

Animation
Contest Winners
See p. 3

AMIGA

WORLD

April 1990
U.S.A. \$3.95
Canada \$4.50
UK £2.50
An IDG
Communications
Publication

PRODUCTIVITY SPECIAL

Get More From Your Amiga!

- ▶ **Easy Transfer Tips:**
Mac/PC To Amiga
- ▶ **Multitasking Hints:**
50 Popular Programs
- ▶ **Memory Management:**
Save Chip RAM!

Plus!
Amiga Unix
Animation Tricks
BASIC Tips
Reviews & Games



SuperGenTM

GENLOCK AND OVERLAY SYSTEM

- ▲ Broadcast quality RS-170A composite output
- ▲ Two independent dissolve controls
- ▲ Software controllable
- ▲ Compatible with all Amiga[®] models
- ▲ Dual video outputs
- ▲ Key output
- ▲ Selectable 3.58MHz Notch Filter

**SUPERGEN IS THE PROVEN
INDUSTRY STANDARD GENLOCK
AND OVERLAY SYSTEM FOR THE AMIGA**

\$749.95



DIGITAL

C R E A T I O N S

2865 Sunrise Boulevard Suite 103 Rancho Cordova CA 95742
Telephone 916/344-4825 FAX 916/635-0475

©1989 Digital Creations.
Amiga is a registered trademark of Comodore Business Machines.

INTRODUCING THE SuperGen SCTM

**ALL THE QUALITY OF OUR ORIGINAL SUPERGENTM
NOW ON A CARD FOR THE AMIGA[®] 2000 SERIES**

- ▲ Occupies the video slot
- ▲ 1 video in, 1 video out
- ▲ Broadcast quality RS-170A composite output
- ▲ Switch selectable overlay function
- ▲ Software controllable
- ▲ Optional remote dissolve console (\$75)

\$599.95

SuperGen 2000TM

**THE FIRST TRUE Y/C GENLOCK & OVERLAY CARD
FOR THE AMIGA[®] 2000 SERIES COMPUTERS**

- ▲ S-VHS, ED-BETA, Hi8 compatible
- ▲ broadcast quality NTSC RS-170A output
- ▲ built in SC/H phase adjustability
- ▲ built in sync generator ▲ dissolves

\$1995



DIGITAL

C R E A T I O N S

2865 Sunrise Boulevard Suite 103 Rancho Cordova CA 95742
Telephone 916/344-4825 FAX 916/635-0475

©1989 Digital Creations.
Amiga is a registered trademark of Comodore Business Machines.

Circle 28 on Reader Service card.

PROFESSIONALS ON

PROFESSIONAL PAGE

Experts Choice
Best Desktop Publishing Software

AmigaWorld, 1989

"*Professional Page* is opening doors for graphic designers and artists... especially free lancers like me. It cuts down layout time, keeps me out of the typeshop, and allows me to show my clients a greater variety of design options without costing a fortune."

J. K. Steele,
Freelance Graphic Designer

"After years of preparing black and white camera-ready art for color printing, we can now design and compose in color and produce plate ready film."

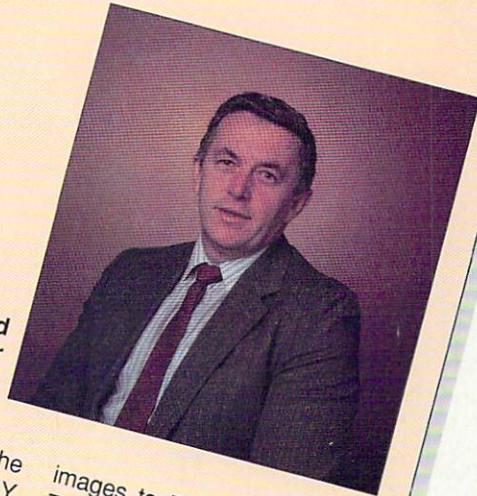
Vel Evans,
President,
Vellum Print & Graphic



GOLD DISK

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

Bill Kidd
Teaching Master
George Brown College



The "pre-press courses of the PRINTING TECHNOLOGY DIPLOMA PROGRAM" at George Brown College use *PROFESSIONAL PAGE* to simulate pagination concepts as applied to the high-end electronic pre-press systems used in the graphic arts industry. Bill Kidd, Teaching Master in the Graphic Arts Division, introduces students to importing text, graphics and bitmap images to *Professional Page*. Then, through various assignments, "the students produce a 4-color workbook including pages, covers and ads which are typical of work that the George Brown graduate will encounter in the industry". Mr. Kidd praises the versatility of the software for cropping, positioning, colour controls, typography, importing data and speed.

Simply put, more professionals use *Professional Page* than any other desktop publishing program on the Amiga. And they use it for everything from creating simple flyers and brochures to producing full four color ads, and even publishing magazines.

Professional Page was the first desktop publishing program, on any computer, to offer true four color separations and it still leads the field. *Professional Page's* typographic and color controls are among the best in the industry and its level of production control is unparalleled.

And now, with the inclusion of AGFA Compugraphic's outline font technology, you can take advantage of *Professional Page's* capabilities without investing in a

PostScript laser printer - output your pages to any printer - dot matrix, ink jet, or laser - at the highest resolution with smooth fonts, jaggie-free lines, and brilliant colors.*

When you combine these features with an intuitive user interface and a high reliability level, it is not difficult to see why *Professional Page* is the program of choice for the graphic professional.

So why not use the best? Call Gold Disk, today, at 1-800-387-8192 and order your copy of *Professional Page*, or stop in to see your local Amiga dealer.

* Graphics will print in full color on color printers or as 16 level grey scaled images on black and white printers.

PAGESTREAM Owners: Upgrade for Only \$150 - Call 1-800-387-8192 For Details

DRAGON SCAPE

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

Well, here's your chance!

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

Together with your trusty
steed, Garvan you must stop the
curse that has descended on the
once beautiful lands of Tuvania.

Featuring 64-way scrolling,
four multi-screen levels, digitized
sound effects, a full musical
sound track and 100 types of
opponents, **Dragonscape** is fast,
furious fun.

Suggested retail price \$39.95

Available from your local dealer, or contact:
Free Spirit Software, P.O. Box 128, Kutztown,
PA 19530. (215) 683-5609

Free Spirit

SOFTWARE



♦ C ♦ O ♦ N ♦ T ♦ E ♦ N ♦ T ♦ S ♦

FEATURES

PRODUCTIVE COEXISTENCE

By Timothy Trimble 16

With the computer "Cold War" winding down, Amiga users will be getting a lot more out of their productivity software. We'll show you new and easier ways to transfer files and data between Amiga and IBM and Mac formats.

THE GREAT SOFTWARE WEIGH-IN

By Loren Lovhaug 24

Pull up a ringside seat while we analyze some vital statistics on 50 popular Amiga programs to show you how you can multitask your software more effectively and conserve valuable memory resources.

CASTING A WIDER NET

By Bill Catchings and Mark L. Van Name 38

In an effort to attract business and professional users, Commodore is about to release an Amiga version of Unix. What does Unix offer? And will current Amiga users benefit?

COLUMNS

CHIEF CONCERNS

By Doug Barney 6
We wondered why the editor was wandering around this month draped in a coil of cables and speaking to six different people at once. He was in full multitasking, multiuser, networking mode preparing this piece on Amiga Unix!

ACCENT ON GRAPHICS

By Joel Hagen 46
In the second half of Joel's "Freehand Animation" tutorial, you'll learn how to apply the finishing touches: coloring, compositing elements, and post-production enhancement.

INFO.PHILE

By Mark L. Van Name and Bill Catchings 56
Spring training picks up this month as our AmigaDOS managerial team introduces more Workbench tools to get new Amiga users seasoned for operating in "The Bigs."

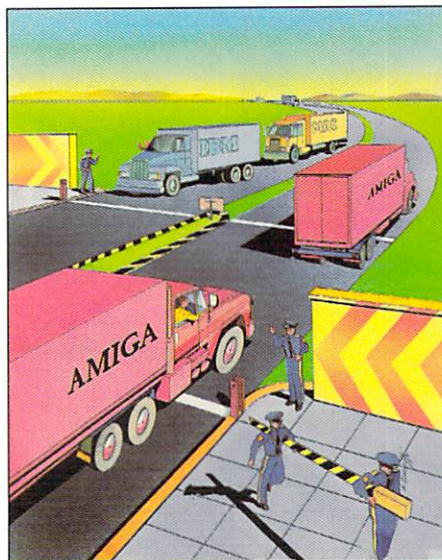
POINTERS

By Bryan Catley 64
Our programmers' corner opens up to Amiga Basic fans this month with some time-saving tips on incorporating assembly-language routines that will speed up your applications.

DEPARTMENTS

REPARTEE 8

Read 'em and weep!



Opening up the borders between Amiga and the PC/Macintosh camps—p. 16.

NOTEPAD 10

In the News: American artist exhibits Amiga Japanese art; good deal for MIDI musicians; Amiga discounts for educators.

WHAT'S NEW? 96

New stuff. No guff. That's enough.

HELP KEY 100

"Whan in Aprill Lou with help soote Woes of March perced to the roote..." LRW is never so busy that he'll spin some "Can't-be-hurried" tale to poor pilgrims in technical distress.

HORS D'OEUVRES 102

Tips and techniques from the best and brightest.

LAST LICKS 108

Skip this page if you're looking for useful, informative, factual, reputable, practical, or reliable information!

REVIEWS

ANIMAGIC (Oxxi / Aegis) 12

An all-purpose Anim editor with an impressive array of features—and a steep learning curve.

SYNTHIA PROFESSIONAL

(The Other Guys) 14

The unique and popular synthesizer/editor program gets turned up a few notches in this more advanced version.

BARS AND PIPES

(Blue Ribbon Bakery) 84

An all-new composition-and-editing package that offers both creativity and control.

X-CAD PROFESSIONAL

(Cadvision Int'l) 90

Third time around could be lucky for this powerful CAD package.

BACK TALK 94

We've definitely started something here with our "response line" on AW reviews!

GAMES

CRIB NOTES

By Peter Olafson 70
Gamesmeister Olafson has tips and tricks on nine popular Amiga games. Game reviews follow his column:

IT CAME FROM THE DESERT

(Cinemaware) 70

Bravely battle big bugs.

NEVER MIND (Psychopse / Psynopsis) . . . 70

A complex puzzle-solver's delight.

POWERDROME (Electronic Arts) 72

You won't see a race car like this jet-propelled "Typhoon" at the Indy 500.

F-16 COMBAT PILOT

(Electronic Arts) 74

A role-playing flight simulator with lots of action.

PRO TENNIS TOUR (Electronic Arts) . . . 74

Good sound and graphics in a tennis simulation that may drive you to John McEnroe-like outbursts of frustration!

VORTEX (Visionary Design) 76

Save the entire universe from black-hole destruction.

AMIGAWORLD ANIMATION CONTEST WINNERS!

1st Prize—\$500

FeO

Stephen Menzies
Montreal, Quebec

2nd Prize—\$200

Tree Snake

Robert Eaton
Winsted, CT

3rd Prize—\$100

Morph

Tracy Sabin
San Diego, CA

See AW's Animation Video on p. 93 for more details.



The leader in innovative
products for the APPLE II
Comes to the AMIGA.



Hard Drive

Special limited Offer: 40 meg Hard Drive, A2000
\$399

Comes with controller card, WD hard drive,
Software, formatted, ready to run out of the box.



Ingenuity, Inc.

800-346-0811 or in CA
818-960-1485
14922M Ramona Blvd
Baldwin Park CA 91706

Under Development

VCR Backup
backup your hard Drive to
any VCR
FAX - MODEM

Ingenuity, Inc revolutionized the Apple II market with
innovative, affordable products and we want to do the same
for the Amiga. "it takes ingenuity to make quality affordable"

Circle 377 on Reader Service card.

Tired of "Times"?

Elegant

Stylish

Exotic

Distinctive

Casual



Fonts!

Pixelations'
PostScript
Series™

7 volumes of typefaces are now available, \$65-75 US.
These disks contain PostScript definitions, bit-maps,
and support files for Professional Page, PageStream,
excellence!, City Desk 2.0, ProWrite/ProScript,
PageSetter/LaserScript, and Shakespeare.
PostScript typeface definitions require PixelScript
(\$149 US) or a PostScript printer for output.
The PostScript Printer Utilities (to download Post-
Script fonts and files), many volumes of EPS clip art,
and our Sample Disk are also available, \$65 US each.
Call or write for more information!

Pixelations, Inc. P.O. Box 547, Northboro, MA 01532 USA 508-393-7866

All product names mentioned are the trademarks of their respective companies.

Circle 284 on Reader Service card.

STEPHEN ROBBINS, Vice President/Group Publisher

DOUGLAS BARNEY, Editor-In-Chief

DAN SULLIVAN, Executive Editor

SHAWN LAFLAMME, Managing Editor

LOUIS R. WALLACE, Senior Editor, Technology

LINDA J. BARRETT, Acquisitions Editor

BARBARA GEVERT TYSON, Review Editor

JAN JACKSON, New Products Editor

TIM WALSH, Technical Editor

CARLA BARKER, Editorial Intern

GENE BRAWN, BILL CATCHINGS, DAVID T. MCCLELLAN,

MARK L. VAN NAME, Contributing Editors

HOWARD G. HAPP, Art Director

ANN DILLON, Designer

LAURA JOHNSON, Designer

ALANA KORDA, Production Supervisor

KENNETH BLAKEMAN, National Advertising Sales Manager

MICHAEL MCGOLDRICK, Sales Representative

BARBARA HOY, Sales Representative

HEATHER PAQUETTE, Associate Sales Representative,

InfoMarket Sales, 1-800-441-4403, 603-924-9471

MEREDITH BICKFORD, Advertising Coordinator

GIORGIO SALUTI, Associate Publisher, West Coast Sales 1-415-363-5230

2421 Broadway, Suite 200 Redwood City, CA 94063

SHELLEY HARMON, Associate Sales Representative,

InfoMarket Sales, 1-415-363-5230

WENDIE HAINES-MARRO, Marketing Manager

LAURA LIVINGSTON, Marketing Coordinator

MARGOT L. SWANSON, Advertising Assistant

LISA LAFLEUR, Executive Assistant to the Publisher

SUSAN KANIWEC, Customer Service Representative

Publishers Assistant

PAUL RUESS, Circulation Director

PAM WILDER, Assistant Circulation Manager

800-365-1364



ROGER J. MURPHY, President

STEPHEN D. TWOMBLY, Executive Vice President/Publishing Director

DENNIS S. CHRISTENSEN, Vice President of Manufacturing/Operations

JEFFREY D. DETRAY, Director of Technology Research

LINDA PALMISANO, Typesetting Manager

DEBRA A. DAVIES, Typographer

SUSAN GROSS, Corporate Production Manager

LYNN LAGASSE, Manufacturing Manager

LINDA RUTH, Single Copy Sales Director

DEBBIE WALSH, Newsstand Promotion 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 1990 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 Kable News Co. *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.

Why settle for an A2500 when you can have A3000 performance today?

IMPACT A3001 UPGRADE KIT

The Clear Choice for 68030 Acceleration

33Mhz
Now Available

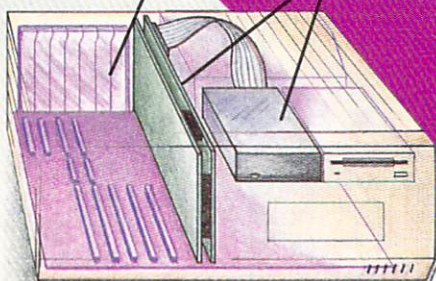
Choose the **IMPACT™ A3001 Upgrade Kit** from GVP to put the speed and power of leading-edge technology into your Amiga™.

Enhance your productivity and create more powerful results when you choose these key features:

- Factory installed 68030 CPU running at 28 MHz.
- Factory installed 68882 Floating Point Processor running at 28 Mhz.
- 4 or 8MB of 32-bit wide High Performance 80ns NIBBLE MODE DRAM; allows full support and advantage to be taken of the 68030's BURST Mode.
- Built-in Autobooting High Performance Hard Disk Controller with data transfer rates well over 700KB/sec.
- Quantum 40MB or 80MB hard disk drive with an average read access time of 11ms (19ms on write) and 64KB read-ahead cache. If you already own a hard disk, this item can be optional.
- Asynchronous design allowing the 68030 to run ASYNCHRONOUS to the rest of the A2000 improving GENLOCK compatibility.
- **ZERO SLOT SOLUTION!** With the A3001 Configuration along with the bundled 40Q or 80Q Hard Disk Drive ALL A2000 EXPANSION SLOTS ARE LEFT FREE FOR FUTURE UNLIMITED EXPANSION!

All A2000
Expansion
Slots Free!

A3001
Upgrade Kit
Installed



Up to 8MB of 32-Bit Wide DRAM
Hard Disk Drive Interface
Autoboot EPPROMS for Hard Disk
Optional 68030 Boot EPPROMS (UNIX™, etc.)
40MB or 80MB Hard Disk Drive
32-Bit 68030 Bus Interface
68030 CPU with 28Mhz Oscillator
68882 FPU running at 28Mhz

When you compare, the choice becomes clear. GVP is unbeatable for price and performance.

COMPARE:	GVP IMPACT A3001	CBM A2630 or A2500/30
28Mhz Standard	✓	NO
33Mhz Available	✓	NO
Upgradable to 8MB 32-Bit Memory	✓	NO
Hard Disk Controller Built-in on Accelerator Board	✓	NO
With Hard Disk Installed All Five Amiga Expansion Slots Left Free	✓	NO
One Year Warranty	✓	NO
User Upgradable Memory	✓	NO

GVP

GREAT VALLEY PRODUCTS INC.
225 Plank Ave., Paoli, PA 19301

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

Consumers Circle 127 on Reader Service Card

For more information, or for nearest dealer, call today. Dealer inquiries welcome.

Tel. (215) 889-9411 • FAX (215) 889-9416 • BBS (215) 889-4994

Dealers Circle 245 on Reader Service Card

CHIEF CONCERNS

Care for a slightly used operating system?

I'VE NEVER BEEN a big fan of the Unix operating system. This Bell Labs relic was far too difficult for normal humans to use, and far too large for normal computers. Like accounting or podiatry, the only reason some people liked Unix was that they understood it. . . and the rest of us didn't.

Unix is still too big, and if you have to get to its insides, it is still far too difficult to use. But it has two things going for it: growing industry support and a growing list of excellent applications. And with all the attention paid to high-powered workstations, Unix has even become exciting—something only a lunatic would have predicted.

Commodore is doing a wise thing by supporting the Unix standard proposed by AT&T, which includes the base operating system (Unix 5.4) and an Amiga-like graphical user interface developed by Sun called Open Look. To underscore the move, Commodore recently established a Systems Marketing Group, which will focus primarily on the release and marketing of Commodore's Unix-based products. The group will be headed by Paul Calkin, a former Unisys exec with over ten years of experience in Unix sales and marketing.

Amiga users seem a bit wary of Unix, but they shouldn't be. Unlike MS-DOS, which requires an additional hardware investment, Unix will run on high-end Amigas without modification, provided there is a large enough hard disk and enough RAM. Unix will solve problems for the Amiga that we never dreamed



would be solved. It will solve these problems quickly, cleanly, and without a whole lot of effort, so we can all stop griping.

For years, the Amiga community has been begging for more mainstream applications, networking, and market credibility. Unix will give us all three.

We gain a tremendous amount by running Unix and Open Look. With a simple operating system upgrade, the Amiga will literally operate as a Sun workstation. We will gain the ability to run what will eventually be tens of thousands of applications. According to the group that proposed Unix 5.4, there are some 15,000 applications that the system will support, and more are being built every day. Not only are these applications multitasking, but many are also truly multiuser. Now that Lotus Development Corp. and other software biggies are supporting Unix, we no longer have to pine for their applications; we'll be too busy using them. And believe me, there are some wild apps being written for Unix—things you and I have never conceived of.

Unix also helps solve major networking problems. Let's face it, the hardware

side of networking is relatively simple. It's just wires and boards and such. The hardest part is building applications that understand that a network exists, can effectively share data, and most importantly, actually share the processing load between multiple machines.

Most workstation applications have been built with networking in mind. An increasing number have been built so that they cooperate with other systems that store and manipulate vast quantities of data, which can be numbers, names, images, voices, or even motion video. The rest of the computing world is moving in this direction, and now so can the Amiga.

Unix also gives us credibility, and an entree into the huge corporate and government markets. This is something that all Amiga users, even those who are strictly game players or artists, should care about. A larger installed base and a healthier market benefits everyone. There will be more competition, new hardware and software, and stronger companies that will be able to support their products into the future.

Unix will not kill off the native Amiga operating system. In fact, most of us will never use Unix. But even if you think Unix is the worst operating system since CP/M or TRS-DOS, or never get a chance to look at it, you should still welcome it to the Amiga. ■

Doug Barr

The Best Keeps Getting Better UNBEATABLE VALUE!

SCSI Hard Disk Controller and 8MB FAST RAM Expansion In a Single A2000 Slot

The NEW IMPACT™ A2000 SCSI + 8 CONTROLLER
gives you more for less.
Compare:

PRICE Why buy a dedicated memory expansion board or a dedicated SCSI Controller when you can install the IMPACT SCSI + 8 as a RAM Board or SCSI Controller All-in-One for less! Save even more when bundled with a GVP Hard Disk Drive.

EFFICIENCY Now you can have the GVP HIGH PERFORMANCE BOOST™ SCSI Controller and 8MB of FAST RAM Expansion in a single A2000 Slot saving you a valuable A2000 slot. Ease of installation is regarded as top in industry.

PERFORMANCE Now with the NEW GVP BOOST, experience the HIGH PERFORMANCE GVP SCSI Controller with full Overscan support, FAST AUTOBOOTING directly off a hard disk FAST FILE SYSTEM partition. Proven track record with over 10,000 GVP hard disk controllers installed!

QUALITY Backed by GVP's unique full one year guaranteed warranty.

High Performance
Hard Disk Drive
SCSI Controller

8MB Memory
Expansion

IMPACT SCSI + 8 Technical Highlights:

- High performance Autobooting SCSI controller supports up to seven SCSI devices.
- Internal and external SCSI connectors. 50 PIN SCSI Cable and well known easy-to-use GVP installation software comes standard.
- DMA to/from drive to onboard 16K SRAM buffer provides high performance not affected by overscan or blitter DMA.
- Now FASTER Data Transfers with GVP BOOST Advanced Driver Software Kit installed.

NEW!



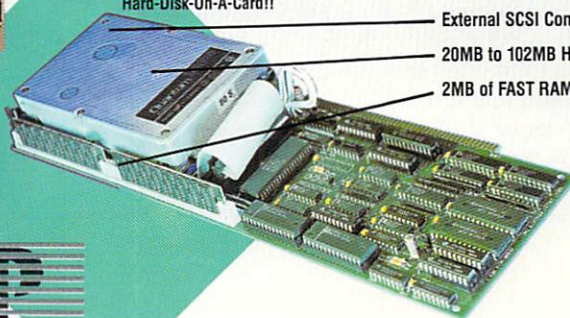
IMPACT SQ 44*
44MB Removable Hard Drive.
Autobooting/Auto Disk-
Change Features Free.

IMPACT XC
GVP IMPACT XC is designed
to take one full-height or 2
half-height 5.25" hard or
floppy disk drives. Internal 45
watt switching power supply.

IMPACT WT 150*
150 MB Streaming Tape Back-
up. TAPESTORE™ software
makes backups simple, fast,
interesting and exciting.
Tapestore is included with all
IMPACT WT 150 orders Free.

**IMPACT-HARD-DISK-
CARD + 2**
Now we have added 2MB of
Zero-Waitstate FAST RAM
Expansion to our best-selling
Hard-Disk-On-A-Card!!

External SCSI Connector
20MB to 102MB Hard Disk Drive
2MB of FAST RAM Expansion



*GVP SCSI host adapter required

GVP

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

GREAT VALLEY PRODUCTS INC.
225 Plank Ave., Paoli, PA 19301

For more information, or for your nearest GVP dealer, call today. Dealer inquiries welcome.

Tel. (215) 889-9411 • FAX (215) 889-9416 • BBS (215) 889-4994

REPARTEE

Comments, complaints, and concerns

from AmigaWorld readers.

NEW WAVE

THE NEW ELEMENTS you have added to your magazine are fantastic. The "Your Turn" boxes in the Reviews section give additional insight into the worth and possible applications of the product. The "Last Licks" column, as well as Peter Olafson's "Crib Notes," are assets. There is not a lot to complain about in this magazine.

One thing, though, that I wish you would give more coverage is public domain/shareware.

Robert Pearson
Indiana, PA

NO ANSWER

IN HIS JANUARY '90 editorial ["Chief Concerns," p. 6], Doug Barney writes that "...there is a new crew at Commodore that is spending big bucks and doing some really smart things." Why then, if they are so smart, can I not obtain a reply to my letters to them?

I am employed by Northrop Corporation in Hawthorne, California, where we are evaluating PCs to determine where our next machines should come from. We currently operate a mix of IBM PC-ATs and Apple IIs. I visited the local Amiga dealer, who could not answer our detailed questions and recom-

mended that we contact Commodore. We wrote Commodore a letter and enclosed a list of questions about the Amiga. To my great surprise, I received my letter back with some penciled comments—no letter or signature. To this day I do not know who answered the questions. To clarify things, I called Commodore and was passed to several departments, but no one claimed knowledge of my letter.

I sent the whole package to the President of Commodore. No answer! I also forwarded to them information of a newly formed government/academic/industry group that is going to develop a NASA design program for use throughout the aerospace industry, which would give the Amiga access to a much wider user base. Once more, no answer.

Northrop is a large user of computing equipment, and is wary of companies that do not respond to its requests for information. This looks like another lost opportunity for the Amiga. It doesn't matter how good a machine is if those who are trying to sell it do not know how to do so.

Brian G. Wilson
Los Angeles, CA

RATIONAL ARGUMENT

DOUG BARNEY'S February '90 editorial ["Chief Concerns," p. 6], which promises less stereotyping and a more

rational form of Amiga advocacy, is a dramatic and welcome change from the tone of previous editorials. Picking up the multimedia ball and publishing addresses where Amiga users can direct comments, complaints, and suggestions is a positive use of time and energy. Keep it up!

Julie Petersen
Bellingham, WA

WHAT WAS THE NAME OF THAT COMPUTER?

COMMODORE'S seven-page Amiga ad on pages 43 through 49 of your February 1990 issue was the worst advertisement of a product I have ever seen. It violates every rule that a good hard-hitting advertisement would follow. The product name is buried in copy; the superfluous personality photos are a waste; there is no emphasis on price as compared to the competition; and there are no lists of specs. Not one piece of pertinent information is given to the potential buyer.

A good advertisement containing the essential information for all Amiga models could be condensed to one page with color. The words AMIGA and COMPUTER

should be the first words to catch the reader's eye. This could be done without clutter and superfluity.

No matter how good a product is, if you can't market it successfully, forget about being successful.

P.W. Hilley-Swank
Lindenwold, NJ

You could write to Commodore... but how about trying the agency that created the ads? They are also responsible for the TV commercials starring "Stevie Palmer." Here's the address; let them know what you think:

Jeff Berg
Messner Vetere Berger Carey Schmetterer

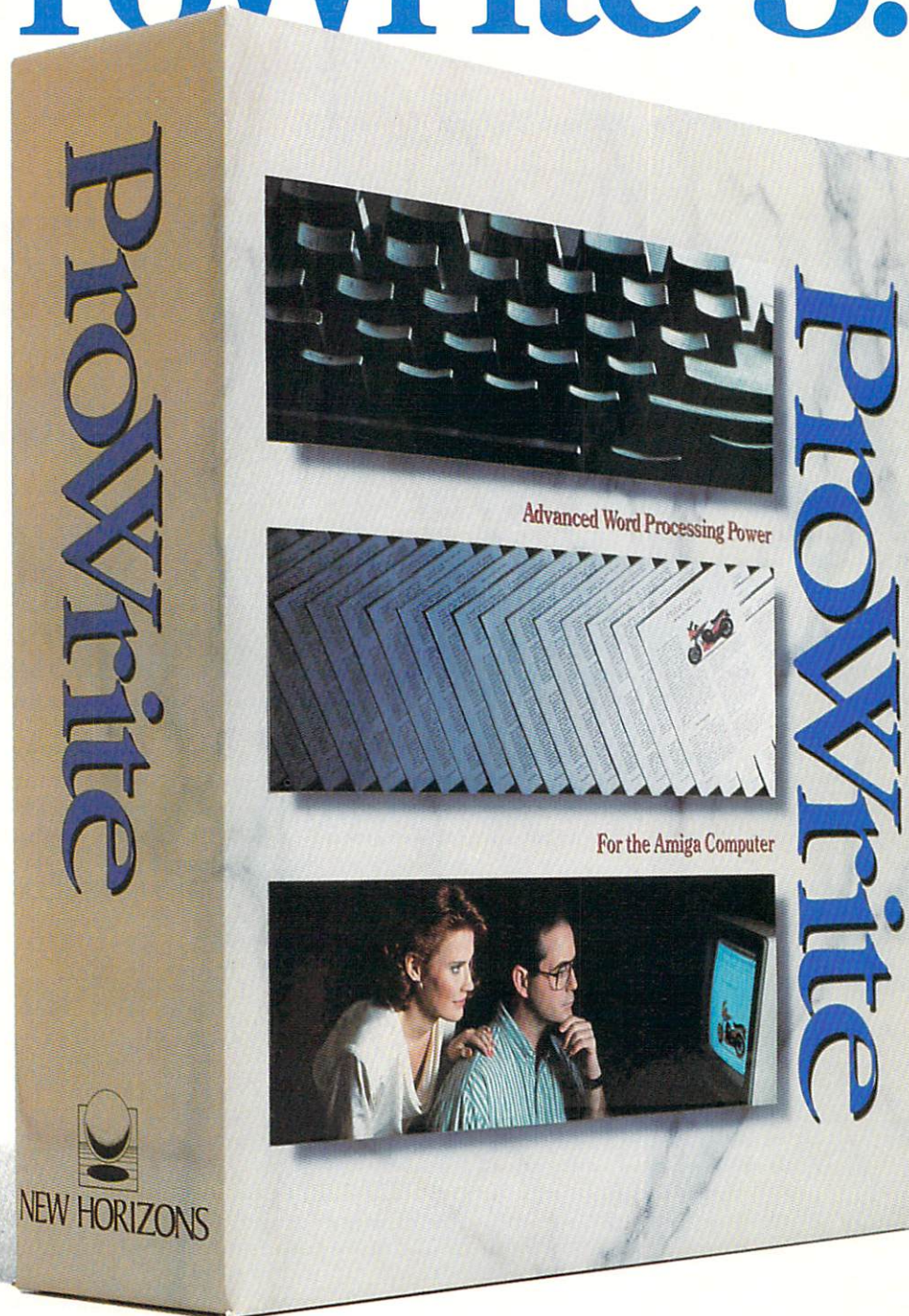
*375 Hudson St.
New York, NY 10014*

They are also interested in learning of other creative uses of the Amiga. You can send disks or printouts of your artwork, music, graphics, etc. to the above address (however, they cannot return your materials).

—Editors

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

ProWrite 3.0



The Next Generation

Finally, the word processor the Amiga[®]
has been waiting for.

Coming in April to a dealer near you.

NEW HORIZONS SOFTWARE, INC./206 WILD BASIN ROAD, SUITE 109/AUSTIN, TX 78746/(512) 328-6650
Circle 38 on Reader Service card.

NOTE PAD

Compiled by Barbara Gefvert Tyson

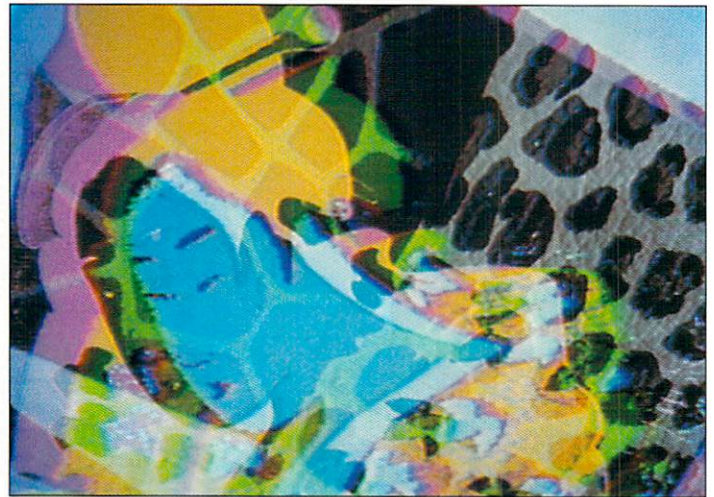
Public Relations

ALTHOUGH THE AMIGA is a favorite tool for many artists, finding a large display of Amiga art at a public gallery is unusual. Laurence Gartel's Nuvo Japonica (New Japanese Imagery) exhibit at the Joan Whitney Payson Gallery of Westbrook College in Westbrook, Maine marks the first time a professional artist has had a showing of work produced entirely with the Amiga.

Not only is this event exceptional, it's also controversial. Laurence addresses the current strain in relations between American and Japanese cultures with a no-holds-barred approach that prompts thought and discussion. Established icons such as geisha girls and Godzilla represent the Japanese, and Gumby, Mr. Potato Head, and a Ken doll portray American interests.

Like many Amiga artists, Laurence relies heavily on digitization. His primary tools, in addition to his A1000, are NewTek's Digi-View digitizer and DeluxePaint III (Electronic Arts). "For the money," says Laurence, "the Amiga is the best system. I feel much more fluid with this machine [compared to a Macintosh]." Laurence does most of his work in low resolution (320 x 200). According to Judith Sobol, director of the Payson gallery, "people get too hung up about resolution. The pixels add a tremendous amount of vitality."

The Nuvo Japonica series is not yet available in book form, but the just-released **Laurence M. Gartel: A Cybernetic Romance** (published by Gibbs M. Smith Inc.), a computer-art anthology



East meets West in Laurence Gartel's dynamic Nuvo Japonica series.

spanning 15 years, includes a number of pieces created with the Amiga. Among these is the first computer art print to be included in the Smithsonian American History Museum collection. What advice does this successful artist offer those of us just starting out in Amiga graphics? "Take a picture, scan it or use a tablet to trace it, and then modify it in different ways...that's a good starting point."

—Graham Kinsey



AT THE JANUARY National Association of Music Merchants (NAMM) show in Anaheim, CA, Commodore announced a dealer promotion good through March 30 (to take advantage, you must have the coupon slated to appear in national music magazines). For the usual price of an A2000 with monitor, dealers will offer an A2000, 1084 monitor, and MIDI interface, along with three Dr. T's

NAMM the Torpedoes!

programs: KCS 3.0, Copyist Apprentice, and any Caged Artist librarian. Commodore is also working on a new MIDI standard that allows memory-resident sequencers and librarians to communicate, and to use a single machine's serial ports. Preliminary specs go something like this: Sequencers using the same serial port for MIDI will be able to merge data, while those using different ports at the same time will allow 16 discrete MIDI channels per serial port. Resident sequencers will also be able to share timing information.

Steinberg of W. Germany announced beta testing of PRO-24

(MIDI sequencing software acclaimed on the Atari) for the Amiga. Passport Designs will bring Master Tracks Pro Amiga up to the version now out on the Macintosh. Dr. T's showed Tiger Cub, also in beta.

—Mitch Wells

The revamped Commodore Education Program provides for a territorial distribution network and competitive pricing. Bundles are priced for institutions, students, and educators at up to 55% off (\$799 for an A500 with external drive, 1 meg RAM, and monitor; \$3679 for an A2500/30, Bridgeboard, and moni-

tor) and stand-alone products are discounted 30%. To penetrate the market dominated by Apple and IBM, CBM plans to target the segment "ready to upgrade," and to ride the multimedia wave.

If you support computer graphics education, you can apply for an ACM SIGGRAPH grant exceeding \$1000. The 25 grants include participation in the international SIGGRAPH conference in Dallas, August 6-10. Applications must be postmarked by April 2; for details contact G. Scott Owen, Math and Computer Science Dept., Georgia State U, Atlanta, GA 30303, 404/651-2247.

—BGT

With the right software, you're in business.



Browse through your data using the VCR-style panel and view related text or image files.



Build menu-driven applications accessing forms under DML control.



Use the spreadsheet to allocate resources to projects. Print wall planning and GANTT charts.

SuperbaseTM
PERSONAL
2

AMIGA⁺
EXPERTS'
CHOICE
1989

Data management
Text processing
Relational querying

Superbase Personal 2 has all the power you need to set up and manage multi-file databases.

- Apply cross-file lookups and validations for data accuracy and consistency
- Change file definitions any time
- Browse through your data in any index sequence using the unique VCR-style browsing controls
- View data page by page or in tables, and build powerful relational queries and reports
- Edit text documents, print merge letters and labels
- Include text, IFF image and sound files as data
- Communicate data via modem

"Personal 2's LOOKUP command... gives the program a decided advantage over most of its competitors."

AmigaWorld July '89

\$149.95

Invest in the best.
Our upgrade policies always protect your investment.

SuperbaseTM
V 1.3
PROFESSIONAL

AMIGA⁺
WORLD
EXPERTS'
CHOICE
1989

AMIGA⁺
EXPERTS'
CHOICE
1989

Form design
Application development
Relational DBMS

Superbase Professional is the experts' choice both for executive use and for Fourth Generation application development. As well as all the menu-accessible features of Personal 2, Superbase Professional includes:

- Database Management Language (DML) with over 250 powerful commands and functions for execution directly via the command line or in programs
- Form Designer with access to a wide range of graphical and logical design objects, including images as data, one-to-many relationships and DML commands
- Report Program Generator for on-screen painting of reports and generation of report programs
- Programmable Communications facilities and ARexx support

\$349.95

SuperplanTM

AMIGA⁺
WORLD
EXPERTS'
CHOICE
1989

Spreadsheet
Time management
Business graphics

Superplan gives you full-featured spreadsheet planning power *plus* the ability to track resources and projects over time:

- Print wall planning charts, GANTT charts, do critical path analysis
- Display and print graphs with over 100 different styles and options
- Sideways printing, full color output, extensive printer support
- Comprehensive macro language
- Lotus 1-2-3 and dBase file compatible
- Full ARexx support

\$149.95

Now get down to business.

1-800-562-9909

Call today!

Precision Software
8404 Sterling Street
Irving, TX 75063
Tel: (214) 929-4888
Fax: (214) 929-1655

**Precision
Software**

REVIEWS

ANIMAGIC

An Anim editor for all reasons.

By Gene Brawn

THEY HAVE NAMES like Mirage, Abacus, and Pinnacle. Swooping titles, glowing graphics, and dramatic zooms are just a small part of their repertoire. These effects, and the hardware used to create them, are known as Digital Video Effects (DVEs). They are the hottest thing in the video universe.

ANIMagic is an ambitious effort to bring the full power of a studio DVE to the Amiga by simulating its effects with IFF animations (Anims). Originally envisioned by Gary Bonham (the father of IFF Anims) as an all-purpose animation editor, ANIMagic ultimately grew to include an impressive suite of digital effects. Flips, zooms, tumbles, confetti, page turns, venetian blind, and mosaic-style transitions are available with just a few clicks of the mouse.

After several sessions with the program, my report card is in and the grades are mixed. ANIMagic gets high marks for its power and flexibility but comes up short on speed of execution and ease of use. Although its potential is mouthwatering, putting it to practical use is another matter.

DIGITAL EFFECTIVENESS

ANIMagic's library of video effects includes over 20 "basic" routines for producing complex DVEs using any type of graphics, from titles to full-motion animations. According to the manual, at least 9025 variations are possible for each effect. Some of the more impressive include page turns, rotating boxes, and opening "doors." Many of these effects are three dimensional, meaning that the

graphic objects' backsides appear when they are rotated. Additionally, you can customize and save these files by selecting parameters from the nifty pop-up menu buttons.

The Grid Control menu is the most powerful and complex part of the DVE. If you modify an effect, this is where you will spend most of your time. From here you control the size of the grid, the point of origin of the effect, the path the effect will follow, and its duration. If the effect is in three dimensions, you can use the 3-D High Level Control menu to change the distance of the object from the viewer and determine whether the back of the image or another picture is mapped to the back of the effect. With



YOUR TURN!

For a seasoned underwater video producer who is a computer novice, ANIMagic is easy to use. Even beginners can perform a multitude of tasks, but unfortunately the manual is written for an experienced audience.

—Joe Kentz
Tucson, AZ

the Backdrop Control you create a colored background for the effect, add shadows to moving objects, and change the size and screen location of the source and destination images.

Although substituting a software Anim for a real-time hardware DVE is certainly cheaper, there are some major disadvantages. First, the files are usually huge. This is not a problem if all you want is a title for a video (as long as you have enough memory to load the animation), but such files are probably too

large to be included in longer disk-based animations or demos.

Also, while high-end effects machines operate in real time, ANIMagic does its stuff frame by tedious frame. The you-get-what-you-pay-for caveat applies; in ANIMagic's case, you pay in lack of speed. As an example, I used ANIMagic to create a simple 66-frame animation. The task involved superimposing a 32-color Anim, frame by frame, on a HAM (Hold And Modify)-format background of the same resolution (low). The frames were rendered to hard disk in four hours, 40 minutes. For comparison, I rendered the same frames with Digi-Paint (NewTek), automating the process with an ARExx script. It took about two hours, including script writing.

ANIMagic's rendering speed may or may not be cost-effective for you. Many other programs, among them The Director (Right Answers Group) and Deluxe-Video III (Electronic Arts), can do very simple effects in real time, and if your needs are simple these may better serve you. Thankfully, Aegis anticipated professionals' needs and included a program version designed for use with 68020/68881 accelerators.

LEARNING THE TRICKS

At first, I was pleasantly surprised by the interface. From the buttons to the text, the design appears simple and uncluttered. The main display is divided into two parts, with editing controls in the upper half and the DVE section below. Two thoughtful touches are especially welcome: pop-up menu buttons and the ability to hide unneeded parts of the control panel.

Unfortunately, my euphoria lasted no longer than the first few clicks of the mouse. The novice ANIMagician (experienced Amiga user or not) faces a formi-

dable learning curve. Invoking almost any effect, however simple, requires that you specify at least five or six parameters. Confusion mounts when you try to locate the controls to set; they are scattered all over the program. Fortunately, pressing the Help key turns the cursor into a question mark. Place the cursor over any key and press the left mouse button to summon a detailed description of the key's function.

I found the main control panel confusing and poorly designed. Animation playback is controlled by clicking on buttons arrayed in two horizontal rows at the top of the screen. The upper row resembles the controls on a VCR: You play, rewind, fast forward, and single step through the animation by clicking on them. The problem is that the layout is inefficient. If you want to single step forward, you must click a button on the right side of the screen. To reverse direction, you have to traverse the entire screen and click a similar button at the left. These buttons should be side by side.

The icons on the buttons are too spartan and repetitive to be of much help to the novice or casual user. The identity of a button is often dependent on its location rather than its design. This was extremely confusing to me, and I found myself constantly reaching for the Help key.

Another major annoyance is the lack of keyboard equivalents for menus and gadgets. ANIMagic's control panel can cover half the screen, obscuring much of the display. To step through an animation and inspect each frame, you must advance the frame using the control panel, turn the panel off to see the frame, switch back to the control panel, and so on.

UNDER THE EDITOR'S SPELL

The editor is my favorite part of ANIMagic. It can add, delete, insert, and cut



The might and muscle of Digital Video Effects—brought to you by ANIMagic.

and paste frames to an existing animation. Special goodies include the ability to change a frame's palette and timing within an animation. Color cycling and variable transparency are also supported.

The palette tools are some of the best I have ever used. With them you can automatically create a smooth transition between palettes over time, or blend, merge, and smear as many as three palettes in order to create an optimized color scheme.

All of the editor's tools work with single frames or any specified range of frames. Best of all, versions 5.40-2 and newer of the ubiquitous ShowANIM (which is included) support the on-the-

fly frame changes implemented by ANIMagic.

As good as it is, ANIMagic cannot automate the creation of an animation from a file of IFF pictures. This is a glaring omission. If you need to assemble an Anim from more than a few frames, I suggest you do so using Electronic Arts' DeluxePaint III (for up to 64 colors) or MicroIllusions' Photon: Cel Animator (for HAM), then modify the result with ANIMagic.

BEST WITCHES

ANIMagic's manual is skimpier than I would like. The emphasis is on tutorials, which are straightforward if not lengthy, and the index is complete. I wished for a reference section, though.

The program is not copy protected and hard-disk installation is a breeze. I especially like the Project Information window, which lets you tell ANIMagic where to look for the files it needs to play your animation. As a bonus, the program will create a custom icon that sets these paths before the animation runs. The Information Window is also used to select the Anim-compression scheme. Amiga IFF Vertical Byte, XOR, and two MAC II schemes are but a few of the compression formats supported. ►



YOUR TURN!

With ANIMagic, someone who is a video pro but a computer novice can run an animation through DVE and achieve wild results. It would be better, however, if you could run the animations from within the program rather than from the CLI.

—Bill Reichle
Long Beach, CA

ANIMagic crashed several times while I was testing it, most seriously while I was saving a file to disk. This could have been much worse had I been using a hard disk instead of a floppy—the file was open when the system reset. When I tried to use the disk again I got an AmigaDOS validation error and had to use DiskSalv to recover it.

ANIMagic is one powerful program, able to leap multiple transitions in a sin-

gle bound. However, I question its complications. In a professional situation, one might use the software a few times a month—too infrequently enough to become expert. There are just too many inconsistencies and eccentricities in ANIMagic for it to be comfortable for the casual user. Then there is the issue of speed.

On the other hand, if you need an all-purpose ANIM editor, take the time to

learn ANIMagic. It does so many things no other program can, that I find I *must* use it, despite my reservations.

ANIMagic

Oxxi/Aegis

PO Box 90309

Long Beach, CA 90809-0309

213/427-1227

\$279

One megabyte required.

SYNTHIA PROFESSIONAL

Synthesize in 16 bits.

By Steve Quinzi

PEOPLE THINK OF samplers primarily as a means of creating acoustic-instrument sounds. This is certainly valid, as extensive load-and-play libraries of



YOUR TURN!

No other program on the market can compete with Synthia Professional. It actually replaced my \$1800 sound system—now I can use Amigas for all my work. I found just one bug: When using the Graphic EQ section on non-looping samples, you must redraw the tail of the waveform. The company is working on this problem though, so I'll give it a break.

—Dave Green
Seattle, WA

string, woodwind, brass, and percussion sounds are available for many models. But samplers need not be relegated to such traditional, mundane duties; they can be used to generate exotic synthesized sounds created by one or a number of synthesis techniques. All you need is a program capable of producing these sounds and putting them into a format your sampler can understand, and then transmitting them to the sampler for playback. Synthia Professional is such a program.

Synthia Pro is billed as a 16-bit synthesizer, but it is not the real-time device we have come to know by that name. Unlike

Continued on p. 78

Checkered Flag RALLY

Challenge the computer or a friend in an all out dash for the checkered flag in the fastest scrolling game for your AMIGA*!

60 frames per second!
48 directional scrolling
3+ minutes per lap

1 or 2 Players
10 Huge Race Courses
Requires 512k

List Price \$34.95
Dealer inquiries welcome
for more info contact—
Realism Entertainment
6n522 Pine Street
Bensenville, Illinois 60106
(708) 595-7487

Realism Entertainment

AMIGA* is a registered trademark of Commodore-Amiga, Inc.

Circle 135 on Reader Service card.

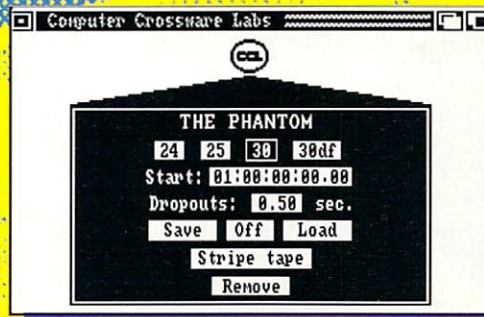
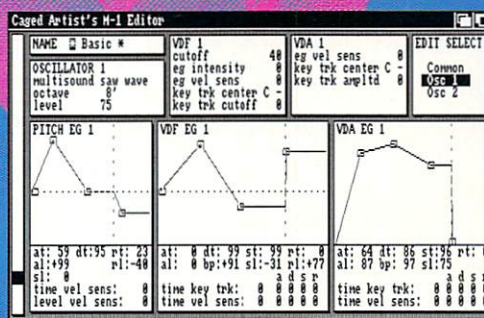
FULL SHRED

Totally radical music software from Dr. T's!

Good music software should be as personal as a vintage guitar, and as powerful as a 300 watt amplifier stack. Our sequencers have always been able to configure themselves to the way you want to work. And the V3.0 Level II and KCS revisions are even more powerful and easier to use than ever before.

Our exclusive Multi Program Environment™ allows for dynamic data transfer, as well as the standard multitasking. You can transcribe directly from the sequencer to Copyist, record your Caged Artist editor "moves" directly into the sequencer, use AutoMix™ (included free with Level II and KCS) to perform real time "MIDI mixdowns," or instantly switch between MPE modules from the Intuition menu. If you need to sync to tape, our new Phantom™ SMPTE synchronizer will lock you up faster and cheaper than you would have dreamed! And Dr. T's has added Laurie Spiegel's acclaimed Music Mouse™ program to our line of quality products.

Dr. T's, software of quality and power that will never go out of style!



PRODUCTS

SEQUENCERS

LEVEL II 3.0 w/AutoMix
KCS 3.0 w/AutoMix
TIGER Cub
MRS V1.1

EDITORS/LIBRARIANS

CASIO VZ-1 VZ-RIDER
CZ RIDER
DX HEAVEN
EMU Proteus
ESQ'apade ESQ-1 SQ-80
4-OP DELUXE (Yamaha)
KAWAI K-1
KAWAI K-5
KORG M-1
LEXICON PCM-70
OBERHEIM MATRIX 6/1000
ROLAND D-110
ROLAND D-50
ROLAND MT-32
X-OR V1.1 (UNIVERSAL EDITOR)

COMPOSITION/SCORING

COPYIST APPRENTICE
COPYIST DTP
TIGER (GRAPHIC EDITOR)

MISCELLANEOUS

MODEL-A MIDI INTERFACE
PHANTOM SMPTE SYNCHRONIZER

Music Software of the Year, 1988
Commodore Magazine

"Our hands-down favorite new piece of software, TIGER... is a music composition program whose elegance is simply stunning. Finally, a program that bridges the gap between cold, hard technology and the creative musician."
Keyboard Magazine

"The most powerful and dependable of MIDI sequencers for the Amiga is KCS..."
Amiga World

"(Copyist is) a composer's delight that provides score editing, file conversion capability, and custom printing all in one package."
Amiga World

"(MRS) ... compared to other sequencers, it is a great value."
Amigo Times

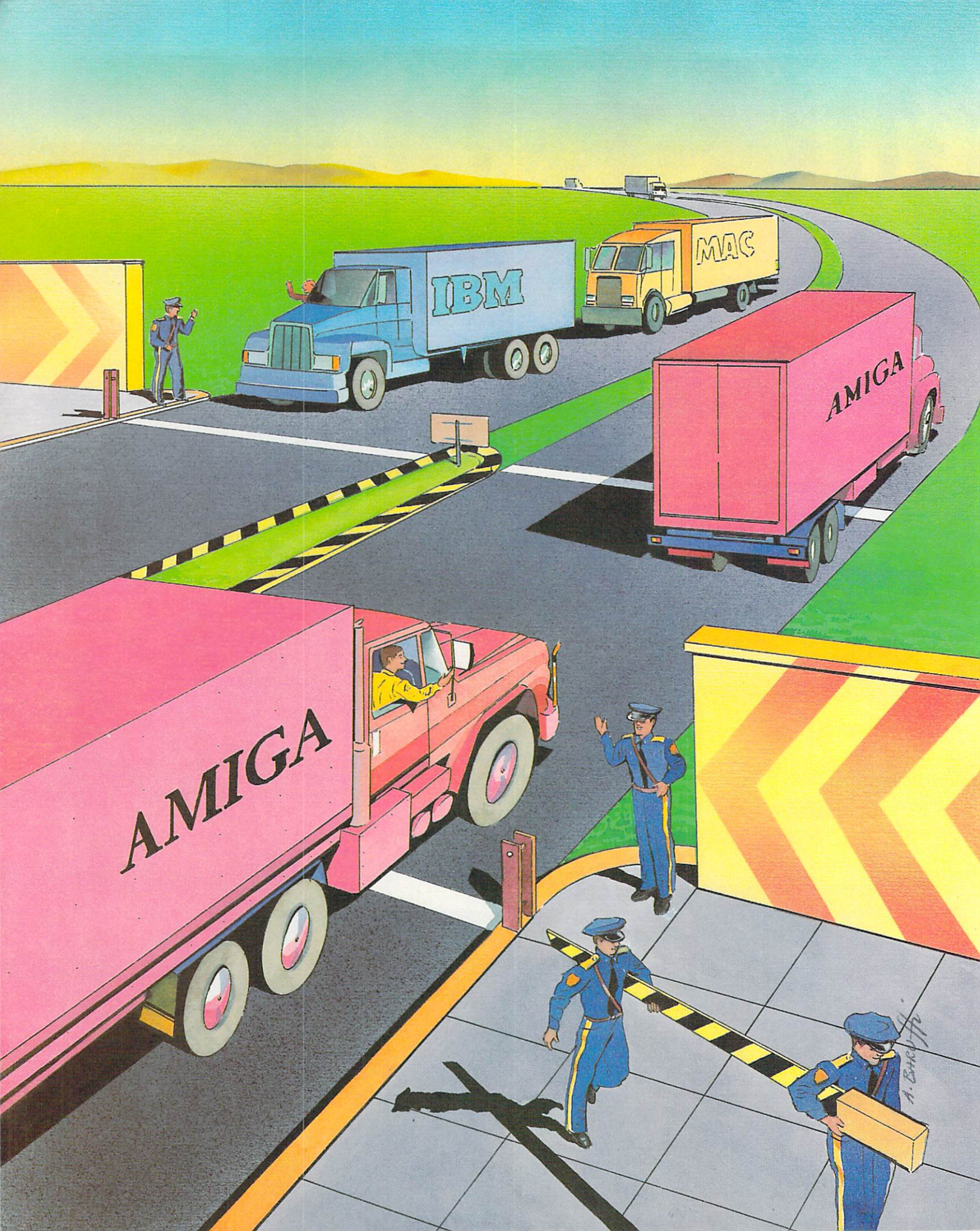
"(Level II) is a powerful collection of MIDI recording and editing tools that works well, is responsive, and is designed with the high-end user in mind."
Amiga Sentry



Dr. T's
MUSIC SOFTWARE

220 Boylston Street, Suite 206
Chestnut Hill, MA 02167 U.S.A.
(617) 244-6954 FAX (617) 244-5243

Circle 35 on Reader Service card.



PRODUCTIVE COEXISTENCE

Improved communications

between the Amiga

and the IBM/Mac superpowers

will mean bigger payoffs

from your productivity software.

Here's a quick course

in products and protocols

that will help you

break down the barriers.

CROSSING BOUNDARIES—WHETHER international or intercomputer—used to be quite an ordeal. Now—like the lifting of the Iron Curtain or the crumbling of the Berlin Wall—barriers between AmigaDOS and the operating systems of the IBM PC and Macintosh are beginning to fall. While you still need the proper passport to get through, more and more productivity programs are speaking a common language to allow free exchange of information.

An emulator or conversion program that will translate files into AmigaDOS format is your passport for intercomputer travel. (See the sidebar "Slipping Across.") Once the data is on the proper type of disk, all you need to do is load it into your application program. Theoretically, if the program can read your file's format, you can load the information and start work immediately. More often, you will need to do a bit of data cleanup first.

To see how well the Amiga's word processors, spreadsheets, and databases met the ideal, I tested them with files from WordPerfect (WordPerfect Corp., IBM and Mac), FullWrite Professional (Ashton-Tate, Mac), Lotus 1-2-3 (Lotus Development Corp., IBM), and dBASE III PLUS (Ashton-Tate, IBM) as examples. (See the compatibility chart for a breakdown of the file-importation capabilities for each spreadsheet and database.)

WORD FOR WORD

Unless your Amiga word processor comes in a version for the IBM or Mac, you cannot transfer documents among machines without losing special font formats,

margin settings, and so on. The standard procedure is to save your document in text (ASCII) format, copy it to the required computer, and load the document into the new word processor. Although it sounds simple, it is not always straightforward. While KindWords (The Disc Company, \$99.95) loaded transferred files cleanly, Amiga WordPerfect had problems with text formatting, mainly because of inconsistent margin settings. Experiment with widths and your documents

should look fine. On the first try, ProWrite's (New Horizons Software, \$124.95) problems were more severe; imported documents were badly formatted and littered with extraneous characters. Hold down the Alt key while you load the file, and the results will be much more satisfying.

You will encounter a similar situation when importing text that was created on a Macintosh. While the Mac allows more than 80 characters to a line of text (because of different sizes of fonts), Amiga word processors expect a maximum of 80 characters per line. When creating a document on a Macintosh for use later on an Amiga, remember to keep the characters to 80 or fewer per line. A spacing of 12 characters per inch on the Mac usually works best.

You will also usually lose the original document's special paragraph formatting (indentations and so on) in the conversion. Visually the document will appear to be indented, but if you try to make some additions to the text, you will discover the indentations are filled with spaces rather than tabs or the originating program's indentation character.

Occasionally, conversion programs insert an LF ►



BY TIMOTHY TRIMBLE

(Linefeed) or CR (Carriage Return) at the end of each line. To realign your paragraphs, delete the space or return character at the end of each line and let the word processor reformat the line to the correct size.

When transferring files between versions of WordPerfect, simply select the type of file you wish to import (Text, IBM 4.2, or IBM Text) from the Import menu, then select the drive, directory, and file from the Retrieve File window. I could see no difference between the Text and the IBM Text import; perhaps the latter option converts the CRLF of the IBM text to LF. This is already done, however, when you move the file from MS-DOS to AmigaDOS. The only problem I ran into was that Amiga version 4.1 was not able to read files from Macintosh version 4.2. Files transferred between Amiga 4.1 and PC 4.2 hit no such roadblocks. Line formatting and font instructions survived the conversion.

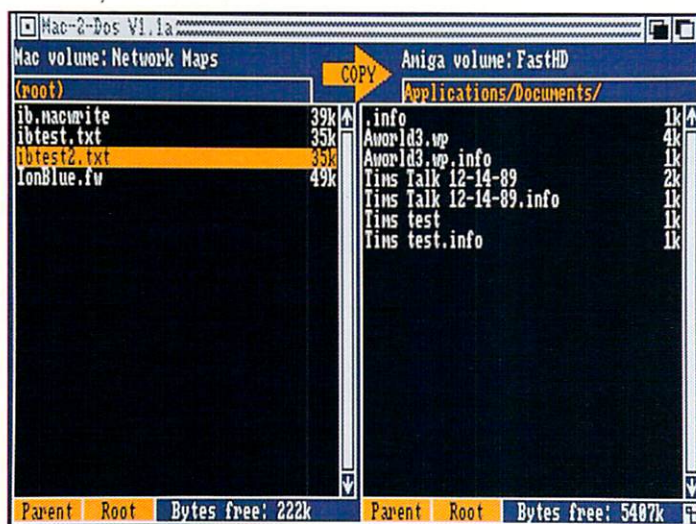
LOTUS POSITION

While there is no official standard format for spreadsheet data files, the Lotus 1-2-3 format (.wks files) is the most widely used. The four programs supporting Lotus on the Amiga are, with one exception, very reliable. You will find that you might have to adjust column sizes in the imported files, but that is about all. Even a large, macro-filled spreadsheet that I brought from the office worked fine.

Sticking to the Amiga's Intuition, Analyze! (Micro-Systems Software, \$99.95) uses menu controls. Simply select Archive from the Worksheet menu, then 123 for the file type, and finally specify the filename.

Superplan (Precision, \$149.95) and VIP Professional (ISD Marketing, \$99.95) take similar keyboard-based approaches to importing. In Superplan, press / for the Selection menu, L for the Load menu, then select your file format (Superplan, dBASE, Lotus 1-2-3, Logistix, Comma Separated Values, Text, or DIF) and file name. A straight clone of Lotus, VIP

uses standard Lotus commands (/ for Selection menu, F for File menu, R for Retrieve) and lacks Amiga amenities. If you are a heavy Lotus user, VIP is your best choice. Be warned, however, the program can read only Lotus files.

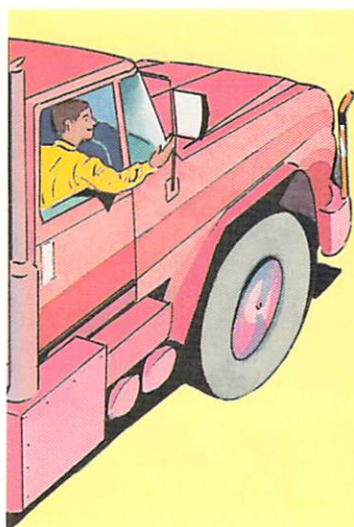


With Mac-2-DOS, you can point and click your files between formats.

The strongest warning comes with MaxiPlan (Intuitive Technologies). I was unable to make the current version (1.9) load anything but its own files, even though it comes with a separate program for converting file formats. I hope Version 3.0 (\$249.95), which should be shipping by the time you read this, will correct the problem, because MaxiPlan is a great spreadsheet to work with on its native files.

FOR THE RECORD

In the database field, dBASE has achieved the same status as Lotus 1-2-3 has for spreadsheets. The dBASE file format (.dbf files) is widely supported on the Macintosh and PC. On the Amiga, your choices are ►



Compatibility Chart

Program	ASCII files	Lotus files/macros	Comma Delim. files	dBASE files	dBASE programs
Analyze!	N	Y	N	Y	Y
SuperPlan	N	Y	Y	Y	Y
PVIP	N	Y	Y	Y	Y
MaxiPlan 500	N	N	N	N	N
Superbase Pro.	Y	Y	Y	Y	Y
dBMAN V	Y	N	Y	Y	Y

SupraDrive

**Simply The Best
Amiga Hard Drive.**

Before you buy a hard drive, look around. Look closely. Compare speeds, but also look at Interfaces...Software...Value. We think you'll agree that SupraDrives are Simply The Best Amiga Hard Drives. Here's why...



**SUPRADRIVE
HARD CARD
FOR AMIGA 2000**
with revolutionary new
WORDSYNC™ INTERFACE

Each SupraDrive for the A500/A2000:
Autoboots directly from FFS partition • Interface allows super smooth video, sound, etc., with no rude interruptions for hard drive access • Compatible with Bridgeboard™, RAM, digitizers, other boards • Supports MS-DOS disk partitions with Bridgeboards • Installs easily • Pre-formatted & ready to use • Includes 2 floppy disks of software & clear, thorough manual • Fine tuned assembly language driver software • Blind data transfers improve speed 3x • Knowledgeable tech support • Interfaces also available separately

SUPRADRIVE FOR AMIGA 500

with **AMIGA BUS PASS-THROUGH**
for unlimited expansion •
OPTIONAL 2MB RAM



**All Supra Products
Are Made in the U.S.A.**

Breakthrough Speed.

SupraDrives give you access times as low as 11 ms. and data transfer speeds of over 500K/sec. (Amiga® 2000) or 326K/sec. (Amiga 500). Features like full support of Workbench™ 1.3, the Fast File System (FFS), and multitasking make these drives *FLY*.

State-of-the-Art Interfaces.

Supra's interfaces (included with every SupraDrive) give you innovative features no one else can match. The revolutionary WordSync™ Interface transfers 16 bits at once, which gives A2000 SupraDrives DMA speed without DMA hassle. The A500 interface passes the Amiga bus signal through to your other peripherals; without Amiga bus pass-through, your system is severely limited. And all Supra interfaces feature SCSI ports for easy daisy-chaining.

The Best Software.

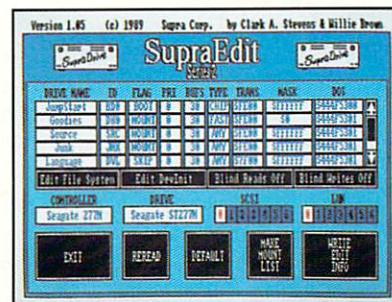
After installing the drive, you'll be glad you have Supra's full array of powerful, easy-to-use software. SupraFormat makes formatting a breeze and lets you use up to 30 partitions and various file systems — FFS, MS-DOS®, Unix, Macintosh™, and more! SupraEdit lets you access low-level Amiga system information, and other included programs make using a hard disk fun and easy.

Irresistible Value.

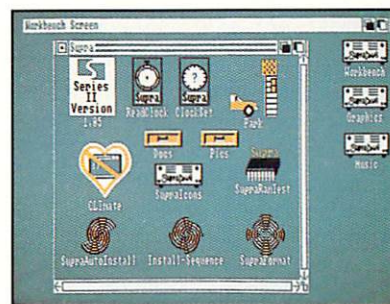
All this is available at a price you'll love. Look into it! Only Supra Corporation — an experienced company with a proven commitment to the Amiga and its potential — gives you such an attractive alternative: The SupraDrive. It's Simply The Best Amiga Hard Drive.



SupraFormat™



SupraEdit™



Included Software

Ask your dealer for details, or call:



1133 Commercial Way Albany, OR 97321 503-967-9075

ORDERS: 1-800-727-8772

Circle 208 on Reader Service card.

SupraDrive, WordSync, SupraFormat, and SupraEdit are trademarks of Supra Corp. Amiga is a registered trademark and Workbench is a trademark of Commodore-Amiga, Inc. MS-DOS is a registered trademark of Microsoft Corp. Macintosh is a trademark of Apple Computer.

Slipping Across

BECAUSE YOUR AMIGA cannot read IBM or Macintosh files directly (or vice versa), you must translate the desired files to the proper disk format before loading the data into your applications programs. For IBM conversions, your best bets are Commodore's emulators, the A2088D (for PC/XT files, \$699.95) and A2286D (for PC/AT files, \$1599) Bridgeboards. With these computers-on-cards you can not only transfer files between operating systems, but also run IBM programs from MS-DOS on your Amiga.

The transfer procedure is quite simple. In the PC window, double click the PCDisk icon, which tells the Amiga to open a gateway between the Bridgeboard and the Amiga for file transfers. Access the Bridgeboard side of the Amiga and, from DOS, use the Awrite.exe file to move your file from the IBM disk to the Amiga disk. For example:

```
AWRITE A:MYFILE.WKS DF0:MY-  
FILE.WKS /B
```

copies a file called myfile.wks from the disk in drive A: to the internal Amiga floppy drive. The /B option flag is very important; it tells the Amiga to keep the full binary structure of the file. Without it, the Amiga will treat the file as if it were made of text only and will not copy it properly.

To copy a file from the Amiga to a DOS disk, follow the same steps, but use Aread.exe to move your file. For example:

```
AREAD DF0:MYFILE.WKS A:MY-  
FILE.WKS /B
```

copies myfile.wks from the Amiga's DF0: to the DOS disk in drive A:. As before, the /B option flag is very important.

Two other option flags are also available: /NC and /CR. When you specify /NC, the Bridgeboard does not convert MS-DOS special characters to their Amiga equivalents. Because the Amiga uses a different ASCII-extended character set from the IBM PC, /NC could lead to unwanted results. Without this flag, the Bridgeboard converts the MS-DOS special characters to their Amiga-DOS equivalents automatically. The /CR option flag disables the conversion of

CRLF (carriage return/line feed) into just LF. Most IBM PC word processors will place a CRLF at the end of each line, whereas the Amiga only uses an LF. If you use /CR and /NC together, the effect is the same as using the /B option flag.

While unchallenged in the emulator market, the Bridgeboards do face a rival for file conversion. DOS-2-DOS (Central Coast Software, \$55) is a low-cost, software-based alternative to emulator boards. It reads and writes 3½-inch and 5¼-inch (you provide the drive) IBM disks and can transfer files in ASCII or binary format. Like the Bridgeboards, it converts CRLFs into LFs. Just because it is an Amiga product, do not expect an Intuition interface; you will need to learn some simple keyboard commands to run it.

TO MAC AND BACK

To move files from Macintosh disks to the Amiga, I use DOS-2-DOS' cousin, Mac-2-DOS (Central Coast Software). The program comes with (\$349.95) or without (\$99.95) a 3½-inch external disk drive and a cable to attach it to the Amiga's floppy-drive connector. Quite easy to use, Mac-2-DOS employs two windows to display file directories for the Amiga disk and the Macintosh disk (see photo). Menus and gadgets make moving files between Macintosh and Amiga disks much easier than with the Bridgeboards. Click on the desired directory, then on the file you wish to transfer. Pull down the Conversions menu, select the proper transfer format, and click on the Copy arrow.

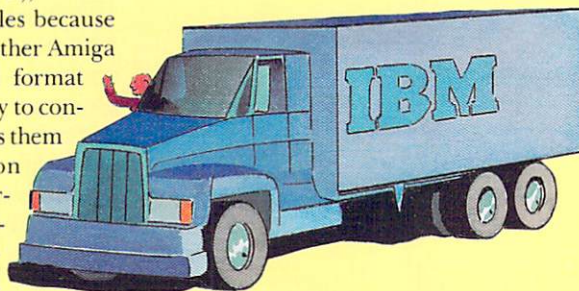
With Mac-2-DOS you can convert binary, text, PostScript, and even MacPaint file formats. The Binary option works well when moving WP (WordPerfect), or GIF (Graphic Interface Format) files because these can be used directly by other Amiga products after only minimal format conversions. Do not use Binary to convert Lotus 1-2-3 files; it renders them unreadable. The only option that can handle Lotus 1-2-3 format files correctly, No Conversion works well for transferring files that can be used in the same binary format on

the Amiga as on the Macintosh.

The Text option works similarly to the Bridgeboards' /CR option flag, by converting a CRLF into an LF for use on the Amiga. The PostScript option is unique in that it supports the transfer, but not the conversion, of EPS (Encapsulated PostScript), a new form of PostScript that includes a bitmap graphic image within the PostScript file. Because EPS is not currently supported on the Amiga, the file is converted "as is," which still allows for use of the ASCII-based PostScript commands within the file. Whether future Amiga products will support the Macintosh "flavor" of EPS is not known.

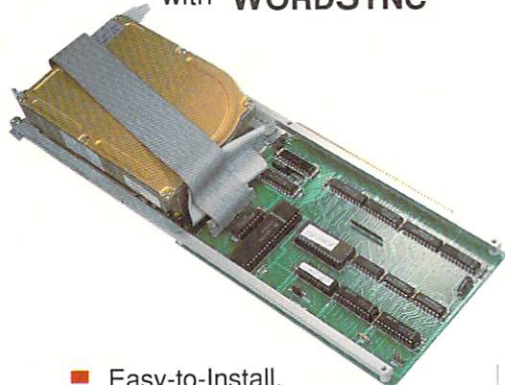
Mac-2-DOS' MacPaint-To-IFF option allows easy transfer between the two graphics-file formats. It takes black-and-white 576×720-pixel MacPaint images and converts them into black-and-white 640×720-pixel IFF duplicates of the original.

If you need to run Mac-specific programs or just feel more comfortable with an emulator, A-Max (ReadySoft, \$199.95) is your only choice. The hardware portion plugs into the drive port and offers pass-through for an external Amiga drive plus a port for an Apple-compatible drive. The core of A-Max is the Macintosh ROM chips, which you must purchase separately (\$50 for 64K chips, \$150 for 128K). While not essential, an Apple-compatible drive (\$150–\$200) smooths transfers from the Mac to A-Max. The Mac/Amiga file-transfer utility merely passes the data and does not convert between file formats. With A-Max, you are better off doing your homework in Mac mode than ferrying it to the Amiga. □ —TT



THE BEST FOR YOUR AMIGA® 2000

SupraDrive™ with WORDSYNC™



- Easy-to-Install, Autobooting Hard Card with WordSync™ Interface
- WordSync Interface Kit also available separately
- Interface transfers 16 bits at once, giving DMA Speed Without DMA Problems
- Eliminates the sound, video, and serial I/O interruptions found with DMA interfaces
- 1-slot design & SCSI-out port
- Easy On/Off Autoboot Jumper
- Compatible with Amiga Bridgeboard, RAM, digitizers, and other boards
- Includes SupraBoot & SupraTools — two full disks of utility software
- Up to 30 Partitions
- All available file systems supported: FFS, MS-DOS, Unix, Macintosh, etc.
- Access to low-level parameters without maintaining MountList
- Excellent Technical Support
- Made in the U.S.A.

30MB (40 ms.)	\$649
40MB (11 ms. Quantum)	\$749
80MB (11 ms. Quantum)	\$1049
44MB SyQuest Removable	\$1149
WordSync Interface Kit	\$199 ⁹⁵

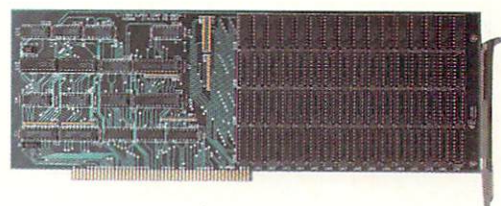
SupraModem™ 2400zi



- Half card modem fits in any Amiga bus slot
- Up to 5 modems per computer
- Works with all popular Amiga telecommunications software
- 100% compatible with the industry-standard "AT" command set
- Asynchronous 2400/1200/300 baud operation
- Compatible with Bell 103/212A and CCITT V.21/V.22/V.22bis
- Autoanswer/Autodial (tone or pulse)
- Adjustable-volume speaker
- Nonvolatile memory stores custom modem configuration and one telephone number
- Includes free subscriptions to popular on-line services
- Made in the U.S.A.

2400zi **\$179.95**

SupraRam™ 2000



- 2, 4, 6, & 8MB configurations available
- Installs easily into any Amiga internal expansion slot
- Easy to expand from your initial configuration — Start with 2MB & add RAM at your convenience
- 6MB configuration allows for maximum benefit with the Amiga Bridgeboard
- Lets you run larger and more sophisticated programs
- Allows creation of large and extremely fast RAM disks
- Test mode & test software make troubleshooting easy
- Made in the U.S.A.

8MB RAM Board	
with 2MB installed	\$399
with 4MB installed	\$599
with 6MB installed	\$749
with 8MB installed	\$899

AVAILABLE AT YOUR LOCAL DEALER, OR CALL:



Supra Corporation

1133 Commercial Way Albany, OR 97321
Voice: 503-967-9075 Fax: 503-926-9370

SupraDrive, WordSync, SupraModem 2400zi, and SupraRAM 2000 are trademarks of Supra Corporation. Amiga is a registered trademark of Commodore-Amiga, Inc.

Circle 88 on Reader Service card.

ORDERS: 1-800-727-8772

limited to Superbase Professional (Precision, \$299.95) and dBMAN V (VersaSoft, \$295). The two programs import files equally well, but take different approaches. In Superbase, you highlight Import in the Process menu, click on the appropriate format (dBASE II, dBASE III, ASCII Delimited, ASCII Fixed Length, DIF, and even Lotus 1-2-3 and Logistix/Superplan), and then select the file to import. Using a mix of typing and clicking, dBMAN requires you to enter "assist" at the CMD: prompt, click on Open A Database from the File menu, and specify the file to load.

Going one step further, dBMAN V supports the execution of dBASE-type programs and applications. If you have a dBASE application you use on the Mac or PC, you can also use it on your Amiga. As a test, I created an application in dBASE III on an IBM and converted the files. Via standard dBASE commands issued at the CMD: line, dBMAN V ran the application and used the database files without requiring any file-format conversions.

INTELLIGENCE REPORT

While you can swap files between machines and applications, compatibility standards could still be improved. A standard format for word processing,

beyond the vanilla-text ASCII, would be a good start. I would like to see a full standard that supports WYSIWYG (What-You-See-Is-What-You-Get) word processing and desktop publishing. A strong beginning, PostScript could be used as a platform for allowing compatibility of files from the Amiga, IBM, and Macintosh.

A more radical wish is for an across-the-board standard for disk formats. With all our high technology, we are still reduced to converting files from one disk format to another by using telecommunications, networks, and special add-on devices. Maybe the increased use of optical disks for storage will bring about such a file-storage standard.

Until that time (if ever), differing hardware platforms and formats are a way of life. The key to success is to be conversant in several. With the Amiga's flexibility, work that used to require running two, sometimes three, different computers, now requires only one. The next challenge is to make the business world take notice. ■

Timothy Trimble is a technical manager at Ashton-Tate and a freelance writer. Write to him at 6034 Pacific Coast Highway, Apt. 9, Redondo Beach, CA 90277 or via electronic mail on CompuServe to 76306,1115.

Manufacturers' Addresses

Ashton-Tate

20101 Hamilton Ave.
Torrance, CA 90509-9972
213/329-8000

Central Coast Software

424 Vista Ave.
Golden, CO 80401
303/526-1030

Commodore Business Machines

1200 Wilson Dr.
West Chester, PA 19380
215/436-4200

The Disc Company

3135 South State St.
Ann Arbor, MI 48108
313/665-5540

Intuitive Technologies

*distributed by American
Software Distributors*
RR 1 Box 290, Bldg. 3
Urbana, IL 61801
217/643-2050

ISD Marketing

2651 Johns St., Unit 3
Markham, Ontario
Canada L3R 2W5
416/479-1990

Lotus Development Corp.

55 Cambridge Parkway
Cambridge, MA 02142
617/577-8500

Micro-Systems Software

12798 Forest Hill Blvd., Suite 202
West Palm Beach, FL 33414
407/790-0772

New Horizons Software

PO Box 43167
Austin, TX 78745
512/328-6650

Precision Inc.

*distributed by American
Software Distributors*
RR 1 Box 290, Bldg. 3
Urbana, IL 61801
217/643-2050

ReadySoft

30 Wertheim Court, Unit 2
Richmond Hill, Ontario
Canada L4B 1B9
416/731-4175

VersaSoft

4340 Almaden Expressway
Suite 250
San Jose, CA 95118
408/723-9044

WordPerfect Corp.

1555 N. Technology Way
Orem, UT 84057
801/225-5000



We Sell Know How

you use an Amiga and you want to know how,
just read on...

Amiga System Programmer's Guide

A comprehensive guide to the inner workings of your Amiga

System Programmer's Guide - comprehensive guide to what goes on inside the Amiga in a single volume. Includes the EXEC structure, I/O requests, interrupts and resource management, multitasking functions, more. 442 pp ISBN 1-55755-034-4 Suggested retail price \$34.95

Amiga Disk Drives Inside and Out

The most thorough coverage of Amiga Disk Drives ever!

Disk Drives Inside and Out - in-depth reference covering the disk drives. Learn how to speed up data transfer, how copy protection works, computer viruses, DOS functions, loading, saving seq. and random files and organization, more. 346 pp ISBN 1-55755-042-5 Suggested retail price \$29.95

Advanced System Programmer's Guide for the Amiga

Get more technical information for the Amiga programmer

Advanced System Programmer's Guide - follow-up volume of thorough explanations to accessing the facilities provided by the libraries, input and output of the Amiga and more. Covers Workbench 1.3 Info. 570 pp ISBN 1-55755-047-6 Suggested retail price \$34.95

Amiga C for Beginners

A practical guide to learning and using C language on your Amiga

C for Beginners - introduction to learning C language. Explains elements using examples geared to Amiga. Describes C library routines, more. 284 pp ISBN 1-55755-045-X Suggested retail price \$19.95

Amiga C for Advanced Programmers

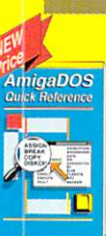
An advanced guide to programming the Amiga using the C language

C for Advanced Programmers - how compilers, assemblers and linkers work, using Intuition, combining assembly language and C codes, more. Includes complete source code for a C based text editor. 650 pp ISBN 1-55755-046-8 Suggested retail price \$34.95

Amiga Graphics Inside and Out

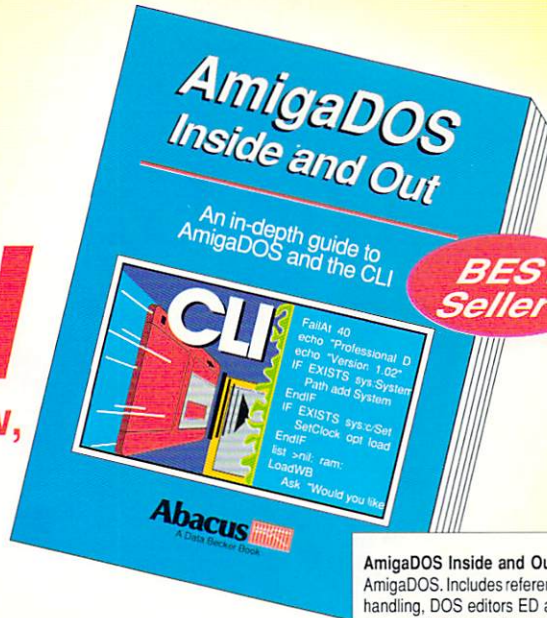
A comprehensive book for understanding and using Amiga graphics

Graphics Inside & Out - graphic programming in C with examples of points, lines, rectangles, polygons, colors, more. Complete description of the graphic system - View, ViewPort, RastPort, bit-maps, screens, and windows. 610 pp ISBN 1-55755-052-2 Suggested retail price \$34.95



AmigaDOS Quick Reference Guide - an easy-to-use reference tool for beginners and advanced programmers alike. You can quickly find commands by using the three handy indexes designed with the user in mind. Commands in alphabetical order for easy reference. Covers Workbench 1.3 Info. 128 pp ISBN 1-55755-049-2 Suggested retail price \$9.95

Companion Diskette - available for all titles except Amiga for Beginners, Desktop Video and AmigaDOS Quick Reference. \$14.95 each



AmigaDOS Inside and Out - covers insides of AmigaDOS. Includes reference section, tasks and handling, DOS editors ED and EDIT, create and use script files, multitasking and more. 274 pp ISBN 1-55755-041-7 Suggested retail price \$19.95



Amiga for Beginners

A complete guide to learning and exploring the Amiga

Tricks and Tips - presents dozens of tips on accessing libraries from BASIC, custom character sets, AmigaDOS, sound, important 68000 memory locations and much more! 342 pp ISBN 0-916439-88-7 Suggested retail price \$19.95

Amiga for Beginners - introduces you to Intuition, the mouse, windows, the CLI and AmigaBASIC. Covers Workbench 1.3 Info. 178 pp ISBN 1-55755-021-2 Suggested retail price \$16.95

Amiga 3D Graphic Programming in BASIC

A revealing book on how to use the spectacular and powerful graphic capabilities of the Amiga

3D Graphic Programming in BASIC - details writing 3D graphic programs: ray tracing in all resolutions, light sources and shading and more. 360 pp ISBN 1-55755-044-1 Suggested retail price \$19.95

AmigaBASIC Inside and Out - step-by-step guide to AmigaBASIC. Every AmigaBASIC topic: charts, windows, pulldown menus, files, mouse & speech commands. Covers Workbench 1.3 Info. 548 pp ISBN 0-916439-87-9 Suggested retail price \$24.95

Amiga Tricks & Tips

A valuable collection of software tools and programming hints



AmigaBASIC Inside and Out

A complete guide to learning and using AmigaBASIC



Amiga Machine Language

A practical guide to learning 68000 assembler programming on the Amiga

Machine Language - comprehensive introduction to 68000 assembler ML programming, covers 68000 microprocessor address modes and architecture, speech, sound and more. 264 pp ISBN 1-55755-025-5 Suggested retail price \$19.95

Amiga Desktop Video Guide

The most thorough guide to video on your Amiga

Desktop Video Guide - most thorough guide to video on Amiga. Explains Genlocks, digitizing, frame grabbers & hardware. 240pp ISBN 1-55755-057-3 Suggested retail price \$19.95

More Tricks & Tips for the Amiga

Another collection of valuable programming hints and techniques for all Amiga users

More Amiga Tricks & Tips - a collection of easy to use techniques, hints for Amiga owners, disable fast RAM, NewCon and Pipe devices, more. Covers Workbench 1.3 Info. 218 pp ISBN 1-55755-051-4 Suggested retail price \$19.95

Abacus
Dept. L4, 5370 52nd Street SE • Grand Rapids, MI 49512
Phone 616-698-0330 • Fax 616-698-0325



In the U.S. & Canada **Order Toll Free**
1-800-451-4319 Ext. 14

The Great Software Weigh-In

How do you get maximum productivity from your multitasking Amiga?

*Well, like a manager training his boxers,
you need to know your software's physical attributes—the
programs' true fighting weights, best combinations of punches,
and different capacities for punishment.*

By Loren Lovhaug

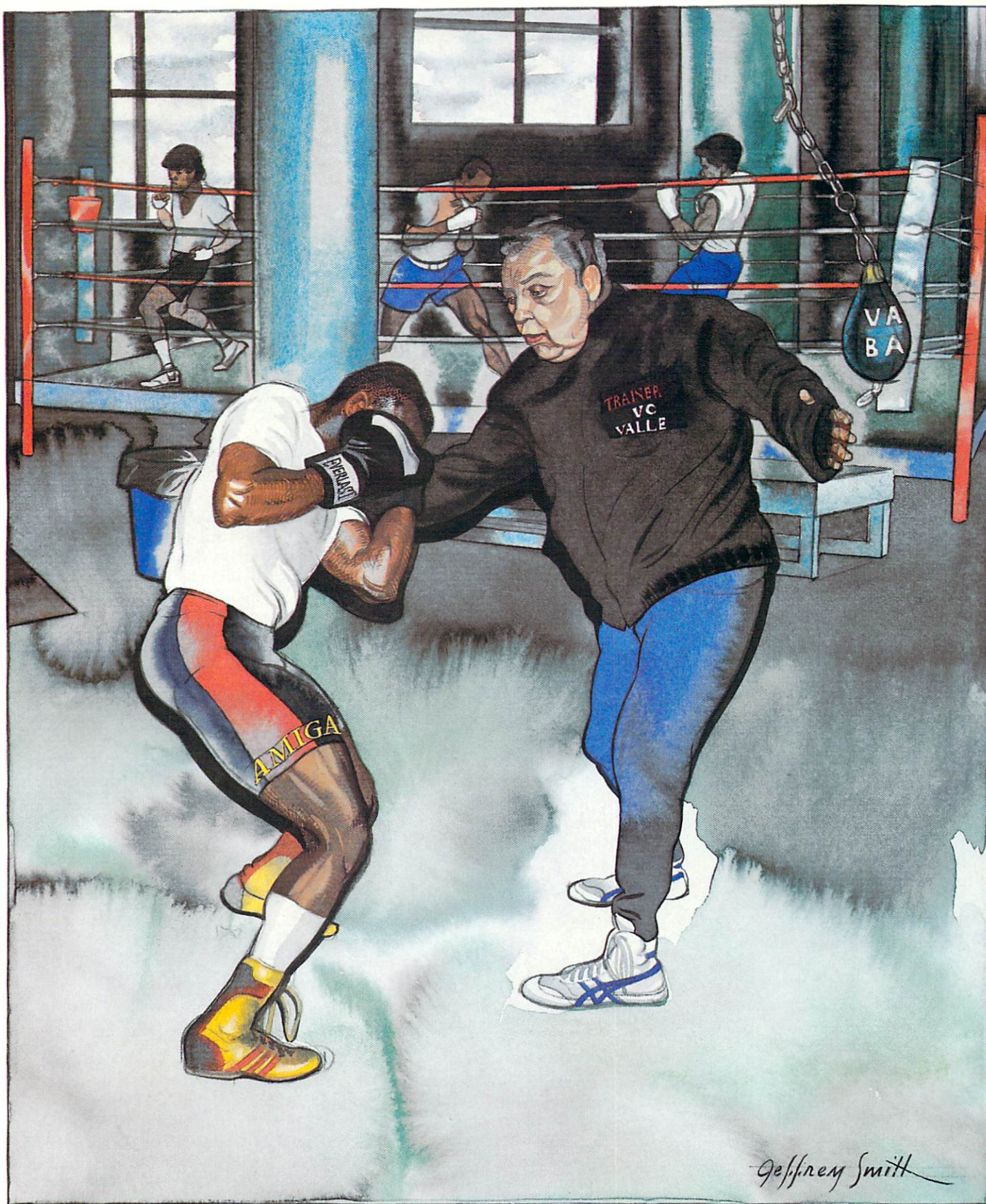
If you were managing the US Olympic boxing team, it would not do you much good if you had four great heavyweights but no real strength in the other eight or nine weight classes. You need balance and a team that demonstrates overall ability. The same holds true for getting the most out of your productivity software on your multitasking Amiga. Find programs that work well together, that do not make excessive demands on your system's chip RAM, and that do not waste valuable system resources performing operations they were not designed to execute effectively in the first place.

To help users put their most "productive" team on the canvas, we have conducted this "Great Software Weigh-In" to provide some important vital statistics on memory usage concerning over 50 popular programs covering a wide range of categories. In so doing, we believe we can help Amiga owners who want to multitask their programs decide which applications best fit their needs and system resources, and how certain combinations of programs might

work most effectively together.

To make better use of the information in the "Great Software Weigh-In" charts that follow, we need first to know a little about how Amiga multitasking works, some basic distinctions between the kinds of memory your system contains, and a few helpful hints on conserving valuable memory resources.

If you want to multitask several programs, obviously you must have the system resources to run each of those programs. In nearly all cases, the limiting factor as far as such resources are concerned is the amount of random access memory (RAM) available when a program is launched. Knowing *exactly* how much memory a program requires is crucial for multitasking. Unfortunately, magazine advertisements, software packaging, and even software reviews seldom make this clear. They may tell you whether a program requires a 512K or a one-megabyte system to run that individual program, but that's all. For instance, two programs that actually use 520K and 850K of RAM, respectively, both require an Amiga with at least a megabyte of RAM—period. Simple ►



mathematics, however, will tell you that the implications for multitasking with these two programs are vastly different.

FROM RAMS TO SHEEP... AND BACK AGAIN

Forsaking our earlier, more muscular boxing metaphor, let's take our cue from George Bush and seek a "kinder, gentler" analogy to better understand the way memory limitations affect the Amiga's multitasking capability: Think of the Amiga as an old-fashioned Village Common, where all of the shepherds in the village come to graze their sheep. Each program represents a shepherd and his hungry flock utilizing the same grassy knoll, the Amiga's RAM. Having more RAM in your Amiga makes it possible to invite more shepherds to feed their flocks, and likewise larger flocks to visit the pasture. Keep in mind, however, there is always a finite limit to how many flocks can use the pasture at any one time.

Our multitasking Common differs markedly from the situation that exists with other popular, non-multitasking computers. If a program takes several hundred acres of RAM on a single-tasking computer but does not exceed the total available memory, no one cares; in fact, it is almost a programmer's duty to make use of every spare byte available in order to enhance the performance of the program. A single-tasking computer is much like a private estate where the landowner has no need to consider the well-being of other shepherds because they are not allowed to graze their flocks on the estate in the first place. Under the Village Common system, however, a citizen who

fences off all of the pasture for his own grazing purposes would be considered rude and selfish, and would soon be visited by the sheriff. On the Amiga, visits from the sheriff for memory-hogging behavior come in the form of insufficient memory warnings from "well-behaved" programs (those that can share the system with other tasks without taking over the entire machine), or a system crash in the case of the ill-mannered ilk (those, like many games, which do take over the whole system).

Leaving our multitasking sheep for the moment, let's get back to the RAMs—or, more precisely, the different types of RAM found inside most Amigas. "Chip RAM" refers to the first 512K of RAM (or the first one megabyte for those with the latest One-Meg Agnus chip—see the sidebar "More Chip on Your System's Shoulder"). It is called chip RAM because this segment of the Amiga's RAM is directly addressable not only by the Amiga's 68000 microprocessor, but also by its three coprocessor chips. These custom chips relieve the 68000 of much of the responsibility for managing various input/output tasks and also control sound and graphics activities (which include, as well, such functions as manipulating windows, updating screens, operating pull-down menus and custom screens, and so forth). This makes chip RAM inherently precious, as the data for nearly all graphics and sound functions ultimately must be stored in chip RAM for the Amiga's custom processors to have direct access to them. Regardless of whether you have even eight megabytes of total system RAM, when your 512K (or one meg) of chip RAM has been exhausted, ►

More "Chip" on Your System's Shoulder

IF YOU WORK with—and especially if you want to multitask with—programs that are graphics- and sound-intensive, the new One-Meg Agnus chip will be invaluable in providing your system with an extra 512K of chip RAM.

Installation requires modifications to the Amiga's motherboard, plus the delicate removal and insertion of chips. Play it safe and have a registered service center do the work. The upgrade typically costs between \$150 and \$175 for the chip and installation.

If you bought your Amiga after June 1989, however, it may already have the new Agnus chip. You can test for its presence in an A2000 or A2500 with the Avail command. From the CLI or Shell type AVAIL. If you have a megabyte of chip

RAM, the third item (in the Maximum column) in the first row (marked "Chip") will read 1040152. If not, the number will be half as great.

The situation is trickier for A500 owners. To determine whether you have the new Agnus chip, you must open the computer. (If you have it, you will see only four RAM chips on the motherboard instead of 16.) Because the A500 comes with only 512K of memory, the computer is set at the factory for 512K of chip RAM. Even if you have the One-Meg Agnus and plug in a 512K expansion module, the RAM will not become chip RAM automatically. Your dealer must make internal modifications to the A500 before it will recognize the extra RAM as true chip RAM. Once the modifications are

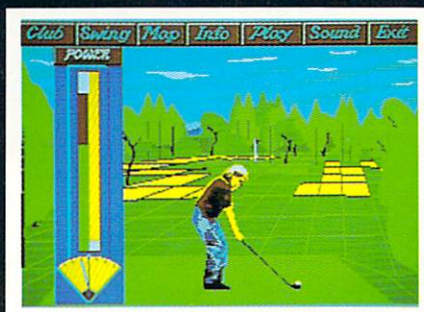
made, the computer will not operate unless the memory-expansion module is plugged in.

As of this writing, A1000 owners have no direct upgrade path to one megabyte of chip RAM, because the first Agnus chip is smaller than the new chips. A few third-party developers are working on adapters that will allow the A1000 to accept the One-Meg Agnus. It has been reported that Greg Tibbs has developed one such board called The Rejuvenator. Expert Services (5912 Centennial Circle, Florence, KY 41042, 606/371-9690) will market it and promises a Spring release. Word has it that The Rejuvenator will be priced between \$500 and \$600 and will come fully populated with the One-Meg Agnus and 1MB of RAM. □

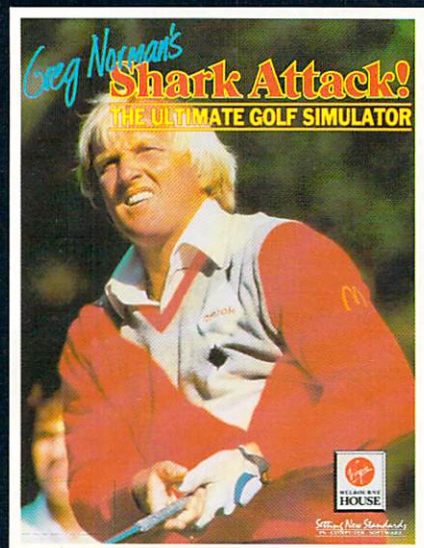
—Sheldon Leemon

Greg Norman's Shark Attack!

THE ULTIMATE GOLF SIMULATOR



IBM EGA

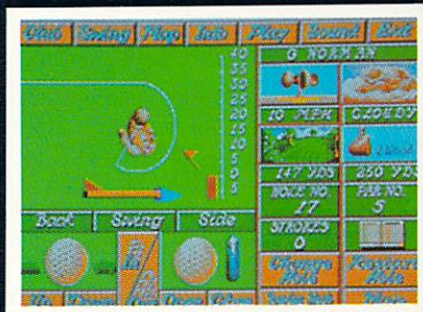


It's professional golf at its best with the game's most aggressive and successful player, Greg Norman... a state-of-the-art golf simulation with more realistic three-dimensional graphics than you've ever seen before!

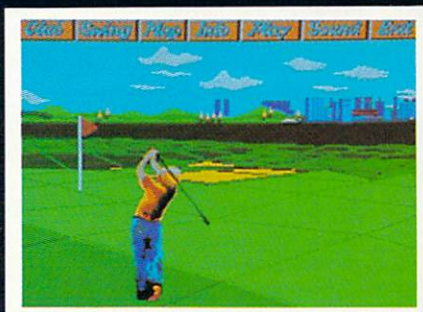
Rich in detail, Shark Attack is packed with features not included in lesser games, including:

- Pre-game Practice, Matchplay, Greensomes, Strokeplay, and Texas Scramble, all handicapped according to adjustable attributes, with single and team play options (up to four players).
- A professional caddy who can recommend the club to use for each shot.
- On-screen ability to design your own swing, for a game which is more dependent on skill than luck.
- Greg Norman's swing digitized for your instruction in the best golfing form.
- Ability to open and close the club face and adjust the loft, totally on-screen, for greater control.
- A 3-D perspective, which can be rotated through 360 degrees from any point. You can really walk each hole, and study the lie of each shot just like you would on a real golf course (one of the features that make this a simulation, not just a game).
- Changing wind and weather conditions, to add to the challenge.

Greg Norman's Shark Attack: the first true golf simulation, produced under the guidance of the Great White Shark himself! As on the pro circuit, total concentration, strategy and control are all required to come in under par!



AMIGA



ATARI ST

WIN A FABULOUS TRIP TO AUSTRALIA IN THE SHARK ATTACK SWEEPSTAKES!

To enter, fill out and return your Shark Attack warranty card. Here's what you may win:

- Two round trip airfares to Australia
- Hotel accommodations for nine nights
- Tickets to the Australian Open Golf Championship
- Opportunity to meet the "Great White Shark" himself
- \$1,000 in cash

Send in your warranty card today!

Entries must be postmarked no later than July 31, 1990. Offer void where prohibited by law.



Setting New Standards
in Computer Software

Licensed from Gremlin Graphics.



MELBOURNE HOUSE

18001 Cowan, Ste. A, Irvine, CA 92714 Tel. (714) 833-8710

Melbourne House is a member of the Virgin Mastertronic Group.

Look for Shark Attack at your favorite software store.
For these fine computers:

Amiga	\$39.99
Atari ST	\$39.99
IBM / Tandy 1000	\$39.99
Commodore 64	\$29.99

your Amiga cannot open more screens or windows—which means no more new programs—even though you still have plenty of non-chip RAM available.

This non-chip RAM, called “fast RAM,” can only be accessed by the main processor. Not having to be shared among the custom processors does provide some great advantages (it speeds program execution by relieving the strain on chip RAM during heavy graphics activity, letting the main processor access program instructions from it while the graphics chips are using chip RAM). But the fact remains that it cannot hold graphics and sound information and thus you will still have problems trying to multitask graphics- or sound-intensive programs. (For a more detailed explanation of the different types of memory and the various kinds of RAM contained in your Amiga, see Sheldon Leemon’s “Memory To The Max” in the December ’89 issue.)

CONSERVE THAT CHIP RAM!

No matter how carefully you select programs that might multitask well together based on our “Weigh-In” charts, the fact remains that chip RAM is still a precious resource. Some tips on minimizing the drain on your system’s chip RAM in general will help you use the information in the charts even more effectively.

When the Amiga’s operating system has a choice as to where it can store data, you definitely want it to put data in fast RAM instead of chip RAM. You can easily make this preference known by including the command “FastMemFirst” in your Amiga’s startup-sequence. Another conservation method is to change the kind of display screen your application uses to display its data. Many programs contain menu items called “configuration” or “preferences” where you are presented with a number of screen-display options. These choices may include the number of colors in your screen display, the screen resolution (hi-res, lo-res, interlaced, or non-interlaced), and whether your application runs on the Workbench or on a custom screen. In addition, some programs include what are known as “startup options,” which might involve changing the tool-type entry on a program’s icon or providing additional information when a program is invoked from the CLI. In such cases, careful study of your program’s documentation can save you an immense amount of chip RAM. In general, here are some guidelines on how various types of screen-display options affect chip RAM usage:

1. Reducing the number of colors (bitplanes) an application

uses for displaying information greatly reduces the amount of chip RAM used by the application.

Although the use of color in some applications is crucial, others, such as word processing, do not really benefit from additional colors. In many cases, these extra colors are used simply to create “shadow effects” on windows and gadgets—which may be attractive but are extraneous to the functionality of the program.

2. Low-resolution screens take up less chip RAM than high-resolution screens.

In general, 320-pixel wide (lo-res) screens conserve more chip RAM than 640-pixel wide (hi-res) screens, provided you are using the same number of colors. For instance, a multicolor 320-pixel screen will exhaust more chip RAM than a monochrome 640-pixel screen. Likewise, non-interlaced screens (200-line) are more efficient than interlaced (400-line) screens—with the same caveat as far as the number of colors used.

3. Running programs on the Workbench screen is generally more efficient than running a program on a custom screen.

When you have a choice, running applications on the Workbench screen will save you chip RAM (with a few exceptions noted below). This is true because the Workbench screen is normally always present in addition to, as opposed to instead of, any custom screen you might be using. Keep in mind, however, that the Workbench screen is a four-color screen, so if you use an interlaced Workbench screen, a two-color lower-resolution custom screen may be more efficient than a program running in a large window on the Workbench screen. Also important here is that although they may be more efficient chip RAM users, some applications—in particular those involving the manipulation of multiple windows—may run considerably slower and be more cumbersome to use on the Workbench screen.

With these conservation tips in mind, you’re now ready to move on to our Weigh-In proper and a wealth of vital statistics on some of your favorite Amiga programs. (See “Software Weigh-In Stats,” beginning on p. 30.)

WEIGHING UP THE RESULTS

It is important to understand that a program should never be judged solely upon its memory usage; instead, memory usage should be considered as a primary factor in determining relative worth after considering the program’s performance and cost. After all, a memory-efficient program that does not do what you want it to do is no bargain.

continued on p. 37

Chip RAM is a precious resource: Whenever you have a choice, store data in fast RAM instead of chip RAM.

Now available
for the Amiga!

The world of dBASETM just keeps on growing.

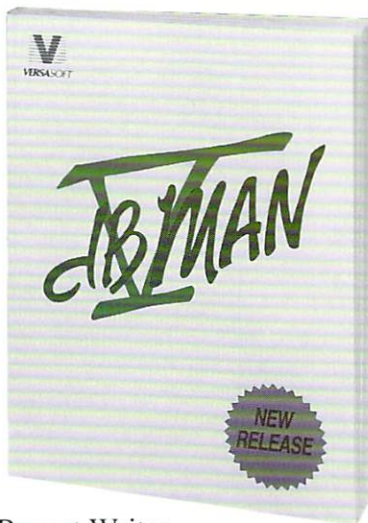


Thanks dBMAN V.

dBMAN V has the world's largest number of available platforms for any dBASE product. Why limit your dBASE applications to just PC's? With dBMAN V you can run or develop your dBASE applications on over 35 different systems.

dBMAN V provides dBASE III Plus compatibility with many major enhancements that include a complete Relational Report Writer, extensive Windowing support, Arrays and UDFs, Save and Restore Screens, the Greased Lightning Compiler, and optionally Unlimited Runtime Distribution.

VERSASOFT Corporation
4340 Almaden Expressway, Suite 110
San Jose, CA 95118
Phone: 408-723-9044
Fax: 408-723-9046
Telex: 650-2635806



The most widely available leading dBASE product on the market, dBMAN V is the only choice to make for MS-DOS, LANs, UNIX, AIX, XENIX, several mainframes, Atari ST, Commodore Amiga and more.

For more detailed information and complete developer's pricing (or to see what new platforms have been added) call (408) 723-9044!

Today's software that meets tomorrow's challenge.

YES! I want more information about dBMAN V!

Name _____
Company _____
Address _____
Phone _____

☐ I want to order. ☐ Send literature.
☐ Have a salesman call.

I have these computers: _____

I have these other databases: _____

Please fill out coupon and return to: VersaSoft Corporation, 4340 Almaden Expwy, Ste. 110, San Jose, CA 95118 Attn: Marketing.

dBMAN V and Greased Lightning Compiler are registered trademarks of VersaSoft Corporation. dBASE and dBASE III Plus are registered trademarks of Ashton-Tate. UNIX, AIX, XENIX, Atari ST, Commodore Amiga are registered trademarks of their respective companies.

Circle 366 on Reader Service card.

SOFTWARE

Weigh-In Procedures

THE WEIGH-IN TESTS were conducted on an Amiga 2000 with five megabytes of RAM and an A500 with one megabyte. All programs were tested under a stock, "no-frills" copy of AmigaDOS version 1.3, loaded from floppy disk. Workbench was loaded as part of the startup-sequence. Although the Amiga 2000 was equipped with a hard drive, it was not mounted or used in order that we could ensure consistency throughout the tests. As a prelude to each test we opened two CLI windows. With the first CLI we checked RAM usage with the AmigaDOS AVAIL command, while we used the second CLI to start the program being tested.

Before each program was tested, and between each individual test, we soft-rebooted AmigaDOS using the Control-Amiga-Amiga key combination to make certain that none of our data was corrupted by applications that might fail to return portions of memory back to the operating system either when the program was exited or when applications data was discarded. Although this was a time-consuming process, it proved the best way to avoid misleading results owing to memory fragmentation or improper programming practices. After each reboot, the results of

the AVAIL command were recorded before any application or its data was loaded. The program was then launched from the second CLI window. Once the program was finished loading, we again checked the AVAIL command in the first CLI window. At this point we calculated the "opened" values by subtracting the figures recorded once the program was loaded, from the memory figures recorded just after the soft reboot but before the program was loaded.

Within some categories of applications, we tried to test each program using a variety of data, because there is often a significant difference in memory usage depending on the type of data handled by that group of applications. The goal here was to provide a better insight into the memory needed for each program while it was in use, rather than merely recording how much memory it consumed when loaded in an "empty" state. In all cases where programs are tested with data, we ran the tests by loading the data in the program's own internal data format, as opposed to testing the applications immediately after importing the data from another format. (Some programs allocate extra memory during the importation

process.) To do otherwise would unduly penalize those programs that included extensive built-in importation modules for their flexibility; importing data from a foreign format is not necessarily representative of normal operation.

Finally, all programs were tested in their "default" configurations, as they are shipped from the manufacturer. In cases where the default configuration was unusually inefficient in comparison to other programs in the same category, we also tested the program using a more efficient configuration. The point of this entire exercise is to help you multitask more effectively, so programs with the ability to configure themselves in more efficient forms should not be penalized for offering you that very choice. We did not, however, test all programs in their absolutely most efficient configuration. For instance, some of the desktop-publishing programs offer non-interlaced screen options, but as most users opt for the interlaced mode, we used interlaced screens to test these programs.

—LL

Key To Chart Abbreviations

Product WP Lib=
WordPerfect
Library utility

Company PD= public-domain
program

Screen WB= Workbench
screen
CS= custom
screen

CSI= custom
screen interlaced
[Number]= number
of colors

Weigh-In Stats

Word Processors and Text Editors

Each of the following word processors and text editors was tested without any test loaded into it (Open), with a 5904-byte file (Small) representing a typical three-page letter, and a 92,589-byte file (Large) representing a typical 35-page

document. Memory usage differences among the programs can be accounted for by the kinds of display screens they use and by the way each program handles text formatting internally.

Product	Company	Screen	Stack	Memory Consumption (Kilobytes)								
				Open			Small			Large		
				Chip RAM	Fast RAM	Total RAM	Chip RAM	Fast RAM	Total RAM	Chip RAM	Fast RAM	Total RAM
WordPerfect	WordPerfect Corp.	WB4	4000	62	162	224	62	198	260	62	295	357
Transcript	Gold Disk	WB4	4000	60	131	191	63	154	217	63	248	312
TransEdit	Gold Disk	WB4	4000	48	89	136	51	102	153	50	198	248
More	(on Workbench 1.3)	WB4	4000	1	18	18	1	19	19	1	19	19
Pen Pal (80%)	Brown-Wagh	CS8	4000	174	1947	2121	174	1945	2119	174	1940	2114
Pen Pal (10%)	Brown-Wagh	CS8	4000	174	515	690	174	511	686	NA	NA	NA
Pen Pal (80%)	Brown-Wagh	CS8	4000	329	305	634	329	307	636	NA	NA	NA
ProWrite (MR)	New Horizons	CS8	4000	50	245	296	51	262	313	51	470	521
ProWrite (HR)	New Horizons	CS18	4000	97	248	346	98	267	365	98	505	603
excellence!	Micro-Systems	CS8	16384	95	410	504	95	419	513	95	569	664
excellence!	Micro-Systems	CS2	16384	35	410	445	35	419	454	35	569	604
PEdit (WP Lib)	WordPerfect Corp.	WB4	4000	51	166	216	51	166	217	51	264	316
MEMACS	(on Workbench 1.3)	CS2	4000	16	75	91	16	83	99	16	207	223
Scribble	Micro-Systems	WB4	4000	34	143	178	34	143	178	34	252	287
TxEd Plus	Microsmiths	WB4	4000	1	68	68	1	74	75	1	159	159
QED 1.9	PD	WB4	4000	30	67	97	33	90	123	30	211	241

NOTES

1. Pen Pal has an unusual buffer allocation scheme that allows you to specify a percentage of your available fast RAM for buffer space. Given this arrangement we felt compelled to test Pen Pal in three different configurations. The 80% and 10% tests were conducted on an A2000 with five megabytes of RAM. The 80% w/

1MB test (third from the top) was conducted on an A500 equipped with one megabyte of RAM. The complete Large test file would not load during either the 10% 5MB test or the 80% 1MB test.

2. Both Gold Disk and New Horizons provide two different versions of their programs (Transcript and ProWrite, respectively), so we tested both versions. TransEdit is a fully functional version of Transcript without Transcript's printing ca-

pabilities. ProWrite MR functions on a 640×200 pixel custom display, while ProWrite HR functions on a 640×400 pixel custom display.

Spreadsheets

Each spreadsheet was tested without any data loaded into it (Open), as well as with a 4073-byte (Small) spreadsheet, and with a 31,039-byte (Large) spreadsheet loaded into it. Both the large and small spreadsheet files featured a liberal mixture of formulas and numeric and text data, as well as a

number of empty cells as one would find in most spreadsheets. Differences in memory usage can be accounted for by the kind of display screen utilized, as well as by how each spreadsheet stores its cell data, in particular how empty cells are stored.

Product	Company	Screen	Stack	Memory Consumption (Kilobytes)								
				Open			Small			Large		
				Chip RAM	Fast RAM	Total RAM	Chip RAM	Fast RAM	Total RAM	Chip RAM	Fast RAM	Total RAM
Superplan	Precision	CS8	20000	48	506	553	49	516	565	48	542	590
VIP Professional	ISD Marketing	WB4	4000	41	777	817	41	777	818	41	777	818
Analyze!	Micro-Systems	WB4	15000	25	238	263	25	239	264	48	542	590
MaxiPlan 1.9	Intuitive Tech.	CS8	4000	52	205	257	69	241	310	NA	NA	NA

NOTES

- VIP Professional provides a configuration option allowing you to allocate a fixed amount of RAM that you wish to dedicate as buffer space. In our tests we needed a 512K buffer to load our Large spreadsheet, so we used the 512K buffer for both the Small and Large tests, even though we could have done the Small test using a smaller buffer.
- MaxiPlan's external file-conversion utilities would not allow us to import our Large spreadsheet file correctly. When we used the .WKS (Lotus 1-2-3 standard), the conversion utility designed for that purpose crashed about two-thirds of the way through the conversion. We tried converting the Large file in small chunks as well with the same result. We were able, however, to convert the Large file as pure text (no formulas), but as this is not an accurate representation of a spreadsheet we decided that using the large data as text was inappropriate.

Databases

Each database program was tested before any records were accessed (Open) as well as when accessing a 100-record database (Small) and a 1560-record database (Large). Each record in both of the latter databases was made up of seven text fields of various lengths and two numeric fields. In those programs that provided multiple index support, we used only a single index for continuity. The differences in memory usage can be attributed primarily to how each program

holds and accesses records. For instance, both Superbase Professional and Pro DataRetrieve normally access a single record at a time and provide a user-definable record cache, which was set to 10 records on each program, whereas Microfiche Filer Plus holds the entire database in memory. One approach is no more valid than the other, but it is important to note the difference when examining the results below.

Product	Company	Screen	Stack	Memory Consumption (Kilobytes)								
				Open			Small			Large		
				Chip RAM	Fast RAM	Total RAM	Chip RAM	Fast RAM	Total RAM	Chip RAM	Fast RAM	Total RAM
Microfiche Filer Plus	Software Visions	CS2	4000	62	194	256	65	234	299	64	669	733
Superbase Pro 3.01	Precision	WB4	8000	33	349	382	34	351	385	33	351	385
Pro DataRetrieve	Abacus	CS4	4000	43	346	389	43	380	423	43	380	423
Organize!	Micro-Systems	CS4	10000	38	203	241	38	209	247	38	214	253
dB Man	VersaSoft	CS2	11000	16	537	553	16	540	556	16	538	554

Paint Programs

Each paint program was subjected to a maximum of four different tests. The first records the memory usage of the programs upon initial startup without any data (images) loaded into them. The other three tests involve the loading of different types of IFF image data. The Lo-Res results derive from loading a 320 × 200 pixel, 32-color image, while

the Hi-Res results derive from loading a 640 × 400, two-color image. The final test involves the use of the Amiga's HAM (Hold-and-Modify) mode with a 320 × 400 HAM image for those programs supporting HAM. For those that do not support HAM but do support EHB (Extra_Halfbrite) mode, we tested a 320 × 400, 64-color EHB image.

Product	Company	Stack	Memory Consumption (Kilobytes)														
			Open			Lo-Res			Hi-Res			HAM			EHB		
			Chip RAM	Fast RAM	Total RAM	Chip RAM	Fast RAM	Total RAM	Chip RAM	Fast RAM	Total RAM	Chip RAM	Fast RAM	Total RAM	Chip RAM	Fast RAM	Total RAM
Digi-Paint 3	NewTek	4000	94	281	375	95	287	381	NA	NA	NA	157	335	492	NA	NA	NA
Deluxe PhotoLab	Electronic Arts	4000	126	281	408	127	283	410	156	280	436	262	288	550	NA	NA	NA
DeluxePaint III	Electronic Arts	4000	147	247	394	147	247	394	132	247	379	NA	NA	NA	262	247	510
DeluxePaint III (overlay)	Electronic Arts	4000	147	184	331	147	184	331	132	184	316	NA	NA	NA	262	184	447
Photon Paint 2.0	MicroIllusions	4000	142	388	530	142	388	530	NA	NA	NA	236	452	688	NA	NA	NA
Photon Paint 2.0 (overlay)	MicroIllusions	4000	142	324	466	142	211	353	NA	NA	NA	236	275	511	NA	NA	NA
DeluxePaint II	Electronic Arts	4000	110	166	277	110	167	277	118	167	285	NA	NA	NA	NA	NA	NA
DeluxePaint II (overlay)	Electronic Arts	4000	110	123	233	113	122	236	118	122	240	NA	NA	NA	NA	NA	NA
PIXmate	Progressive Per.	4000	66	121	187	42	124	166	32	122	155	97	122	219	NA	NA	NA
Butcher	Eagle Tree	4000	110	110	220	110	110	220	93	110	203	220	110	330	NA	NA	NA
SuperView II	PD	4000	NA	NA	NA	41	14	55	32	13	46	96	14	110	NA	NA	NA

NOTES

1. Both DigiPaint 3 and Photon Paint 2.0 are HAM paint programs. These programs will, however, load 32-color lo-res images, so we tested them with

the Lo-Res graphics data. Photon Paint and DPaint II and III have an option allowing you to conserve memory by using disk-based overlays as opposed

to loading the entire program into memory. Therefore, we opted to test the programs in overlay mode separately. SuperView II, of course, can-

not edit the pictures it displays, but is included for comparison basis as an example of a small utility that can display pictures.

Desktop Publishing

The desktop-publishing programs were tested in two states: without any data loaded into them (Open) and with a typical three-page layout (Layout) incorporating the Small text file used in the Word Processors tests above and the 640 × 400,

two-color image used in the Paint Programs tests. Differences in memory usage are primarily owing to the way each program handles text and graphics data internally, as well as to the actual program size itself.

Product	Company	Screen	Stack	Memory Consumption (Kilobytes)					
				Open			Layout		
				Chip RAM	Fast RAM	Total RAM	Chip RAM	Fast RAM	Total RAM
PageSetter	Gold Disk	WB4	4000	69	125	194	89	145	233
PageStream	Soft-Logik	CSI4	4000	117	305	422	118	363	481
City Desk 2.0	MicroSearch	CSI4	4000	80	370	450	83	442	525
Pro Page 1.3 (Color)	Gold Disk	CSI16	4000	321	357	678	321	442	763
Pro Page 1.3 (B&W)	Gold Disk	CSI4	4000	227	357	584	227	442	669



Telecommunications

We tested the telecommunications packages only in their "Open" state, namely, without having text in their capture buffers and without using such special features as macros and terminal-emulation modes, because there was no consistent manner in which to compare the actual memory usage of these features. Each program, with the exception of Access, came configured with a 16-kilobyte capture buffer. Inter-

estingly, the telecommunications packages as a group were by far the most flexible packages in terms of configuring screen display. Therefore, we made an effort to test the three commercial telecommunications programs (A-Talk III, Baud Bandit, and Online!) not only in their default configurations, but also in their most memory-conserving configuration.

Product	Company	Screen	Stack	Memory Consumption (Kilobytes)		
				Open		
				Chip RAM	Fast RAM	Total RAM
A-Talk III	Oxxi	WB4	4000	89	195	284
A-Talk III	Oxxi	CS2	4000	80	200	280
Baud Bandit	Progressive Per.	CS8	4000	128	106	234
Baud Bandit	Progressive Per.	CS2	4000	47	103	150
Online!	Micro-Systems	CS8	4000	48	277	324
Online!	Micro-Systems	CS2	4000	16	277	293
JR Comm	PD	CS2	4000	21	198	219
Access 1.3	PD	CS4	4000	97	128	225

Personal Information Managers

These programs represent a group of utilities focused on keeping track of calendar events, phone or address lists, and personal scheduling. Inherently more valuable as multitasking applications, most of these programs allow themselves to be tucked away as a very small window on Workbench. PIM

applications were tested in both their small iconified windows (Icon) and in their "open-for-business" states (Open). As we would not dare estimate how many friends you have or how busy your business calendar might be, all programs were tested without adding additional data.

Product	Company	Screen	Stack	Memory Consumption (Kilobytes)					
				Open			Icon		
				Chip RAM	Fast RAM	Total RAM	Chip RAM	Fast RAM	Total RAM
NAG Plus 3.0	Gramma	WB4	4000	29	96	125	4	92	96
Calendar (WP Lib)	WordPerfect Corp.	WB4	4000	41	104	145	3	101	104
W!W!W!W!	Blue Ribbon Bakery	WB4	4000	29	164	193	10	164	173
Mail-O-Dex	American Software	WB4	40,000	12	94	106	NA	NA	NA
Notebook (WP Lib)	WordPerfect Corp.	WB4	4000	51	110	161	9	110	119

NOTES

1. Mail-O-Dex has no small-window/iconify option and no appointment-reminder function. Its default stack as shown above is not a misprint, but even with

this large stack it remains a memory-efficient program. The WordPerfect Library collection of utilities separates the

tasks of calendar watching and schedule planning (handled by Calendar) and mail/phone list keeping (Notebook) into two programs, which we tested sep-

arately. W!W!W!W! is Who! What! When! Where!.

BBS Software

We tested the two leading commercial Amiga bulletin board programs—MicroSystem's BBS-PC and Incognito's Atredes—in their empty, "default" (Open) state without actually setting up a real bulletin-board system complete with

message bases and file-transfer areas. We did this because the way each of the two programs sets up a BBS configuration is vastly different. We also added an entry for Atredes' memory-conservation iconify mode (Icon).

Product	Company	Screen	Stack	Memory Consumption (Kilobytes)					
				Open			Icon		
				Chip RAM	Fast RAM	Total RAM	Chip RAM	Fast RAM	Total RAM
BBS-PC	Micro-Systems	CS4	15000	47	241	288	NA	NA	NA
Atredes	Incognito	CS8	20480	64	262	325	1	260	261

DOS Shell Programs

These handy utility programs offer many functions, including the ability to move, copy, and rename files and directories with the click of a mouse. More relevant to our tests here, they often allow the display of text and graphics files. The Small and Large categories show the memory usage of these programs as they display the same text files used

in the Word Processors section above; the Lo-Res, Hi-Res, and HAM columns show the memory consumed in displaying the same pictures used in the Paint Programs tests. Fm (File Manager), one of the programs included in the WordPerfect Library collection, does not include the ability to display picture files.

Product	Company	Screen	Stack	Memory Consumption (Kilobytes)								
				Open			Small			Large		
				Chip RAM	Fast RAM	Total RAM	Chip RAM	Fast RAM	Total RAM	Chip RAM	Fast RAM	Total RAM
CLImate	Progressive Per.	CS8	4000	118	70	188	175	70	246	175	70	246
DiskMaster	Progressive Per.	CS8	4000	90	49	139	90	65	154	90	150	240
Fm (WP Lib)	WordPerfect	WB4	4000	50	73	123	94	81	175	94	165	259

Product	Company	Screen	Stack	Memory Consumption (Kilobytes)								
				Lo-Res			Hi-Res			HAM		
				Chip RAM	Fast RAM	Total RAM	Chip RAM	Fast RAM	Total RAM	Chip RAM	Fast RAM	Total RAM
CLImate	Progressive Per.	CS8	4000	158	100	258	150	99	250	213	100	313
DiskMaster	Progressive Per.	CS8	4000	90	49	139	90	49	139	90	49	139
Fm (WP Lib)	WordPerfect	WB4	4000	NA	NA	NA	NA	NA	NA	NA	NA	NA

Music Programs

Unfortunately, newer Amiga music programs have not continued to support the SMUS file standard, complicating our ability to compare the following programs. All programs were tested with their default song-editor screens opened (Open), as well with them playing music. Because Sonix and Deluxe Music Construction Set (DMCS) can play SMUS

format files, the same song (a 32-bar, four-voice tune) was used with each program's default instrument voice. Music Mouse creates its own music algorithmically "on the fly" as it runs. We stepped out of our consistent pattern and tested M with a music file not usable with the other programs—a short MIDI file included on the program's disk.

Product	Company	Screen	Stack	Memory Consumption (Kilobytes)					
				Open			Play		
				Chip RAM	Fast RAM	Total RAM	Chip RAM	Fast RAM	Total RAM
DMCS	Electronic Arts	CS8	16000	319	205	524	319	208	528
Sonix	Aegis (Oxxi)	CS4	4000	82	38	120	82	40	122
Music Mouse	Aesthetic Engin.	CS8	4000	112	76	188	112	76	188
M	Intelligent Music	CS8	4000	62	298	360	110	354	464
M	Intelligent Music	CS4	4000	43	295	339	110	354	464

NOTES

1. M allows its screen to be configured for four or eight colors, and we tested both. Interestingly, the manual reveals that M's master-control screen mask is a standard IFF graphics file, the ultimate in end-user screen configurability!

Manufacturers' Addresses

Abacus

5370 52nd St. SE
Grand Rapids, MI 49508
616/698-0330

Aesthetic Engineering

175 Duane St.
New York, NY 10013
212/925-7049

American Software Distributors

RR 1 Box 290, Bldg. 3
Urbana, IL 61801
217/643-2050

Blue Ribbon Bakery

1248 Clairmont Rd., Suite 3D
Atlanta, GA 30030
404/377-1514
fax: 404/377-2277

Brown-Wagh Publishing

16795 Lark Ave., Suite 210
Los Gatos, CA 95030
408/395-3838

Eagle Tree Software

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

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
416/828-0913

Gramma Software

17730 15th Ave. NE, Suite 223
Seattle, WA 98155
206/363-6417

Incognito Software

34518 Warren, Suite 149
Westland, MI 48185
313/937-1850

Intelligent Music

116 N. Lake Ave.
Albany, NY 12206
518/434-4110
800/344-2086

Intuitive Technologies

distributed by American Software

ISD Marketing

2651 Johns St., Unit 3
Markham, Ontario
Canada
416/479-1990

Micro Systems Int.

1143 Monroe St.
Carleton, MI 48117
313/654-8402

MicroIllusions

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

MicroSearch Inc.

9896 SW Freeways
Houston, TX 77074
713/988-2818

New Horizons Software

PO Box 43167
Austin, TX 78745
512/328-6650

NewTek

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

Oxxi Inc.

PO Box 90309
Long Beach, CA 90809-0309
213/427-1227

Precision Inc.

distributed by American Software

Progressive Peripherals & Software

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

Soft-Logik Publishing Corp.

11131 South Towne Sq.
Suite F
St. Louis, MO 63123
314/894-8608

Software Visions

PO Box 3319
Framingham, MA 01701
508/875-1238
800/527-7014

VersaSoft

4340 Almaden Expressway
Suite 250
San Jose, CA 95118
408/723-9044

WordPerfect Corp.

1555 N. Technology Way
Orem, UT 84057
801/225-5000

from p. 28

Taking care to choose the right program for a specific task can greatly increase your ability to multitask other applications. For instance, the highly useful DOS shell program CLImate (see DOS Shell Programs chart) may be a good choice when you want to clean up your disks or reorganize your directories. As a utility to view text files or show pictures, however, it is terribly inefficient. This is not to suggest that you should not use CLImate to examine text or pictures: There are many instances when it is quite convenient to be able to do both of those tasks while using a DOS shell. But using CLImate to view a text file with a machine containing only 512K of chip RAM means you will be sacrificing almost half of that precious commodity, thereby severely limiting your ability to multitask other programs. Many full-fledged word processors will take up less RAM, and if you use a file reader such as More (see Word Processing and Text Editors chart), you will barely tax your resources. The same holds true for viewing picture files: Even DeluxePaint III actually uses *less* chip RAM to view a 640×400 monochrome image than CLImate. Using a simple public-domain program such as SuperView II (see Paint Programs chart) would save you hundreds of kilobytes of RAM and still

accomplish the same task.

It is also interesting to note that much of what has been published or informally spread around about the memory costs of Amiga programs has been vague, unquantified, and in many cases inaccurate. Some programs tagged as "RAM hogs" are actually not when you look at them objectively in context with other programs used for the same task. For instance, WordPerfect (see Word Processing and Text Editors chart) has an undeserved reputation as being excessively RAM-intensive because of its extensive number of features, but in reality it tests out to be a near-average consumer of RAM in relation to other Amiga word processors. I hope this article will dispell some of this kind of "folklore" and prompt you to test some of your own convictions about various programs against the data presented here. Doing so will help put you on the road to more productive, effective multitasking. ■

Loren Lovhaug is a frequent contributor to Amiga and C-64/128 publications, and often reviews productivity software for AmigaWorld's Reviews section. He is also a SYSOP on both the Quantum Link and GENie telecommunications networks. Write to him c/o AmigaWorld, Editorial Dept., 80 Elm St., Peterborough, NH 03458.



Make Amigos With Other Amigas.

The largest group of Amiga® users in the world shares its problems and solutions online every day in CompuServe's Amiga Forums. And you can join them.

Whether you're an Amiga novice or a professional user in broadcasting, film special effects, animation, or music production, you'll find support from thousands of Amiga users and nearly every third-party Amiga software and hardware vendor.

Looking for a solid CAD program? Want to make the most of your Amiga's multitasking capabilities? Ask

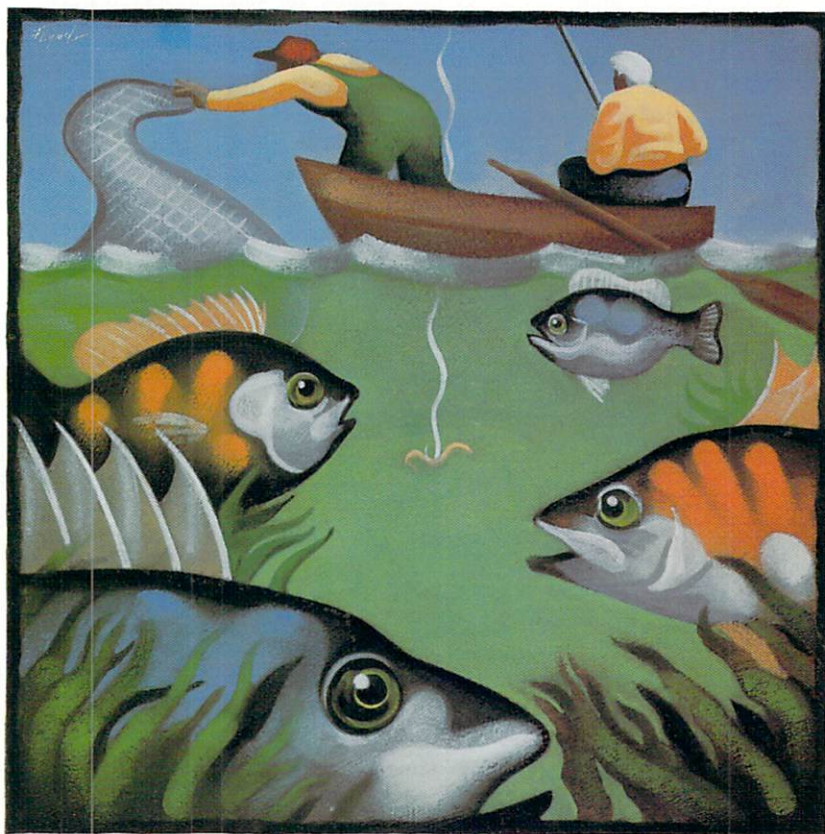
somebody who's been through it all. There's no better way to get more out of your Amiga.

To join CompuServe, see your computer dealer. To order direct or for more information, call 800 848-8199. If you're already a member, type GO AMIGA at any ! prompt.

CompuServe®

Casting A Wider Net

*Commodore is fishing new waters with Unix,
but will you really share in the catch?*



WHY DO I need a multitasking, multiuser operating system when I have AmigaDOS?" Amiga owners have been asking themselves this question since Commodore began showing Unix running on the Amiga at trade shows over a year ago. With the lure of networking, high-end CAD and desktop-publishing programs, and office applications, Commodore is dangling some enticing bait before business and professional users in the hopes that Unix will create new markets for the Amiga. The

rest of us, however, may well wonder just what Unix is and what it can do for us. To answer those questions, we must start with some background about Unix.

CLASSIC PREPARATION

AT&T's Bell Laboratories developed Unix for Digital Equipment Corporation's PDP-7 and PDP-11 minicomputers and began selling the source code in the early 1970s. By selling the source to universities for a nominal fee, AT&T helped Unix quickly become a ►

By Bill Catchings and Mark L. Van Name



Sunsets!

Imagine yourself sailing off into an exquisite sunset. As you are sailing you enjoy the warm tropical breeze, the gentle waves and a chilled drink by your side. Sounds wonderful!



Soft-Logik Publishing Corp.
11131 Suite F South Towne Square
St. Louis, MO. 63123

Sales : 314 - 894 - 8608 Tech: 314 - 894 - 0431
BBS : 314 - 894 - 0057 Fax : 314 - 894 - 3280

PageStream

Stop imagining and start creating this breathtaking scene. With PageStream importation of pictures is an easy task.

PageStream allows for four color separation plus resizing and cropping capabilities. The combination of the perfect picture and your text is essential when laying out your creation.

Words express ideas and feelings. PageStream's variety of typefaces will help you convey your message clearly. Elegance for the romantic, Helvetica for the serious and Oddballs to add the touch of fun.

Determined to be the Best !

This advertisement was created entirely with PageStream. The sunset picture was scanned and imported as a 24-bit picture.

PageStream Version 1.8 retails for \$ 199.95. Also Available are 17 font disks for both Dot Matrix and PostScript printers.



de facto standard at many schools. Because Unix is written in C (developed by Bell Labs at about the same time), it is, as operating systems go, fairly easy to move to new machines. While most of the early ports were to minicomputers, today Unix is widely available on microcomputers with both Motorola 680x0 and Intel 80x86 CPUs.

As various groups ported Unix to new machines, different versions naturally sprang up. Several emerged as standards: AT&T's System V, Berkeley

Unix (the basis for Sun Microsystems' SunOS), and Xenix, perhaps the most popular implementation for Intel processors. Fortunately, the versions are similar enough that experienced users can move from system to system with little trouble.

Unix's original set of tools was good and it has only grown richer with time. Today the operating system supports a wide variety of languages, programming libraries, and networking protocols.

Unix excels in networking and was the platform ►

Computer du Jour: Amiga Unix

WHILE THE STATE of the general Unix world is complicated, at least it is largely a matter of public record. That's not yet the case with Commodore's Amiga Unix. Because this article precedes the official product announcement, Commodore representatives were not eager to divulge many details. Combining the information they did supply, recent third-party announcements, and our knowledge of other Unix versions sketches the following picture.

Commodore will initially sell Unix as part of a new Amiga (the A3000 is the most likely candidate) that you will be able to buy with either Unix or AmigaDOS. The new machine will be based on a Motorola 68020 or 68030 CPU running at 16MHz.

You will also probably be able to run this Unix on current Amigas, although Commodore was very noncommittal on this point. Don't, however, expect to run Unix on your A500; the operating system typically requires at least 2MB (preferably 4MB) of memory and at least 40MB of disk space.

You need not worry about obsolescence; Amiga Unix will be the latest and greatest version (AT&T's System V.4), not an about-to-be-out-of-date relic. System V.4 is the culmination of AT&T's effort to combine four key Unix versions: the company's System V, Berkeley's 4.2, SunOS, and Xenix. Amiga Unix will also include XWindows. In what company representatives called a "strategic endorsement of V.4," Commodore demonstrated an Amiga running System V.4 and XWindows in the AT&T booth at the Fall '89

Uniforum trade show. The Amiga version of XWindows was modified to use the Amiga's graphics chips to calculate and manage some of the graphics. The performance of this XWindows implementation should compare favorably with that of similar low-end Unix workstations. As an added attraction for those who need even higher resolution, Commodore showed Unix running at last winter's World of Commodore show with the company's new Hi-Res card, which is based on the TI34010 graphics processor. This as yet unreleased product promises a palette of 16 million colors and very high-resolution mega-pixel displays. To make use of all that display power, Amiga Unix will support Sun's Open Look GUI (see "A Look from Sun").

On the networking side, Amiga Unix will support the most common protocols, including uucp, TCP/IP, and NFS. The catch is that right now Commodore does not sell any networking cards for the Amiga. Expect some big Amiga networking announcements—probably for both Unix and AmigaDOS—from Commodore in the near future. While the Commodore spokespeople would not give us details, look for Ethernet hardware, because the TCP/IP and NFS protocols are almost useless without it.

Such a system, of course, does no good without applications. While some of the existing Unix/Open Look library theoretically should run or at least compile on Amiga Unix without alterations, Commodore is actively courting Unix application vendors, including most of the major players, for Amiga-specific versions. Commo-

dore would not give us specific names, but such vendors as Informix and WordPerfect Corp. are obvious candidates.

Amiga Unix targets three main markets in which the Amiga's present penetration is low. The federal government, the largest Unix customer, tops the list. (Many government contracts require support for multiuser Unix.) Higher education and the general business community follow. Commodore is trying hard to make available the software that these markets require, and it is setting up marketing channels targeted for each of these areas. The Commodore spokespeople went to great pains, however, to explain that the firm is not abandoning AmigaDOS, but is instead trying to expand the system's overall market presence.

The ability to run a lot of existing Amiga applications under Unix would be nice, but this topic produced some of Commodore's quickest "no comment" answers. Long-standing rumors indicate that Amiga Unix might run "well-behaved" AmigaDOS applications that can share the system with other tasks and do not take over the entire machine. The Commodore representatives would say only that they have been "discussing" this issue. Our guess is that Commodore will provide at least some minimal, restricted facility for running Amiga applications. At worst, you will be able to partition your system's hard disk into Unix and AmigaDOS sections, so that both operating systems can use the hard disk, although not necessarily at the same time. □

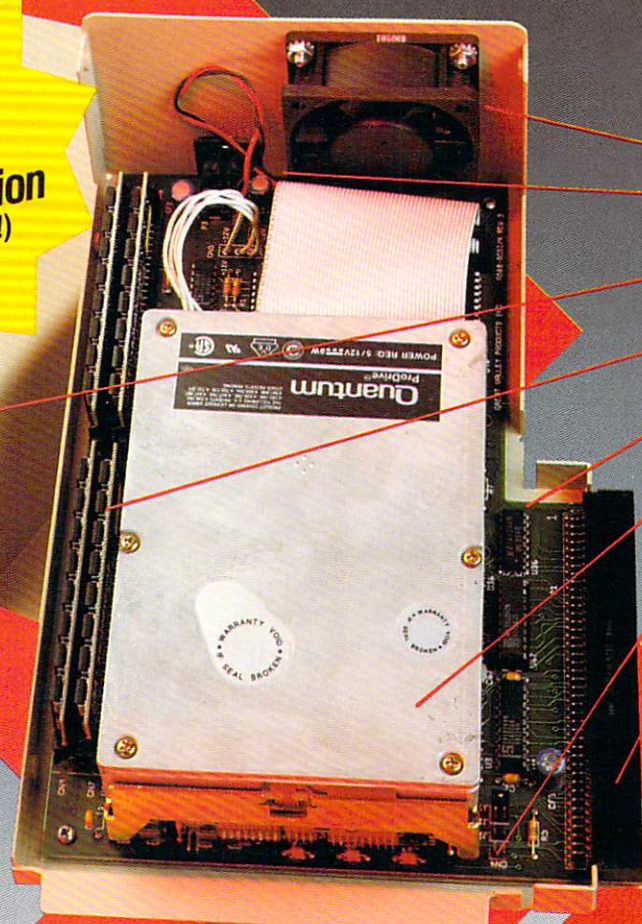
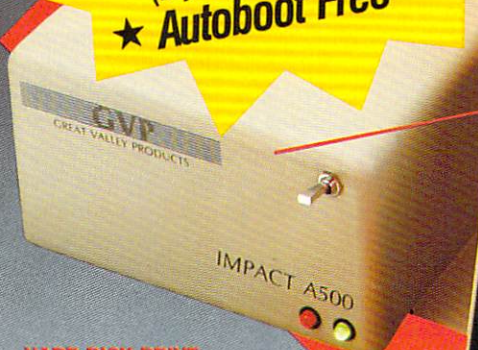
—BC and MVN

Attention: **AMIGA 500 USERS**

The Ultimate Expansion Tool Now More Expandable Than Ever!

NOW!

- ★ 4 Mega Byte Memory Expansion
(Expand your A500 TODAY!)
- ★ Autoboot Free



- Internal Fan
- Dedicated Power Supply Connector
- Game Switch (enable/disable Autoboot)
- 0MB, 2MB or 4MB of FAST RAM Expansion
- SCSI Hard Disk Controller
- 20MB to 102MB SCSI Hard Disk Drive
- RAM Configuration Jumpers
- 86 pin Card Edge Connector

HARD DISK DRIVE

SCSI 3.5" Hard Disk Drive, available from 20MB to 102MB, capable of storing up to 116 floppy diskettes.

HARD DRIVE CONTROLLER

DMA direct to onboard 16KB buffer, provides A2000 performance with no DMA side effects.

86 PIN CARD EDGE CONNECTOR

This compact snap-on unit connects directly to the Amiga bus, ensuring the highest possible performance and reliability.

AUTOBOOT FEATURE

Allows the A500 to be booted directly off the hard disk, no floppies required! All hard disk partitions can be Fast File System partitions.

RAM EXPANSION

Up to 4MB of ZERO-WAITSTATE, FAST RAM can be added internally.

EXTERNAL SCSI CONNECTOR

Allows up to six additional SCSI devices to be attached.

DEDICATED POWER SUPPLY

Robust power supply is included so that your A500 is not over-loaded.



GREAT VALLEY PRODUCTS INC.
225 Plank Ave., Paoli, PA 19301

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

For more information, or for your nearest GVP dealer, call today. Dealer inquiries welcome.

Tel. (215) 889-9411 • FAX (215) 889-9416 • BBS (215) 889-4994

for much early network development and research. Almost all Unix versions support at least the TCP/IP (Transmission Control Protocol/Internet Protocol) communications protocol. Most also support at least one network file system protocol; the two most common are Sun's NFS (Network File System) and AT&T's RFS (Remote File System).

While Unix has been a development environment for these and many other exciting technical projects, it still has the look and feel of a traditional minicomputer operating system. Each system needs an administrator. You don't just turn on the machine and use it; you must log in first. At the end of a session, you must shut the system down in an orderly fashion or risk losing disk files.

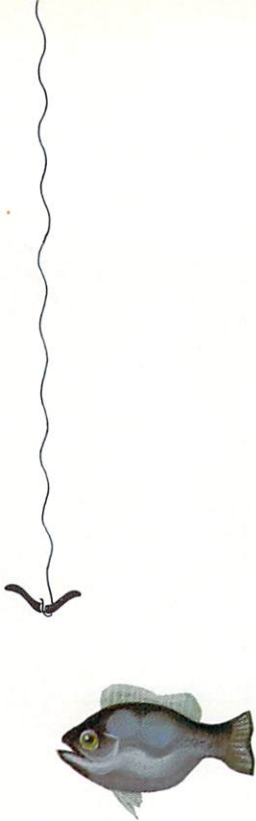
The interface typically has been a text-oriented command-line interpreter, a la the Amiga's own CLI. Different Unix versions sport different command-line interfaces, called shells (akin to AmigaDOS 1.3's Shell). The most popular are the Bourne, C, and Korn shells. All share one unfortunate trait: cryptic commands. Want to delete a file? Type **rm** (remove). What could be more obvious? The **mv** (move) command renames, **ls** (list) provides a directory listing, and **cat** (concatenate) displays a file. A few, such as **cd** (change directory), no longer seem cryptic because so many other operating systems now use them.

While vague, the commands do share a common benefit: Each is a separate tool that you can use in combination with the others. Like AmigaDOS, Unix lets you redirect the output of any program (and

hence command) or send one program's output directly to another program via "pipes" (similar to the PIPES: device in AmigaDOS 1.3). The underlying notion is that providing many simple tools, with good ways to use them together, is better than having lots of options on each tool. For example, rather than add lots of sorting switches to the **ls** command, let the user pipe its output to a sort tool. Time has eroded this notion somewhat; **ls**, for example, now has many options.

Traditionally, your only interface for Unix was a command line, but the operating system is evolving here as well. An MIT graphics standard, XWindows, is becoming increasingly popular on Unix systems. XWindows defines all the primitives that application developers need to drive mega-pixel displays over networks. In keeping with the Unix philosophy, however, it does not define a standard graphical user interface (GUI).

Fortunately, market pressure is forcing Unix vendors toward standardization. In the last few years, all of the major Unix vendors have joined one or both of a pair of groups dedicated to standardizing Unix: AT&T and Sun started Unix International, while IBM, Digital, and others founded the Open Systems Foundation (OSF). Both are now discussing ways to bring their proposals together. The Unix world will benefit even if those talks fail, however, because the result will be at most two Unix standards—far fewer than the many that currently abound. The two organizations are also trying to provide standard GUIs. OSF's Motif ▶



A Look from Sun

JUST BEFORE THIS article went to press, Sun Microsystems Inc. announced that Commodore will support Sun's Open Look graphical user interface.

Like the Amiga's Workbench, Open Look is mouse-driven and sports icons, pull-down menus, and point-and-click operations. The interface was tailored for Unix System V Release 4.0 (Unix 5.4) and will be supported by a broad range of software vendors, including Lotus Development Corporation. Open Look applications written for the Motorola 68000 family of processors and Unix 5.4 should run directly on Amigas, while many programs written for other architectures need only be recompiled to run on an Amiga.

The long-range impact of this an-

nouncement could be significant. With Open Look, Amigas will be able to take advantage not only of a number of sophisticated Unix programs already written for technical and productivity environments, but will also run those applications currently being developed by a broad range of vendors. Because of the failure of IBM and Microsoft's OS/2, many developers are shifting their efforts towards Unix. On the hardware side, Open Look supporters include AT&T, Amdahl, Fujitsu, Intel, Motorola, Olivetti, and Toshiba.

Commodore has yet to announce whether it will formally support OSF/Motif, a combination operating system/graphical user interface being pushed by Digital Equipment Corp., Hewlett-Pack-

ard, and IBM, among others. The point, however, may become moot. Although OSF/Motif has yet to ship, AT&T is working on an interface that would allow Open Look and Unix 5.4 to run OSF/Motif.

In other last-minute news, Commodore recently endorsed the 20MIPS Motorola 68040, a chip expected to be used by many Unix workstation vendors including NeXT Inc. The chip is promised to be shipping in volume by early Spring, with a 40MIPS version slated for release by year's end. Even if firms like GVP or IMtronics beat Commodore to the 68040 punch, this chip will surely liven the performance of any AmigaDOS or Unix-oriented system. □

—Doug Barney

UltraDesign!

COMBINING POWER WITH EASE OF USE IN A CAD SYSTEM DESIGNED FOR PROFESSIONALS!

PERFORMANCE

PROFESSIONAL CAD SYSTEM

AFFORDABILITY

FOR ALL AMIGA COMPUTERS

SIMPLICITY

SYSTEM REQUIREMENTS

Amiga computer with at least 1 Megabyte of memory
(Hard Disk or Second Floppy Drive recommended).

MULTIPLE PROCESSOR SUPPORT

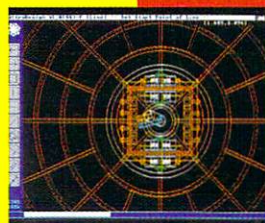
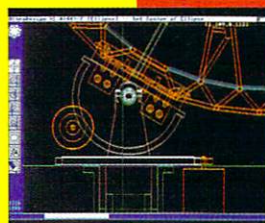
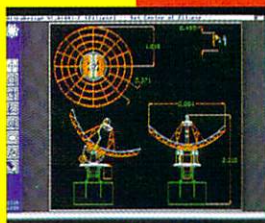
Support available for 68020/68881 processors.

EASY TO USE!

No "dongle" or copy protection
No "dangle" or copy protection
Step-by-step online prompts and status bar
Functions available through mouse or keyboard
Scroll bars for fast, easy viewing of drawings
Add custom pull-down menu & keyboard equivalents
Set custom defaults and data paths for easy file loading & saving
Save configurations for convenience

COMPATIBLE!

Read & write AutoCAD DXF drawings
Read Aegis Draw, IntroCAD, HPGL plot and DXY files.
Save drawings as IFF picture files
Supports all preferences printers & plotters
Supports postscript and encapsulated postscript output
Enhanced support for DMPL, HPGL and Roland plotters.



POWERFUL DRAWING TOOLS

- Drawing tools for multiple lines, arrowheads, arcs, ellipses & boxes.
- Automatic line generation, razor lines, line hook (rubber banding).
- Fillet with user definable radius.
- Ellipse rotation and object editing.

TEXT SUPPORT

- Eighteen fonts with user-definable size, aspect ratio & slant
- Text rotation, reversing, flipping, inverting editing & styling.
- Special QTEXT mode for speeding up complex drawing projects.
- Align text automatically with dimensioning line or fixed angle.
- Add custom fonts.

PASTEPUP MODULE

- Place any number of drawings in any configuration, rotation or scale on a virtual page before plotting or printing.
- Display and modify relative sizes and placement on screen.

PRECISION DRAWING OBJECT SNAP

- Seek to endpoint, midpoint, intersection and perpendicular intersection.

DRAWING CONFIGURATIONS

- Linear units, automatic unit conversions and drawing boundaries.
- Metric or english systems supported.
- Dialog (keyboard) support of all functions through precise coordinate entry.

LAYER MANIPULATION

- Up to 65,535 layers
- Add, kill, rename, merge, color, toggle display/ghost/plot commands
- Label and descriptive comment attached to each layer (not just a number).

COMPLETE PEN STYLE SUPPORT

- Give each pen style a name.
- Number of pen styles limited only by memory.
- Add, kill, rename, merge, color, toggle display/ghost/plot commands.

AUTOMATIC LINEAR DIMENSIONING

- Adjustable witness line and dimension line.
- Adjustable arrowhead sizes and angles.
- Adjustable witness line gaps, offsets and overshoots.

OBJECT FUNCTIONS

- Delete, copy, move, scale, rotate, X-Y flip, change order and grouping.
- Load and save object files or libraries.

DISPLAY FUNCTIONS

- Fast window zoom (in and out).
- Pan and re-center view of drawing.
- Adjust cursor snap grids and screen display grids.

HATCHING AND FILLING

- Forty hatching patterns provided.
- Define custom hatching patterns.
- Pattern rotation, scaling, solid filling and polygon hatching.

ARexx SUPPORT

- Run ARexx programs from dialog window.
- Add ARexx commands to UltraDesign's user-definable pull-down menus.

and Unix International's Open Look are both icon-based GUIs that support mice. Commodore is siding with Unix International in designing Amiga Unix. (See "Computer du Jour: Amiga Unix" and "A Look from Sun" for more details on Amiga Unix.)

MAKE YOUR CHOICE

The question remains: Why would you ever want to run Unix? Its draws are multitasking, graphics, memory management, networking, and a wide variety of programming libraries and applications. These features should sound familiar: AmigaDOS already has all of them except for networking. While XWindows' graphics are good by Unix standards, they are not likely to impress many Amiga users. Unix also has few built-in facilities for taking advantage of two of the Amiga's greatest strengths: animation and sound. Unix does have some advantages over AmigaDOS. Its multitasking facility, for example, protects tasks from one another when you run on processors (such as the 68020 and 68030) that have memory-management coprocessors or features. Unix also supports virtual memory, which lets it run programs larger than physical memory by swapping portions of memory to disk when necessary. Most of all, Unix is better known and available on far more platforms than AmigaDOS.

The bottom line is that average AmigaDOS users

will not want to bother with Amiga Unix, unless tempted by an irresistible, high-end application. It will not provide enough extras to be worth the money and hassle.

If you are already familiar with Unix and need a good, low-cost Unix system, however, Commodore's package will be attractive. It is the most current Unix version and should be priced "aggressively." Commodore is also an early participant in the GUI standard charge, strongly endorsing Open Look and the AT&T camp. The Unix command line and Open Look combination maintains the spirit of the Amiga's Shell and Workbench pairing, while promising to lead the machine into new and larger markets.

Even if you never want Unix, its availability on the Amiga is a good sign of the computer's maturation. Unix will open new markets for the Amiga and should lead to higher-capacity and higher-performance peripherals, something we can all use. Even if Unix does nothing but force Commodore to supply Ethernet boards for the Amiga, it will be a great boon. Whether you personally need Unix or not, its announcement should signal the start of an exciting year for the Amiga. ■

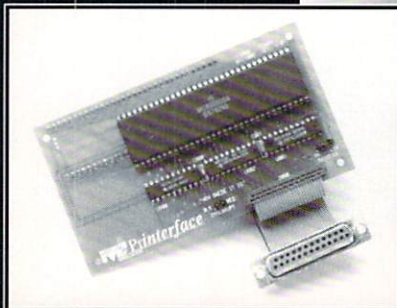
Bill Catchings and Mark L. Van Name are contributing editors to AmigaWorld. Write to them at 10024 Sycamore Rd., Durham, NC 27703.

This picture is worth only 7 words...

...The Best Things Come in Small Packages.

Printerface provides an auxilliary printer port for simultaneous operation of your printer and digitizer.

- *Printer & digitizer are always available and ready for use. Install Printerface and forget it's there.*
- *No more cable swapping, no more switches, no icons to click.*
- *A500 & A2000 compatible.*
- *The convenience of Printerface costs about the same as an A-B switch box & cable.*



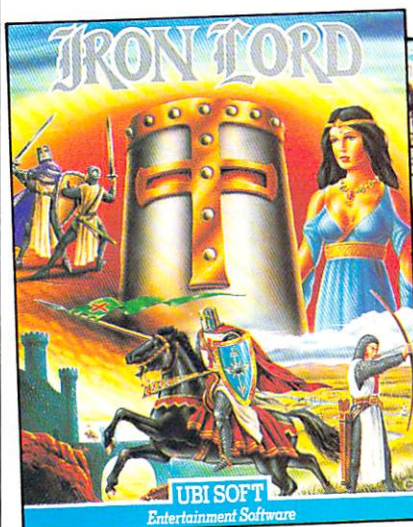
Printerface
INTERACTIVE VIDEO SYSTEMS

11612 Knott Avenue • Suite 13
Garden Grove, California 92641
(714) 890-7040 • FAX (714) 898-0858

UBI SOFT
Entertainment Software
PRESENTS

THE WINNING TRIO

ADVENTURE

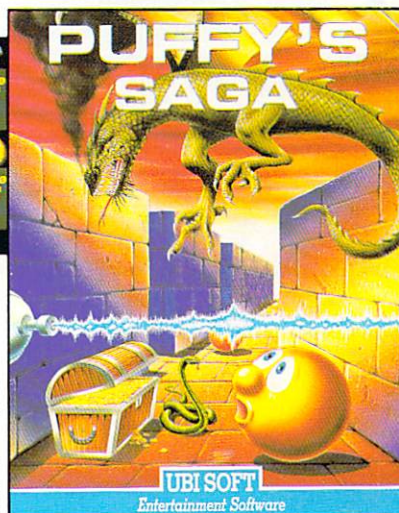


Prove your birthright through strategy and strength. Amaze the town with your superior archery, arm-wrestling, sword-play, and dice-throwing skills. Ultimately, you must build a following that not only respects you, but will go to war for you !

You are alone... a single warrior in a country of traitors, spies and assassins. You are unknown... the forgotten son of the dethroned king. Can you recover the throne ? Only a true Crusader of Justice could succeed at such a feat. Deceit and treachery abound !

Take charge. Prove you are IRON LORD - The Crusader of Justice ! You owe it to your homeland. Your father, and most of all, to the future of your kingdom !

ACTION



"DON'T GET PUFFED OUT..."

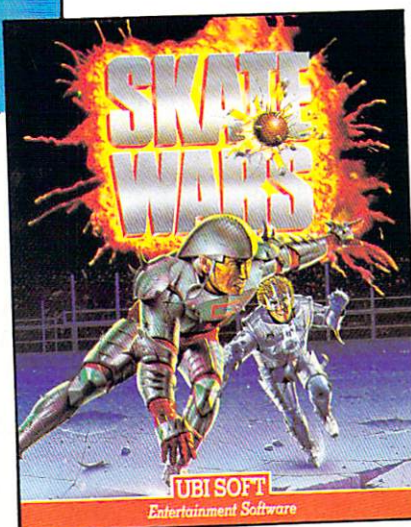
That's the challenge in this addictive arcade-style game.

- **Avoid the enemies...** Ghosts, Acid Puddles, Flying Dragons, and Snakes lurk around each corner.
- **Choose your character :** Puffy is powerful, but Puffyn has the speed !
- **Explore twenty different levels** and settings, each offering secret passageways filled with demons.
- **Race through the mazes** quickly or accumulate points by exploring each level in full.
- **Enjoy** the colorful graphics and entertaining sound effects.

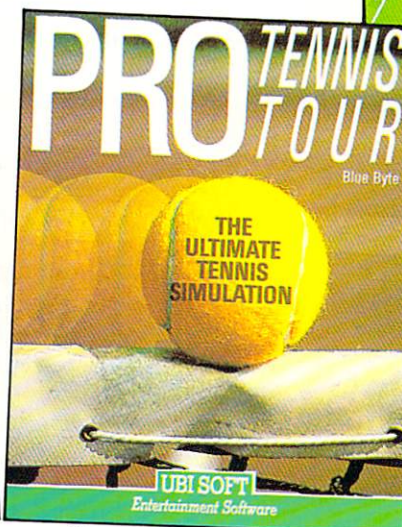
SPORT



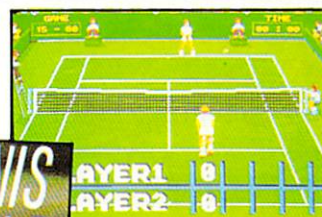
Skate Wars the sport of the future, combines the skills of soccer with the thrills of Rollerball, played in a space age ice stadium ! Lead your team to victory through a series of deadly hazards : crevasses, ramps, jumps, all while competing against the ruthless tactics of your opponents. You'll have to play dirty to win. Maim, trip, push, and shove... show no mercy. Only the brave win, or even survive !



Distributed by
ELECTRONIC ARTS®



Compete against your friends, even if they aren't internationally ranked ! Amaze the grandstand with an instant replay in 3-D animation. More than 300 animations with zoom effects.



Warm up on one of six practice programs containing three levels of increasing difficulty. Put away shots like a Pro ! Master back-hand volleys, passing shots, and other winning tennis strokes.

Rush the net with confidence, knowing you can strategically place your next return. Feel the excitement build as you challenge your next opponent and make your way to the top !

Travel around the world and play at four international tournaments. Test your abilities on grass, clay or cements courts.



14

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

By Joel Hagen

Freehand Animation

Part II: Ready For Action

IF YOU PASSED last month's "pencil test," you're halfway through our "MFA" course (mastering freehand animation) and should have a line animation of a character on an empty background ready to use in moving on to the final phases of the process. Having completed the drawing and testing segments—in which we learned how to use Deluxe-Paint III's (Electronic Arts) Fix and Free Background features to simulate an animator's light table—we focus this month on coloring, compositing elements, and post-production enhancement.

Before we start coloring with the Fill tool, let's first take a look at the palette. If you want the animated character to be in a painted or digitized scene, the palette colors of that IFF image will determine the palette for the character as well. Create such a background image as a separate IFF file and save it. If there are specific colors you want in your animated character—flesh tones, for example—build them into the background palette ahead of time. (See *Accent's* "Forced Palettes" column, February '90, p. 70, for some extremely helpful techniques on digitizing a background.) Load the line animation from the Anim section of the menu, hit "j" from the keyboard to switch to the scratch screen, and load the background image to that screen. The animation palette will now be that of the background image.

COLORFUL CHARACTER

Switch back to the animation screen and see what color the lines of the animated character have become under the new palette. If you want to change the color of those lines, do it now—before coloring the image—by selecting the current line color as the background color, and the desired line color as the foreground color. Go to Change Color under the

Picture menu and select BG > FG. The program will go through every frame automatically and change the background color to the foreground color without affecting the palette. Black lines are a good standby for line color, but gray or other colors can also be effective.

Color the animation with the Fill tool, "f" on the keyboard. Select each color for the character and fill the outlined areas frame by frame advancing with the 2 key. Finish with one color completely, then choose the next. For example, go completely through the animation with the flesh color, then choose a hair color and go through the sequence again. This method helps you track areas of color across a sequence of frames. When you are finished, run the animation with the 4, 5, or 6 key to evaluate it. When you are satisfied, save it to disk.

Now go to Anim Brush in the Anim menu and select Pickup. Make sure the background color is transparent, and hit SHIFT-1 to put you at frame one of the anim. As you would with a normal brush, drag a box around the entire character, leaving room for any movement there might be in successive frames. The entire animated sequence will be picked up as an anim brush with no apparent background. Save it under the Animbrush submenu.

Go to Frames under the Anim menu, memorize the number of frames in the Anim, then select Delete All. Hit the j key to switch to the background image on your scratch screen. Now return to Frames in the Anim menu and re-create the same number of frames. The background image is duplicated over the entire sequence. If you have not selected another brush in the meantime, the animbrush is still attached to the pointer. Set the animbrush to its first frame in Animbrush Settings and position it where you

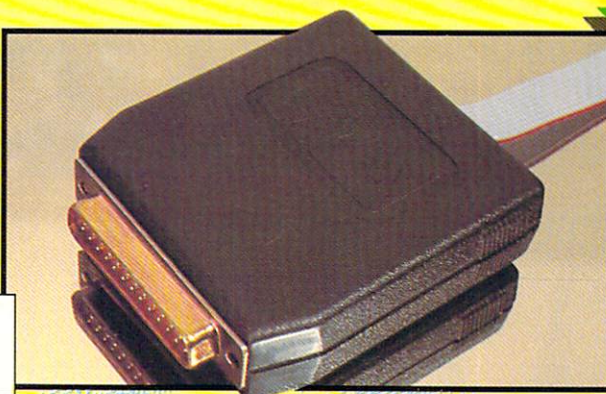
SYNCHRO EXPRESS...

THE WORLD'S MOST POWERFUL DISK COPIER IS HERE!!

**THE TOTAL
DISK BACKUP
SOLUTION!!**

SYNCHRO EXPRESS IS
AVAILABLE FOR BOTH ST
AND AMIGA - PLEASE
STATE WHICH REQUIRED.

**NOW YOU CAN
BACK-UP ANY DISK IN
UNDER 50 SECONDS!!**



**BACKUP ANY DISK
IN UNDER
50
SECONDS!!**

CARTRIDGE
CONNECTS TO
PARALLEL
(PRINTER)
PORT.

**COMPLETE
HARDWARE/
SOFTWARE
SYSTEM
\$69.99***

YES IT'S TRUE! SYNCHRO EXPRESS IS A HARDWARE/SOFTWARE SYSTEM THAT WORKS WITH "DIGITAL IMAGE COPYING". THIS IS THE METHOD THAT COMMERCIAL DUPLICATORS ACTUALLY USE TO MAKE THE ORIGINAL FROM THE MASTER DISK. DATA IS TRANSFERRED AS RAW DIGITAL INFORMATION.

**CUSTOM
LSI
CHIP**



LATEST CUSTOM LSI CHIP TECHNOLOGY

By using an on-board custom LSI Chip, Synchro Express has the power to transfer an MFM image of the original disk directly to your blank disk - quickly, simply and without any user knowledge. So it doesn't matter what kind of Data is there or whether the disk is "protected" - Synchro Express will make an identical "Clone" of your original without fuss. One external disk drive is required.

- 100% SUCCESS? - In our recent tests we were unable to find a single program that Synchro Express could not backup - this includes ALL the latest Blockbusters and utilities!! Start protecting your software investment now.
- Remember this process is both simple and fast. No parameters or patches are required.
- Menu Drive Control Program couldn't be simpler!! Select Number of Tracks, and that's it!! Don't be misled by outrageous claims for "Nibbler" programs. This system can guarantee success by using the very Hardware/Software techniques that made the original!!

WHY WILL SYNCHRO EXPRESS SUCCEED WHERE OTHERS FAIL?

- Some programs now have very sophisticated protection including long tracks, Incryption, etc. But remember, whatever the programmer comes up with, the disk then has to be commercially duplicated. That's where Synchro Express beats all others - it transfers data at MFM/TTL level, just like the duplicators.

POWER BY DESIGN

- Synchro Express is designed in Europe where "Digital Image Copying" is the present sensation. This device, with its custom chip, goes even further by offering a complete system for under \$70!!
- Manufactured in our European facility using the latest Surface Mount Techniques - Synchro Express is warranted for 6 months against manufacturing defects.



HOW TO GET YOUR SYNCHRO EXPRESS

FAST....

CALL TOLL FREE - 1 - 800 - 962 - 0494 - ORDERS ONLY

WE WILL PROCESS YOUR ORDER QUICKLY AND EFFICIENTLY TO ENABLE YOU TO START RECEIVING THE BENEFITS OF YOUR SYNCHRO EXPRESS WITHIN DAYS, NOT WEEKS. OUR MULTI-USER XENIX BASED ORDER PROCESSING SYSTEM CONTROLS YOUR ORDER FROM THE MOMENT YOU PLACE IT RIGHT THROUGH TO DESPATCH. ORDERS NORMALLY DESPATCHED WITHIN 48 Hrs.



**WE ACCEPT MASTERCARD/VISA/CHECKS/MONEY
ORDERS or CODS (ADD \$2)**



**COAST TO COAST
TECHNOLOGIES**

1855 W. STATE ROAD, 434 SUITE 208, LONGWOOD, FLORIDA 32750
TECHNICAL/CUSTOMER SERVICE 407-767-0779



* ADD \$4.00
SHIPPING/HANDLING
(\$10.00 CANADA/MEXICO)

PRESENTING

WORLD OF AMIGA

IN NEW YORK CITY

★ *Starring* ★
THE AMAZING AMIGA

★ *Featuring* ★

**Amiga Hardware • Amiga Software • Amiga Accessories
Seminars • Stage Presentations • Clinics • Bargains**

**Pier 92, New York Passenger Ship Terminal,
New York, New York**

April 27-28, 1990

Friday and Saturday 10 am-5pm

Pre-registration \$10 for both days

Deadline for pre-registration April 12

Registration at show:

\$10 for single day

\$15 for both days

Admission includes exhibits, seminars, clinics
and stage presentations.

Restricted to persons 12 years of age and older.



**WORLD OF
AMIGA
IN NEW YORK CITY**

Produced by
World of
Commodore Shows,
The Hunter Group

For more information call (416) 595-5906 or fax (416) 595-5093.

SAVE WITH PRE-REGISTRATION

Please register me for World of Amiga in New York City at the
Special Pre-registration Rate of \$10 for April 27 and 28, 1990.

NAME _____

COMPANY (if applicable) _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

Payment by ☐ Check or Money Order enclosed ☐ Visa ☐ MasterCard

Credit card # _____ Expiry date _____

Name on card _____ Signature _____

Make Check or Money Order payable to
The Hunter Group, 3380 Sheridan Drive, Suite 120, Amherst, NY 14226

Circle 151 on Reader Service card.

Open Any Drawer and Discover Something Extraordinary!

Introducing the AmigaWorld Tool Chest, an Amiga software celebration that makes you even more creative and productive than ever before!

Entertaining games, useful utilities, professional clip art, detailed animation, wild sound effects, music, and more... exclusively from the AmigaWorld Tool Chest.

Users of every Amiga model—and at every level of computing skill—will be thrilled with these top quality programs and tools. Released in a two-disk set every other month, the AmigaWorld Tool Chest is a fantastic way to enhance your computing career.

CREATIVITY

The Amiga is a graphic goldmine, and the Tool Chest has plenty of nuggets ready for you to find!

Each issue brings you elaborate animation objects, ready for you to make them come alive in your own creations! Choose from a multitude of vector images, from out-of-this-world spaceships to exquisite dinner table objects, lamps, and more!

Are you into desktop publishing or desktop design? Looking for original clip art to incorporate into your IFF paint programs? Then you'll be overjoyed with each issue's collection of clip art that's been specially commissioned from some of the most talented Amiga artists around.

Plus there's an ample supply of sound and music accessories. Be it bizarre sound clips, melodious music, or computer speech utilities, the Tool Chest will have your audiences clamoring for encore performances!

PRODUCTIVITY

Of course the Amiga can handle all those traditional personal computer chores as well, and the Tool Chest will continuously complement your software collection with useful utilities and original productivity programs.

Discovered a corrupted disk? Need to recover a deleted file? Problems in formatting a bunch of new disks? The Tool Chest is here to help! We'll save you time, money, and needless aggravation with programs like TJ Format and Disk Salvage.

Contents of Volume 1, #4 (Available as a back issue)

Tic Tac Toe 3D

MicroMan graphic arcade game

Sounds variety of digitized sounds

Pteronadonaball 3D animation

Graph 3D create and view 3D graphs

Amigo File address book

Spectrogram creates audio spectrograms

3D Vector Objects

3D Lamps

Clip Art images of food

Plus, the Tool Chest is specifically designed to be a productivity tool, with useful programs like Chartmaster, a powerful data graphing tool. And Iconmeister, an advanced icon editor with a complete set of drawing tools.

FUN and GAMES

Each issue of the Tool Chest will also entertain you with one or more games, each of them new, each capturing the Amiga's fantastic sound or graphic sophistication. You might find *Shark!*, a gobbling-game that utilizes digitized sound for maximum effect. Or *Crystal Caverns*, a neat magic adventure that's full of color and a whole lot of fun.

PLUS—AN ORIGINAL

ANIMATION IN EVERY ISSUE!

Complete with player program, each Tool Chest edition will delight and fascinate you and your friends with original creations from leading Amiga animators. Classic, colorful, inventive, these are animations you'll want to see and show again and again! And throughout the year, your animation library will continue to grow in both value and variety!

All this for just \$14.95 per two-disk edition! Try it for yourself! To order, use the coupon below, or look for the special flier inserted in this issue. Or for immediate service, call 1-800-343-0728.

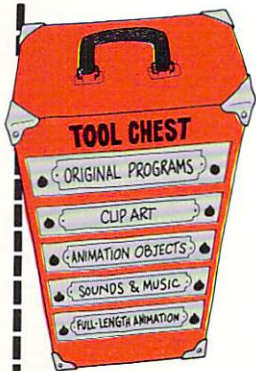
CHARTER SUBSCRIPTION OFFER!

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.
- AmigaWorld subscription/renewal discount certificate.
- Discount on AmiExpo admissions!
- PLUS! Full Money Back Guarantee. If you are not completely satisfied with the AmigaWorld Tool Chest, simply return it for an immediate refund.

The **AMIGA**
WORLD

TOOL CHEST



☐ **YES!** Send me the following AmigaWorld Tool Chest Edition(s) for only \$14.95 each:

____ Vol. 1, #4 (see above)
____ Vol. 1, #5 (coming soon)

☐ 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 1 MB of memory.

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

1-800-343-0728 • 1-603-924-9471

TC9004

GRAPHICS

3 Domain	\$ 72
Animator/Imagines	67
Award Maker Plus	34
Award Maker Sports Disk	20
B Paint	27
Board Master	74
Butcher 2.0	25
Calligrapher	69
Chroma Paint	69
Comic Setter	59
Comic Setter Data Disks	25
Deluxe Paint II	84
Deluxe Paint III	104
Deluxe PhotoLab	104
Deluxe Print II	61
Design 3D	59
Digi-Droid	74
Digi-Print 3.0	63
Digi-View Gold 4.0	131
Elan Performer	43
Express Paint 3.0	55
Fancy 3-D Fonts	55
Font-Works	67
Frame Grabber SW	74
GrabIt	24
Interchange	40
Interchange Object	15
InterFont	176
Modeler 3D	49
Opticks	124
PageRender 3D	108
Photon Paint II	99
Photon Paint Expansion	23
Photon Video EDP	33
Pixmate	54
Print Master Art Gallery 1 or 2	20
Print Master Fantasy	22
Print Master Fonts & Borders	24
Print Master Plus	34
Scambl	Call
Sculpt 3D XL	130
Sculpt-A-Mate 4D	399
Sculpt-A-Mate 4D Jr.	Call
Terrain Disk	22
Turbo Silver	109
Turbo Silver Conversion	15
Turbo Silver Video	39
Vid Gen	99
Videopack 3D 2.0	122
Wrap Session	59

Abacus Desktop Video Book	18
Animagic	66
Animation: Editor	40
Animation: Effects	35
Animation: Flipper	40
Animation: Multilane	69
Animation: Rotoscope	53
Animation: Soundtrack	89
Animation: Stand	35
Animation: Video Title	44
Animator: Apprentice	225
Animator: Pro	67
Broadcast Title	199
Caligari Consumer	165
Deluxe Productions	129
Deluxe Video 1.2	84
Deluxe Video III	106
Digi-Works 3D	90
Director	45
Director Toolkit	28
Director Video Tutorial	31
Easy Title	34
Fantavision	39
Font Libraries for PV+ (each)	79
Invision (Requires Live! New Version)	141
Lights Camera Action	58
Movie Setter	68
Movie Setter Data Disks	24
MovieFlipper F/X	101
Photon Vid. Cal Animator	108
Photon Vid. Transporter	215
Pro Video Gold	199
Pro Video Gold Fonts (each)	77
Scene Generator	29
TV Graphics	36
TV Show	74
Video Effects 3D	112
Video Title v1.1	99
VIVA!	140
Zootrope	92

Abacus Desktop Video Book	18
Animagic	66
Animation: Editor	40
Animation: Effects	35
Animation: Flipper	40
Animation: Multilane	69
Animation: Rotoscope	53
Animation: Soundtrack	89
Animation: Stand	35
Animation: Video Title	44
Animator: Apprentice	225
Animator: Pro	67
Broadcast Title	199
Caligari Consumer	165
Deluxe Productions	129
Deluxe Video 1.2	84
Deluxe Video III	106
Digi-Works 3D	90
Director	45
Director Toolkit	28
Director Video Tutorial	31
Easy Title	34
Fantavision	39
Font Libraries for PV+ (each)	79
Invision (Requires Live! New Version)	141
Lights Camera Action	58
Movie Setter	68
Movie Setter Data Disks	24
MovieFlipper F/X	101
Photon Vid. Cal Animator	108
Photon Vid. Transporter	215
Pro Video Gold	199
Pro Video Gold Fonts (each)	77
Scene Generator	29
TV Graphics	36
TV Show	74
Video Effects 3D	112
Video Title v1.1	99
VIVA!	140
Zootrope	92

Abacus Desktop Video Book	18
Animagic	66
Animation: Editor	40
Animation: Effects	35
Animation: Flipper	40
Animation: Multilane	69
Animation: Rotoscope	53
Animation: Soundtrack	89
Animation: Stand	35
Animation: Video Title	44
Animator: Apprentice	225
Animator: Pro	67
Broadcast Title	199
Caligari Consumer	165
Deluxe Productions	129
Deluxe Video 1.2	84
Deluxe Video III	106
Digi-Works 3D	90
Director	45
Director Toolkit	28
Director Video Tutorial	31
Easy Title	34
Fantavision	39
Font Libraries for PV+ (each)	79
Invision (Requires Live! New Version)	141
Lights Camera Action	58
Movie Setter	68
Movie Setter Data Disks	24
MovieFlipper F/X	101
Photon Vid. Cal Animator	108
Photon Vid. Transporter	215
Pro Video Gold	199
Pro Video Gold Fonts (each)	77
Scene Generator	29
TV Graphics	36
TV Show	74
Video Effects 3D	112
Video Title v1.1	99
VIVA!	140
Zootrope	92

Abacus Desktop Video Book	18
Animagic	66
Animation: Editor	40
Animation: Effects	35
Animation: Flipper	40
Animation: Multilane	69
Animation: Rotoscope	53
Animation: Soundtrack	89
Animation: Stand	35
Animation: Video Title	44
Animator: Apprentice	225
Animator: Pro	67
Broadcast Title	199
Caligari Consumer	165
Deluxe Productions	129
Deluxe Video 1.2	84
Deluxe Video III	106
Digi-Works 3D	90
Director	45
Director Toolkit	28
Director Video Tutorial	31
Easy Title	34
Fantavision	39
Font Libraries for PV+ (each)	79
Invision (Requires Live! New Version)	141
Lights Camera Action	58
Movie Setter	68
Movie Setter Data Disks	24
MovieFlipper F/X	101
Photon Vid. Cal Animator	108
Photon Vid. Transporter	215
Pro Video Gold	199
Pro Video Gold Fonts (each)	77
Scene Generator	29
TV Graphics	36
TV Show	74
Video Effects 3D	112
Video Title v1.1	99
VIVA!	140
Zootrope	92

Abacus Desktop Video Book	18
Animagic	66
Animation: Editor	40
Animation: Effects	35
Animation: Flipper	40
Animation: Multilane	69
Animation: Rotoscope	53
Animation: Soundtrack	89
Animation: Stand	35
Animation: Video Title	44
Animator: Apprentice	225
Animator: Pro	67
Broadcast Title	199
Caligari Consumer	165
Deluxe Productions	129
Deluxe Video 1.2	84
Deluxe Video III	106
Digi-Works 3D	90
Director	45
Director Toolkit	28
Director Video Tutorial	31
Easy Title	34
Fantavision	39
Font Libraries for PV+ (each)	79
Invision (Requires Live! New Version)	141
Lights Camera Action	58
Movie Setter	68
Movie Setter Data Disks	24
MovieFlipper F/X	101
Photon Vid. Cal Animator	108
Photon Vid. Transporter	215
Pro Video Gold	199
Pro Video Gold Fonts (each)	77
Scene Generator	29
TV Graphics	36
TV Show	74
Video Effects 3D	112
Video Title v1.1	99
VIVA!	140
Zootrope	92

Abacus Desktop Video Book	18
Animagic	66
Animation: Editor	40
Animation: Effects	35
Animation: Flipper	40
Animation: Multilane	69
Animation: Rotoscope	53
Animation: Soundtrack	89
Animation: Stand	35
Animation: Video Title	44
Animator: Apprentice	225
Animator: Pro	67
Broadcast Title	199
Caligari Consumer	165
Deluxe Productions	129
Deluxe Video 1.2	84
Deluxe Video III	106
Digi-Works 3D	90
Director	45
Director Toolkit	28
Director Video Tutorial	31
Easy Title	34
Fantavision	39
Font Libraries for PV+ (each)	79
Invision (Requires Live! New Version)	141
Lights Camera Action	58
Movie Setter	68
Movie Setter Data Disks	24
MovieFlipper F/X	101
Photon Vid. Cal Animator	108
Photon Vid. Transporter	215
Pro Video Gold	199
Pro Video Gold Fonts (each)	77
Scene Generator	29
TV Graphics	36
TV Show	74
Video Effects 3D	112
Video Title v1.1	99
VIVA!	140
Zootrope	92

GEN Animations	37
Heraldic Designs	27
Human Design	24
Kara Anim. Fonts 1	32
Kara Anim. Fonts 2	32
Kara Anim. Fonts 3	32
Kara Anim. Fonts 4	32
Kara Anim. Fonts 5	32
Kara Anim. Fonts 6	32
Kara Anim. Fonts 7	32
Kara Anim. Fonts 8	32
Kara Anim. Fonts 9	32
Kara Anim. Fonts 10	32
Kara Anim. Fonts 11	32
Kara Anim. Fonts 12	32
Kara Anim. Fonts 13	32
Kara Anim. Fonts 14	32
Kara Anim. Fonts 15	32
Kara Anim. Fonts 16	32
Kara Anim. Fonts 17	32
Kara Anim. Fonts 18	32
Kara Anim. Fonts 19	32
Kara Anim. Fonts 20	32
Kara Anim. Fonts 21	32
Kara Anim. Fonts 22	32
Kara Anim. Fonts 23	32
Kara Anim. Fonts 24	32
Kara Anim. Fonts 25	32
Kara Anim. Fonts 26	32
Kara Anim. Fonts 27	32
Kara Anim. Fonts 28	32
Kara Anim. Fonts 29	32
Kara Anim. Fonts 30	32
Kara Anim. Fonts 31	32
Kara Anim. Fonts 32	32
Kara Anim. Fonts 33	32
Kara Anim. Fonts 34	32
Kara Anim. Fonts 35	32
Kara Anim. Fonts 36	32
Kara Anim. Fonts 37	32
Kara Anim. Fonts 38	32
Kara Anim. Fonts 39	32
Kara Anim. Fonts 40	32
Kara Anim. Fonts 41	32
Kara Anim. Fonts 42	32
Kara Anim. Fonts 43	32
Kara Anim. Fonts 44	32
Kara Anim. Fonts 45	32
Kara Anim. Fonts 46	32
Kara Anim. Fonts 47	32
Kara Anim. Fonts 48	32
Kara Anim. Fonts 49	32
Kara Anim. Fonts 50	32
Kara Anim. Fonts 51	32
Kara Anim. Fonts 52	32
Kara Anim. Fonts 53	32
Kara Anim. Fonts 54	32
Kara Anim. Fonts 55	32
Kara Anim. Fonts 56	32
Kara Anim. Fonts 57	32
Kara Anim. Fonts 58	32
Kara Anim. Fonts 59	32
Kara Anim. Fonts 60	32
Kara Anim. Fonts 61	32
Kara Anim. Fonts 62	32
Kara Anim. Fonts 63	32
Kara Anim. Fonts 64	32
Kara Anim. Fonts 65	32
Kara Anim. Fonts 66	32
Kara Anim. Fonts 67	32
Kara Anim. Fonts 68	32
Kara Anim. Fonts 69	32
Kara Anim. Fonts 70	32
Kara Anim. Fonts 71	32
Kara Anim. Fonts 72	32
Kara Anim. Fonts 73	32
Kara Anim. Fonts 74	32
Kara Anim. Fonts 75	32
Kara Anim. Fonts 76	32
Kara Anim. Fonts 77	32
Kara Anim. Fonts 78	32
Kara Anim. Fonts 79	32
Kara Anim. Fonts 80	32
Kara Anim. Fonts 81	32
Kara Anim. Fonts 82	32
Kara Anim. Fonts 83	32
Kara Anim. Fonts 84	32
Kara Anim. Fonts 85	32
Kara Anim. Fonts 86	32
Kara Anim. Fonts 87	32
Kara Anim. Fonts 88	32
Kara Anim. Fonts 89	32
Kara Anim. Fonts 90	32
Kara Anim. Fonts 91	32
Kara Anim. Fonts 92	32
Kara Anim. Fonts 93	32
Kara Anim. Fonts 94	32
Kara Anim. Fonts 95	32
Kara Anim. Fonts 96	32
Kara Anim. Fonts 97	32
Kara Anim. Fonts 98	32
Kara Anim. Fonts 99	32
Kara Anim. Fonts 100	32

GEN Animations	37
Heraldic Designs	27
Human Design	24
Kara Anim. Fonts 1	32
Kara Anim. Fonts 2	32
Kara Anim. Fonts 3	32
Kara Anim. Fonts 4	32
Kara Anim. Fonts 5	32
Kara Anim. Fonts 6	32
Kara Anim. Fonts 7	32
Kara Anim. Fonts 8	32
Kara Anim. Fonts 9	32
Kara Anim. Fonts 10	32
Kara Anim. Fonts 11	32
Kara Anim. Fonts 12	32
Kara Anim. Fonts 13	32
Kara Anim. Fonts 14	32
Kara Anim. Fonts 15	32
Kara Anim. Fonts 16	32
Kara Anim. Fonts 17	32
Kara Anim. Fonts 18	32
Kara Anim. Fonts 19	32
Kara Anim. Fonts 20	32
Kara Anim. Fonts 21	32
Kara Anim. Fonts 22	32
Kara Anim. Fonts 23	32
Kara Anim. Fonts 24	32
Kara Anim. Fonts 25	32
Kara Anim. Fonts 26	32
Kara Anim. Fonts 27	32
Kara Anim. Fonts 28	32
Kara Anim. Fonts 29	32
Kara Anim. Fonts 30	32
Kara Anim. Fonts 31	32
Kara Anim. Fonts 32	32
Kara Anim. Fonts 33	32
Kara Anim. Fonts 34	32
Kara Anim. Fonts 35	32
Kara Anim. Fonts 36	32
Kara Anim. Fonts 37	32
Kara Anim. Fonts 38	32
Kara Anim. Fonts 39	32
Kara Anim. Fonts 40	32
Kara Anim. Fonts 41	32
Kara Anim. Fonts 42	32
Kara Anim. Fonts 43	32
Kara Anim. Fonts 44	32
Kara Anim. Fonts 45	32
Kara Anim. Fonts 46	32
Kara Anim. Fonts 47	32
Kara Anim. Fonts 48	32
Kara Anim. Fonts 49	32
Kara Anim. Fonts 50	32
Kara Anim. Fonts 51	32
Kara Anim. Fonts 52	32
Kara Anim. Fonts 53	32
Kara Anim. Fonts 54	32
Kara Anim. Fonts 55	32
Kara Anim. Fonts 56	32
Kara Anim. Fonts 57	32
Kara Anim. Fonts 58	32
Kara Anim. Fonts 59	32
Kara Anim. Fonts 60	32
Kara Anim. Fonts 61	32
Kara Anim. Fonts 62	32
Kara Anim. Fonts 63	32
Kara Anim. Fonts 64	32
Kara Anim. Fonts 65	32
Kara Anim. Fonts 66	32
Kara Anim. Fonts 67	32
Kara Anim. Fonts 68	32
Kara Anim. Fonts 69	32
Kara Anim. Fonts 70	32
Kara Anim. Fonts 71	32
Kara Anim. Fonts 72	32
Kara Anim. Fonts 73	32
Kara Anim. Fonts 74	32
Kara Anim. Fonts 75	32
Kara Anim. Fonts 76	32
Kara Anim. Fonts 77	32
Kara Anim. Fonts 78	32
Kara Anim. Fonts 79	32
Kara Anim. Fonts 80	32
Kara Anim. Fonts 81	32
Kara Anim. Fonts 82	32
Kara Anim. Fonts 83	32
Kara Anim. Fonts 84	32
Kara Anim. Fonts 85	32
Kara Anim. Fonts 86	32
Kara Anim. Fonts 87	32
Kara Anim. Fonts 88	32
Kara Anim. Fonts 89	32
Kara Anim. Fonts 90	32
Kara Anim. Fonts 91	32
Kara Anim. Fonts 92	32
Kara Anim. Fonts 93	32
Kara Anim. Fonts 94	32
Kara Anim. Fonts 95	32
Kara Anim. Fonts 96	32
Kara Anim. Fonts 97	32
Kara Anim. Fonts 98	32
Kara Anim. Fonts 99	32
Kara Anim. Fonts 100	32

WORD PROCESSING AND DTP	
City Desk 2.0	134
CyrusEd	67
Excellence! (Req. 1MB)	159
Flow	69
Gold Spell 2	34
Kind Words 2.0	74
Micro Text	25
Level Page Set II	19
PageStream	123
PageStream Fonts (each)	27
PageStream Forms	28
Pen Pal	99
Pro Templates	38
Professional Page 1.3	214
Profonts (each)	26
Promise	39
ProScript	33
ProText	139
ProWrite 2.5	75
Reason	279
Scribble! Platinum	99
Transcript	47
WordPerfect (Updated I)	179

PRICES • BEST SELECTION

HARDWARE...HARDWARE...HARDWARE...HARDWARE

A-SQUARED Live - A1000 \$259 Live - A500 345 Live - A2000 Call	HEWLETT-PACKARD New! Deskjet + Call New! PaintJet Call Deskjet printer driver available!	PRACTICAL SOLUTIONS Mouse Master 31
ANAKIN Easy! - A1000 369 Easy! - A500 359 Easy! - A2000 399	IMTRONICS New! WIZRAM Call	PRO PRINT Paper for Ink Jet Printers... 15
APPLIED VISIONS FutureSound (A1000)..... 144 New! FutureSound A500/2000... 95	INKWELL Light Pen 99	PROGRESSIVE PERIPHERALS Frame Grabber Call New! MiniGen 209 Pro Gen Genlock 349
ASDG New! JX-100 Scanner w/ SW... 899 Multi Port Serial Card Call New! Scanlab Call	IVS Trump Card 500 Call Trump Card 2000 Call	QUANTUM ProDrive 40S 460 ProDrive 80S 690 ProDrive 105S 780
CALIFORNIA ACCESS CA-860 3.5" Drive 127	KETEK Command Center Sale!	RD & L PRODUCTIONS New! A Pro Draw In Stock!
CITIZEN New! 24-Pin Color Printer Call	MAGNI Magni 4000 In Stock! Magni 4000-S In Stock!	SAFESKIN Clear Keyboard Covers 19 Specify Amiga model
COMMUNICATION SPECIALTIES Gen One Lowest!	M.A.S.T. Unidrive 129 Twin Drive 249	SHARP New! JX-100 Scanner w/SW... 899 JX-450 Scanner Call
CSA New! Midget Racer HOT Now 100% compatible with games!	MAXIMUM New! Yoke for Flight Simulator... 78	SONY 1302 MultiScan Call
DIGITAL CREATIONS SuperGen 644 SuperGen SC Call New! SuperGen 2000S Call New products coming soon!	MICROBOTICS Starboard II (All Sizes) Call Multifunction Module 75 SCSI Module 103 8 Up (A2000) Call Hard Frame In Stock! Pop SIMMs Call See overleaf for new low prices!	SOUTHERN TECH My-T Mouse 42
ECE MIDI for A500/A1000/ A2000 58	MICROWAY Flicker Fixer 469 New! Genlock Upgrade 49 PAL version available!	SPIRIT TECHNOLOGY Up to 1.5MB for A1000... Call Up to 1.5MB for A500 Call Hard Disk Interfaces Call All RAM on Sale Now!
EXPANSION TECHNOLOGIES Tool Box In Stock! New! A500 Power Supply 94	MIMETICS Amigen Genlock 149 Audio Digitizer 85 MIDI Interface for A500 and A2000 45	STAR MICRONICS NX1000 Rainbow 259 NX1000 Black 190
GO AMIGO! Disk Head Cleaner 15 30 Disk Case 10 ImageWriter II Cable Call Printer Cable 20 Modem Cable 20 Mouse Pad 10 Sony Cables Call FlickerFixer Cables Call Custom Cables Call	MITSUBISHI DiamondScan Monitors... Call Great for video!	SUNRAZE INDUSTRIES Perfect Sound 69 Color Splitter Call
GOLD DISK New! Pro Scan In Stock!	NEC MultiSync Monitors Call We have all the right cables!	SURFSIDE Master 3A 3.5" 129
GRAVIS New! MouseStick 89 New! SwitchStick 37 The best joystick!	NERIKI New! Neri Desktop 919 New! Neri Imagemaster Call	SUPRA 2400 Modem 115 2400z Internal (A2000)... 139 Hard Drives Call RAM Boards Call Removable Media Call See overleaf for complete listing!
GREAT VALLEY PRODUCTS 68030 Accelerators Call Impact SCSI/RAM Call A2000 Hard Cards Call A500 Products Call Streaming Tape Call Removable Media Call See overleaf for new low prices!	OKIDATA Okimate 20 with Plug n' Print 199 Black Ribbon 6 Color Ribbon 7	TECHNICOVER Cover for A500 14 Cover for A1000 17 Cover for A2000 17
HAITEX X-Specs 3D 97	PACIFIC PERIPHERALS Subsystem 500 219 Subsystem 500 w/3.5" 365	WICO Trackball 39
	PANASONIC New! WV1500 Camera In Stock! WV1410 Camera/Lens 239 Variable Iris Lens 79 1180i Printer Call 1191i Printer Call 1124 Printer Call	VID TECH Scanlock 869 Scanlock Power 69 GA is the #1 Scanlock Dealer!
	PASSPORT DESIGN New! MIDI Interface Call	VISUAL AURALS Mindlight 7 178
		XETEC FastCard A2000 135 FastTrak A1000 339 FastTrak A500 339 RAM Module for A1000 99 RAM Module for A500 99 Call for latest SIM/drive prices!

A1000 Owners!!!

Call today for a
special offer!



Time is running out!



Best of Public Domain!

Harv Laser's
top 20 on
4 disks for
only **\$23**

From Premier Software -
#1 in PD Software



Vision FX HOT!

- SuperSharp AnimFonts - \$59
- SuperSharp ColorFonts - \$59

Electronic Arts Special

TV Sports
Basketball
Only **\$33!**



xetec

FastTrak with
40MB Quantum Drive
and 2MB RAM

\$999

For A500 or A1000.

See overleaf for complete listing.

Orders Only: **800-BE-AMIGA™**

In California: **800-843-2842**

Customer Service: **415-364-9714**

Facsimile (FAX): **415-365-2073**

Now on CompuServe:
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 \$3.00 per item using UPS Ground service (max. \$9.00) or \$4.50 per item using UPS 2nd Day Air Service (max. \$13.50). For Airborne shipping rates and conditions, see first page. Alaska, Hawaii, APO, Mail, foreign shipping extra. Call for hardware rates and other shipping info. ***RETURN & REFUND POLICY:** All returns must have an RMA-#. Call Customer Service to request one. Defective merchandise under warranty will be repaired or replaced. Returned product must be returned postage prepaid with all original packaging. Exchanges for same product only. **OTHER POLICIES:** We don't charge your card until the product ships. Purchase order customers must have credit application on file. No surcharge for VISA and MC. When ordering with credit card, please include exp. date and name of bank!

Amiga is a trademark of Commodore-Amiga. Samuel Alan Drexler, January 10, 1990, 6 lbs. 11 oz. Delivery subject to product availability • Prices subject to change • Circle 26 on Reader Service Card

FOUR PAGES OF SAVINGS!

SPECIALS...HARDDRIVE & MEMORY SPECIALS...HARD

A500

MICROBOTICS

M501 \$ 99

SPIRIT BOARD

0K 239
512K 299
1MB 369
1.5MB 429

SUPRA DRIVES

20MB 499
30MB 609
40MB 709
80MB 950
44MB Removable 1,169
2MB RAM 275
SCSI Interface 189
512K RAM Expansion 94

Prices are falling — Call for latest!

XETEC

FastTrak 500 329

A1000

STARBOARD II

0K \$239
512K 289
1MB 339
2MB 449
MultiFunction Module 75
SCSI Module 99

Call for current prices!

SPIRIT BOARD

0K 239
512K 289
1MB 339
1.5MB 369

Call for current prices!

SUPRA DRIVES

20MB 599
30MB 679
40MB 789
80MB 1,024
44MB Removable 1,249
SCSI Interface 209

Prices are falling — Call for latest!

XETEC

FastTrak 1000 329

A2000

GVP '030 ACCELERATORS

25Mhz, '882, 4MB 2,399
With 40MB Drive 2,849
With 80MB Drive 3,224
16Mhz, '882, 4MB 1,999

With 40MB Drive 2,449
With 80MB Drive 2,824
4MB Upgrade (w/Bd) 1,500
4MB Upgrade (no Bd) 999
25Mhz, No '882, No RAM 779

Many Configurations Available

GVP HARD DRIVES

HC2/40Q 749
HC2/80Q 1,029
HC2/100Q 1,099
Impact 8/0 319
Impact 8/2 519
Impact 8/4 719
Impact 8/6 919
Impact 8/8 1,119
Streaming Tape Call
Removable Media Call

MICROBOTICS 8UP

0K 159
2MB 309
4MB 459
6MB 609
8MB 759

Memory Prices Are Changing!

MICROBOTICS HARD FRAME

No Drive 239
With 40MB Quantum 699
With 80MB Quantum 1,019
With 105MB Quantum 1,099

Other Drives Available!

SUPRA A2000 RAM BOARDS

0K 159
2MB 309
4MB 459
6MB 609
8MB 759

SUPRA WORDSYNC CONTROLLER

No Drive 179
With 40MB Quantum 629
With 80MB Quantum 869
With 105MB Quantum 949
External 44MB Removable 1,039
Internal 44MB Removable
(includes controller) 1,039

Other Drives Available!

QUANTUM HARD DRIVES

ProDrive 40S 460
ProDrive 80S 749
ProDrive 105S 849

XETEC

FastCard A2000 134
With 40MB Quantum 589
With 80MB Quantum 799
With 105MB Quantum 899

Extremely Fast!

ONLY GO AMIGO!

- Airborne Express shipping • Largest inventory • Oldest, largest Amiga-only dealer
- Best order processing system • Courteous, knowledgeable staff • No membership fee!

PenPal

- Top-rated word processor
- Outstanding output on any printer
- Integrated text/graphics
- Built-in database
- Special price through 4/30/90

\$92

BARS & PIPES



- Revolutionary MIDI controller
- Full power, but easy to use

Only \$185

Attention Shoppers!

Don't forget, Go Amigo will meet or beat any legitimate deal on any Amiga product. You **can** have it all — **best** products, **best** prices, **best** service!

GO AMIGO KNOWS VIDEO

Do you use your Amiga for video? We are experts in titling, animation, and editing — and we have all the products you need to be successful.

Call for our Amiga Video Brochure!

**MORE
SPECIALS
INSIDE!**

TO ORDER
CALL
TOLL-FREE:

800-BE-AMIGA™

(800-232-6442)

IN CALIFORNIA CALL:
800-843-2842

Put the finishing touches on your animation with these tips on coloring, compositing elements, and post-production enhancement.

want it on frame one of the anim itself. Take your hand carefully away from the mouse, leaving the brush in position. Hold down the "animpainting" key to the left of the space bar, and press the Left Alt key. This simulates pressing the left mouse button and stamps down successive frames of the animbrush frame by frame on the background in the animation. The advantage is that you run no risk of accidentally moving the mouse during the process.

FINISHING TOUCHES... POST-PRODUCTION FRILLS

Play the animation to evaluate it. You have now composited one animation element with another. You can repeat the process indefinitely, building an animation in layers. At this point, you could decide, say, to add birds flying through the scene, put a border around the screen, or move clouds in the sky—all by creating those elements separately and compositing them into the animation as brushes. This is a powerful approach to animation, as well as an excellent use of the computer. Remember that the curve, freehand, and straight-line tools can also work across the entire sequence of an animation. To do this, go to the Spacing requester by clicking the right mouse button in an unfilled line tool. Select N Total and set it to the number of frames in the animation. On frame one of the animation, hold down the animpainting key and press the mouse button with the brush positioned at the desired starting point of a movement. Stretch the line to the desired end point and release the button. Each stamp of the brush will be on a successive frame, and the result will be a smooth, controlled brush or animbrush movement during the animation.

Your finished anim is only the starting point for the final phase of the process—



Here in "Cartoon" the author has colored the character with DPaint's Fill tool and composited it into the painted background as an animbrush. Using The Director for post-production enhancement, he then page-flipped the moon across the sky at a different rate.

post-production enhancement. You may want to turn to a program such as The Director (Right Answers Group) to, say, add sound effects, mouse or keyboard interactivity, or fading titles and credits. Perhaps you might chain multiple anims together, or experiment with effects requiring frame-by-frame control over anim playback. For instance, try reading in text from an external file for display during anim playback.

One of my favorite tricks makes use of the partial-screen page-flipping techniques I outlined in an earlier column (see June '89, p. 50). By combining this style of Director "BLIT" animation frame by frame with an anim, you can disguise the periodicity of the anim loop. For example, a blitted moon can rise

slowly in the sky over 20 or 30 cycles of a looping anim. Some of these added effects are easy to achieve with The Director, some are challenging, but putting these final touches on a production can provide polish and give a piece a truly professional look. Post-production techniques created with The Director were used in the last two winners of the prestigious BADGE (Bay Area Amiga Developers' Group) animation contest—and with a little effort you can add them to your work as well. ■

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.

GO AMIGO!™

THE WORLD'S LARGEST DISTRIBUTOR OF AMIGA™ PRODUCTS



**Supra
Corporation**

2400 Baud Modem with Cable — \$119

Internal for A2000 — \$129

"Diga!" for \$29 with modem (while they last!)

Prices include shipping in U.S.



GREAT VALLEY PRODUCTS

GVP's 68030 gives you 10 times the performance of a stock Amiga 2000!

68030 POWER!

**28MHz 68030,
28MHz 68882,
and 4MB RAM —
Only \$2,229**

► Now available at 33MHz and 40MHz! ◀

Entry-level boards from \$749. Go Amigo is the #1 GVP Dealer.

Digi-View 4.0

With Dynamic
Hi-Res!

\$129



Digi-Paint 3

The Ultimate
Paint Program!

\$62



WE RECOMMEND
CAN DO
FOR EVERY AMIGA!

CanDo!



Win a trip to AmiExpo
in Cologne, Germany.

Call for contest
details.

Intro Price

\$99



VidTech

Scanlock Mania!

- S-VHS In and Out
- NTSC In and Out
- Four Output Channels
- Super Clean Signal
- Slide Control Faders

\$869

Optional Power Supply \$69

**AIRBORNE
EXPRESS**

GO AMIGO GOES AIRBORNE!

**ORDER BY 1 PM PST AND RECEIVE YOUR
ORDER THE NEXT BUSINESS DAY**

• Software Rates: \$7 for first two items, \$3 for each additional
• Continental U.S. only • C.O.D. available • Low hardware rates
available • Call for complete details — not available to all areas.

NEW PRODUCTS EVERY DAY!

THE POWER BREAKS THROUGH...

AMIGA ACTION REPLAY™

ONLY
\$99.00

SHIPPING &
HANDLING \$4.00

THE WORLD'S MOST POWERFUL FREEZER-UTILITY CARTRIDGE IS HERE

JUST LOOK AT THE UNMATCHED RANGE OF FEATURES

■ **AMIGA ACTION REPLAY SIMPLY PLUGS INTO THE EXPANSION PORT OF YOUR AMIGA 500 AND GIVES YOU THE POWER TO FREEZE MOST ANY PROGRAM, THEN YOU CAN:-**

■ **SAVE THE ENTIRE PROGRAM IN MEMORY TO DISK**

Special compacting techniques enable upto 3 programs to fit on one disk. Unique FDOS power means that the programs reload at upto 4 TIMES FASTER than Amiga Dos - even independantly of the cartridge.

■ **UNIQUE INFINITE LIFE/TRAINER MODE**

Allows you to generate more and even infinite lives, fuel, ammo etc. Perfect as a trainer mode to get you past that "impossible" level. Very easy to use.

■ **SPRITE EDITOR**

The full sprite editor allows you to view/modify the whole sprite set including any 'attached' sprites.

■ **VIRUS DETECTION**

Comprehensive virus detection and removal features to protect your software investment. Works with all presently known viruses.

■ **SAVE PICTURES AND MUSIC TO DISK**

Pictures and sound samples can be saved to disk. Files are IFF format suitable for use with all the major graphic and music packages.

■ **SLOW MOTION MODE**

Now you can slow down the action to your own pace. Easily adjustable from full speed to 20% speed. Ideal to help you through the tricky parts!

■ **RESTART THE PROGRAM**

Simply press a key and the program will continue where you left off.

■ **FULL STATUS REPORTING**

At the press of a key now you can view the machine status. Including Fast Ram, Chip Ram, Ramdisk, Drive status, etc.

PLUS THE MOST POWERFUL MACHINE CODE FREEZER/ MONITOR

MORE FEATURE THAN YOU COULD EVER NEED. HERE ARE JUST SOME:

- Full M68000 Assembler/Disassembler
- Full screen editor
- Load /Save block
- Write string to Memory
- Jump to specific address
- Show Ram as text
- Show Frozen picture
- Play resident sample
- Show and edit all CPU registers and flags
- Calculator
- Help command
- Full search feature
- Unique Cutom Chip Editor allows you to see and modify all chip registers-even write only registers
- Notepad
- Disk handling - show actual track, Disk Sync pattern Etc.
- Dynamic Breakpoint handling
- Show memory as HEX, ASCII, Assembler, Decimal
- Copper Assemble/Disassemble.

REMEMBER AT ALL TIMES YOU ARE INTERROGATING THE PROGRAM IN IT'S "FROZEN" STATE WITH ALL MEMORY AND REGISTERS INTACT.-INVALUABLE FOR THE DE-BUGGER OR JUST THE INQUISITIVE!

HOW TO GET YOUR AMIGA ACTION REPLAY...

CALL TOLL FREE - 1 - 800 - 962 - 0494 - ORDERS ONLY

WE WILL DESPATCH YOUR ORDER QUICKLY & EFFICIENTLY TO ENABLE YOU TO START RECIEVING THE BENEFITS OF YOUR PURCHASE WITHIN DAYS, NOT WEEKS. WE ACCEPT MASTERCARD/VISA/CHECKS/MONEY ORDERS or CODS (ADD \$2)
ORDERS NORMALLY DESPATCHED WITHIN 48Hrs.



COAST TO COAST TECHNOLOGIES INC.,
1855 W. S.R. 434, SUITE #208, LONGWOOD, FLORIDA 32750, U.S.A.
TECHNICAL/CUSTOMER SERVICE 407 - 767 - 0938

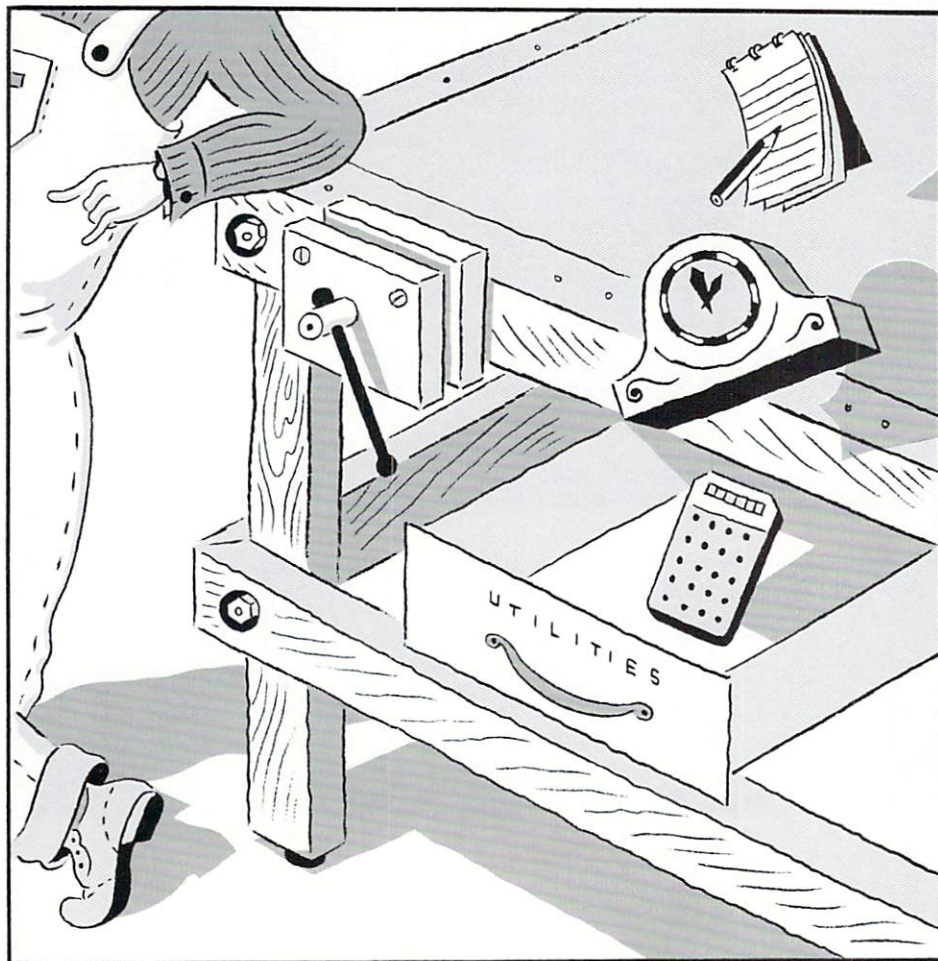


Back to Basics

Part 3

*Adding some new wrinkles to using the Workbench,
Team info.phile steps up the pace a bit in its mini-series
for Amiga novices.*

By Mark L. Van Name and Bill Catchings



NOW THAT YOU know a little about the four types of Workbench information objects—disks, drawers, tools and projects—let's extend the range of basic operations you can perform on them. After that, we will take a closer look at some specific tools that are standard equipment on your Workbench disk.

MOVING PICTURES

One of the simplest tasks you can perform with the Workbench is to move icons. Just click and hold down the left mouse button on the icon you want to move, and then drag it to its new location. This procedure moves any tool, project, or drawer from one disk partition to another as long as you stay within a single disk. If you drag a tool, project, or drawer icon from one disk to another, the original icon is not relocated. Instead, the Workbench copies that object onto the second disk and the original stays where it is. If you drag one disk's icon onto another, the Workbench replaces the second disk's contents with a copy of the first.

Be warned, also, that you cannot drag a disk icon into a drawer; if you try, the Workbench will ignore you and do nothing. ▶

ILLUSTRATED BY MICHAEL KLEIN

The Essence of Platinum!

Scribble! Platinum Edition

- ☐ 104,000+ word **Spellchecker**
- ☐ Scientific and Technical Supplements
- ☐ **Spell As You Type**
- ☐ Full User Dictionary maintenance
- ☐ 470,000+ word **Thesaurus**
- ☐ Multiple windows
- ☐ Color, Interlace & Overscan support
- ☐ Cut and Paste among documents
- ☐ **Mail Merge**
- ☐ Print **IFF Graphics**
- ☐ Clipboard Compatible
- ☐ Cartridge Font support
- ☐ 512K Required
- ☐ Not copy protected
- ☐ Free Technical Support
- ☐ User Friendly Manual

The Works! Platinum Edition

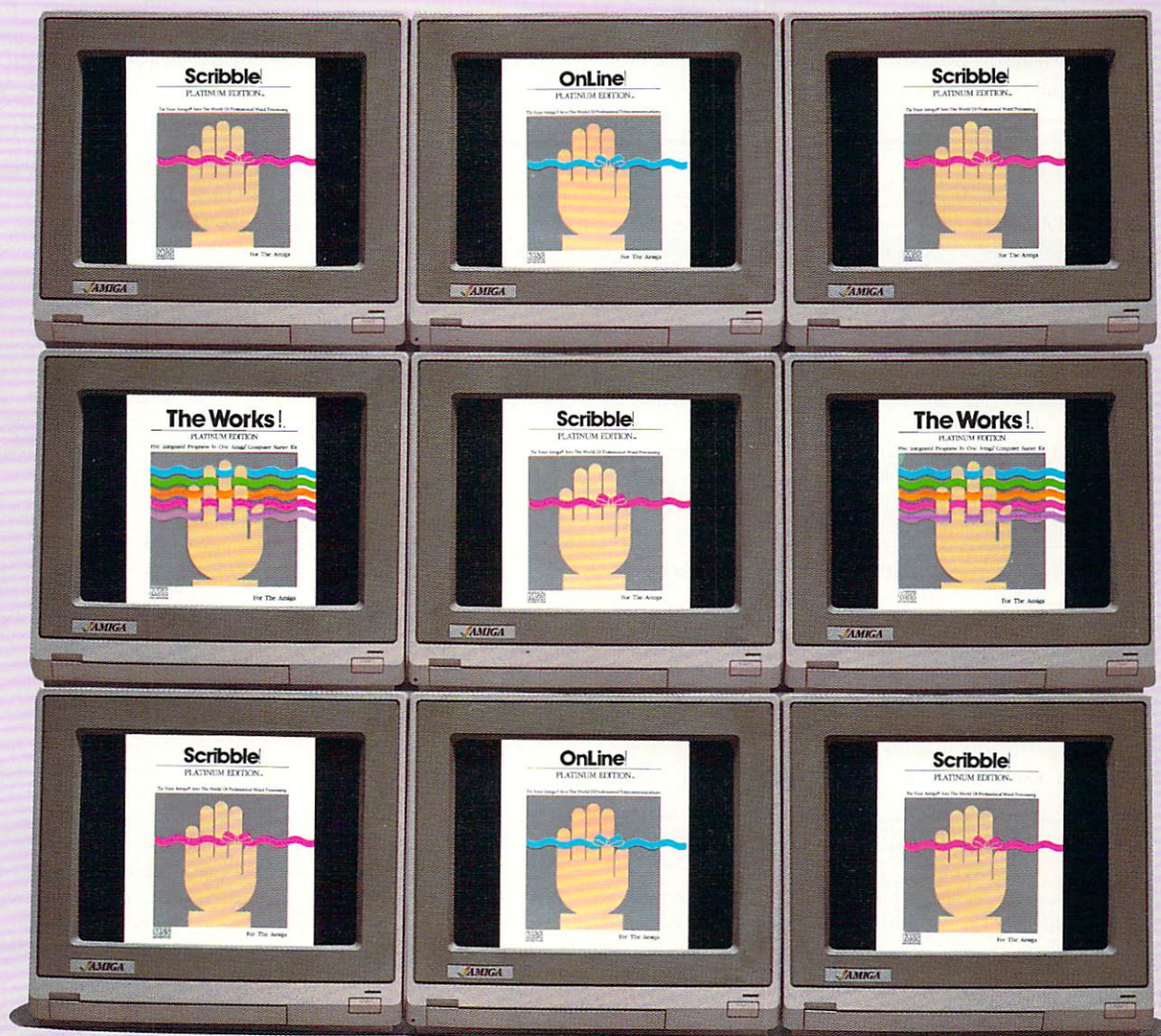
- ☐ Includes Scribble! Platinum module
- ☐ **Full featured spreadsheet module**
- ☐ Lotus 123 wks file compatible
- ☐ Macro-language
- ☐ 40+ built-in functions
- ☐ 68881 math co-processor support
- ☐ 8 graph types
- ☐ Sideways print utility
- ☐ **Flat file manager (database) module**
- ☐ Extensive math capability
- ☐ **Includes OnLine! Platinum module**
- ☐ Clipboard Compatible
- ☐ 512K Required
- ☐ Not copy protected
- ☐ Free Technical Support
- ☐ User Friendly Manual

OnLine! Platinum Edition

- ☐ **ARexx support**
- ☐ New Sadie Protocol (simultaneous chat and 2-way file transfers)
- ☐ Color, Interlace & Overscan support
- ☐ VT-100, -52, -102, TTY, ANSI-BBS, Tektronics 4010 emulations
- ☐ X-, Y-, Z-, WX-Modem, CIS-B, Quick-B, Kermit protocols
- ☐ 300 - 57600 bits per second
- ☐ **Multiple Serial Ports**
- ☐ **Internal Modem support**
- ☐ **Full Script Language**
- ☐ **User defined Macro keys**



12798 Forest Hill Blvd., Suite 202
West Palm Beach, Florida 33414
407-790-0770 FAX: 407-790-1341
Micro-Systems Software
Committed to excellence since 1978



All brand and product names are trademarks or registered trademarks of their respective companies. ARexx support not in telecommunications module.

The Works! Platinum Edition, Scribble! Platinum Edition and OnLine! Platinum Edition are trademarks of Micro-Systems Software, Inc.

Circle 95 on Reader Service card.

ing. If you want to copy everything on one disk into a drawer on another disk using the Workbench, you will have to copy the source disk's drawers, tools, and projects by using the above procedure.

To make copies of objects within the same disk, "select" that object's icon (click the left mouse button on it), go to the top of the screen, and bring up the Workbench menus by holding down the right mouse button. Next, choose Duplicate from the Workbench menu by releasing the mouse button. The resulting duplicate will have the name "copy of <object>", where <object> is the name of the tool, project, or drawer you selected. A duplicate of a drawer will contain copies of everything in the original drawer. If you wish to rename the duplicate so that you do not have to use the "copy of" name, employ the Rename command discussed in "Back to Basics Part I" (see Feb. '90, p. 74).

If you make enough of these copies, your disks will start to fill up. In fact, your disks will probably fill up no matter what you do because data always seems

to expand to fill the available space.

When you start running out of room, it's time to clean house by throwing out any unnecessary objects. (Of course, it's not a bad idea to keep a backup disk with copies of anything you delete, in case you later regret your decision.)

The Workbench provides two easy ways to delete. You can simply drag the item's icon to the Trashcan icon and release the left mouse button. Presto! the icon disappears. The object, however, is still recoverable because the Trashcan is just another Workbench drawer. You can open it in the usual way, remove any object icons you want, and move them to another location.

If you want to delete the object permanently, select the object's icon and choose Discard from the Workbench menu. A requester will appear with the message, "Warning: you cannot get back what you discard," and two options, "ok to discard" and "forget it!" Click on the former and your object—in its entirety—is gone forever.

The Trashcan method of deletion is safer because it saves you from over-zeal-

ous deletions, but it does not free any additional space on your disk. When you are certain you have no further use for objects in the Trashcan, you can get rid of them permanently by choosing Empty Trash from the Disk menu. This procedure gains space on the disk, but remember it is equivalent to using the Discard option from the Workbench. Also, keep in mind that while you can use the Trashcan for tools, projects, and drawers, it will not work with disks. The Trashcan is a drawer, and as we mentioned with the copying procedure described earlier, you cannot move an entire disk into a drawer.

TOOLS OF THE TRADE

Once you have mastered these basic Workbench operations, you are ready to start working with some of the many Workbench tools and utilities. We do not have space in this column to cover them all, but we can at least take a look at a few. If you open the Utilities drawer—the main warehouse for these Workbench objects—you will discover some of the important ones. Three of its goodies, ►

DigiFeX

CORPORATION

610 Main Street • Oregon City, Oregon • 97045

(503) 656-8818 fax: (503) 656-8903

PROCESSOR ACCELERATOR

Amiga 500 or 2000...\$250.00 Amiga 1000...\$280.00

This board incorporates a 16MHZ 68000 processor that replaces the existing 8MHZ processor. The result is increased processor instruction speeds from 7.16MHZ to 14.32MHZ providing up to 35% overall system throughput improvement.

Additionally, a 68881 compatible math FPU socket comes standard to work with software packages that use the IEEE libraries under Workbench 1.3. The Amiga 1000 version comes with a Commodore compatible Kickstart ROM socket standard, and a battery backed-up clock option can be purchased separately as well.

NEW

NETWORKING via: Net Software/Hardware Package call for pricing

Providing the first Amiga AppleTalk networking application, the Net Software/Hardware Package allows you to create your own Amiga-only network of up to 32 nodes. You can share resources, monitor activity, exchange files and messages, and read files on another node.

Not limited to Amiga-only networking, the Net Package also allows you to interface an Amiga with an existing AppleTalk network for output to a Laser Printer. Software and Hardware are available for either the Amiga 500 or Amiga 2000 systems.

MUSICAL INSTRUMENT DATA INTERFACE

MIDI 1.....\$89.95

MIDI 1 is THE affordable feature-rich MIDI available for the Amiga. Features include MIDI IN, 2 MIDI OUTS, MIDI THRU, PASS THRU AND SYNC OUT.

MultiPORT Board

Amiga 2000...\$250.00

Free-up your built-in Parallel and serial ports on your Amiga 2000 by adding a MultiPORT Board. This full length internal expansion provides RS-232 output, a parallel printer output, and a RS-422 output for networking capability. A SUPER FAST auto boot SCSI interface can be added to your MultiPORT Board for an additional cost.

V.I. SERIES VIDEO ADAPTORS

**without RF...\$79.95 with
RF...\$99.95**

DigiFeX Video Adaptors provide Composite, Chroma, Luma and optional RF outputs that allow your Amiga to be interfaced with a variety of video hardware--Composite monitors, VCR's, SVHS, Chroma/Luma monitors and TV's. Available for all Amigas (internal or external for the 2000).

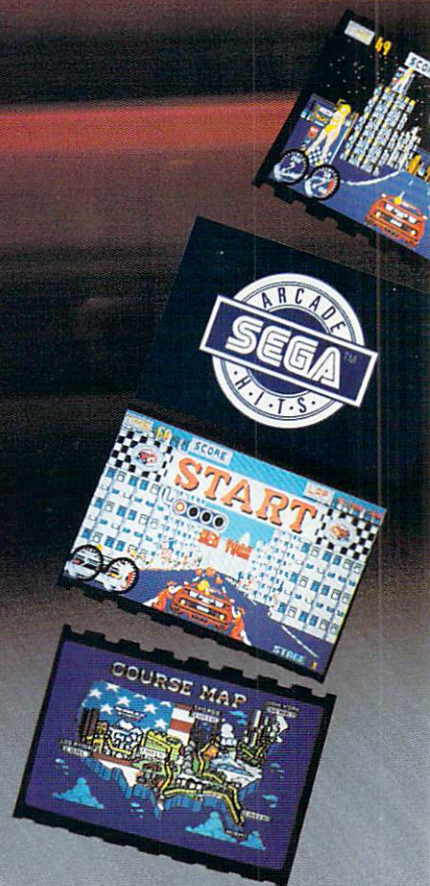
NEW

V.I. PROFESSIONAL (V.I.P.) call for price

This Multiple-Output Video Adaptor is THE tool for the desk top video enthusiast. Providing quality Composite Out and SVHS Out, This device allows your Amiga to be interfaced with virtually all video hardware products that require a Composite or SVHS signal. Additionally, a RGB Pass thru is provided so that you can monitor signal transmission on your Amiga monitor.

Circle 368 on Reader Service card.

TURBO *Out Run*™



THE ULTIMATE DRIVING EXPERIENCE.

Distributed by Electronic Arts,® Copyright 1989 Sega Enterprises, Ltd.

Circle 77 on Reader Service card

Notepad, Calculator, and Clock, have been with the Amiga from the start (and like the Amiga, have all improved with age).

The biggest and most powerful tool of the three, the Notepad, is not really a complete word processor, but it's more than adequate for writing simple memos or letters. When you open it, a small white window labeled Notepad appears in the upper center of the screen. As you type, it wraps text automatically so you need to hit the Return key only when you want to end a paragraph. Notice that if you press the right mouse button, the Notepad's five menus—Project, Edit, Font, Style, and Format—will appear. When you are ready to save your work, choose Save As from the Project menu and a requester will appear. Fill in the name you want to use for your document and then click OK.

Although this is all you absolutely have to know about the Notepad, its other menus will greatly increase your options, and we urge you to explore them. Edit allows you to cut and paste text and to search for and replace strings. Font lets

you choose different typefaces for your text, while Style enables you to make that text italicized, bold, or underlined. Format provides global formatting options, including ones that control background and text colors, word wrap, and overall document font. One of Notepad's best features is its ability to have multiple fonts in a single document; you can then print the document as a bitmap graphic in much the same way as you can with a commercial WYSIWYG word processor.

Basically just a computerized version of the simple hand-held calculator, the Calculator utility appears roughly in the same spot as the Notepad when you click on its icon. You can enter numbers by clicking on its display or by typing on the keyboard. While it offers only the basic arithmetic functions (+, -, *, /), it's handy to have around.

When you click on the Clock icon, a round analog clock appears in the upper left of the screen. If you want a digital display, you can choose from two options on the Type menu: Digital 1 gives you a two-line clock while Digital 2 provides a single-line clock, handy for stashing in

the Workbench's menu bar. Other Clock menus allow you to set an alarm function, to turn the alarm on or off, and to display or not display seconds and the date. The Clock, like the Notepad, runs in a standard Workbench window; so if you do not like its position or size, you can change them just as you would change those of any other window. (The Calculator is a bit more limited; you can move it, but you cannot change its size.)

EXPLORE AND EXPERIMENT

We've skipped quickly through these utilities so you'll have an idea what they can do. The best way to learn about them is to use them. Try a time-tested exploration technique: Start at the left menu and choose every option, one by one, and see what it does. (In the case of the Notepad, of course, do all this on a scratch note that you don't really need.) There is no better way to learn than by doing. Good luck! ■

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

THE AAMIGA CENTER

Formerly The 64 Store

Call Toll Free **ORDERS ONLY**
1-800-388-2700
10 AM to 6PM MON. thru SAT.

500 POWER SUPPLY	82.75
9 x 11 MOUSE PAD	6.95
A-MAX ROM CHIPS	142.95
A-MAX	142.95
A-TALK III	62.50
A.M.A.S.	140.00
ACTION FIGHTER	25.00
AEGIS IMPACT	124.95
AEGIS VIDEO TITLER	93.75
AEGIS DRAW 2000	175.00
AFTER BURNER	31.25
AIR DRIVE-3 1/2" EXTERNAL	128.75
AMI ALIGNMENT KIT	31.25
AMIGA GRAPH STARTER KIT	49.98
AMIGA MONITOR STAND	28.95
AMIGATOSH DISK DRIVE	202.00
ANALYZE	65.00
ANTIC OBJECTS DISK	21.95
ARCHIPELAGOS	29.95
AREXX USERS REF. MANUAL	31.25
ARTURA	23.00
B.A.D. DISK OPTIMIZER	31.25
BARNS AND PIPES	186.75
BROADCAST TITLER	209.95
BUBBLE BOBBLE	21.95
CALAGARI CONSUMER	151.25
CAN DO!	93.75
COMIC SETTER	85.95
DELUXE PAINT III	91.00
DELUXE PHOTOLAB	93.75
DEMON'S WINTER	27.00
DESIGN 3D	62.50
DIGI-PAINT 3.0	69.95
DIGIVIEW GOLD 4.0	137.00
DIGIWORKS 3D	93.75
DISTANT SUNS	43.75
DOS 2 DOS	34.25
DR.T'S (ALL SOFTWARE)	CALL

WE WILL MATCH ANY ADVERTISED PRICE

DRAGONS LAIR II	42.50
DUNGEON MASTER	24.95
DUNLAP UTILITIES	49.95
E.C.E. MIDI	56.75
EPYX PRODUCTS	CALL
EXCELLENCE	187.50
F-16 COMBAT PILOT	31.25
F-16 FALCON MISSION DISK	14.95
FACC II	21.95
FALCON	29.00
FANCY 3D FONTS	49.95
FIENDISH FREDDY'S BIG TOP	31.25
FLIGHT SIMULATOR II	31.25
FRAME GRABBER	579.95
FROST BYTE	15.95
GAUNTLET II	24.95
GO!	31.25
GOMF 3.0	24.95
GRAVIS MOUSESTICK	109.00
GVP "3001" W/4 MB MEM	2899.00
HAWAIIAN ODYSSEY	18.75
HOME BUILDERS CAD	124.95
HOSTAGE	28.00
HUNT FOR RED OCTOBER	21.95
IMAGE SCANNER 500/2000	120.00
IMPACT 2000 - OK	309.00
INFOCOM PRODUCTS	CALL
INTERFONT	74.95
IT CAME FROM THE DESERT	31.25
KARA FONT HEADLINE	43.75
KARA FONTS	49.95
KING'S QUEST III	31.25
LEISURE SUIT LARRY II	37.50
LICENCE TO KILL	21.95
LOST DUTCHMAN MINE	29.95
LOTTERY ASSISTANT	24.95
M (MUSIC COMPOSING)	124.50
MAC-2-DOS	93.75

OVER 1700 ITEMS AVAILABLE

MANIAC MANSION	26.25
MAVIS BEACON TYPING	31.25
MICROBOTICS 8 UP!	199.95
MICROBOTICS 2MB SB OK	334.00
MICROFISH FILER PLUS	98.75
MINDSHADOW	20.50
MONEY MENTOR	55.00
MUSIC X	187.50
NIMBUS 1.3	99.95
OPTICKS	62.50
PAGE RENDER 3D	99.00
PAGE FLIPPER PLUS! FX	86.75
PAGESTREAM VER 1.8	124.95
PAPERBOY	31.25
PEN PAL	93.75
PERFECT SOUND	74.95
PHASAR 4.0	56.25
PHOTON PAINT II	93.75
PIPE DREAMS	27.50
PIRATE'S BUNDLE	112.50
POPULOUS DATA DISK	18.75
POPULOUS	31.25
PRO VIDEO GOLD	187.50
PRO. PAGE CLIP ART	37.50
PRO. PAGE TEMPLATES	37.50
PROFESSIONAL PAGE 1.3	246.75
PROWRITE 2.5	78.00
QIX	24.98
QUANTAM 40 MB PRODRIVE	485.00
QUANTAM 80 MB PRODRIVE	968.75
QUARTERBACK 2.0	43.75
QUSARSOUND	37.50
SAFE SKINS	22.50
SCANLOCK	885.00
SCULPT ANIMATE 4D	395.00
SCULPT ANIMATE 4D JR.	92.95
SHINOBI	31.25
SIM CITY	31.25

CALL - NEW PRODUCTS ARRIVING DAILY!

SOUNDScape	131.25
SPACE ACE	37.50
SPIRIT 2MB - A500	249.00
SPIRIT INBOARD 1000	339.00
SPIRIT INBOARD A500 OK	258.00
STARGLIDER II	31.25
SUPER GEN	CALL
SUPERBASE PRO	236.25
SUPERPLAN	93.75
SUPRA RAM 500 512K W/CLOCK	93.75
SYNTHIA PROFESSIONAL	247.50
TEENAGE MUTANT NINJA	28.10
TEST DRIVE II	24.95
THE WORKS PLATINUM	184.50
THE DIRECTOR	43.75
THE DIRECTOR TOOLKIT	24.95
THE ACCOUNTANT	156.25
THUNDER BLADE	31.25
TOOL CADDY AMIGA	31.25
TRANSCRIPT	43.75
TRUMP CARD - 500	261.50
TURBO CARD - 2000	167.75
TURBO SILVER 3.0	124.95
ULTIMA IV	34.25
ULTRA-CARD	31.25
VIDEO PAGE FROM IMPULSE	93.75
VICO EFFECTS 3D	124.95
VIVA	165.00
WEIRD DREAMS	28.00
WHERE IN USA IS CARMEN	31.25
WHERE SLEEPING GODS	31.25
WHERE IN WORLD IS C.S.	28.75
WICO TRACKBALL	39.95
WORD PERFECT	161.00
X-10 AMIGA SOFTWARE	27.00
X-10 SECURITY SYSTEM	59.00
X-CAD PROFESSIONAL	343.00
ZUMA TV TEXT	61.00

Commodore's First Authorized Amiga Dealer In The USA !!

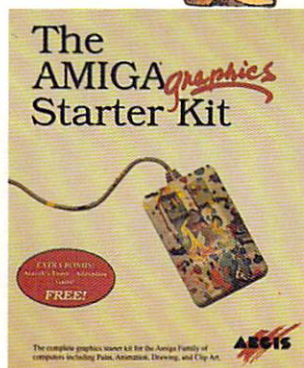
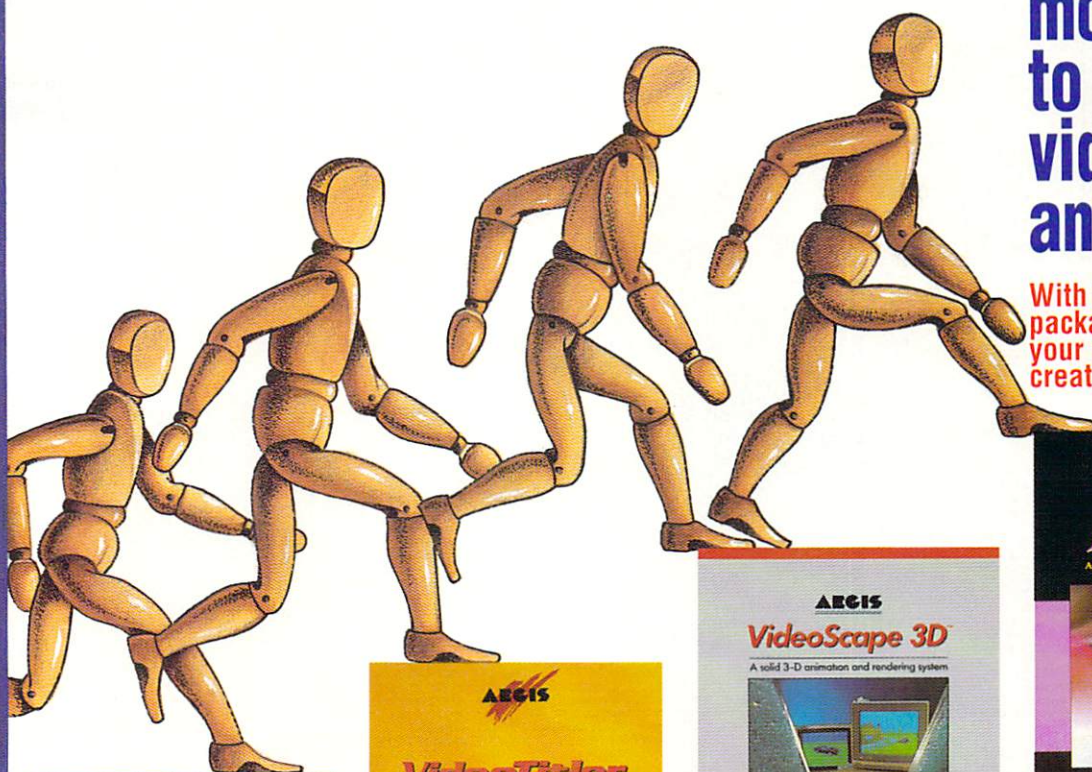
The AAMIGA Center
5920 Roswell Road
Atlanta, GA 30328

TERMS: Software S/H USA \$4.95 per item. Hardware S/H by quote; Minimum order 30.00: Cashiers check, Money Order, Visa, MasterCard & Discover welcome. No credit card fee. We ship UPS signature required/No driver release. COD's add \$5.00, \$6.00 for second day air per item. Allow 3 weeks for personal checks; Return authorization number required for defective products. (Call (404) 252-1235) Only like items will be exchanged; 20% restocking fee on non-defective return goods; Overseas shipping available; Manufacture warranty honored. Prices and availability are subject to change. Not responsible for typos.

Tech Support: (404) 252-1235 - Customer Service: (404) 252-1233

Join the movement to quality video & animation!

With four software packages to step up your performance and creativity.



Graphics Starter Kit
Introductory Drawing and Animation Programs
 Get Aegis Draw, Animator and Images, plus the Art-Pak volume of clip art images, all in one loaded software package—an incredible \$269.00 value for only \$99.95! Learn to create Amiga® graphics with the Draw program, explore colors and cycling effects in the Images program, then animate your creations with Animator. Hundreds of ready-made images are provided in the Art-Pak library.

- Now includes a FREE copy of Arazok's Tomb game! Explore the sinister subterranean world ruled by "the evil mind held by no head."

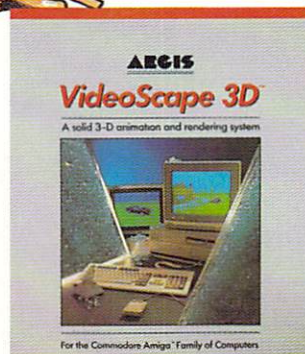
List Price: \$99.95



VideoTitrer™
Professional Video Titrer
 Create spectacular text effects such as star, neon, glow and embossed... all animated! VideoTitrer can mirror, skew, size, and distort fonts from a variety of sources, even create new fonts, control shadows and 3D effects, and use IFF files as back-drops and fills.

- Sharper fonts.
- Simulated rotation of images.
- HAM 4,096 color palette.
- Utilizes Half-brite chip.
- Runs in NTSC and PAL.
- Med/High res. with Overscan.
- Lights!Camera!Action! slide show/special effects generator included.

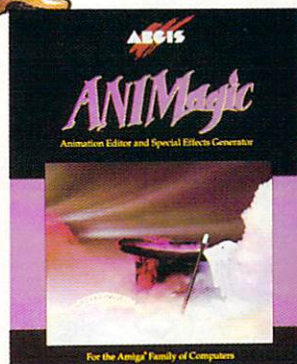
List Price: \$159.95



VideoScope 3D™
High Speed 3D Animation
 Lightning speed makes Videoscope 3D the best-selling 3D animation program for the Amiga® Computer. Take seconds to do animations which require hours with other programs! Control light sources, camera and object motions, background and sky colors for incredible 3D movies. Set start and end shapes and have the program generate intervening frames.

Special Limited Time Offer
Now with Pro/Motion™
 Pro/Motion eliminates the need to enter tedious x-y-z coordinate tables with its break-through graphic motion file-editing environment. Track several objects, even change objects. Special effects such as wind, gravity, and magnetism automatically simulate complex real-world movements.

List Price: \$199.95



ANIMagic™
3D Animation Special Effects Generator
 Spectacular 3D effects from your IFF files and ANIM™-style animations, including spins, page-turns, venetian blinds, confettis, strobes, and color effects like solarization, shadows, translucency, masks and cycling. With ANIMagic, you create effects rivaling those on network T.V.!

- Cut-and-paste edit and adjust color on single frame or throughout an animation.
- Looping.
- Record to memory or disk.
- Link ANIMs for longer movies.
- Supports all resolutions and color modes: HAM, half-brite, interlace, medium and severe overscan.
- Includes library of 21 effects like fountain and shutter-flip.
- Supports NTSC and PAL.
- Uses ANIM or IFF-format files.

List Price: \$139.95

Oxxi/AEGIS
 Your Source for Imaginative Software

ANIMagic, VideoTitrer, VideoScope 3D, Lights! Camera! Action!, Modeler 3D, ProMotion and Aegis are trademarks of Oxxi, Inc. Amiga is a registered trademark of Commodore-Amiga.

P O Box 90309
 Long Beach, CA 90809
 (213) 427-1227

Circle 75 on Reader Service card.

U.S. ORDERS ONLY:
(INCLUDING CA)

4453 Redondo Beach Blvd., Lawndale, CA 90260

CUSTOMER SERVICE
OR ORDER STATUS:

213-214-0000

Mon-Sat 8am-6pm PST FAX: 213-214-0932

ANNOUNCING: THE CREATIVE COMPUTERS

VIP CLUB

JOIN TODAY AND YOU WILL BECOME ELIGIBLE FOR:

- 5% off on all software (discounted from our already SUPER-LOW prices).
 - Incredible SAVINGS on many hardware items.
 - A FREE newsletter subscription to "The Creative Edge."
 - A FREE Creative Computers Amiga T-Shirt.
 - PRIORITY handling of YOUR orders.
 - PRIORITY notification on all SPECIAL DEALS, BLOW-OUT SPECIALS, and CLEARANCE ITEMS.
 - FREE UPS second day shipping on software orders over \$100 (within the continental United States).
- A one-year membership costs you only \$50. You can save many times that amount with just one order!
- To enroll, call our toll-free number today with your credit card number handy.

HOW TO GET A FREE MEMBERSHIP

Order from Creative Computers before June 1990 with an order totaling \$400 or more in software only, or an order totaling \$1400 or more of any product(s).

You will receive a free membership in Creative Computers' VIP Club — a \$50 value!!!

Creative Computers' VIP Club could save you hundreds and hundreds of dollars on future orders.

TAKE ADVANTAGE OF THIS SPECIAL OFFER TODAY!

HARDWARE

AMAS MIDI SAMP. A1000	129.95
AMAS MIDI SAMPLER	129.95
AMERSTAR ETHERNET	799.00
AMIG-A-TOSH	179.95
AMIGEN GENLOCK	99.95
AMPLIFIED SPEAKERS	84.95



MUSIC-X
\$149.99

AFRO DRAW 12x12 W/CUR	499.95
BAUD BANDET MODEM	119.95
CANON SCANNER IX 12	1049.00
CMI MIDI 1 (EXT)	56.95
CMI MULTIPORT BOARD	195.95
CS 3100 SILENT DRIVE	159.00
CS 3100 AUTOBOOT CRD	99.95
DELUXE MIDI A500/2000	64.95
DESKJET PLUS	117.95
DIGIVIEW GOLD 4.0 PAL	159.95
DUAL SERIAL BOARD	109.95
EASY 500 TABLET	369.00
EASY 1000 TABLET	369.00
EASY 2000 TABLET	369.00
EEC MIDI 1000	49.95
EEC MIDI 500/2000	49.95
EXP 1000/1MB FOR A500	349.95
EXP2000/1 INTERNAL CD	349.95
FLICK. FIX TO GENLOCK	39.95
FLICKER FIXER	479.00
FRAMEGRABBER	539.00

FRAMERBOARD/256 GRAY	599.00
FUTURE SOUND 500	92.95
GEN-ONE GENLOCK	739.00
GVP AUTOBOOT EPROM	29.95
GVP SYQUEST CARTRIDGE	99.00
GVP WT-150 TAPE DRIVE	799.00
IMG SCAN 500/2000	109.95
INTRUDER ALERT	119.95
LASERJET II	995.00
LASERJET IIP TONER C	79.95
LENS 16MM ND IRIS	23.95
LENS 16MM W/IRIS	54.95
LIVE 1000	270.00
LIVE 2000	340.00
LIVE 500	319.00
MAC EPROMS 128K	149.95
MICRO MESS	99.95
MICROB RUP M-BRO SIMM	174.95
MICROB RUP DIPP W/DK	174.95
MIDJET RACER	349.95
MIDI GOLD 500	64.95
MIDI GOLD INSIDER	68.47
MIDNIGHT GENLOCK	194.95
MINIGEN PAL GENLOCK	194.95
MINIMES A500 512K	299.00
MINIMES A500 1MB	399.00
MINIMES A500 2MB	549.00

BEFORE YOU BUY A HARD DRIVE-READ THIS!

Get a 40MB or 80MB Quantum HD with 11ms access and a GVP 25MHz 68030 card/HD controller (transmits data to the hard drive in 32-bit chunks—other controllers are limited to 16-bit wide data), for a few hundred dollars more than a regular drive! And, you save an expansion slot! Plus, you can later upgrade the card to an A3001.

GVP 25MHz '030-400 \$1295
GVP 25MHz '030-800 \$1695
(Either of the above with 68882 processor—add \$330)

MINIMES A1000 512K	299.00
MINIMES A1000 1MB	399.00
MINIMES A1000 2MB	549.00
NEC CL SILENT WRITER	3495.00
NEC MULTISYNC IIA	599.00
COMICSETTER SF DATA	25.95
DELUXE P/O PAINT 3	21.84
DELUXE MAPS	16.95
DELUXE PHOTO III	99.95
DELUXE PHOTO LAB	99.95

NEC MULTISYNC 3D	699.00
NERIKI GENLOCK	1995.00
OKIMATE 20 W/PLUG PRNT	249.00
OKIMATE PLUS N PRINT	79.95
OMEGA SAMPLER A1000	79.95
OPTICAL FILTER WHEEL	12.95
PAINTEZ	995.00
PAINTEZ FONT CRTG	140.95
PAINTEZ XL	1995.00
PAINTEZ XL FONT CRT	139.95
PAINTEZ XL MEDIA KIT	93.95
PANASONIC WV1410	225.00
PANASONIC WV1500	320.00
PERFECT SOUND 500/200	71.95
PRO SOUND DESIGNER	119.95
PROCESSOR ACCEL A500	189.95
PROCESSOR ACCEL A1000	199.00
PROCESSOR ACCEL A2000	159.00
PROGEN GENLOCK	399.00
SCANJET PLUS SCANNER	1199.00
SONY 1304 MULTISYNC	769.00
SPIRIT DELUXE MIDI	214.95
SPIRIT INSDO QX EXP	249.95
SPIRIT INSDO QX EXP	249.95
STAR NX-1000 PRINTER	195.00
STAR NX-2410 PRINTER	339.00
STAR NX1000 II PRINTER	195.00
STAR NX1000 RAINBOW	270.00
SUPERGEN 2000S	1495.00
SUPERGEN GENLOCK	649.00
SUPRA 2400 BAUD MODEM	129.95
SUPRA 2400 INT. MODEM	129.00
TWOBOX A500 EPE 2520	230.00
TRUMP CARD SC50 A2000	169.95
TRUMP CARD SC50 A500	169.95
TRUMP CARD META 0/4	159.95
TRUMP CARD MOUNT BRACK	24.95
TWIN DRIVES	279.00
UNIDRIVE	169.00
VCR BROKSONIC	149.00
VIDEOTRANSLATOR	849.00
X-SPC 3D	99.95
QUANTUM 2400 BAUD MODEM	139.95

GRAPHICS

3D OPTIONS	32.46
3D TO TRANSLATOR	119.95
AECIS DRAW 2000	179.95
AIRCRAFT PICS	32.46
ANALYTIC ART	37.95
ANIMAGIC	64.95
ART GALLERY 1 & 2	25.95
ART GALLERY FANTASY	23.36
BROADCAST TITLER	184.95
BUTCHER 2.0	25.95
C LIGHT	38.95
CAD PARTS 4 INTRODAD	16.95
CAD PARTS 4 INTRODAD	16.95
CALLIGRAM CONSUMER	164.95
CALLIGRAM	84.95
CHORDMAP	32.95
CHRISTMAS PICS	24.95
CHROMA PAINT	51.95
CLIP ART #1 & 2	12.95
COMIC SETTER	64.95
COMICSETTER FUNYDATA	25.95
COMICSETTER HERO DATA	25.95
DESIGN 3D	64.95
DIGI PAINT 3	64.95
DIGI PAINT 3 PAL	64.95
DIGIWORKS 3D	84.95
DIRECTOR, THE	45.95
DIRECTORS TOOLKIT	24.95
DOUG'S MATH AQUARIUM	51.95
DOUG'S MATH COMMANDER	19.95
DOUG'S MATH AQUAR. LIB	9.95
ECLIPS PROFESSIONAL	64.95
EXPRESS PAINT 3.0	22.95
FANCY 3D FONTS	46.95
FANCY 3D FONTS SILVER	51.95
FANTASION	42.95
FONT WORKS	64.95
FONTS AND ROBOTS	22.95
FOUNDATION/FRAME LIB	59.95
GRABBIT	20.95
GRAPHICS STARTER KIT	64.95
GRAPHICS STUDIO, THE	19.95
HAMANDLER PRO V3.0	59.95
HOMEBUILDERS CHOICE	52.95
HOMEBUILDERS LIB 1	26.95
HOMEBUILDERS PRINT	72.95
IMAGE LINK	199.95
INTERACTOR	61.95
INTERCHANGE	32.46
INTERCHANGE TSVL MODL	19.95
INTERFONTS	77.95
INTROCAD	49.95
INVISION PLUS	195.00

DELUXE PRODUCTIONS	139.95
DELUXE VIDEO III	99.95
DELUXEHELP PAINT III	31.95
DES DISK ARCHTCT	22.74
DES DISK HUMAN	22.74
DES DISK INTER	22.74
DES DISK MICROB	22.74
KARA ANIMFONTS 1	31.95
KARA ANIMFONTS 2	31.95
KARA FONTS HEADLINES	51.95
KARA FONTS HEADLINES2	47.95
KARA FONTS HEADLINES3	47.95
LIGHT CD	119.95
MAP PICS WORLD	37.95
MASTERPIECE FONTS	159.95



HARD DRIVE MADNESS SALE!!

Supra (A1000 owners add \$40). (Larger capacities available—call.)

20 Meg HD (A500 ver. with optional 2 Megs RAM) \$479.00
2 Meg memory board (populated) for A500 only \$299.00

A500 Only: GVP (Autoboot with sockets for 2 Megs RAM)
Impact A500-SCSI HD/20—20 Meg HD \$599.00
Impact A500-SCSI HD/30—30 Meg HD \$699.00
Impact A500-SCSI HD/40—42 11ms Quantum \$799.00
Impact A500-SCSI HD/80—84 11ms Quantum \$1199.00

A2000 Only: Harddracs (includes your choice of GVP, Microbotics
Hardframe, or Supra WordSync harddracs)
Quantum 42 Meg 11ms HD \$695.00
Quantum 84 Meg 11ms HD \$1095.00
Quantum 100 Meg 11ms HD \$1195.00

A2000 Controllers:
GVP SCSI-2 controller with sockets for 2 MB RAM
GVP harddrac controller H/C 0 \$249.00
Microbotics HardFrame Harddrac \$239.95
Supra WordSync harddrac \$189.95
Flashcard (super special price! While supplies last!) \$149.00

A2000 Removable Media:
GVP Syquest removable 42 Meg HD \$995.00

MODELER 3D	59.95
MOVIE SETTER	64.95
MOVIEPLICS GENERAL I	22.95
NEW PAINT DATA DISK #1	19.95
NEWLETTER FONTS COLR	162.95
PAGE FLIPPER PLUS F/X	103.95
PAGE RENDER 3D	94.95
PAGESTORM FONTS 1-13 EA	25.95
PAGESTORM FONTS A C EA	25.95
PERFORMER (ELAN)	38.95
PHOTON CELL ANIMATOR	99.95
PHOTON PAINT 2.0	99.95
PHOTON PAINT EXP. DSK	19.95
PHOTON TRANSPORT CPT	195.95
PHOTON VIDEO EOLP	349.95
PIC-MAGIC PACKAGE ONE	64.95
PIXMATE	45.95
PRO FONTS VOL I-1 EA	22.95
PRO VIDEO - FONTS 1-4 EA	84.95
PRO VIDEO GOLD	194.95
PRO VIDEO PLUS	184.95
PROF. FONT LIBRARY	48.95
PROFESSIONAL DRAW	129.95
RESEP	54.95
SCENE GENERATOR	25.95
SEX FONTS I	19.95
STARSHIP 2000 TPLT	32.46
STARSHIPS 2000 TPLT	32.46
STRUCTURED CLIP ART	38.95
TALKING ANIMATOR, THE	35.95
TERRAIN FOR TURBOVISL	19.95
TURBO SILVER 3.0	129.95
TV GRAPHICS	32.46
TV-SHOW	84.95
TV-TEXT PROFESSIONAL	109.95
ULTRA DESIGN	129.95
VIDEO EFFECTS 3D	259.95
VIDEO PAGE	89.95
VIDEOCAPS 3D	124.95
VIDEOTITLER	99.95
VIDEON 1.0	93.95
XCAD DESIGNER	94.95
XCAD PROFESSIONAL	299.95
ZUMA FONTS 1-4 PACK	68.95

BREAKING THE SPEED & PRICE BARRIERS!

GVP 25MHz 68030 board \$799

GVP A3001—25MHz 68030/68882 4MB 0-wait

32-bit RAM - 32-bit BLAZING FAST HD controller \$2495

Also available with Quantum 11ms hard drives. CALL FOR PRICES!

ULTRACARD	32.46
ULTRACARD PLUS	32.46
VIP VIRUS	64.95
VIRUS PROTECT TOOLBOX	38.95
VOREC ONE	116.95
W SHELL	31.95
WBETHAS	14.95
WORKBENCH 1.3	24.95
X-COPY VERSION 2.0I	29.95
AUDIO MASTER II	64.95
BARNS AND PIPES	189.95
DELUXE MUSIC 2.0	69.95
DR. TS 4-OP 10/LIB	92.95
DR. TS 4-OP 10/LIB	17.95
DR. TS COPYIST	159.38
DR. TS COPYIST APPR.	59.95
DR. TS COPYIST PROF.	159.95
DR. TS C2 RIDER	61.95
DR. TS D-110 ED/LIB	92.95
DR. TS D-50 ED/LIB	92.95
DR. TS DR. DRUMS	17.95
DR. TS DR. KEYS	17.95
DR. TS DXT ED/LIB	92.95
DR. TS E-MU PROTEUS	92.95
DR. TS EXC 10/LIB	92.95
DR. TS KAWAI K-1	92.95
DR. TS KAWAI K-5	92.95
DR. TS KCAS	154.95

MUSIC

BUSINESS & PRODUCTIVITY

ACCOUNTANT... THE 186.95

AWARD MAKER... EDUC 16.95

AWARD MAKER... SPORTS 16.95

AWARD MAKER... 32.46

BUDGETER 32.46

CANDO 89.95

CYENUS ED PROF 64.95

VIVA WHO WHAT WHERE WHEN 125.95

WORD PERFECT 64.95

WORD PERFECT LIBRARY 179.00

WORKS PLATINUM 191.95

ADVENTURES OF SINBAD 32.46

AESOP'S FABLES 32.46

ALGEBRA I 36.95

PROGRAMMING & UTILITIES

AC BASIC	129.00
AMI ALIGNMENT SYSTEM	32.46
AMIGA DOS TOOLBOX	38.95
ANAVIRUS	25.95
ARX	32.95
ASSEMBRO	71.95
ATANK II	64.95
AZTEC C PROFESSIONAL	129.95
BAUD BANDET	29.95
BAUD BENCH	64.95
BENCHMARK IFF LIBRARY	64.95
BENCHMARK MODULA-2	129.95
BENCHMARK SIMPLE LIBR	64.95
BENCHMARK SOURCE LIBR	99.95
BOARD MASTER	64.95
CAPE GUN ASSEMB 2.0	19.95
CROSS DDS	59.95
DEVPAC AMIGA ASSEMBL	59.95
DISK MECHANIC, THE	58.95
DISK TO DISK	34.95
DISKMASTER	37.95
DOS TO DOS	37.95
DUNLAP UTILITIES	47.95
EXPRESS COPY	29.95
FACC II	21.95
FINE PRINT	41.95
GFA BASIC 3.0	90.95
HISORT BASIC PROFESS	102.95
INNOVATIONS I	58.47
JFORTH PROFESSIONAL	129.95
LATTICE "C" 5.04 SYS	179.00
LATTICE C++	299.95
MAC 2 DOS	89.95
MACELLAN V.1.1	162.95
ONLINE PLATINUM	64.95
OTG DSM - DISASSEMBLER	43.95
PCLO	149.95
PCLO - PANTO CIRCUIT	299.95
PIXELSCRIPT V 1.1	97.95
POWER WINDOWS 2.5	58.95
PROJECT D	31.95
QUARTERBACK	49.95
RAW COPY 1.3	38.95
SCANNERY	195.00
SKYLINE BBS VI.2	93.95
TELEUTROT	19.95

NUTRIFAX	37.95
PAGE SETTER II	84.95
PAGESTREAM 1.8	129.95
PEN PAL	89.95
PHASAR 4.0	59.95
PRINTMASTER PLUS	25.95
PRO PAGE TEMPLATES	38.95
PROFESSIONAL PAGE 1.3	109.00
PROJECT MASTER	129.95
PROSCRIPT	32.95
PROWRITE V2.5	79.95
RECIPE FAX	24.95
SCRIBBLE PLATINUM	97.95
SECURITIES ANALYST	49.95
SUPERBASE PERSONAL	89.95
SUPERBASE PERSONAL 2	94.46
SUPERBASE PROF 3.0	209.95
SUPERPLAN	39.95
TALK STICK	32.46
TAX BREAK	51.95
THINKER	45.95
TOP FORM	64.95
TRANSCRIPT	44.95
VIDI MICE	55.95

DISCOVERY DATA EA	12.97
DISCOVERY W/MATH	25.00
DISCOVERY W/SPELLING	25.00
DISCRETE MATHEMATICS	36.95
DISTANT SUNS	44.95
FIRST LETTERS & WORDS	27.95
FIRST SHAPES	27.95
FRACTION ACTION	32.46
GREAT STATES I	25.95
INTELLITYPE	19.95
KIDTALK	27.95
KINDERAMA	31.95
LETTERS OF THE ALPHABET	21.95
LINKWORD QUTCH, FRENCH	29.95
GERMAN, GREEK, ITALIAN	

Assembly Language From Amiga Basic

By Bryan Catley

DO YOUR AMIGA Basic programs need a boost? By incorporating assembly language routines with Amiga Basic you can speed up your applications. BASIC is an interpretive language and by nature slow. The programs that execute the fastest are written in assembly language and converted into machine language on a one-instruction for one-instruction basis by an assembler. The results can be spectacular. Thus, if you have some process-intensive code (such as a series of involved calculations), consider an assembler subroutine to perform the task.

With Amiga Basic, once the machine language has been loaded into memory it is invoked in the same manner as any natural subprogram or library routine:

```
CALL myMLroutine(param-1,...,param-n)
```

Note that you can pass parameters.

Of course, first you need an assembler subroutine to import. A good example is the one in Chapter 6 of your Amiga Basic manual. It is not too big or too small; plus it uses both character string and numeric parameters. The subroutine accepts a character string and converts all lowercase letters to uppercase.

You have two options for getting the machine language code into memory. The first method is the more traditional approach and is satisfactory for small routines that may be stored in DATA statements. The second method is better for larger routines, which are best loaded directly from disk.

OLD-FASHIONED WORK

The traditional approach involves storing the machine language in DATA statements, using Amiga Basic's READ command to store the machine language

into a character string byte-by-byte, and then executing the code just created. The code would look similar to the following:

```
mlCode$=""
mlLength%=20
FOR n=1 TO mlLength%
  READ x$
  x$="&H"+x$
  mlCode$=mlCode$+CHR$(VAL(x$))
NEXT
DATA 48, E7, C0, 80, ...
mlRoutine%=SADD(mlCode$)
CALL mlRoutine%
```

It looks good, but will be successful only half the time. The reason is quite simple. When Amiga Basic allocates the memory for mlCode\$ (or any string variable), it does so at the next available location, which may or may not be at an even address. If the memory allocation falls on an odd address, and you subsequently place machine code there and then try to execute it, you'll get a Guru #3 (addressing) error every time!

To avoid this, use the AllocMem library routine, which always allocates memory at an even address. Next, READ the machine language as shown above, but then POKE the code into the allocated memory. As in the example:

```
' Example of Poking a Machine Language
' Subroutine into Allocated Memory
'
```

```
LIBRARY "exec.library"
DECLARE FUNCTION AllocMem& LIBRARY
' get some memory, pick up machine
' language, and poke it into that area.
mlArea%=AllocMem&(56, 1)
FOR n%=0 TO 27
```

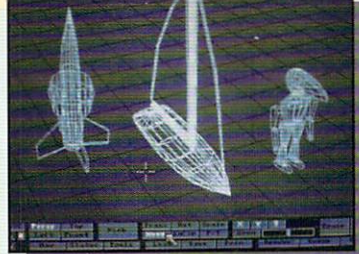
```
  READ xNum$
  POKEW mlArea&+n%*2, VAL("&H"+xNum$)
NEXT
' the machine language subroutine
DATA 48E7, C080, 202F, 0010, 206F, 0014
DATA 4281, 6000, 001C, 1230, 0000, 0C01
DATA 0061, 6D00, 0010, 0C01, 007A, 6E00
DATA 0008, 0230, 00DF, 0000, 51C8, FFE4
DATA 4CDF, 0103, 4E75, 0000
' request input from user
INPUT "Enter a mixed case string: ", s$
strLength%=LEN(s$)
strAddr%=SADD(s$)
' execute the machine language program
CALL mlArea&(strLength&, strAddr&)
' show user the result
PRINT "Converted value is: ";s$;" "
' free allocated area and quit
CALL FreeMem (mlArea&, 56)
LIBRARY CLOSE
END
```

The machine language is straight out of the example in the manual, but the Amiga Basic code is anything but! Unlike the manual example, the above routine works correctly consistently. Notice the differences: The code is read and poked two bytes at a time to speed things up. It invokes the code using the CALL statement and the code's address. It passes the length parameter as a long word value and the string parameter as a memory address.

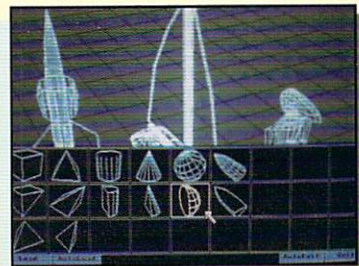
This approach is not as effective for larger routines. After all, the machine language has to be stored twice in the program, once as DATA statements and once as executable code, plus reading and poking takes some time. A more serious problem is that all addressing must be done relative to the Program Counter (PC relative addressing), because the sys- ►

VIRTUAL REALITY

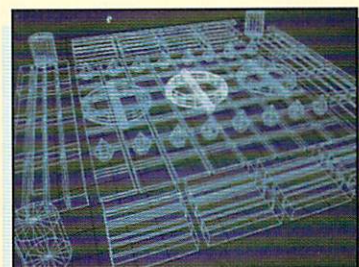
Delivered



CONCEPTUALIZE
Move around in 3D environment with real time response. Move objects, rotate them, copy them, shape them.



BUILD
Draw your own shapes in extruder or choose from a set of 3D primitives. Glue them together to make a hierarchical object.



COMPOSE & ANIMATE
Save your objects, then create a scene. Animate it and preview the animation (as long as you wish) in real time.

CALIGARI

3D Conceptual Design and Animation.

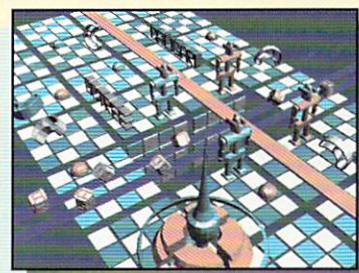
BE CREATIVE - Design in perspective 3D space which looks like the physical world of our everyday experience. Interact with objects, not with menus or the keyboard.

BE FAST - Work in real time. If it doesn't move, it's not 3D.

BE PRECISE - Position complex objects with total precision in perspective or orthogonal views. (No, you still don't need a keyboard.) Render your image in 16.7 million colors in video resolution (NTSC or PAL) or up to 8000 by 8000 pixels for slide output.

BE PRODUCTIVE - Design video animations, corporate presentations, educational or training videos better and faster. Do conceptual product design, architectural design, or fine art with transparent ease. This is possible because you don't have to learn any new skills. Your actions in Caligari will resemble those in a real 3D world.

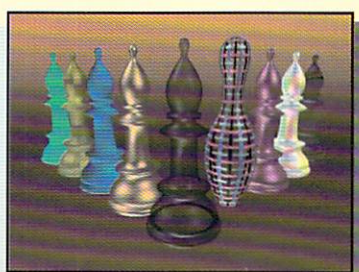
BE VIRTUAL - Enter the virtual reality with us. It's just about to happen.



RENDER
Adjust the lighting and render the scene in seconds. Color the objects in real time.



RENDER AGAIN...
...with 16.7 million colors in minutes. Use anti-aliasing, transparency, texture maps, shadows, global and local lights.



VIRTUAL BISHOPS
From left to right: flat, facet, Gouraud and metal shaders, texture map, Phong shader, 2D and 1D environment.

Octree Software Inc.

311 West 43rd Street Suite 904 New York, NY 10036 (212) 262-3116

Caligari runs on an Amiga PC with an optional Targa/Vista board. Amiga is a trademark of Commodore Inc. Targa and Vista are trademarks of Truevision Inc. Caligari is compatible with ImageLink from Active Circuits, Interchange from Syndesis, and Photon VTR module from Microillusions.

Circle 81 on Reader Service card.

tem has no knowledge of the routine or its starting address. The system is therefore unable to automatically adjust addresses for the actual load point, which it usually does as part of the loading process. While not a big problem with small routines, this is a major headache with large programs. The solution is to use a system routine to load the subroutine, handle all the memory allocation and alignment requirements, as well as remove the need for PC relative addressing.

SYSTEM SELF-SERVICE

The sole purpose of the dos.library function LoadSeg is to load machine language from disk and prepare it for execution. The only catch is that the code must be in load module format; it must have been processed by a linker, meaning the source code must have been assembled. To use the LoadSeg method, therefore, you need access to an assembler and linker. LoadSeg's other oddity is that it does not return the address of the loaded program. Instead, it returns the number of long words (four bytes each) from the beginning of memory to the start of the long word immediately preceding the first byte of executable code. (These four bytes contain the number of long words of code). This means the program must perform a small calculation to determine the starting address of the actual code. Use the

following code fragment as a guide:

```
' set up name with a trailing zero
pgmName$="myML"+CHR$(0)
' load the named module
pgmPtr=&LoadSeg&(SADD(pgmName$))
' calculate starting address of code
' -first multiply number of words by 4
Code=&pgmPtr&*4
' -now add another 4
Code=&Code&+4
CALL Code&
```

When you no longer require the subroutine, remove it from memory as shown:

```
CALL UnloadSeg(pgmPtr&)
```

With your assembler and linker, carefully enter the assembly subroutine as shown in your Amiga Basic manual, assemble it, and link it. You may use any name you wish; I named my sample Ucase.exe. Now, enter the code below, ensure your machine language is in the current directory (although you may use a full path name with LoadSeg if you wish), and run it. It functions exactly as the earlier example with the single exception of using a load module from disk rather than DATA statements.

```
' declare function(s) and open the
' dos library
DECLARE FUNCTION LoadSeg& LIBRARY
LIBRARY "dos.library"
' load subroutine, and get pointer
```

```
loadModule$="Ucase.exe"+CHR$(0)
pgmPtr=&LoadSeg&(SADD(loadModule$))
IF pgmPtr=&0 THEN
PRINT "LoadSeg Failed"
GOTO Quit
END IF
' calculate start of code address
Ucase=&pgmPtr&*4+4
' get user's input, set up parameters
INPUT "Enter a mixed case string: ", s$
strLength=&LEN(s$)
strAddr=&SADD(s$)
' execute the machine language routine
CALL Ucase&(strLength&, strAddr&)
' show user the result
PRINT "Converted value is: ";s$;" "
' remove called routine,
' close up library, and terminate
UnloadSeg pgmPtr&
Quit:
LIBRARY CLOSE
END
```

Using these techniques will allow you to include assembler routines in your Amiga Basic programs. I wouldn't recommend including them just for the sake of having them, but for specific functions they can be great time savers. Don't be shy if the need arises. ■

Bryan D. Catley is a professional software engineer and is presently integrating unlike software on IBMs and Suns. Write to him c/o AmigaWorld Editorial Dept., 80 Elm St., Peterborough, NH 03458.

"Narly Drive, Dude."

-Stevie "Surfs-up" Sherman - Malibu, California-
Satisfied CA-880 owner

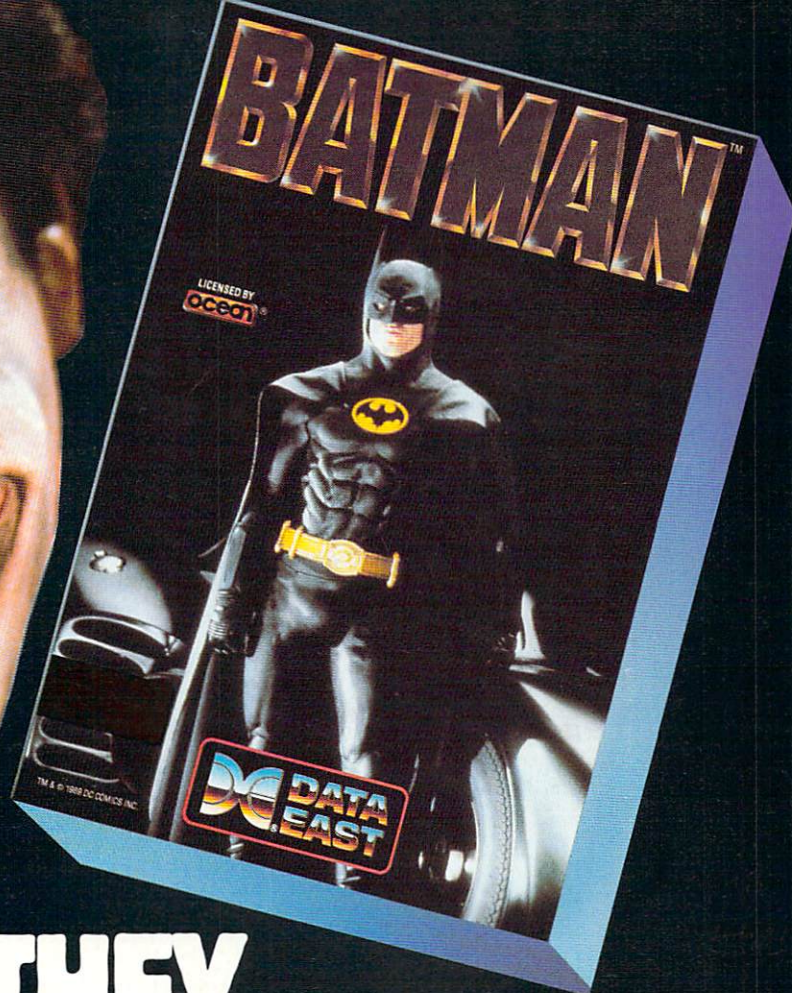
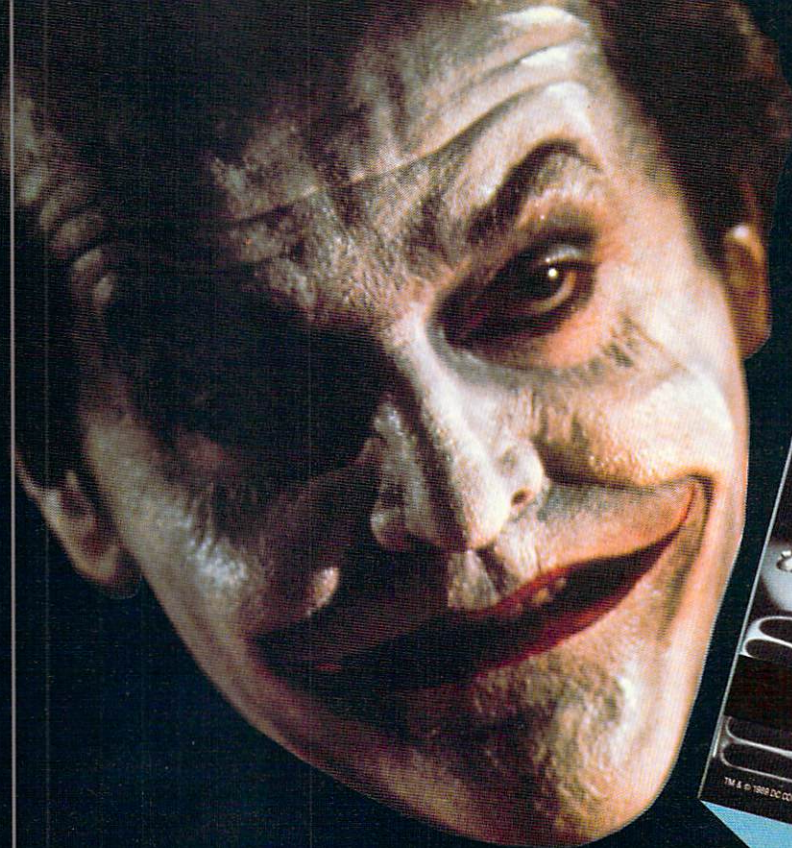
California Access™ All rights reserved.
780 Montague Expwy. #403, San Jose, CA 95131
Tel. (408) 435-1445, Fax. (408) 435-7355
Stevie "Surfs-up" Sherman is a fictitious character,
however, Malibu, California does exist.

Here at California Access™ we believe "Surfs-up" said it best. But don't take his word. Purchase your own CA-880 disk drive and let us know what you think of this narly drive.

Narly Features:

- Passthrough
- Power Disable Switch
- Low Power Consumption
- 880K Capacity





"WAIT 'TIL THEY GET A LOAD OF ME!"

Just when you thought you'd heard the last of his insidious cackling, THE JOKER™ is back in an all new software adventure, based on the blockbuster movie—BATMAN.™ As the DARK AVENGER,™ only you can determine how the plot unfolds as you try to save GOTHAM CITY™ from certain doom. Yes, the legend lives on . . . but then so does the devil. Care to dance, BATMAN?



Maneuvering the BATMOBILE™ may look easy on the big screen, but you're in the driver's seat now!



At the chemical factory, THE JOKER and his goons plan to give all of GOTHAM a lethal face-lift. Smiles, everyone!



It's a near-miss in the BATWING™ as you make your descent over GOTHAM and THE JOKER's balloons of doom!

NOW AVAILABLE FOR THE COMMODORE 64/128,™ AMIGA,™ AND ATARI ST.™

For more BATMAN adventures, ask your retailer for BATMAN THE CAPED CRUSADER.™

DATA EAST USA, INC. 1850 LITTLE ORCHARD DRIVE, SAN JOSE, CA 95125 (408)286-7074. © 1989 Data East USA, Inc. Batman, all related characters, slogans and indicia:™ & © DC Comics Inc. 1989. Game design: © 1989 Ocean Software Ltd. Manufactured under license by Data East USA, Inc. Ocean is a registered trademark of Ocean Software Ltd. Commodore is a registered trademark of Commodore Electronics, Ltd. Atari is a registered trademark of Atari Corp.

Circle 231 on Reader Service card.



BRIWALL

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

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

SOLID PRODUCTS

CALL

1-800-638-5757

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

ACCESSORIES

64 Emulator	\$52
Amtrac (trackball)	68
Camera Lens 16mm - No Iris	22
Copy Stand with Light Fixtures	64
Covers	call
DigiView Adapter Gender Chang..	16
Flicker Master	14
Ink	call
Joystick - Gravis	35
Joystick - Super 3 Way	25
Maxx Yoke Flight Cntrl	79
Mouse Master	29
Paper	call
Ribbon	call
Safeskin Keyboard Protectors	29
Switch Box A/B Db25f Connectors	89
X-Specs	46
Zoomer Console Controller	46

BOOKS

1001 Things to do with Amiga	\$11
AMIGA C for Beginners+	15
Advanced Amiga BASIC	15
Advanced System Prog Guide+	27
Amiga Machine Lang Prog Guide	17
Amiga 3D Graphics Programming+	17
Amiga BASIC Inside & Out+	20
Amiga C for Advanced Progs+	25
Amiga DOS Inside & Out+	17
Amiga DOS Quick Ref Manual	8
Amiga Desktop Video Guide	17
Amiga Disk Drives Inside & Out+	24
Amiga Graphics Inside and Out+	27
Amiga Hardware Reference Review	18
Amiga Machine Language+	15
Amiga Programmer's Guide	17
Amiga Prog's Handbook Vol1	20
Amiga Prog's Handbook Vol2	20
Amiga System Prog's Guide+	27
Amiga Tips & Tricks+	17
Amiga for Beginners	15
AmigaDOS Manual (2nd Edition)	20
AmigaDOS Reference Guide v1.3	11
Dungeon Master Hint Book	17
Elementary Amiga BASIC Book	13
Guru's Guide, Meditation #1	14
Inside Amiga Graphics	15
Inside the Amiga With C	21
Kickstart Guide to Amiga	19
Kids and the Amiga	13
MORE Amiga Tips & Tricks+	17
Prog Guide Amiga - C. Disk	12
Prog Guide Amiga - Modula 2 Disk	12
Programmer's Guide to the Amiga	22
ROM Kernel Ref:ExecLib&Devs	28
ROM Kernel Ref:Includes&AutoDoc	27

GENERAL BUSINESS

Advantage (The)	129
BGraphics+	126
Data Retrieve	52
Desktop Budget	52
Excellence	150
Family Tree (Your)	35
Nimbus Accounting V1.3	109
P.H.A.S.A.R. V3.0	69
Page Setter	69
Pagesetter II	84
Page Stream DM Fonts #1-13	27
Page Stream V1.9	129
Pen Pal	99
Professional Draw	139

Professional Draw Structures	42
Professional Page 1.3	189
Professional Page Template	42
Prowrite V2.5	75
Scribble - Platinum Edition	72
Service Industry Accounting	252
Tax Break	59
Tax Plan 1989/1990	28
Word Perfect	149
Works - Platinum Edition	140

EDUCATION

Adventures of Sinbad	\$32
Aesop's Fables	32
All About America	39
Animal Kingdom (Wonders of)	32

Barney the Bear Goes to School

A fun, creative, colorful, musical game for children ages 3-8.

Briwall Price \$23

Chicken Little	20
Designasaurus	33
Dinosaur Discovery Kit	29
Discover Alphabet	13
Discover Chemistry	13
Discover Math	13
Discover Numbers	13
Discover US History & Geography	13
First Letters & Words (3 - 8)	30
First Shapes (3 - 8)	30

Distant Suns

Version 3 of the award winning educational program -- Galileo. Distant Suns is a planetarium that lets you view the stars and planets from any vantage point on earth, and for any date from 8000BC through 12,000AD.

Features include: realistic color, authentic, astronomically correct sky, 2,200 stars, and 450 deep space objects.

Briwall Price -- \$46

Fun Keys	23
Kid talk (5 - 15)	30
Kinderama	30
Linkword:Spanish	32
Little Red Hen	20
Math Odyssey	33
Math Talk (5 - 13)	30
Math Wizard	32
Math-amation (College)	55
Mavis Beacon Typing	34
Mixed Up Mother Goose	20
Myprint	33
Noah's Ark	20
Planetarium	49
Read & Rhyme	32
Read A Rama	32
Speller Bee (5 - 12)	29
Three Bears	20
Three Little Pigs	20
Ugly Duckling	20
World Odyssey	33

ENTERTAINMENT

3D Pool	\$23
688 Attack Sub*	34
AD&D - Champions of Krynn*	35
AD&D - Dragons of Flame	27
AD&D - DungeonMaster Asst 1*	21
AD&D - DungeonMaster Asst 2	21
AD&D - Pool of Radiance*	35
Adventures Through Time	33
Altered Beast*	34
Aquanaut*	27
Archipelagos	27
Artura	27
B.A.T.*	34
Balance of Power 1990	34
Batman The Movie	33
Battle Chess	34
Battle Squadron	24
Battlehawks 1942	36
Beyond Dark Castle	24
Blockout	26
Blue Angels*	30
Breach 2	33
Bride of the Robot	26
Clown-O-Mania	23
Data Storm	26
Double Dragon II*	26

DRAGONSCAPE

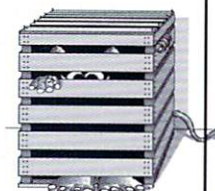
The wackiest, fastest, toughest, wildest fantasy shoot-em-up for the Amiga

Briwall Price \$27

Dr. Plummet's House of Flux	23
D.R.A.G.O.N. Force	34
Dragon's Lair	39
Dragon's Lair II: Singe's Castle*	46
Dungeon Master	26
Earl Weaver Baseball	15
Earl Weaver Commissioner's Disk	37
Eye Of Horus	27
F16 Combat Pilot	34
F18 Interceptor	36
F40 Pursuit Simulator	30
Falcon	17
Falcon Scenery: Oper Countr Strike	33
Federation	37
Fiendish Freddy's Big Top of Fun	23
Flight Simulator 2	33
Flight Sim Hawaiian Odyssey	19
Fool's Errand*	34
Forgotten Worlds	27
Gold of the Americas	27
Grid Iron Football	45
Halls of Montezuma*	30
Hardball II*	27
Heat Wave: Offshore Racing*	30
Hockey League Simulator	23
Hole In One - Miniature Golf	26
Honda RVF	26
Hound of Shadow*	33
ICOM Tri-pack	27
Ice Hockey: Wayne Gretzky	35
Indiana Jones: Last Crusade (Grphic)	34
Iron Lord	27
It Came From the Desert	33
Jack Nicklaus Golf	35
Jack Nicklaus' Course Int'l*	15
Jet	33
Jetsons (The)	26
Jigsaw!	26
Joan of Arc	30
Keef the II	34
Kings Quest I, II, III each	36
Kristal	34
Laser Squad*	27
Last Duel	27
Leisure Suit Larry 2	33
Licence to Kill	23
Lost Duthman Mine	30
Magic Johnson's Basketball	33
Manhunter	33
Manhunter - San Francisco*	31
Maniac Mansion	31
Mean 18 Famous courses Vol2	17
Mean 18 Golf	17
Might & Magic 2*	41
Monopoly*	26
NY Warriors*	33
Never Mind	23
Neuromancer*	31
Night Hunter*	27
Nuclear War	35
Omega	33
OmniPlay Basketball	33
OmniPlay Horse Racing	33
Persian Gulf Inferno	24
Pipe Dream	27

WHY CHOOSE BRIWALL?

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



SATISFACTION GUARANTEED!

Planet of Lust	24
Pocket Rockets	27
Police Quest 2	39
Populus	34
Pro Football Simulation	27
Pro Tennis Tour	27
Puffy's Saga*	27
R. Davis Soccer	33
Reach for the Stars	29
Rings of Medusa*	23
Rocket Ranger	33
Romance of the Three Kingdoms	46
Sex Vixens from Space	25
Shadow of the Beast	33
Shark Attack*	26
Shoot'em Up Kit	13
Side Arms	33
Side Show	33
Sim City	30
Skate or Die*	27
Space Ace (Drag Lair Sequel)	39
Space Quest 2	33
Space Quest 3	39
Star Command	33
Starflight	34
Stellar Crusade	38
Stryx	23
Stunt Track Racer	27
Super Hang On	30
Superman	26
Sword of Aragon*	27
TV Sports Basketball*	33
TV Sports Football	33
Table Tennis	23
Teenage Mutant Ninja Turtles	30
Test Drive 2:European Challenge*	13
Test Drive 2:Muscle Cars	13
Test Drive 2:Super Cars	13
Test Drive 2:The Duel	30
The Cycles: Grand Prix Racing	30
Their Finest Hour: Battle Britain*	41
Turbo Out Run*	34
UFO*	33
Ultima IV	39
Veteran	20
Vortex	30
War In Middle Earth	33
Weird Dreams	27
Where in USA is Carmen San Diego	33
Where in World is Carmen San Diego	30
Windwalker	26
Xenophobe	27
Zack Mcracken	30

Pro Video Gold	199
Sculpt 3DXL	116
Sculpt/Animate 4D Jr	97
Turbo Silver	139
TV Text Professional	97
Ultra Design	255

SOUND & MUSIC

Bars & Pipes	192
Deluxe Music Construction	65
Dr T Copyist Apprentice (1)	65
Dr T Keyboard C. S. Level II	225
Dr T Midi Recording Studio	49
Dr T Tiger*	97
Dr T Tiger Cub*	65
Future Sound Sampler A500/2000	103
M	139
Music-x	195
Perfect Sound A500	65
Synthia II*	81
Synthia PRO	252
Take Note	59

UTILITIES/LANGUAGES

A Talk III	\$65
AC BASIC v1.3	135
Amix - Macintosh Emulator	129
Ami...Alignment	39
Amiga Workbench 1.3	24
Amikit	34
Arexx V1.0	35
Assempro	64
Aztec C Dev Pak V5 w/SLDebug	195
Aztec C Prof Pak V5 w/ZEditor	129
B.A.D. Disk Optimizer	32
Baud Bandit	33
Benchmark Modula 2	129
C.A.P.E. 68K v2.0	59
Can Do	89
CrossDOS	20
Cynes Ed Prof Text Editor	69
DOS-2-DOS	39
DSM	39
Disk-2-Disk v2.1	35
Diskmaster	39
Dunlap Utilities	52
Express Copy	34
FACC II	25
GFA BASIC	99
Imagelink	299
Lattice C++	219
Lattice V5.04 Dev Package	205
Online - Platinum Edition	60
Power Windows 2.5	59
Project D v1.1	39
Quarterback V2.3	39
Raw Copy V1.3E	39
T.A.C.L. (adventure const. lang.)	65
UltraCard	65
UltraCard Plus	65
Virus Infection Protection	33

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

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

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

DYNAMIC DUO!

Digipaint 3
The Ultimate Paint Program!
\$69



Digiview 4.0
Simply the Best!
\$139

These packages from NewTek are two of our hottest titles for the Amiga.



Order yours today and find out why everyone calls them the "Dynamic Duo."

1-800-638-5757

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

BRiWALL

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

VISA

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

MasterCard

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

		SCSI CONTROLLERS											
HARD DRIVES		Fastcard	Hardframe	Impact 8/0	Impact 8/2	Trumpcard	Wordsync	FastTrak*	Supra*	Synergy*	Trumpearcard	FastTrak*	Supra*
Drive Specs.	Drive Price	A2000	A2000	A2000	A2000	A2000	A2000	A500	A500	A500	A500	A1000	A1000
		\$151	\$251	\$350	\$620	\$159	\$169	\$346	\$315	\$313	\$223	\$346	\$308
20MB-40ms Seagate-3.5	\$293	\$438	\$536	\$632	\$896	\$447	\$458	\$641	\$595	\$600	\$510	\$641	\$595
40MB-19ms Quantum-3.5	\$439	\$584	\$682	\$778	\$1,042	\$593	\$604	\$787	\$741	\$746	\$656	\$787	\$741
44MB-25ms Syquest-5.25	\$673 cartridge \$98	\$916	\$1,014	\$1,238	\$1,502	\$925	\$936	\$1,109	\$1,063	\$1,068	n/a	\$1,109	\$1,063
48MB-40ms Seagate-3.5	\$360	\$505	\$603	\$699	\$963	\$514	\$525	\$708	\$662	\$667	\$577	\$708	\$662
48MB-28ms Seagate-3.5	\$382	\$527	\$625	\$721	\$985	\$536	\$547	\$730	\$684	\$689	\$599	\$730	\$684
64MB-24ms Seagate-3.5	\$498	\$643	\$741	\$837	\$1,101	\$652	\$663	\$846	\$800	\$805	\$715	\$846	\$800
84MB-24ms Seagate-3.5	\$532	\$677	\$775	\$871	\$1,135	\$686	\$697	\$880	\$834	\$839	\$749	\$880	\$834
100MB-19ms Quantum-3.5	\$775	\$920	\$1,018	\$1,114	\$1,378	\$929	\$940	\$1,123	\$1,077	\$1,082	\$992	\$1,123	\$1,077
135MB-15ms Imprimis-3.5	\$1,202	\$1,347	\$1,445	\$1,541	\$1,805	\$1,356	\$1,367	\$1,550	\$1,504	\$1,509	\$1,419	\$1,550	\$1,504
207MB-15ms Maxtor-3.5	\$1,708	\$1,853	\$1,951	\$2,047	\$2,311	\$1,862	\$1,873	\$2,046	\$2,000	\$2,005	\$1,925	\$2,046	\$2,000

Many other package deals available! Please call!

SUPRA
CORPORATION

A500 RAM	
Supra RAM 500 (501 type)	\$105
A500 Hard Drive Packages	
22MB Supra Drive	\$495
40MB-Quantum Supra Drive	\$739
60MB Supra Drive	\$859
80MB-Quantum Supra Drive	\$999
2MB RAM for Supra Drive A500	\$319
NEW MODEM	
Supra Modem Plus MNP Level 5	\$158

IMTRONICS

HURRICANE BOARDS

Hurricane A500 Accelerator Board with 68020/14MHz	\$617
with 68020, 68881/16MHz & 1MB RAM	\$858
Hurricane 2800 Accelerator Board with 68030/25MHz	\$1016
with 68030, 68882/25MHz & 2MB RAM	\$2041

A500 RAM

Wiz RAM A500 (0K) with 512K	\$124
with 1Mb	\$174
	\$228

Call for other combinations and packages!

PACKAGES

BOARDS	0K	\$12K	1MB	2MB	4MB	8MB
A2000 8-up! (1MBx1)	\$185	n/a	n/a	\$374	\$566	\$950
A2000 Supra (1MBx1)	n/a	n/a	n/a	\$361	\$553	\$937
A2000 Minimegs 256Kx4ZIP	n/a	\$276	\$376	\$536	n/a	n/a
A2000 EXP-8000 (1MBx1)	\$356	n/a	n/a	\$540	\$732	\$1,116
A2000 Inboard 256Kx1 150ns	\$239	\$308	\$384	n/a	n/a	n/a
A2000 MD 540 256Kx4ZIP	\$164	\$239	\$319	\$479	\$799	n/a
A2000 Xte Fastram 1MBx8SMM	\$210	n/a	n/a	\$424	\$644	call
A2000 Starboard2 256Kx1 150ns	\$269	\$334	\$410	\$608	n/a	n/a
A2000 Minimegs 256Kx4ZIP	n/a	\$276	\$376	\$536	n/a	n/a
A2000 Inboard 256Kx1 150ns	\$239	\$308	\$384	n/a	n/a	n/a
A2000 Xte Fastram 1MBx8SMM	\$210	n/a	n/a	\$424	\$644	call

AMIGA

We carry a full line of Amiga
computers and peripherals.

CALL FOR PRICES!

ACCELERATOR BOARDS

A3001 w/030-882/25 4MB/0	\$2549
A3001 w/030-882/25 4MB/40Q	\$2999
A3001 w/030-882/25 4MB/80Q	\$3299
Infinity Machine*	call
Midget Racer with 68020	\$349
Midget Racer Pkg w/68020-881/16	\$449

CHIPS

4MB SIMM for GVP Ace Bd	\$849
DRAM - 1MB x 8 bits SIMM	\$135
DRAM - 1MB x 1 bit 100ns	\$16
DRAM - 256KB x 1 bit 150ns	\$6
DRAM - 256KB x 4 bit 100ns ZIP	\$22
DRAM - 256KB x 4 bits - 120ns	\$18
Math Chip 68881 - 16Mhz	\$99
Math Chip 68882 - 25Mhz	\$349
Micro Proc Chip 68030 - 25Mhz	\$349

DRIVES (FLOPPY)

Amiga-4-tosh Plus	\$245
Flexidata FD-10	\$135
Flexidata FD-20	\$259
Unidrive	\$139
Master 5A 5.25-inch external	\$209

DRIVES (Hard)

64MB Seagate 5.25" ST277N	\$447
80MB Quantum 3.5"	\$750
84MB Seagate 5.25" ST296N	\$506
90MB Fujitsu 3.5" (SCSI)	\$997
100MB Connor 3.5" CP3100	\$862
136MB Fujitsu 3.5" (SCSI)	\$1256
158MB Micropolis 5.25" 1674-7	\$1144
182MB Fujitsu 3.5" (SCSI)	\$1488

DRIVES (Hardw/Controller)

GVP A500 Hard Drives	call
GVP A2000 Hardcard Plus	call

EXPANSION CHASSIS

A1000 ToolBox w/ power	\$239
A500 Subsystem	\$249
A500 Subsystem with Drive	\$329
A500 ToolBox w/ power	\$239

GENLOCKS

Amigen	\$99
Magni 4004 w/ 4010 Cntrl.	\$1629
Magni 4010 & 4010S	\$1629
Mingen	\$209
Neriki 1187	\$1959
Neriki DeskTop	\$1133
SuperGen	\$669
SuperGen 2000s	\$1459
Vidtech ScanLock VLS-1	\$895

MEMORY A500

Ametek Clone (501 type)	\$105
Meta4 w/case 2MB	\$515
Micromegs - MAST (501 type)	\$133

MIDI/SOUND

A.M.A.S.	\$135
ECE - External A500/1000/2000	\$49

MODEMS

Aprotek H24 Mini A1000	\$79
Aprotek Mini A500/2000	\$79
HST Courier 9600	\$659
Supra 2400 w/o cable	\$125
Supra 2400zi A2000 internal	\$145
Supra Modem Plus MNP lev 5	\$158

MONITORS

Mitsubishi DiamondScan 14	\$529
Moniform Viking I	\$1545
NEC 3D	\$695
Sony PVM-1390	\$580

MOUSES

Boing Optical	\$99
M4 Contriver	\$49
The Cordless Mouse	\$99

PRINTERS

Citizen GSX-140	\$379
Citizen GSX-140 Color Kit	\$50
Canon PJ1080a Color Ink Jet	\$519
HP Deskjet Plus	\$795
HP Paint Jet	\$1150
Okimate 20 with Plug & Print	\$230
Sharp JX730 (color ink jet)	\$1859
Star NX 1000 Model II	\$189
Star NX-1000R Rainbow	\$259

SCSI ERASABLE OPTICAL

Tahiti 1GB	call
Ricoh 570MB (drive only)	\$3999
570MB cartridge	\$299
Sony 640MB w/1 cartridge	\$4599
650MB cartridge	\$329

SCANNERS

Cannon DPI	\$949
Migraph Hand Scanner	call
Prof. Scanlab (Softw+Hardw)	\$795
Sharp JX-300 + Prof Scanlab	\$4349

VIDEO

Camera Lens 16mm w/variable iris	\$49
Camera Panasonic 1500X	\$309
Camera Panasonic WV1410	\$189
Color Splitter	\$109
Flicker Fixer A2000	\$479
Flicker Fixer A500/1/2 Flickoff	\$389
Frame Buffer+Capture A2000 (0K)	\$619
Frame Buf+Capture A2000 (1MB)	\$749
Frame Grabber - 256 Gray Scales	\$636
Frame Grabber - Progressive	\$539
Printerface	\$89

MISC HARDWARE

Amax - 128 ROM Chips ONLY	\$139
Case 2-5.25" HH harddrives-power	\$94
Power supply - A500 Exp. Tech	\$85
Power supply for A500 Trumpcard	\$95
Tape Streamer Fast Tape 60MB Int	\$519
Tape Streamer Fast Tape 60MB Ext	\$599
Tape Streamer WT-150	\$853

SHIPPING POLICY: ALL ORDERS received before 3PM EST will normally be shipped within 2 business days. All UPS shipments are sent Signature Required/No Driver Release. Add the following shipping charges to your Total order amount.

UPS: Ground \$4.50 (cont. USA ONLY); Air/Rush \$8.00 (includes Puerto Rico/Hawaii); Overnight \$12.00 + \$2.50 PER ITEM (must be received by 12 Noon.) Priority Mail: USA \$4.50 (includes APO/FPO); Canada/Mexico \$7.00; Other Foreign \$4.00 Handling + Actual Shipping + Insurance.

HARDWARE: Shipping charges for all hardware are \$4.50 handling + actual shipping charges + 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) 683-5661. 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 telephone number, shipping address, charge card number, expiration date and name of bank.

ACCEPTED PAYMENT METHODS: We gladly accept Personal Checks (no holding), Money Orders, VISA, MASTERCARD, School Purchase Orders, or COD (\$4.00 additional - for established Briwall Customers ONLY). All checks must be in US Dollars and drawn on a US bank. 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 repaired or replaced with the same item only (please allow at least 30 days for returned hardware.)

TECHNICAL SUPPORT Call (215) 683-5699, Monday - Friday, 9am - 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, such as price, compatibility, 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 you will get the most help from our Technical Support Line.

THE GAME PRESERVE

IT CAME FROM THE DESERT

By Dodson Yaple

HEADLESS COWS, sinister cult figures, giant ants—wow, guests on the next *Geraldo*? Nah, just some of the scenery in *It Came From The Desert*, Cinemaware's homage to the bug-fear flicks of the fifties.

You're a visiting geologist in Lizard Breath, where a recent meteor impact was the first excitement in years. Since then, peculiar incidents have disturbed the town's normally tranquil atmosphere. You do a little investigating, and guess what? You find you've become a walking Human McNugget.

The townsfolk are skeptical of your warnings; these desert types take a lot of convincing when it comes to ants the size of locomotives. You won't be able to get your hands on any heavy-duty firepower until you can persuade the dim-witted mayor to declare an emergency, so your first task is to accumulate evidence. Problems arise: Your house catches fire, you meet a mysterious woman on the run, and you have trouble getting enough sleep. Even worse, giant ants keep trying to consume you. These complications are rarely



You'll need more than *Raid* to kill these bugs.

fatal, but they do lead to a lot of costly hospital time under the supervision of the air-headed Nurse Judy. Give her the slip, because you only have a week or two to locate the creatures' nest, venture into its awful depths, and then...

Playing the game is easy and intuitive, especially if you're familiar with Cinemaware's map-and-arcade approach. Amid the mortal combat with knives, cars, pistols, grenades, dynamite, tanks, jet planes, and bug spray there is plenty

of character interaction. Weak dialogue and misspellings limit its effect, but these are the only flaws in an otherwise highly-polished product. The graphics, music and digitized speech are outstanding, the disks are not copy-protected, and you can play from RAM or a hard drive. *It Came From The Desert* is a knockout. (\$49.95, Cinemaware, distributed by Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404, 415/571-7171. One megabyte and joystick required.)

Crib Notes

By Peter Olafson

• The initial puzzle in *The Jetsons* (MicroIllusions, \$39.95) is getting George into his car. Go car. Uh-oh, the canopy is closed. Open canopy. Uh-oh, the canopy is locked. Where are those keys, anyway? Finding them relies on good eyesight more than anything else—so good, in fact, that you may not notice them the first few times through the apartment. Don't expect much help. Everybody seems to have cleared out (*Rastro ris areep*). But there is somebody—or something—around to give you a reluctant hint. Use reverse psychology.

• After the initial expansion phase (the first four or five turns) in *Kingdoms of England* (Incognito, \$44.95), try to sculpt your territory so it has the shortest defensible frontier, and put all your armies on the cutting edge. (You should garrison your home castle, however, at least until you've taken an opponent's.) Don't leave a castle army in interior provinces against the chance of an attack; you can't afford to play a defensive game. Leave vacant any province that isn't under immediate threat of attack.

• You can't get to the heart of Joan of Arc: *Siege and the Sword* (Broderbund, \$49.95) unless you can master two arcade games (and save your progress). The first has you charging across the bridge and chopping up enemy troops. You can get ahead more quickly if you seize opportunity and occasionally change your swordfighting tactics. The other game places you at the foot of three ladders as troops on the parapet hurl rocks and spill boiling oil. All you can do against the oil is jump to the next ladder. The trick ►

NEVER MIND

By David T. McClellan

FULL OF PSYGNOSIS' trademark artwork and crisp animation, *Never Mind* requires

you to reassemble a picture whose pieces are scattered over a perspective landscape

made of floors and walls at right angles to each other.

With a joystick, you walk

Rings of Medusa



GAME OF THE YEAR 1990?

You'll love
this game—
We
guarantee it!



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

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

Circle 214 on Reader Service card.

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

your character (a desperately unhappy medieval-looking figure) around picking up and moving tiles to complete the painting before the time limit runs out. To move between the floors and walls you must find and jump in the proper warp tube. Your reward for a successful round is a crack at the next and nastier puzzle. Fail and you start over at the beginning. There are 250 levels of this madness, each with one or more pictures (made up of square tiles), which you preview whole only briefly.

At higher levels, complications set in. Some pictures are animated and obstacles appear. Chess pieces block your way and move tiles (I think they make legal chess moves, but I was too mad to be sure). Bridges to islands disappear, and quicksand tiles melt under you.

A few touches ease the frustration. Once you reach certain plateaus, you receive passwords that let you skip over preceding levels. You don't score as high when you do this, but the option makes

life easier, as does the pause button. While the help button shows you the completed picture, it then deducts most of your remaining time on that level.

Overall, I give *Never Mind* high marks. The joystick controls are touchy, but the animation, music, and puzzles are great. If you like thinking games, get this one. You won't be sorry. (\$34.95, *Psyclapse/Psygnosis, distributed by Computer Software Services, 2150 Executive Dr., Addison, IL 60101, 800/669-4912. Joystick required.*)

is to know when to advance. There is a small window of opportunity during which the soldier guarding your ladder disappears. Use it.

- You're going to go nowhere fast in *Leisure Suit Larry II: Looking for Love in Several Wrong Places* (Sierra On-Line, \$39.95) unless you look in the garage. I'll wager you know what to do with what you find.

- The first semi-tricky room in *Dragon's Lair* (ReadySoft, \$59.95) is the one with the tentacles. You are more or less led through it—just follow the flashing objects—but your guide is running and you'll need to be quick on the stick. Get your sword out pronto when the tentacle appears, and don't be impatient with the rear door at the end. One timely push with joystick will get you there. More will order lunch for the tentacles.

- If you have a new character in *Alternate Reality: The City* (DataSoft, \$39.95), don't leave the central square. The monsters usually lie low here. The businesses are pricey, but they're close together. (If one isn't offering work, another may be.) Much of consuming interest lies just out of sight, including one of the attribute-enhancing guilds. If you can't afford the Inn, there's a cheaper one on the left up the northern main street.

- If you're not doing so hot as a boxer in the graphic adventure version of *Indiana Jones and the Last Crusade* (Lucasfilms, \$59.95), well, talk is cheap. Virtually every guard in the castle can be outwitted, though it'll take some trial-and-error. You'll have to fight the towering Biff the Nazi, but he'll be a regular Bill the Cat if you have the right combination of items. You'll have to fight at least the first couple of guards after you don the German uniform.

The ticket-taker on the zeppelin won't take any guff from you at all—he wants tickets, not excuses—so be prepared to fight like an Olympic-medal-winning boxer (as the ticket-taker is) if you don't have them.

- You can not only fend off the enemy ▶

POWERDROME

By Timothy Trimble

LIKE CONVENTIONAL racing games, *Powerdrome* offers multiple race tracks, pit stops, qualifying heats, and much more. The big difference is that you fly a quad-boosted Typhoon racer, complete with afterburners.

You can select one of seven tracks (each on a different planet) for practicing or racing against the computer or a friend whose machine is connected to yours via a null modem cable. For a bigger challenge, choose the Championship race, in which you start at Track 1 and continue through Track 7. The graphics are fast, and the sound is great. Being able to nudge other ships, hear them as they approach you, and see them in your rearview monitor, adds to the excitement.

The Typhoon racer's flight characteristics are very similar to those of a fighter plane with a "fly-by-wire" control system. Moving the yoke (mouse or joystick) to the right rolls the racer clockwise with the nose still facing straight down the



Fly through the races.

track. To make a right turn, roll to the right, then pull back on the yoke, which swings the nose of your racer into the turn.

Practice mode pits you and your ship against the walls, twists, and tunnels of the track. Using the racer's force field settings will help to keep you away from the walls, but higher settings reduce your speed. Pit stops give you a chance to repair the wings and engines, re-

place filters (needed for flying in different atmospheres), adjust the roll and pitch characteristics, and select the fuel grade (nitro grade is best, but burns fastest). All that's missing is the smell of the fuel and the hot engines. (\$39.95, *Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404, 415/571-7171. No special requirements.*)

Sullivan Bluth's
DRAGON'S LAIR ESCAPE FROM **SINGE'S CASTLE**™

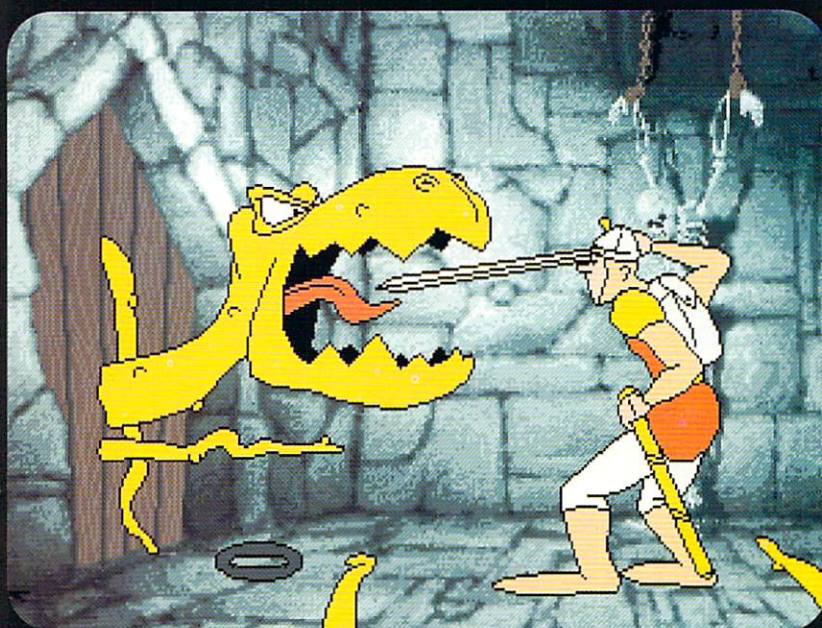


he Adventure continues...

The Evil Shapeshifter has stolen Princess Daphne and to save her you will have to outwit the Evil One in totally new encounters never before seen in the original Dragon's Lair. New scenarios and characters combine to make *Escape from Singe's Castle* the best sequel to the largest selling animated fantasy adventure of all time... Dragon's Lair.

Musten all your skill and cunning to free Daphne from deep within the labyrinthian dungeons of Singe's Castle.

Lead on Brave Adventurer, your quest awaits!



Amiga Screens Shown

ESCAPE FROM SINGE'S CASTLE™

- ◆ Installs on any hard drive for quick loading.
- ◆ Compatible with all 68000, 68010, and 68020 processors.
- ◆ Multitasks peacefully with any 1Mib Amiga.
- ◆ New Burstloader™ technology loads 10 times faster!
- ◆ Three selectable skill levels.
- ◆ Room flipping option increases difficulty.
- ◆ Directional arrows guide you during game play.
- ◆ Saves and restores up to 5 previously played games.
- ◆ Links with the original Dragon's Lair for the ultimate playing experience.
- ◆ Now requires only 512K RAM!
- ◆ Never the same game twice.



Visionary, Ltd., a division of Media Technology Limited
 15235 Shady Grove Road, Suite 100, Rockville, MD

Dragon's Lair® and Escape from Singe's Castle™ are trademarks of Bluth Group, Ltd., and are used under license.
 © Copyright 1989 Bluth Group, Ltd. Character designs © Copyright 1983 Don Bluth. All rights reserved.

Currently for the
 Commodore Amiga
 Coming soon to:
 Atari ST and Apple
 Computers

F-16 COMBAT PILOT

By Kevin C. Rohrer

ANOTHER FLIGHT simulator has rolled out of the Electronic Arts hangar, one with role-playing elements to give it depth.

You begin your F-16 fighter pilot career in the Squadron Crewroom. There you can access your log, pick missions, and perform administrative functions. Once you pick your mission, plan your route using the Electronic Strategic Display, select your aircraft's weapons loadout and fuel, and take off. All the offensive and defensive weapons of a real F-16 are at your command: cannon, bombs, air-to-air and air-to-ground missiles, flares, chaff, and recon pods.

The simulator shines in its multiple levels of play. The first level consists of training,

where you can fly any of seven missions without having to worry about damaging your career, no matter how many planes you crack up. You'll need the practice; the aircraft is overly sensitive to the joystick. Once you've got a feel of your plane, begin your career by picking such operational missions as Tankbuster (close air support), Scramble (air-to-air interception), or three others. With these under your belt, you are promoted from being a mere fighter jockey to commanding your own fighter squadron.

At this level, the simulator takes on role-playing elements. You'll be faced with Operation Deepstrike, which consists of trying to halt a constantly attacking enemy force by assign-

ing your pilots a variety of missions while continuing to fly yourself. Continued combat will take its toll of aircraft, weapons, and spare parts; plan on having to do too much with too little. Should you succeed, you'll be asked to move up to a higher level squadron to face a tougher, more skilled enemy.

F-16's scenery and sounds might not provide the visual and aural delights of other flight simulators, but the detailed aircraft displays, varied missions, and increasingly difficult responsibilities more than hook you into the action. (\$49.95, Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404, 415/571-7171. No special requirements.)

troops around Dameron in Sinbad and the Throne of the Falcon (Cinemaware, \$29.95), you can do away with them entirely. Have your, ah, encounter with the witch Libitina early in the game (play up to her saucy talk), withdraw your forces around the city, and let the Black Prince take Dameron. You will automatically rush home, but this time your fight is to the death. Libbie has made you nearly invincible, so the Black Prince is dog food.

• The Shadow of the Beast (Psygnosis, \$49.95) is a cold place. To warm it up a bit, go left at the start. The well to the right is useless—at least at this point—and what lies beyond (giant bloody horns coming up out of the ground) is more than you want to deal with in the wee hours. Don't go too far left or right when initially underground.

COMPANIES MENTIONED:

Broderbund Software Inc., 17 Paul Dr., San Rafael, CA 94903, 800/527-6263, 415/492-3200.

Cinemaware, distributed by Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404, 415/571-7171.

DataSoft, distributed by Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404, 415/571-7171.

Incognito Software, 34158 Warren, Suite 149, Westland, MI 48185, 313/462-2148.

Lucasfilm, distributed by Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404, 415/571-7171.

MicroIllusions, 17408 Chatsworth St., Granada Hills, CA 91344, 800/255-5217, 818/360-3715.

Psygnosis Ltd., distributed by Computer Software Services, 2150 Executive Dr., Addison, IL 60101, 800/669-4912.

ReadySoft, PO Box 1222, Lewiston, NY 14092, 416/731-4175.

Sierra On-Line Inc., PO Box 485, Coarsegold, CA 93614, 209/683-4468. □

PRO TENNIS TOUR

By Rick Teverbaugh

YOU HAVE TO be careful how you label things. Pro Tennis Tour is billed as: "The Ultimate Tennis Simulation." Tsk, tsk. To make it so, the developers need to correct several flaws.

The manual's organization, completeness, and clarity are atrocious and the game is just too darn difficult. It opens at its easiest level. I had four matches of 6-0 losses before I won a game. The manual gives very little help on how to execute the shots needed to win. On the easy level, the ball always goes over the net on serves, usually when you are at the baseline, and seldom



Play on clay or grass.

when you are at the net. As a hint on where to stand to return a shot, a mark appears on the court. You barely have

enough time, however, to get to it. On more difficult levels the mark disappears, the ball ►

DESK TOP STUFFING.

Konami is cooking now, with a hot computer game that gives



you complete control of world championship caliber basketball, featuring Chicago, New York, Boston and LA.

From the opening tip, it's 5 on 5, full court, board crashing action, highlighted by blocks, steals, picks,



foul shots, 3 point bombs and 3 kinds of slams — the Gorilla, the Rim Rockin' Reverse

and the In-Your-Face Jam!

Two can play at this game, or you can challenge the computer. Either way, it'll take all the runnin' and gunnin' you can muster if you hope to savor the taste of victory.

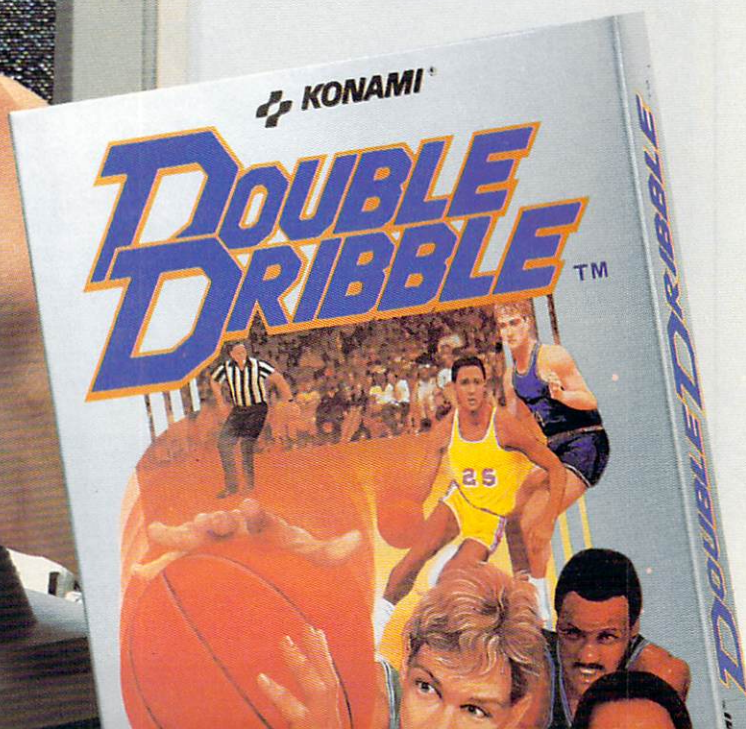
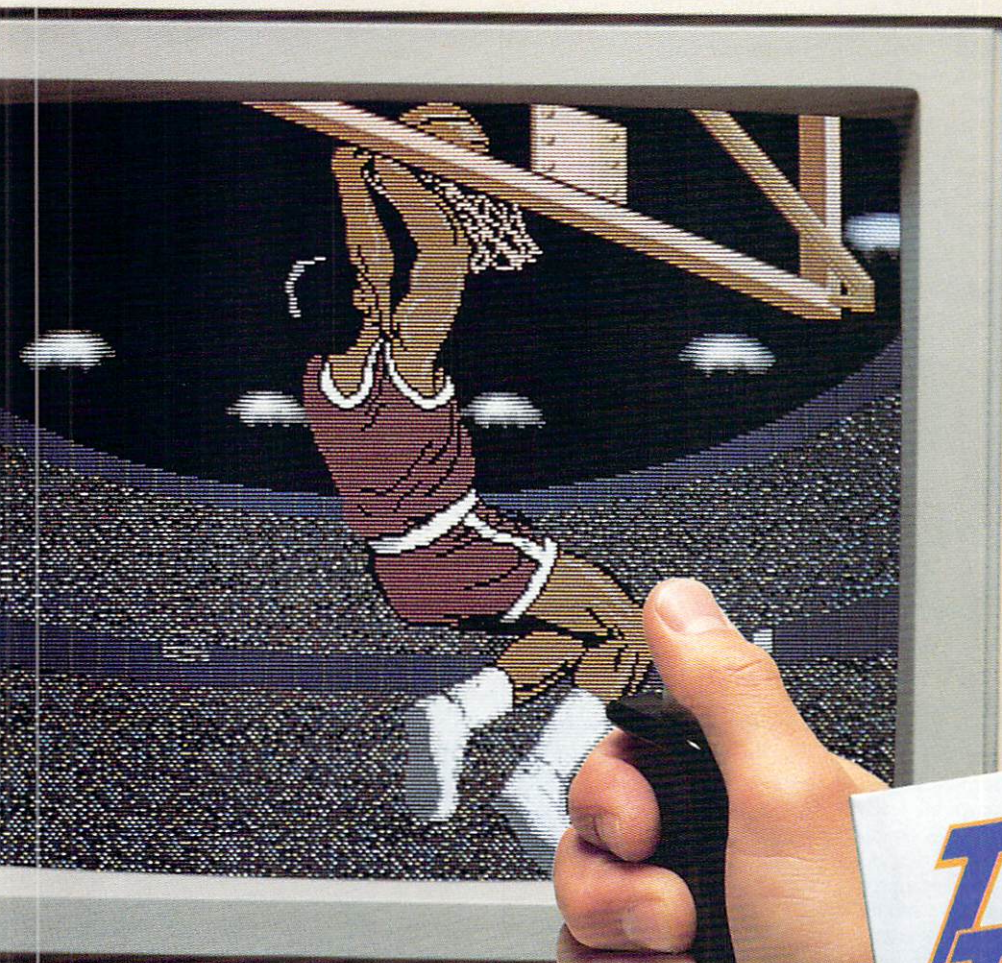


KONAMI®

Konami® is a registered trademark of Konami Industry Co., Ltd. Double Dribble™ is a trademark of Konami Inc. © 1989 Konami Inc. Amiga® is a registered trademark of Commodore-Amiga, Inc. IBM® is a registered trademark of International Business Machines, Inc. Commodore® is a registered trademark of Commodore Electronics Ltd.

Double Dribble is available for IBM. Also Commodore and Amiga in early 1990.

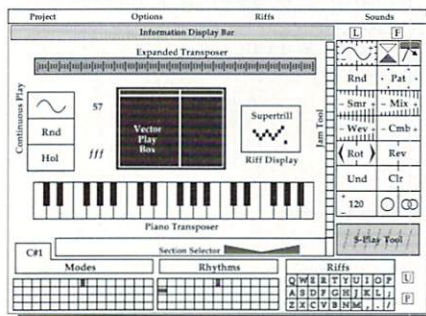
Circle 25 on Reader Service card.





THE DYNAMIC RIFF SEQUENCER

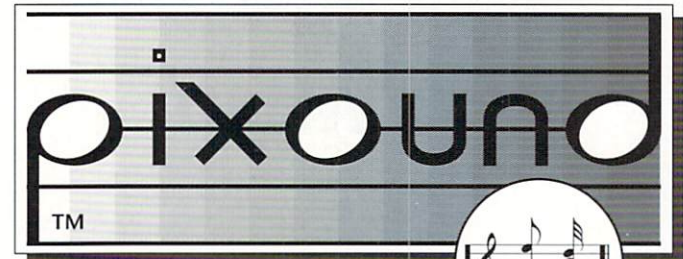
From Hologramphone Research



The Hyperchord Play Screen

Turn your Amiga into a powerful new instrument with **Hyperchord™**, the dynamic riff sequencer. Create themes, from simple scale runs to complex "Riff Waves," using original Hg functions such as Smear, Rotate, Weave, Reverse, and Mix. Change pitch, speed, rhythm, harmonies and orchestration. For intense riffing, switch between 60 user-defined scale modes and 40 rhythms, or employ unique cyber-musical tools such as Holistic Play and Vector Play. Store for real-time playback or record performance. Disk includes three **Hyperchord** utilities: *Mode Maker*, *Rhythm Maker*, and *Holistic Window*.

THE MUSICAL GRAPHICS PLAYER

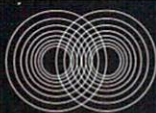


Listen to a Lichtenstein!



Detail from Roy Lichtenstein's "Woman Sitting On a Chair"

Pixound™ is new kind of musical instrument as well as a powerful MIDI controller (uses Amiga sounds too). Load up any graphic image or use **Pixound's** screen generators. Invent a new instrument with every screen, then play it with the mouse. Create shimmering bursts of notes or slow, lyrical harmonies with the touch of a key. Save your work either as a musical sequence or a screen – or both. Great fun for the beginner; endless challenge for the virtuoso.



Hologramphone Research
6225 S.W. 145th Street
Miami, Florida 33158

becomes increasingly harder to control, and serving becomes a three-step process. You definitely need to practice against the ball machine before tackling the four grand slam events.

Against the computer foe, you are always on the side of the net in the foreground of the end-view screen. To make matters worse, the good computer opponents often hit the ball at such sharp angles that you need to go beyond the side out-of-bounds line. The program, however, won't let you run past the sideline to return a shot.

Because of the program's size, owners of only 512K machines must disconnect all peripherals before attempting to load and play the game. The command card tells Amiga 1000 owners to call customer service if they have problems loading the game.

While its graphics are gorgeous and the sound very life-like, *Pro Tennis Tour* is below the usual quality of the Electronic Arts sports line. Sit out this match. (\$39.95, UBI Soft, distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404, 415/571-7171. Joystick required.)

VORTEX

By Bruce Jordan

MAN HAS BEEN mucking about with the forces of nature and ripped a hole in the fabric of space-time itself. In *Vortex*, you must close the hole before matter meets antimatter and both universes go *poof!* Along the way, you'll need to battle a continual onslaught of enemy critters.

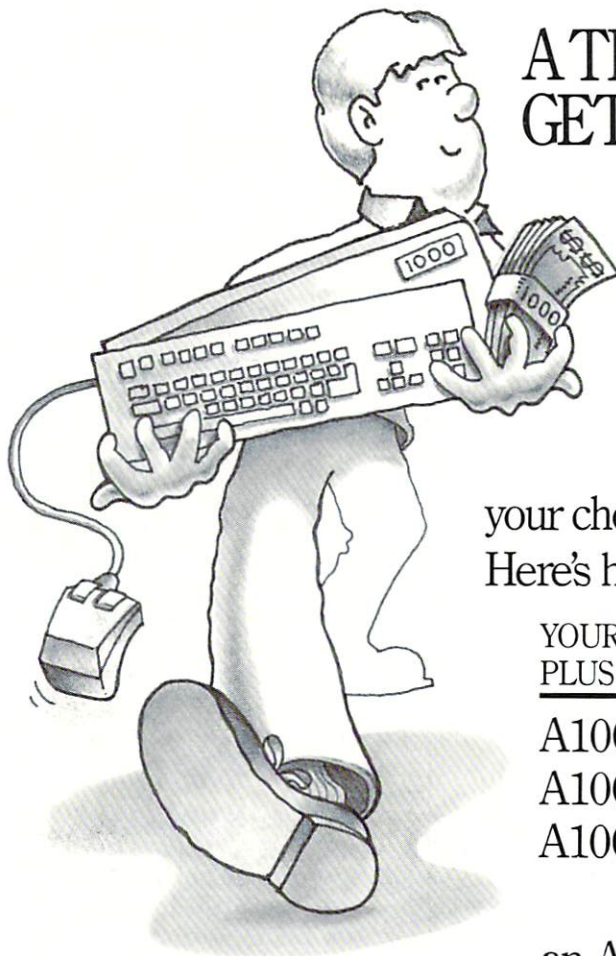
In the center of the circular game screen depicting deep space is an ominous, thrumming vortex of doomed stars and super-heated matter. The vortex spews out antimatter pods, which adhere to the containment wall, and several free-floating nasties. You must maneuver your ship (via the mouse) about the screen, attempting to return the antimatter to the vortex (bank shots off the containment wall work well), while fending off attacks. You can even launch decoy ships to lure the enemy to its destruction.

Vortex is an arcade game in the strictest sense: You cannot save games, and one slip sends you back to square one. You can

choose from three starting levels, but can reach higher levels only by successfully completing previous ones. The manual is short and to the point, plus gives a few hints. The introductory screens provide additional scoring information.

While visually beautiful, intense, deadly, and addictive, the game is rather like a baroque fugue: It increases in complexity without much theme development. *Vortex* is one-dimensional without imagination and depth worthy of its presentation. Seasoned arcade players will find it lacking. (\$44.95, Visionary Designs, distributed by Media Technology Ltd., 15235 Shady Grove Rd., Suite 100, Rockville, MD 20850, 301/926-8300. No special requirements.) ■

THE COMPUTER DEAL OF THE DECADE.



A THOUSAND PLUS A THOUSAND GETS YOU AN AMIGA 2000.

Between now and March 31, Commodore is offering an incredible trade-up offer to all Amiga 1000 owners. By bringing your A1000 computer in to any participating Authorized Commodore Dealer, you can save hundreds – even thousands – of dollars on the CPU of your choice from our powerful Amiga 2000 series. Here's how it works:

YOUR TRADE-IN PLUS CASH	LETS YOU BUY	RETAIL VALUE*	YOU SAVE
A1000 + \$2999	A2500	\$4699	\$1700
A1000 + \$1599	A2000HD	\$2699	\$1100
A1000 + \$ 999	A2000	\$1899	\$ 900

Don't miss this special opportunity to become an Amiga 2000 owner. Commodore will be introducing many new exciting technologies for the Amiga 2000 series in the 1990's, and we want you to be able to take advantage of them all.

Call 800-343-9595 for the Authorized Commodore Dealer nearest you. But call soon. The offer ends March 31st – and this may very well be your last chance to get such a deal on an Amiga 2000.

AMIGA®. THE COMPUTER FOR THE CREATIVE MIND.™
C-Commodore®

Circle 15 on Reader Service Card

*Manufacturer's suggested retail price. Taxes not included. © 1990 Commodore Electronics, Ltd. Commodore and the Commodore logo are registered trademarks of Commodore Electronics, Ltd. Amiga is a registered trademark of Commodore-Amiga, Inc.

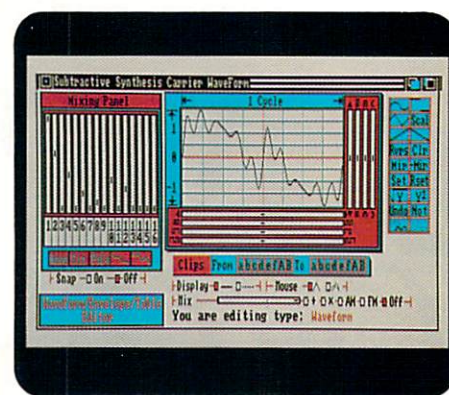
from p. 14

a traditional synthesizer, which produces an immediate change in sound based on your edition of a patch's parameters, Synthia Professional calculates a waveform from the vast array of parameters available. You can load the result into one of the supported samplers, just as you would with any sample.

The program also serves as an editor to cut, paste, and loop existing samples

or its own synthesized waveforms. It has a plethora of digital signal-processing (DSP) functions, and is compatible with most common file formats.

The package includes the program disk (which is copy protected with the key-disk format), a disk packed with examples of all program functions (which are referenced in the manual), and a utilities disk containing a SMUS player and several musical scores produced us-



Less is more in subtractive synthesis.

ing Synthia sounds. You'll need at least a meg of memory to run the program, and as always when samples are involved, the more RAM the better.

THE FAT LADY SINGS

The sizable Synthia Professional offers many, many ways to create sound. The place to start is the Synths menu. New Instrument Parameters, the first menu item, dictates the parameters of the sound or "instrument" to be generated. These include sample rate and length, root key, number of samples (four or five comprise the average multi-sampled instrument), the interval of each sample, auto-looping, and Presets, which set the configuration for a particular file format.

Selecting a synth opens a window of parameters. All synth modules are set up similarly, each containing parameters pertinent to its own form of synthesis. Because you cannot size these windows, screen clutter can be a problem (I solved this by using D-Mouse, a public-domain utility that summons any window with a mouse click).

Every window has a Make gadget, which tells the program to calculate a waveform from the settings in the window. Each also has an Undo gadget for cancelling the last action, and a Keyboard gadget that opens a keyboard window and allows you to play sound with the mouse while showing the key map range of each sample. A sample selector tells you which of the several samples that may be in the current instrument will be affected by changes. Another selector determines whether the sample(s) created will be based on the data in the New Parameters window or on another

Authorized
COMMODORE
AMIGA
Dealers

COMPUTERS
etc!

ORDERS ONLY (800) 634-5546
HOTLINE (813) 378-3477
MODEM ONLY (813) 378-3477
LOCAL (813) 377-1121

SOFTWARE

TV Text	62.50
TV Text Pro	106.25
Broadcast Titler	187.50
Video Effects 3D	125.00
Turbo Silver	112.50
Music X	149.95
Kara Fonts	CALL
Pixmate	43.75
Forms in Flight	12.50
Pro Video Gold	187.50

**DELUXE PAINT III &
DELUXE VIDEO III**
only \$89.95 each!
DIGIPAIN 3.0 \$59.95

HARDWARE

SAVE ON SUPRA PRODUCTS!

Amiga 2000 Products	
80 MB Quantum Hard Card	915.00
40 MB Quantum Hard Card	625.00
8 MB Ram Card with 2 MB	325.00
Amiga 500 Products	
80 MB External Hard Drive	940.00
40 MB External Hard Drive	695.00
20 MB External Hard Drive	495.00
2 MB Ram Board for Above	260.00
512K Ram Expansion w/clock	110.00
SupraModem 2400 Baud	129.95
w/Cable and Software	
Bridgeboard Speaker	19.95
HD-150 Replacement Power	99.00
Supply for the A500	
HD-150DL (Deluxe)	129.00



Supergen	650.00	Magni 4004 Genlock	1649.95
Scanlock	895.00	Frame Grabber	569.96
VD1 Frame Buffer	920.00	Progen	349.95
DigiView 4.0	139.95	Amigen	129.95

As always, we've opted for readability rather than quantity of items in our ad. Please call for prices on products that don't appear here.

**CALL (800) 634-5546 TO PLACE AN ORDER
OR TO RECEIVE OUR FREE 48 PAGE CATALOG**

Sensational Service With *Sprite Technology*

ORDERS: **800-634-9315**

Customer service & order status: 404-535-8806

HOURS: 9-6 MON-FRI EST

VISA, MasterCard, Discover, AmExpress
cards accepted. No credit card surcharge.
Your credit card is not charged until we ship.

HARDWARE

Amiga 500.....	CALL
Amiga 20M HD/500	\$619
Amiga 501 RAM Card.....	\$149
Amiga 520 Video Adapter.....	\$40
Amiga 1084 Monitor.....	\$309
Amiga 2000.....	CALL
Amiga 2000HD	CALL
Amiga 2500/20.....	CALL
Amiga 2500/30.....	CALL
Amiga 020/881/2MB (A2000)	CALL
Amiga 030/882/2MB (A2000)	CALL
Amiga 2010 In. Floppy.....	\$149
Amiga 1010 Ex. Floppy.....	\$129
3.5" In. Floppy/Chinon.....	\$112
3.5" Ex. Floppy/C.A.880.....	\$139
Baud Bandit modem w/Software	\$139
CSA TurboAccelerator (A500)	CALL
GVP Hardcards.....	CALL
GVP 68030 Accelerator.....	\$875
GVP 68030/882/4MEG.....	\$2599
GVP 030/40M HD/4M RAM/68882.....	\$2995
GVP 030/80M HD/4M RAM/68882.....	\$3499
Microbotics 8UP.....	\$172
Microbotics Hard Frame	\$246
Microbotics StarB2/1M.....	\$349
Microbotics StarB2 SCSI	\$98
Microbotics 501 RAM/OK	\$60
Supra 512K/A500	\$89
Supra Hard Drives	CALL
Supra 2400 Modem	\$124
Supra Internal Modem	\$134
Supra 8M/2M RAM A2000.....	\$319
Supra 8M/OK RAM A2000	\$175

SOFTWARE

Amiga Graphics Starter Kit	\$63
Animation Apprentice.....	\$185
Animation.....	\$63
Broadcast Titler.....	\$189
Deluxe Paint III	\$99
Deluxe Productions.....	\$130
Deluxe Video III	CALL
Digi-Paint 3.....	\$62
DigiWorks 3D.....	\$81
Director	\$45
Distant Suns	\$44

Draw 2000	\$169
Dunlap Utilities.....	\$50
Excellence	\$185
Fantavision	\$38
Invision Plus.....	\$187
Maxiplan Plus	\$94
Modeller 3D	\$63
Movie Setter.....	\$62

Video Specials

Anakin Easy! 2000	\$387
Framebuffer	\$469
Framebuffer w/Capture	CALL
Framegrabber	CALL
Live!	CALL
MicroWay Flicker Fixer.....	\$479
Magni Genlock	\$1499
Scanlock	\$879
SuperGen.....	\$689
SuperGen 2000s.....	CALL
DigiView Gold 4.0.....	\$149
Perfect Vision.....	\$189

On Line Platinum	\$97
Opticks	\$75
PAGE render 3D	\$99
Photon Paint 2.0	\$94
Photon Video	\$94
Pix Mate.....	\$43
Pixil Script.....	\$94
Professional Draw.....	\$123
Professional Page.....	\$246
ProPage Structured Clip Art	\$38
ProPage Templates	\$38
Project 'D'	\$32
ProVideo Gold	\$195
Sculpt Animate 4D.....	\$429

Sculpt Animate 4D Jr.	\$94
Sculpt 3D	\$72
Super Heroes Clip Art.....	\$22
Turbo Silver	\$125
Video Effects 3D	\$125
Videoscape 3D	\$125
Videotitler.....	\$93
Workbench 1.3 Update.....	\$19
Works Platinum.....	\$156

GAMES

Archipelagos	\$24
Bard's Tale II	\$42
Chessmaster 2000.....	\$34
Eye of Horus	\$24
Kingdoms of England.....	\$28
Magic Johnson -1Mb	\$31
OmniPlay Basketball.....	\$35
Populous.....	\$38
Pro Tennis Tour.....	\$28
Space Ace	\$37

MUSIC WARE

A.M.A.S. MIDI/Sampler.....	\$127
Audiomaster II.....	\$62
Bars & Pipes	\$188
Deluxe Music	\$65
Dr.T's Copyist Pro	\$165
Dr.T's DX Heaven	\$94
Dr.T's Midi Rec Studio	\$44
Dr.T's KCS	\$156
Dr.T's KCS Level II	\$219
Master Trax Pro	\$237
Music X	\$186
M for Amiga	\$125
Perfect Sound 3.0	\$75
Pro MIDI Studio	\$126
Sonix.....	\$50
Sound Trax 1 or 2	\$15
Texture II	\$156

AMIGA ACCESSORIES

Beach Towel	\$16
Golf Cap - grey or white.....	\$8
Golf Shirt - L or XL	\$20
Sweatshirt - L or XL	\$16
Sports Bag	\$19

Starter Software Kit:

TV Text, Money Mentor, Text Craft Plus,
Arkanoid, Graphics Studio

Holiday Gift Pack:

Master Type, PHASAR 3.0, Who-What-
Where-When, F- 40, Hole in One Golf, a
joystick, \$310 value

Educational Software

Sprite Technology

Circle 206 on Reader Service card.


Defective returns must have a return authorization number. Shipping and handling are non-refundable. Returns subject to restocking fee. We cannot guarantee compatibility. All sales are final and prices are subject to change without notice. All stocked items are not listed so please ask for our complete product listing.

Amiga is a registered trademark of Commodore Business Machines, INC.

sample. In most windows you will also find a Waveform gadget; it opens yet another window in which you can design carrier waveforms. Gadgets for modulators and envelopes open similar windows. A Frequency slider governs the frequency of the generated instrument, but no readout is available to tell you what that frequency is. Finally, every window has a Mix slider to combine the current sample with whatever that window generated. This can be a straight mix or a multiplication, which results in ring modulation.

SHAPING UP

The Waveform/Envelope Editor provides an incredible number of ways to design a wave or envelope. It occupies the entire screen, and you cannot open other windows over it. A title and a message tell whether you are editing a waveform or an envelope. In the center is a box that displays the current waveform. When you are editing a wave, the horizontal scale in the box reads "1 cycle"; if you are working with an envelope, that scale reads "length of sound." (A real-time



Synthia Pro allows me to implement more than one form of synthesis at a time and it sounds realistic rather than electronic. The program works well in a multitasking environment and comes with an excellent manual.

—Allen Slacks
West Hollywood, CA

scale, helpful in designing envelopes for long sound effects, is not included.) At the bottom and right are sliders that position, expand, contract, and distort the waveform horizontally and vertically. To the far right is another box containing buttons to draw sine, square, and triangle waves, to scale to full amplitude, to draw ramp up or ramp down (for envelopes), to reverse, mirror, square, or take the square root of the current waveform, to smooth out rough spots, produce random shapes, and to clear the area.

At the far left is a panel of sliders for mixing harmonics one through 16. If you choose Wave, the panel mixes the selected harmonics of the current wave at the levels set by the sliders. If Sine is selected, the wave is replaced by a mix of sine wave harmonics (a kind of non-dynamic additive synthesis). Poly creates a mix of Chebyshev polynomials with slider one representing the first order polynomial, two representing the second, and so on. The Linear and Spline EG options draw straight and curved lines. A mix slider causes any function that would otherwise have modified the waveform to act on it as a modulator. Finally, you can have up to eight clips on line at a time and copy settings between Waveform/Envelope Editors.

IN PRODUCTION

The Subtractive Synthesis module bears little resemblance to its analog counterpart, and its harmonic possibilities far outnumber those available in an analog synthesizer. Two of the most critical components of subtractive synthesis—envelope-controlled filter and amplifier—►

Even Up The Score!



Let your Amiga give you the Advantage in making *better investment decisions!*

Color graphics of Individual Stocks and General Market Trends help you make more profit in this volatile market. High Low Close, Moving Averages, Centered Moving Averages, Volume, Relative Strength, Stochastics, Wilder's RSI, Cycles, Trend lines and Momentum. Powerful reports such as the Relative Strength Report help you pick the best performers. Use the Market Barometers to help you time your market entries. Update Stocks, Mutual Funds and Commodities manually or automatically. Easy to use communications included. *Call Today! for complete information: (313) 463-4995.*

Version 2.0



See your local Dealer or Call:
Software Advantage Consulting Corporation
38442 Gail, Mt. Clemens, MI 48043

Only \$99.95 Demo Disk \$7.95

Amiga and the Investor's Advantage are trademarks of their respective companies.

More than just a Hard Disk Backup Utility

ExpressCopy

Rapidly copies directories and files to floppy disk

FAST Copies directories and files from Hard Disk to Floppy Disk at up to 1 MegaByte per minute. Can format, verify, AND fill a new floppy disk with files in less time than it takes AmigaDOS to format a new disk!

SAFE Other Hard Disk Backup Programs this fast create NON standard disks that can only be used by their program. NOT ExpressCopy! ExpressCopy creates STD DOS disks that look just as if you had done a copy from your Hard Disk to floppy. If your Hard Disk failed, the backup disks can be used NORMALLY from both the CLI and Workbench! This gives you a SAFE and EASY way to access important files you backed up.

Select files by their DateStamp, pattern matching, Archive Bit, and by source directory. Exclude files from being copied by filename pattern matching. All file attributes (DateStamp, Protection Bits, and FileComment) are retained. Options for setting the Archive bit for incremental backups, verifying the data written to floppy disk, and estimating the number of disks needed for the backup. Up to 4 copies of the backup disks can be created at a time, or disks can be pre-loaded in up to 4 disk drives. New disks are automatically formatted and verified. Easy recovery if a bad diskette is found.

Parameters to be used for backups can be saved in configuration files. Either Normal or Fast File compatible disks can be written. Specifically designed for effective multitasking. Backup restoration can be done using any file copy program, a Directory Utility, or ExpressCopy's Restore program. Can be used from both the CLI and Workbench and has no copy protection. Fully documented with a 65 page manual which includes a 25 page section with help and ideas on how you can better organize and manage your Hard Disk.

All these features and speed for ONLY:

\$44.95 US

Check/Money Order/MC/VISA
Add \$4 (\$8 outside US and CAN) for shipping & handling.
Missouri residents add 5% sales tax.

Express-Way Software, Inc.
PO Box 10290
Columbia, MO 65205-4005
(314) 474-2984
Hours 9AM - 5PM CST

Requires an Amiga with at least 512k ram and Version 1.2 or higher of AmigaDOS
Amiga, AmigaDOS, and Workbench are trademarks of Commodore-Amiga, Inc.

Computer Mart

BEST BUY

Baud Bandit Modem

\$99.00

HAYES COMPATIBLE
300/1200/2400 BAUD

SOFTWARE

3-DEMON	68.00
AMIKIT	24.00
AMI ALIGNMENT KIT	32.00
ANALYTIC ART	38.00
ANALYZE 2.0	62.00
ANIMATOR APPRENTICE	187.00
AQUAVENTURE	24.00
ARCHITECTURAL DESIGN	22.00
AREXX	30.00
ARKANOID	25.00
ASSEMPRO	69.00
ATLAK III	60.00
B.A.D.	30.00
BAD DUDES	27.00
BARD'S TALE II	37.00
BATTLE CHESS	30.00
BAUD BANDIT	30.00
BBS-PC	92.00
BENCHMARK MODULA 2	138.00
BENCHMARK LIBRARIES	69.00
BEYOND DARK CASTLE	21.00
BLITZ ON THE ARDENNE	37.00
BLOOD MONEY	24.00
BLUE ANGELS	28.00
BREACH II	30.00
BREACH SCENARIO DISKS	19.00
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
CAN DO	99.00
CAPE 68K ASSEMBLER	59.00
CAPONE	35.00
CAPTAIN BLOOD	31.00
CARMEN SAN DIEGO	27.00
CARRIER COMMAND	28.00
CENTERFOLD SQUARES	20.00
CHESSMASTER 2000	31.00
CHRONOQUEST	24.00
CITY DESK 2.0	120.00

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
DISTANT SUNS	42.00
DOS TO DOS	32.00
DOUGS MATH AQUARIUM	51.00
DOWNHILL CHALLENGE	21.00
DR. T'S SOFTWARE	39.00
DRAGON'S LAIR	42.00
DRAGON'S LAIR II	42.00
DRUM STUDIO	30.00
DUNGEON MASTER	24.00
DYNAMIC DRUMS	51.00
DYNAMIC STUDIO	138.00

HARRIER MISSION	19.00
HEROES OF THE LANCE	26.00
HOLE-IN-ONE MIN. GOLF	22.00
HOLLYWOOD POKER	22.00
HONEYMOONERS	25.00
HUMAN DESIGN	22.00
HUNT FOR RED OCTOBER	35.00
HYBRIS	34.00
INDOOR SPORTS	25.00
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
IT CAME FROM THE DESERT	35.00
JACK NICHOLAS GOLF	30.00
JET	36.00
JETSONS	21.00
JEWELS OF DARKNESS	30.00
JIGSAW	30.00
JINXTER	28.00
JOAN OF ARC	39.00
KAMPFRUPPE	19.00
KARTING GRAND PRIX	32.00
KINDERAMA	63.00
KINDWORDS	30.00
KINGDOMS OF ENGLAND	27.00
KING OF THE CASTLE	35.00
KRISTAL	26.00
LANCELOT	19.00
LAS VEGAS	204.00
LATTICE C 5.0	29.00
LAZERSCRIPT	29.00

Supra Corporation Expansion Products

SupraRam 2000 2 Meg	324.00
SupraDrive 2000 40Q	667.00
SupraDrive 2000 80Q	959.00
SupraDrive 2000 105Q	1056.00
SupraDrive 500 20 Meg	480.00
SupraDrive 500 30 Meg	618.00
SupraDrive 500 40Q Meg	720.00
SupraDrive A500 Ram 2 Meg	275.00

EARL WEAVER BASEBALL	35.00	LEADER BOARD DUAL PACK	21.00
EMPIRE	35.00	LIGHTS, CAMERA, ACTION	51.00
EUROPEAN SCENERY DISK	18.00	LINKWORD LANGUAGES	19.00
EXCELLENCE	174.00	LION'S FONTS	54.00
F16 COMBAT PILOT	38.00	LORDS OF THE RISING SUN	36.00
FA INTERCEPTOR	35.00	M	155.00
FACC II	24.00	MAC 2 DOS	90.00
FAERY TALE ADVENTURE	35.00	MAC 2 DOS W/MAC DRIVE	336.00
FAERY TALE HINT BOOK	10.00	MAGELLAN	117.00
FALCON	30.00	MAGIC JOHNSON BASK.	30.00
FALCON MISSION DISK 1	15.00	MANHUNTER SF	30.00
FAMILY TREE	30.00	MANIC INVADERS	19.00
FANTAVISION	38.00	MARBLE MADNESS	15.00
FEDERATION	30.00	MASTER TYPE	28.00
FERRARI FORMULA I	35.00	MATH MAGICIAN	28.00
FIGHTER BOMBER	35.00	MATH TALK	35.00
FINE PRINT	30.00	MATH TALK FRACTIONS	35.00
FIRE POWER	16.00	MATH WIZARD	32.00
FIRST LETTERS & WORDS	35.00	MAVIS BEACON TYPING	35.00
FIRST SHAPES	35.00	MAXIPLAN 500	94.00
FLIGHT SIMULATOR II	36.00	MAXIPLAN PLUS	126.00
FLIPSIDE	38.00	MEAN 18	28.00
FLOW	65.00	MENACE	28.00
FORMS IN FLIGHT II	72.00	MICROBOT DESIGN DISK	22.00
FRACTION ACTION	32.00	MICROFICHE FILER PLUS	108.00
GETTISBURG	42.00	MICROLAWYER	38.00
GIZMOS 2.0	44.00	MIDI MAGIC	92.00
GOLD RUNNER	28.00	MIMETICS UTILITIES 1	40.00
GOLD SPELL II	29.00	MINI PUTT	24.00
GOLDEN PATH	21.00	MISSION CON-BAT	29.00
GRABBIT	52.00	MISSION ELEVATOR	32.00
GRADE MANAGER	28.00	MODELER 3D	88.00
GRAND PRIX CIRCUIT	38.00	MOEBIUS	41.00
GRAPHIC STUDIO	25.00	MONEY MENTOR	61.00
GREAT STATES II	19.00	MONOPOLY	24.00
GRID START	35.00	MOVIE CLIPS	21.00
HAUNTLEY II	35.00	MOVIESETTER	63.00
HACKER II	28.00	MULTI-FORTH	56.00
HARDBALL	35.00	MUSIC MOUSE	50.00
HARRIER COMBAT SIM.	35.00	MUSIC STUDENT	35.00

NEUROMANCER	27.00	TAX BREAK	48.00	GEN ONE GENLOCK	699.00
OBITERATOR	28.00	TECNOPOP	29.00	GO 64	24.00
ONE ON ONE	14.00	TEEN, MUT. NINJA TURTLES	28.00	GO 64 INTERFACE CABLE	15.00
ONLINE PLATINUM	60.00	TERRORPODS	28.00	GRAVIS ADVANCED JOYSTK	35.00
OPERATION WOLF	24.00	TEST DRIVE II	27.00	GVP 68030 BOARD	CALL
OPTICKS	120.00	TEXTPRO	53.00	GVP 68030 W/68882	CALL
ORGANIZE	63.00	THE ACCOUNTANT	190.00	GVP 68030 W/4 MEG	CALL
OUTRUN	29.00	THE THREE STOOGES	35.00	GVP 20 MEG HARDCARD	575.00
PAPER BOY	30.00	THE WORKS PLATINUM	178.00	GVP 30 MEG HARDCARD	698.00
PAGE STREAM	138.00	THEXDER	26.00	GVP 45 MEG HARDCARD	816.00
PAGEFLIPPER + F/X	94.00	THUNDERBLADE	30.00	GVP IMPACT A500	CALL
PALADIN	28.00	TIME AND MAGIK	26.00	GVP A500 RAM MODULE	66.00
PEN PAL	90.00	TITAN	27.00	GVP SCSI RAM A2000 0K 1M294.00	564.00
PHANTASIE III	104.00	TRACER	35.00	GVP SCSI RAM A2000 2M	564.00
PHASAR 4.0	56.00	TURBO SILVER	115.00	HD-6A HARD DRIVE CASE	125.00
PHOTON CELL ANIMATOR	104.00	TV SPORTS FOOTBALL	41.00	INBOARD 0K A1000	216.00
PHOTON PAINT 2.0	90.00	ULTIMA IV	30.00	INBOARD 512K A1000	249.00
PHO. PAINT SURFACE DISK	18.00	ULTRA DESIGN	230.00	INBOARD 1 MEG A1000	279.00
PIXELSCRIPT	90.00	UNINVITED	30.00		
PIXIMATE	44.00	V.I.P.	30.00		
PLATOON	28.00				
POPULOUS	36.00				
PORT OF CALL	32.00				
POWER WINDOWS 2.5	62.00				
PRINTMASTER +	32.00				
PRISON	24.00				
PRO ASM	66.00				
PRO BOARD	355.00				
PRO NET	355.00				
PRO SOUND DESIGNER	98.00				
PRO VIDEO GOLD	179.00				
PRO. DATARETRIEVE	195.00				
PRO. FOOTBALL SIM.	28.00				
PROFESSIONAL PAGE 1.3	199.00				
PROJECT D	32.00				
PROWRITE 2.5	78.00				
QIX	21.00				
QUADRALIENS	18.00				
QUARTERBACK	48.00				
QUESTRON II	32.00				
RAW COPY	36.00				
RISK	24.00				
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	35.00				
SARGON III	28.00				
SCRIBBLE PLATINUM	90.00				
SCULPT 3D XL	99.00				
SCULPT 4D	350.00				
SCULPT/ANIMATE 4D JR	99.00				
SEX VIXENS	24.00				
SHANGHAI	28.00				
SHINOBI	30.00				
SHOOT 'EM UP CONT. KIT	15.00				
SILENT SERVICE	28.00				
SINBAD & FALCON	35.00				
SKY CHASE	27.00				
SLAYGON	49.00				
SONIX	28.00				
SOUND QUEST	24.00				
SOURCE LEVEL DEBUGGER	56.00				
SPEEDBALL	24.00				
SPELLER BEE	28.00				
STELLAR CONFLICT	35.00				
STELLARIX	24.00				
STRIP POKER II	24.00				
STRYX	21.00				
STUDIO MAGIC	63.00				
SUB BATTLE	27.00				
SUPERBACK	48.00				
SUPERBASE PERSONAL 2	87.00				
SUPERBASE PRO	207.00				
SUPERPLAN	99.00				
SUPERSTAR ICE HOCKEY	35.00				
SWORD OF SODAN	53.00				
SYNCHRO EXPRESS	59.00				
SYNTHIA	24.00				
TARGIS	24.00				
TARGHAN	24.00				

VIDEO EFFECTS 3D	130.00	INBOARD 1.5 MEG A1000	314.00
VORTEX	24.00	INBOARD 0K A500	216.00
WAYNE GRETZKY HOCKEY	30.00	INBOARD 1 MEG A500	279.00
WORDPERFECT	145.00	INBOARD 2 MEG A500	389.00
WORDPERFECT LIBRARY	90.00	KRONOS SCSI 1000	288.00
WORLD TROPHY SOCCER	30.00	KRONOS SCSI 500	253.00
X-CAD DESIGNER	90.00	KRONOS SCSI 2000	216.00
X-CAD PROFESSIONAL	299.00	MIDI GOLD A500	58.00
		MIDI INSIDER A2000	65.00
		MIDI STAR	216.00
		MINI-GEN	179.00
		MODEM CABLE A1000	15.00
		MODEM CABLE A500/A2000	15.00
		MOUSE MASTER	27.00
		MOUSE PADS	9.00
		NEC PINWRITER 2200	379.00
		PERFECT SOUND	66.00
		PERFECT VISION	189.00
		PRO GEN GENLOCK	349.00
		SCSI CABLES	25.00
		SEAGATE ST157N 48 MEG	371.00
		SEAGATE ST138N 30 MEG	336.00
		SEAGATE ST296N 85 MEG	545.00
		SI COLOR SPLITTER	98.00
		STARBOARD II 512K	259.00
		STARBOARD II 1 MEG	299.00
		STARBOARD II 2 MEG	399.00
		SUPER GEN GENLOCK	699.00
		SUPRA 2400 MODEM	119.00
		SUPRAM 2000 2 MEG	324.00
		SUPRAM 2000 4 MEG	544.00

F-DATA 10 External 3.5" Floppy \$115.00 100% A1010 Compatible

VIDEO EFFECTS 3D	130.00
VORTEX	24.00
WAYNE GRETZKY HOCKEY	30.00
WORDPERFECT	145.00
WORDPERFECT LIBRARY	90.00
WORLD TROPHY SOCCER	30.00
X-CAD DESIGNER	90.00
X-CAD PROFESSIONAL	299.00

Super Special A501 CLONE \$79.00 512K MEMORY With Clock/ Calendar

HARDWARE

8 UP OK	179.00
8 UP W/2 MEG	324.00
8 UP W/4 MEG	469.00
8 UP W/6 MEG	629.00
8 UP W/8 MEG	779.00
AIR DRIVE EXT.	149.00
AIR DRIVE INT.	139.95
APRODRAM 12 X 12	480.00
CALIFORNIA ACCESS	139.00
CITIZEN GSX-140 PRINTER	399.00
GSX-140 COLOR OPTION	49.00
CS-1 COPY STAND	62.00
DIGI-VIEW GOLD 4.0	139.00
EPYX 500 XJ JOYSTK	14.00
ERGOSTICK JOYSTK	18.00
EXP 8000 OK	329.00
EXP 8000 2 MEG	449.00
EXP 8000 4 MEG	599.00
EXP 8000 8 MEG	899.00
F-DATA 10 FLOPPY	115.00
FLICKER FIXER	510.00
FLICKER MASTER	12.00
FRAMEGRABBER	529.00
FUTURE SOUND 500	99.00

LIMITED TIME OFFER X-CAD DESIGNER \$79.00 X-CAD PROFESSIONAL \$269.00

SUPRAM 2000 6 MEG	725.00
SUPRAM 2000 8 MEG	913.00
SUPRAM 500 2 MEG	275.00
SUPRA DRIVE 500 40 MEG	720.00
SUPRA DRIVE 500 60 MEG	840.00
SUPRA DRIVE 2000 30 MEG	552.00
SUPRA DRIVE 2000 40Q	667.00
SUPRA DRIVE 2000 80Q	959.00
SUPRA SCSI 500	168.00
SUPRA SCSI 1000	216.00
SUPRA WORDSYNC 2000	168.00
VD-1 FRAMEGRABBER	920.00
VITECH SCANLOCK	875.00
VW-1410 W/LENS,CABLE	238.00
X-SPECS 3D	94.00

Spirit Technology Even Lower Prices

A500 & A1000 Memory Expansion

Inboard 512K	\$249.00
Inboard 1 meg	\$279.00
Inboard 1.5 meg A1000	\$314.00
Inboard 2 Meg A500	\$369.00

Computer Mart

1305 North St.

Nacogdoches, TX 75961

Orders: 800-443-8236

Info. & Customer Service
409-564-4421

SHIPPING INFO: Software rates are \$2.50/item (Max 9.50) UPS Ground or \$4.50/item (Max 16.00) UPS 2nd Day Air. Call for APO, FPO, & Foreign Shipping rates. Call for Hardware shipping info. REFUND & RETURN POLICY: Defective merchandise under warranty will be

appeared at first to be missing, but a closer look revealed that they are implemented as effects and as such are not limited to the Subtractive Synthesis module.

Additive Synthesis is provided in a fairly standard format—with 32 envelope-controlled harmonics—but does not limit you to mixing only sine waves.

Pseudo-Additive Synthesis is similar to Additive except that instead of mixing 32 time-variant harmonics to produce a dynamic waveform, you can combine up to 32 single waveforms, fading from one to another, to create sound. Both of these modules are very powerful, but working with them can be cumbersome. Because you can have only one Waveform/Envelope Editor open at a time, it becomes more difficult to imagine your final sound the more harmonics or waveforms you add. I would like to at least be able to see all the envelopes at once.

The FM/PM Synthesis module is very different from the Yamaha DX7-style synthesis most people think of when they hear the term FM. This module has a single carrier wave (which can be any

one you create in the Waveform Editor) and a single envelope-controlled modulator (which also can be any wave you design). In PM synthesis, the frequency of modulating waveform is below the audio range; in FM, because the frequency of the modulator is within audio range, you get a wider harmonic spectrum.

Plucked String Synthesis simulates the timbral change that occurs over time when a string is plucked. Algorithms approximate the sounds of both steel and nylon strings. A Stretch slider determines the rigidity of the material being plucked or struck, and at its most rigid setting, produces a clink sound resembling bell or percussive instruments.

Interpolation Synthesis literally interpolates values to change gradually from one waveform to another. Like the Pseudo-Additive module, it lets you work with up to 32 envelope-controlled waveforms.

The Drum Synthesis and Noise Drum Synthesis modules create synthesized drums; the former produces a tom-tom-like sound while the latter delivers a snare-like effect. Both modules have slid-



YOUR TURN!

Synthia Pro is the only product I know of that can generate sound in 16 bits and download into professional samplers. To really work with it you must understand how sound is synthesized, generated, and applied to a sampling. Experienced users, however, will find the set sound-generating parameters to be slow.

—Robert Pierce
Westland, MI

ers to determine pitch, decay, emphasis (degree of attack), bass boost, and bandwidth.

PLAY SOME LOOP

You can edit and loop your synthesized waveform in the Editing Looping window, which shows the full sample at the top. Here you can define loop points and mark ranges for cutting, pasting, and crossfades (there are four variations of crossfade looping). In another smaller display, you can draw the sample. Precise looping is handled in the Fine Looping Adjust window. It aligns the loop start with the loop end at a point of zero crossing. Although the scrolling in this module works, it is not smooth.

In addition to the synth modules, Synthia has an impressive list of DSP functions under its Effects menu. These include Amplitude Modulation, a Pitch Shifter, Ring Modulation, Angle Modulation (which allows a waveform to frequency modulate itself), and Flange/PhaseShift. There is an envelope-controlled Filter/Filtered Noise generator with two settings of low, high and band pass filters, and one notch filter. The different low and high pass filter settings appear to represent different slopes, though there is no definition of what the slope is. The band-pass- and notch-filter ranges are not defined either—an odd omission. There is a very nice 32-band Graphic equalizer with a 12 Hz to 16 KHz range, and a distortion function simulates the sound of clipping, doubling, saturation, and two types of fuzz. The Echo/Reverb module offers eight al-

FREEDOM \ˈfrēd-əm\ n

1: the ability or capacity to act without undue hindrance or restraint **2**: the quality or state of running or operating smoothly and without impediment

The Cordless Mouse™

- Compatible with any Amiga
- High-tech infrared design
- Sleek lines, low profile
- Exceptionally smooth action
- One-year limited warranty
- Two AAA batteries included
- UNIX and Workbench 1.4 compatible



(602) 322-6100
fax (602) 322-9271

1135 N. Jones Blvd., Tucson, AZ 85716



©1990 Practical Solutions, Inc. All product names and logos are trademarks or registered trademarks of their respective owners.

7-DAY'S TOP 7 SPECIALS!

TOP 7 GAMES

Shadow of the Beast	34.95
TV Sports Basketball	31.88
Stryx	23.99
Dungeon Master	31.88
Falcon F16 w/Mission Disk	CALL!
Space Ace	33.89
Block Out	25.98

TOP 7 EDUCATION

Algebra I/II	32.25
Discovery Math/Spell	34.95
Mavis Beacon Typing	31.88
Read-A-Rama	31.88
Designasaurus	32.25
World Atlas	41.67
Math-A-Mation	64.95

TOP 7 PRODUCTIVITY

CanDo	CALL!
Excellence	159.00
Professional Page 1.3	239.00
Pro Write 2.5	77.00
Superbase Pro 3.0	243.22
Tax Break	55.25
Word Perfect 4.1	177.99

TOP 7 GRAPHICS

Aegis Draw 2000	159.99
Amiga Graphics Kit	55.00
Deluxe Paint III	98.00
DigiView Gold 4.0	137.88
Express Paint 3.0	90.27
TV Text Professional	124.88
Ultra Design	277.97

TOP 7 MUSIC

Bars & Pipes MIDI	209.00
Dr T's ALL	CALL!
MIDI Magic	96.89
Pro MIDI Studio	123.99
Sonix	55.00
Soundlab Amiga	205.55
Synthia	59.97

TOP 7 PROGRAMMING

AC/Basic	133.97
AC/Fortran	197.69
ARexx	30.89
HiSoft Basic	103.17
Lattice C 5.04	279.55
True Basic	69.47
WShell	31.88

TOP 7 UTILITIES

B.A.D. Accelerator	31.79
CLI Mate	25.77
Cygnus Ed Pro	63.69
DOS-2-DOS	37.22
FACC II	21.00
Project D	31.88
Quarterback	43.98

TOP 7 HARDWARE

AMIGEN Genlock	148.88
Color Splitter	109.88
ECE MIDI 500	55.49
GVP 68030/882-28 4MB	2,488.00
GVP HC/O	249.00
SuperGen Genlock	697.88
ToolBox 500	229.00

MORE HARDWARE SPECIALS!

AMIGA 500 HARD DISK SPECIAL OFFER!

IVS Trumpcard 500 w/40MB Quantum	649.00
IVS Trumpcard 500 w/105MB Quantum	949.00
(optional Meta 4 2MB RAM cards for above)	CALL!

AMIGA 500 PERIPHERAL DEALS!

Master 3A external disk drive	119.00
A501 Clone for Amiga 500	83.00
Baud Bandit 2400 modem w/software	129.00
(serial cable for above)	9.00

AMIGA 2000 HARD DISK SPECIAL OFFER!

HardFrame 2000 w/40MB Quantum	649.00
HardFrame 2000 w/105MB Quantum	959.00

AMIGA 2000 MEMORY SPECIAL SALE!

MicroBotics 8-UP! DIP w/0k	170.00
MicroBotics 8-UP! DIP w/2MB	339.00

VIDEO TAPES THAT MAKE AMIGA FUN!

Getting Started With Your Amiga	29.95
Using DPaint III	24.95
WorkBench 1.4 & Tips/Tricks	24.95

7-Day SOFTWARE

P.O. BOX 1619, AGOURA HILLS, CA 91376-1619

**PICK ANY PRODUCT FROM ANY AD
IN THIS ISSUE OF THIS MAGAZINE
AND WE'LL MATCH IT OR BETTER!**

*Software only, subject to availability.

**WE'LL TAKE YOUR ORDER WHILE OTHERS LEAVE
YOU ON HOLD FOREVER! TRY US!**

BUSINESS HOURS

Our phone lines are open for orders:

Mon-Fri	8am to 5pm Pacific Time
Sat	10am to 4pm Pacific Time

Customer Service & Tech Support:

Mon-Fri	9am to 2pm Pacific Time
---------	-------------------------

ORDERING INFORMATION

- 7-Day accepts VISA, MASTERCARD, AMERICAN EXPRESS, OPTIMA, Money Orders, Business and Personal Checks. (American Express and Optima card holders please add 4% surcharge.)
- We offer more than 1800 products for the Amiga.
- Don't see it listed? Please ask! Call around, then call us.
- We welcome orders by FAX—(818) 889-5175
- Personal Checks & Company Checks under \$500.00 clear within 24 hours. Personal Checks & Company Checks over \$501.00 clear within 3 days.
- If we must ship a partial order we don't charge for the remainder of the order (US ONLY).
- Mail-in orders PLEASE include your telephone number.
- California residents ONLY—add 6% tax.

Consumer Notice: No warranties or representations as to the quality or useability of the products are made. It is the responsibility of the manufacturer to provide support for its products. 7-Day Software will gladly replace or repair damaged or defective merchandise. No cash refunds—PLEASE DON'T ASK. No exchanges after 30-days. Prices and availability subject to change without notice. All exchanges and returns will be charged shipping and handling. Restocking fee may apply. Our "Meet or beat any advertised price" policy excludes blowouts, discontinued or "special" sale prices—and all hardware.

SHIPPING INFORMATION

WE PAY SHIPPING: All software orders delivered within the continental United States with a purchase value of \$150 or more are shipped FREE via UPS regular service. (Excludes price-matched items.) Two-day service and other special shipping are available. Ask for details.

- International shipping—NO PROBLEM!
- To find the status of an order, to exchange a defective item, or for customer service, call (818) 889-3633, 9am—2pm Mon-Fri (PST). Inquiries and technical support calls will not be permitted on our 800 numbers.
- WE SHIP BY: Federal Express and UPS.

ORDERS ONLY

1-800-525-7DAY

Customer Service (818) 889-3633 • FAX (818) 889-5175



gorithms for echo and 16 for reverb. Chorus lets you determine how many new voices will emerge from the original. WaveShaper is an esoteric effect that distorts a waveform, apparently according to the values in a wavetable.

One thing I have noticed about some of the effects applies to software-generated effects in general, especially to reverb: They work much better on sounds that are not looped—drum and percussive sounds, for instance. To get around this you could apply the effect before looping, but reverb is the kind of effect I like to use to cover flaws like audible loops.

APPLIED AUDIO

What do you do with these sounds once you have created them? Well, you can save a sound's parameters as a window environment (the waveform is then recalculated when you load the parameters file back in). Or, you can save a sound as a sample in one of many formats. AudioIFF, the preferred format for Synthia, is a Macintosh format that the Mac can read if you select the Mac binary op-

tion when saving. Other supported formats are 8SVX, Sonix, SoundScape, and Raw. Most amazing is the ability to read and write in SoundDesigner format, another Mac format that has become a standard for sound samples. I created some drum sounds with Synthia, saved them as SoundDesigner files, downloaded them into my Mac, and from there transferred them to my SP-12 sampling drum machine. This is the kind of compatibility I would like to see in every music program.

I ran Synthia Pro extensively with an Ensoniq EPS sampler without a hitch. The interface is very smooth and easy to use. The developer claims that Synthia Pro also supports the Roland S550/330, the Korg DSS1, and the Akai S900.

For faster data transfer, I would like to see direct SCSI communication with samplers that support it (EPS, Emulator III). Another item on my wish list is a version for use with accelerated Amigas. Despite a few minor complaints, though, I like Synthia Professional. It is not for beginners, but those experienced with sound are sure to enjoy it.

Synthia Professional

The Other Guys

PO Box H

Logan, UT 84321

800/942-9402

801/753-7620

\$395

One megabyte required.

BARS AND PIPES

Hum a few bars and plumb

a few pipes.

By Michael Hanish

BECAUSE NO TWO composers approach music making in the same way, music software must be flexible enough to meet a variety of needs. The one-size-fits-all Bars and Pipes does, offering



YOUR TURN!

With Bars and Pipes I can get more variety by creating my own tools. One drawback is that to load Deluxe Music files you must save them in SMUS format and risk losing information.

—Pete Patterson

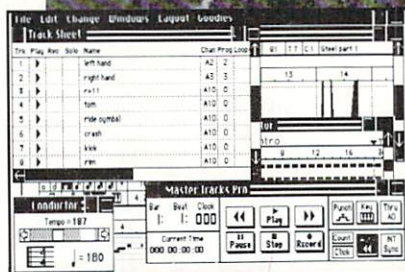
North Bay, Ontario, Canada

**The world's most powerful
MIDI sequencing software is
available for Amiga!**

Master Tracks Pro™ for Amiga features 64 tracks of real time and step recording, our exclusive Song Editor™ and legendary graphic editing. Professional features include controller chasing, fit time, 16 MIDI channels, a built-in Sysex Librarian, a cue sheet for keeping track of hits and the ability to lock up to SMPTE via MIDI Time Code with the MIDI Transport.™

For more information see a Passport dealer near you or call (415) 726-0280 for details on the Next Generation of Music Software™.

**Amiga
Music
Power!**



PASSPORT

Passport, 625 Miramontes Street, Half Moon Bay, CA 94019 (415)726-0280

everything necessary to make and edit music using MIDI instruments. (While Bars and Pipes does not support the Amiga's internal sounds, this capacity is planned for an upgrade due to be ready by the time you read this.)

Bars and Pipes has all the standard recording and playback features we have come to expect, and then some. Included are the ability to record an unlimited number of tracks, one at a time or several simultaneously; selection of MIDI channels for input and output; mute, solo, or normal playback of all tracks; step-time or real-time recording; loading and saving standard MIDI files; SMPTE and MIDI time-code support; full editing facilities for tempo, dynamics, and song arrangement. Virtually all actions are done in the graphics-based en- ▶

ESTABLISHED
1967

MONTGOMERY GRANT

AMIGA
WORLD
4/90

OUTSIDE USA & CANADA CALL
(718) 692-0790

FOR CUSTOMER SERVICE
Call: Mon-Wed, 9-5/Thurs, 9-6
Fri, 9-4:30 (718) 692-1148

Retail Outlet, Penn Station, Main Concourse
(Beneath Madison Square Garden) NYC, N.Y., 10001
Store Hours Mon-Thurs 9-7:30/Fri 8:30-4:30/Sat CLOSED
Sun 9:30AM-7PM

FOR ORDERS & INFORMATION IN USA & CANADA CALL TOLL FREE

1-800-759-6565

OR WRITE TO:
Montgomery Grant; Mail Order
Department P.O. Box 58,
Brooklyn N.Y., 11230

FAX NO. #7186923372
TELEX 422132 MGRANT

ORDER HOURS: Mon-Thurs, 9:00am-7:00pm / Fri, 9:00am-4:30pm / Sat CLOSED/Sun 9:30am-6:00pm (ET)
NO SURCHARGE FOR CREDIT CARD ORDERS / WE INVITE CORPORATE AND EDUCATIONAL CUSTOMERS
RUSH SERVICE AVAILABLE / TOLL-FREE TECHNICAL SUPPORT



AMIGA 500 **AMIGA 2500/30**
IN STOCK - PRICED TOO
LOW TO PRINT!



1084 MONITOR
RGB COLOR
\$279



AMIGA 2000 **AMIGA 2000 HD**
IN STOCK - PRICED TOO
LOW TO PRINT!

WE'LL TRY TO
BEAT ANY
ADVERTISED PRICE
IN THIS
MAGAZINE

**ADDED BONUS:- WE NOW OFFER A FREE 6 MO. PARTS & LABOR WARRANTY ON ALL AMIGA COMPUTERS
PURCHASED THRU MONTGOMERY GRANT. MORE THAN TWICE WHAT THE MANUFACTURER OFFERS!**

GVP GREAT VALLEY PRODUCTS

IMPACT A-2000-2/0	\$269
IMPACT A-2000-2/2	\$459
IMPACT A-2000 8/0	\$309
28MHz, 68030 ACCELERATOR FOR A-2000	\$769
IMPACT SQ44 WITH CARTRIDGE	\$869
IMPACT WT-150 (150MB)	
Streaming Tape Backup	\$699
GVP 3001 KIT WITH 68030, 4MB, 68882	\$2379
3001 KIT WITH QUANTUM 40MB	\$2779
3001 KIT WITH QUANTUM 80MB	\$3079

A-2000 HARD DRIVES

IMPACT A-2000 8/0	
w/SEAGATE ST-157N (49MB)	\$639
IMPACT A-2000 8/0 w/QUANTUM 40S (19ms)	\$699
IMPACT A-2000 8/0 w/QUANTUM 80S (19ms)	\$1029
IMPACT A-2000 8/0 w/QUANTUM 100S (19ms)	\$1099
IMPACT A-2000 8/0-SQ44 w/CARTRIDGE (INCLUDES EPROM KIT)	\$1099

A-2000 HARD CARDS

IMPACT A-2000 HC/45	\$569
IMPACT A-2000 HC/40Q	\$599
IMPACT A-2000 HC/80Q	\$899
IMPACT A-2000 HC/100Q	\$969
IMPACT A-2000 HC2/0/40Q	\$679
IMPACT A-2000 HC2/0/45	\$639
IMPACT A-2000 HC2/0/80Q	\$949
IMPACT A-2000 HC2/0/100Q	\$1059

A-500 HARD DRIVES

IMPACT A-500 HD/30	\$679
IMPACT A-500 HD/45	\$749
IMPACT A-500 HD/40Q	\$799
IMPACT A-500 HD 80Q	\$1099

PERIPHERALS

AMIGA 2500 COMPUTER	IN STOCK
A-1010 DISK DRIVE	IN STOCK
A-501 EXPANSION MODULE	IN STOCK
A-590 HARD DRIVE	IN STOCK
A-2286D AT BRIDGEBOARD	IN STOCK
A-2088-D BRIDGEBOARD	IN STOCK

A-2058 RAM EXPANSION	IN STOCK
A-2300 GENLOCK	IN STOCK
A-1680 MODEM	IN STOCK
A-2010 3.5" DISK DRIVE	IN STOCK
A-2090	IN STOCK
A-2620/2 A-2630 ACCELERATOR BOARDS	IN STOCK

OTHER PERIPHERALS FOR AMIGA

ASDG DUAL SERIAL PORT BOARD	\$249
A-MAX MAC Emulator for AMIGA	\$119
AMIGA A-TOSH Compatible Drive for A-MAX	\$165
A-MAX ROM	\$129
CALIFORNIA ACCESS	
3.5" DISK DRIVE	\$119
CANON SCANNER	\$889
C.LTD AMIGA Hard Scanner	\$399
DIGIVIEW GOLD	\$125
FLICKER FIXER	\$429
FRAME GRABBER	\$489
EASYL A-500	\$329
EASYL A-2000	\$359
GENLOCKS	
MAGNI-4004/4004S	\$1359
MAGNI 4004 or 4004S/ 4010	\$1569
MINIGEN	\$188
NERIKI GENLOCK	CALL
OMINIGEN	CALL
SUPER GEN	\$619
SUPER GEN 2000S	CALL
SUPERGEN SC	CALL
LIVE!	
LIVE! A-500	\$339
LIVE! A-1000	\$279
LIVE! A-2000	\$309
MASTER 3-A 3.5" DISK DRIVE	\$115

MIMITECS MIDI INTERFACE	\$49
MINI MEG (2MB Expander for A-500, A-1000)	\$339

MICROBOTICS

Memory Upgrades for A-2000	
8up OK	\$169
8up OK with 2MB	\$359
8up OK with 4MB	\$529
8up OK with 6MB	\$699
8up OK with 8MB	\$849
Handframe 2000	\$239

PANASONIC WV-1410 CALL

VARIABLE 16mm LENS WITH IRIS	\$65
PROFESSIONAL Page 1.3/228	
SHARP JX100 A Color Scanner w/Software & Cables	\$799

SUPRA RAM 2000	
2MB RAM	\$299
4MB RAM	\$449
6MB RAM	\$599
8MB RAM	\$759

SUPRA 2400 EXTERNAL	\$115
SUPRA 2400i INTERNAL	\$115
SUPRA RAM 500	
(512K Expander for A-500)	\$77
Toolbox for A-500/A-1000	\$239
VIDEOTEK SCAN LOCK	CALL

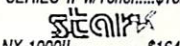
PRINTERS

Panasonic

KXP-1180	\$169.95
KXP-1191	\$214.95
KXP-1124	\$289.95
KXP-1624	\$429.95
KXP-1695	\$419.95



HP DESKJET	\$599.95
HP DESKJET	\$689.95
HP LASERJET IIP	
w/Toner	\$999.95
HP PAINTJET	\$989.95
HP LASERJET	
SERIES II w/Toner	\$1629



NX-1000i	\$164.95
NX-1000	
RAINBOW	\$207.95
NX-2410	\$287.95
XR-1000	\$339.95
XR-1500	\$439.95
XB-2410	\$439.95
XB-2415	\$559.95
Color Option Kit XB, XR, CALL	

CITIZEN

GSX-140	\$349.95
Color Option Kit	CALL

EPSON

LX-810	\$199.95
FX-850	\$349.95
LQ-510	\$339.95
LQ-1010	\$449.95

Canon

BJ-130	\$579.95
--------	----------

OKIDATA

OKIMATE 20	\$139.95
172 TURBO	\$199.95
182 TURBO	\$239.95
OKIDATA 320	\$339.95
OKIDATA 380	\$369.95
OKIDATA 321	\$469.95
OKIDATA 390	\$469.95
OKIDATA 391	\$639.95
OKIDATA 393	\$989.95
OKIDATA 393	
Color	\$1069.95

NEC MULTISYNC IIID MONITOR \$649

HARD DRIVES for AMIGA 500

SUPRA HARD DRIVES FOR A-500	
20MB	\$469
30MB	\$569
40MB	\$649
80MB	\$839
A-1000 VERSIONS ADD \$80	
TRUMP CARD 500	EXTERNAL CHASSIS ENABLES ANY SCSI HARD DRIVE TO OPERATE WITH AMIGA 500 (EXPANDABLE TO 2MB)
TRUMPCARD PACKAGES FOR A-500	
Seagate	
ST-138N (30MB)	\$519
ST-157N (49MB)	\$549
Quantum	
40MB (19ms)	\$599
80MB (19ms)	\$859
100MB (19ms)	\$909
SAME PACKAGE AS ABOVE WITH XETEC FASTTRAK EXTERNAL CHASSIS CAN BE EXPANDED TO 8MB RAM...ADD \$110	

HARD DRIVES for AMIGA 2000

SUPRA HARD DRIVES	
40MB (Quantum)	\$569
80MB (Quantum)	\$849
105MB (Quantum)	\$919
THESE HARD DRIVE PACKAGES INCLUDE YOUR CHOICE OF XETEC OR TRUMPCARD HARD DRIVE CONTROLLER CARDS	
Seagate	
ST-157N (49MB)	\$469
ST-277N (60MB)	\$549
ST-296N (80MB)	\$579
Quantum	
40MB (19ms)	\$539
80MB (19ms)	\$769
100MB (19ms)	\$829



Certified check, bank check, money orders, approved P.O.'s, Visa, Mastercard, Diner's Club, Am-Ex, Optima, Cart Blanche, C.O.D.'s & wire transfers accepted. Please call before submitting P.O.'s. No additional surcharge for credit card orders. Non-certified checks must wait 4-6 weeks for clearance. 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 prior return authorization number, or returns will not be accepted. Please add 5% shipping & handling (min. \$6). Orders over \$1200 are discounted to 3% shipping & handling. Orders over \$3000 are discounted to 2%. (Canadian orders please call for shipping rates). APO FPO orders please add 10% shipping & handling. All APO FPO orders are shipped first class priority air. All orders can be shipped Air Express-call for details. D.C.A. #800233. Amiga is a registered trademark of Commodore-Amiga Inc.

Public Domain

By
DevWare

Only \$5.95 each

We have been part of the official Public Domain library of Amiga World, we are the official library of AntiVirus Plus. Find out why these magazines choose us! Each disk typically contains 7-10 of the best programs available. The first two letters on each disk indicate the orientation of the disk: DD# intermediate to advanced, often contains source code, WB# general interest - most programs run from Workbench, and FD# games and entertainment.

Order our disk based catalog and receive a coupon for a free volume *

DD44: ARP and DiskSalv - On this disk you will find the complete ARPRel3.0. This is the official AmigaDOS Resource Project (ARP) release 1.3. ARP makes many improvements to AmigaDOS and makes your system easier to use from the CLI (UserDocs are on dd45, not required), and DiskSalv 1.3 - By far the best disk and file recovery program available. And others.

DD47: Pascal - This disk contains everything needed to program in pascal. Includes, A68k (1.2) 68000 assembler, and Blink a linker.

DD49: C Compiler - contains a fully K&R, gcc(1.0) front end, A68k(1.2) assembler, Blink linker.

WB1: GRAPHICS and PLOTTING - Several neat graphic and mathematical plotting routines are included. Plot - a three dimensional mathematical function plotter. Can plot any user defined function, all aspects controllable. Scenery - This generates fractal landscapes. Surf - makes awesome pictures of objects one could turn on a lathe.

WB6: Fonts #2 - ShowFont(4.0) a font display program, an more than 30 fonts, some up to 56pts.

WB11: Business - Clerk(4.0), finally a full featured business accounting PD program for the small to medium company. Includes receivables, payables, end of month and much more. With the full user docs!

WB12: Disk Utilities - This great disk is loaded with wonderful utilities for everything including making disk labels, disk cataloging, disk optimizing, disk and file recovery archive and organizing, and all sorts of file manipulation. A real must have.

WB13: Printer Drivers and Generator - over 70 different drivers, and if these don't do it, PrtDrvGen an easy to use program to make your own.

WB14: Video and Anim Utilities - on this disk are several utilities to manipulate anims including cutting, pasting, and combining and more. For the video enthusiast we have included multiple slates, video titling and other useful utilities. Also on this disk is a full featured video cataloging program.

WB15: Business - This disk contains a spreadsheet, a database, a project time management program and financial analysis (stocks).

WB16: Business - This disk contains an inventory manager, a loan analysis program, a great calendar/scheduler, a rolodex program, and pennywise a good "Cash Book" accounting program for home or office.

FD6: GAMES! - This disk is chocked full of games including: Checkers, Clue, Gold - A new slide the pieces puzzle, Jeopard - An enhanced version of Risk, RushHour - Surprisingly addictive, and SpaceWar - Best described as a cross between Combat Tanks and asteroids.

FD8: Games! - This disk is full of games, game hints and a few game editors (cheat programs) including: Antepennit - The best PD Ultima type going, GameEditors - Crystal Hammer, Bards Tale, TV Sports Football, and Faery Tale, GameHints - These are: Zak McKracken, Shadow Gate, Faery Tale, Space Quest II, Dragon's Lair, and others.

FD12A,FD12B: Star Trek, The Game - This is by far the best Star Trek game ever written for any computer. It features complete mouse control, good graphics, digitized sound effects and great gameplay. Two disk set. Requires two disk drives, 1 Mb memory.

FD13: Board Games - contains multiplayer Monopoly, Dominoes, Paranoia, and others.

FD14: Dungeon Master Hints and Arcade Games - DM maps, spells, item location, and hints and more, also on this disk, Hball - an arcrod/break out type game, Tris - a Qix type clone, and others.

FD17: Educational Games - This disk includes several games for the younger members including geography, math, science, and word games, also includes Wheel of Fortune and Vanna.

FD19: Arcade Games - Raiders a space raiders clone that can be 3D compatible, Frenzy a shark feeding nightmare, VollyBall a good implementation, and Jar impossible to describe but fun game.

FD20: Tactical Games - MechForce(3.65): A game that simulates combat between two or more giant, robot-like machines. Simple words can't begin to give you the feel of piloting a 30 - 40 foot tall, fire breathing, earth shaking colossus that obeys your every whim. This game is the full featured update to BattleForce(3.0) on FD5.



Anti-Virus

Now only \$19.95

INFO magazine, 4 STARS, Sep 89
Amiga Resource, 4 CHECKS, Oct 89

Anyone with an Amiga computer can have virus or trojan horse infections and not know about it! Anti-Virus will stop them ALL. At this special price, you too can have the best virus protection money can buy. Satisfaction guaranteed!

Anti-Virus(c) is not Public Domain

To Order: Send check or money order to the address below (or call). Credit card users include Account number, Expiration date, Signature, and Phone number. A minimum of \$19.95 on all credit card orders please. CA residents add 6.5% sales tax. *Send \$2.50 for disk based catalog. Coupon valid with next purchase. Limit one per household per month.

DevWare, Po Box 215-A2, La Jolla, CA, 92308 (619)673-0759

Shipped following day in most cases. Orders outside North America add \$0.50 each for air mail

Circle 398 on Reader Service card.

REVIEWS

vironment. While this approach may alienate die-hard list users, the program's design is so exemplary that both experienced and novice MIDI voyagers will find it easy and intuitive to use.

The program comes on one non-copy-protected disk, runs from Workbench, and installs easily on a hard disk. It opens onto the main sequencer screen—colorful and full of information yet uncluttered. Across the top of the screen are tape-recorder-style controls for moving through the music, and a timer showing in measures, beats, and clocks, either your place in the song or the position of the edit flags. The clock, which resolves to 196 parts per quarter note, can be displayed in SMPTE time (hours, minutes, seconds, and frames) as well. Below the transport controls are icons for the tool box and current tool, group selections, track display, solo/mute/thru, and the tempo-display box. The bottom half of the screen is filled with track displays, tools, and channel assignments.

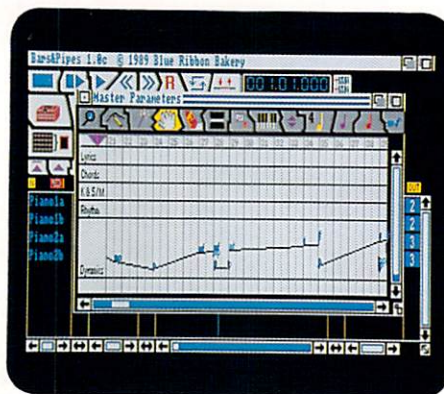
IT'S ALL IN THE PIPES

Although the world of MIDI can easily become a jungle of parameters and possibilities, it ultimately comes down to a conduit between synthesizer and sequencer, with musical information flowing through sixteen channels in between. Bars and Pipes is based on a plumbing metaphor, wherein each track is a pipeline carrying MIDI data. Like a plumber, you can redirect or split the flow and turn it on or off. With the graphic interface, what you see is what you get.

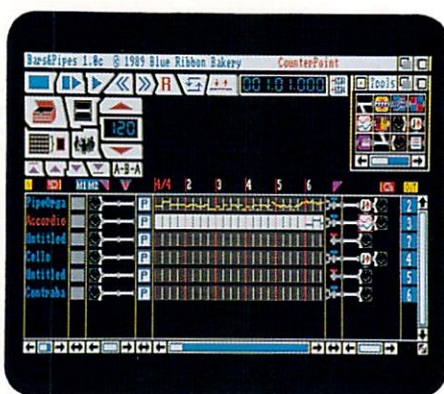
In the center of each pipeline is a small scrolling display of that track's note content. A double click on this display brings up the sequence-editing window, where notes are shown in detail on both a musical staff and a piano keyboard. With menus, you can resize and alter each track, including or excluding such items as velocity, program and control changes, dynamics, aftertouch, key and scale, rhythm, time signature, and lyrics. Multiple windows can be open at the same time.

Flanking each note-content display are the pipes themselves, into which you place tools to process the data. Starting and ending with the MIDI tool connects the input and output of the sequencer to your MIDI instruments and determines

which parameters will be recorded and passed along. When placed on the left (input) side of the pipeline, tools process the data as it comes into the sequencer and the result is recorded. A tool placed on the right (output) side does not alter the original track data; its effect is heard only on playback. There are a number of tools included with the program, optim-



Tools on the output in the main sequencer.



Going global: dynamic markings and curves.

ized for a wide range of processing activities including echo and delay, feedback, counterpoint and harmony generation, transposition, filtering, dynamics, articulation, and quantization. Once you place a tool in the pipeline, you can edit its parameters and qualities.

Tools can be combined into macros in the Create-a-Tool window, a powerful feature that adds greatly to the program's flexibility. This allows you, for example, to take the track output and filter from a range of notes, feed them through the Counterpoint Generator, and send the output through the Transpose, Velocity, and Delay tools to a new track, all in one step. The window not ▶

SAVE SOME GREEN CELEBRATION

At SDA you're always "Dublin" your savings because our prices are "Shamrock" bottom and that's no blarney.



We have what you're looking for!



Just like the explosive coin-op arcade game, your strike force w/awesome firepower will blow away the terrorists.



N.Y. WARRIORS
List \$49.95

SDA
Discount Price \$32

ABACUS	Linkword Languages ... Call
Assam Pro ... \$65	Strip Poker 2 ... \$25
*Abacus Books in stock! ... Call	S.P. Data #1 Females ... \$14
ACCESS	S.P. Data #2 Female/Male ... \$14
W.C. Leader Board Golf ... \$29	BETHESDA
ACCOLADE	Gretzky Hockey ... \$32
Blue Angels Flight Sim ... \$32	BOX OFFICE
Cycles ... \$32	Elvira's Personal Nightmare \$32
Fast Break ... \$29	Ikari Warriors ... \$25
4th & Inches Football ... \$14	Speed Buggy ... \$25
4th & Inches Team Const. \$6.88	BRITANNICA/DESIGNWARE
Grand Prix ... \$26	Archipelago ... \$25
Hardball ... \$25	Designasaurus ... \$32
Heatwave Boat Racing ... Call	BRODERBUND
Jack Nicklaus Golf ... \$32	Carmen S.D. — Europe ... Call
J.N. Golf Champ Courses \$16	Carmen S.D. — U.S.A. ... \$32
J.N. Golf Int'l Courses ... \$16	Carmen S.D. — World ... \$32
Test Drive 2: The Duel ... \$32	Omni-Play Basketball ... \$32
T.D. 2: Calif. Scenery ... \$16	Omni-Play Horse Race ... \$32
T.D. 2: Europe Scenery ... \$16	Shufflepuck Cafe ... \$25
T.D. 2: Muscle Cars ... \$16	Sim City ... \$32
T.D. 2: Super Cars ... \$16	BROWN-WAGH
Third Courier ... Call	Pen Pal Word Processor ... \$89
ACTION WARE — ON SALE	BYE BY BYTE/CENTAUR
Capone ... \$21.88	B.A.D. Disk Optimizer ... \$32
Phaser Gun ... \$32.88	Sculpt Animate 4D Jr. ... \$95
Sideshow ... \$28.88	World Atlas ... \$39
ACTIVISION	CINEMWARE
Battle Chess ... \$32	Federation ... \$32
Beyond Dark Castle ... \$23	It Came From The Desert ... \$32
Ghostbusters 2 ... Call	King of Chicago ... \$32
Neuromancer ... \$29	Kristal ... \$32
Rampage ... \$25	Lords of Rising Sun ... \$32
AEGIS	Rocket Ranger ... \$32
Am. Graphics Starter Kit ... \$65	T.V. Sports Basketball ... \$32
Audio Master 2 ... \$59	T.V. Sports Football ... \$32
Draw 2000 ... \$169	DATA EAST
Drivescape 3D ... \$129	Bad Dudes ... \$29
ARTWORX	Batman ... \$29
Bridge 5.0 ... \$23	Batman the Movie ... \$29
Centerfold Squares ... \$19	Robocop ... \$29
Daily Double Horse Race ... \$19	Super Hang-On ... \$29
Jigsaw Puzzlemania ... \$19	

ReadySoft Inc.

The arcade hit is here w/ breathtaking full screen animation & sound of the original laser disk game. The fate of Earth is in your hands.



SPACE ACE
List \$59.95

SDA
Discount Price \$39

DATA SOFT

Hunt for Red October ... \$32
Sorcerer Lord ... \$23

DIGITEK

Hole in One ... \$25
Hollywood Poker (X-Rated) \$23

ELECTRONIC ARTS

Altered Beast ... \$32
688 Attack Sub ... Call

Bard's Tale 2 ... \$32
Battlehawks 1942 ... \$32

Chessmaster 2000 ... \$29
Dark Castle ... \$26

Deluxe Music Const. ... \$65
Deluxe Paint 3 ... \$99

Deluxe Photo Lab ... \$99
Deluxe Print 2 ... \$55

Deluxe Productions ... \$129
Deluxe Video 3 ... \$96

Dragon Force ... \$32
Empire ... \$32

F/16 Combat Pilot ... \$32
FA/18 Interceptor ... \$32

Ferrari Formula One ... \$32
Fools Errand ... Call

Gold of the Americas ... \$26
Hound of Shadow ... \$26

Indiana Jones Crusade ... \$26
Indiana Jones Crusade ... \$26

Graphic Adventure ... \$32
Mandarin ... \$25

Melbourne House ... \$32
Magic Johnson's B. Ball ... \$32

War in Middle Earth ... \$32
World Trophy Soccer IMB \$32

Michtron ... \$99
HiSoft Pro Basic ... \$25

Time Bandit ... \$25
Broderbund

Carmen & her new gang have launched a crime wave in Europe. Help outwit the master criminal as she tries to steal Nat'l treasures.

WHERE IN EUROPE IS CARMEN SANDIEGO

List \$49.95

FTL

Dungeon Master ... \$25
Gold Disk

Comic Setter ... \$59
Desktop Budget ... \$44

Movie Setter ... \$59
PageSetter 2 ... \$84

Profess. Page V1.3 ... \$249
Infocom

Battletech ... \$32
Journey ... \$32

Shogun ... \$32
Zork Zero ... \$39

Leisure/Arcadia/Virgin
Altura ... \$25

Clue ... \$26
Double Dragon 1 or 2 \$26 Ea

Monopoly ... \$26
N.Y. Warriors ... \$32

Risk ... \$26
Scrabble ... \$26

Mandarin ... \$25
Lombard Rally ... \$25

Melbourne House ... \$32
Magic Johnson's B. Ball ... \$32

War in Middle Earth ... \$32
World Trophy Soccer IMB \$32

Michtron ... \$99
HiSoft Pro Basic ... \$25

Time Bandit ... \$25
Origin

Omega ... \$32
Quest For Clues: 1 or 2 \$19 Ea

Times of Lore ... \$25
Ultima 4 ... \$39

Windwalker ... \$25
Polarware

All Dogs Go to Heaven ... \$32
Practical Solutions

Cordless Mouse ... \$84
Precision

Superbase Personal 2 ... \$95
Superbase Profess. 3 ... \$189

Psygnosis ... \$19
Captain Fizz ... \$23

Stryx ... \$23
ReadySoft

Dragon's Lair ... \$39
Space Ace ... \$39

Sierra ... \$25
Black Cauldron ... \$25

Gold Rush ... \$25
King's Quest 1, 2 or 3 \$32 Ea

Leisure Suit Larry ... \$25
Leisure Suit Larry 2 ... \$39

Manhunter N.Y. or S.F. \$32 Ea
Mother Goose ... \$19

Police Quest ... \$32
Space Quest 1 or 2 ... \$32

Space Quest 3 ... \$39
Softbyte

Lotto Program 2 ... \$24
Software Insight

Go-64 Emulator ... \$19
Spectrum Holobyte

Counterstrike (RC Falcon) \$16
Falcon ... \$32

Tetris ... \$23
Spotlight

Dark Side ... \$26
Deathbringer ... \$26

Speedball ... \$26
Total Eclipse ... \$26

USA/CANADA orders
1-800-225-7638

PA Orders 1-800-223-7784
Customer Service (412) 361-5291

Fax Order Line (412) 361-4545
Free shipping on orders over \$100 in continental USA.

No surcharge for VISA/MasterCard.
Your card is not charged until we ship.

School purchase orders accepted.

BETHESDA SOFTWARE

This riveting simulation is packed w/all the strategy, excitement & hard hitting action of a Gretzky slap-shot. Dazzling digitized fights.

WAYNE GRETZKY HOCKEY
List \$49.95

SDA
Discount Price \$32

Hostage ... \$29
Mystery Adventure 3Pack \$32

Includes: Shadowgate, Deja Vu, Uninvited ... \$33

Outrun ... \$33
Shinobi ... \$29

Space Harrier ... \$32
Super Star Ice Hockey ... \$32

Thunder Blade ... \$32
Newtek

Digi-Paint 3.0 ... \$65
Digi-View Gold 4.0 ... \$139

OmniTrend ... \$32
Breach 2 ... \$32

Universe 3 ... \$32
Origin

Omega ... \$32
Quest For Clues: 1 or 2 \$19 Ea

Times of Lore ... \$25
Ultima 4 ... \$39

Windwalker ... \$25
Polarware

All Dogs Go to Heaven ... \$32
Practical Solutions

Cordless Mouse ... \$84
Precision

Superbase Personal 2 ... \$95
Superbase Profess. 3 ... \$189

Psygnosis ... \$19
Captain Fizz ... \$23

Stryx ... \$23
ReadySoft

Dragon's Lair ... \$39
Space Ace ... \$39

Sierra ... \$25
Black Cauldron ... \$25

Gold Rush ... \$25
King's Quest 1, 2 or 3 \$32 Ea

Leisure Suit Larry ... \$25
Leisure Suit Larry 2 ... \$39

Manhunter N.Y. or S.F. \$32 Ea
Mother Goose ... \$19

Police Quest ... \$32
Space Quest 1 or 2 ... \$32

Space Quest 3 ... \$39
Softbyte

Lotto Program 2 ... \$24
Software Insight

Go-64 Emulator ... \$19
Spectrum Holobyte

Counterstrike (RC Falcon) \$16
Falcon ... \$32

Tetris ... \$23
Spotlight

Dark Side ... \$26
Deathbringer ... \$26

Speedball ... \$26
Total Eclipse ... \$26

SSI

Dragons of Flame ... \$26
Heroes of the Lance ... \$26

Hillstar ... \$32
Red Lightning ... \$39

Star Command ... \$32
Star Games

Clown-O-Mania ... \$25
Targhan ... \$23

Sublogic
Flight Simulator ... \$32

Hawaii Odyssey Scenery ... \$19
Jet ... \$32

Scenery Disks ... Call
Taito

Bubble Bobble ... \$23
Operation Wolf ... \$23

Puzznic ... Call
Olix ... \$23

Rambo 3 ... \$23
Renegade ... \$23

Ultra
Teen Mutant Ninja Turtle ... \$29

Unicorn
Aesop's Fables ... \$29

Mith Wizard ... \$29
Read & Rhyme ... \$29

Unison World
P.M. Founts & Borders ... \$23

P.M. Art Gallery 1-2 ... \$19
Print Master Plus ... \$25

Word Perfect
Word Perfect W.P. ... Call

Accessories
Air Drive Internal ... \$99

Air Drive External ... \$135
Bonus 3 1/2 DSD ... \$11.99 Bx.

Sony 3 1/2 DSD ... \$13 Bx.
Sony 3 1/2 DSD ... \$24 Bx.

Sony DSD Color ... \$13.50 Bx.
Disk Case (Holds 45) ... \$6.88

Disk Case (Holds 110) ... \$8.88
Disk Drive Cleaner ... \$4.88

Winner M4 Mouse ... \$29
Mouse Pad 8 1/2 x 11 ... \$6.88

500XJ Joystick ... \$14
Freedom Cdriss. Joystick ... \$14

Wico Bat Handle ... \$47
Maxx Control Yoke ... \$69

!!!!!! SDA CLOUTS!!!!!!
Hybris ... \$19.19

Zoom! ... \$15.15
Andromeda Mission ... \$9.99

Temple Adshai Trilogy ... \$4.44
Celebrity Cookbook ... \$14.14

Workbench Extras ... \$15.15
Casino Fever ... \$15.15

Epyx Street Cat ... \$11.11
Space Ranger ... \$8.88

Speedy Delivery

Deep Discounts

Astronomical Selections

If you can't find what you're looking for in our ad, call us.



Send check or money orders to:
P.O. Box 111327-Dept. AMW
Blawnox, PA 15238

Circle 128 on Reader Service card.

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

*Please Read The Following Ordering Terms & Conditions Carefully Before Placing Your Order: Orders with cashiers check or money order shipped immediately 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 SD 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 SD 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 CompuServe, GENie and electronic malls.

Software
Discounters
Of
America

only allows you to design the components and sequence of a macro process, but to design an icon for it as well.

AROUND THE WORLD IN ONE WINDOW

Global editing is done in the Master Parameters window, which, like the other windows, can be customized for appearance and content. Track and song parameters are interchangeable; tools (which you must use in conjunction with parameters) refer first to the track parameters for processing, then to the master parameters. All musical elements except section arrangements are available for editing here. Editing tools include a pencil (for making edit marks), an eraser, a magic wand (for changing existing parameters), a hand (to grab and drag or change parameters and notes), and a bounding box and edit flags (for marking off sections of the sequence to be affected). Finally, the Toolizer (which is also found in the sequence editor), allows a section or entire track to be processed in place by a particular tool.

If you do sequence editing or rear-



I can achieve more realistic sound with Bars and Pipes than with some other programs because the crescendos and decrescendos are not figured mathematically; I can place them as I feel them. I do wish, however, that the notes were represented in actual musical notation rather than bar notation. It's difficult to tell the difference between an $\frac{1}{8}$ note and a $\frac{1}{16}$ note by the length of the line.

—George Davis
West Palm Beach, FL

range, you'll appreciate Bars and Pipes' support of the Amiga's clipboard device, which allows you to cut, copy, and paste between tracks. The clipboard holds multiple clips (each of which can be renamed), and you can save the clipboard's contents.

Bars and Pipes' learning curve is relatively shallow. Getting used to editing in a graphics-based environment and learning to use the tools effectively and pre-

dictably takes little time. The manual is clear and direct, so even neophytes can become productive quickly. Also, the program's open design is conducive to experimentation.

There are no show-stopping problems with Bars and Pipes, but the designers seem committed to getting the program just right. Upgrades with new tools and bug fixes appear regularly (among promised additions are an arpeggiator, an automated mix-down tool, algorithmic composition tools, and processing aids), and tech support calls are answered energetically and in depth. Bars and Pipes is a major new player on the Amiga music scene, with plenty of power, features, and flexibility. Don't hesitate to get plumbing!

Bars and Pipes

Blue Ribbon Bakery
1248 Clairmont Road
Suite 3D-241
Decatur, GA 30030
404/377-1514
\$299
No special requirements. ►

RAWCOPY V1.3

The ULTRA-POWERFUL Backup tool for your Amiga™

RawCopy V1.3. . . Setting the Standard For The Competition to Follow.

- ✓ Eliminates wheel, dongle and manual protected software
- ✓ Friendly and Helpful Customer Service and Technical Support
- ✓ Upgrades offered every 3 months (at least 30 new parameters)
- ✓ Error Checker, RAM Buffer, Extended Cylinder and much more
- ✓ Copies software that no others will

FatTracks

FatTracks™ is an upgradable nibbler backup utility that is designed to copy those "super" protection schemes found on European games and some domestic titles as well. You will not believe the so-called "uncopyable" programs that FatTracks™ will breeze through.

INCLUDES:

THE MOST POWERFUL NIBBLER AVAILABLE
A SUPERFAST MULTIPLE DRIVE DOS COPIER
A WIPEOUT™ TOOL TO RESTORE USED DISKS
GRAPHIC DISPLAY OF 164 TRACKS

RAWCOPY V1.3 FatTracks



msi
Micro
Systems
International

Call Today or Visit Your Favorite Dealer
(313) 654-8402 Orders and Information
(313) 654-8405 Technical Support
1143 Monroe Street, Carleton, MI 48117

VISA

MasterCard

Circle 227 on Reader Service card.

UTILITIES UNLIMITED, Inc.

P.O. Box 532
North Plains, OR 97133

If you wish to place your order by phone
CALL (503) 647-5611 24 Hrs A Day!
FAX: (503) 243-1333

SUPER CARD AMI

Have you ever used a dual cassette recorder to copy tapes?
Pretty simple to do isn't it? Don't you wish you could back-up
your valuable disks as easy?

\$99⁹⁵

Well, now you can. Super Card AMI will back-up any 3.5" disk software, copy protected or not! 100% guaranteed. Don't be led astray by other products that alter drive speed and clock rates, or by "Digital Image Copiers" Super Card AMI works because of an amazing new process called "DupliFlux" (patent pending) which actually reads the magnetic fluctuation from the source drive and duplicated it on the destination drive...! Which means [as] reliable copies everytime! Copy DOS Disks in under 45 seconds! Super Card AMI works with any Amiga/Compatible drive. No drive speed change required!! No parameters, or settings required!! Super Card AMI was created by Jim Drew, the same person responsible for over 10,000 satisfied Super Card owners for Commodore 64/128 users. We are #1 in 64/128 market, now we will be #1 in Amiga!! Utilities Unlimited the name you can trust...

NIB V2.0

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

\$44⁹⁵

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

SUPER-TRACKER AMI

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

\$79⁹⁵

AMIGA 500
REPAIRABLE POWER SUPPLY

\$109⁹⁵

Circle 74 on Reader Service card.

HOURS:

AM to 7 PM Monday - Friday

AM to 4 PM Saturday

Call on Sunday

THE SOFTWARE SHOP

YOUR AMIGA SOFTWARE AND HARDWARE MARKETPLACE

We will beat or match any price in this magazine

ACCESSORIES

Outlet AC Surge	\$16.00
B Switch cable	\$35.00
B/C/D Switchbox	39.00
Infrared Mouse	109.00
Infrared optical mouse	109.00
Copy Stand	65.00
Wireless Mouse	105.00
Joystick	17.00
Joystick Mouse	39.00
Joystick Joystick	37.00
Joystick mouse	176.00
Joystick flight yoke	79.00
D120 3.5 Disk holder	33.00
D60 disk holder	28.00
D64 disk holder	31.00
Modem cable A1000	15.00
Modem cable A2000/500	15.00
Mouse holder	6.50
Mouse master	29.00
Mouse pad	9.00
Mouse cable ribbon	5.00
Mouse color ribbon	7.50
Mouse gun	49.00
Inter cable 2000/500	15.00
Inter cable A1000	15.00

ACCOUNTING

Easy ledger	\$195.00
Financial plus	189.00
Investor advantage	63.00
Amiga ledger	63.00
Micro lawyer	39.00
Amiburs record keeper	95.00

CAD

Draw 2000	\$69.00
Home builder cad	129.00
Home builder choice	53.00
Pro cad	51.00
Logic works	65.00
Pro-Board	379.00
Pro-Net	379.00
Pro-Design	269.00
Cad Designer II	97.00
Cad Designer Pro	304.00

DATABASE MGMT

Data retrieve	\$51.00
Data Retrieve Prof	189.00
Microfile filer plus	115.00
Organize	49.00
Superbase pers II	99.00
Superbase Pro 3.0	229.00
Superbase professional	189.00
Our family tree	32.00

DESKTOP PUBL

Citydesk 2.0	135.00
Citydesk	\$97.00
Citydesk companion	15.00
Citydesk companion II	15.00
Page setter	89.00
Page stream (new vers.)	125.00
Pro-draw clip art	42.00
Pro-draw template	42.00
Professional Draw	129.00
Professional page 1.2	199.00
Hakespeare	79.00
Who, What, When	69.00

SOUND & MUSIC

Top deluxe	\$97.00
Audio master	37.00
Audio master II	67.00
Track songbook	27.00
Bars & Pipes	210.00
Copyist II	179.00
50	99.00
Deluxe music	69.00
Drums	28.00
Dr keys	28.00
Dr T's Keyboard	160.00
Dr T's Midi Record'g Studio	47.00
Dynamic drums	52.00
Dynamic studio	129.00
Future sound A500/A2000	92.00
cs Level II	225.00
Matrix 6	97.00
Midi Magic	97.00
Midi-32	97.00
Music student	38.00
Music-X	205.00
Sound designer	125.00
Formidi studio	129.00
Onix	51.00
Sound Oasis	69.00
Sound sampler	78.00
Sound Track Vol. 1	35.00
Studio magic	65.00
Synthia	59.00
Synthia Pro	199.00
Texture	97.00
Timelines 2(multitasking)	43.00

EDUCATION

Adventure of sinbad	\$32.00
Aesop's fables	32.00
All about America	35.00
Animal kingdom	32.00
At the Zoo	27.00
Decimal dungeon	32.00
Dinosaur Discov. kit	29.00
Discovery game math	25.00
Discovery game spell	25.00
First letters and words	35.00
First shapes	35.00
Fraction action	32.00
Great states	25.00
Kid Talk	35.00
Kinderama	32.00
Learning curve	52.00
Letters For You	28.00
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 Odyssey	35.00
Math talk	35.00
Math talk fraction	35.00
Math wizard	35.00
My Paint	33.00
Numbers Count	28.00
Puzzle Story book	29.00
Read & rhyme	32.00
Read-a-rama	32.00
Rhyming note book	30.00
Spell bound	25.00
Speller bee	35.00
Tales from Arabia	32.00
Talking Animator	34.00
Where in the U.S.	35.00
Where in World C.S.	32.00
Wordmaster	32.00
World Atlas	39.00
World Odyssey	33.00

SPREADSHEETS

Advantage (GD)	Call
Analyze! 2.0	\$95.00
Haicalc	32.00
Maxiplan 500	95.00
Maxiplan plus	126.00
Super plan	97.00
VIP Professional	65.00

HOME ACCOUNTING

Critic's Choice	\$159.00
Desktop budget	\$46.00
Money mentor	\$65.00
Phaser	65.00
Publishers Choice	130.00
Tax Break	53.00
The Works Platinum	164.00

HARDWARE

Baud Bandit	\$129.00
Easy! A1000	349.00
Easy! A2000	379.00
Easy! A500	345.00
Flicker fixer	495.00
Framegrabber	599.00
Future sound	129.00
Gen One	689.00
Internal 3.5drive A2000	99.00
Live A2000	349.00
Live framegrabber A1000	279.00
Live framegrabber A500	305.00
Mac 3.5 Drive	229.00
Midi Gold (500)	60.00
Perfect sound A1000	69.00
Perfect sound A500/A2000	78.00
Progen	379.00
Scanlock	898.00
Super Gen	695.00
Supra 2400bd internal	149.00
Supra modem 2400bd	129.00
Synergy 500	199.00
Unidrive External	115.00
WV1410 Panasonic Camera w/lens	210.00

MONITORS

Amdek multisync 12" mon.	\$512.00
Nec 3D multisync	699.00
Sieko cm1430 monitor	699.00
Sony multi-scan Monitor	535.00
Taxan 1000 20" Ultrasync	2899.00
Zenith 14" Flat screen mon.	720.00

COMMUNICATIONS

Atalk III	\$65.00
BBS pc	96.00
Diga	50.00
Online Platinum	67.00
Skyline BBS	99.00

FONTS

Anim Font1 Kara	\$34.00
Anim Font1 Kara	34.00
Asha's fonts	54.00
Calligrapher	85.00
Fancy 3d fonts	52.00
Font set I	22.00
Headline Fonts	54.00
Headlines 2	47.00
Kara fonts color	50.00
Kara fonts Headline 2	48.00
Kara fonts subheads	48.00
Lion fonts	56.00
Masterpiece fonts	159.00
News letter fonts	29.00
Page Stream fonts 1	21.00
Profonts I Prof.	23.00
Profonts II decorative	23.00
Studio font	29.00
Subheads	47.00
Zuma 1-4	69.00

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
Benchmark C library	62.00
Benchmark iff library	62.00
Benchmark modula 2	128.00
Benchmark simplified	62.00
Cape 68k	59.00
Cross Dos	22.00
Devpac Ed/Assem/link/dbg	66.00
Dissassembler	95.00
GFA basic 3.0	95.00
Hisoft Basic Pro	118.00
Innovatools #1	54.00
J-Forth pro 2.0	133.00
Lattice development system 5.0	199.00
Metascope debugger	65.00
Power windows v2.5	58.00
Source level debugger	50.00
True basic	65.00
W shell	33.00

UTILITIES

B A D disk optimizer	\$32.00
C B Tree	65.00
Can do	99.00
Cygnusd Professional	65.00
Disk 2 disk	33.00
Disk master	33.00
Disk mechanic	59.00
Dos 1.3	24.00
Dos 2 dos	35.00
Doug's math aquarium	52.00
Dunlap Utilities	55.00
Encore	45.00
Ez backup	33.00
Facc II	22.00
Fine print	33.00
Formation	47.00
Gizmo enhanced	45.00
Gomf	29.00
Grabblit	19.00
Intellitype	35.00
Laser scripts	28.00
Laser up fonts	28.00
Laser up plot	33.00
Laser up print	58.00
Laser up utilities	28.00
Mac 2 Dos	99.00
Magellan	129.00
Master type	25.00
Mavis beacon typing	33.00
Nag Plus Sched. Assist.	52.00
Pixel Script	104.00
Pro script	32.00
Project D	32.00
Project Master	129.00
Promis spelling	33.00
Quarterback	45.00
Raw copy 1.3	39.00
Superback	52.00
Text ed plus	52.00
VIP	32.00
X-Copy	30.00

GRAPHICS & VIDEO

3-Demon	\$73.00
3-d options	35.00
Animagic	62.00
Animate 3-D	99.00
Animate 4-d	439.00
Animation editor	39.00
Animation effects	32.00
Animation Flipper	32.00
Animation multipane	58.00
Animation stand	32.00
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 pak I	20.00
Broadcast Titrer	39.00
C light 3d editor	169.00
Calligrapher help	28.00
Chroma Paint	48.00
Comicsetter	65.00
Deluxe paint III	99.00
Deluxe photo lab	99.00
Deluxe print II	59.00
Deluxe production	129.00
Deluxe video III	99.00
Design 3d	67.00
Designasaurus	32.00
Digi paint	39.00
Digi View Gold 4.0	131.00
Digital 3	69.00
Digitalworks 3d	89.00
Director's Toolkit	26.00
Elan Performer	41.00
Express paint	65.00
Express paint III	89.00
Fantavision	42.00
Forms in flight II	77.00
Future design 3-d	23.00
Human design 3-d	23.00
Interchange	32.00
Interior design sculpt3d	23.00
Invision	109.00
Lights Camera Action	49.00
Microbot design 3-d	23.00
Modeler 3d	64.00
Movie Clips	29.00
Movie setter	65.00
Page flipper fx	95.00
Pagerender 3d	105.00
Photon expansion disk	20.00
Photon paint 2.0	97.00
Photon video cell anim	97.00
Pixmate	43.00
Print master plus	33.00
Prism	43.00
Provideo Gold	205.00
Pro video plus set I	83.00
Pro video plus set II	83.00
Provideo plus	163.00
Sculpt 3-d	95.00
Sculpt-Animate 4D Jr.	95.00
The Director	46.00
Turbo silver	119.00
Turbo Silver Module	20.00
Tv Text Prof.	111.00
Tv-show 2.0	64.00
Tv-text	64.00
Video effects 3d	121.00
Video scape 3-d	120.00
Video titler	95.00
Zoetrope	91.00

PRINTERS

1124 Panasonic Printer	\$349.00
Alps Allegro 24 PIN	425.00
NEC LC890 laser PS	3395.00
Okimate 20 color prt.	145.00
Plug'n print	85.00
Star rx rainbow	259.00

WORDPROCESSORS

Becker text	\$92.00
Excellence	179.00
Gold spell II	30.00
Kindwords	65.00
Pen Pal	99.00
Prowrite v2.0	83.00
Reason	249.00
Text pro	50.00
Transcript	47.00
Word perfect	159.00
Wp library	79.00

Drives and Expansions at prices you can't resist

HardFrame 2000 with

Quantum 40mg \$619.00
Quantum 80mg 899.00
Quantum 105mg 939.00

FastCards A2000 with

Quantum 40mg \$559.00
Quantum 80mg 869.00
Quantum 105mg 899.00

Word Sync Supra with

Quantum 40mg \$599.00
Quantum 80mg 869.00
Quantum 105mg 899.00

FastTrack Sys. A500/A1000 with

Quantum 40mg \$748.00
Quantum 80mg 1,015.00
Quantum 105mg 1,049.00

FastTrack Sys. w/2mg

Quantum 40mg \$999.00
Quantum 80mg 1,299.00
Quantum 105mg 1,349.00

Fast ram with

Quantum 40mg \$99.00
Quantum 80mg 129.00
Quantum 105mg 139.00

Memory Board A2000

8Up 2mg \$299.00
8Up 4mg 429.00
8Up 6mg 559.00
8Up 8mg 689.00

Supra ram2000 2mg

Supra ram2000 4mg \$299.00
Supra ram2000 6mg 429.00
Supra ram2000 8mg 559.00

Expansion Memory A500/A1000

Minimeg 1mg \$319.00
Minimeg 2mg 359.00

Starboard 512k

Starboard 1mg \$259.00
Starboard 2mg 299.00
Starboard 512k 395.00

Spirit 512k

Spirit 1mg \$259.00
Spirit 1.5mg 289.00
501 Clone(M.A.S.T.) 319.00

ENTERTAINMENT SOFTWARE
We have them all! Over 300 games in stock. Call for your favorite game and check our Special Prices.

1-800-752-0050
In Mass. Call...
1-508-756-6452
SALES AND QUOTES (outside Mass.): 1-800-752-0050
SHIPPING AND TECHNICAL SERVICE: 1-508-756-6452
QUOTE-A-FAX: 1-508-799-9354
• Corporate and volume purchases invited. Call Moe.
• Stock orders placed by 12:00 NOON EST shipped the same day.
• Allow 10 days for personal checks to clear.
• Minimum \$5.00 Shipping/handling charge
• Returns subject to restocking charge
• Software defects-call the Manufacturer
• For faster delivery send cashiers check
• Wire transfer accepted.
• Add \$3.50 for COD.

Circle 134 on Reader Service card.
MasterCard VISA
SHOWROOM
22 Front Street
Worcester, MA 01614
Visa and MasterCard Accepted

X-CAD PROFESSIONAL*Design in the bigger picture.***By Ron Bissett**

TEARING THROUGH X-CAD Professional's packaging, I could hardly control my trembling fingers. As an owner of both the original X-CAD from Taurus-Impex (a sometimes-difficult Computer Aided Design powerhouse) and the more recent X-CAD Designer (a non-professional model produced by Cadvision, who purchased the original source code), I was eager to see this latest release. My expectations were high, as I had been pleased with Designer.

Inside the box, I discovered a revamped manual, whose index and section tabs make it easier to use than the original documentation.

The program itself will be familiar to Taurus-version owners. Unlike Designer, Pro is basically the same as the original X-CAD, with some powerful and much-needed upgrades. The initial screen is similar but better, and the command-line

**YOUR TURN!**

X-CAD Pro has the fastest refresher I have seen. I would like to see the cursor become highlighted when it is directly over the entity you are working with. Drawings would be more precise if a ghost image appeared as you drew. (Now, you must finish your drawing and click the mouse button to see it.) Also, I would like to see an integrated 3-D option.

—Eric Allen
Detroit, MI

interface sports a new look. The X and Y mouse coordinates are continually displayed at the cursor, and the redesigned AutoMenus interface is more usable. Most importantly, you can toggle it on or off to accommodate a drawing tablet or a customized interface.

Taurus-version owners who toiled developing customized alternate menus—ScreenMenus—will be happy to know that X-CAD Professional supports them.

ModMenus, the utility in which you create ScreenMenus, carries over one idiosyncrasy from the original X-CAD: Its command line window will not close even when you quit the utility. ModMenus performs well, however, and if your machine is equipped with the one-meg Agnus chip, you can run it without shutting down the main program. The ScreenMenus environment is a really great approach to CAD, and X-CAD Pro makes a good thing better by letting you link individual ScreenMenus with the Dynamic Menu System. This speeds menu access and enables you to keep just one menu active at a time—an important feature, as only three or so ScreenMenus can be displayed simultaneously. The ScreenMenu directory contains a few functioning menus that you can customize. For those who prefer to work with a drawing tablet, Cadvision has added support for the popular Summagraphics tablets (R&DL Productions).

MAKE A POINT OF IT

The list of great drawing enhancements includes the Arrow command, which lets ▶



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

Special Packages!

68030 Bundle at 28MHz 2299.00!
Baud Bandit Modem & Software 145.00
Turbo Silver with Turbo Silver Video 105.00

Spotlight on Hardware

8-Up! Board OK 170.00
8 Meg Board, Supra OK 160.00
8 Meg Board, Supra 2 Megs 336.00
AMAX Package 425.00
Camera, Panasonic WV 1410 215.00
flickerFixer 460.00
Floppy Drive, Internal 2000 90.00
Floppy Drive, CA-880 135.00
Harddrive System 20 Meg (500) 505.00
Joystick, Advanced Gravis 39.99
Master Sound Digitizer 59.99
Memory Mod, Supra 500 2 Meg 269.00
Modem, Supra 2400 120.00
Mouse, Cordless 90.00
Mouse, Jin Mouse 50.00
MouseStick, Advanced Gravis 88.00
Perfect Sound 3.0 (500/2000) 74.50
PrinterFace 85.00
Scanner, Sharp JX100 799.00
ScanLock, VidTech 850.00
SCSI Controller, Byte/Sync 170.00
SCSI Controller, Word/Sync 170.00
SCSI/Impact A2000-8/0 GVP 325.00
Spirit Boards OK 500/1000 229.99
ToolBox 1000 222.00

Orders Only Please:

800-544-6599
Visa/MC/CODs

Spotlight on Software/Books/Videos

All Dogs Go To Heaven 31.10
Amiga Desktop Video Book 16.00
AREXX 31.10
Artura 28.00
Bars & Pipes 174.99
Broadcast Titrer 195.00
Can Do 88.99
Cross DOS 24.99
CygnusEd Professional 2.0 65.00
Deluxe Paint III 100.00
Deluxe Video III 105.00
Digi Paint 3.0 61.99
Digi-View Gold 4.0 140.00
Distant Suns 42.99
Federation 36.99
Getting Started (Video) 21.99
KCS 3.0 159.99
KCS Level II 3.0 219.00
Persian Gulf Inferno 27.73
Professional Page 1.3 195.00
ProWrite 2.5 75.95
ROM Kernel: Libs/Devices 26.00
Shoot-EM Up Construction Kit 15.00
Space Ace 36.69
Stunt Car Racer 31.99
Tax Break Call
Total Control Diet 59.00
TV* Show (new version) 59.99
World/Turbo Silver Video 24.99
WShell 31.10

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

HDutil.

3 Backup/Restore modes. Works with all Amiga DOS compatible hard drives. Multi-tasking designed to run in the background. Runs from Workbench or the CLI. Minimum 512K Amiga required. Price: **\$59.95 U.S.**

AUtoKick 1.3.

Software autoconfig contiguous block of fastmem. Install code into Kickstart to prevent the spread of any new viruses. Patch bugs in Kickstart. Install a font of your choice. Modify Kickstart to use any external drive to boot from. Runs from Workbench or the CLI. Price: **\$39.95 U.S.**

Toll Free Line for Orders in the U.S.A.

1-800-525-2167

Toll Free line for Orders in Canada

1-800-663-3940

We Accept Visa, MasterCard and BankCard

DigiSoft
(INC 2 Pty Ltd)

12 Dinmore Street, Moorooka,
Brisbane, Queensland.
AUSTRALIA 4105
Telephone **61-7-277-3255**

Within Australia: (07) 277-3255. U.S. and Canadian orders please phone between 11 am–8 pm East Coast and 2 pm–11 pm West Coast.

WE CARRY OVER 1600 ITEMS!

**FREE SHIPPING ON SOFTWARE
ORDERS OVER \$100!**

via UPS. U.S. only (Alaska & Hawaii excluded)

ENTERTAINMENT

Archipelagos	\$27
Beyond Dark Castle	\$27
Blade of Steel	\$29
Blood Money	\$27
Blue Angels	\$29
Chaos Strikes Back	\$27

ELECTRONIC ARTS

Bards Tale	\$15
B.A.T.	\$32
Battle of Britain	\$39
Chessmaster 2100	\$32
Deluxe Music	\$65
Deluxe Paint II	\$49

PROGRAMMING

AC BASIC	\$129	Lattice C V5.0	\$225
AREXX	\$32	Lattice C++	\$259
Benchmark Modula-2	\$129	Magellan	\$129
G.F.A. BASIC	\$89	Manx Aztec C Devel	\$199
HiSoft BASIC	\$105	Manx Aztec C Pro	\$129
J-Forth	\$129	M2Sprint	\$199

GRAPHICS & ANIMATION

ANIM Fonts	\$32
ANIMagic	\$95
Butcher	\$25
Digi-Paint III	\$65
Director	\$45
Elan Performer	\$39
Homebuilder's CAD	\$129
Modeler 3D	\$65
Photon Paint II	\$99
Pic Magic	\$65
Pro Motion	\$65
ProVideo GOLD	\$199
Starship 2050	\$32
Turbo Silver	\$129
TV*Text Pro	\$115
UltraDesign	\$265
Videoscape 3D	\$129
X-CAD Designer	\$99
X-CAD Professional	\$329

ENTERTAINMENT

Distant Suns	\$45
Double Dragon II	\$27
Dungeon Master	\$27
Elite	\$32
Escape Singe Castle	\$45
Faery Tale	\$32
Falcon	\$32
Falcon Mission Disk	\$17
Gauntlet II	\$35
Heat Wave	\$29
King's Quest IV	\$39
N.Y. Warriors	\$32
Omega	\$32
Police Quest II	\$39
Pro Football Sim.	\$23
Shadow of the Beast	\$32
Sim City	\$32
Space Ace	\$39
Star Trek V	\$32
Stunt Track Racer	\$27
Test Drive II	\$29
Muscle Cars	\$14
European Challenge	\$14
U.F.O.	\$32

ELECTRONIC ARTS

Deluxe Paint III	\$95
Deluxe PhotoLab	\$95
DM's Assistant	\$21
D.R.A.G.O.N. Force	\$32
Dragons of Flame	\$27
Earl Weaver Baseball	\$32
F/16 Combat Pilot	\$32
Federation	\$32
Fool's Errand	\$32
Halls of Montezuma	\$27
It Came / Desert	\$32
Life and Death	\$32
Maniac Mansion	\$29
Marble Madness	\$15
Mavis Beacon Typing	\$32
Nuclear War	\$32
Pool of Radiance	\$32
Populous	\$32
Reach for the Stars	\$27
688 Attack Sub	\$32
Skate or Die	\$27
Star Command	\$32
Starflight	\$32
TV Sports Basketball	\$32

TOLL-FREE ORDERING:

1-800-735-4428

Customer Support, Order Status, and
Technical Assistance: 1-503-777-1008

AUSTRALIA: 0014-800-12-5632

CANADA: 1-800-869-2555

• Australia & Canada: Please use Toll-Free
lines for orders over \$100 U.S. only!

THE LIGHTSPEED ADVANTAGE

- No sales tax
- Unbeatable support and assistance during
and after your order
- Best selection with fastest delivery
- Consistently the lowest overall pricing
- Knowledgeable and helpful customer
representatives are all Amiga owners

POLICIES:

Shipping Info: Software is \$2.50/item (\$7.50 max)
via UPS ground. For UPS 2nd Day Air add \$2.00
per item (\$10.50 max). COD add \$4.00. Next Day
Service available. Call for rates on hardware,
Books, Fed-Ex, and foreign shipments.

Other Policies: No charge to credit card until
shipping date, and no surcharges. Exchanges
only for defective items, and for same item
only. We cannot guarantee product satisfaction.

PRODUCTIVITY

Analyze!	\$65
A-Talk III	\$65
Baud Bandit	\$32
BBS-PC!	\$99
Can Do	\$99
CygnusEd Pro	\$65
Desktop Budget	\$45
Home Front	\$65
Maxiplan V3.0	\$165
Pagesetter II	\$85
Pagestream V1.8	\$129
Phasar	\$59
PixelScript	\$99
Professional Page	\$225
Compugraphic Fonts	\$129
ProWrite 2.5	\$79
Skyline BBS	\$99
Superbase Pro	\$199
SuperPlan	\$99
The Advantage	\$129
Top Form	\$65
Transcript	\$45
Word Perfect	\$165

BOOKS

BASIC Inside & Out	\$19
C for Advanced	\$26
C for Beginners	\$16
Desktop Video	\$16
Graphics Inside & Out	\$26
Libraries & Devices	\$25
System Prog Guide	\$19

ACCESSORIES

AmTRAC Trackball	\$69
ECE MIDI	\$49
Epyx 500XJ Joystick	\$14
Master Sound	\$55
MIDI Gold 500	\$59
Mouse Master	\$27
X-Specs 3D Glasses	\$89

THIS MONTH'S SPECIALS:

SupraRam™ 500 512K.....	\$79
SupraRam™ 2000 2MB/8MB.....	\$289
SupraDrive™ External Disk Drive.....	\$119
Conner 105MB SCSI HD.....	\$649
Sony Bulk Disks (each).....	95¢

Special prices effective through April 6th

MUSIC & MIDI

KCS V3.0	\$185
Level II V3.0	\$249
Midi Recording Studio	\$45
Music-X	\$199
Sonix	\$55
Tiger	\$99
Tiger Cub	\$65

UTILITIES

Amiga Alignment Kit	\$32
B.A.D.	\$32
Fat Tracks	\$39
Project D	\$32
Quarterback	\$45
Raw Copy	\$39
The Reaper	\$29

L I G H T

SPEED

D I S T R I B U T I O N

6335 SE 82nd, Portland, OR 97266, (503) 777-1008, FAX: (503) 777-1252

A Division of Dosis Systems, Inc

Circle 122 on Reader Service card.

you create an arrow with a leader simply by clicking twice. The Label command goes one better by letting you create arrowheads, leaders, and text in one sequence. The Draw Line Horizontal and Draw Line Vertical commands make drawing more accurate and versatile: One click on the screen marks the starting point, and moving the mouse in any direction draws a line in the x or y plane. This feature is very useful, especially because X-CAD Pro's cursor does not register directly beneath the crosshairs; like the original version, it registers one pixel up and to the left.

The Auto Return feature speeds command execution and reduces the need to enter colons from the keyboard or access the AutoMenu. The greatest single addition, however, is the Undo function. Unlike some such approaches that keep track of all individual actions and reverse them one at a time, X-CAD Pro can undo an entire sequence of actions with one command.

A pop-up window lists the files in your drawings or symbols library. The file requester is a super memory aid, but it's



X-CAD Professional is a powerful, full-featured program with a wide variety of options. Using a colon to enter a command is awkward, however, because it is difficult to hit the Shift key while at the same time holding a mouse button. Also, I wish the command key were easier to use. Finally, the line weight is not consistently uniform.

—Mark Needham
Louisville, KY

slow; luckily, you can toggle it on and off. With the new Backup requester, you can create a temporary backup of any drawing in the directory as you open it. X-CAD Professional does not do timed backups, but this option is the next best thing.

The Attributes feature lets you associate symbols with user-definable, non-graphic data. With this data, you can quickly generate reports defining all or

some symbols in a drawing, and estimate materials and costs for a project. You can store this data by setting up a text file called XCDATA:ATTRIBUTE to contain attribute names, data types, and optional notes. (To use this file in the program, you must run it through the CLI's binary compiler, COMPAT.) Assigning attributes to entities is a simple matter of entering a text string or numeric value, depending on the data type specified in the XCDATA:ATTRIBUTE file. You can easily add and delete attribute values for one or all symbols, but the Change Attribute command explained in the manual was not available through the automenu Change Submenu, and could not be typed in manually. Too bad; this feature has vast potential for accurately quantifying project materials and costs.

REACHING OUT

The most powerful features, the new database conversion routines, have far-reaching implications. The CLI-accessible XPP command (which should be copied to your root directory) transforms an X-CAD HPGL plot file into Profes-

SAXMAN SYSTEMS

INTRODUCING

Here it is! Proof that the **AMIGA** (tm) Computer is more than just great for graphics and sound. We all know about its ability to produce the **BEST** Desk Top Publishing, the **BEST** Desk Top Video, and the **BEST** Desk Top Music. But did you know it could also do the **BEST JOB POSSIBLE** with your accounting?

We, at SaxMan Systems have taken the **BEST** data-base available for the **AMIGA** (tm), **SUPERBASE PROFESSIONAL** (tm), from Precision, Inc., and created two powerful, and easy to use accounting systems.

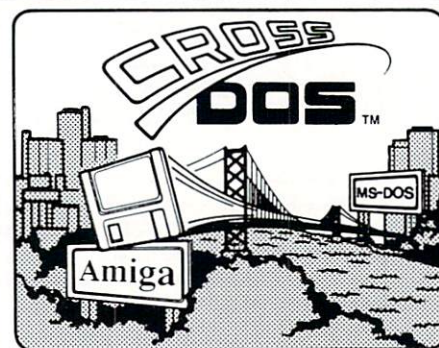
System # 1 - Billing and Disbursements (tm)

This system is designed for use by small businesses. It processes cash and credit sales, prints invoices and statements, and ages your accounts receivable. It also will track your cash disbursements, and print a check register. Finally, it tracks and reports on the general ledger accounts necessary to fill out tax returns. List price is \$ 249.95

System # 2 - SaxMan Accounting System (tm)

This is a complete accounting package. Including: General Ledger, Accounts Receivable, Accounts Payable, Payroll, Inventory Control, and Job Cost Analysis. Its features are much too extensive to list here. List Price is \$ 499.95

For information contact: SaxMan Systems, 400 Walnut St., #403, Redwood City, CA 94063, (415) 368-6499



the **MS-DOS**
File System
for the
COMMODORE
AMIGA

AVAILABLE NOW FOR
THE LOW PRICE OF

\$30.00 (US)
\$36.00 (CDN)

CrossDOS™... MS-DOS® DISK ACCESS DONE RIGHT!

The first MS-DOS File System for the Amiga®

- Reads or writes any 360K or 720K MS-DOS or ATARI ST® disks (Version 2.0 or higher) with optional text file filters.
- Transparently accesses MS-DOS files from any utility or application (including file requesters).
- Fully integrates itself into the Amiga operating system.
- Automatically readjusts to different MS-DOS/ATARI ST formats.
- Can be removed after use to reclaim memory.
- Provides an easy installation program.
- Available in a READ-ONLY version from the Public Domain or directly from **CONSULTRON** for only \$5.00.

For orders placed through **CONSULTRON** add \$3.00 shipping and handling (\$8.00 outside the U.S. and Canada). Michigan residents must add the correct sales tax. C.O.D. add \$3.00

Send check or money order to:

Please allow up to 2 weeks to process your order.

Dealer inquiries welcome.



CONSULTRON
11280 Parkview
Plymouth, MI 48170
Technical Support
(313) 459-7271

Amiga is a registered trademark of Commodore-Amiga, Inc. MS-DOS is a registered trademark of Microsoft, Inc. Atari ST is a registered trademark of Atari, Corp.

In winning presentations, we play the title role

Create winning titles with **TV-Text Professional™**. It's the ideal program for producing eye catching lettering and graphics for video titling and desktop presentations on the Amiga®.

With **TV-Text Professional** you can create:

Exciting Stylistic Effects Automatically

- Outlines, shadows, metallics, strobes, edges, extrusions (3D) and more.
- Color animated glows, glints, sheens, and cycles.
- Apply to text, shapes, and IFF images.
- Two degrees of overscan in all resolutions.
- Dozens of preset rendering styles included.
- Create your own styles with built in editor.
- Compatible with **TV-Show™** special effects slide show program.

Backgrounds In The Blink Of An Eye

- Eight different color gradient background patterns.
- Wallpaper, Tile, & Grid.
- Imported IFF images.

You'll be surprised how quick and easy it is to turn those tired titles into attention getting graphics with **TV-Text Professional**. It's at your Amiga dealer now!

Amiga is a registered trademark of Commodore Business Machines Inc. TV-Text, TV-Show, and Zuma Fonts are trademarks of Zuma Group, Inc.

ZumaGroup

Zuma Group, Inc.
6733 N. Black Canyon Hwy.
Phoenix, AZ 85015
TEL: 602.246.4238
FAX: 602.246.6708

Graphics, Animations, Sounds? Good Show!

With **TV-Show™** you can showcase your graphics and animations with just a few clicks of your mouse. Using **TV-Show's** mouse and menu driven Script Editor, choose from a wide variety of exciting image transition effects. Grab your audience by the ears with sound effects and computer generated speech. Experiment all you want. You can play any portion of your script anytime during your editing session.

All Image Formats

- IFF screen formats include HAM, Extra Halfbrite, & Overscan
- Use any combination of image formats in the same script

Over 40 Variable Speed Transition Effects

- Fades, pushes, reveals, checkerboards, blinds, splits, zig-zags
- Use with screens, brushes, & animations
- Manual forward/reverse, self-timed, looping, & hot key playback

Animation & Sound

- ANIM format from **DeluxePaint®** III & other programs
- Fly any brush on or off over screen backgrounds
- Color cycling
- IFF sampled sounds & speech with control of playback rate & volume
- Synchronize sound with screen event or animation frame

TV-Show is the complete special effects slide show for you and your Amiga®. Version 2 is at your Amiga dealer now.

TV-Show is a trademark of Zuma Group, Inc. Amiga is a registered trademark of Commodore Business Machines, Inc. DeluxePaint is a registered trademark of Electronic Arts.

ZumaGroup

Zuma Group, Inc.
6733 N. Black Canyon Hwy.
Phoenix, AZ 85015
TEL: 602.246.4238
FAX: 602.246.6708

sional Page (Gold Disk) structured drawing format—the same format Draw 2000 (Oxxi/Aegis) uses. Once in Draw 2000, you can transfer the file to Modeler 3D (Oxxi/Aegis) either directly, if only straight lines are needed, or save it using the Modeler.plotdriver first, if you want to retain curves. XPP converts black to white and all other colors to black, so drawings come out looking great in Pro Page. It would be nice, however, if colors were saved as is, because Professional Page supports color output. XSCRIPT, another CLI command, converts X-CAD HPGL plot files to Sculpt-Animate (Byte by Byte) script files. This link to existing 3-D software immediately expands X-CAD Pro's horizons, and is, I think, the right approach to providing solid modeling for this program.

The DXF Input and Output commands carry the broadening theme even further, taking X-CAD Professional from an isolated position into the big CAD arena. These commands allow Pro to read and write files in the popular AutoCad DXF format used on other computer systems. Previously, you could

exchange drawings between systems only by plotting to HPGL files and using a conversion utility. While this method works, it usually causes the drawing database to triple in size as text, circles, and dashes become collections of straight lines instead of single entities. As a result, this method also involves lots of editing. The DXF conversion takes care of these problems with a few exceptions. Ellipses and splines do not convert at all. A circle translates as a circle, but its origin becomes the drawing's origin and its radius lengthens. (The solution is to split the circle into two arcs, which convert perfectly.)

Drawing origins are important to coordinate when importing DXF files into X-CAD Pro. Importing a drawing whose origin is in the center into a Viewport whose origin is at the lower left will give you only $\frac{1}{4}$ of the drawing. Also, to maintain text placement, you should match the height and width of the text in the two systems. While not every entity is translatable between systems (this is true even among IBM CAD programs), the DXF conversion utility has filled a gap-

ing hole in X-CAD's usability in the professional design world.

The upgrade cost to Taurus-version owners is \$199. Technical support is provided by Cadvision, but if you want to avoid overseas calls, you can purchase a support-service package from GRAFX Computing in New York.

X-CAD Professional lives up to its developer's claims. It compares favorably with PC CAD software and offers more features than most. This version's improvements and additions make it flexible, versatile, and a pleasure to use.

X-CAD Professional
Cadvision International Ltd.
 London, England
 1-603/3313

distributed by American Software Distributors
 RR 1 Box 290
 Bldg. 30
 Urbana, IL 61801
 217/643-2050
 \$499.95
One megabyte required. □



B A C K T A L K

CANDID RESPONSES TO AMIGAWORLD REVIEWS

CrossDOS (Consultron)

In response to the article on CrossDOS (see p. 63 in the January '90 issue), I would like to suggest a solution for what reviewer Tim Walsh sees as the most difficult part of using the program. The way I mount either a 3.5- or 5.25-inch drive is to place a project-type icon with the default tool as SYS:C/ICONX in the Workbench C directory, and include a script file with the same name as the icon with the required mount statement. I also find that the AmigaDOS 1.3 MOUNT command works fine in place of the MOUNTJDS. Mounting the drives then becomes as simple as clicking on an icon and letting ICONX do the work.

—Steve Burroughs
 Bossier City, LA

Mounting CrossDOS from my startup-sequence allows the program

to access MS-DOS disks from software that provides for drive selection. Because of this feature, I can read an IBM version of a WordPerfect file from an MS-DOS disk with my Amiga version of WordPerfect and write it back to the same disk—without any extra work. Also, the reviewer says that the system's major limitation is incompatibility with high-density floppies; it would be more accurate to say that Amiga drives are incapable of reading from and writing to high-density floppies.

—Bill MacMillan
 Delta, BC, Canada

The Vault (Progressive), A590 (Commodore), and HD-500 (Imtronics)

I read with interest your review of three hard-disk systems for the A500 (see p. 82 in the January '90 issue). You gave read/write DiskPerf 2.0 re-

sults, but did not state the size of the buffer. Was it 256K? I need to know in order to compare with the test results from the drives covered in the July '89 issue (p. 22).

—Bill MacMillan
 Delta, BC, Canada

Yes, the buffer size was 256K.

—Lou Wallace

CLAS (MicroEd)

I own CLAS (reviewed on p. 82 of the September '89 issue) and find it quite good. I installed it on my hard drive shortly after buying it. Recently, my drive crashed. Upon reinstalling the drive, I found that CLAS had been lost. I called MicroEd, and the company sent me the latest upgrade without hassle and at no cost. That's what I call product support!

—Normand Morin
 Levack, Ontario, Canada ■



InterComputing, Inc.

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

*In business since 1984
Amiga support since 1985*

We are a service oriented business offering discount prices

FAX: 1-214-660-3695

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

COMPLETE PRODUCT LISTING AVAILABLE

Order line: **1-800-622-9177**

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



Custom DESKTOP VIDEO SYSTEMS

Talk to one of our System Specialists to get
the best configuration for your requirements.

Note: We apologize for the inconvenience of not having a picture or pricing
Amiga World does not allow us to publish these.

Free Installation

2nd Disk Drive	99.00	Multisync Monitor	540.00
2MB Memory	324.00	Amiga 1084D Monitor	329.00
4MB Memory	524.00	40MB Hardcard	675.00
6MB Memory	674.00	80MB Hardcard	929.00
8MB Memory	774.00	Flicker Fixer	459.00
Internal Modem	110.00	XT Bridgecard	399.00

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

MEMORY

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

DISK DRIVES

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

SUPRA HARD DRIVES

EXTERNAL

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

INTERNAL

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

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

GVP 3001 Package NOW 28 MHz!

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

VoRecOne 129.95

SUPERGEN 2000 1499.95

Flicker Fixer *plus* Mitsubishi

Multisync Monitor 999.95

Flicker Fixer 499.95

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

GVP A2000-8

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

FDATA-10 now with On/Off switch & many additional features 129.95

Amtrac TRACKBALL 69.95

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



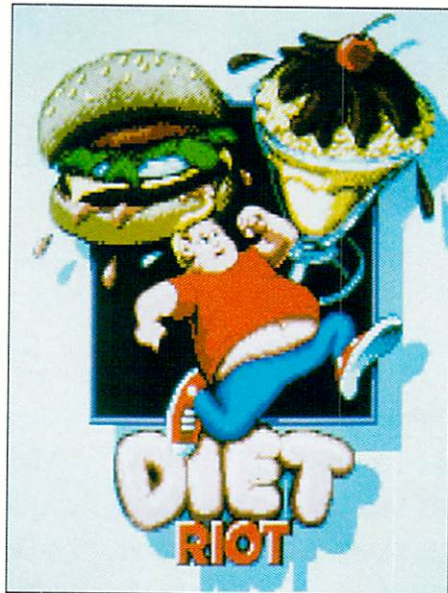
WHAT'S NEW?

*"When you have a mind to laugh, you shall see me
fat and sleek. . ." (Horace)*

Compiled by Jan Jackson

HEAVY

DO YOU SOMETIMES suspect that food is your enemy? Then you will feel right at home with the Diet Riot segment of **Future Classics** (\$49.95), a five-in-one arcade-action game pack. Squeeze through a course while munching tempting treats in your path; every swallow adds to your weight so you must periodically reduce at designated areas. The LIVE Studios' (30151 Branding Iron Rd., San Juan Capistrano, CA 92675, 714/661-8337) game package also includes Diskman, a game that features a superhero dedicated to protecting your system from pernicious viruses; Tankbattle, wherein you strive to capture an enemy coat of arms;



You can run, but
there's no way you
can hide.

Blockalanche, which has you stacking blocks geometrically; and Lost 'N Maze, which chal-

lenges you to circumvent towering, impenetrable walls and look for treasure. RS# 504.

WALKING TALL

DO EXPANSION DEVICES kick sand on your power supply's blanket? Power-draining add-ons can tax the stock A500 power box, but you can give your system muscles with an enhanced, replacement power supply from Computers, Etc! (4521-A Bee Ridge Rd., Sarasota, FL 34233, 813/377-1121). The base **HD150** (\$129.95) model sports a 165-watt switch box complete with connectors. The deluxe **HD150DL** (\$179.95) model is a bolstered version of the base unit and features

three external A/C outlets, an internal cooling fan, and separate fuse protectors.

Is that your PC-emulator talking? The ordinary Bridgeboard-equipped A2000 will not recognize audio output from a PC program, but thanks to Computers, Etc!, you can wire your board for sound. The **Bridgeboard Speaker Kit** (\$24.95) comes complete with pre-assembled hardware for a do-it-yourself installation. RS# 502.

GOLDEN CALF

IF YOU HAVE ever fantasized of clicking on your boss's face to open a file that holds. . . oh, let's say your resume. . . check out **Hermes IconLab** (\$34.95) from Elkon Enterprises (4654 Mistletoe St., Wichita Falls, TX 76310, 817/691-0964). The program frees you from those desk drawers, document symbols, and other ordinary representations. You can reduce an IFF or HAM image or draw original icons. The package converts color images to black and white and has frame-capture and color-mixing capabilities. RS# 503.

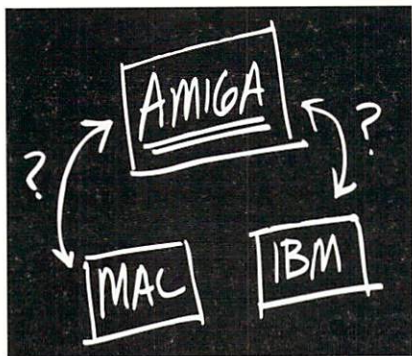
And Then Some

GRAB YOUR TANKS and fins! It's time for adventure in paradise with *Treasure Trap*, an action-strategy title from Electronic Zoo (3431-A Benson Ave., Baltimore, MD 21227, 301/646-5031). Dive for countless riches in the wreck of the gold-laden Esmerelda while avoiding slithering eels, poisonous jellyfish, powerful stingrays, and other aquatic menaces. RS# 505.

Now you can write to all your Russian friends on your Amiga with *Cyrillic Alphabets 2.0* (\$44.95). The program can handle Macedonian, Serbian, Bulgarian, and Ukrainian as well. You get three keyboard layouts for each language: Soviet typewriter, phonetic American "qwerty," and a 47-key computer setup. Each font includes English letters so you can combine them with Slavic in one document. You can use Cyrillic Alphabets with any program compatible with the Amiga's alternate character set. RS# 506.

Help a brave band of adventurers seek out and vanquish a malevolent alien criminal before he destroys the world of Cron. As your party proceeds in its quest, more and more obstacles bar its path while hundreds of blood-thirsty, ravenous monsters plague the group. Help combat these fiends with your arsenal of over 250 weapons, mystic items, and devastating spells. Take a deep breath before contacting New World Computing (14922 Calvert St., Van Nuys, CA 91411, 818/785-0401). RS# 507.

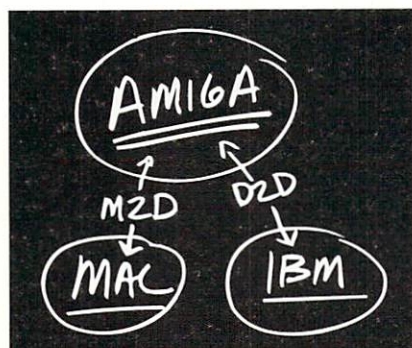
Hail, C-Zar 2.4! This editor/librarian for the Casio CZ series keyboards is showing off some new screen gadgets and resizable windows. C-Zar has learned to share the serial port with other MIDI programs. New preset sounds and operations memories also ▶



PROBLEM

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

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



SOLUTION

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

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

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

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

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

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

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

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



Central Coast Software

424 Vista Avenue Golden, Colorado 80401
(303) 526-1030 • (303) 526-0520 (fax)

appear on the list of new features. Registered owners can upgrade by sending \$10 plus their original disk to Diemer Development (12814 Landale, Studio City, CA 91604-1351, 818/762-0804). **RS# 508.**

Get in on a *Wrap Session* (\$79.95). This seven-disk set offers op-art patterns, gray scale, HAM, and full-color wraps.

Take a still video tour with *Vermont Seasons (Summer)* (\$39), the first of a promised set of scenes from the Green Mountain state. You can set these images to interlace with other software, and use them as backgrounds for genlocking and animation.

GENamations (\$49) are animations that use the transparent color techniques of the Amiga's color 0 register in order to allow you greater freedom in tailoring genlocked video.

For your desktop-publishing endeavors, *World Symbol Library* (\$44.95) includes multicultural images stored as 300- and 200-dpi line art, hi-res gray scale images, and a selection of full-color versions.

Satisfy the Marion Perkins in you with *AMIZOO* (\$44.95), a set of full-color hi-res brushes of frogs, fish, and birds—with more animal friends promised in upcoming releases.

Boldly go where no man has gone

before with *Amiga-SF* (\$69.95), a package that gives your videos a science-fiction flair. These ANIMbrushes of space vehicles represent the first release in a collection of futuristic images in 3-D, eight-color hi-res.

Need musical backdrops for your presentations? Take note of *Fat Sounds* (\$59.95), sampled sounds with file sizes larger than 8SVX. Items from *Wrap Session* to *Fat Sounds* are available from Go-Amigo, 2682D Middlefield Rd, Redwood City, CA 94063, 800/232-6442, or in California: 800/843-2842. **RS# 509.**

Props, with its HAM-brush images of animals, structures, and trees, and *Flowers* (\$24.95), containing digitized and hand-painted floral-pattern HAM brushes, can speed your work with Scene Generator from Natural Graphics. *Props* and *Flowers* are available for \$24.95 each from Eyeful Towers Communications (15 Rockydale, Bristol, VT 05443, 802/453-4293). **RS# 510.**

Combining the glorious tradition of outer space chivalry with domestic detective work, Euroline Group (1244 N. Orange Dr., Suite 206, Hollywood, CA 90038, 213/462-5013) has come up with a combined release, *Space Knight and Hotel Detective* (\$29.95). When you tire of racing about the universe in your star glider, you can hop

over to a grand hotel to root out danger sure to be lurking about the guest rooms. **RS# 511.**

Next you are off to rescue the fair Athena, daughter of Zeus, in *Altered Beast* (\$49.95) from Sega. As a warrior bestowed with powers of transformation, you must battle, conquer, and capture spirit balls to magnify your metamorphic abilities. Your adversaries include crocodile worms, hammer demons, and grave masters. Begin the change by contacting Electronic Arts (1820 Gateway Dr., San Mateo, CA 94404, 415/571-7171). **RS# 512.**

The infamous Shredder is tearing up the sewers of New York City...and your pizza-powered *Teenage Mutant Ninja Turtles* (\$44.95), bearing nunchakus and wacko bombs, are ready for retaliation. All they need is the go-ahead from you and Konami Inc. (900 Deerfield Parkway, Buffalo Grove, IL 60089, 708/215-5100). **RS# 514.**

What do Buffalo Bill, Elvira, and Michael Jackson have in common? They all star in adventure-strategy games from Box Office Software (available through Key Punch Corp., PO Box 7008, St. Paul, MN 55107, 612/292-1490). *Buffalo Bill's Rodeo Games* (\$29.99) tests your shooting, steer wrestling, and stage-coach rescuing abilities; *Elvira's Horrorsoft: A Per-*

sonal Nightmare (\$29.99) offers chill-inducing animations, and *Moonwalker* (\$34.99), based on a Michael Jackson movie, attempts to draw you into the action. Help Michael dance along while avoiding pesky fans. **RS# 515.**

Now you can get clipped and like it with *SuperClips* (\$29.95), a collection of professional structured clip art for desktop publishing. This King Publishing offering features gray-scale images that you can color for full color separations and an optional encapsulated PostScript format disk. You can also reassemble objects for custom creations by using Professional Draw (Gold Disk). Picture categories include hi-tech, domestic, plants, unusual symbols, kitchen, celestial, and transport. Get the picture by calling Computer Discount (5300 Greenvillage Rd., Chambersburg, PA 17201, 717/261-0512). **RS# 540.**

You are a professional tennis player, ranked 64th in the world and striving for the Australian Open, French Open at Roland Garros, US Open, and Wimbledon in *Pro Tennis Tour*. Each event is played on a unique surface with three levels of difficulty. Show them you have the competitive edge; contact Electronic Arts (1820 Gateway Drive, San Mateo, CA 94404, 415/571-7171). **RS# 541.** ■



CHECKPOINT
TECHNOLOGIES

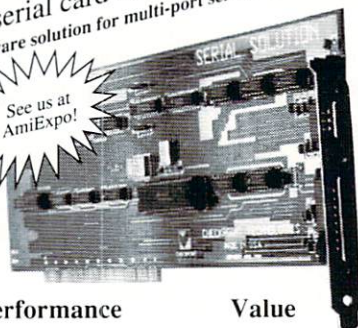
THE SERIAL SOLUTION

a dual-port internal serial card for the Amiga 2000
A complete hardware & software solution for multi-port serial expansion.

32 MIDI CHANNELS!

Works with Bars&Pipes
MIDI sequencer from
Blue Ribbon Bakery to give
you 32 or more simultaneous
MIDI channels!

See us at
AmiExpo!



Compatibility

The Serial Solution provides two industry-standard serial ports. The 9-pin port is IBM-AT compatible. The 25-pin port is RS-232C compatible. And it supplies the 12 volts needed to drive Amiga-specific peripherals, such as MIDI interfaces. Both ports support all standard handshaking lines plus CD and RI.

Performance

The Serial Solution delivers error-free performance for both the standard baud rates (1200, 2400, etc.) and the MIDI baud rate. The highest supported baud rate is 125K baud -- useful for networking two Amigas together. Each port has a four-byte buffer to ensure no data loss at all transmission speeds.

Value

The Serial Solution is your best buy in serial expansion at only \$199!

The right price, the best performance, the most compatibility.

Use it with:
Bars&Pipes • Deluxe Music • A-Talk III • Baud Bandit • OnLine! • Diga • many others •

P.O. Box 2035 • Manassas, Virginia 22110 • 703-330-5353

Investors! Traders! Brokers! Analysts!

Trade Profitably Through the 1990's
with

MicroTrader®

The Ultimate Stock Market Technical Analysis
and DataBase Management Tool Kit

Perform your own technical analysis on stocks, options, commodities and indices. Keep your portfolio under constant supervision and spot buy formations in other securities. Watch for short sale opportunities and be warned of resistance areas. Mind your own portfolio and update, either automatically using the powerful communication capability, or manually using the sophisticated Screen Editor.

For a Limited Time \$195.00; Demo Disk \$15.00

See your Local Dealer or Call:

MicroActive Inc.

USA: 4460 Patrick, West Bloomfield, MI 48322

CANADA: 7831 Bodinier, Anjou, Quebec H1K 1C2

TEL (514) 355-8503

FAX (514) 354-4324



**The
BEST**

Amiga

DISKS

THE TOP 10

- ☐ #131 **PacMan '87**—Great graphics and sound. Adds new elements to the Pac Man game. Saves a top 10.
- ☐ #200 **SMS**—A fantastic educational disk for the whole family. Practice math, spelling, and geography.
- ☐ #165 **Wheel of Fortune**—Play against the computer. Has the elements of the TV show including Vanna!
- ☐ #37 **Business Programs**—Includes a label printer, a talking mail list manager, and an address book program.
- ☐ #27 **Amoeba Invaders**—Much better than *Space Invaders*!
- ☐ #140 **Virus Killers**—Everyone needs this disk. It's easy to detect and eliminate known viruses.
- ☐ #115 **Wordwright**—A great word processor!
- ☐ #182 **Six Pack**—A collection of two-player games including *Word Boggle*, *Word Scramble*, and *Hangman*.
- ☐ #207 **Sonix #2**—A collection of popular music hits including "Thriller" and "Grapevine."
- ☐ #240 **Chess**—See if you can beat your computer!



THE BEST OF THE REST

GAMES

- ☐ #102 **Sinking Island**—An excellent adventure game!
- ☐ #118 **Great Graphic Games**—You'll have hours of fun playing *Missile Command*, *Breakout*, and more!
- ☐ #121 **Backgammon**—A great version by David Addison.
- ☐ #122 **Solitaire**—Two excellent solitaire games.
- ☐ #123 **Cribbage**—Now you can play anytime you want.
- ☐ #124 **Milestone**—Computer version of *Miles Bournes*.
- ☐ #125 **Othello**—Try this great 3-D game.
- ☐ #127 **Wheel of Fortune**—Another excellent computer version of *Wheel of Fortune*. This one speaks!
- ☐ #128 **Space Games**—An *Asteroids* game and *Gravity War* make this a disk you don't want to miss!
- ☐ #137 **Blackjack**—A full-featured game which allows pair-splitting and double-down. Also *Vegas Slots*.
- ☐ #139 **Bull Run**—Great Civil War strategy game.
- ☐ #142 **Q-Bert**—A really fun version of the favorite arcade game. Plus lots of other great games.
- ☐ #148 **Boulder Dash**—A very popular game with excellent graphics and ascending levels of difficulty.
- ☐ #151 **MAXIT**—This is a math/strategy game that you can play against a friend or your computer.
- ☐ #156 **Fly Snuffer**—Score points by spraying flies with bug spray. Get even with those pesky critters!
- ☐ #158, 159 **Sinking Island II**—A great adventure game with graphics. The game has four map scenes, underground chambers, and much more. Written by a great Amiga programmer, our friend, Terry Fike. (2 Disks)
- ☐ #161 **Sorry**—Amiga version of the classic board game.
- ☐ #162 **Video Poker**—Like the casino poker machines.
- ☐ #171 **Escape from Jovi**—An exciting, fast-action arcade game with different levels and effects. Fantastic graphics and sounds. (Requires a Joystick)

- ☐ #177 **Kamikaze Chess**—Chess with a twist! You win by losing all your pieces. Play a friend or the computer.
- ☐ #180, 181 **Star Trek**—A TREKies dream. Excellent sound and graphics. Requires 1 megabyte of RAM. (2 Disks)
- ☐ #195 **Tiles**—Match the tiles to clear the screen. A game with nice graphics that is very addictive!
- ☐ #210 **Gametime**—Games to give you many happy hours. Includes *Super Breakout* and *Orbit*, a space game.
- ☐ #216 **Chinese Checkers**—Great color and graphics. Allows up to six human and computer players.
- ☐ #223 **Conquest**—A space strategy game. You battle against the computer to conquer and colonize planets.
- ☐ #230 **Dad Puzzle**—This graphic puzzle is a real brain teaser! I couldn't solve the puzzle, but I did enjoy the included solution, a slideshow with music!

MUSIC & SOUNDS

- ☐ #18 **Future Sound Demo**—A sample of digitized sounds including "The Wicked Witch," "Breaking Dishes," "Car Crash," and "Sea Gulls."
- ☐ #77—Turn your keyboard into 25 different musical instruments and play it like a piano!
- ☐ #206 **Sonix #1**—Great songs created with *Sonix*. Includes "Maniac" and "Let the Music Play."

MISC. APPLICATIONS

- ☐ #110 **Potpourri VI**—Among the included programs is *Amiga Spell*, a spell checker.
- ☐ #134 **Applications I**—Included are a mail label printing program and a grocery shopping list program.
- ☐ #146 **Calendar**—Excellent personal calendar and reminder. Keeps track of appointments, birthdays, etc.
- ☐ #170 **Bowling League Secretary**—Keeps all your league's records. Can print standings, averages, etc.

ANIMATIONS

- ☐ #144 **Christmas Animations**—Ten beautiful scenes.
- ☐ #224 **New Movie II**—A collection of short animations including Jessica (From *Who Framed Roger Rabbit*).

SLIDE SHOWS

- ☐ #1 **Norman Rockwell**—Seventeen beautiful Norman Rockwell paintings in a self-running slide show presentation.
- ☐ #198 **Space**—This disk includes a slideshow from NASA of the Space Shuttle and also a slideshow of planets.

BUSINESS & HOME FINANCE

- ☐ #106 **Home Inventory**—Two programs that keep track of all your family's property and possessions.
- ☐ #152 **Mail Manager**—Complete package for maintaining a mailing list and printing mailing labels.
- ☐ #164 **Bank'n**—Keep your checking account in perfect balance. One of the many fine Hal Carter programs that we carry.
- ☐ #169 **Ledger**—An easy to use general ledger.
- ☐ #237 **Credit Card Record**—Keeps a complete record of all your credit card accounts.

UTILITIES

- ☐ #97 **Tutorial Disk I**—Full of info and programs for Amiga programmers and *Power Users*.
- ☐ #132 **Video Maker Utilities**—A collection of utilities to make your desktop videos more professional looking.
- ☐ #133 **AmigaDOS Helper**—Helps you to use AmigaDOS commands (and therefore your Amiga) more effectively.
- ☐ #220 **ICONomy Package**—Design and manage icons.
- ☐ #222 **CLI Wizard**—Have a CLI at the push of a button.
- ☐ #226 **Assorted Tools**—Includes *Blanker 2* (a screen saver) and *FlameKey* (a password security utility).

TELECOMMUNICATIONS

- ☐ #235 **Access 1.4**—Access any bulletin board with a modem and this program! Also includes *Pkax*, a file archiving utility.

Other Products

Amiga Joystick—the Kraft *ACE*—Only \$9.95 each (2 for \$15.95)
 Disk Holder—Holds 40+ 3 1/2" Amiga Disks—Only \$9.95 each!
 Disk Drive Cleaning Disk—Vital maintenance—Only \$5.95 each!
 SONY Blank Disks— 10 for \$9.90—Only 99¢ each!
 25 for \$21.25—Only 85¢ each!
 50 for \$39.50—Only 79¢ each!
 100 for \$75.00—Only 75¢ each!

So Easy to Use

- ▲ No computer experience necessary
- ▲ Instructions with each order
- ▲ Support Line: 503-826-7679

So Easy to Order

- ▲ FREE Membership ▲ FREE 800# for Orders
- ▲ Same day shipping.
- ▲ UPS 2nd Day Air Service when you need it now!
- ▲ FREE Catalog ▲ Your satisfaction guaranteed



Circle 194 on Reader Service card.

\$ 7 Each
Buy
1-4
Disks

\$ 6 Each
Buy
5-14
Disks

\$ 5 Each
Buy 15
or more
Disks

Name _____

Address _____

City _____ State _____ Zip _____

Phone (____) _____

Visa/MC _____

Exp. Date _____

Signature _____

☐ Send Catalog

Disks _____ x _____ \$ _____

☐ Shipping U.S. \$ 3.00
 Canada 5.00
 Foreign 7.00

☐ COD 4.00 \$ _____
 U.S. only

☐ UPS 2nd Day
 3.00 U.S. only \$ _____

TOTAL \$ _____

☐ Check/MO ☐ Visa/MC

**Software
Excitement!**

P.O. Box 5069 • Central Point, OR 97502

ORDER TODAY
1-800-444-5457
 503-826-7679 Foreign Orders

HELP KEY

*Whether you're mad as a March hare or feeling like an April fool,
Lou will bring you to your senses.*

By Louis R. Wallace

BOOK LEARNING

Q: *I just purchased an Amiga 2000, and I am having problems learning to use AmigaDOS. Do you know of any books on AmigaDOS that are similar to Richard Immers' Inside Commodore DOS?*

M. Kiker
Orange Park, FL

A: One of the best books available on AmigaDOS is Rob Peck's *The Amiga Companion* (\$19.95). The revised second edition includes full information on version 1.3 of the operating system and is available by calling the *AmigaWorld* order line, 800/343-0728.

SPIFF IT UP

Q: *How can I change the icon the RAM disk uses? I have fancy icons for all the other drives, but the RAM icon looks like a poor cousin.*

J. McRand
Charlotte, NC

A: The Disk.info icon file defines how a disk drive icon looks. If none is present, the system uses the plain default icon you see for the RAM disk. To give your RAM disk icon a facelift, create a disk icon using your favorite icon editor.

Once you have saved the new Disk.info icon file to a safe location on disk (perhaps in an Icon drawer), copy it to the RAM disk. To make it take effect, issue the LOADWB command from the Shell. The new disk icon will become the default for the RAM disk.

If you want to automate the procedure, add the following line to your startup-sequence before the LOADWB command:

COPY Icon/Disk.info to RAM:

MAP IT OUT

Q: *Help! I am a wildlife and habitat biologist. Two years ago I bought an Amiga in the hopes that a Geographic Information System (GIS) program or map-making software would be available eventually. Although this is a 200 million dollar a year market I still cannot find anything! Are there any GIS or map-making programs for the Amiga?*

D. Bader
Anchorage, AK

A: I don't know of any GIS software or map-making programs. If anyone else does, please write to me with the information. I will pass it on through Help Key. I must admit that with more than a million Amigas on the market (many of which are in the hands of scientists and engineers) I am constantly aston-

ished at the lack of commercial scientific and technical software.

RANDOM LUCK

Q: *I am having a terrible time making a random file work in Amiga Basic. I open the random file, define the various fields using the FIELD statement, then assign string values to the fielded variables. If I print the field variables from within the program they are fine, but when I examine the resulting file it is completely empty, yet is the proper size in bytes! Is there a bug in random files in Amiga Basic?*

J. Galdenstein
Akron, OH

A: Rather than a bug, the problem sounds like a common error in your use of fielded variables. Keep in mind that the correct way of assigning a value to a field variable is through the LSET or RSET command. Below is a simple example of using field variables in a random file.

```
' open the file
OPEN "R",#1,"Test",32
FIELD #1,11 AS FS,11 AS LS,10 AS PS
' the file is defined as 32
' bytes per record, equal to the sum
' of the three field variables' sizes
' input the information for 10
' names and phone numbers
FOR I%=1 TO 10
  INPUT "Firstname=";AS
  LSET FS=AS
  INPUT "Lastname=";AS
  LSET LS=AS
```

```
INPUT "Phone number=";AS
LSET PS=AS
PUT #1,I%
NEXT I%
' close the file and exit
CLOSE #1
END
```

Notice I used a standard string variable to input the data, then used the LSET command to assign the value to the fielded variables. If I had assigned them as I would a normal variable (for example, FS=AS) they would have become standard string variables instead of fielded variables. While they would have contained the proper information if I had printed them out, when I issued the PUT #1,I% command, it would have placed NULL strings into the data file. The result would be a file filled with empty data such as you described. I suggest you examine your program to check if you inadvertently treated the field variables as if they were normal variables. If you did, make the correction and see if your program runs correctly. ■

Order Toll Free

800-558-0003

Since 1982
ComputAbility
Consumer Electronics

Order Toll Free

800-558-0003

AMIGA SOFTWARE

1943	25.95	Carmen/World	30.95	Earl Weaver Baseball	31.95	Keybd. Cont. Seq 3.0	159.95	On Line Platinium	58.95	Risk	24.95	Test Drive 2 - The Duel	29.95
3D Pool	21.95	Champions of Kyrin	31.95	Comm. or MLBPA	14.95	Keybd. Cont. Seq Level II	219.95	Operation Wolf	22.95	Robocoop	28.95	Cal Challenge	15.95
A-Talk 3	64.95	Chaos	24.95	Elan Performer	35.95	Kid Talk	25.95	Optics	117.95	Rocket Ranger	31.95	European Chal	15.95
Adventure, The	CALL	Chessmaster 2100	31.95	Empire	31.95	King's Quest 1, 2, or 3	30.95	Page Renderer 3-D	94.95	Romance/3 Kingdom	44.95	Muscle or Super	15.95
Adventures Thru Time	30.95	Chronoquest	25.95	Excellence 1 Meg	158.95	King's Quest 4	37.95	Page Stream	119.95	Scrabble	24.95	Their Finest Hour	37.95
Aegis Draw 2000	167.95	Codename: Ieman	37.95	F-19 Stealth Fighter	31.95	Knight Force	28.95	Page Flipper Plus/FX	87.95	Scrabble Platinum	87.95	Thinker	57.95
After Burner	30.95	Colony's Bequest	59.95	F-40 Pursuit Blm.	28.95	Kristal, The	31.95	Parzer Strike	29.95	Sax Vixens	22.95	Third Courier	28.95
Albion Ranger	28.95	Comic Art Disks (ea)	20.95	FA/18 Interceptor	31.95	Last Duel	24.95	Phasar 4.0	54.95	Shadow of the Beast	31.95	Thunder Blade	29.95
All Dogs Go To Hvn.	30.95	Conquest of Camelot	37.95	Falcon	31.95	Leisure Suit Larry	25.95	Photon Paint 2.0	87.95	Shark Attack	24.95	Tiger	89.95
Alien Beast	67.95	Cribbage/5th King	37.95	Oper Counterstrike	16.95	Leisure Suit Lry II or III	37.95	Planet of Lust	24.95	Shufflepuck Cafe	24.95	Tiger Cub	59.95
Aquarant	25.95	Cross Dos	18.95	Fantavision	37.95	Life and Death	31.95	Pocket Rockets	24.95	Sim City	30.95	Times of Lore	24.95
Archipelagos	23.95	Curse/ Azure Bonds	28.95	Federation	31.95	Uights Camera Action	51.95	Police Quest 1	30.95	Terrain Ed.	14.95	Trackers Quest	21.95
Audio Master II	62.95	Cycles	30.95	Flendish Freddy	30.95	Logiworks	184.95	Police Quest 2	37.95	Snake or Die	25.95	Tnls/Armageddon	24.95
Aunt Arlo Adven.	24.95	DB Man	167.95	First Letters & Words	25.95	Lords of the Rising Sun	31.95	Power Windows 2.5	54.95	Smooth Talker	25.95	Turbo Out Run	31.95
Atari C Devl. V5.0	177.95	Day of the Viper	24.95	First Shapes	25.95	Luxor	19.95	Powerdrome	25.95	Sonix	51.95	Turbo Silver 3.0 1 Mg	112.95
Atari C Pro V5.0	119.95	Deathbringer	25.95	Flight Simulator II	30.95	M2 Amiga	147.95	Print Master Plus	24.95	Space Ace	34.95	TV Text Professional	99.95
B.A.D.	29.95	Defender / Crown	31.95	Fool's Errand	31.95	M2 Amiga Debug	77.95	Pro Motion	51.95	Space Harrier	30.95	Typhoon of Steel	31.95
B.A.T.	31.95	Deluxe Music Contr 2.0	61.95	Gauntlet II	30.95	Manic Johnson 1 Mg	31.95	Pro Tennis Tour	25.95	Space Quest 1 or 2	30.95	Typhoon Thompson	30.95
Balance/Power 1990	30.95	Deluxe Paint III	94.95	Genghis Khan	39.95	Manhunter - NY or SF	30.95	Pro Video Gold	167.95	Space Quest 3	37.95	Ultima	38.95
Balisticx	21.95	Grand Prix Circuit	27.95	Graphic Starter Kit	62.95	Manhunter 2	30.95	Pro Write 2.5	89.95	Spell Bee	25.95	Ultima III	24.95
Bar Games	28.95	Deluxe Print II	51.95	Gunship	34.95	Manic Johnson 2	28.95	Pro Fonz 1 or 2	21.95	Star Flight	31.95	Ultra Design	219.95
Bars and Pipes	169.95	Deluxe Productions	128.95	Hardball II	28.95	Math Talk or Fractions	25.95	Professional Draw	112.95	Star Trek	34.95	Ultra Plus	57.95
Barbarian II	24.95	Deluxe Video III	94.95	Heat Wave	28.95	Matrix Marauders	21.95	Project D-Backup	30.95	Strike Ace	30.95	Universe 3	31.95
Barde Tale II	38.95	Designasaurus	30.95	Heroes Quest	31.95	Maya Beacon Typing	31.95	Prospector Mazes 2	24.95	Strip Poker II	23.95	Vette	30.95
Batman	28.95	Digipalnt 3.0	64.95	Hillstar	124.95	Micro Fiche Filer +	114.95	Puffy's Saga	25.95	Stryx	21.95	Video Effects 3-D	113.95
Battle Chess	29.95	Digiview Gold	124.95	Hound of Shadow	25.95	Mid Rec Studio V.1.1	30.95	Puzzle Storybook	25.95	Stunt Track	21.95	Video Filter V1.5	92.95
Battle Hawks 1942	31.95	Dinosaur Dis. Kit	25.95	Howies Book of Games	21.95	Might and Magic II	37.95	Quicker Silver	41.95	Super Contra Basketball	CALL	Videoscape 3D	122.95
Battle Squadron	24.95	Disk Master	28.95	If It Moves Shoot III	19.95	Modeler 3D	62.95	Quarter Back	42.95	Superbase Personal	46.95	Viva-Amiga	122.95
Battles of Napoleon	31.95	Distant Sun	41.95	Ikarl Warriors	24.95	Monopoly	24.95	Rambo III	22.95	Superbase Personal 2	77.95	Voice Recognition	109.95
Battletech	30.95	Dos 2 Dos	30.95	Indl Jones-Graphic	30.95	Movie Better	59.95	Rampage	24.95	Superbase Pro 3.0	189.95	War in Middle Earth	30.95
Baud Bandit	30.95	Double Dragon II	24.95	IntroCad	46.95	Mus X	169.95	Raw Copy	34.95	Superbike Simulator	30.95	War of the Lance	25.95
Beyond Dark Castle	22.95	Double Dribble	28.95	Invision+	174.95	Neuromancer	28.95	Renegade	22.95	Superplan	87.95	Wayne Gretzky Hockey	30.95
Blade/Steel Hockey	28.95	Doug's Math Aquar	49.95	Iron Lord	25.95	N York Warriors-1 Mg	30.95	Rhythmic Notebook	25.95	Swords of Aragon	25.95	Weird Dreams	24.95
Block Out	24.95	Dr. Doom's Revenge	24.95	Island of Lost Hope	23.95	Night Force	28.95	Rick Dangerous	21.95	Swords of Twilight	31.95	Wings of Fury	24.95
Blood Money	25.95	Dragon Force	31.95	It Came From/Desert	31.95	Night Hunter	25.95	R.D. Soccer 1 Mg	30.95	T.V. Show V2.0	64.95	Worlds of War	167.95
Blue Angels	28.95	Dragon's Lair	33.95	Jack Nicklaus Golf	31.95	Nuclear War	30.95			T.V. Sports Basketball	31.95	World Atlas	35.95
Broadcast Tiller	167.95	Dragon's Lair II	43.95	Jeltons	30.95	Obilator	25.95			T.V. Sports Football	31.95	World Class Leader Board	28.95
Bubble Bobble	22.95	Dragons of Flame	25.95	Joan of Arc	28.95	Omega	30.95			Targhan	24.95	Xenophobe	25.95
Buffalo Bills Rodeo	24.95	D.U.D.E.	29.95	Kampfgruppe	37.95	Omniplay Baseball	30.95			Tax Break 2.0	63.95	Zak McKracken	28.95
Can Do	84.95	Dungeon Master	24.95	Karadzons Hines 1or 2	44.95	Omniplay Hrs Race	30.95			Teen Mutant Ninja Turtles	28.95	Zork Zero	38.95
Carmen/Europe	30.95	Dungeon Quest	31.95										

MASTER 3A
Disk Drive \$123
FREE DELIVERY
to the 48 Contiguous States

CALL TODAY! **AUTHORIZED** **AMIGA** **DEALER** CALL TODAY!
•A500• •A2000HD•
•A2000• •A2500•

VIDEO PACKAGE
PANASONIC 1410 CAMERA
16MM LENS WITH VARIABLE IRIS
COPYSTAND WITH LIGHTS
DIGIVIEW GOLD 4.0
\$419 DELIVERED!

IVS Trumpeard Hard Drive Packages for A2000 Series

8T-157N-1 49 Meg-28ms	519 DEL
8T-177N 60 Meg NEW	639 DEL
8T-277N-1 60 Meg	599 DEL
8T-296N 80 Meg	619 DEL

Quantum Pro Drive

40 MEG SCSI Pro Drive	549 DEL
80 MEG SCSI Pro Drive	779 DEL
100 MEG SCSI Pro Drive	849 DEL

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

Hard Drive Cards (A-2000)

8T-157N-1 49 Meg-28 ms	539 DEL
8T-177N 60 Meg NEW I	659 DEL

Quantum Pro Drive

40 MEG SCSI Pro Drive	589 DEL
80 MEG SCSI Pro Drive	799 DEL
100 MEG SCSI Pro Drive	899 DEL

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

SUPRA MEMORY

Supra Ram 500	89 Del
Supra Ram 2000-2 MB	289 Del
Supra Ram 2000-4 MB	449 Del
Supra Ram 2000-6 MB	609 Del
Supra Ram 2000-8 MB	769 Del

Includes FREE DELIVERY in the Contiguous 48 States

Trumpeard 500 Hard Drive Packages for Amiga 500

Seagate

ST-157N-1 49 Meg-28ms	589 Delivered
ST-177N-60 Mg NEW	709 Delivered

Quantum Pro Drive

40 Mg SCSI Pro Drive	629 DELIVERED
80 Mg SCSI Pro Drive	839 DELIVERED
100 Mg SCSI Pro Drive	919 DELIVERED

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

Trumpeard 500 Ram Expander available-612k • 1 MEG • 2 MEG • 4 MEG

Quantum Pro Drives

40 Meg SCSI Pro Drive	399
80 Meg SCSI Pro Drive	599
100 Meg SCSI Pro Drive	699

PRINTERS

PRICES SLASHED **Star** **Micro**

NX1000 Multifont 2	\$158
NX1000 Rainbow	\$205

Star XB 2410 415

Panasonic

KX-P1124	\$279
Panasonic 1180	179
Panasonic 1191	229

XETEC Fast Card Hard Drive Packages for Amiga 2000

ST-157N-1 49 Meg-28ms	499 Del
ST-177N-60 Meg NEW	619 Del
ST-277N-1 60 Meg	599 Del
ST-296N 80 Meg	609 Del

Quantum Pro Drive

40 Meg SCSI Pro Drive	549 DEL
80 Meg SCSI Pro Drive	759 DEL
100 Meg SCSI Pro Drive	849 DEL

Card features Xetec's DMAx hard, autoboot ROM, auto-config circuitry, 25 pin SCSI conn., disk, utilities manual.

FREE DELIVERY IN THE CONTIGUOUS 48 STATES

XETEC Fast Card System Hard Drive Packages for Amiga 500

ST-157N-1 49 Meg-28ms	709 Del
ST-177N-60 Meg NEW	829 Del
ST-277N-1 60 Meg	799 Del
ST-296N 80 Meg	809 Del

Quantum Pro Drive

40 Meg SCSI Pro Drive	749 DEL
80 Meg SCSI Pro Drive	949 DEL
100 Meg SCSI Pro Drive	1039 DEL

System includes Adaptor with autoboot ROM, enclosure, manual, Fast Track disk with utilities & shielded SCSI cable. With power supply and fan.

FREE DELIVERY IN THE CONTIGUOUS 48 STATES

Seagate SUPER SALE

8T-125N 20 Meg - 8C8I	269
8T-138N 30 Meg - 8C8I	299
8T-157N 49 Meg - 8C8I	329
8T-157N-1 49 Meg - 28 ms	349
8T-177N 60 Meg - 8C8I	469
8T-225N 20 Meg - 8C8I	255
8T-251N 40 Meg - 8C8I	375
8T-277N-1 60 Meg - 8C8I	429
8T-296N 80 Meg - 8C8I	459
8T-1096N 80 Meg - 24ms	519

GVP

HC/O SCSI Host Adaptor	199
HC8/O-HD Contr-O/K exp. 8 MB	285
Removable HD 44 MB Syquest	809
WT 150-Stream Tape BV 150MB	699
GVP 68030/28 4MB -Math Co.	CALL

GEN LOCKS

Ami Gen	95
Magni 4004 w/ Remote	1569
Scan Lock	739
Super Gen	659
Super Gen SC	CALL
Super Gen 2000S	1329

MISCELLANEOUS HARDWARE

Flicker Fixer	\$429
Perfect Sound	\$69
Color Splitter	\$119
Migraph Hand Scanner	CALL
Sharp JX 100 Color Scanner	\$759
Amiga Trackball	\$72
Cordless Mouse	\$99
Jin Mouse	\$49
Gravis Mouse Stick	\$85
Supra 2400Z Internal (A2000)	\$139
Baud Bandit Modem	\$105
Mega Midget Racer 25 mg.	\$669
Supercard	\$75
Synchro Express	\$55

Supra 2400

Ext. Modem & Cable
•\$117•
FREE DELIVERY to 48 Contiguous States

VISA

MasterCard

NO CREDIT CARD
SURCHARGE

ORDER INFORMATION

414-357-8181 FAX 414-357-7814
P.O. BOX 17882 Milwaukee, WI 53217

ORDERING INFORMATION: Specify system. For fast delivery send cash 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 shipping orders \$25 shipping for hardware, minimum \$5.00. MasterCard and Visa orders please include card #, expiration date and signature. We reserve the right to change prices without notice. All orders shipped outside the Continental U.S.A. are shipped first class insured U.S. mail. If foreign shipping charges exceed the minimum amount, you will be charged the additional amount. All goods are new and include factory warranty. We do not guarantee compatibility & version #. 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 and user directly with the manufacturer.

HORS D'OEUVRES

*Hints, tips and techniques from
your fellow Amiga users.*

Compiled by Tim Walsh

SMOOTHER ANIMATIONS

WHILE SETTING UP a series of DeluxePaint III (Electronic Arts) animations to run within Elan Design's Elan Performer, I discovered a method for getting smoother animations. Apparently, DeluxePaint III saves two extra animation frames during the Save Anim procedure, which, under normal circumstances, provide for smoother continuous loop animations. However, within Elan Performer, a glitch appears between animations when two or more DPaint animation files are combined.

Circumventing this problem is easy. Suppose you've created, say, an animation consisting of 30 frames. When prompted by the Save Anim requester to save Frames 1 to 30, change the 30 to 28, then save the animation. It will be saved in its entirety, and the finished animation can be run in Elan Performer back to back with other animations without a hitch. Note: Don't use this procedure if you intend to run the animation within DeluxePaint III, because DPaint needs the two extra animation frames for smooth execution.

*Craig Hollenback
Cos Cob, CT*

RAM-RESIDENT FORM FEED

IF YOU DO a lot of printing, you probably long for a way to issue a form-feed command to your printer from your Amiga. Why not create a tiny batch file named FFEED that can be kept in your RAM Disk? From the CLI or Shell, type

the following command, which sends what you type to the RAM-resident FFEED file:

```
COPY * RAM:FFEEED  
ECHO >PRT: <CTRL L>
```

Now press CTRL \ to close the RAM:FFEEED file. To get FFEED to run from any current directory, type the following:

```
PROTECT RAM:FFEEED+S
```

Now, typing EXECUTE FFEED from any CLI or Shell window will cause the printer to perform a form feed. You can easily save a copy of this utility to disk as a short script file, provided you create it on a text editor that lets you enter the CTRL L sequence without ill effects.

*Barry Harvey
Los Altos, CA*

BRIDGEBOARD COLOR

IF YOUR SYSTEM is equipped with an A2088 or A2286 Bridgeboard that you'd like to have default to the color screen rather than the monochrome screen on startup, the solution is only a few keystrokes away.

First, activate the Bridgeboard and create an autoexec.bat file by typing the following:

```
COPY CON AUTOEXEC.BAT
```

Next, type the following to set the color mode:

```
MODE CO80  
DATE  
TIME
```

Finally, press CTRL Z and then Return. The autoexec.bat file will be saved to your DOS disk in the Bridgeboard's drive. As most experienced PC users know, the date and time commands are

optional. The next time you boot your Bridgeboard with that MS-DOS boot disk, it will default to the Color mode.

*Ben Oshrin
Miller Place, NY*

B.A.D. SOLUTIONS

IF YOU HAVE only one disk drive and intend to use B.A.D. (Blitz A Disk) by M.V. Micro, you'll normally have to go through a lot of work to create fast-loading disks. According to the B.A.D. documentation, "Expect processing times of around 30-45 minutes for a full disk, with faster times for disks not yet filled." So, plan on setting aside an afternoon or two and suffering through numerous disk swaps for each Blitzed disk you create.

However, if you have a megabyte or more of memory and AmigaDOS 1.3, create a recoverable RAM disk, or RAD. Set the original disk in DF0 and assign the RAD as the destination drive. When the Blitzing process is finished, copy the entire RAD disk to a destination disk in DF0. This entire process can be performed in a fraction of the time of a normal single-drive Blitzing process.

*Lee R. Palmer
Westerly, RI*

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. ■

Sponsored by

AMIGA
W O R L D

AmiEXPO

THE

AMIGA

PERSONAL COMPUTER SHOW

March 16-18, 1990

Sheraton Washington
Washington, D.C.

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, Rendering and Publishing!
Seating for Master Classes is limited; call for schedule and availability before registering.

PRE-REGISTRATION DEADLINE IS MARCH 2, 1990

(No cancellations or refunds after deadline)

SPECIAL EVENT: AmiEXPO Art & Video Awards

with Prizes from C Ltd., GVP, IVS, NewTek and Philadelphia Video Labs

For Hotel Reservations Call the Sheraton Washington at (202) 328-2000

Hotel reservations deadline: February 15, 1990

For discounted airfares, call American Airlines at (800) 433-1790 and give them this ID: 12Z 04F

REGISTER TODAY!

Register by Mail, or Bring This Coupon to the show or Call 800-32-AMIGA Nationwide (or 914-741-6500)

For Your Ticket to The Amiga Event!

Yes, I want to come to AmiEXPO-East Coast

☐ 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 - \$60 Each

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 465 Columbus Ave., Ste. 285

Total Amount Enclosed

Circle 72 on Reader Service card. Valhalla, NY 10595

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 Oesterreich*; 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*, *Tietoväikku*; FRANCE'S *Le Monde Informatique*, *Distributique*, *InfoPC*, *Telecoms International*; GREECE'S *Micro and Computer Age*; HUNGARY'S *Computerworld SZT*, *PC Mikrovilág*; 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 Computerworld 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*, *iCider*, *InfoWorld*, *Macintosh Today*, *MacWorld*, *Computer + Software News*, *(Micro Marketworld/Lebhar-Friedman)*, *Network World*, *PC World*, *Portable Computer Review*, *Publish!*, *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 unpublished 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 Kaniwec, Customer Service Representative.

List of Advertisers

Reader	124	Abacus Software, 83	Reader	75	Oxxi, Inc., 61
Service	72	AmiEXPO, 103	Service	84	Passport Designs, 84
Number	*	Applied Engineering, 107	Number	284	Pixelations, 4
	377	Applied Ingenuity, 4		9	Practical Solutions, Inc., 82
	*	AmigaWorld		187	Precision Inc., 11
		Amiga Tool Chest, 52		137	Progressive Peripherals, 43
		Video Disk, 105		372	Quality Digitized Images, 107
	334	Beta Unlimited, 73		135	Realism Entertainment, 14
	173	Briwall, 2		110	7-Day Software, 83
	132	Briwall, 68, 69		275	Safe Harbor, 90
	73	California Access, 66		338	Saxman Systems, 92
	143	Central Coast Software, 97		359	Softech Computer Systems, Inc., 107
	379	Check Point Technologies, 98		211	SoftLogik Corp., 39
	83	Coast to Coast Technologies, 54		337	Software Advantage Consulting, 80
	114	Coast to Coast Technologies, 55		128	Software Discounters, 87
	15	Commodore, 67		194	Software Excitement, 99
	53	CompuServe, 37		206	Sprite Technology Corp., 79
	148	Computability, 101		214	Star Games, 71
	69	Computer Mart, 81		208	Supra Corp., 19
	52	Computers Etc!, 78		88	Supra Corp., 21
	39	Consultron, 92		281	Tensor Productions, 107
	199	Creative Computers, 62-63		61	The AAmiga Center, 60
	231	Data East, 67		151	The Hunter Group, 53
	398	DevWare, Inc., 86		134	The Software Shop, 89
	368	Digifex, 58		213	UBI-Soft, 42
	55	DigiSoft, 90		74	Utilities Unlimited, 88
	28	Digital Creations, CII		366	Versasoft, 29
	35	Dr. T's Music Software, 15		291	Very Vivid, 107
	374	Duggan Deizgn, Inc., 106		104	Virgin Mastertronic Int'l, Inc., 27
	367	Elkon Enterprises, 106		57	Visionary Ltd., 73
	364	Express-Way Software, Inc., 80		80	Zuma Group, 93
	396	Gladstone Productions, 107			
	26	Go Amigo, 48-51			
	177	Gold Disk, Inc., 1			
	245, 127	Great Valley Products, Inc., 5			
	145, 62	Great Valley Products, Inc., 7			
	36, 265	Great Valley Products, Inc., 41			
	339	Hologramophone, 76			
	77	IDG Sega, 59			
	58	Interactive Video Systems, 44			
	125	InterComputing, Inc., 95			
	117	Konyo, CIII			
	122	Lightspeed Distribution, 91			
	283	Lionheart Press, Inc., 107			
	57	Media Technology, 73			
	287	Memory World, 106			
	227	Micro Systems Int'l, 88			
	95	Micro Systems Software, 57			
	363	MicroActive Inc., 98			
	*	MicroEd, Inc., 106			
	*	Montgomery Grant, 85			
	38	New Horizons Software, 9			
	119	NewTek, Inc., CIV			
	81	Octree Software, 65			

* 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.

NOTICE TO ADVERTISERS

All advertising is subject to the approval of the Publisher and *AmigaWorld* reserves the right to refuse advertising without notice. The advertising herein that has been typeset and/or designed by *AmigaWorld* is the property of *AmigaWorld*, and not that of the advertiser. The advertiser has purchased the right of reproduction in *AmigaWorld* only, and does not have the right to reproduce the ad in any other publication, without the expressed written consent of *AmigaWorld*. Advertisers and/or their agencies assume the responsibility for the condition of the contents of the advertising printed herein and agree to indemnify the Publisher of *AmigaWorld* for any claims and/or expenses incurred therefrom. *AmigaWorld* is not responsible for changes to artwork after the given advertising deadlines, nor assumes responsibility for mistakes, misprints, or typographical errors, and will not issue credits of any kind for such errors. *AmigaWorld* advises advertisers that statements regarding shipping and handling charges, warranties and/or money-back guarantees should be included within all forms of advertising in *AmigaWorld*. The opinions expressed in the articles and advertising appearing herein are those of the authors and/or advertisers and are not necessarily those of *AmigaWorld*.

FYI

If you have any questions or concerns about advertisers in *AmigaWorld*, please contact: **Susan Kaniwec, Customer Service Representative, AmigaWorld Magazine, 80 Elm Street, Peterborough, NH 03458.** 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. Through our customer service representative, *AmigaWorld* assists readers with problems they may have with advertisers. Readers are advised to contact *AmigaWorld* before dealing with these companies: **Computer Best, FutureSoft Applications.** However, *AmigaWorld* does not assume any liability for advertiser's claims. **C Ltd.** is no longer a viable corporation.

M.C.S. WE DON'T CLAIM TO HAVE THE LOWEST PRICES ON AMIGA...

**WE PROVE IT!
NOBODY BEATS US!**

THINK YOU FOUND A GOOD DEAL? OURS WILL BE BETTER!

**3.5
DS/DD
49¢**
100 LOT QTY.
69¢ (10)

APROTEK 2400 MINI MODEM

LTD QTY **\$75**

- Supra 2400 ext. 99*
- Supra 2400i. 98
- Supra 2400ZI. 125
- Avatex 2400. 130*

*If you purchase a Modem Cable

MICROBIOTICS

512K A500 **\$95**
Or Lower To Beat Competition

**GVP 25 MHZ
68030
\$779**

**PANASONIC
1124 \$289***

- Rainbow. \$210*
- Okimate 2.0. 140
- Panasonic 1180. 168*
- Star NX1000-II. 159*

*If you purchase 2 ribbons

HARD DRIVES

Or Lower To Beat All Competition!

Drive Type	Trump 2000	Drive Only	Xetec FC 2000	Xetec FC 500	Trump 500	GVP 2000	GVP 500
3.5 DRIVES							
30MG ST-138N	448 DEL	298	438 DEL	622 DEL	500 DEL	625	750
49MG ST-157N	490 DEL	348	480 DEL	664 DEL	550 DEL	—	—
60MG ST-177N	640 DEL	448	630 DEL	800 DEL	642 DEL	—	—
QUANTUM 40MG	590 DEL	448	580 DEL	758 DEL	645 DEL	780	995
QUANTUM 80MG	825 DEL	698	815 DEL	995 DEL	880 DEL	1050	1375
QUANTUM 100MG	900 DEL	778	890 DEL	1020 DEL	949 DEL	1150	1475

MAST Tiny Tiger II

20MG	449
30MG	549
50MG	599
90MG	950

Unidrive 119

Unidrive 150

Enhanced

Twin Drive 225

SCANLOCK \$799 LTD QTY

- Super Gen. 649
- Flicker Fixer. 440
- Framegrabber. 520
- Flick Off. Call

PANASONIC Video Package

WV1410 Camera-16mm Lens

Digiview Gold 4.0 Copy Stand W/Light

Enhanced

\$399 DELIVERED!

MAST 2MG

MINI-MEG A500 or **\$350**
A1000

MICROBIOTICS

2 MG 8-UP **\$299**

4MG-460 6MG-620 8MG-780

INBOARD 500/1000 512K \$299

1MG-365 1.5MG-425 2MG-590

STARBOARD II 500/1000 \$299

512K 1MG-365 2MG-540

MINI MAX 512K \$110

ABACUS

- Amiga Dos Tool Box \$36
- Disk Drives Inside/Out \$27
- Amiga C Adv. \$33
- Amiga Dos Inside/Out \$18
- Amiga Machine Lang \$18
- Amiga C for Beginners \$15
- Amiga Sys prog. Guide \$33
- Amiga Basic Inside/Out \$23
- Amiga for Beginners \$15
- Amiga 3D Graphics \$18
- More Tricks & Tips \$117

ABSOF

- AC/Basic 1.3 \$117
- AC/Fortran. \$180

ACCESS

- Leader Board Dual Pk \$21
- World CIs Ldr Board \$27

ACTIONWARE

- Sideshow \$30

ACCOLADE

- Muscle Cars \$12
- Cycles \$12
- Jack Nicklaus Chp Crs \$12
- Super Cars \$14
- Shoot'em-up Const Kit \$15
- Heavy Metal \$27
- California Challenge \$14
- Bubble Ghost \$21
- Famous Courses Vol 2 \$12
- Jack Nicholas Golf \$30
- Test Drive II. \$27

ACTIVISION

- Maniac Mansion \$27
- Battle Hawks 1942 \$30

ADDISON-WESLEY

- Includes & Auto Docs Call

AEGIS

- AniMagic \$60
- Audiomaster 2.0 \$60
- Modeler 3D \$60
- Sonix \$48

AMIGA

- 1.3 Enhancer \$20

ANTIC

- Design Disks \$21
- Phasar 3.0 \$60
- Artura \$24

ARTWORX

- World Snooker \$21
- Bridge 5.0 \$21
- Centerfold Squares \$18
- Linkword Languages \$18
- Strip Poker 2. \$24

ASDG

- FACC II \$21

AVANTE GARDE

- Benchmark Module 2 \$120

BAUDVILLE

- Award Maker Plus \$30

BETHESDA

- Dragons Lair II. \$36
- Wayne Gretzky Hockey \$30

BRITANNICA

- Jigsaw \$30

BRODERBUND

- Carmen USA \$30
- Simm City Terrain \$12
- Omniplay Horseracing \$30
- Joan of Arc \$27
- If It Moves Shoot It \$18
- License to Kill \$24
- Joan of Arc \$27
- Shufflepuck Cafe \$24
- Downhill Challenge \$24
- Archipelagos \$24
- Omniplay Basketball \$30
- Carmen San Diego World \$27
- Sim City \$27
- Star Wars \$24

BROWN WAGH

- Easyledger \$180
- Pen Pal \$90

BUENA VISTA

- Booster Rabbit \$27

BYTE BY BYTE

- Sculpt 3D XL \$100
- Sculpt Animate 4D \$90
- Sculpt/Animate 4D Jr. \$90

CADVISION

- International \$90

CALIFORNIA DREAMS

- Bloody Data Disk \$24

CENTAURO SOFTWARE

- World Atlas \$36
- B.A.D. \$30

CENTRAL COAST

- MAC to DOS. Special \$33
- DOS 2 DOS. \$33
- Quarterback \$42

CINEMAWARE

- TV Sports Basketball \$32
- Deathbringer \$26
- Darkside \$26
- It came from the desert. \$32
- Speedball. \$26
- Kristal \$32
- Federation \$32
- King of Chicago \$15
- Lords of Rising Sun \$32
- Rocket Ranger \$32
- S.D.I. \$15
- Sinbad \$18
- 3 Stoggles \$32
- Defender of the Crown \$30
- T.V. Sports Football \$32

DATA EAST

- Batman-The Movie \$18
- Bad Dudes \$27
- Rambo III. \$21
- Batman \$27
- Robocop \$30

DEMONWARE

- Final Countdown Call

DIGITEK

- Extra Courses \$12
- Hole 1 Mini Golf \$24

DISCOVERY

- Arkanoid \$20
- Grabbit \$18
- Hybris \$24
- Sword of Sodan \$30
- V.I.P. \$30
- Zoom \$18

DR. T MUSIC SOFTWARE

- Tiger Cub \$60
- K.C.S. Level II \$210
- Copyst 2.0 \$168
- K.C.S. \$150
- Midi Recording Studio \$42

EASEWARE

- Home Builders Cad \$120
- Home Builders Ch \$49

ELAN DESIGN

- Invision Req Live \$135
- Performer \$36

ELECTRONIC ARTS

- Deluxe Video III \$92
- Pro Tennis Tour \$32
- Keef the Thief \$48
- Delux Paint II \$32
- Power Drome \$26
- Indy Jones Last Crusade \$26
- Swords of Twilight \$32
- Might and Magic II \$38
- Populus Data Disk \$20
- Demons Winter \$26
- Populus \$32
- Time and Magic \$26
- Alternate Rity(city) \$26
- Bard's Tale \$32
- ChessMaster 2000 \$29
- Commissioners Disk \$14
- Deluxe Music \$62
- Deluxe Paint III \$92
- Deluxe Photo Lab \$26
- Deluxe Productions \$122
- Double Dragon \$26
- Earl Weaver \$32
- FA/18 Interceptor \$32
- Ferrari Formula 1 \$32
- Marble Madness \$32
- Master Ninja \$20
- Mavis Beacon \$32
- Zany Golf \$26

FIRST BYTE

- First Letters & Words \$26
- First Shapes \$26
- Kid Talk \$32
- Math Talk \$32
- Math Talk Fractions \$26
- Speller Bee \$26

FREE SPIRIT

- Ami-Alignment \$30
- Planet of Lust \$24
- Securities Analyst \$48
- Sex Vixens from Space \$24

FTL

- Kaos Strikes Back Call
- Dungeon Master \$24

FULLER COMPUTER

- Project D \$30

GOLD DISK

- Pagesetter II \$78
- Prof. Page 1.3 \$210
- Advantage \$120
- Movie Clips \$21
- Comic Strip Data Disks \$21
- Structured Clip Art \$Call
- Transcript \$42
- Pro Page Templates \$36
- Pro Draw Clip Art \$36
- Desk Top Budget \$42
- Design 3D \$60
- Comic Strip \$60
- Movie Setter \$60
- Pro Draw \$120

IMPLUSE

- Turbo Silver \$120

INFORM

- Zork Zero \$36
- Battletech \$30

INNERPRISE

- Persian Gulf Inferno \$24
- Lost Dutchman Min \$30

INOVATRONICS

- Cando \$90

INNOVATION

- Broadcast Titrer \$180
- Video Effects 3D \$120

INTERPLAY

- Battle Chess \$32
- Neuromanizer \$24

INTUITIVE TECH.

- Ultrapack Plus \$60
- Maxiplan 3 \$150

JDK IMAGES

- Pro Video Gold \$180
- Font Libraries \$78

KARA

- Anim Fonts \$30
- Subheads \$42
- Headlines 2 \$42
- Kara Fonts \$48

KOEI

- Romance/3 Kingdoms Call

KONAMI

- Digital Dribble Call

LATTICE

- Lattice 5.0 New Price

LUCAS FILM

- Pipe Dreams \$26
- Their Finest Hour \$38
- Indy Jones-Action Game \$27
- Indy Jones-Adven. Game \$32

MELBOURNE HOUSE

- NY Warriors \$30
- World Trophy Soccer \$Call
- War in Middle Earth \$30
- Magic Johnson B-ball \$30

MICRO DEAL

- Dr. Dooms Revenge \$27

Amas

- International Soccer \$24

MICROILLUSIONS

- Jetsons \$24
- Dr. Plummet \$21
- Turbo \$18
- Data Disks \$12
- Discovery Math or Spell \$24
- Faery Tale \$30
- PhotoVid Cel Animator \$90
- Music X \$160
- Photon Paint II \$90

MIKROSCAPE

- Afterburner \$30
- Fiendish Freddy \$30
- Paperboy \$30
- Gauntlet II \$30
- Indiana Jones \$24
- Captain Blood \$30
- Hostage \$27
- Outrun \$30
- Shadowgate \$30
- Uninvited \$30
- Alien Syndrome \$24
- RoadRaider \$30
- Deja Vu II \$30

MINDWARE

- Aunt-Artic Adventure \$24
- Pg Flipper Plus F/X \$96

MSI

- Raw Copy \$36

M.S.S.

- Online Platinum \$60
- Excelera \$150
- Scribe Platinum Ed. \$90
- Works Platinum Ed. \$177

NEW HORIZONS

- Pro Fonts 1 or 2 \$21
- Pro Write 2.5 \$75

NEWTEK

- Digiview Gold 4.0 \$125
- Digi Paint III \$60
- Digidroid \$62

ORIGIN SYSTEMS

- Windwalker \$24
- Omega \$30
- Times of Lore \$24
- Ultima IV. \$36

OTHER GUYS

- Synthia Professional \$237

OXI

- Tax Break 2.0 \$48
- Nibreak 2.0 \$96
- A-Talk 3.0 \$60

PARAGON

- Dr. Dooms Revenge \$27

PRECISION SOFTWARE

- SuperBase Personal \$48
- SuperBase Personal II \$90
- SuperBase Pro 3.0 \$210
- Super Plan \$90

PROGRESSIVE

- Dunlap Utilities \$48
- Baud Bandit \$30
- All About America \$24
- Disk Master \$30
- IntroCad \$48
- Mathamation \$48
- Pixmate \$42

PSYGNOSIS

- Stryx \$21
- Nevrmind \$21
- Shadow of the Beast \$30
- Blood Money \$24
- Baal \$18
- Ballistik \$21
- Menace \$18

READY SOFT

- Amiga-Tosh Drive \$190
- A-Max Pkg Price. \$Special
- A-Max \$120
- Dragon's Lair \$36

RIGHT ANSWERS GROUP

- Director \$42
- Director Tool Kit \$24

SIERRA

- Heroes Quest \$36
- Spacequest III \$Call
- Leisure Suit Larry II \$30

InfoMarket

MEMORY FOR LESS

D RAM BLOWOUT!!

D RAM BLOWOUT		CPUs for Repair or Accelerators	
256 x 1 150n.s.	\$3.50 ea.	68010 8 Mhz	\$ 35.00
256 x 1 120n.s.	4.00 ea.	68020 16 Mhz	75.00
256 x 1 80n.s.	5.00 ea.	20 Mhz	109.00
1 meg x 1 100n.s.	12.50 ea.	68030 25 Mhz	289.00
1 meg x 1 80n.s.	14.00 ea.	Math Co's	
256 x 4 80n.s.	12.00 ea.	68881 12 Mhz	69.00
		16 Mhz	75.00
		20 Mhz	109.00
		68882 16 Mhz	109.00
		25 Mhz	289.00
FATTER AGNUS	95.00	All Crystals	10.00 ea.
1.3 Kickstart ROM	25.00		

WE PROUDLY OFFER SPIRIT EXPANSION BOARDS

	OK	1/2 meg	1 meg	1 1/2 meg	2 meg
IN 1000	\$239	\$269	\$299	\$339	—
SIN 500	\$239	\$269	\$299	\$339	\$519
Octabyte OB2 (2000)	\$239	\$295	\$371	\$463	\$519
Trapper 501	\$ 69	\$ 89	—	—	—

MEMORY WORLD
2476 CROYDON COURT
BENSALEM, PA 19020



215-741-6225
FAX 215-741-6229
VISA / MC / CHECK / COD

Circle 287 on Reader Service card.

The Revised Ultimate Hint Kit

The Revised Ultimate Hint Kit Combines Vol.I and Vol.II into one package, plus adding new material. The Revised Hint Kit offers walk-thrus and help for over 40 adventure games. Walk-thrus for Starflight, Kristal, Shadow Beast, Zak, Batman, Dungeon Master, Kult, Stryder, Battle Tech and more! The backdoor section gives you cheats for Robo Cop, Thunder Blade, Elite, Falcon, Space Ace, Battle Squadron and many more!

Now add over 60 maps for the most popular games. Complete dungeon maps for Bard's Tale I and Bard's Tale II. Maps for FaeryTale and Dungeon Master. Also included are maps for Obliterator, Stryder, Ultima IV and Batman the Movie.

Now how about Character editors for Bard's Tale, Phantasi, FaeryTale, Battle Tech, Sim City. Unlimited lives for BloodMoney, Shadow Beast, XYbots, Cybermold.II and more. This is the most complete package for the Amiga. All text files and maps are printable! Send \$26.95 plus \$2.00 for shipping. Vol.I and Vol.II owners update by sending your original disk and \$9.95 plus \$2.00 shipping to

Elkon Enterprises P.O. Box 4164 Wichita Falls Tx 76310

Dealer Inquiries welcome.

Circle 367 on Reader Service card.

DON'T HOLD THAT JOYSTICK!
USE the ONLY **SOLID STEEL** holding clamp
DE-ZIGNED for it called. . .

NEW! **STIK-GRIPPER™**

- **ALLOWS ONE HANDED JOYSTICK OPERATION!**
- **AVOIDS FUMBLING FOR THE KEYBOARD CONTROLS!**
- **EXCELLENT FOR FLIGHT SIMULATORS OR ANY GAME!**
- **SOLID STEEL—RUGGED CONSTRUCTION**
- **TOTALLY ADJUSTABLE! CLAMPS ANY JOYSTICK UP TO 4 1/2" WIDE!**

Protective Pads & Caps Included!

It clamps you into the Action!™

GIVES ANY GAME THE TRUE ARCADE FEEL!

CALL (ORDERS ONLY)
(800) 843-1223

OR: Send a check or money order to:
(Add \$2.50 for shipping)

Visa MasterCard
For info call: (401) 823-8073
Dealer Inquiries Welcome!
RI residents add 6% tax

Duggan DeZign, Inc.
300 Quaker Lane
Suite #7
Warwick, RI 02886

Circle 374 on Reader Service card.

AMIGA BUREAU

Laser Printing—File Transfer—BBS

- Postscript 300 dpi & colour separations
- Only \$5 setup & then \$1 or less per page
- Amiga DTP/WP packages supported
- File conversions Amiga-IBM-Mac etc
- Bulletin Board for prices, news, uploads
- 300/1200/2400 & soon 9600 baud
- On line most hours / 7 days
- Credit card facility on line
- Image scanning & graphic artwork
- ASDG distributors for Australia.

Desktop Utilities

Ultra convenient - an online bureau! Send a disk or upload Postscript, ASCII or doc files for laser printing. A4 margins at least 1cm. Standard Adobe & Compugraphic fonts available. O/s users allow 2 weeks' air mail postage. Canberra users: same day delivery can be arranged.

P.O. Box 3053, Manuka, A.C.T. 2603, Australia
Messages: 61-6-239 6658; BBS: 61-6-239 6659

Hypertext for the Amiga

Thinker

Write, design, think, plan, Outline. Multimedia idea processor. Hypertext!

\$80 Version 2.0 with ARexx

"...stunning capabilities...simple to operate" "power and grace..."
"...superbly crafted..." Gary Gehman, Amiga Sentry, June 1989
"This is one program that I will use often. For \$80, it is a real steal!"
Robert Klimaszewski, Amazing V5.1
"Will certainly whet a lot of HyperAppetites"
Neil Randall, Amigaworld 1/90

Poor Person Software, Dept 10, 3721 Starr King Circle
Palo Alto, CA 94306 (415) 493-7234

Public Domain Software Resource

Choose only the Amiga public domain programs you want using our custom ordering service. PDSResource offers hundreds of the best Amiga freeware and shareware programs. Send now for our free updated catalog. Each custom disk is only \$6.00. Remember, with PDSResource . . .



PDSResource

"You have a choice!"

P.O. Box 7175 Loma Linda, CA 92354

35mm COLOR SLIDES

from your IFF or HAM files

- Brilliant Color
 - No Curvature Distortion
- as low as \$1/slide

Call or Write for order form, price list & sample
HAMMOND 11280 Washington Place
PHOTOGRAPHIC SERVICES Culver City, Ca. 90230
(213) 390-3010



8372A

(Fatter Agnus) \$99.95

WE RESERVE THE RIGHT TO REFUSE WORK ON DAMAGED UNITS. DISCOUNTS FOR DEALERS & SCHOOLS.

WE CARRY PARTS, CHIPS, POWER SUPPLIES & ALL OTHER ACCESSORIES FOR YOUR COMMODORE & AMIGA. AUTHORIZED AMIGA SALES & SERVICE.

A500 (Repair)	\$ 64.00	A500 Power Supply	\$ 99.00
1.3 ROM (315093-02)	29.95	A2000 Power Supply	159.00
M501 (512K)	125.00	A2000 Int'l Drive	99.00
8UP w/2 MEG	369.00	A1000 Int'l Drive	159.00
A500 Keyboard	120.00	A1000 Keyboard	110.00
CALL FOR OTHERS		A2000 Keyboard	125.00

AMPEX SYSTEMS, INC.
5344 Jimmy Carter Blvd.
Norcross, GA 30093
(404) 263-9190
Toll Free 1-800-962-4489

MicroEd

Educational Software K thru Adult
ALL CURRICULAR AREAS • INCLUDES RELIGIOUS PROGRAMS
ALSO AN AUTHORIZING SYSTEM THAT USES ENGLISH COMMANDS

MicroEd, Incorporated
PO Box 24750 Edina, MN 55424
612-929-2242



AMIGA CHIPS, PARTS AND UPGRADES



- 1st of 'Enhanced Chip Set', 1 megabyte Fatter Agnus (8372A) hi-res mode allows Amiga user more chip memory for use in Graphics, Music or Video. This 'plug-in' upgrade is an absolute must and costs \$95.85 with simple 10 min. step by step installation instructions.
- A501-512K Ram upgrade with battery/clock \$99.95
- 1.3 kickstart ROM-\$27.95

• AMIGA DIAGNOSTICIAN (Reference Aid #7) •

A range of Diagnostic fault finding guides for the A500 in a manual format. Written with "the novice" in mind. Utilizes the "proven" Commodore Diagnostic method for finding faulty chips. Included are schematics, chip functions, info on the "enhanced chip set" and much more (48 pages). \$9.95+1.00 postage.

SEND FOR CATALOG OF EXCLUSIVE PRODUCTS

1-800-292-7445
(Toll free)



THE GRAPEVINE GROUP, INC.
35 CHARLOTTE DRIVE, WESLEY HILLS, NY 10977

(914) 354-4448
FAX (914) 354-6696

Adult Artwork

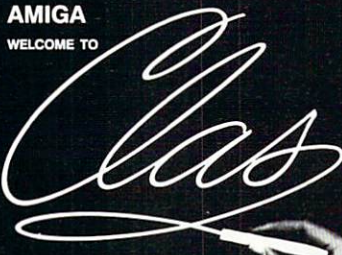
PO Box 20024
Kansas City, MO 64195

VISA
MasterCard

Must be 21
Missouri residents add \$2.25 sales tax

3 Disks \$35
All New

AMIGA WELCOME TO



Computerized Lesson Authoring System

- Create Your Own Software
- Use Plain English Commands
- Then Let Your Amiga Write The Program

For use in homes, schools and businesses
For more information, call or write:

MicroEd

TOUCH TECHNOLOGIES

PO Box 24750
Edina, MN 55424 (612) 929-2242

Unleash the True Power of Your Amiga with the Ultimate Man-Machine Interfaces

- VIDI-Mice & MIDI-Mice**
- ✓ Interactive Music and Video Performances
 - ✓ Studio Music and Video Synchronization
 - ✓ Kinetic Sculptures and Cybernetic Arts
 - o Allow you to control any VIDEO, MUSIC, or PAINT program
 - o Multitask on any model Amiga. Interactive or batch mode
 - o Fully programmable. Instant edit and recall

- VIDI-Mice**
- ✓ Home Automation and Interfaces for the Disabled
 - ✓ Business Presentation and Information Access
 - ✓ Interactive Learning and Training
 - o Transform real-time video into mouse and keyboard events
 - o Proprietary image processing algorithms
 - o LIVE! frame grabber required

- MIDI-Mice**
- ✓ Use with MIDI Microphone, MIDI Drums
 - ✓ Use with Wireless MIDI Controllers
 - ✓ MIDI Local Area Networks
 - o Transform MIDI events into mouse and keyboard events
 - o Share MIDI events with any MIDI program
 - o MIDI adaptor required

\$85.00 each software or \$150.00
both software. California residents
add 6.25% sales tax. Please make
your check or money order
payable to: **Tensor Productions**
280 Mathilda Drive No. 9
Goleta, California 93117
Tel: 805-685-6245
Fax: 805-685-2994

Where Creativity Meets Technology

Circle 281 on Reader Service card.

VERY VIVID INTERACTOR

HYPERMEDIA AUTHORING
FOR INTERACTIVE EDUCATIONAL GAMES
COURSEWARE AND SIMULATIONS
FULL IFF, ANIMBRUSH, AREXX, MIDI
LASERDISK, HARDDISK ANIM & SOUND SUPPORT
INTERACTIVE MULTISTATE OBJECTS
ARE "HOT" ANYTIME, ANYWHERE - THROUGH
INTERACTION, TIMING OR REMOTE CONTROL
DYNAMIC INTEROBJECT COLLISION
BEHAVIOURAL ANIMATION FEATURES
SPRITE COMBINATION, OBJECT TRACKING
GLOBAL VARIABLES, USER RESPONSE ANALYSIS
COMPACT, INTUITIVE, HYPERTEXTUAL INTERFACE
STACKWARE COMPILER INCLUDED \$129

INTERACTOR 1.02 VERY VIVID INC

POB127 STN.B TORONTO M5T-2T3 (416)686 7850

Circle 291 on Reader Service card.

-NET AMIGA™ BULLETIN BOARD PROGRAM

THE MOST WIDELY USED BULLETIN
BOARD PROGRAM FOR THE C64 & C128
IS NOW AVAILABLE FOR THE AMIGA!

ONLY \$119.95

Softech Computer Systems, Inc
153 Patchen Drive Suite 61
Lexington, KY 40517
(606) 268-2283

Circle 359 on Reader Service card.

MAKE YOUR FRIENDS SICK WITH ENVY! NEW QUICK MUSIC/VIDEO CONSTRUCTION SET!

- You can easily, effortlessly produce Professional Quality Animations and Slide Shows while playing Stereo Music!
- All Resolutions/Graphic Modes Supported including HAM and OverScan! • Automatic Color Cycling! • Fast! Loads! Displays Pictures in as little as 2 seconds! • Easy-to-Use: Simple Script controls it all! • Show plays continuously, Without End or Interruption!
- Low Price: Complete Construction Set, Fully Documented only \$34.95! Available only directly from us! • Order Prior to July 31, 1990 and we will include a Beautifully done, Very Impressive Full-Stereo, Overscan Musical Slide Show on 2 disks! Demo Includes 30 beautifully rendered color-cycling slides and 30 fine musical compositions!
- 2 Disk Demos: (1 graphics disk, 1 music disk required). Only \$4.95/disk!
- Graphic Demos: Nagel Art, Science Fiction, or Fantasy! Music Demos: Rock 'n' Roll, Christmas, or Classical!
- Exciting Laser Light Show demo, only \$4.95!

- Exciting new Game, Sample Contest (win huge cash prizes in our word puzzle contests!), Catalog-on-Disk, only \$3 (Included FREE with order!)

- Huge Selection of Hi-Quality Music, Graphics, Animations, Games, etc at very low prices! Fish Disks: only \$1.95!!

Gladstone Productions, 249 S. Highway 101 Dept 567B,
Solana Beach, CA 92075
HI-PERFORMANCE, LO-COST SOFTWARE!

Circle 396 on Reader Service card.

SUPERHAM PICTURES

ALL DISKS PACKED WITH DIGITIZED PICTURES IN 4096 COLORS IN 640x400 HI-RES!!!

- Planet Earth—Breathtaking views as seen from satellite (disks #1-5)
- Aircraft—A fascinating collection of jet fighters (disks #1-5)
- Shuttle Series—Space shuttle pics from liftoff to landing (disks #1-5)
- Conservative Rated R—Adult pictures (disks #1-10)
- Explicit Rated R—Adult pictures (disks #1-10)*

Viewer included on each disk at no charge
Only \$7.95 per disk
Add \$2.00 shipping/handling per order
(5 disks or more add 50¢ per disk)

* Include signed statement that you are 18 or older

WE ALSO DO CUSTOM DIGITIZING!!

Just send in your photos and they will be returned with the digitized picture on disk. Only \$8.95 per picture!
Add \$2.50 s/h for first 10 pictures and 10¢ for each additional.

Send check or money order to:
Quality Digitized Images
PO Box 92124
Milwaukee, WI 53202-0124

All orders sent UPS!

**QUALITY
DIGITIZED
IMAGES**

Everything done in
640x400 4096 colors!

Circle 372 on Reader Service card.

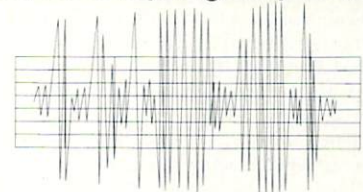
Amiga Software Engineers

Major peripheral manufacturer seeks experienced Amiga software engineers who enjoy seeing ideas become real-life products. Hands-on Amiga experience a must. Company has team spirit, a sterling reputation and a ten-year track record. Dallas location. Salary and benefits commensurate with experience. We're the best at what we do. If you are too, please send resume in strictest confidence to: Director of R&D, PO Box 5100, Carrollton, TX 75011.

AE Applied Engineering®

AudioLink

16-bit Linear Stereo Audio Processor with Sound Sampling Capabilities



Beta Unlimited
87 Summit St. Brooklyn, NY
11231

Circle 334 on Reader Service card.

LAST LICKS

Revised AmigaWorld Editorial Calendar 1990

May: Hacking Made Easy

We'll give mischievous readers all they need to break into critical databases, compromise national security, and wreak havoc with the Registry of Motor Vehicles. Got a criminal record, bad grades, unpaid bills, bad credit,

or speeding tickets? Use our simple Public Domain Data Invader program, and erase your worries forever.

June: Pilferers Guide

If we know anything about heavy computer users, they're cheap. Also

dishonest. After dozens of issues of new products, reviews, and how-to's, we know you're itching to get your hands on the hottest software. We'll tell you how to save up to 100%

Maximizing your trip to the software store, bring an oversized jacket, some

stick'um, and walk away with the best new packages. Read our special credit card scam story, and charge purchases to that guy who stole your girl and insulted your Mom.

July Annual Geek Awards

Every computer's ranks of supporters include geeks and misfits. We'll honor these people in July's Geek Pride Issue and award prizes in several geeky categories—a pocket protector for the best imitation of a NewTek employee and a slide rule for the most lines of code written with absolutely no value.

August: Special Review Issue

In this issue we will test your level of comprehension of the last three issues. What story was found on page 31? Did we like Gold Disk's latest spreadsheet, or did it lose our 1991 budget forecast? This must-have issue will rehash stuff that bored you the first time around.

September: CAD Issue

Here we will profile the biggest cads in the Amiga market. We'll expose the jerks responsible for the virus that wiped out your hard disk, and we will interview the Idiots who drove your favorite software company into the ground. You've never heard so many excuses!

October: Annual Swimsuit Issue

This popular issue features industry luminaries wearing the hottest swimwear. See PC-biggly Philippe Kahn in his daring French string bikini. Marvel at Bill Gates' skivvies decorated with snappy C subroutines. And, of course, there's our own Lou Wallace showing off unheard-of storage capacity.

November: Education Issue

This lively, juvenile issue covers everything from keg parties to pick-up lines. Let your computer explain why Mom's car is dented. Discover how to remove bubble gum from the underside of your Amiga. Teach your Amiga to do your homework while you sneak out the window!

December: Game Issue

This issue is a cut above all our competitors. It features a scratch-and-sniff page with pork, beef, fish, and even moose samples. When we say game, we mean game!

Say What?

Question of the Month: "What product would you like to see developed that is not currently available?"

A 24-bit graphic display board. . . developers have taken Amiga's superior graphic abilities for granted. . . 4096 colors isn't really enough to do true ray-tracing. Also a program that writes vector graphics files for hi-res film recorders.

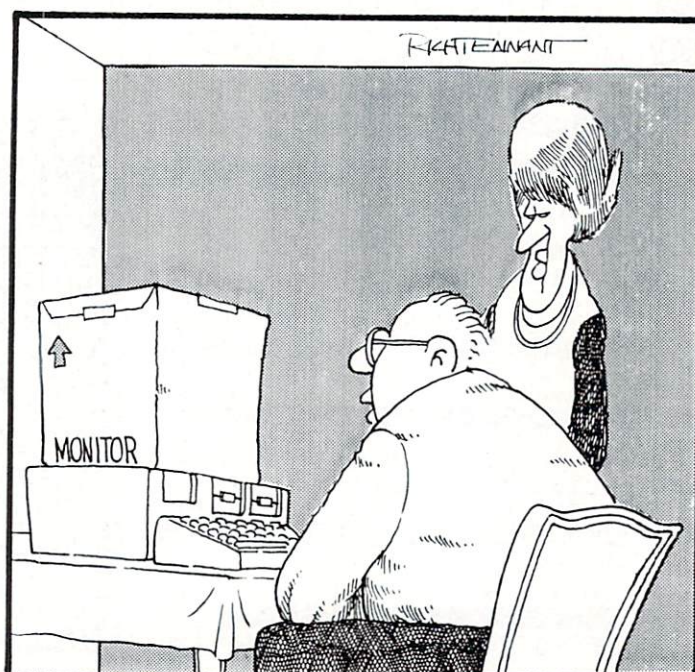
—Martin Ricketts
London, Ontario

We could use a direct-to-disk recording interface similar to Digi-Design for the Macintosh instead of using an expensive digital recorder.

—Jim Dodds
Champaign, IL

The Video Toaster, an Amiga that doesn't crash, and greater recognition in the computer community.

—Gary Davis
Culver City, CA



"RESPONSE TIME SEEMS A BIT SLOW."

Ear to the Wall

Brand-New Operation: Workbench 2.0 (formerly known as Workbench 1.4) is set for release early this year. Owners of the A1000, which will not support 2.0, will be targeted by an aggressive trade-in program.

Up And Running: If you are having difficulty connecting with Megagem, makers of fractal-art creativity software, a correct address may be of use to you: 1903 Adria, Santa Maria, CA 93454, 805/349-1104.

Down But Not Dragging: Those trying to get in touch with C Ltd. probably realize the company has closed its doors. Attempts to reach a company representative for comment have so far been fruitless.

B&B Electronics (2863 S. Broadway, Wichita, KS 67216, fax: 316/522-0914) offers limited customer ser-

vice including repair for current C Ltd. products.

Newly-formed Ricketts Inc. will continue development of former C Ltd. products such as C-View, RAM expansion devices, and a modified Laser Express in parallel format. Ricketts owner Breck Ricketts plans to develop an audio-visual line, as well.

Due to the recent demise of Computer Software Services, US gamers looking for support (and hints) for Psygnosis packages can send their questions directly to Psygnosis (South Harrington Building, Sefton St., Liverpool L3 4BQ, England, 51 709 5755) or to Micro-Pace Distributors (Commercial Park West, Suite C, 604 N. Country Fair Dr., Champaign, IL 61821, 217/356-1885).

The **MASTER 3A-1**

light years ahead of the rest . .

AMIGA® 500/1000/2000
FULLY COMPATIBLE

- FULL 1 YEAR WARRANTY
- QUALITY DRIVE MECHANISM
- ON/OFF DISABLE SWITCH
- SMALLER SLIMMER DESIGN
- DIRECT DRIVE MOTOR
- EXTREMELY QUIET OPERATION
- ADVANCED INTERNAL CIRCUITRY
- FCC APPROVED
- READY TO RUN
- LSI ELECTRONICS
- PASS THROUGH CONNECTOR FOR DAISY CHAINING
- DOUBLE SIDED / DOUBLE DENSITY 880K CAPACITY



Let the **MASTER 3A-1** add
new dimension to your **AMIGA®**



800-356-5178
Inside CA 714- 633-1026

Distributed by
KONYO International, Inc. / FAX 714-633-5339

NEW Optical Mouse
for **AMIGA . . .**



D I G I • V I E W G O L D

4096 Colors in High Resolution . . . is just the beginning



With the all new Digi-View 4.0 software you can do the one thing most people thought was impossible—digitize and display all 4096 colors in high resolution!

We call this revolutionary new graphics mode Dynamic HiRes and you will have to see it on your own screen to believe it. But that's just the start of what makes Digi-View 4.0 a breakthrough. Other new features include: Dynamic HAM (fringe free HAM), Noise Reduction (for the sharpest images ever), ARexx support, super bitmap digitizing, 24 bit color support, 68020/68030 compatibility and dozens of other new features making Digi-View Gold the hottest Amiga graphics product ever.

And it's still just as easy to use. Simply focus your video camera on any object or picture, and in seconds Digi-View Gold turns it into Amiga graphics that glow with vibrant color and stunning clarity. Whether you are creating graphics for desktop publishing, presentations, video, or just for fun, Digi-View Gold gives you dazzling images with amazing simplicity.

These images were photographed directly from an Amiga 1080 monitor and show the new 4096 color Dynamic HiRes mode available only with NewTek's Digi-View 4.0

Digi-View 4.0 and Digi-Paint 3 Become One

with the ultimate link between digitizer and paint program. With Digi-View 4.0's Digi-Port feature they can both share the same screen so that touching-up your digitized images is easier than ever. Transfer 768x480, 4096 color super bitmaps from Digi-View 4.0 to Digi-Paint 3 with a simple menu command, make changes such as combining images or adding titles, and redisplay them as Dynamic HiRes or other resolution images.

Only Digi-View Gold:

- Digitizes in all Amiga resolution modes from 320x200 up to 768x480 (full HiRes overscan)
- Uses 2 to 4096 colors (including halfbrite)
- Has exclusive Dynamic modes for 4096 colors in HiRes
- Digitizes in 21 bits per pixel (2.1 million colors) for the highest quality images possible
- Has advanced dithering routines that give an apparent 100,000 colors on screen simultaneously
- Comes with an icon driven slideshow program for presentations using both IFF and Dynamic images
- Has complete software control of color saturation, brightness, sharpness, hue, resolution, and palette
- Offers an unprecedented lifetime warranty and toll-free support line

If you want the best graphics possible for your Amiga, then get best selling video digitizer of all time: Digi-View Gold.

Only \$199.95

Digi-View Gold is available now at your local Amiga dealer. Or call 1-800-843-8934.

Digi-View Owners call for "Instant" upgrade to 4.0 software today.

NewTek
INCORPORATED

*Requires standard gender changer for use with Amiga 1000. Dynamic HiRes requires 2 megs of RAM. Digi-View Gold is a trademark of NewTek, Inc. If you want a Toaster then get your bread ready...
Circle 119 on Reader Service card.

