OVER 100 PRODUCTS EXAMINED IN THIS ISSUE!!

FREE MOUSEPAD OFFER INSIDE!

#26 MAY/JUN 1989 ($5.50 Canada) $3.95

INFO

THE GAMES AND GRAPHICS SHOWCASE

for AMIGA and COMMODORE COMPUTERS

FIRST LOOKS:

- INFOCOM's new graphic adventure games!
- *PageStream*: too much, too soon.
- *Professional Draw*: too little, too late.

REMOVABLE MASS STORAGE: Are Hard Drives Obsolete?

PAINT PROGRAM ROUNDUP!

0 76956 14373 3 05

The *FIRST* magazine produced entirely with personal computers!

POINT POUNDING FOR YOUR C64®

That are out

Zoomer™

Now get behind the wheel or in the cockpit. 2 auto-fires.

These items are also available for : ATARI®, SEGA®, and NINTENDO®

For Ultimate Arcade Excitement at Home, look for Video Game Accessories by

Beeshu Inc.™

Send for your FREE Catalog to: 101 Wilton Ave., Dept.12
Middlesex, N.J. 08846 • (201)968-6868

VISIT YOUR RETAILER OR CALL
800-999-4470
FOR VISA/MC ORDERS

PERIPHERALS™

Commodore®

of this world !!

ULTIMATE™
superstick

Micro-switch control, dual auto-fire, left and right hand play, 4 LED lights.

HOT STUFF®

Auto-fire, left and right hand play.

Commodore®, Atari®, Sega®, Nintendo®, are registered Trademarks of Commodore Electronics, Atari Corp., Sega Entertainment, Nintendo of America respectively. Zoomer™, Ultimate Superstick™, Point Pounding Peripherals™, are Trademarks of Beeshu™, Inc., Hot Stuff®, is a registered Trademark of Beeshu™, Inc., Beeshu is a Trademark of Beeshu, Inc..

INFO IS:

Benn Dunnington
Publisher, Managing Editor, Founder

Mark R. Brown
Senior Editor, Technical Editor

Tom Malcom
Assistant Editor

Judith Kilbury-Cobb
Associate Editor

Don Romero
Contributing Editor

Jim Oldfield, Jr.
Editor Emeritus

Arby Fuller
Apprentice Editor

Megan Ward
Art and Production Manager

Jeanne Baron
Production Assistant

Advertising Sales
Carol Brown
(319) 338-3620

Subscriptions ph.# (319) 338-0703
FAX ph.# (319) 338-0897

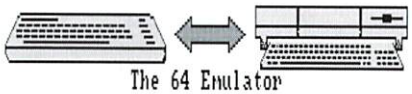
READER MAIL:
INFO Reader Mail
123 N. Linn Street, Suite 2A
Iowa City, IA 52245

COPYRIGHT© 1989 BY
INFO PUBLICATIONS, INC.
ALL RIGHTS RESERVED

INFO is an independent journal not connected with Commodore Business Machines. INFO is published bi-monthly by INFO Publications, Inc., 123 N. Linn St., Suite 2A, Iowa City, IA 52245. Subscription rate is $16.50 (U.S. Funds), one year. Canadian / Mexican rates are $20.50 (U.S. Funds), one year. Foreign rate is $28.50 (U.S. Funds), one year. Entire contents copyright 1989 by INFO Publications, Inc. No part of this publication may be printed or otherwise reproduced without written permission from the publisher. National and Worldwide distribution by Select Magazines, Inc. NY, NY. INFO makes every effort to assure accuracy of articles, stories, and reviews published in this magazine. INFO assumes no responsibility for damages due to errors or omissions. Second class postage paid at Iowa City, IA and at additional mailing office. POSTMASTER: send address changes to INFO Subs, 123 North Linn, Suite 2A, Iowa City, IA 52245.

Products used to create this issue of INFO include:

PROFESSIONAL PAGE
GOLD DISK


The 64 Emulator

REDMOND Cables

Hitachi
video cameras

SONY
MONITORS

DIGI-VIEW
Digi-View Gold

Deluxe
Paint III

SUPER SNAPSHOT

CSA
TURBO

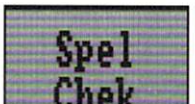
Butcher

Sculpt-Animate 4D

Comspec

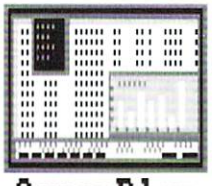
I·MEGA

Transcript



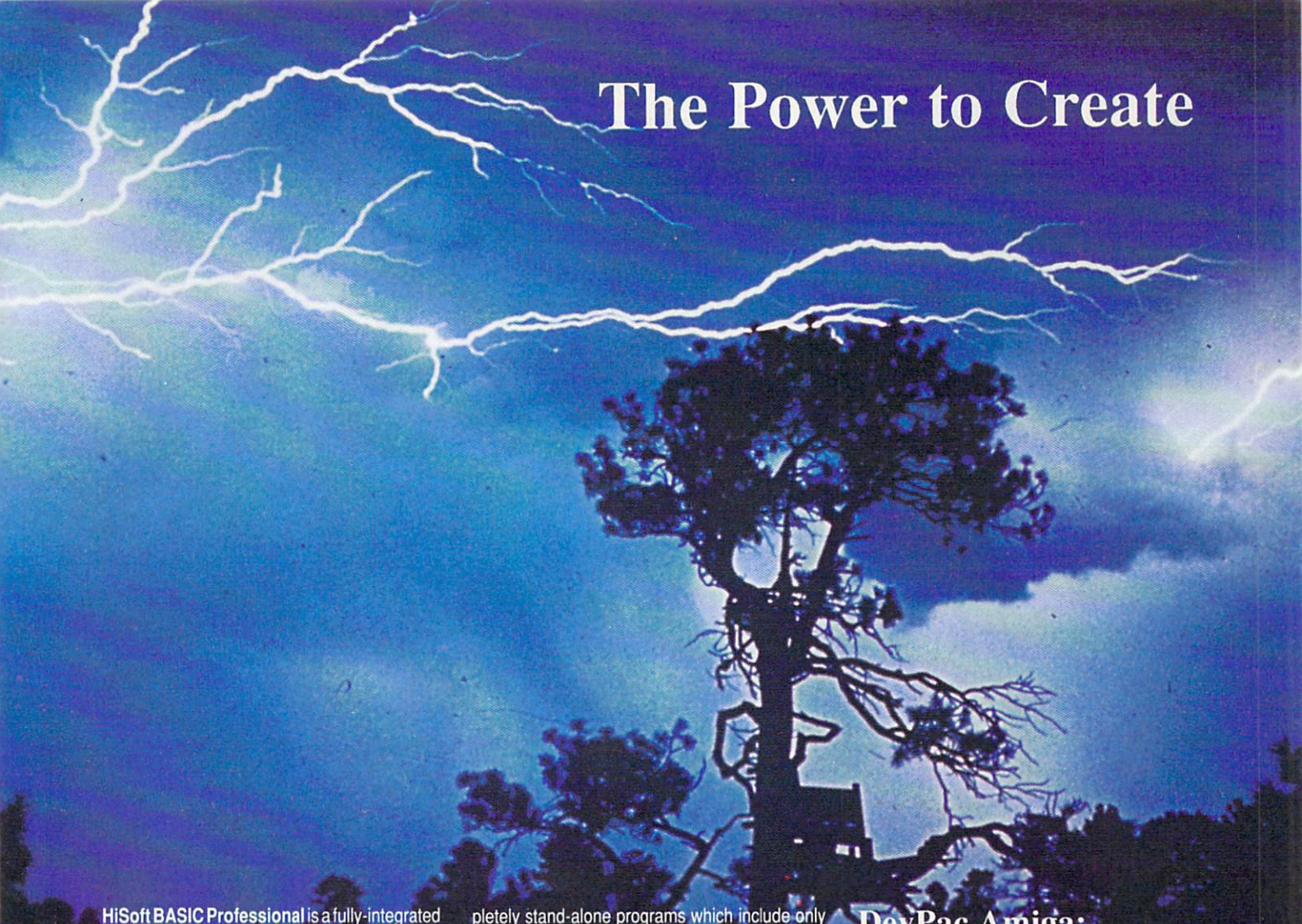
TransSpell

TransEdit


SuperPlan

Superbase
Professional

Perfect
Vision



The Power to Create

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

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

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

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

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

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

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

Features include:

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

✓ Full structured programming.

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

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

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

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

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

DevPac Amiga: *The Assembler of choice*

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

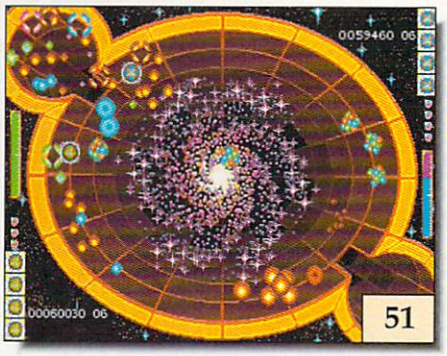
GenAm includes a full screen editor, running under *Intuition* and using the window- and mouse-oriented environment. The editor features a file requester, dynamic block handling (including delete, copy, save and insert from disc) a comprehensive range of Search and Replace commands and edit-time tab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

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

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

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

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



CONTENTS 26

FEATURES

26 AMIGA PAINT PROGRAMS: The paint program is one of the most useful and enchanting types of software a user can own. INFO looks at the current crop of titles for the AMIGA, and some of the fantastic art they have helped create.

35 8-BIT PAINT PROGRAMS: Most have ceased distribution, but here's what's left.

39 INTERVIEW with LOREN LOVHAUG: The publisher of Twin Cities 128 talks about his new quest: to take the struggling 8-bit market off Commodore's hands!

48 REMOVABLE MASS STORAGE: For a growing number of Amigans, Bernoullis and other removable media are becoming the mass storage solutions of choice.

DEPARTMENTS

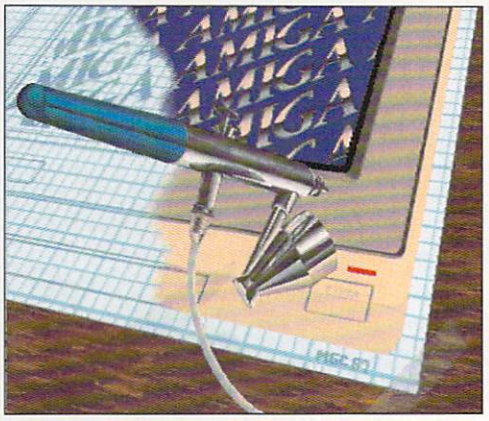
6 Editors' Page
8 Reader Mail
10 New Products
45 geoStuff
36 Public Domain
44 Copy Corner
46 Magazine Index
51 Games for Amiga
58 Games for C64
68 News & Views

ETC.

25 *BRYCE*
63 INFO Update
64 Show Report
66 Back Issues
67 FREE MousePad
83 Real World
84 Ad Index

Mini Reviews

10 1581 Toolkit
12 MicroLawyer
12 WillMaker
16 Pen Pal
18 Inkwell Lightpen
19 Easyl
19 AproDraw
19 Pencraft
22 PageStream
44 Disk Mechanic 2.4
45 Geos 128 2.0
50 Express Copy
50 Hard 'N Fast
50 Superback
50 Quarterback 2.0



Cover illustration: *"Air Brush"* by Mike Crossmire. Multi-product 320 X400 HAM painting.

About INFO

INFO is a living showcase of what can be produced with affordable personal computer equipment (the Commodore Amiga, in particular), and readily available consumer software, peripherals, and services. With the exception of most of the ads, everything in this issue, including color screen shots and photos, was digitally created, edited, composed, printed, and color separated as complete assembled pages on Amigas running Professional Page, and output to a Linotronic L300 typesetting device at 1235 dots per inch.

THE PRODUCTIVE AMIGA

Real-world software solutions from Brown-Wagh Publishing...and Amiga

EXPRESS PAINT 3 - Feature-rich graphics, B/W & Color PostScript, 24-pin dot matrix, Virtual Memory, text importing, 3-D perspective, unlimited Undos & Redos, 64 color Extra Half Brite, dbl-arc curves, 6-range color cycling, large canvas. "Best of 1988" - *Commodore Magazine.*

PAR REAL I - Professional real estate analysis for realtors or investors. Amortization tables, balloon and variable payments, depreciation, financial statements, loan evaluations, lease vs. buy, cash flow forecasts, ratios, tax benefits, rate of return, 3-D barcharts, forms, agreements.

EASY LOANS - Amortization tables, tracks interest, principal and time payments. Speech output. Find incorrect charges.

OUTLINE - Organize lists for reports, meetings, appointments, recipes, etc. Cut/copy/paste. Import into WP. "Best of 1988" - *Commodore Magazine.*

PROJECT MASTER - Professional project management. Helps you manage projects instead of being managed by them. Graphic flow of activities. Best and worst case schedules. "What if" scenarios for deadlines, resources and budgets. Critical paths. Actual vs. planned. Expense graphs, Gantt and PERT charts, resource loads.

PEN PAL - Your writing Partner

UNEQUALED PRINT QUALITY & SPEED

◀ Print true printer fonts (NLQ) and graphic images on same page in same pass!

◀ Print multiple graphics on same page; each with its original colors and resolution!

UNPRECEDENTED PRODUCTIVITY FEATURES

- Automatically flow text around graphics; box & contoured boundaries; even while typing.
- Colored boxes, borders, shadows, lines & backgrounds.
- View full page and closeup while editing and scrolling.
- Resize/crop images (& HAM); keeps original resolution.
- Create forms; fill in field by field; edit & refresh.
- Spellcheck; 100K words; unlimited user dictionaries.
- Analyze writing style; statistics & reading grade-levels.
- Open 4 documents; search/replace; undo/redo.
- Access 200 B/W or color fonts; sorted by name and size.
- Mailmerge & copy from built-in database. Report templates.
- Open 4 databases; 9 data types including calculations; 32 fields per record; 32k rec. max.
- Print mail labels & reports; titles, sort breaks, sub-totals.
- Sort by multiple fields; search by logical criteria; screen totals.
- Locate duplicates; delete multiple records; merge

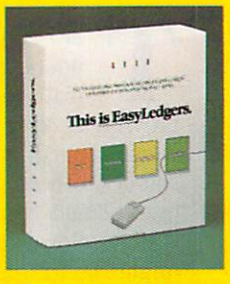
TV*TEXT - Best selling video titling software. Fonts, colors, shadows, strobes, sizing, grids, backgrounds, special effects.

TV*SHOW - Create super slide show presentations. 50 transitions. Any IFF pictures. Voice; Loops. Just point & click.

ZUMA FONTS #1-4 - Professional fonts for video & graphics. Each volume contains 3 styles in 6 sizes at 2 resolutions.

MIDI MAGIC - Easiest Midi sequencer! Fabulous interface. Help text. Multitasking, 16 tracks, 26 sequences. Quantizing. Multi channel recording. "Beginning and serious amateurs will love MIDI MAGIC for its power" - *Amiga World*

EASY LEDGERS - Fully integrated accounting system. Sales, purchases, inventory and general ledger. Extremely easy; uses familiar bookkeeping interface. No complicated codes to learn, no account numbers to remember. Just point and click.



ARCHITECTURAL DRAWINGS - 4 sets of professional designs; IFF or Aegis Draw(tm) format; FLOOR PLANS – windows, doors, baths, etc.; INTERIOR DESIGNS – beds, tables, desks, sofas, etc.; FOUNDATIONS – framing, rafters, etc.; AUTOS – 1980's, Mercedes, Cady, Ford, etc.

Give Me More!!!

Call for additional product information, prices and participating dealer locations. Ask about our product demos and money-back guarantee.

We acknowledge the trademarks and give many thanks to the producers of our fine productivity products:

Circum Design
Madrigal Designs
PAR Software
SoftWood Company
TRS Labs
Zuma Group

Brown Wagh

1-800-451-0900
1-408-395-3838 (CA)
16795 Lark Ave. #210, Los Gatos, CA 95030

Editors' Page

A DELICATE BALANCE

The Amiga market has finite bounds. Like a delicate ecological system, there's room for growth as long as the rate of growth doesn't outstrip the environment's resources. There's recently been an unprecedented increase in the number of Amiga-related computer shows. That might seem like good news for the Amiga, but there are signs that this sudden growth could be placing excessive demands on the limited resources of the Amiga marketplace.

There are now a half-dozen AmiEXPO and World Of Commodore shows each year, and a number of AmiForums and regional shows. In addition, there are two Consumer Electronics Shows and two COMDEX shows, plus shows for the desktop publishing, music, and video industries. It's not hard for a company to feel that they should exhibit at six to twelve shows a year, and that's where the problem lies.

Many large companies have people on staff whose only job is to schedule and attend shows. But for most smaller companies (and this describes the majority of Amiga developers), exhibiting at a show represents a major investment in time and money. The cost of renting a booth, shipping products, and sending employees to a show can add up to many thousands of dollars. Multiply this by 6 to 12 shows a year, and it quickly becomes a major business expense. Then too, every company wants their booth to make them look prosperous, but even a modest professionally designed show booth can run into thousands of dollars. And the preparation and printing of slick show-quality posters, catalogs, and promotional literature also costs money. The cumulative cost can be enough to cause a company serious financial difficulties. And that's exactly what we're hearing from a growing number of Amiga developers. Shows are simply costing them too much money.

So why don't they just quit going? Unfortunately, once a company starts exhibiting at computer shows, a sort of Catch 22 kicks in. If they skip a show, rumors may suddenly circulate that they are "in trouble". Even major players in the Amiga software marketplace are not immune to this syndrome. (One very large Amiga developer told us that they suffered from this "rumor effect" after cancelling their booth at a recent show. Several of their distributors and dealers called to check on their corporate health before they would place orders.) So to keep up appearances, a company may continue exhibiting until they really are in financial difficulty. We know of at least one company that bought and occupied large booths at computer shows up until just weeks before declaring bankruptcy.

The cost of attending so many shows can also force a company to cut back on other expenses, perhaps by cheapening packaging and documentation, not hiring much-needed help, trimming advertising budgets, or even postponing planned product introductions.

But even if exhibiting at so many shows doesn't hurt a company financially, it may hurt them in terms of time. People have to take time off from their regular duties to go to shows, and they may also spend a great deal of time beforehand preparing materials and demonstration software. Often the programmers themselves are taken along to answer questions. If a company exhibits at a show every month, that can slow down the programming of new software and the creation of magazine ads, packaging, and documentation, all of which may result in the delay of a new product introduction by many weeks. Again, we have the testimonials of many Amiga developers that this is, indeed, the case.

There is also the opposite pressure - to rush a product to market just to meet a release date that coincides with a show. This may mean that show attendees end up buying what is really a substandard "early beta" version of a product instead of a truly finished and bug-tested product. There's even one magazine-on-disk that has historically managed to publish a new issue only before each show!

It would be fun to see all the new toys from all the Amiga developers at every show, but that's just not realistic economically. When a software or hardware company skips a show, it's probably just a sign of sound business planning. More and more of the companies we're talking to, from multi-megabuck game conglomerates to Mom & Pop operations, are carefully weighing how many shows they'll attend each year, and which ones those will be.

- Mark & Benn

INFO only exhibits at one or two shows a year. We'll have a booth at AmiEXPO Midwest at the Chicago Hilton Hotel the weekend of July 28-30. If you're attending, stop by the booth and say "Hi!"

FLY THROUGH THE WARE
WITH THE GREATEST OF EASE
The easiest and fastest database available on the Amiga.
Organize, arrange, and manipulate graphics, text, and numbers
and enjoy yourself doing it.
No Bugs No Crashes No Gurus GUARANTEED*
*See your Amiga dealer for legalese
MICROFICHE filer™ PLUS
EASIER DONE THAN SAID
SOFTWARE VISIONS Inc.
P.O. Box 3319, Framingham, MA 01701 Call Toll Free: 1-800-527-7014 In MA. (508)-875-1238

Look For Designer Databases Templates Pre-Constructed for Home and Business.

READER MAIL

INFO MAILBOXES

Send comments, questions, and cash (coins or bills of any denomination are fine) to:

INFO Mail, PO Box 2300,
Iowa City IA 52244

FAX us at: 319-338-0897

Send Electronic Mail (comments and questions only; please, NO subscription problems!) to our online mailboxes:

CompuServe	70215,1034
QuantumLink	INFO Mag
PeopleLink	INFO Mag
BIX	infomag

Please do not use the EMail addresses to inquire about subscription problems. Mail all subsription inquiries to Judi at the PO Box address above, or call her at 319-338-0703.

Please don't call the INFO offices with general questions about computing or send self-addressed stamped envelopes expecting a personal reply. We just don't have the staff to handle it. Thanks.

QLINK Mail From: Robert John

In the vaporware dept., is Microprose ever going to release *Gunship* and *F19* for the Amiga? It irks me no end that both games are available for the IBM/PC, but not for the Amiga.

Microprose tells us that Gunship should be on the store shelves by the time you read this, with F19 scheduled for release "by the end of the year". With game sales booming for MS/DOS systems, we wouldn't be a bit surprised if you see more of this kind of product scheduling in the future.

- Mark & Benn

QLINK Mail From: SCIMITAR

I would like to see an in-depth review of the new video digitizer for the 64/128 called *Video Byte*. I've got a color video camera and understand that *Computer Eyes* didn't work so hot with a color camera.

We'd like to see it, too. Unfortunately, the company that produces the Video Byte digitizer, The Soft Group, also produces the Explode! cartridge, and they haven't said much to us since we printed a somewhat uncomplimentary review of Explode! v2.0 in issue #19.

- Mark & Benn

QLINK Mail From: DugK

I've been buying your magazine for a few years now and I know that your magazine "...comes closer to total desktop publishing than any other mass- market publication..." as stated in the Jan/Feb 1989 issue. Now, the questions I would like to ask are what makes a publication truly "desktop published" and how is your magazine not a 100% desktop publication? I don't care how "amateur" they say your magazine is, I've always enjoyed reading it. Keep up the good work!

We've been "desktop published" since at least two years before the Macintosh people "invented" desktop publishing. What the Mac people usually mean by the phrase "desktop published" is that all the elements of a printed page -- graphics, text, borders, etc. -- are produced, assembled, and printed out using personal computer software, usually a page layout program like Professional Page on the Amiga, which is what we use. INFO's ads are generally supplied by the advertisers in a ready-to-use format, so those pages aren't "desktop published". Last issue, we printed only one photo in the editorial section that didn't count as being "desktop published". I'm not sure yet what the final count for this issue is, but it's very, very close to 100%. And no mass-circulation Mac magazine can make that claim yet!

- Mark & Benn

QLINK Mail From: Capital 1

I thought you were most generous in giving Cinemaware's *TV Sports Football* for the Amiga a five-star rating. I feel that only three formations on offense and defense really aren't enough. The game also lacks kickoffs, (onside kicks are important if you're losing) and the ability to run down the clock (important if you're winning). *TV Sports Football* also has some quirks, such as the clock keeps running after a change of possession, and the computer opponent will at times take possession on the wrong end of the field (i.e. on my 20 instead of on his 20). I see *TV Sports Football* as a four star game at the most.

We never claim that everyone will agree 100% with our reviews, and your letter is a case in point. We thought TV Sports Football was innovative enough and included enough options to massively overwhelm any shortcomings. It's just plain fun! But thanks for sharing your views with us. ***- Mark & Benn***

continued on page 11 . . .

VISA
MASTERCARD
DISCOVER
NO SURCHARGE

COMPUTER MART
800-443-8236

INFORMATION
409-560-2826

New Low Price

SUPRA 2400 MODEM
$129.00

HAYES COMPATIBLE
300/1200/2400 BAUD

SOFTWARE

3-DEMON	68.00
3D FANCY FONTS	48.00
AAARGH	21.00
AC BASIC	135.00
AC FORTRAN	198.00
AEGIS DRAW 2000	168.00
ALTERNATE REALITY	25.00
ANALYTIC ART	38.00
ANALYZE 2.0	62.00
ANDROMEDA MISSION	25.00
ANIMATE 3D	95.00
ANIMATOR APPRENTICE	187.00
ARCHITECTURAL DESIGN	22.00
AREXX	30.00
ARKANOID	25.00
ASSEMPRO	69.00
ATALK III	60.00
ATREDES BBS PRO.	90.00
ATREDES TERMINAL	30.00
AUTO DUEL	34.00
AWARD MAKER	32.00
AWE. ARCADE VOL. 1	35.00
B.A.D.	30.00
BARD'S TALE II	37.00
BATTLE CHESS	30.00
BBS-PC	92.00
BENCHMARK MODULA 2	138.00
BENCHMARK LIBRARIES	69.00
BLITZ. ON THE ARDENNE	37.00
BREACH	28.00
BRIDGE 5.0	22.00
BUBBLE BOBBLE	26.00
BUBBLE GHOST	25.00
BUTCHER 2.0	23.00
CALIFORNIA GAMES	27.00
CALLIGRAPHER	74.00
CAPE 68K ASSEMBLER	59.00
CAPONE	35.00
CAPTAIN BLOOD	31.00
CARRIER COMMAND	28.00
CENTERFOLD SQUARES	20.00
CHESSMASTER 2000	31.00
CHRONOQUEST	24.00
CITY DESK	95.00
COMICSETTER	66.00
COMICSETTER DATA DISKS	22.00
CRITICS CHOICE	150.00
CYBER COMPLEX	21.00
CYGNUS ED PRO	60.00
DARK CASTLES	28.00
DATARETRIEVE	53.00
DECIMAL DUNGEON	32.00
DEFCON 5	28.00
DELUXE HELP DISKS	22.00
DELUXE MUSIC 2.0	69.00
DELUXE PAINT II	86.00
DELUXE PHOTO LAB	98.00
DELUXE PRINT II	57.00
DELUXE PRODUCTIONS	138.00
DELUXE VIDEO 1.2	86.00
DESIGN 3D	60.00
DESTROYER	27.00
DETONATOR	25.00
DEVPAK ASSEMBLER	60.00
DIGA	51.00
DIGI PAINT	41.00
DIRECTOR	44.00
DIRECTOR TOOLKIT	28.00
DISCOVERY DATA DISKS	14.00
DISCOVERY MATH	28.00
DISC. SPELL	28.00
DISC. TRIVIA	28.00
DISK MASTER	48.00
DISK MECHANIC	55.00
DOS TO DOS	32.00
DOUGS MATH AQUARIUM	51.00
DR. T'S SOFTWARE	CALL
DRAGON'S LAIR	39.00
DRUM STUDIO	30.00
DUNGEON MASTER	24.00
DYNAMIC DRUMS	51.00
DYNAMIC STUDIO	138.00
EARL WEAVER BASEBALL	35.00
EMERALD MINES	13.00
EMERALD MINES II	28.00
EMPIRE	35.00
EMPIRE STRIKES BACK	24.00
ENCHANTER	21.00
EUROPEAN SCENERY DISK	18.00
EXCELLENCE	174.00
EXPRESS PAINT 3.0	78.00
FA INTERCEPTOR	35.00
FACC II	24.00
FAERY TALE ADVENTURE	35.00
FAERY TALE HINT BOOK	10.00
FALCON	30.00
FAMILY TREE	30.00
FANTAVISION	38.00
FERRARI FORMULA I	35.00
FINE PRINT	30.00
FIRE POWER	16.00
FIRST LETTERS & WORDS	35.00
FIRST SHAPES	35.00
FLIGHT PATH 737	19.00
FLIGHT SIMULATOR II	36.00
FLIPSIDE	38.00
FLOW	65.00
FORMS IN FLIGHT II	72.00
FORTRESS UNDERGROUND	19.00
FRACTION ACTION	32.00
GALILEO 2.0	44.00
GETTISBURG	42.00
GIZMOS 2.0	44.00
GNOME RANGER	14.00
GOLD RUNNER	28.00
GOLD SPELL II	29.00
GOLDEN PATH	32.00
GOMF 3.0	24.00
GOMF 3.0 W/ BUTTON	51.00
GRABBIT	21.00
GRADE MANAGER	52.00
GRAPHIC STUDIO	38.00
GREAT STATES II	25.00
GRID START	19.00
HACKER II	28.00
HALLEY PROJECT	31.00
HARDBALL	28.00
HARRIER COMBAT SIM.	35.00
HARRIER MISSION	19.00
HEAD COACH	35.00
HEROES OF THE LANCE	26.00
HITCHHIKERS GUIDE	21.00
HOLE-IN-ONE MIN. GOLF	22.00
HOLLYWOOD POKER	22.00
HOLMES!	35.00
HONEYMOONERS	25.00
HOT LICKS	32.00
HUMAN DESIGN	22.00
HUNT FOR RED OCTOBER	35.00
HYBRIS	24.00
INDOOR SPORTS	35.00
INOVATOOLS #1	55.00
INSANITY FIGHT	28.00
INTELLITYPE	35.00
INTERCHANGE	32.00
INTERFONT	72.00
INTERNATIONAL SOCCER	24.00
INTROCAD	51.00
INVESTOR'S ADVANTAGE	66.00
JACK NICHOLAS GOLF	30.00
JET	36.00
JET SET UTILITIES	24.00
JEWELS OF DARKNESS	21.00
JINXTER	28.00
JOE BLADE	21.00
KAMPFGRUPPE	39.00
KARATE KID II	28.00
KARATE KING	19.00
KARTING GRAND PRIX	19.00
KINDERAMA	32.00
KINDWORDS	63.00
KING OF CHICAGO	35.00
KINGDOMS OF ENGLAND	30.00
LANCELOT	26.00
LAS VEGAS	19.00
LATTICE C 5.0	204.00
LAZERSCRIPT	29.00
LEADER BOARD DUAL PACK	21.00
LEATHER GODDESSES	26.00
LEXCHECK	27.00
LIGHTS, CAMERA, ACTION	51.00
LINKWORD LANGUAGES	19.00
LION'S FONTS	54.00
LRDS OF THE RISING SUN	31.00
LOTTERY MAGIC	18.00
LURKING HORROR	28.00
M	155.00
MAGELLAN	117.00
MANIC INVADERS	19.00
MARBLE MADNESS	35.00
MASTER TYPE	28.00
MATH MAGICIAN	28.00
MATH TALK	35.00
MATH TALK FRACTIONS	35.00
MATH WIZARD	32.00
MAVIS BEACON TYPING	35.00
MAXIPLAN 500	94.00
MAXIPLAN PLUS	126.00
MEAN 18	28.00
MENACE	28.00
METACOMCO PASCAL 2.0	81.00
MICROBOT DESIGN DISK	22.00
MICROFICHE FILER PLUS	108.00
MICROLAWYER	38.00
MIDI MAGIC	92.00
MIKE THE MAGIC DRAGON	16.00
MIMETICS UTILITIES 1	40.00
MINI PUTT	24.00
MISSION CON-BAT	29.00
MISSION ELEVATOR	32.00
MODELER 3D	88.00
MOEBIUS	41.00
MONEY MENTOR	61.00
MOVIE CLIPS	21.00
MOVIESETTER	63.00
MULTI-FORTH	56.00
MUSIC MOUSE	50.00
MUSIC STUDENT	35.00
MUSIC STUDIO	35.00
OBLITERATOR	28.00
OF THE FLESH	24.00
ONE ON ONE	14.00
ONLINE	45.00
OPERATION CLEANSTREETS	24.00
OPTICKS	66.00
ORGANIZE	63.00
OUTLINE	32.00
OUTRUN	29.00
P.O.W.	28.00
PACBOY	19.00
PAGE STREAM	138.00
PAGEFLIPPER + F/X	94.00
PAGESETTER	94.00
PALADIN	28.00
PERFECT SCORE	55.00
PERSECUTORS	13.00
PHANTASIE III	28.00
PHASAR 3.0	56.00
PHOTON CELL ANIMATOR	104.00
PHOTON PAINT	66.00
PHOTON PAINT 2.0	90.00
PHO. PAINT SURFACE DISK	18.00
PIONEER PLAGUE	24.00
PIXMATE	44.00
PLATOON	28.00
PLUTOS	21.00
PORT OF CALL	32.00
POWER WINDOWS 2.5	62.00
PRINTMASTER +	32.00
PRO ASM	66.00
PRO BOARD	355.00
PRO MIDI STUDIO	125.00
PRO NET	355.00
PRO SOUND DESIGNER	98.00
PRO VIDEO PLUS	179.00
PRO. DATARETRIEVE	195.00
PROFESSIONAL PAGE	240.00
PROJECT D	32.00
PROMISE	34.00
PROWRITE 2.0	78.00
Q-BALL	21.00
QUADRALIENS	18.00
QUARTERBACK	48.00
QUESTRON II	32.00
RAW COPY	36.00
ROAD RAIDERS	24.00
ROADWAR 2000	28.00
ROADWAR EUROPA	31.00
ROCKET RANGER	35.00
ROGER RABBIT	27.00
ROMANTIC ENCOUNTER	28.00
RUSH'N ATTACK	28.00
SARGON III	35.00
FS SCENERY DISK	18.00
SCRIBBLE 2.0	63.00
SCULPT 3D	66.00
SCULPT 4D	419.00
SEX VIXENS	24.00
SHANGHAI	28.00
SILENT SERVICE	28.00
SILICON DREAMS	21.00
SINBAD & FALCON	35.00
SKY CHASE	27.00
SKYFOX	14.00
SLAYGON	28.00
SONIX	49.00
SOUND QUEST	CALL
SOURCE LEVEL DEBUGGER	56.00
SPACE QUEST	35.00
SPACE STATION OBLIVION	29.00
SPELLBOUND	25.00
SPELLER BEE	35.00
STARGLIDER II	28.00
STELLAR CONFLICT	28.00
STELLARYX	24.00
STREET CAT	27.00
STRIP POKER II	24.00
STUDIO MAGIC	63.00
SUB BATTLE	27.00
SUPERBACK	48.00
SUPERBASE PERSONAL	95.00
SUPERBASE PRO	207.00
SUPERPLAN	99.00
SUPERSTAR ICE HOCKEY	35.00
SWORD OF SODAN	30.00
SYNTHIA	69.00
TARGIS	24.00
TAX BREAK	48.00
TECNOCOP	29.00
TELEGAMES	22.00
TELEWARS	28.00
TERRORPODS	28.00
TEST DRIVE	33.00
TEXTPRO	53.00
THAI BOXING	14.00
THE ACCOUNTANT	190.00
THE THREE STOOGES	35.00
THE WORKS PLATINUM	178.00
THEXDER	26.00
THUNDER BOY	21.00
TIME AND MAGIK	26.00
TIME BANDITS	28.00
TRACER	22.00
TURBO SILVER	115.00
TV SPORTS FOOTBALL	29.00
TXED PLUS	51.00
ULTIMA IV	41.00
UNINVITED	35.00
UNIV. MILITARY SIM.	30.00
V.I.P.	30.00
VIDEO EFFECTS 3D	130.00
VIDEO TITLER	88.00
VIDEO WIZARD	42.00
VIDEOSCAPE 3D	127.00
WARLOCK	21.00
WAYNE GRETZKY HOCKEY	30.00
WILLOW	24.00
WINTER GAMES	14.00
WITCHCRAFT	28.00
WORDPERFECT	199.00
WORLD CLASS LEADER BD	28.00
WSHELL	30.00
X-CAD	414.00
ZAK MCKRACKEN	28.00
ZOETROPE	84.00

GVP™

High Speed
A2000 HardCards

40 MEG 11ms **$799**

80 MEG 11ms **$1199**

HARDWARE

8 UP 0K	169.00
8 UP W/1 MEG	399.00
8 UP W/2 MEG	655.00
8 UP W/4 MEG	CALL
8 UP W/8 MEG	CALL
ADAPTEC 4000	126.00
ADAPTEC 4070	170.00
AIR DRIVE EXT.	159.95
AIR DRIVE INT.	139.95
AMIGEN GENLOCK	147.00
APRODRAW 12 X 12	480.00
BUS EXPANDER	485.00
C LTD REPLACEMENT KYBD	98.00
C LTD HARD DRIVES	CALL
CALIFORNIA ACCESS	149.00
C LTD A500 512K 0K	30.00
C LTD CORONA SCSI	CALL
C LTD SCSI 500	156.00
C LTD SCSI 1000	180.00
C LTD SCSI 2000	119.00
CM 20 MEG A500/A1000	639.00
CM 20 MEG A2000	539.00
CM 40 MEG A500/A1000	799.00
CM 40 MEG A2000	749.00
CM 65 MEG A500/A1000	879.00
CM 65 MEG A2000	799.00
CM 85 MEG A500/A1000	966.00
CS-1 COPY STAND	51.00
CVIEW 1	35.00
CVIEW 2	35.00
DELUXE MIDI INTFCE	63.00
DIGI-DROID	62.00
DIGI-VIEW 3.0	139.00
DIGI-VIEW GOLD	139.00
ECE MIDI	50.00
EPYX 500 XJ JOYSTK	14.00
ERGOSTICK JOYSTK	18.00
EXP. TECH HARD DRIVE KIT	286.00
FLASH CARD A2000 SCSI	186.00
FLICKER FIXER	510.00
FLICKER MASTER	12.00
FRAMEGRABBER	529.00
FUTURE SOUND	136.00
GEN ONE GENLOCK	699.00
GO 64	36.00
GO 64 INTERFACE CABLE	15.00
GVP 20 MEG HARDCARD	575.00
GVP 30 MEG HARDCARD	698.00
GVP 45 MEG HARDCARD	816.00
GVP AUTOBOOT EPROM KIT	29.00
GVP FD2010 FLOPPY	135.00
GVP IMPACT A500	CALL
GVP A500 RAM MODULE	66.00
GVP SCSI/RAM A2000 0K 1M	294.00
GVP SCSI/RAM A2000 0K 2M	324.00
GVP SCSI/RAM A2000 2M	750.00
HARDFRAME 2000	257.00
HD-6A HARD DRIVE CASE	125.00
INBOARD 0K A1000	216.00
INBOARD 512K A1000	360.00
INBOARD 1 MEG A1000	504.00
INBOARD 1.5 MEG A1000	648.00
INBOARD 0K A500	239.00
INBOARD 1 MEG A500	546.00
INBOARD 2 MEG A500	853.00
KICKSTART ELIMINATOR	120.00
M501 512K A500 EXP. 0K	65.00
MIDI GOLD A500	58.00
MIDI INSIDER A2000	65.00
MIDI STAR	216.00
MODEM CABLE A1000	15.00
MODEM CABLE A500/A2000	15.00
MOUSE MASTER	27.00
MOUSE PADS	9.00
NEC PINWRITER 2200	432.00
PERFECT SOUND	66.00
PERFECT VISION	189.00
PRO GEN GENLOCK	384.00
PROCESSOR ACC	149.00
MEGA 2 MEG A2000	479.00
PRORAM 8 MEG W/2 MEG	590.00
SCSI CABLES	25.00
SEAGATE ST157N 48 MEG	510.00
SEAGATE ST225N 20 MEG	345.00
SEAGATE ST251N 40 MEG	440.00
SEAGATE ST277N 65 MEG	510.00
SEAGATE ST138N 30 MEG	394.00
SEAGATE ST296N 85 MEG	635.00
STARDRIVE SCSI CONT.	102.00
SI COLOR SPLITTER	74.00
STARBOARD II 0K	260.00
STARBOARD II 512K	409.00
STARBOARD II 1 MEG	552.00
STARBOARD II 2 MEG	842.00
SUPER GEN GENLOCK	699.00
SUPRA 2400 MODEM	129.00
BRICK A500 POWER	102.00
TIMESAVER	55.00
TOOLBOX A1000 3 AMP	214.00
TOOLBOX A1000	144.00
TOOLBOX A500 1 AMP	152.00
TRUMPCARD CONT.	165.00
VI-2000RF	78.00
VI-500RF	78.00
WV-1410 W/LENS,CABLE	238.00
X-SPECS 3D	94.00

California Access

CALIFORNIA ACCESS CA-880

NEW LOW PRICE

149.00

Expansion Technology ToolBox

2 Slot Expansion uses A2000 Cards for your A500 or A1000

Starting as low as **$144**

Federal Express

Standard Air
Available on Request

Computer Mart
105 Lynn St.
Nacogdoches, TX 75961

SHIPPING INFO: Software rates are $2.10/item (Max8.00) UPS Ground or $4.00/item (Max 14.00) UPS 2nd Day Air. Call for Hardware shipping info. REFUND & RETURN POLICY: Defective merchandise under warranty will be repaired or replaced. Returned product must be in original packaging. We do not offer refunds for defective products or for products that do not perform satisfactorily. We make no guarantees for product performance. Money back guarantees must be handled directly with the manufacturer. All returns must have an RA #. Call 409-560-2826 for an RA. Returned products are subject to a 20% restocking fee. Prices subject to change without notice. Delivery subject to availability.

Visa

New Products & Reviews

★★★★★ OUTSTANDING ★★★★ VERY GOOD ★★★ SATISFACTORY ★★ POOR ★ DREK

BOOKS

ARKRM

Of course, the release of the 1.3 operating system necessitated the revision of the **Amiga ROM Kernel Reference Manual**. *Addison-Wesley* sent copies of the first volume, *Includes and Autodocs* ($32.95). The book is about the size of the Manhattan phone directory and contains more C and assembler source than I've ever seen in one place. The second volume in the series, **Amiga Hardware Reference Manual**, should be available BTYRT (By the Time You Read This), with **Libraries and Devices** to follow after that. Route 128, Reading, MA 01867. 617-944-3700.

MORE ABACUS

Jim Oldfield, whose wisdom occasionally graces these very pages, sent copies of the two latest books from *Abacus*. **More Tricks & Tips** ($19.95) offers tidbits covering CLI, AmigaBASIC, and other arcana. **Amiga 3-D Graphic Programming in BASIC** ($19.95) covers the essentials of raytracing and the fundamentals of 3D math. 5370 52nd St. SE, Grand Rapids, MI 49508. 616-698-0330.

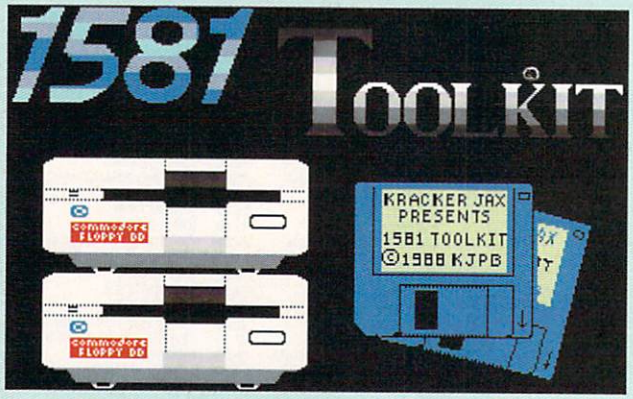
LEGAL AID

Clearly written and easily understandable, **The Desktop Publisher's Legal Handbook** by Daniel Sitarz should be required reading for anyone doing any publishing. It covers everything a publisher, or would-be publisher, needs to know to keep the lawyer-weasels off his back. There are sections on copyright law, the different types of business entities (corporations, limited partnerships, and the like), taxes, and more. There are also example contracts and agreements which can be easily adapted to your own use. The most enlightening parts of the book, though, are the ones on libel and invasion of privacy. If you're even considering saying something derogatory about someone, read these chapters first - they might save your skin and your bank account. The book doesn't purport to be a substitute for professional legal advice, but it gives good, solid answers to many of the legal questions that come up in the course of desktop publishing. $19.95 from *NOVA Publishing*, 1103 W. College St., Carbondale, IL 62901, 618-457-3521

8-BIT SOFTWARE

REISSUE

After being unavailable for some time, **BASIC 8** ($39.95) is being reissued by *Free Spirit Software*. Written by Lou Wallace and David Darus, this revised edition of the C128 language comes on two disks. Numerous demo programs are included, along with a RunTime library. The 200-page manual has also been redone. At the same time, Free Spirit is also releasing the **BASIC 8 Toolkit**. It provides a point and click system that will permit creation of fonts, patterns, icons, pointers, all in color. It will also let you add color to Print Shop graphics. And in a burst of generosity, a collection of disk utilities is also included. Cost is a mere $19.95. 58 Noble St., Kutztown, PA 19530. 215-683-5609.



★★★★+

1581 TOOLKIT $39.95

Software Support International, 2700 NE Anderson Rd. Vancouver, WA 98661 206-695-1393

The *1581 Toolkit* is made up of ten first-rate 1581 utility programs which are thoroughly documented. In addition, Software Support International has added an exhaustive 147 page technical treatise on the internal workings of the 1581 and its DOS, written by INFO's own resident disk drive expert, David Martin.

The utilities themselves are all menu driven and quite easy to use, despite the fact that they all are quite powerful and flexible. Included are: a fast disk copier which supports single and multiple 1581s; a fast file copier with multiple drive and partition/ subdirectory support; a directory editor; a complete track & sector editor; a track and sector tracer; a partition/ subdirectory creator; a fast formatter; a directory error scanner; and a relocatable fastloader. There are dozens of little extras, and frequent use of color and graphic displays. All work together to make this package a pleasure to use. Add to this the fact that the copiers, fast formatter, and fast loader significantly outperform anything released to date and this collection quickly becomes a must for any heavy 1581 user.

I can only think of two ways this package might be enhanced. Although the copiers are as quick as lightning, it is possible that if they optionally supported the 17xx RAM Expansion units they could perhaps be made even faster. In the same vein, the C128 might be able to milk even greater performance from the *1581 Toolkit* if it supported the 128's added memory and speed. However, short of adding these frills, the *1581 Toolkit* is hard to beat. - Loren Lovhaug

READER MAIL

. . . continued from page 8

U.S. Mail From: Dale Hash
I would like to compliment you on your "ANIMATION" article in the March-April issue of INFO. Your subject is one that is near and dear to our hearts here at Hash Enterprises. Just as a point of clarification, in your article you stated that our various programs were modules of the ANIMATION: Apprentice program. They are, in fact, stand-alone programs, each addressing a particular area of the process now being called "Desktop Video".

Thanks for the clarification. We think lots of users will like your "modular" approach. It requires a higher level of user education to make sure they get what they need, but they are much more likely to end up with the features they want. ***- Mark & Benn***

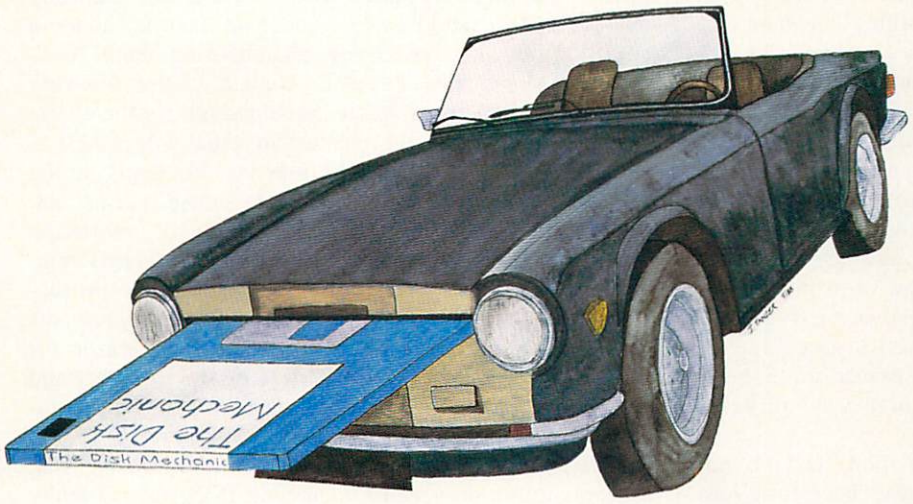
COMPUSERVE Mail From: Ed Godek
I have an Amiga 500 and would like to get in touch with Commodore to get a couple of copies of their Amiga Buyers Guide.

Give them a call at their toll-free information (NOT User Support!) number: 800-343-3000. But be forewarned that the Amiga Buyers Guide (updated quarterly, and included free in the box with all new Amigas) is not really a comprehensive, impartial buyers guide. Commodore sells the listings, just like magazine ads. ***- Mark & Benn***

COMPUSERVE Mail From: Nancy Devitt
Are you sure it's appropriate to criticise Guy Wright for wandering in the philosophical and metaphysical when, in the same issue (#24), Mindy Skelton romanticizes Reichart von Wolfsheild for much the same excesses?

Mindy Skelton romanticizes Reichart von Wolfsheild? Sounds like one of those sleazy National Enquirer headlines! Anyway, at least von Wolfsheild doesn't charge folks four bucks apiece to listen to him wax metaphysical!
- Mark & Benn

continued on page 13 . . .



The Disk Mechanic

The Disk Mechanic requires a 512K Amiga and Kickstart version 1.2 or later. We are now shipping Version 2.5: registered owners should contact us for upgrade details.

Lake Forest Logic Inc.
28101 E Ballard Road
Lake Forest, IL 60045
(312) 816-6666

Give Your Disks a

Tune-up

The Disk Mechanic is a comprehensive collection of disk management tools for the Amiga. The package includes a disk optimizer, hard disk back-up program, file recovery program, disk editor, and a dozen CLI utilities.

With the TuneUp disk optimizer you can increase floppy and hard disk performance up to 500%.

Deleted files and corrupted disks can be recovered with the Disk Repair program.

DoubleBack makes the task of regular hard disk back-up fast, easy, and safe.

All this and more for only $89.95 suggested retail price. Dealer inquiries welcome. ***Amiga*** is a trademark of Commodore-Amiga. Inc.

★★★+

MICROLAWYER $59.95

Progressive Peripherals, 464 Kalamath Street, Denver CO 80204, 303-825-4144

A lawyer is a craftsman of words. Every lawyer develops his own collection of favorite ways of crafting words to accomplish specific tasks. These are called form books.

MicroLawyer for the Amiga is a form book on a disk. It is *not* a program: it is a 300K collection of ASCII text files with blank spaces, which the user can load into his wordprocessor and tailor to his needs. The value of *MicroLawyer* is its 200 page spiral-bound manual, which contains all the forms and instructions for filling in the blanks, and the enclosed disk making these forms word-processor-ready.

Forms are written in a language known among lawyers as "boilerplate", and among non-lawyers as "legalese". Boilerplate gets used and reused, but never reinvented, because it is known to work. In this sense, *MicroLawyer* is on a firm footing - it gives you working language that ostensibly lets you do what lawyers do. However, the skill and judgement of knowing which forms and what language are appropriate for your transaction take training and experience to develop. Although the forms are fine, the dangers from misuse are great. And if you think you will save on your legal bills by presenting your attorney with a form from *MicroLawyer* already modified by you "for his comment", think again. The attorney will most likely take one of HIS office forms and fill it in with the information from your document. If, however, you are a sophisticated businessman, already used to using boilerplate forms, and have the wherewithal to read these forms carefully for content and sense, *MicroLawyer* will be of great use to you.

Lots of people enter into legal relations and do not reduce these to formal writings. These later turn into "your word against mine" contests in small claims court. To the extent that *MicroLawyer* and programs like it convince people to formalize their legal relations so that disputes can be resolved quickly and cheaply, they are good. To the extent people use them without really reading and understanding them, they are dangerous. If you have enough common sense and can sense when you're getting in deep enough to really need an attorney, I can recommend *MicroLawyer* to you. If not, you may be playing with matches.

★★★+

WILLMAKER $39.95

Nolo Press/Legisoft, 950 Parker Street, Berkeley CA 94710, 415-549-1976

Nolo Press, the legal self-help publisher, has released *WillMaker* for the C64. This BASIC program on disk, which comes bound in a large and informative paperback book, prompts the user for information and collates it all into a will that it prints out. The user interface is fine, though very slow. You have plenty of opportunity to revise your will, and can go back and change it months later. You can only make one will per disk; to make a will for a different person, you must erase the existing will.

WillMaker is reasonably sophisticated, distinguishing among the laws of various states, but makes a number of assumptions that an attorney would normally discuss with his client. Whereas the attorney will ask, "Do you mean to disinherit your son to whom you have not made a specific gift?" *WillMaker* assumes you do and automatically leaves $1.00 to children to whom you have not made a specific gift, thus effectively disinheriting them. *WillMaker* automatically adds a "no-contest" clause; this very automation alone is probably cause enough for the clause to be found invalid in the event of an actual will contest.

WillMaker fails to warn the user in sufficiently strong terms not to monkey with the final document it prints out. The arcane doctrine of dependent relative revocation comes into play the second a probate court sees non-signatory pen marks on a typed document. The instructions are often not worded strongly enough: requirements come across as recommendations. Part of the reason for attorneys is to impress upon the testator the formality and legal significance of what he is doing and to provide common sense input. *WillMaker* accomplishes neither.

WillMaker is good in that it focuses the user on what happens in a testamentary document. If the user is really concerned by what he learns he needs to take care of, he can consult an attorney. The manual also gives good advice about avoiding probate.

If you are thinking about drafting a will, but are not sure whether you really need to, this program will focus you on your concerns as a will writer. Just be sure that you approach your will with all the formality and trepidation it merits. Be careful and alert when using this helpful program.

- Jeremy D. Weinstein, attorney at law

READER MAIL

. . . continued from page 11

PLINK Mail From: Dan Bonachea

I was reading your Mar/Apr 1989 issue of INFO and came across an INFOMania game tip for *F/A-18 Interceptor* which stated: "From the main menu, select option 2 and press zero. The screen goes into a spiral down to 34 by 117 degrees. I don't know what purpose this serves, but it *is* interesting." I work for Boeing Military Airplanes at the Boeing Mojave Test Center, and I just thought I'd let you know that 34 degrees latitude by 117 degrees longitude is smack dab in the middle of Edwards Air Force Base, where the F/A-18 was flight tested. Perhaps this is the aspect that Electronic Arts was intending to include in this program... flight testing at the actual place of the flight test of the real airplane!

What a neat bit of trivia! Sounds like the game wizards at Electronic Arts had another scenario in mind, and couldn't get it squeezed in. Thanks for the insight! ***-Mark & Benn***

U.S. Mail From: Gary B. Lee

I read your review of 3D programs in INFO #24 with more than a little interest. As the owner of two of the programs (*Turbo Silver* and *C-Light*), a comparison by another user is always interesting. I feel that the assessment of *C-Light* is a little harsh. While it is slightly limited in its current form, it has one of the most user-friendly environments in 3D today. The ability to see the wireframe in three dimensions as you work instead of using three separate windows is a real boon to me. Your article was accurate and informative and was worth the price of the magazine by itself. Thank you for a real article of interest to both experienced and novice users.

C-Light is the only program we looked at that uses the 3D wireframe view, other than the $2000 Caligari. 3D editing is intriguing, and was, I felt, the potentially strongest point of the C-Light software. Unfortunately, its other limitations hold it back. I hope there's an improved version offered in the future. It could be a very nice package with some additional polish and power. ***- Mark & Benn***

COMPUTERMATE™ australia

BIG ENOUGH TO BE PROFESSIONAL
SMALL ENOUGH TO BE PERSONAL

COMPUTERMATE AUSTRALIA, a wholly Australian owned company, was incorporated in 1984.

The company commenced operations under the control of Ray Firth, the present Managing Director, who saw the need for an independent approach to the distribution of third party computer software and accessories in Australia.

During its first 6 months of operation, Computermate developed a broad client base as sales agents for a number of software and accessory suppliers, both from Australia and overseas. In 1985, as Computermate's business plans developed, the company was appointed as the master distributor for several software and peripheral manufacturers, directing its major operations to supplying and servicing the major department and chain stores and independent retailers.

Late in 1985, Computermate saw the need to further increase its range of available products and commenced importing from the U.K., U.S.A. and Asia. Since the company had a direct line to the end-user market and their needs, through some 250 retail outlets and an associate company, these products were well researched prior to their release on the Australian market.

In 1986, Computermate commenced manufacturing operations in Australia and now manufactures a range of accessories such as Dust Covers, Printer and Utility Stations, Display Stands, etc., that are marketed in Australia, on a national basis.

Computermate addresses the software and accessories market for Commodore 64, 128, Amiga, Atari ST, Amstrad and IBM personal computers.

Computermate Australia, now with offices in the U.K. and U.S.A., has built its reputation on its ability to supply quality products to the Australian marketplace and its corporate philosophy of supporting those products, 100%. It is now the largest distributor of productivity software and accessories for the Commodore 64 and Amiga in Australia.

Seeking now to expand its direct contact with manufacturers and publishers, Ray Firth, the Managing Director of Computermate, would like to hear from representatives of companies who wish to market their products in Australia.

Contact may be made by calling Australia 011-612-457-8118 or FAX 011-612-457-8739.
Or write: 9 High Street, Mt. Kuring-Gai NSW 2080.

. . . continued

MAKING PLANS

Stock market investors will want to check out **The Strategist**, a market analysis package from *Strategy Software*, and previously available only on the C128. It begins with historical data for a particular stock, then lets the user specify a strategy, and from there goes through a series of simulated trades. The program then varies the strategy slightly and goes through the trading process again. This is repeated until the highest payoff is reached. A module for creating historical files and another for downloading historical data via modem are also included. Price is $24.95, and two disks of historical quotes are available for $8.95 each. Box 14-2403, Anchorage, AK 99514. 907-694-2120.

AMIGA SOFTWARE

FREE SPIRITED

There are three new entries in *Free Spirit Software*'s Media Line series. **Font Disk 2** ($34.95) offers structured fonts to use with 3D rendering packages. Supported are *Aegis Draw* and *Draw 2000, Sculpt 3 & 4D, Videoscape 3D, Forms in Flight, Turbo Silver,* and *Professional Draw.* The **Clip Art Collection** was designed by Loren Lovhaug (see the interview elsewhere in this issue) and contains over 200 images on various themes. All are in IFF format and the price is $34.95. **Animation Backgrounds** has 30 background scenes that can be used by popular animation packages such as *The Animator, Animate 3D, MovieSetter, Videoscape 3D,* and *Deluxe Video*. They come on two disks, cost $39.95, and are available in either PAL or NTSC format. 58 Noble St., Kutztown, PA 19530. 215-683-5609.

OF GOOD CHARACTER

Julie Petersen of *Classic Concepts* sent a copy of their latest catalog of fonts. The catalog itself is worth noting for a clearly written introduction on practical considerations in choosing fonts. The newest releases are the **Professional Font Library**, which is a 6-disk set ($74.95) including 60 distinct fonts, ranging from 7 to over 80 lines in height. Some are in color (we're particularly fond of Pipeline, which is made up of sections of pipe that fit neatly together). Also of note are **StoryBook Capitals** ($29.95), which is a collection of large decorative letters in illuminated manuscript styles. They are in brush format to use with paint and video packages. PO Box 786, Bellingham, WA 98227. 206-733-8342.

B CUBED

Byte by Byte has three new accessory-disk releases for use with *Sculpt*. **Tate Fonts I** and **Tate Fonts II** are 3D fonts designed for rendering. Each has three fonts: Tube, Slot, and Prism on the first disk; Bevel, LCD, and Premier on the second. Also available is **U.S. Space Station and Orbiter**, which contains all the necessary pieces to render your own space station. The finished orbiter conforms to the actual NASA specifications. Of course you could use the pieces to create your own design. Each of the three titles retails for $69.95. 9442 Capital of Texas Hwy., Suite 150, Austin, TX 78759. 512-343-4357.

National Type Foundry's Comix Fonts

PHUNNIES PHONTS

The latest from *National Type Foundry*, **Comix Fonts**, is a collection of nine fonts ranging in point size from 53 to 92. The characters are particularly well-suited for video. Our favorite is the one done in the style of Robert Crumb, a fondly-remembered Sixties artist. PO Box 13431, Torrance, CA 90503. 213-542-8311.

THE CLUBBY SET

The Computer Club, which published a handy little AmigaDOS 1.2 reference booklet a few months ago, has come out with the 1.3 version. For a measly $3.50, you get 12 pages listing all the commands you need to get you through CLI and ED. They also sent us a copy of **Zelda** (no relation to the Fitzgeralds), a print-merge and report generator. It supports conditional text inclusion, merging from up to five separate lists with up to 128 fields per list. It will also handle 200 numeric variables, 128 string variables, and has six math functions. It works with any ASCII wordprocessor and has full printer support. $16.95. And just for fun, The Computer Club is selling a **Foam Bat** emblazoned with their logo. They rightly claim it's 100% compatible with *everything* and completely bug-free. Just the thing to beat a recalcitrant computer (or Senior Editor) with. 13013 Lee Jackson Highway, Suite 142, Fairfax, VA 22033. 703-968-7588.

KARA REVISITED

Two more sets of fonts are just being released by *Kara Computer Graphics*, the outfit that designed the large fonts Benn is so fond of. **Subheads** is a scaled-down version of their **Headlines** fonts and come in a variety of styles ranging from Chrome to Brick, in 55- and 72-point sizes. The second set of four new fonts, **Headlines 2**, come in two and three sizes. chiselSCRIPT, Glass, Embossed, and Engraved are done in 8-color hi-res. Each set comes on two disks and retail for $69.95 apiece. 6365 Green Valley Circle, #317, Culver City, CA 90230. 213-670-0493.

PERFORMANCE....Not Hype.

Call For Drive Pricing.

Call now to order!
(415) 651-1905

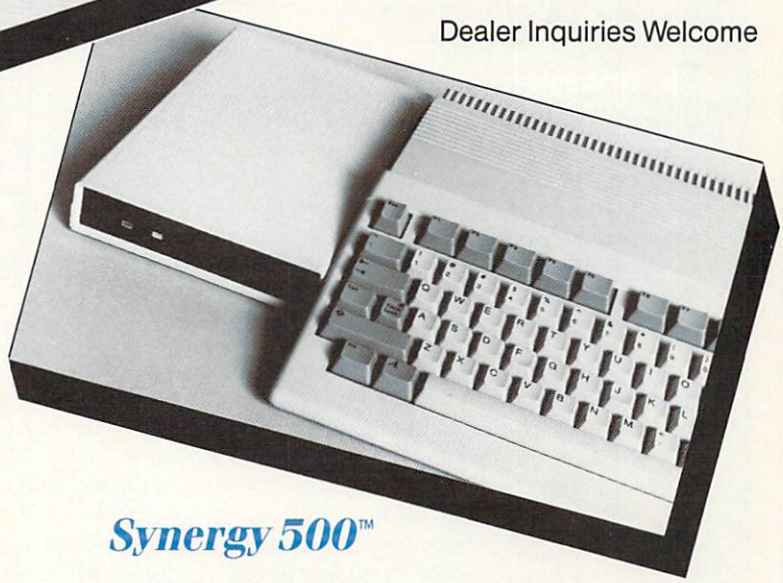
Dealer Inquiries Welcome

OverDrive™

The ***OverDrive*** is an autoboot **DMA** SCSI CONTROLLER (and not just a "hardcard"). We don't advertise the speed of any particular drive since all controllers can use the same drives. When someone offers you "DMA speed," but not DMA and brags about how great their drive is... there's a reason.

What you get with the OverDrive are choices and performance. The performance is guaranteed by a Motorola 68440 two-channel DMA (Direct Memory Access) chip. When measured with an oscilloscope, we transfer data across the bus at burst speeds of 875K per second and sustained rates of 550K per second—Real transfer rates... not timed by public domain software. Choices? Mount a 3.5" drive on the card, a 3.5" or 5.25" drive in the drive bay, or an external drive or some combination of up to 7 drives. Choose your own drive, not just what we offer. Use ST 506 drives with Adaptec controller cards. Use removable media drives like the Konica 10 megabyte floppy. We even let you turn DMA off through software (although we haven't figured out why you would want to). Our installation software is so simple it's almost automatic, but you can customize it to suit yourself. (One last thing—we **DON'T** mount our drive directly on the card—give us a call to find out why!)

OverDrive Card $249.95



Synergy 500™

The ***Synergy 500*** autoboot drive controller for your A500 combines speed, features (including optional RAM) and dependability at an affordable price. Connect from 1 to 7 drives with inexpensive ribbon cables. Add your own hard drives and enclosures or ask about ours. Each Synergy 500 comes with all software necessary, including our own backup utility that backs up your drive in standard Amiga DOS format. An optional RAM board allows an additional memory expansion from .5 to 8 MB. Housed in an injection molded case, a power-on LED and drive access LED allow you to place the drive anywhere since it is not necessary that it be visible during operation. Fast? The Synergy 500 is faster than some controllers advertising "DMA speed." Compare us to anyone... you won't be disappointed.

The Synergy 2000 is a "hardcard" version of the Synergy 500 for use with your A2000. Mount a drive on the card, in the drive bays, or externally.

Synergy 500	$249.95
2 MB RAM Board	Call
8 MB RAM Board	Call
Synergy 2000	$169.95

SubSystem 500™

is a Two-slot expansion chassis with pass-thru for the A500 that uses cards designed for the A2000. An optional 3.5" floppy may be added and is more convenient than ***any*** other floppy available. The SubSystem connects to the 86-pin bus on the left side and is fully compatible with the A501 expansion module. The SubSystem 500 does ***not*** use power from your A500.

SubSystem 500	$279.95
with floppy drive	$419.95

In France call: MAD at 48.78.11.65

Call for drive availability and pricing. All products carry a one-year limited warranty unless otherwise noted.

Call For Drive Pricing.

Pacific Peripherals
P.O. Box 14575 — Fremont, CA 94539

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

PREVIEW

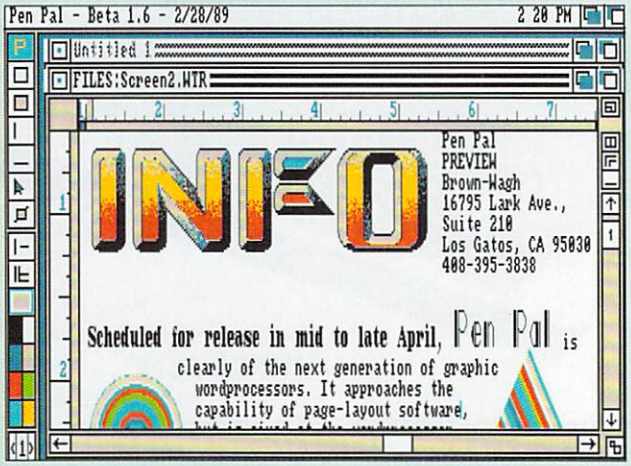
PEN PAL

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

Scheduled for release by the time you read this, *Pen Pal* is clearly the first of the next generation of graphic wordprocessors. It approaches the capability of page-layout software, but is aimed squarely at the wordprocessor market. Judging from the beta version, it's going to be a killer. Most graphic wordprocessors operate with all the speed of an exceptionally indolent sloth, but Pen Pal is more like a cheetah. It's the first graphic wordprocessor I haven't been able to type ahead of, no matter what font I'm using.

The mandatory wordprocessing features, like spellchecking with a 100,000 word dictionary, are neatly implemented, but the list of other features is impressive. It supports text flow around irregular graphics, and if the graphic is moved or sized, the text is reflowed automatically. Although the text can flow only on one side or the other of a graphic, it can be made to flow between two images, or even on top of an image. Future versions will support multiple columns, which will allow the graphic to be positioned virtually anywhere. Graphics can be imported (about any format can be used, including HAM, though *PP* will reduce it to 8 colors onscreen) and then sized and cropped within *Pen Pal*. The reduction algorithm is excellent, with little loss of detail in the image. There's even an Undo! There is no apparent way to enlarge an image beyond its original size, but awareness of that fact should be enough to prevent any problems. The flow around irregular shapes works very well, and a little judicious cropping of the image and a few well-placed hyphens will help the text fit even better. There are other graphic functions as well, like the ability to draw lines, an outline, or a filled box around text.

Font support is among the best I've ever seen. There are actually two font menus, one listing fonts by name and point size, the other listing them by size. Thus, if you need a font to fit a particular space, you can tell immediately what you have available in which styles. I even found that using a font directory that's too long to fit in one menu causes the program to generate another font menu to handle the overflow. (The only thing I worry about is that with fonts so easy to use and change, we'll start seeing some truly outlandish documents.)



Probably the most impressive thing about *PP*, aside from its speed, is the way it prints. Two modes are offered, graphic and text. The graphic option is the standard printer dump, but the text print is what we've been waiting for. It prints any graphics as bitmaps (retaining the image's original palette and resolution) but the text is printed using the printer's own internal fonts, making for some truly impressive output, particularly on 24-pin and laser printers.

As an added fillip, *PP* also includes integrated database functions which provide mail-merge and report generation capabilities. If you're familiar with *Softwood File*, you'll be at home with *Pen Pal*. Cut-and-paste operations can be performed between the database and documents, or from database to database or document to document for that matter. That provides, finally, a relatively easy way to make a list, sort it, and incorporate it into your document. Related to the database options is the ability to create forms and then fill them in, jumping automatically from field to field. The example provided tracks Girl Scout cookie sales, but the possibilities are endless.

Graphic wordprocessors for the Amiga have historically promised a lot and delivered little, but our experiments with the beta version of *PenPal* have been encouraging. It looks like this one may really deliver great graphics and great text to the same page, with minimum restrictions and minimum effort. It's about time!

Save your money, folks. (And it won't take as much as you might think - *PP* will retail in the $150 range). *Pen Pal* is going to be required software for your Amiga.

- Tom Malcom

GOOD FOR AMIGA

GFA BASIC 3.0 ($139.95) has been ported from the Atari ST by *Antic Software* and released for the Amiga. The language resides on a single disk and comes with an inch-thick manual which assumes a working knowledge of BASIC. A thumb-through shows it to be incredibly full-featured, with an editor so fast that it puts most word-processors to shame. It offers over 300 commands, including 6 types of variables. In-line assembler and C routines can be called, and access to Intuition, sprites, and Amiga graphics libraries is also provided. A run-time module permits free-standing programs. 544 Second St., San Francisco, CA 94107. 415-957-0886.

PERFORMING VIDEO

Getting a video presentation together is often an exercise in frustration. *Elan Design*, makers of *Invision*, are releasing a product that may make it a bit easier. **Elan Performer** lets you assign a screen or animation to a key. Hitting that key then displays whatever is assigned to it. A simple and elegant solution. Animations can be separated into their component frames and stepped through in either direction. Speed and timing can also be controlled - making for easy slow/fast motion and freeze-frame. ANIM, RIFF, IFF, HAM, & RGB formats are supported, and the package will handle files from most Amiga graphic/animation packages. *DeluxePaint, DigiPaint, Photon Paint, Videoscape 3D, Zoetrope*, and *Invision* are all mentioned by name. $59. PO Box 31725, San Francisco, CA 94131. 415-621-8673.

SALLY FORTH

Delta Research sent us a copy of their **JForth Professional 2.0** ($179.95). This implementation of Forth provides precompiled modules for 'include' files, a hashed dictionary, user-definable function keys, IFF read/write support (which also handles simple blits, wipes, & fades), and a source-level debugger. Programs can be written using traditional block files or normal text files, and library routines can be called directly by name. This version of the language also has a new Clone routine, which will take an existing Forth program, disassemble it, decide what code and data are needed, and then recompile it with only what is necessary; the effect is much smaller applications. Also available from Delta Research is **HMSL** (Hierarchical Music Specification Language), an object-oriented set of extensions to Forth specifically designed for music experimentation and composition. It requires JForth and lists for $150. PO Box 1051, San Rafael, CA 94915. 415-485-6867.

W^4!

We got a press release from *Blue Ribbon Bakery* detailing their new product, **Who!What! When!Where!** It's a desktop organizer to help you keep track of all the stuff you have to do. The package will track your appointments, keep your to-do list up to date, provide you with a calendar and a timer (handy, that), and dial the phone or make a mailing list for you (but it doesn't bake anything). It even supports multiple users. $99.95. 1248 Clairmont Rd., Suite 3-D, Atlanta, GA 30030. 404-377-1514.

AVAILABLE FROM GOOD COMPUTER STORES

High speed driving along a busy three lane highway, crowded with cars and trucks is the challenge set by the Highway Hawks. Perception, intuition, and fast reflexes under pressure will be the assets you will need most to weave your way through the heavy traffic as quickly as possible wiping out any obstructions with the lasers, grenades or vaporizers.

Time Bonuses can be used to purchase faster cars, better weaponary or super grip tires to screech your racer round the sharp bends. You will need all the help you can get for sure.

You must keep your car fueled, the engine cool and keep a sharp eye on the road for oil slicks and avoid tire punctures. Your biggest headache may be the Assassin cars determined to stop you dead in your tracks. Their aim is lethal and they must be eliminated quickly.

ENHANCED GRAPHICS AND SOUND FOR THE EXPANDED AMIGA

Your most powerful car accessory is the powerful RADAR SCANNER showing the road ahead. Does the situation warrant the use of vaporizer or will a grenade do. You have seconds to decide. Watch out for the lane closures. The trucks as usual will hog the road leaving you fuming, unless you have the skills to find the gaps or weapons to clear the road ahead.

DISTRIBUTED BY ESP CORP:
P.O. BOX 228, BURGETTSTOWN, PA 10521

1-800-992-9198

FREE
HATS OR BUMPER STICKERS
WHILE SUPPLY LASTS

☆☆☆+

AMIGA LIGHTPEN $129

Inkwell Systems, 1050 Pioneer Way, Suite R,
El Cajon CA 92020, 619-440-7666

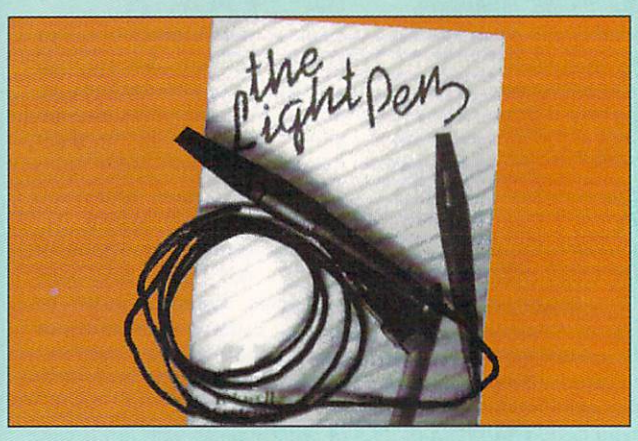
One of the things I missed most when I switched from the C64 to the Amiga was my Flexidraw lightpen from Inkwell Systems. The pen seemed the most natural way to draw. I was gratified, however, at the Amiga mouse sensitivity, so I resigned myself to "mousing it" while price deprived me of a digitizing pad. It was therefore a delight to beta test the new Amiga lightpen and driver by Inkwell.

Designated the 184-A, the Amiga pen looks identical to the ergonomic 180-C pen for the C64/128. They are, however, not interchangeable. The 184-A has a non-fatiguing, lightweight plastic body, triangular for easy hand fit, and a 56 inch, tangle resistant cord. Two buttons trigger left and right "mouse" commands. The driver disk contains the invisible background program that is loaded along with your paint program or installed in the startup sequence. Adequate documentation prints from the disk.

Your probable first question about the pen, ditto mine: "Does it integrate with the major Amiga paint programs?" As I write, it only works with *Photon Paint v1*. It will also be compatible with *Deluxe Paint v3.0*, *Express Paint 2.0*, and *Photon Paint 2.0*. In my own tests it worked fine with *Fantavision* but *Deluxe PhotoLab* displayed some harmless glitchy-ness. Full lightpen compatibility could be programmed into new software.

How does it perform? The Italians say it with a flat hand, palm down, that tips back and forth. "Mezzo, mezzo!" "So, so!" On the C64 the Flexidraw program was black and white so the pen didn't have to read colors. Scanning over very dense colors on the Amiga can sometimes be slow and will halt completely over solid areas of red or black. Unless you object to two-fisted computing, it presents little difficulty since you can use the mouse interchangeably for any problem areas. With *Easyl* connected to the expansion port, all three devices will work alternately. Overscan is not supported and 1 megabyte is suggested for interlaced modes.

I couldn't seem to find the right button positions session to session with the 184-A pen while beta testing. It either hair triggered or didn't respond. Inkwell came up with a unique solution to this touchy "feel" in the final release software. On installation you can select a feedback program which gives a separate tone for each button when pressed. My fingers "learned" effortlessly where to go.



Buttons allow for drawing at a nice "lean-back" distance from the screen.

After testing the 184-A for several weeks, I got surprising good news from Inkwell. My old Flexidraw 170-C pen *would* work with the driver disk. The 170-C is a professional quality pen with an aluminum body and a single, more convenient, tip switch. I booted up the driver and found myself immediately "sweet-home" comfortable. Whether the 170-C is a more precise instrument or only seemed so after my years of practice was difficult to judge.

The bad news about the 170-C is that having only one switch, the Alt-Amiga (Commodore) keys must be pressed simultaneously to simulate the left button program selections. The pen then draws in foreground colors without the tip switch being pressed to the screen. If the driver software could designate the Caps Lock key for left button commands it would free up your hand for coffee, the phone, or an itch....but then what do I know? I have faith someone out there will provide a solution that won't include holes in pen or pocketbook.

In "you gets what you pays for" mode, the Inkwell Amiga lightpen is a bargain compared with digitizing pads. I highly recommend trying it at your local store first. Not everyone can tolerate the arm fatigue or the dangling cord. I continue suggesting coiled cords.

Personally I would opt for the 170-C at $99 plus the driver disk at $34.95 for slightly over the cost of the 184-A including the driver at $129, and hope for a switch solution. Inkwell promises updates with a hint that overscan will follow along for those wise enough to send in those warranty cards.

For some of you the lightpen may seem a Mickey "mouse" solution, for others it will be like welcoming home a loved lost pet. - Sue Albert

GRAPHICS TABLETS

Easyl

Anakin Research, 100 Westmore Drive
Rexdale, ON M9V 5C3 Canada 416-744-4246

AProwDraw

R & DL Productions, 11-24 46th Avenue, #2A,
Long Island City, NY 11101 718-392-4090

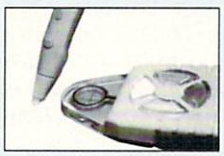
Pencraft

Kurta, 4610 South 35th Street
Phoenix, AZ 85040 602-276-5533

There are currently three graphics tablets available for the Amiga: Anakin Research's *Easyl*, R & DL Productions' *AProwDraw*, and Kurta's *Pencraft*. *Easyl* is pressure sensitive, letting you use a favorite pen or pencil. The Kurta and *AProwDraw* units read the position of a special stylus or puck (a mouse-like device) using radio waves.

➢ *Easyl* comes in model-specific versions for the 500, 1000, and 2000. Driver software and a minimal drawing package are included. The tablet's programmable menu bar can be configured for the most-used options of your paint program. Many operations require two hands, one for the pen and one for the buttons on the tablet. There is at least one instance (using Control-key operations in *DPaint*) that requires three hands. We assume this is a feature for space aliens. Easing up on drawing pressure terminates whatever operation you're performing, which is only slightly less annoying than when the rubbery plastic mat wrinkles.

➢ The *AProwDraw* package combines a Summagraphics tablet with driver software from R & DL. The optional $50 puck should be considered a necessity. We found the pen cord constraining (it needs a swivel connector); but in this office, keeping a pen leashed keeps it from wandering off. The radio waves can transmit thru a half inch depth, letting you trace from books with excellent results. It has an external power supply that needs to be unplugged "when the driver is halted" and a manual which explains ways to avoid such glitches.



➢ While it shows much promise, the Kurta *Pencraft* pad has the fatal flaw of operating only in low resolution (320 X 200). We're assured by Kurta that new driver software is in beta testing and will add support for other resolutions. It operates on the same positional system as the *AProwDraw* and has its own programmable menu bar. We love the *Pencraft*'s cordless stylus and puck (included). We like the feel of this one better than the other two, and would rate it higher if it would work in all resolutions.

Each tablet excels at something; *Easyl* is easy to install, *AProwDraw* has an honest, helpful manual. Menu operations seem to be the toughest things to master, with *AProwDraw* a bit more touchy. The main thing to remember if you're considering a graphics tablet is to try it out with the software you want to use before you buy. Then plan on taking some time to get used to it.

- Megan Ward & Tom Malcom

	AProDraw			Easyl			Pencraft		
SIZES	9X6	12X12	12X18	8.5X12			8.5X11	12X12	12X17
COST	$449	$549	$999	$399	$449	$499	$525	$645	$995
MACHINES	All Amigas			A500	A1000	A2000	All Amigas		
SURFACE	Hard plastic			Rubber mat			Acetate over hard plastic		
SCREEN MODES	ALL			ALL			320 X 200 ONLY		
INTERFACE	Serial			expansion slot			serial		
PROGRAMMABLE	NO			YES			YES		
HOW IT WORKS	Radio Frequency			Pressure Sensitive			Radio Frequency		
ON/OFF	Unplug from socket			Keyboard Command			Switch on tablet		

New Products & Reviews

. . . continued

DESIGNER DATA

If you use *Software Visions' Microfiche Filer* or *Microfiche Filer Plus*, your life just became a little easier. The company sent us copies of the first two in what is to be a series of pre-fab databases. **Home I** ($39) provides databases for keeping track of video/audio tapes, recipes, household inventory, your home budget, and the like. **Business I** ($59) includes applications such as a general ledger, expense report, inventory, billing, calendar, and a mail merge module. Each database comes with instructions and tips written by the person who created it. ARexx macros are also included with several of the applications. All of the databases and macros can be easily customized to suit your own needs. PO Box 3319, Framingham, MA 01701. 508-875-1238.

IN SEQUENCE

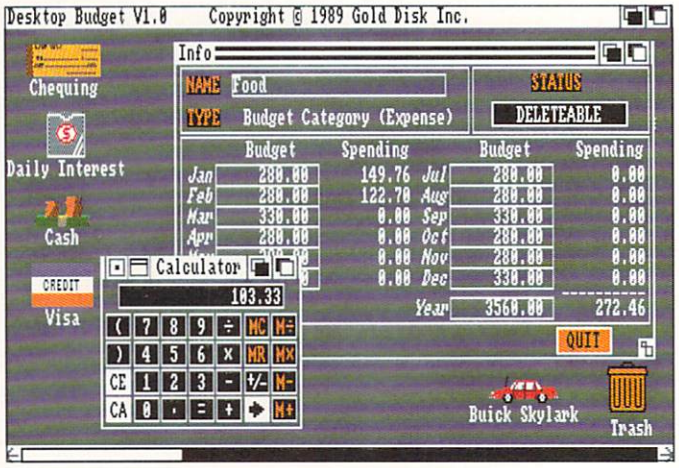
Dr. T's (did you know there really is a Dr. T? His name is Dr. Emile Tobenfeld) *Music Software* has released the latest in their long line of music software. **Level II of the KCS v.1.6A** *(Keyboard Controlled Sequencer)* has three modes of operation -- Track, Open, and Song -- along with a Programmable Variations Generator and Master Editor. The PVG provides all sorts of options for ringing changes on your music, including note selection by absolute pitch, velocity, duration, pattern matching, pitch interval relative to adjacent notes, and more. You can also add trills and ornaments, and controller events. A Macro function allows for even more elaborate editing. The Master Editor has a veritable plethora of features, including pitch mapping, chord alteration, track utilities, and more. *Level II* also supports SMPTE interface with MIDI Song Pointer, thus simplifying the addition of a sound track to video. Price is $349. 200 Boylston St., Chestnut Hill, MA 02167. 617-244-6954.

I HAVE A LITTLE LIST

The latest in *Microillusions'* **Photon Video** series is the **Edit Decision List Processor**. The *EDLP* is a $499.95 product that will assist in professional video production. A video piece is generally put together from many little pieces of tape or film, and this software provides a way of talking to editing equipment. The **EDLP** will let you create a list of which snippets you want to include in the final edit and then transfer it to the editing machine via the Amiga's serial port. It supports 3 tracks (one video and two audio) for split edits, a search command, automatic recalculation after changes are made to the list, sorting, and up to 999 events per file. It works with 30-frame NTSC, 25-frame EBU (PAL), and supports CMX, ISC, Convergence, United Media, and Grass Valley EDL formats. 17408 Chatsworth St., Granada Hills, CA 91344. 818-360-3715.

INTELLIGENT TOOLBOX

An add-on series of modules is being released for *Magellan*, the expert system from *Emerald Intelligence*. The **Interface Toolkit** consists of five modules that will let *Magellan* communicate with the outside world. **SBFIO** will import Superbase files, **WKSIO** does the same for Lotus worksheets, **ASCIO** brings in ASCII text files, **SERIO** talks to the serial port, thus letting *Magellan* talk to a BBS, and **PORTIO** offers ARexx macro capability (five macro examples are included). Final price hasn't been set, but will be under $100. 334 S. State St., Ann Arbor, MI 48104. 313-663-8757.



Desktop Budget from Gold Disk

RECORDER

We received a copy of **Encore** from *Elipsys* just before presstime. The program is a full-featured macro recorder whose basic function is to record keyboard/ mouse macros and then assign them to hotkeys. Mouse movements can be captured with either absolute or relative positioning. The resulting macros can also have speech synchronized to them, and scrolling text across the bottom of the screen is also an option. Macro playback speed can be varied, and macros can also be made to loop, for creating continuous demos. Cost is $69.95. PO Box 16757, Seattle, WA 98116. 206-938-0825.

MONEY MATTERS

In a departure from their usual realm, *Gold Disk* has released **Desktop Budget**, a home/small office accounting package. It's mostly icon driven, and provides an online calculator, along with easy setup of monthly payments. It will also do month-end reconciliations and handle year-end rollover. Different types of accounts can be set up and icons attached to them for easy access. This is the first in a series of productivity titles coming this year from Gold Disk. $69.95. 2179 Dunwin Dr., #6, Mississauga, ON L5L 1X2 Canada. 416-828-0913.

FORMANIA

Business is addicted to forms, and **FormAtion** will let you design your own. Anything from tax forms to expense logs to hall passes can be created with it. IFF graphics can also be used in the design. $69.95 from *Iconoclassic Software*, PO Box 31323, Richmond, VA 23294. 804-273-0312.

COMING SOON

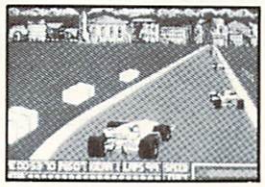
This list of over 60 new games includes recent releases (marked with an '*') and others that have been announced as "coming soon". We try hard not to duplicate ourselves in this list -- many of the games listed in the last couple of issues still haven't made it to market, but we only list 'em once! Also, they're not listed if we've included them in this issue's Games Section.

C64:

Accolade: *F-86 Sabre Strike, Jack Nicklaus Course disk*
Data East: *Guerrilla**
DigiTek: *Joe Blade, Western Games, Hole in One, Dino-Wars (Apr.)*
Electronic Arts: *Powerplay Hockey: USA vs. USSR*, Project Firestart*
Epyx: *Axe of Rage*
Free Spirit: *M.A.C.H. (Maneuverable Armed Computer Humans)*
Image Works/Cinemaware: *Speedball*
Interplay: *Battle Chess (July)*
Intracorp: *Trump Castle**
Medalist International/MicroProse: *Destroyer Escort, Keith Van Eron's Pro Soccer*
Mindscape: *Deja Vu II - Lost in Las Vegas, Thunder Blade, Kick Butt & Slam*
SSI/EA: *First Over Germany**

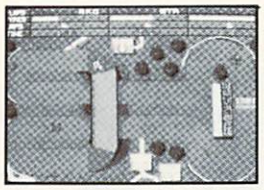
AMIGA:

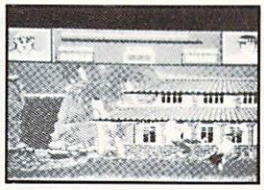
Accolade: *Fast Break, Grand Prix Circuit*
Anco: *Highway Hawks**
Bethesda Softworks: *Wayne Gretzky Hockey**
Broderbund: *Star Wars**
Spotlight/Cinemaware: *Deathbringer, Federation, Total Eclipse*
Datasoft/EA: *Time & Magik**
Data East: *Platoon**
Digitek: *Dino-Wars (Apr.)*
Electronic Arts: *Project Firestart, Zany Golf**
Epyx: *The Games - Winter Edition**
Free Spirit: *The Last Inca*, Planet of Lust - Sex Vixens from Space II*
Image Works/Cinemaware: *Speedball*
Impulse: *Evil Garden*
Incognito: *Kingdoms of England*
Infocom: *Journey, Battle Tech*
Interplay: *Neuromancer (April)*
Magnetic Images: *Gold of the Realm**
Mastertronic: *War in Middle Earth**
MicroDeal: *Goldrunner II*, International Soccer*, Airball, Jug*
MicroProse: *Gunship*
Mindscape: *Speedball, Balance of Power 1990 ed.*, Thunder Blade, Combat Course**
Panther Games: *Fire-Brigade**
Psygnosis: *Ballistix*
Readysoft: *Scary Mutant Space Aliens From Mars*, Cosmic Bouncer*, Rock Challenge**
Sega/Mindscape: *Space Harrier*, Out Run**
SSI/EA: *Dragon Lance**
Titus: *Galactic Conqueror**
Visionary Design: *Datastorm, Vortex*



GRID START
Race your 6 gear FORMULA 1 car with Booster against 23 other cars over 6 world famous circuits. Practice long and hard before you even enter the Novice class.

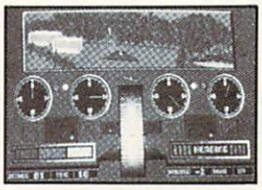
KARTING GRAND PRIX
GO KART racing is great fun but requires skill and experience in the selection of Sprocket sizes and tires to suit the track, weather conditions and style of driving. Practice or Compete over 8 tracks. 1 or 2 players.

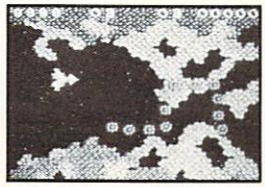




THAI BOXING
Combines fast and furious action of Karate and lethal punches of Boxing. 6 spectacular backdrops. 1 or 2 players.

FLIGHT PATH 737
An Advance Pilot Trainer, the program takes you through the most interesting aspects of flying. Take off and climb over mountain ranges, then attempt a safe landing. Six levels of addictive flying experience.





XR 35
Eight sectors of fast shooting against numerous enemies moving fast in ever changing patterns, ready to annihilate your super maneuverable ship. Multi plane scrolling background.

LAS VEGAS
You have $5 and a burning ambition to break the bank at LAS VEGAS. Play SLOTS with the very latest features, HIGH or LOW and finally the BLACK JACK table to realize your ambition.

ANCO **$44.95**

Super 6

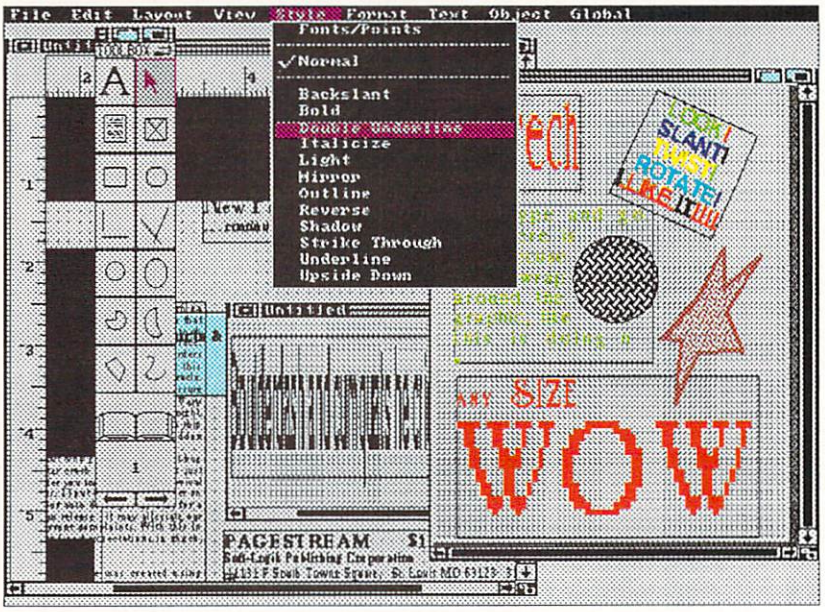
FOUR DISKS

DISTRIBUTED BY
ESP CORP: P.O. BOX 228 BURGETTSTOWN, PA 15021
1-800-992-9198
AVAILABLE FROM GOOD COMPUTER STORES

ACTION PACKED COMPILATION

PageStream

NEW! NEW! NEW! NEW! NEW!



PAGESTREAM $199.95 ★★+

Soft-Logik Publishing Corporation
11131 F South Towne Square, St. Louis MO 63123 314-894-8608

Imagine promising an Amiga desktop publishing program that will put all those Macintosh DeskTop Yuppies in their place. Now advertise and accept orders while you work on creating this all-encompassing software miracle. Try to grasp the enormous pressure to release the product soon. Very soon. Too soon, maybe. You might, like Soft-Logik, be tempted to ship what is essentially a bug-ridden beta version of your program.

But why go on and on about bug after crash after guru? Let's just offer you two PageStream survival tips: 1) put the support number on your auto dialer, or 2) wait for a new release - it may alleviate some or all of our current complaints. With this in mind and expectations in check, onward.

PageStream tries to please everyone by outputting to dot matrix, HP Laserjet, and most PostScript printers. This page was created using PageStream, and printed on a PostScript laser printer. There are a number of gee whiz features that make this program a layout bonanza. From visual effects to font management, it tries to create the best of all possible DTP worlds.

Where most layout programs have pages and a clipboard, PageStream uses a windowing system. Once you set a master (default) page, all pages in that window are the same size. You can have many windows up and running, and append them together.

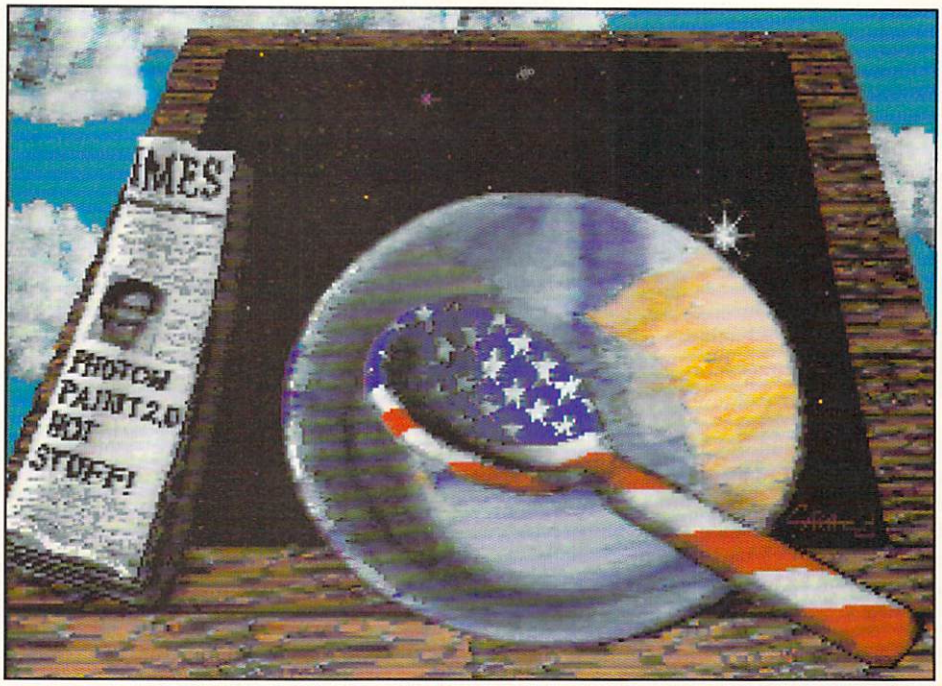
Columns for text can be linked, or routed from definable page settings. So words flow easily throughout the document (hence the name PageStream?). When used in conjunction with automatic page numbering and double sided documents (an option that mirrors the margins for odd and even pages), this program becomes a model of efficiency for large text files.

The program manages font handling internally - fonts are structured graphics. This means no manual downloading of fonts, and allows stretched, bent, and rotated text to be output smoothly. This is where this program shines! Type wherever you like, it automatically creates a box for you to manipulate. Ten resident fonts in twelve styles are included, and the attributes for sizing, spacing, kerning, wrap around, and justifying are all there. The Tag feature saves the attributes you have defined to a font, and you can save as many as 255 different tag files. This can be thought of as a sort of macro for fonts.

PageStream offers 4-color separations, but the quality is low. Line density is set permanently at 60, less than half of what we use. The palette requester is dismal. Where are the usual 16 steps of RGB, or the 1-100% of yellow, magenta, cyan, and black? Instead there are numbers from zero to 65,535. You'll be better off letting your printer do colors, screens, and graphics, or stick to black and white wherever you can.

PageStream's low rating is due to the plague of bugs we encountered with it. Bug-infested programs discourage users; they create bad press not just for the software, but for the machine and the industry. We do, however, recognize PageStream's unrealized potential. And, like a gangly adolescent, we hope to see it mature into a sophisticated adult role model. So as new versions of PageStream are released, we will update our rating to reflect its progress towards fulfilling its promises. - Megan Ward

Photon Paint™ 2.0



YOU NEVER KNEW YOUR AMIGA COULD BE THIS GOOD!

WITH THE MOST OUTSTANDING PAINT FEATURES, SOPHISTICATED OPERATIONS AND SPECIAL EFFECTS ONLY BEFORE AVAILABLE ON DEDICATED GRAPHIC WORKSTATIONS, PHOTON PAINT 2.0'S POWER IS LIMITED ONLY BY YOUR IMAGINATION!

Just look at some of Photon Paint 2.0's features: • Contour Mapping • Light Source Specification and Shadowing • More Sophisticated Brush Operations • Stretch Option • 4,096 Color Palette • Page Flipper • Magnification • Rub-through • Pantograph • Blending • Full Manipulation of Color Values • Colorization • Air Brush • Stencil • Fill Polygon • RGB and HSV • And Photon Paint is fully compatible with the Photon Video Series and most third party art and animation systems!

2.0 UPGRADE for information call:

microillusions™

This is what the critics said about Photon Paint 1.0 (wait until they try 2.0!):

"Photon Paint is an essential part of the ideal Amiga graphics studio." Roger Goode, Amiga World

"...the cutting edge of paint program technology and a step into the future for Amiga graphics." Louis Markoya, Amiga Transactor

"...this program is dynamite and is a must have for every graphics affecianado." Mark Smith, The Amiga Sentry

"Photon Paint is without a doubt the most complete painting program available for the Amiga..." Lewis Tilley, Your Amiga

Photon Paint is a trademark of Microillusions
Amiga and Commodore are trademarks of Commodore International, Inc.

17408 Chatsworth St., Granada Hills, CA 91344
Inside CA 818/360-3715 • Outside CA 800/522-2041
FAX 818/360-1464

New Products & Reviews

. . . continued

ROOT-WARE

Geneologists will be interested in **GENP**, a family history package from Australia. While we haven't seen the actual software, the specs look good. The program produces three basic types of charts: Pedigree, Family Group Sheet, and Descendant. Each individual's entry can also have a picture attached to it, and multiple databases can be created. It also has telecommunications capability, easy-to-use searching, 9 user-definable fields, and the unusual ability to change from English to other languages. A stripped-down version for 512K machines is also available. Cost is $150 AUS. For more INFO, contact *GENP*, 37 Charles St., Cheltenham, Victoria, 3192, Australia. (03) 584 2765.

BUDGETEER

Making a budget is always a pain, and sticking to it is even worse. To help in the process, *Prakticon* has released **Budgeteer**, a compiled BASIC spreadsheet-like package that provides you with a selection of budgetary categories. What-if calculations are supported, along with several graphing functions. $39.95. 27 Hutchings Ct. NE, Medicine Hat, AB T1C 1G3 Canada. 403-526-4765.

VIDEO VISIONS

CV Designs sent samples of their art and backdrop disks. There are seven volumes available, each consisting of two disks. Cost is $24.95 per volume. Subject matter covers everything from weddings to weather. 61 Clewley Rd., Medford, MA 02155. 617-396-8354.

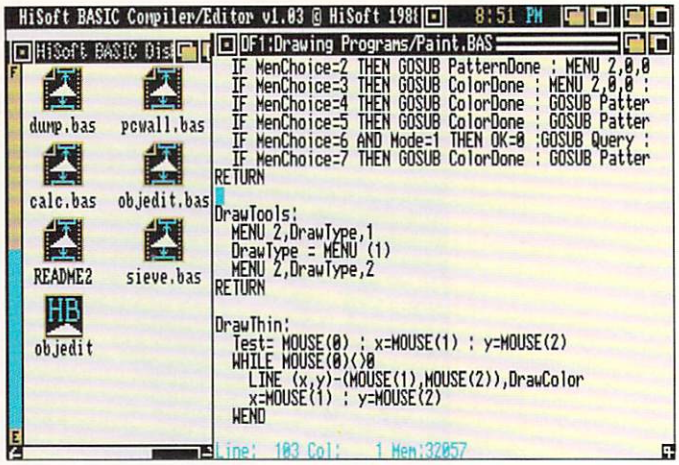
BACK TO BASICS

Compatibility is a main selling point of **HiSoft BASIC**. This editor/compiler claims compatibility with AmigaBASIC, Microsoft's MS/DOS QuickBASIC3, and Atari ST BASIC, thus making it useful for cross-development. The package, from Michtron, provides an editor, selective runtime routines, and a symbolic debugger, among other things. It will also allow compatible C or assembler code to be incorporated as functions or subroutines. Array sizes are limited only by memory, and string variables can be up to 16Mb. (Can you imagine using an entire novel as a variable name?) The compiled code is compatible with the 68010/20/30. Cost is $159.95. 576 S. Telegraph, Pontiac, MI 48053. 313-334-5700.

AMIGA HARDWARE

DATA GRABBER

The first of a group of data acquisition products is being marketed by *A.M.S.* The **SAM** (Subsystem Acquisition Module) provides two sampling rates, 5MS/s and 10MS/s, 8 bit resolution, and has a capacity of 8 to 64K for each of up to 8 channels. It comes with software that offers digital filtering, modulations, time and voltage cursoring, and hi-res display of waveforms (which can be panned). Cost is $239 for the startup kit, with additional channels priced at $159. 13552 Portsmouth Circle, Westminster, CA 92683. 714-893-0762.



The editing screen from HiSoft BASIC

INSIDE STUFF

Supra, makers of modems and other hardware, have released the first internal modem we've seen for the A2000. The **SupraModem 2400zi** is a half-length card that will fit any internal slot, so if you have a cage for your A500, it would be possible to install it. 2400, 1200, and 300 baud operation are all supported, and custom configurations, which are stored in nonvolatile memory, are accomplished in software, rather than by DIP switches. For $179.95, you get a speaker, Hayes compatibility, and support for Bell 103/212A and CCITT V.21/V.22/V.22bis protocols. It comes with a one-year warranty and is made in the USA. 1133 Commercial Way, Albany, OR 97321. 503-967-9075.

SAMPLER

Those of you on the lookout for a sound digitizer/sampler will want to check out **FutureSound 500**. The device connects to your A500 or A2000's parallel port via a ribbon cable. Left and right channel audio inputs are provided, along with a 3.5mm microphone jack, and there's a slider for volume control. It will handle sampling rates from 5042 to 42,118 samples per second in mono mode, and up to 19,889 in stereo. A software editing package is also included in the $119.95 price tag. [Note: owners of the earlier FutureSound digitizer for the A1000 can upgrade to the A500 for $75.] *Applied Visions*, One Kendall Square, Suite 2200, Cambridge, MA 02139. 617-494-5417.

NEW GENLOCK

VidTech, a new Miami-based company, is producing a new broadcast-quality genlock for all Amiga models. The **Scanlock VSL-1** supports composite, component (chroma/luma or Y/C) format. It's equipped with fade control and promises glitch-free switching between reference, computer, and keyed video. It comes in two models, one for NTSC ($995) and another for PAL ($1095). 2822 NW 79th Ave., Miami, FL 33122. 305-477-2228.

Gregory Conley can be contacted by writing: Gregory Conley, 17320 Laverne Avenue, Cleveland, Ohio 44135

PAINT PROGRAMS

Leonardo da Vinci would have loved the Amiga. He was a man who worked with both sides of his brain. His technical and scientific side would have appreciated the simple elegance of the mouse, the efficiency of storing so much information on such a little disk, and the grand mystery of a box with no moving parts whose sole purpose is to serve as an extension of the human mind. The left side of Leonardo's brain would have been overjoyed with the brilliant colors of the Amiga display, and with the ease with which those colors can be manipulated and blended to create works of art. And if Leonardo had owned an Amiga, you can bet he would have also owned every paint program available for it!

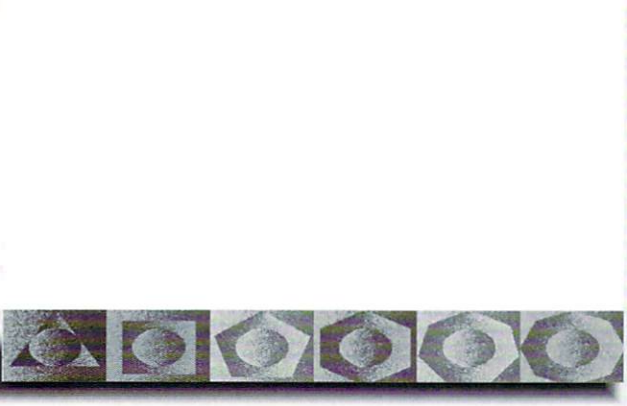
An Amiga paint program won't make you a Leonardo, but it can help you to unleash the artist in you. Art is an amalgamation of imagination and technique. Both of these talents can be developed through exercise. A paint program supplies you with a set of artistic "power tools" that can speed you along the path of developing your technical skills while sparking your imagination.

PAINT AND CANVAS

Think of the Amiga screen as an art studio, with a wide selection of canvases and paints sitting around. There are 4096 shades of "paint" available, each mixed from red, green, and blue light. Each color of light is available in sixteen different brightness levels from 0 (no color at all, or black) to 15 (full, intense color). For example, 15/red, 15/green, and 0/blue makes yellow.

Because of the way computers represent color in memory, you can choose a palette of 2, 4, 8, 16, 32, 64, or 4096 colors for your picture. Palettes of 32, 64, and 4096 colors take up so much of the Amiga's graphics memory that you are limited to using them only in lo-res mode. *Halfbrite* mode provides 64 colors, with 32 of them user-selectable. The second 32 are a repeat of the first, but half as bright. (It's an excellent mode for depicting shadows.) The Amiga's full 4096-color capability comes into play in *HAM* mode, which stands for *hold-and-modify*. It works with a palette of 16 definable colors, shading and blending them on-screen to create the full range of Amiga color.

The Amiga's video "canvases" come in several sizes. *Low resolution* gives you a screen that is 320 dots wide and 200 dots tall. *High-resolution* mode is twice as wide, but the same height. Hi-res mode is limited to 16 colors. You can add *interlace* to either of these screen resolutions to create a screen that is twice as high (400 pixels) if you don't



Japan is a 320x200 32-color picture by Illinois artist Scott Martindale.

mind some flicker. There are also *overscan* modes that are perfect for video work; overscan creates screens of up to 752x494 resolution that are borderless and bleed off the edges of the video monitor. Some paint programs allow you to work in a scrolling work area larger than the display screen. The size of these *superbitmap* images is determined by the software itself, or by the memory limitations of your Amiga.

Amiga images are stored to disk in a file format called *IFF* (Interchange File Format). Where artists on other machines must struggle with a variety of incompatible file formats, Amiga artists can freely save and load work from one paint program into another.

BRUSHES AND TOOLS

All Amiga paint programs provide the following features:

DRAWING TOOLS: Freehand draw, straight lines, and elementary geometric objects like circles and rectangles. There is almost always an option to draw any of these as a filled solid.

BRUSHES: There is generally a wide selection of pen styles and sizes. You'll also find the capability to pick up a portion of the screen and draw with it as a *brush*, which can be rotated and sized as needed, and saved and loaded from disk.

PAINTING: You mix colors using red, green, and blue slider gadgets, and can spread a range of colors.

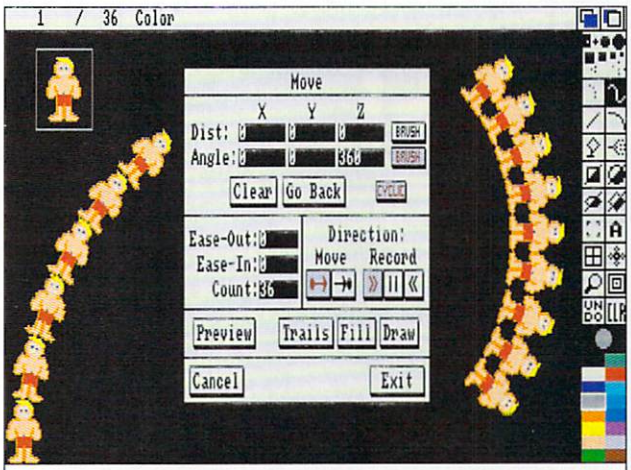
GADGETS: A selection of tools like a "zoom" magnifying mode, mirroring, a spare screen, an "undo" option, and the like are considered standard equipment these days. Most paint programs also include a handful of unique tools.

Where Amiga paint programs differ is in the "extras" they provide, as well as in the Amiga modes they work in. They generally fall into one of two categories: HAM and non-HAM. Because HAM mode operates so differently that the other Amiga display modes, they tend to be very different from non-HAM paint programs. First we'll look at non-HAM paint programs.

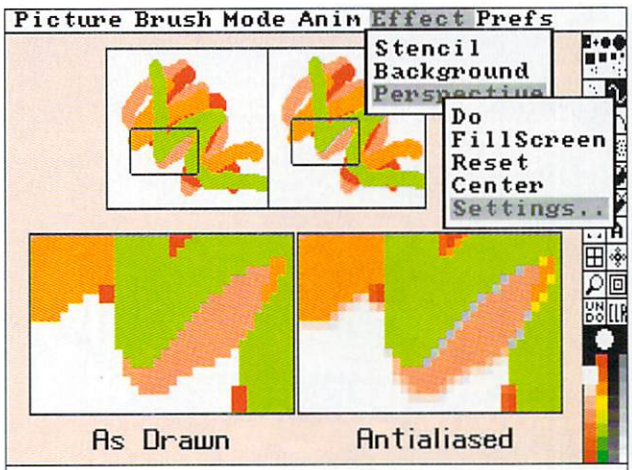
DELUXE PAINT III

With all of its new tools and gadgets, the first thing I noticed about *DPaint III* is its speed; it's perceptibly faster than previous versions at fills, perspective antialiasing, and other time-consuming tasks.

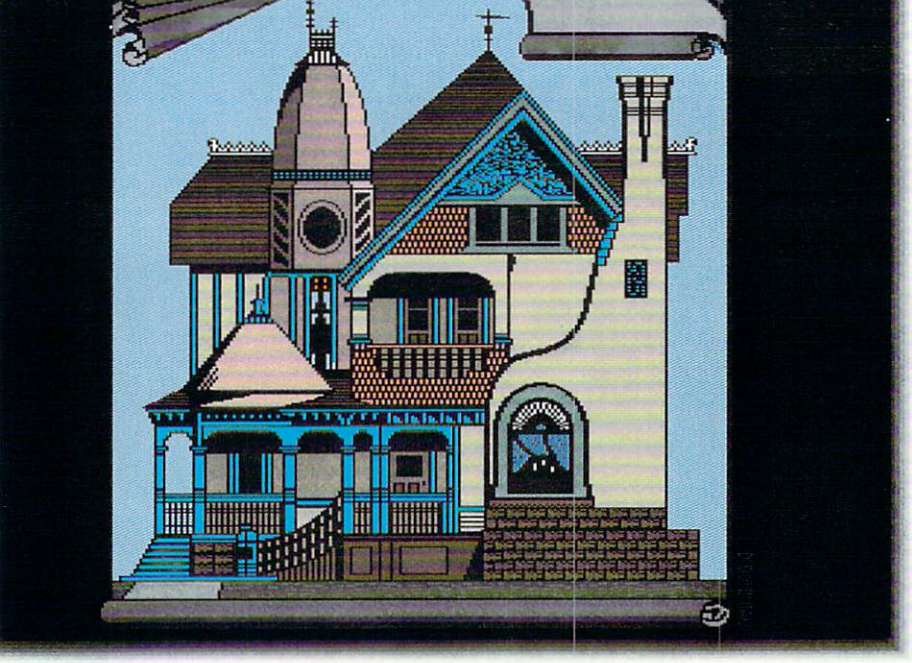
There are also many improvements to old features, like the improved font handling. Now there's a requester that lets you specify



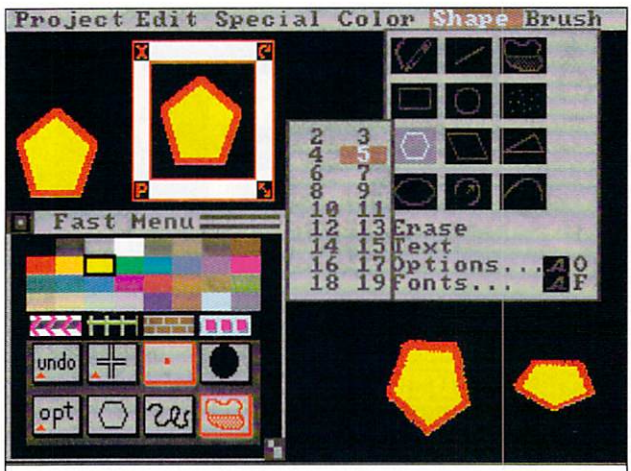
DPaint's new Anim menu gives you access to the Move requester shown here. The little beach guy was rotated using these settings.



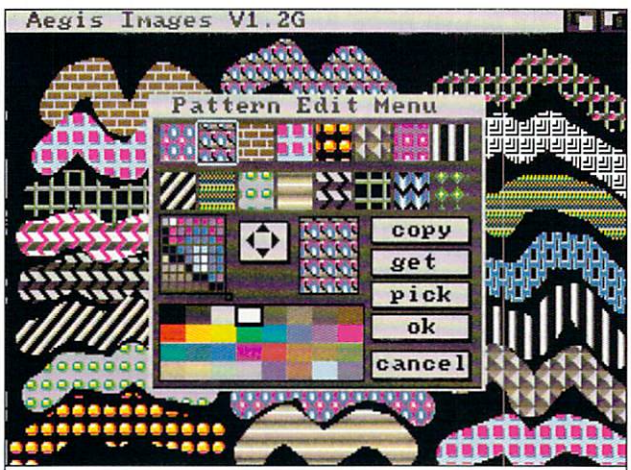
Antialiasing is hidden in Deluxe Paint's Perspective mode. These magnified views illustrate what antialiasing is all about.



House, one of three public domain illustrations from Light Systems shown here, is a 320x400 32-color picture.



Images' Fast Menu provides quick access to tools and colors. Its geometric shapes are nice, but using Frames can be cumbersome.



Aegis Images lets you edit and maintain a selection of 16 different fill patterns, all of them as easy to select and use as a palette color.

font pathnames and preview fonts before you use them. There's a new set of intelligent buttons on the file requester that knows what drives your system really has attached. When you load a picture, you are now asked if you want the screen resolution and palette adjusted to match it. If you change modes in mid-edit, you are also asked if you want your picture sized to fit the new format. There's even a new print requester with all the preferences options for width, height, aspect, placement, and such right at your fingertips.

DPaint III gives you stencils, grids, coordinates, symmetry, and just about anything else you can think of. Most of the features have extra bells and whistles. The perspective mode is very powerful, allowing you to create beautiful 3D effects. Antialiasing (for smoothing out color transitions) is hidden within the perspective mode, and is reason enough to learn how to use it properly. 64-color halfbrite support has been added to this latest version, and there's a new halfbrite brush that's great for creating shadow effects. There's even a new "live" overscan mode.

Lots of new little additions make your life easier, like the indispensable filled freehand draw mode. There's a new edge option that adds outlines to or strips them from a brush. And speaking of brushes, you can now place your brush handle anywhere you want to - great for getting at those hard-to-reach places. But my favorite new feature is saving pictures without all those annoying ".info" icon files!

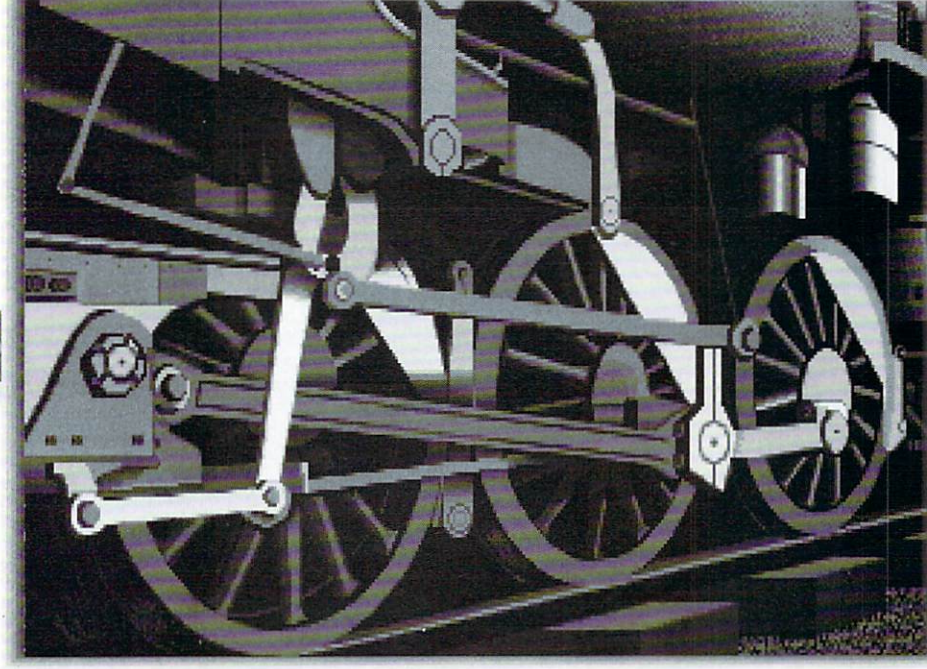
And then there's animation. The animation tools are marvelous for moving and twisting brushes in 3D space. You can even pick up an animated brush and draw with it! This not only lets you make some tremendous animations, but gives you a nice set of new tools for special effects in still paintings as well.

Not even *DPaint III* is perfect, of course. You can't keep multiple patterns or brushes on hand, and we're not fond of the way the new font handling reassigns the fonts: directory. But our complaints are few, and *DPaint III*'s strengths are legion. It's not just a paint program - it's a marvelous creative tool. If you can buy just one piece of software for your Amiga, it should be *Deluxe Paint III*.

AEGIS IMAGES

Two versions of *Aegis Images* come in the box, one for lo-res and one for hi-res mode. Interlace is not an option. The lo-res version works in 32 colors, the hi-res in 16.

Where most of the paint programs copy *DPaint*'s way of doing things, *Aegis Images* does many things differently. For example,



Train, also from Light Systems, is lo-res 320x200 black and white.

there's a complete menu of brush shapes, and even a brush shape editor. You can also pick up a brush from the screen and paint with it, though *Images* calls those *frames*. To prove their point, they surround the object with a bright white frame containing rotation and sizing gadgets; it tends to get in the way. *Images* maintains a set of sixteen patterns for pattern fills, and includes an editor to create them, or they can be picked up from the screen. The patterns available appear right on the palette menu along with the available paint colors. All your most recent brushes, patterns, and drawing tools remain handy in the fast menu window.

With *Images*' toolbox of geometric shapes, you can draw all the usual shapes, plus symmetrical objects of 2 to 19 sides, circular arcs of greater than 180 degrees, and parallelograms. *Aegis Images* provides a surprising array of sophisticated tools and effects like antialiasing, smear, and glow (like *DPaint*'s Shade) color effects; stencils (which they simply call "under"); a pantograph tool for copying portions of a painting to another area; and vertical, horizontal, and diagonal mirror effects.

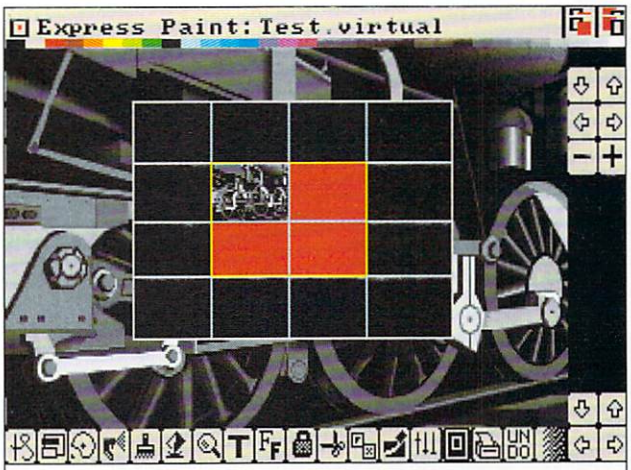
There are also some aggravations. For example, there's no way to undo any painting you do with frames. When you do want to erase, you pick that option from a menu.

Because it doesn't support all resolutions, *Aegis Images* shouldn't be your only paint program, but for the price it's worth keeping a copy in your artist's toolbox for the things it does well.

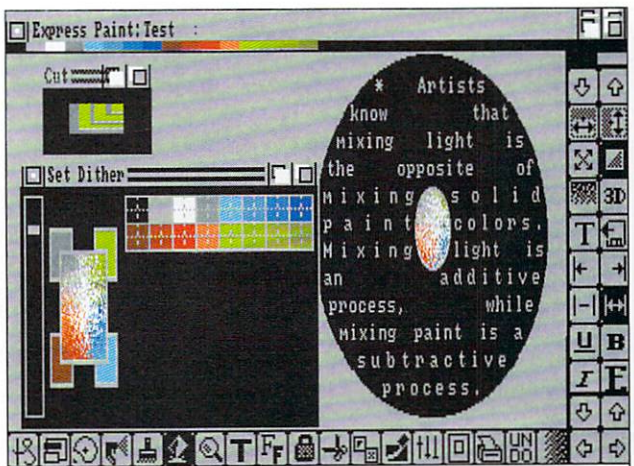
EXPRESS PAINT

Express Paint version 3.0 is a powerful paint program that is cursed with many annoyances. It can fill irregular shapes with text, justifying as it does; but it usually spaces out the words so badly as to make the effect unpleasing. You are given a nearly infinite number of "undos", but to erase a minor mistake you have to pick the background color from the palette and paint it out. The circle tool includes an option to create nifty Bezier curves; but you can't draw a simple filled circle. There's a nifty little pop-up magnifier; but when used with grabbed brushes it gives you a closeup of your brush instead of the screen.

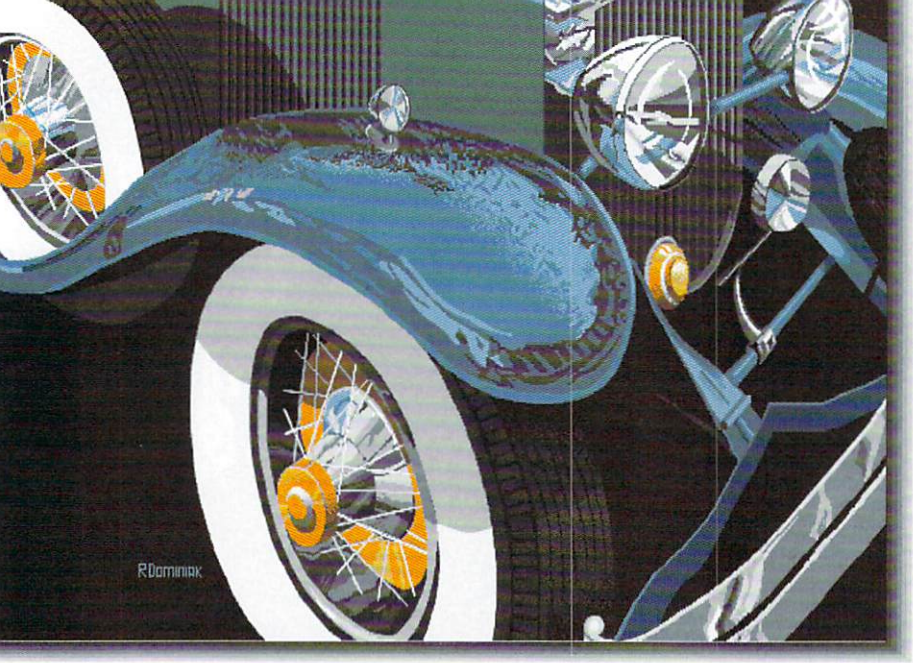
But *Express Paint*'s main difficulty is simply its incredible array of tool icons. The main tool menu stretches across the bottom of the screen. Clicking on any of the tool icons pops up another menu down the right side. Many of the icons are obscure and require a trip back to the quick reference card or even the two manuals for clarification. I've been using *Express Paint* off and on for weeks



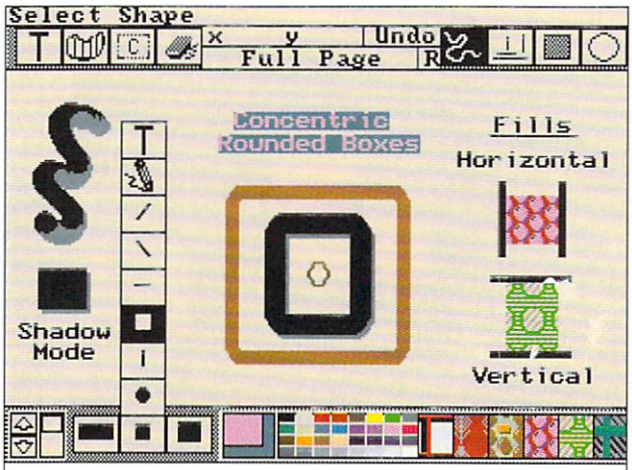
Express Paint's microview of a 320x200 editing screen, part of a 640x400 edit window (red area) from a 1280x800 virtual page (blue grid).



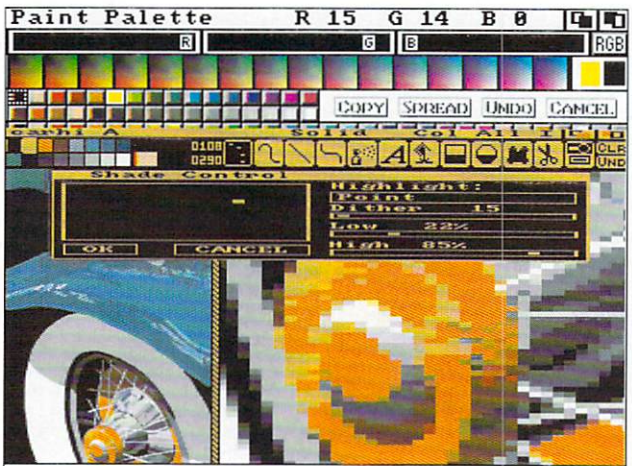
Express Paint's text flow is nice in theory, but often looks "spaced out". Its four-way dithering is unique.



CarHi, our third PD picture from Light Systems, is in 16 colors on a 640x400 hi-res interlace screen.



Graphics Studio has some unique features, like shadowing, curved-corner boxes, fill-to-edge, and pop-up icons.



Deluxe PhotoLab Paint is the only paint program that handles all Amiga graphics modes.

and I'm still not sure where many of the tools are without looking them up. And many operations are spread all over the place. For example, to pick up, size, and stamp down a brush (or "cut", as this program calls them) requires a trip to three separate menus.

Does *Express Paint* have some strengths? Yes. It supports all of the Amiga's resolutions and modes but HAM. It doesn't limit you to working with a single brush, but maintains a vast number of them simultaneously in memory. And the ability to undo a virtually unlimited sequence of steps is invaluable for testing ideas without fear. You can even mark and return to steps in the process.

Express Paint's handling of superbitmaps is among the best we've seen, with excellent user control over screen size, edit window size, and size of the working "virtual page" up to the limits of memory. Through virtual pages, *Express Paint* can make use of C Ltd's *LazerXpress* scanner and laser printer for direct editing of laser printed pages at up to 300 dpi. And it directly supports both PostScript and color PostScript laser printers.

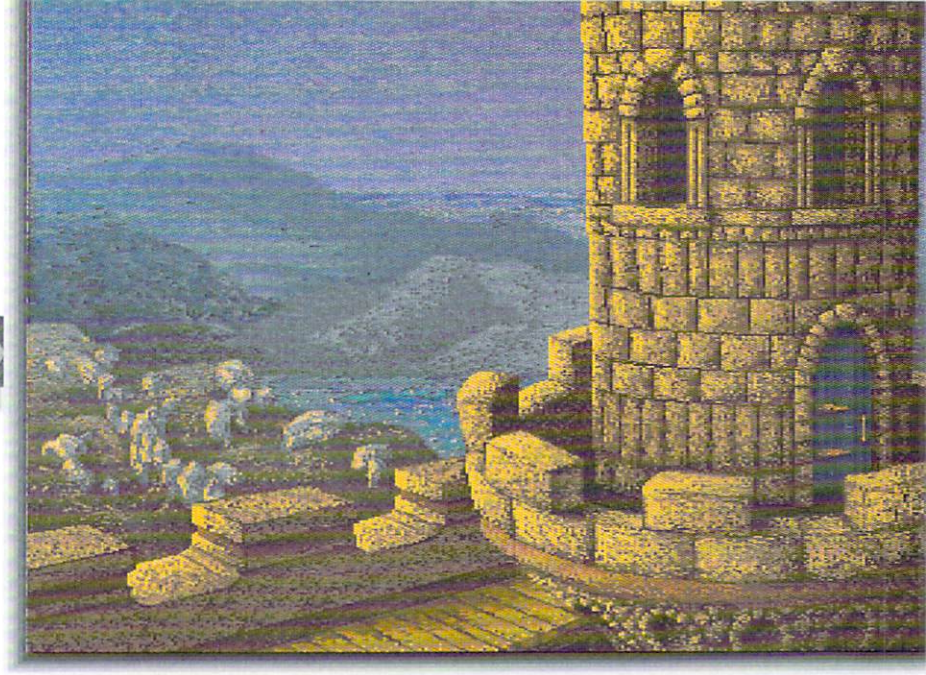
Express Paint is awkward to use and hard to learn, and I feel we can recommend it only as a supplementary program. At a cost of $140, I'm afraid that means that most Amiga users won't get a chance to play with its good features.

GRAPHICS STUDIO

Accolade's *Graphics Studio* presents the Amiga artist with an unusual user interface - it's a port from the Apple IIGS (*Graphics Studio = GS*). Pull-down menus control functions like mirrors and pattern editing; more often-used selections "pop-up" from icons. Many familiar tools are cloaked in unfamiliar guises; fortunately, the screen's title bar displays what each icon does in plain English as you move the mouse pointer over them.

Like *Aegis Images*, *GS* works only in 32-color lo-res and 16-color hi-res modes. All the basic tools are here, but the geometric shapes are a little rough, especially in smaller sizes. Some are unique to *Graphics Studio*, like rounded-corner rectangles and concentric circles. There are some extras, too, such as color cycling, selectable mirror modes, editable patterns, and even adjustable dropshadows. Pattern fills include horizontal and vertical options that fill only in one direction - very useful for painting in open-ended areas.

While I wouldn't choose *Graphics Studio* as my primary paint program, it does do some things well. If you've got an extra fifty bucks and you're really into Amiga art, check it out.



The Tower is a 320x400 HAM image created by California artist Brad Schenck. He also did North Light, the title page illustration.

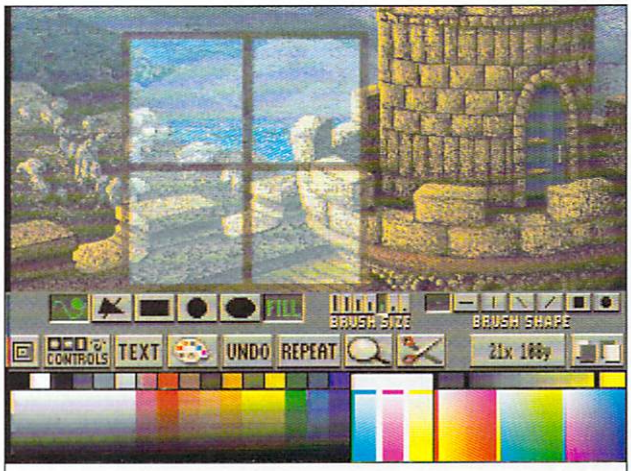
DELUXE PHOTOLAB PAINT

Deluxe Photolab is a collection of three paint utilities. *Posters* lets you dump out poster-sized graphics, with color smoothing that makes them look great. *Colors* converts pictures from one screen size and color mode to another, and lets you play with color palettes. I think it's slow and inefficient; for that kind of work I'd suggest *Butcher* or *PixMate* instead.

PhotoLab Paint is a full-featured paint program whose major strength is its unique ability to work in all the Amiga's graphics modes from monochrome to HAM. It gives you a nice selection of brushes, a Bezier curve tool, gradient and brush fills, filled freehand draw, and a stencil mode that allows you to lock out drawing on the background or foreground colors. The color palette is particularly convenient; you can mix RGB colors as usual, or pick them from a HAM-mode palette of all 4096. *PhotoLab Paint* lets you set the amount of dithering in a gradient fill, and there's a user-adjustable shade mode for producing highlights.

My only real complaint with *Paint* is its abysmal file requester. It's a scrollable five-line display that jams file, directory, and volume names all into one list, and it's a constant annoyance scrolling all over the place trying to find the file you need.

This is a good basic paint program with a few nice extras. It's not a speed demon, but it's not snail-paced, either. You won't find a bazillion special effects here, but the ones you do have are very nice and can be supplemented (if you're patient) by some of the effects in the *PhotoLab Colors* program. And if you have a nice color (or even black and white) printer, you'll certainly have a lot of fun with the *Posters* program. If you've been seeking one program that will let you work with both HAM and non-HAM pictures, this is your only choice; fortunately, it's not a bad choice at all.

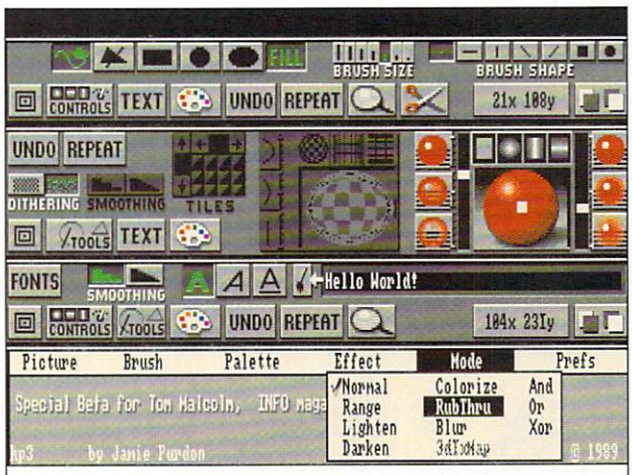


Applying color effects with DigiPaint III.

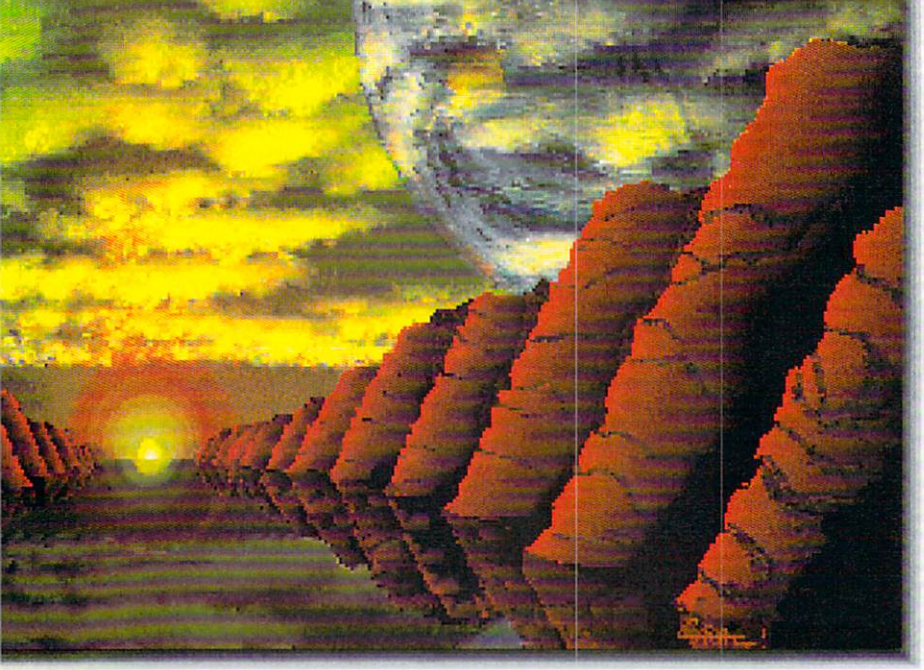
DIGIPAINT III

DigiPaint was the first HAM mode paint program, developed and released to allow users to edit pictures created with NewTek's *DigiView* video digitizer. Coming soon is *DigiPaint 3.0*. Lest you think you missed a version somewhere along the line, there is no *DigiPaint 2.0*. This *was* going to be called 2.0, but according to NewTek staffers, "We added too much stuff to raise it just one version number." We suspect a PR move to make it sound one generation ahead of its major competitor, *Photon Paint 2.0*.

In any event, the beta test version we have on hand (sans



DigiPaint III's menus have been totally revamped. This composite shows the Tools, Controls, Text menus, and pull-down menu.



Alien Sky, a sample HAM picture included on the Photon Paint II art disk.

One of Photon Paint 2.0's most fun features is its ability to map brushes on 3D objects, like the ellipse shown here.

Just a few of Photon Paint's special effects.

documentation) has some impressive features. The menus have been completely revamped - they look great and work logically. As you can see from the sample screens on page 31, there are new ways of setting dithering, selecting colors, etc. You can even paint with a range of colors. You have your choice of eight different paint modes, including normal solid color, colorizing (tinting), and lightening and darkening. The most unusual is rub-thru, which allows you to merge parts of one picture behind another.

We're especially fond of the new automatic screen scrolling, which scrolls the picture into view as you move the mouse. And still unique to *DigiPaint* is its 'Repeat' feature, which remembers the last area you worked on so you can undo boo-boos and redo things correctly without redrawing. You can also use it to perform a series of operations on the same space. Very nice.

PHOTON PAINT 2.0

We have been using beta copies of *Photon Paint 2.0* in the offices here for a couple of months, and frankly we still can't believe all the features MicroIllusions has squeezed into it. This simple and elegant program is to HAM mode what *Deluxe Paint III* is to the Amiga's other graphics modes.

Besides the expected abilities to colorize and tint pictures, blend colors, and merge graphics almost seamlessly, *Photon Paint 2.0* has added a wide selection of interesting and useful features, starting with page-flip animation. You can create multiple animation screens up to the limits of memory, play them back, and save the works as an ANIM file. The brush tools have been enhanced with the ability to wrap brushes around 3D objects. There's also a marvelous new contour mapping mode, which lets you assign 3D 'heights' to different colors, then map the brush in 3D perspective.

The new stencil feature lets you protect parts of your drawing by clipping around it, just like making a regular paper stencil. There's an automatic shadow effect that's quite nice, and there are now two separate menus for defining different drawing modes for foreground and background colors. From what we've seen of *Photon Paint II*, we expect it to become a favorite of HAM artists everywhere.

An Amiga, a mouse, and a paint program won't turn everyone into an artist, but don't be afraid to sit down with any of these programs, open the manual, and experiment. You might just be amazed at what you can create.

AMIGA PAINT PROGRAM COMPARISON CHART

POWER - Elementary, Intermediate, Advanced
LO-RES - 320 wide / # colors: 32 only / HB 2-32 colors + halfbrite
HI-RES 640 wide / # colors: 16 only / All (2-16) colors
HAM - 4096 colors
INTERLACE - 400 pixels high
OVERSCAN - video mode
SUPERBITMAP - pictures > display
STENCIL - by Area or Color
3D - 3D perspective brushes
ANTIALIAS - color smoothing
DITHER - color gradient fill
BLEND - color tint, blend, & smooth
SHADOW - automatic shadowing
CYCLE - # color cycle ranges
ANIMATION - pageflip w/ ANIM load & save
NOTES - extra features & omissions

❖ Basic features are assumed (see article). Due to space limitations, not all features have been listed for all products. ❖

PRODUCT	DELUXE PAINT III	AEGIS IMAGES	GRAPHICS STUDIO	EXPRESS PAINT	PHOTOLAB PAINT	DIGIPAINT III	PHOTON PAINT 2.0
COMPANY	Electronic Arts	Aegis	Accolade	Brown/Wagh	Electronic Arts	NewTek	MicroIllusions
RATING	★★★★★	★★★✦	★★★	★★★	★★★★	PREVIEW	PREVIEW
PRICE	$149.00	$39.95	$49.95	$139.95	$149.00	$99.95	$149.95
POWER	A	E	E	A	I	I	A
LO-RES	HB	32	32	HB	HB		
HI-RES	ALL	16	16	ALL	ALL		
HAM					✘	✘	✘
INTERLACE	✘			✘	✘	✘	✘
OVERSCAN	✘			✘	✘	✘	✘
SUPERBITMAP	✘			✘	✘	✘	✘
STENCIL	C	C		A	C		A
3D	✘			✘		✘	✘
ANTIALIAS	✘	✘		✘	✘	✘	✘
DITHER	✘	✘		✘	✘	✘	✘
BLEND	✘	✘		✘	✘	✘	✘
SHADOW	✘		✘			✘	✘
CYCLE	6	4	32	6			1
ANIMATION	✘						✘
NOTES	1-3	4-6	5,7,8	9-15	11,16-19	17,20-22	4,21,23,24

NOTES

1) Includes two KARA fonts, clipart, and ANIM player
2) 3D animation tools
3) Automatically matches & changes screen formats.
4) Pantograph
5) Pattern fill with editor.
6) Symmetrical geometric objects of 2 to 19 sides
7) Key disk copy protection
8) Includes slideshow program
9) Mirror brushes only
10) Multiple brushes
11) Bezier curves
12) Text fill
13) Unlimited "undos"
14) PostScript and LaserXpress laser printer support
15) Virtual pages
16) Includes Colors & Posters programs
17) Repeat function
18) 'Load at' location
19) Multiple simultaneous screens in different resolutions
20) Automatic screen scrolling
21) Rub-thru
22) Swap brush
23) Pixelize
24) Wrap brush on object

COMPANY LIST

AMIGA

Electronic Arts
1820 Gateway Dr.
San Mateo CA 94404
415-571-7171

Aegis Development
2115 Pico Blvd.
Santa Monica CA 90405
213-392-9972

Accolade
550 S. Winchester Blvd.
San Jose CA 95128
408-985-1700

NewTek
115 West Crane, Ste. B3
Topeka KS 66603
800-843-8934

MicroIllusions
PO Box 3475
Granada Hills CA 91344
818-360-3715

Brown-Wagh
16795 Lark Ave. #210
Los Gatos, CA 95030
800-451-0900

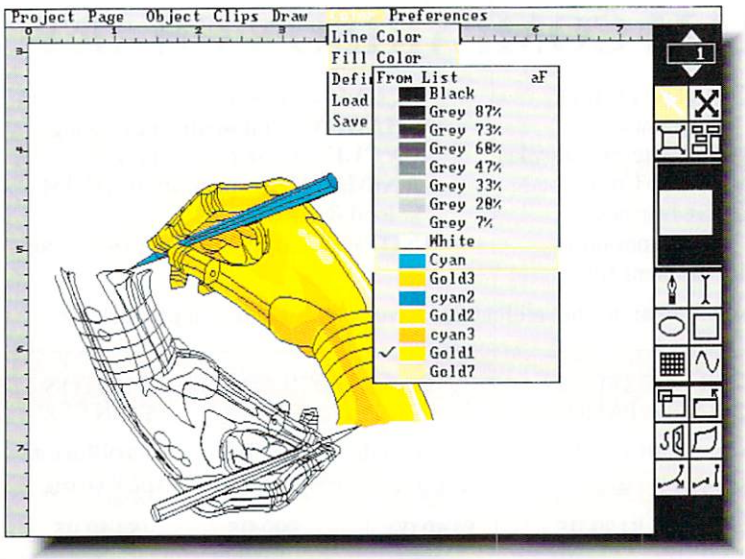
8-BIT

Crystal Rose
109 S. Los Robles
Pasadena CA 91101
818-795-6664

Scorpion / CRL
19 Harbor Drive
Hopatcong NJ 07849
201-663-0202

Inkwell Systems
1050 Suite R Pioneer Way
El Cajon, CA 92020
619-440-7666

Free Spirit Software
PO Box 128
Kutztown PA 19530
215-683-5609



While these robot hands prove that good results can be achieved with Pro Draw, it takes more talent, patience, and time than most humans possess.

PROFESSIONAL DRAW

$199.95

Gold Disk

PO Box 789, Streetsville
Mississauga Ont Canada L5M 2C2
416-828-0913

We sometimes look at a new product and wonder why it has even been put on the market. This is one of those times. *Professional Draw* (better known among users as *Pro Draw*) adds very little to what is already available in Gold Disk's flagship publishing package, *Professional Page* (better known by users as *Pro Page*), and does it so slowly as to be virtually unusable by professionals (or anyone else for that matter).

Pro Draw is a *structured drawing program*. Where a paint program manipulates the individual pixels making up a bitmap image, a structured drawing program defines objects in terms of curves, lines, and areas. Unlike bitmaps, the finished structured object can be scaled, rotated, and modified without losing detail. Well established with the Macintosh crowd (where programs like *Adobe Illustrator* and Aldus' *FreeHand* set the standard), structured drawing programs are ideal for creating slick line art, logos, illustrations, and other elements for hi-end desktop publishing work.

If you are familiar with *Pro Page*, your learning curve for *Pro Draw* will be short. The user interface is very similar, as you can see by the screen shown here. The page scroll gadget, page selector, and many of the drawing tools are identical to those in *Pro Page*. The workpage is also the same, as are the layout and feel of many of the requesters. You are given line, bezier curve, ellipse, and box tools, plus tools for distorting, sizing, cropping, and otherwise manipulating the pieces that make up a structured drawing.

Judged by the established standards in the Macintosh world, *Pro Draw* is strictly an entry level structured drawing program. It lacks graduated fills, auto-tracing, text fit to curve, and most of the other features of the top of the line Mac programs. In fact, *Pro Draw* offers so little over and above what is already available in *Pro Page*, one has to wonder why anyone would need it at all. And, though you can save graphics for importation into *Pro Page*, you'll need the new version 1.2 of *Pro Page*, now in beta testing, to do so.

Creating text effects is one of the main reasons for wanting to use a program like *Pro Draw*, because *Pro Page* itself won't rotate, stretch, or warp text. Unfortunately, *Pro Draw* is supplied with only two fonts. Without a wide selection of fonts, the potential appeal of *Pro Draw* is even further limited.* Since text is treated as just another structured object, manipulating text is identical to working with any of the other graphic elements in *Pro Draw*. If you think this program will allow you to automatically create the classy text effects you see coming out of the Macintosh structured drawing programs, you'll be sorely disappointed. Some of the same effects can be achieved, but only after long and tedious manual manipulation.

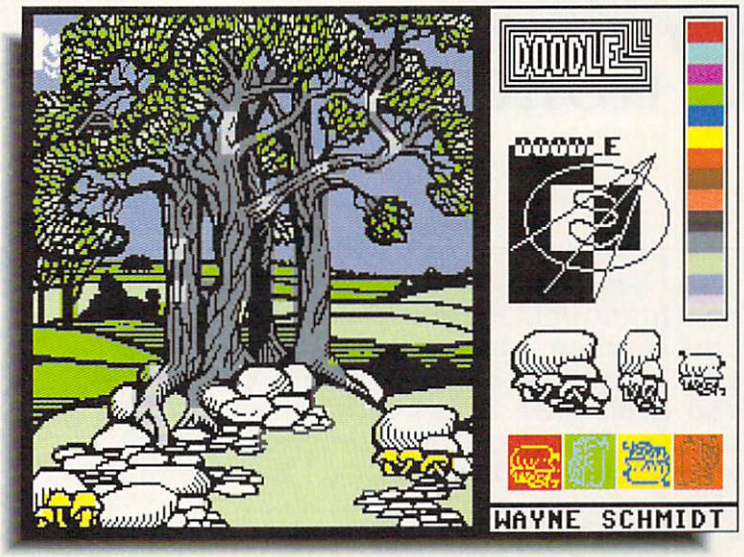
Turning graphics creations (once drawn) into clip art libraries is a relatively easy task with *Pro Draw*. Considering how long it takes to create art from scratch, Gold Disk could have improved the utility of *Pro Draw* by including a couple of disks of usable clip art along with it. Unfortunately, the Gold Disk logo, and the *Hands* (shown above) are the only art clips included (a separate clip art disk is advertised for an *additional* $59.95).

At $200 *Pro Draw* doesn't give you enough for your money to either earn the name Professional, or justify being marketed as a stand-alone program in Gold Disk's generally excellent lineup. In my opinion, Gold Disk would have done much better to either integrate *Pro Draw*'s few new features directly into an update of *Pro Page*, or go the whole nine yards and create a full-featured stand-alone *FreeHand* or *Illustrator* calibre product that professional desktop publishers could use, and that the Amiga community in general could be proud of.

As it now stands, *Pro Draw* is a big letdown to Amiga users, and should be a major embarrassment to Gold Disk.

- Benn Dunnington

* Syndesis has a new *Pro Draw* support module available for *Interchange* and *Interfont*, which makes a vast library of objects and fonts accessible to *Pro Draw* users.



Doodle, one of our favorite C64 paint programs, from Crystal Rose.

8-BIT PAINT PROGRAMS

C64

The outlook is not particularly bright for C64 paint programs. Rainbird's *Advanced OCP Art Studio*, arguably the best of the C64 multicolor paint programs, is no longer on the market. *Artist 64*, an impressive British paint program, is "under consideration" by a major U.S. software publisher, and has been for quite some time. They are not sure they want to invest in another C64 creativity title "at this stage in its history". *Koala Painter, Micro Illustrator, Picasso's Revenge, Sorcerer's Apprentice*, and all of the rest are long gone. Scorpion is the only company to address this gap in the C64 software market. They have just released *Masterpiece*, a full-featured multicolor paint program that looks hot. It features powerful effects like 3D brush manipulation and texture mapping in a WIMP (Windows, Icons, Mouse, Pointer) environment, We just received a copy at presstime, and will fill you in on the details in the next issue.

The situation in the hi-res market is little better. If you want to get into the *GEOS* operating system, *GeoPaint* is an excellent drawing program, with a page-size virtual screen. But in C64 native mode, ironically, two of the earliest entrants in the C64 market are still the best: *Flexidraw 5.0* and *Doodle*.

Doodle is unchanged from 1983, but it's still a kick. It's been three years since I last used it, and when I booted it up I was amazed at how fast it is. You draw with a trackball; you can use a joystick, but then you're limited to only eight directions of motion. There's a full set of hi-res drawing tools, including freehand draw, box, ellipse, and text. You can pick up and stamp sprite-sized objects, and draw in nine speeds with nine brush sizes. There's a whole kit of special effects, too, including some I wish *DPaint 3.0* had on the Amiga! You can mirror, invert colors, clear, or erase-to-edge anything within a sizable box gadget, up to the full size of the screen. My favorite effect is the "op art" mode, which performs an automatic erase-to-edge and invert in a cyclic mode; it creates some truly dazzling special effects. The sizable box and ellipse are extremely well-done, with a sliding crosshairs pointer that is intuitive, quick, and unique to *Doodle*. You can color your pictures in the C64's blocky 8x8 color grid, and again the tool is great, showing background and foreground colors in a "target" display. The pop-up help screens are all the documentation you really need with this program, but there's a clever tutorial manual, too. This is still my personal favorite of all the C64 hi-res drawing programs, and I'm glad that it's still available.

Flexidraw is at version 5.0 and holding. This lightpen-based hi-res drawing program has sophisticated features like rubberband lines, pattern fills, and excellent custom font support. Drawing with a lightpen takes some getting used to, but this latest version also supports the 1351 mouse, which is much less fatiguing. We created many of the graphics for INFO back in the "good old days" with *Flexidraw* because of its fine control and excellent effects. It is also capable of working on graphics twice as large as the C64 screen. This was and is an excellent program.

C128

Though C128 software is scarce, Free Spirit Software is dedicated to filling the gap as well as a single company can. In the case of C128 80-column paint programs, the market is all theirs.

Sketchpad 128 is Free Spirit's 80-column monochrome paint program. Written in BASIC 8.0, this package requires Commodore's 1351 mouse. If you've got 64K of video RAM or a 1581 drive, it'll take advantage of those, too. The list of drawing features is impressive, with all the basic art tools plus shaded fills, airbrush, grid, and much more. Our favorites are the 3D solids (donuts, spools, spheres, etc.). There's excellent font support, nice clip art functions, and lots more. The whole works is menu-driven and fun to use. Speed is sometimes a factor, but there's a lot going on here, and the results are well worth it.

If you want color, you'll need to equip your C128 with expanded video RAM (the C128D comes with it; owners of flat C128s will have to add it themselves). *Spectrum 128* squeezes a lot out of that extra memory, starting where *Sketchpad 128* leaves off and adding full 16-color support. Through dithering techniques, a palette of 128 colors is available to you.

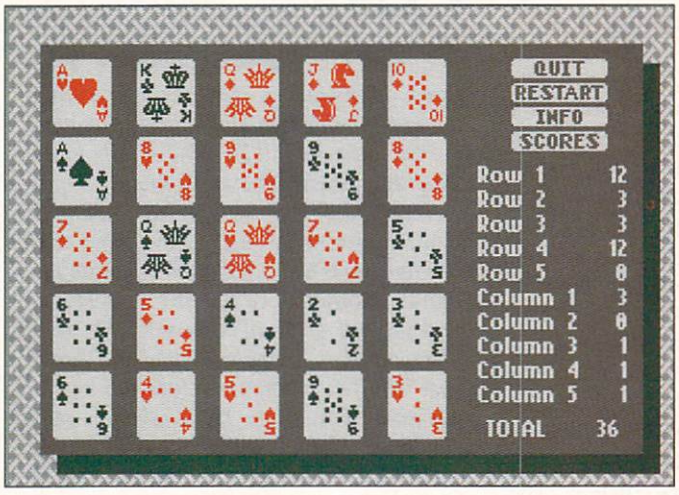
- Mark R. Brown

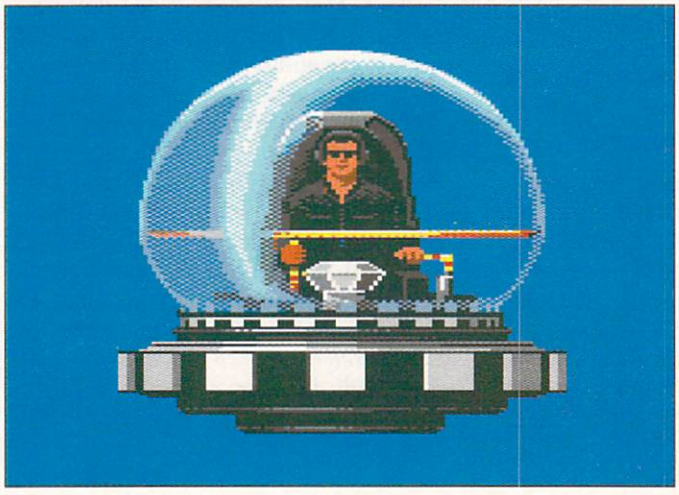
Public Domain

The programs listed here are available on QuantumLink and American PeopleLink, and on other networks, local BBSs, and on public domain disk collections. You don't have to belong to these online services to obtain these programs. But if you're interested, you can get information about signing up for these network services by calling:

QUANTUMLINK:
703-883-0788

AMERICAN PEOPLELINK:
312-670-2666





QUANTUMLINK GEMS

OMEGA-Q

Over the years, you may have downloaded several versions of arc, lynx, library, and archive utilities. You can put those all away after you download Omega-Q. Omega-Q boasts the ability to dissolve all the above types of archived files, as well as sda and SID files. It can also perform a variety of system utilities such as formatting, renaming, and scratching files, and it includes a sequential text file reader and printer. It's even 1581 compatible.

[css/ software library/ new: downloader's starter kit, from: QLink, by: Robert Stoerrle]

SOLO

Solo is a unique card game that runs under GEOS. The game is poker solitaire and the idea is to deal yourself 25 cards and lay them out on the table in a five by five grid. When complete you actually have 10 hands (5 across and 5 down). The goal of the game is to make the best total score. This is a nicely done game with a great GEOS point and click interface.

[css/ geos arena/ geos software library/ user applications/ part 1, from: Smart Axe, by: Ken D. Turner]

LOGO 128 V4.0

Here's a chance for you and your kids to explore the LOGO language. LOGO has always been a big hit with kids because they can control the computer's graphics turtle with just a few simple commands. You can actually "teach" this version of LOGO up to 10 different routines which can be called up at will. For example, you can teach the turtle a routine to draw a circle and then call up the routine to paint a screen full of circles. While LOGO 128 is not full-featured, it does have more than 50 commands.

[css/ software library/ c-128 library/ c-128 graphics/ 40 column/ 40 column tools, from: Jim Derry, by: Jim Derry]

TIME CRYSTAL.SDA

Once in a while a graphic animation comes along which is just super. I consider Time Crystal an unfinished masterpiece. This great demo by Jim Sachs uses all the memory in the entire computer except for two bytes! Here's the story: you have entered a time machine and are now traveling backward to the dinasaur period. Try landing the spacecraft and watch the action around you. You must see this program to believe it.

[css/ software library/ all time top downloads/ graphics, from: Fleximan, by: Jim Sachs]

- Saul Cohen

8 BIT PEOPLELINK

ARTWORK

The Commodore 64 is capable of some of the finest graphics that you will ever see. Three of the most recent uploads are JJLAST SPELL (file #9299), GGMEMORY (#9468), and GGGERMAN CASTLE (9419). They are best viewed using either CSLIDE 1.9 (file #5350) on the 64, or CSLIDE128.SDA (file #8044) on the 128 in 40 columns. Once you see what your machine is capable of doing, you might even want to try creating your own.

SIDTITLE 6.2.SDA

SIDTITLE 6.2.SDA (file #9621, section 6) by "Weird" Al Walker is one of the best additions a SID composer can make to his software library. It will permit you to change the author's screen on any SID program by adding graphics and colors. Most important is that it allows a fifth line of graphics or information that the SID editor will not permit.

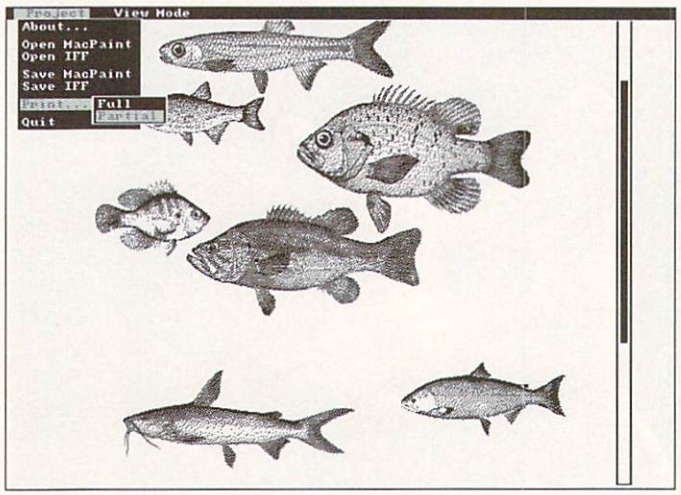
DIGIPLAYER2.SDA

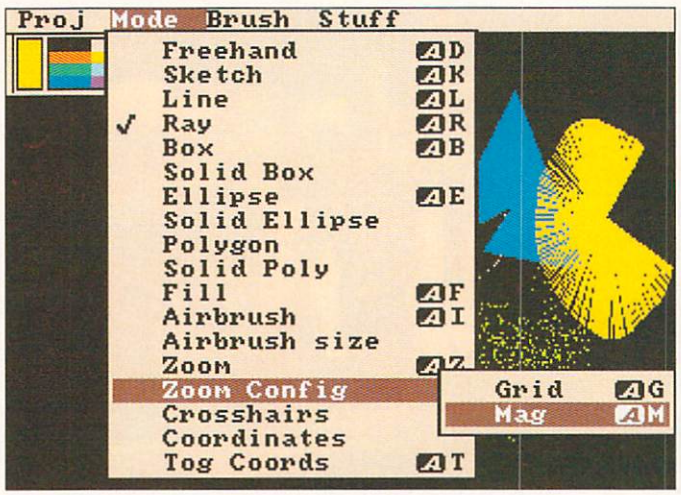
If you've ever heard music on your 64/128, you know that the Commodore SID chip can perform miracles. But did you know that your machine can talk to you? Once you've downloaded DIGIPLAYER2.SDA (file #9578 in section 14), you'll be ready to hear voices and sounds that you never thought your computer was capable of playing. Marc Dickenson has written an incredible program that will convert Amiga and Apple sound files to the C64 for playback. If, for example, you load in GMV.RAW (file #9608), which is short for "Good Morning, Vietnam", you would assume that Robin Williams is in the same room with you. While in section 14, you might download voices of Clint Eastwood, Peewee Herman, Humphrey Bogart, and Bill Murray.

MORE SIDSTUFF

UtahBlaine has uploaded several SID songs in the past few weeks. One of his best is called WHY WE SMILE (look for it in section 6). If honkytonk piano is one of your favorite sounds, then download this file immediately! If you're into classical, easy listening, or country music, then take a look through the SID library. There are sure to be many choices for anyone's taste in music. PLink's SID library has over 1600 files for your downloading pleasure. Since many stereo SIDs are being uploaded, I suggest you download STRPLAYER10.SDA (file #8953 in section 6) to listen to your SIDs. It works just fine with regular or stereo songs, as well as with the enhanced SID files.

- Robert Umfer [CBM*BOB]





PAINT UTILITIES

To get a serious Amiga paint program you're going to have to whip out your wallet. However, the PD world is graced with a bunch of handy and imaginative IFF tools for post- or pre-processing, converting, manipulating, and viewing your picture files. Here are some of the best:

HAMGIF.ARC [#14,592]

GIF is the *Graphics Interchange Format* developed by Compuserve so owners of many different brands and models of computers can view each others' artwork. HAMGIF, the latest Amiga version, even works with 256 color IBM VGA GIF pictures, like the digitized painting on the left.

There are also many other public domain Amiga utilities which enable you to view and convert C64 *Koala, Doodle*, and *GEOS*, Atari ST *Degas* and *Neochrome*, Apple][, and *MacPaint* files. One great example is Scott Evernden's *MacView*, shown here with some Mac clip art fish. Unfortunately there is not yet one single Amiga program, either PD or commercial, which will handle all of these formats. *(Add it to INFO's "Things We'd Like to See" list! -Ed.)*

IMAGETOOLS.ZOO [#16,466]

This archive contains seven handy little programs which give you numerous ways to manipulate and massage your non-HAM pictures. These utilities will analyze a picture's palette, convert icons to IFF pictures (and vice versa), "filter" a picture in various ways, compare the color palettes of two pictures, and even intelligently recolor one picture using the palette of another.

SUPERVIEW21.ARC [#16,036]

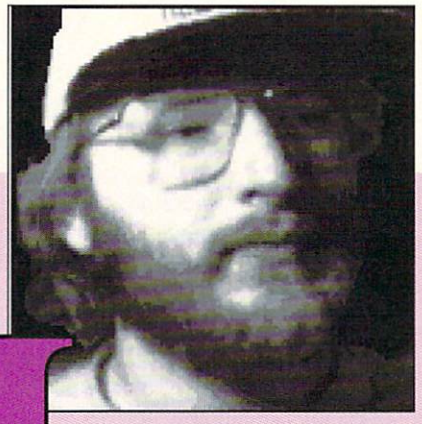
Loading one picture after another into a paint program just to view them is a time-consuming pain. Also, most paint programs don't handle all formats. You need a free-standing IFF picture viewer, and the best is SuperView. SuperView can handle virtually any IFF picture you can throw at it. Use it with the mouse as a "slide projector remote control" to step through an entire disk's worth of pictures. Lots of other options and commands. 2.1 is the latest and best version of a great program.

ULTRAPAINT.ARC [#15,327]

If you haven't yet purchased an Amiga paint program, here's a demo (no save) of a shareware program that's worth a look-see. UltraPaint is loaded with interesting features and even has a "ray drawing" mode not found in many commercial packages. While it's no *Deluxe Paint III*, UltraPaint is fun to play and experiment with, and certainly won't make much of a dent in your credit card.

For inspiration to budding Amiga artists, or just to collect and enjoy, the AmigaZone's library is chock full of IFF creations by some of the best computer artists working today. Scan through our "Section 5" which currently has over 400 files, including some INFO cover artwork.

- Harv Laser [CBM*HARV]



At INFO, we believe in the Freedom of the Press. We also believe in the responsibilities of the press. Therefore, the views expressed in this interview are the unexpurgated opinions of the interviewee, and do not necessarily reflect those of INFO Publications.

Loren Lovhaug

an Interview
by Mindy Skelton

Loren Lovhaug has been described -- along with Lou Wallace of *RUN* magazine, and Fred Bowen of Commodore -- as one of the "Three Musketeers of Commodore 8-bit Computing". If this gives you the idea that Lovhaug is an ardent supporter of the C64 and C128, you're right. Lovhaug, a 23-year-old ex-law student, is not only the voice of C128 support on QLink, but is the editor/publisher of *Twin Cities 128*, the only magazine devoted entirely to the C128.

INFO: We've heard that Commodore is discontinuing the C64 and the C128 so that they can concentrate completely on the Amiga. Is this true?

LOVHAUG: Let's be very careful about this. The C64 and the C128 have not been officially discontinued. I've been told that Commodore is developing a marketing plan for the phase-out of the 8-bit products, and that the 128 is not in the current "build plan". This means they have no current plans to make any more, and, based on conversations with the people who make the decisions, I think that if the current stock of 128s meets their projected demands, it's very likely that that no more will ever be made.

INFO: So you think that Commodore will be pushing hard for 8-bit owners to upgrade to the Amiga?

LOVHAUG: Commodore acknowledges that 64 and 128 owners are important to the future of the Amiga and have to be treated delicately on the issue of phasing out the 8-bit equipment. It's no big secret that the Amiga has not been drawing a lot of users from other bases, whether new users, the IBM and Apple markets, or whatever. Only about a million have been sold in three and a half years. The projections look good, but it's crucial to Commodore to draw as many of the 64/128 users into the Amiga fold as possible. If the Amiga does not catch the imagination of upgraders, it's going to have a rocky time, especially in a market where other vendors are catching up to it technologically, and the price is so low on readily available PC clones. Commodore is aware that if 64/128 users are not treated well, Commodore's actions may sell a lot of PC clones, even though 64/128 users seem impressed with the Amiga.

INFO: But Commodore has never seemed to know how to market the Amiga.

LOVHAUG: Yeah, that's part of the weirdness of all this. Commodore as a corporation seems to have a hard time understanding what they have and what things about their machines appeal to people. If there was ever a paradigm for being successful in spite of yourself, it's Commodore.

INFO: Do you think Commodore has any real understanding of why people buy Commodore products?

LOVHAUG: I know Commodore pays a lot of PR and marketing people to research why people buy their products, but the ones they ought to be asking, and the ones who get the least input, are the people who are buying these machines in the first place. I think that a lot of the needs and desires of Commodore owners go ignored. Maybe it's a "bottom-line mentality". Maybe Commodore has beliefs about its customers that just aren't true. I know from talking to some people at Commodore, especially in marketing, that there's a sense that 8-bit Commodore owners were just buying toys, and that the users are really not very smart. My experience suggests that the people who buy these machines know what they're doing, know why they're buying them, and are darn bright.

INFO: Does that view of their customers have something to do with Commodore's historically poor user support?

LOVHAUG: Commodore's feeling about support is a little different from most users' definition of the term. They say, "We market hardware, and peripherals to support that hardware. We're a hardware company. We build stuff for you guys to play with. What else do you want from us?" The users say, "Things took too long to come out, or didn't arrive at all, or didn't work right, or couldn't be repaired. You ignored us

“ Commodore owners need a little good will to become Amiga owners. ”

after we bought our machines". And Commodore says in reply, "We've done our job. We've delivered a well-designed, well thought-out, competitively priced product". The machines are a start, but when it comes to support, the 8-bit owners want more. At the very least, they want the feeling that they aren't going to be rushed into having to buy another computer.

INFO: What do you mean?

LOVHAUG: What turns off 64/128 owners is somebody saying to them they have to upgrade now because a marketing decision is eliminating their computer. Users want to make their own decisions and they want to be convinced, not coerced. This feeling of being pushed is not entirely Commodore's fault, but even third-party developers take their cues from West Chester. When they're told that a product is being de-emphasized, common business sense dictates that they focus their efforts in a more productive direction, like MS/DOS. We now have games being created on MS/DOS machines first and ported to the Amiga instead of vice versa. It's Commodore's attitude that leads developers and users to feel uncomfortable about the future of the Amiga.

INFO: Are you saying that how Commodore handles the phase-out of its 8-bit machines could have an impact on the future of the Amiga?

LOVHAUG: Given Commodore's track record of very quickly washing its hands of a machine after production stops, if I were an Amiga 500 owner I would be worried. Unlike the 2000 which can be expanded and changed, the 500 is a closed box that's expensive and difficult to expand. In a couple of years, we could very easily see the 500 being de-emphasized because it doesn't mesh with the new machines being produced. I see 128 owners (whose most likely upgrade is the 500) being wary and wondering what will happen when the "closed box Amiga" loses favor just like the "closed box 128". I think they'll make Amiga buying decisions based on how Commodore handles the phasing out of the C64 and C128.

INFO: Don't you think that Commodore's 8-bit computers are outdated?

LOVHAUG: Yes and no. 8-bit computers are outdated as far as being a new, gee-whiz kind of product. I think it would be a mistake to suggest that Commodore could successfully come out with, for example, a new, souped-up 128. Given the comparative price of faster processors, the cheap 8-bit game machines, and inexpensive MS/DOS clones, such a machine would probably lose money. But that doesn't mean that end users shouldn't pursue and enjoy 8-bit machines. Most people don't have the need for a lot of computing power. They *like* a lot of power, but an 8-bit machine is all the computing power most people *need*. I fully believe that the "wonder boxes" to come will give us the option of putting, in effect, a mainframe on our desks, but I don't know whether we need that kind of power. I don't think the full power of the 8-bit has been anywhere close to fully exploited yet, and a computer is never obsolete as long as you have something to do with it.

INFO: But times marches on, and things change. Isn't that inevitable?

LOVHAUG: Nobody wants to own an orphan, even though there are orphans, and... orphans. There are machines like the PET which enjoyed a fair amount of support for several years after their demise, and there are machines like the Mattel Aquarius, where people were saying "The what?" the day after they stopped production. There has never been an orphan like the 64 would be, with 10-million-plus owners out there. Think what happened with the Timex Sinclair and the TI-99. The publications supporting them disappeared almost overnight when the machines went out of production, even though there were still over a million users of each. The magazines folded because they were funded mostly by advertising and the advertisers disappeared in droves. Look at what's happening now. I picked up a *Compute's Gazette* and got a paper cut, it was so thin. *Twin Cities 128* will stay in business even if Commodore decides to stop 128 production, because we are supported by our subscribers, not our advertisers.

INFO: Are C64 and C128 owners in jeopardy of becoming "orphans" soon?

LOVHAUG: I really do believe that the support mechanism for the 64/128 is at the crossroads. If Commodore doesn't take an active role in propping up that mechanism, or at least supporting the people who are willing to provide an external support mechanism, there won't be any.

I think Commodore could go a long way to making this transition easier by "bowing out gracefully" and creating a support mechanism rather than a support vacuum. This would encourage people to stay with Commodore and make the switch in their own time.

INFO: So what's the answer?

LOVHAUG: After considerable thought, based on the premises that Commodore should not leave a vacuum, that support needs to be provided, and that someone has to be willing to provide this service, I came up with myself as the answer.

INFO: What makes you think you're qualified?

LOVHAUG: Several reasons. One, we've already been providing support for three years, at least in part by publishing the *Twin Cities 128*. We've also been in the forefront of most of the important 8-bit developments that have occurred during the last three years. We were among the first people to popularize 8-bit desktop publishing, and were actually using *GEOS* to help publish our magazine before *GeoPublish*. We were first to publish information about the C128 and 1571 upgrade ROMs, and we were calling Commodore twice a week to make sure they got out. (They were done literally a year before they reached the streets.) We were also the first to popularize and give information about the expanded video RAM on the 128. At the World of Commodore Show in Philadelphia we were showing a 640x600 pixel display on a C128 screen.

We have paid our dues. We work with people who have been working to make these machines better. I've been running the 128 support area on QLINK for a year and a half, and the 128 support area on GEnie for a year before that. I've been accessible to the users. I answer my EMail, and I get a *lot* of EMail.

I don't know of anybody in this industry who's working harder to support the 128. So here I am. I've been doing it, I enjoy doing it and I *want* to do it.

I have some ideas (which I'm not going to mention here) that can change customer support from a cost center to a profit center. I have support from several major 8-bit vendors including Briwall and Free Spirit. I'm not naive enough to think I can do this as one lone individual. We have a very good relationship with the people in West Chester who still work on the 8-bit lines, as well as developers who are still interested in the 8-bit Commodore market.

INFO: Practically speaking, what does the future look like to you?

LOVHAUG: I see two scenarios. One, Commodore will call COMB or Protecto and blow the remaining 8-bit stock out the door, sell them to a bunch of first-time users who will then find zero support (like the Plus Four users found) and get mad and never look at a Commodore product again. Or, Two, Commodore works with someone (me, I hope) to create realistic after-market support; product marketing, information distribution, product development, and the option to pick up 8-bit titles for distribution as third party companies drop them. I'd also like Commodore to sell or license the rights to peripherals so people can still get the hardware Commodore is no longer willing to produce. Think what a wonderful public relations ploy this could be for Commodore -- the "New Commodore": supportive and looking out for their users! Commodore owners need a little good will to become Amiga owners. I really don't think Commodore wants to be bothered, so I hope they turn it over to someone who is able and willing to provide what's needed. And it would free up their internal resources to concentrate completely on the Amiga.

INFO: Have you talked to Commodore about your ideas?

LOVHAUG: Yes. So far Commodore is not willing to make any commitments, but at least they are talking to me, and they haven't ruled me out yet. I've talked to Max Toy; he even returns my calls. They seem interested, take my ideas seriously, and have referred me to the people who are creating the management plan for the 8-bit machines. They have also told me that as a corporation they are reluctant to turn over exclusive rights to one individual, and they have informed me that they can consider none of my ideas to be proprietary. I want to make sure people read it here in INFO first, so if Commodore comes through with any of this, they'll know where the ideas came from. I think the odds are against me, but I want to try.

"If there was ever a paradigm for being successful in spite of yourself, it's Commodore."

INFO: Can people do anything to help Commodore decide to help you provide support?

LOVHAUG: Yes. If you want this to happen, you have to let it be known. Write Commodore and tell them you want support; tell them you'd be more likely to buy another Commodore product (if you would). Tell them about me! Talk this up at users groups. Let people know they have options.

INFO: Any final thoughts?

LOVHAUG: I like Commodore's 8-bit machines. I hope to keep using the C128 for a long time, but I'm not afraid of the Amiga either. You don't have to be a "hex head". I make these boxes work for me. I would like to believe that anyone can use any computer as a tool to enhance his or her own creativity. These boxes are tools; the important thing is the person who presses the buttons.

[Note: For more information on *Twin Cities 128*, or its illustrious founder, write to *Twin Cities 128*, P.O. Box 11587, Minneapolis MN 55411, or contact LOVHAUG on QLINK or Sparrow.J on GEnie. A 6 issue subscription to *Twin Cities 128* is $12.50 and a 12 issue subscription is $25.00]

Creative Computers

ORDERS ONLY: 800-872-8882 OUTSIDE CALIF. **213-370-2009** INSIDE CALIF. **213-542-2292** CUSTOMER SERVICE OR ORDER STATUS

VISA, MasterCard, American Express, Discover, International Phone and Mail Orders, Educational, Corporate and Aerospace Purchase Orders Accepted.

4453 Redondo Beach Blvd., Lawndale, CA 90260 Mon.-Sat. 8 a.m.-6 p.m. PST FAX: 213-214-0932

HOT NEW PRODUCTS

VIDEO & AUDIO:
- Forms In Flight II
- Photon Paint II
- Music X
- Caligari
- The Performer
- Movie Setter
- MidiVU
- C-Zar
- Comic Fonts
- Pro-Sound Designer
- MIDI Magic
- Zoetrope
- Photon Cell Animator

GAMES:
- Double Dragon
- Designasaurus
- Baal
- Trump Castle
- Operation Wolf
- Bubble Bobble
- Rastan
- Dragon's Lair
- TV Sports Football
- Lords of the Rising Sun
- Univeral Military Simulator
- Advanced Dungeons & Dragons
- Kingdoms of England
- Hostage
- Test Drive 2
- Downhill Challenge
- Rampage
- Evil Garden
- Artic Adventurel

BUSINESS PRODUCTIVITY:
- Page Stream
- Works Platinum
- Pen Pal
- Tax Break
- Desktop Budget
- Pro-Net
- Pro-Board
- Professional DataRetrieve
- Professional Draw
- Aegis Draw 2000
- Superbase Personal 2
- Superplan

EDUCATIONAL:
- My Paint

UTILITIES:
- B.A.D. (hot floppy and hard disk accelerator)

HARDWARE:
- INTRUDER ALERT
- AMAC Emulator (Macintosh emulator!)
- Spirit Deluxe MIDI
- Vault-30

PLEASE CALL FOR PRICES

SOFTWARE

3-D GRAPHICS	36.13
3-DEMON	71.95
4 X 4 OFF ROAD RACING	32.46
4TH & INCHES CONSTRUCTION	9.95
4TH AND INCHES	29.24
64 EMULATOR 2, THE	49.95
A B ZOO	25.99
A-TALK III	64.97
AAARGH!	23.95
AC BASIC COMPILER	134.06
AC FORTRAN	199.00
ACCOUNTANT, THE	186.95
ADRUM	51.98
ADVENTURES OF SINBAD	32.46
AEGIS ANIMATOR	87.95
AEGIS DRAW 1.4	52.95
• AEGIS DRAW 2000	181.95
AESOP'S FABLES	19.95
ALGEBRA I	36.95
ALGEBRA II	36.95
ALIEN FIRES	24.95
ALIEN SYNDROME	32.46
ALL ABOUT AMERICA	38.95
ALTERNATE REALITY	27.95
• AUDIOMASTER II	64.95
• AUTODUEL	27.00
AWARD MAKER PLUS	31.16
AWARD MAKER SPORTS	19.95
AZTEC 68/AM-D	194.95
AZTEC C PROFESSIONAL	129.95
• AZTEC BDSK CDBK SPEC	359.72
• B.A.D. DISK OPTIMIZER	32.46
• BAAL	22.95
BAD CAT	30.25
BALANCE OF POWER	34.95
BALANCE OF POWER (BOOK)	8.51
BARBARIAN	25.95
BARD'S TALE	35.95
BARD'S TALE CLUE BOOK	10.95
BARD'S TALE II	41.95
BARD'S TALE II CLUE BOOK	10.50
BARDS TALE HINT DISK	13.95
BASIC GRAMMER SERIES	19.46
• BATTLE CHESS	32.46
BATTLE SHIP	19.46
BBS-PC	62.32
BECKER TEXT	99.95
BENCHMARK C LIBRARY	64.95
BENCHMARK IFF LIBRARY	64.95
BENCHMARK MODULA-2	129.95
BENCHMARK SIMPLE LIBRARY	64.95

MIDGET RACER

HOT NEW ACCELERATOR FOR ALL AMIGAS **$349.00**
- 68020 processor.
- Optional math co-processor up to 33 Mhz 68882!
- 50% average speed increase *without* math co-processor.

ALSO: Sculpt Animate 4D **$399.95**

PACKAGE DEAL **$979.00**

INCLUDES: 1. SCULPT ANIMATE 4D; 2. MIDGET RACER; 3. 68882-20 CO-PROCESSOR; 4. 20 OR 24 Mhz CRYSTAL OSSC.

AMIGA DOS EXPRESS	19.95
AMIGA FONTS (NTF)	59.95
AMIGA KARATE	24.95
ANALYTIC ART-GRAPHICS	37.48
ANALYZE 2.0-SPREADSHEET	93.73
ANDROMEDA MISSION	25.95
ANIMAL KINGDOM	32.46
ANIMATE-3D	99.95
ANIMATION	62.95
ANIMATION EDITOR	38.95
ANIMATION EFFECTS	32.46
ANIMATION MULTIPLANE	58.46
ANIMATION STAND	32.46
ANIMATOR'S APPRENTICE	184.95
ANNALS OF ROME	24.95
ANTI-VIRUS	25.95
ARAZOK'S TOMB	31.25
ARCADE ACTION PACK	34.95
• ARENA	9.95
• AREXX	32.95
ARKANOID	19.95
ART COMPANION	19.95
ART GALLERY FANTASY	23.36
ART OF CHESS	22.95
ASHA'S FONTS	58.95
ASSEMPRO	71.95
ATREDES (BBS)	97.46
BETTER DEAD THAN ALIEN	21.95
BEYOND ZORK	33.76
BIONIC COMMANDO	25.97
BLACK CAULDRON	28.95
BLACK JACK ACADEMY	29.95
BLACK LAMP	22.00
BLACK SHADOW	22.95
BLITZKRIEG (1 MEG VER)	38.95
BLOCKBUSTER	32.46
BOBO	23.36
BOOMERAID	32.46
BREACH	25.95
BREACH SCENARIO DISK	16.95
BRIDGE 5.0	24.10
BRUSH WORKS	20.95
BRUSH WORKS 2	19.95
BUBBLE GHOST	22.71
BUMPER STICKER MAKER	37.95
BUTCHER 2.0	23.13
C-LIGHT	38.95
• C-ZAR	126.95
CAD PARTS FOR INTRO CAD	16.50
CALCULUS	36.95
• CALIFORNIA GAMES	32.46
• CALIGARI	CALL
CALLIGRAPHER	84.95
CAPE 68K ASSEMBLER 2.0	58.47
CAPITALIZATION SERIES	19.46
CAPONE	25.95
CAPTAIN BLOOD	32.46
CAPTAIN FIZZ	19.95
CARRIER COMMAND	30.95
CASINO FEVER	25.95
CB TREE PLUS	64.95
• CBM DOS 1.3 WORKBENCH	24.95
CELEBRITY COOKBOOK	22.95
CENTERFOLD SQUARES	19.95
• CHARON 5	25.96
CHESSMASTER 2000	32.46
CHICKEN LITTLE	19.95
CHRONO QUEST	33.95
CITY DESK	93.95
CITY DESK ART COMPANION	19.95
CITY DESK BUNDLE	99.95
CLI MATE	24.95
CLIP ART #1-#8 (EA)	12.95
COMBAT COURSE	25.95
• COMIC FONTS (NEW & NICE)	59.95
• COMIC SETTER	64.96
COMIC SETTER (FUNNY DATA)	22.95
COMIC SETTER (SF DATA)	22.95
COMIC SETTER (SUPERHEROS)	22.95
• COSMIC BOUNCER	19.95
CRAPS ACADEMY	25.95
CRASH GARRET	25.96
CRAZY CARS	25.95
CROSSWORD CREATOR	34.95
• CUBEMASTER	9.95
CUSTOMS SCREENS	43.73
• CYGNUS ED PROF	64.95
DARK CASTLE	25.95
DATA RETRIEVE	49.95
• DATA RETRIEVE PROF	211.95
DEATH SWORD	19.95
DECIMAL DUNGEON	32.46
• DEEP SPACE	9.95
DEFCON 5	25.95
DEFENDER OF THE CROWN	34.95
DEJA VU	34.95
DELUXE ART PARTS #1	21.95
DELUXE ART PARTS #2	21.95
DELUXE HELP CALLIGRAPHER	22.71
KAWAI K-1 ED/LIB	92.97
KAWAI K-5 ED/LIB	92.95
KCS	154.95
LEXICON ED/LIB	92.95
MIDI RECORD. STU	43.50
MT-32 ED/LIB	92.95
MATRIX-6 ED/LIB	92.95
• DRAGON'S LAIR	46.50
DREAM ZONE	32.46
DRUM STUDIO	32.47
• DUNGEON MASTER	32.46
DUNGEON MASTER HINT DSK	12.95
DYNAMIC DRUMS	49.95
DYNAMIC STUDIO	139.00
DYNAMIC-CAD	299.00
EARL WEAVER BASEBALL	34.95
EARL WEAVER STATS	12.95
EASY LOANS	24.95
EBON STAR	25.96
EMERALD MINES	14.95
EMETIC SKIMMER	25.95
EMPIRE	34.32
ENCORE	45.95
EUROPEAN SCENERY DISK	17.95
• EVIL GARDEN	25.95
• EXCELLENCE	159.00
EXPLORER	32.47
EXPRESS COPY	29.95
EXPRESS PAINT 3.0	90.95
EXTEND	25.95
FACC II	21.95
FAERY TALE ADVENTURE	31.95
FAERY TALE GUIDEBOOK	7.95
FALCON	32.46
• FAMILY TREE	32.46
FANCY 3D FONTS	46.95
FANTAVISION	42.95
FERRARI FORMULA ONE	33.95
• FINAL ASSAULT	32.46
FINAL MISSION	19.95
FINE PRINT	41.95
FIRE 'N FORGET	25.95
FIRE ZONE	23.95
FIRE-BRIGRADE	32.46
FIREPOWER	16.95
INTERFONT	75.36
INTERNATIONAL SOCCER	25.96
INTROCAD	49.95
INVESTORS ADVANTAGE	64.95
• INVISION	99.95
IT'S ONLY ROCK & ROLL	21.95
J FORTH	77.96
JET	37.46
JET SET FONT SET	32.50
JINXTER	25.95
• JOKER POKER	32.46
KAMPFGRUPPE	41.95
KARA FONTS	54.95
KARATE KID II	25.95
KEY TO 'C'	22.95
KICK-WORK 1.3	22.95
KIDTALK	27.95
KIKUGI	18.95
KINDERAMA	32.46
KINDWORDS	64.95
KING OF CHICAGO	34.95
MICROLAWYER	37.95
• MIDIVU	29.95
• MISSION CON-BAT	31.16
MODELER 3-D	65.00
MOEBIUS	39.95
MONEY MENTOR	64.95
• MOVIE SETTER	64.95
MULTI-FORTH	59.95
MULTI-PREFS	19.45
MURAL PRINTER	29.95
MUSIC MOUSE	51.95
MUSIC STUDENT	37.95
MUSIC STUDIO	34.95
• MY PAINT	32.46
NAG PLUS 3.0	49.95
NEWSLETTER FONTS COLOR	29.95
OBLITERATOR	25.95
OFFSHORE WARRIOR	25.96
OGRE	32.46
ONLINE 2.0	43.56
OPERATION CLEAN STREETS	25.95

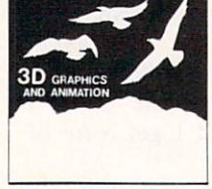
SPECIAL HOT PRODUCT!
DELUXE PAINT III $99.95

KING'S QUEST I	32.95
KING'S QUEST II	32.95
KING'S QUEST III	32.95
KNIGHT ORC	30.95
LANCELOT	27.95
LASER UPI FONTS VOL. I	31.95
LASER UPI PLOT 1.2	39.95
LASER UPI PRINT 1.2	71.95
LASER UPI UTIL. VOL. I	31.95
• LATTICE "C" 5.0 COMPLETE!	195.00
• LATTICE C++	345.00
LAZERSCRIPT	28.10
LEADER BOARD DUAL PACK	22.72
LEADER BOARD TORNA DISK	13.95
LEADER BOARD-GOLF GAME	27.00
LEARNING CURVE	51.95
LEARNING THE ALPHABET	19.46
LEATHER GODDESSES	32.46
LEATHERNECK	25.95
LEISURE SUIT LARRY	26.40
LEXCHECK	26.85
LIFE CYCLES AMIGA	19.46
LIGHTS! CAMERA! ACTION!	59.95
LINKWORD DUTCH	20.55
LINKWORD FRENCH	20.55
LINKWORD GERMAN	20.55
ORGANIZE	62.32
OTG DSM (DISASSEMBLER)	43.95
OUT RUN	32.46
P.O.W.	25.95
PAGE FLIPPER	31.23
PAGE FLIPPER PLUS F/X	103.95
• PAGE STREAM	129.95
PAGESETTER	93.72
PALADIN	25.95
PALADIN (QUEST DISK 1)	16.86
PCLO PRINTD CURCUIT LYOUT	199.95
PCLO+ PRNTD CURCUIT LYOUT	399.95
PERFECT SCORE	54.95
• PERFORMER (ELAN)	38.95
PHANTASIE	27.47
PHANTASIE 3	24.95
PHANTASM	22.95
• PHASAR-FIN'L MGMT	62.48
• PHOTON CELL ANIMATOR	99.95
PHOTON PAINT	64.96
PHOTON PAINT EXP. DSK.	19.95
PHOTON PAINT TRANS. CNTRL	194.95
PHOTOSYNTHESIS	97.95
PINBALL 1.0	19.46
PIONEER PLAGUE	25.96
PIXMATE	45.95
PLANET PROBE	19.95
PLATOON	29.21
POKER SOLITAIRE	22.95
POLICE QUEST	32.46
PORTS OF CALL	29.95
POWER WINDOWS 2.5	58.47
POWERSTYX	22.95
PRE CALCULUS	36.95
PRESIDENT IS MISSING	25.95
PRIME TIME	25.95
PRINTMASTER PLUS	31.23
PRO MIDI STUDIO	130.95
• PRO VIDEO PLUS	194.95
PROBABILITY THEORY	36.95
• PROFESSIONAL DRAW	129.95
• PROFESSIONAL PAGE	229.00
PROJECT D	31.95
PROMISE: SPELLING CHECKER	34.95
PROSCRIPT	32.95
PROWRITE 2.0	78.10
PUNCTUATION SERIES	19.46
QRADRALIEN	19.95
QUARTERBACK	45.95
QUESTRON II	32.46
QUICK MERGE	37.95
QUINTETTES	29.95
QUIZ MASTER	49.95

We carry OVER 1100 items
The best NEW products
The LOWEST PRICES

NEW PRODUCTS ARRIVE DAILY. CALL FOR UNLISTED ITEMS.

DELUXE HELP FOR DIGIPAINT	21.84
DELUXE HELP FOR DPAINT II	21.84
DELUXE HELP FOR PHOTON	21.95
DELUXE HELP PAGE SETTER	22.95
DELUXE MAPS	16.95
DELUXE MUSIC 2.0	69.95
DELUXE PAINT ART & UTIL	21.95
DELUXE PAINT II	89.95
DELUXE PHOTO LAB	99.95
DELUXE PRODUCTIONS	139.95
DELUXE VIDEO 1.2	89.95
DEMONSTRATOR	21.95
DES CARTES	22.95
DESIGN DISK	
ARCH SCULPT or VSCAPE	22.74
FUTURE SCULPT or VSCAPE	22.74
HUMAN SCULPT or VSCAPE	22.74
MICROB SCULPT or VSCAPE	22.74
• DESIGNASAURUS	32.46
DESKTOP ARTIST	18.95
• DESKTOP BUDGET	45.95
DESTROYER	25.95
DEV DISK (ASSORTED UTIL)	7.95
DEVELOPERS TOOLKIT	36.95
DEVPAC AMIGA ASSEMBLER	64.95
DIGI-PAINT	41.95
DIGI-VIEW UPGRADE	13.95
• DIRECTOR'S TOOLKIT	24.95
DIRECTOR, THE	45.95
DISCOVERY EXPANSION DISKS	12.97
DISCOVERY/MATH	25.00
DISCOVERY/SPELL	25.00
DISCOVERY/TRIVIA	25.00
DISCRETE MATHEMATICS	36.95
DISK MECHANIC	58.50
DISK PRO PLUS	18.95
DISK TO DISK	34.95
DISK WICK	32.46
DISKMASTER	37.95
DISTANT ARMIES	29.95
DOCTOR TERM PROFESSIONAL	74.95
DOMINOES	16.95
DOS TO DOS	37.95
• DOUBLE DRAGON	27.95
DOUG'S MATH AQUARIUM	51.95
DOUGS COLOR COMMANDER	19.46
DR. T'S:	
4-OP ED/LIB	92.95
BACH SONGBOOK	17.95
CASIO V21 ED/LIB	92.95
COPYIST	159.38
CZ CARTRIDGE	51.95
CZ RIDER	92.95
D-110 ED/LIB	92.95
D-50 ED/LIB	92.95
DR. DRUMS	17.95
DR. KEYS	17.95
DX7 ED/LIB	92.95
ESQ-APADE ESQ-1	92.95
FIRST LETTERS & WORDS	33.00
FIRST SHAPES	33.00
FISH	29.95
FLEET CHECK	25.96
FLIGHT PATH 737	16.95
FLIGHT SIMULATOR II	37.46
FLOW	62.32
FONTS AND BORDERS	22.95
FOOTMAN	21.95
• FORMS IN FLIGHT II	79.50
FOUNDATIONS WASTE	23.62
FRACTION ACTION	32.46
GALACTIC CONQUERER	29.95
• GALAXY FIGHT	9.95
GALILEO 2.0	45.46
GALLERY 3-D (SCULPT)	51.95
GAMES: THE WINTER EDITION	32.46
GETTYSBURG	38.95
• GFA BASIC 3.0	90.95
GIZMOZ	45.95
GLOBAL COMMANDER	27.46
GOLD SPELL II	29.95
GOLDEN PATH	29.95
GOLDRUNNER II	25.95
GOMF! 3.0 (SOFTWARE ONLY)	20.95
GRABBIT	20.95
GRADE MANAGER	58.95
GRAND SLAM TENNIS	31.25
GRAPHICS STUDIO	38.95
GREAT STATES II	25.95
• GRETZKY HOCKEY	32.46
GUILD OF THIEVES	30.95
HAMANDEL	25.95
HARDBALL	28.95
HARRIER COMBAT SIMULATOR	32.95
HEAD COACH	32.46
HEROES OF LANCE HINT DSK	13.95
• HEROES OF THE LANCE	27.95
HISOFT BASIC PROF.	103.95
HIT DISK VOL I	32.46
HOLE IN ONE	25.99
HOLLYWOOD POKER	25.95
HOME BUILDERS CAD	129.95
HOSTAGE	29.95
HOT & COOL JAZZ	21.95
HUNT FOR RED OCTOBER	34.95
• HYBRIS	25.99
ICON PAINT	58.95
IMPACT-BUSINESS GRAPHICS	62.46
IMPOSSIBLE MISSION II	32.46
INDOOR SPORTS	31.22
INOVA TOOLS	52.03
INSTANT MUSIC 1.2	33.00
INTELLITYPE	35.95
INTERCEPTOR	37.95
INTERCHANGE	29.95
INTERCHANGE CONVERSION	16.95
INTERCHANGE OBJECTS #1	16.95
INTERCHANGE TSLV MODULE	12.96
LINKWORD GREEK	20.55
LINKWORD ITALIAN	20.55
LINKWORD PORTUGUESE	20.55
LINKWORD RUSSIAN	20.55
LINKWORD SPANISH	20.55
LINT (GIMPLE)	63.70
LION'S CALLIGRA FONTS	58.95
LITTLE RED HEN	19.95
LOGIG WORKS ADVANCED	189.95
LOTTERY MAGIC	19.95
LURKING HORROR	25.95
• M INTELLIGENT MUSIC	143.46
• MAGELLAN	119.00
MAGICAL MYTHS	32.46
MAJOR MOTION	25.96
MANIAX	16.95
MARAUDER II-DUPLICATION	27.47
MARBLE MADNESS	33.00
MASTER NINJA	30.95
MASTERING CLI	25.95
MASTERPIECE FONT, 20-DSKS	167.95
MATCH IT	25.95
MATH MAGICIAN	27.49
MATH TALK	31.95
MATH TALK FRACTIONS	26.95
MATH WIZARD	32.46
MATH-AMATION	64.95
MAVIS BEACON TYPING	30.89
MAXIPLAN 500	93.95
MAXIPLAN PLUS	124.95
MEAN 18 COURSE DISK	14.96
MEAN 18 COURSE DISK II	14.95
MEAN 18 GOLF	28.95
MEDIALINE FONTS	22.95
MENACE	19.98
METACOMCO ASSEMBLER	68.95
METACOMCO PASCAL VER 2.0	92.95
METACOMCO SHELL	39.95
METACOMCO TOOLKIT	34.95
METASCOPE DEBUGGER	59.95
MICROFICHE FILER	69.95
MICROFICHE FILER PLUS	116.95



Forms In Flight II ($79.50)

Boing! Mouse

Professional Optical 3-button mouse for your Amiga.
- Optical technology eliminates friction and momentum coefficients for super-precise handling.
- No moving parts for increased reliability.
- Middle button makes it the only mouse compatible with A2024 software and X Windows.
- Compatible with ALL Amiga computers.

SPECIAL PRICE!
LIMITED TIME ONLY: $99.95

WE CAN BEAT ANY ADVERTISED PRICE! BUT WE SELDOM HAVE TO — OUR PRICES ARE THE LOWEST! (IF YOU SEE A LOWER PRICE ON AN ITEM, GIVE US A CALL.)

R.R. AESOP'S FABLES 19.95
RAW COPY 1.3 ..... 38.95
REACH FOR THE STARS 27.95
READ & RHYME 31.95
READ-A-RAMA 32.46
REALM OF THE WARLOCK 22.74
REBEL CHARGE CHICKAMANGA 39.95
REEL FISHIN'—GONE FISHIN 30.88
RETURN TO ATLANTIS 34.95
ROAD RAIDERS 25.96
ROADWAR 2000 ..... 27.47
ROADWAR EUROPA 29.95
ROADWARS 23.95
ROB. READER UGLY DUCKLING 19.45
ROBBEARY 16.21
• ROCK CHALLENGE 25.95
ROCKET RANGER 32.46
ROCKFORD 23.95
ROMANTIC ENCOUNTER 25.95
SAMPLEWARE-DIGITAL 16.95
SAMPLEWARE-GRAB BAG 16.95
SAMPLEWARE-ORSHESTRAL 16.95
SAMPLEWARE-ROCK 16.95
SANTA PARAVIA & FIUMACCIO 19.95
SARGON III 35.95
SCARY MUTANT SPACE ALIENS 25.95
SCENERY DISK #11 EAST COAST 18.72
SCENERY DISK #7 EAST COAST 18.71
SCHEMATIC CAPTURE 199.95
SCRABBLE 27.46
SCRIBBLE 62.32
SCULPT 3-D 69.95
• SCULPT ANIMATE 4-D 399.95
• SDI: CINAMAWARE SERIES 34.95
SEASONS AND HOLIDAYS 21.95
SECONDS OUT 19.46
SECURITIES ANALYST 49.95
SEVEN CITIES OF GOLD 14.95
SEX VIXENS 25.95
SHADOW GATE 31.95
SHAKESPEARE 146.95
SHANGHAI-STRATEGY GAME 27.46
SHERLOCK 27.00
SILENT SERVICE 25.95
SINBAD & FALCON 34.95
SKY BLASTER 19.95
SKY CHASE 26.95
SKYFOX II 27.45
• SLAYGON 14.95
SMOOTH TALKER 33.95
SNAKE PIT 24.95
SOCIAL STUDIES 19.46
SOFTWOOD FILE SG 78.21
SOLITAIRE ROYAL 22.71
SONIX (AEGIS) 49.95
SORCERER LORD 23.95
SOUND OASIS 64.95
SOUNDLAB 209.95
SOUNDQUEST:
CZ MASTER 92.95
D-10 MASTER 92.95
D-110 MASTER 92.95
D-50 MASTER 92.95
DX7 MASTER 109.95
DX7-II MASTER 109.95
ESQ/ESQ-80 MST 92.95
GENERIC MASTER 77.95
K-1 MASTER 92.95
M-1 MASTER 92.95
MT-32 MASTER 92.95
TEXTURE 92.95
TX-802 MASTER 92.95
TX-81Z MASTER 92.95
SOUNDSCAPE PATTERN SPLAT 35.95
SOUNDSCAPE UTILITIES 1 ..... 35.95
SOUNDSCAPE UTILITIES II 42.95
SOURCE LEVEL DEBUGGER 49.96
SPACE CUTTER 19.95
SPACE HARRIER 32.46
SPACE MATH 29.95
SPACE PORT 27.38
SPACE QUEST II 32.46
SPACE RACER 19.46
SPACE SCHOOL SIMULATOR 22.95
SPACE STATION OBLIVION 32.46
SPACEQUEST 33.00
SPELLBOUND 25.95
SPELLER BEE 31.25
SPELLING IMPROVEMENT 25.95
STAR WARS EMPIRE STRIKES 30.25
STARFLEET I 29.95
STARGLIDER 30.95
• STARGLIDER II 29.95
STARRAY 19.95
STELLAR CONFLICT 28.95
STELLARYX 25.95
STOCK MARKET-THE GAME 16.95
STRIP POKER 27.46
STRIP POKER DATA #4 ..... 12.95
STRIP POKER DATA #5 ..... 12.95
STRIP POKER II 25.95
STUDIO FONTS V1 (COLOR) 29.95
STUDIO MAGIC 64.95
SUB BATTLE 24.95
SUMMER CHALLENGE 19.95
SUPERBACK 51.95
SUPERBASE 93.73
• SUPERBASE PERS. II 94.46
• SUPERBASE PROF. 3 ..... 299.95
• SUPERPLAN (SPREADSHEET) 99.95
SUPERSTAR ICE HOCKEY 32.46
SWORDS OF SODAN 32.46
SYMPHONY SONGS (EACH VOL) 15.95
SYNTHIA 59.95
SYSTEMS MONITOR 28.95
T SHELL 32.46
TAKE STOCK 32.46
TALES FROM ARABIAN NIGHTS 32.46
TALKING ANIMATOR 39.00
TALKING COLORING BOOK 18.95
TANGLE WOOD 25.95
TARGIS 28.95
TATE FONTS 45.95
• TAX BREAK 51.95
TECHNOCOP 32.46
• TELE EPIC 25.96
• TELE WARS II 25.96
TELEGAMES 23.95
TERA QUESTRON 25.95
TERRAIN FOR TURBO SILVER 19.95
TERROPODS 25.95
TEST DRIVE 34.95
TETRA QUEST 25.95
TETRIS 21.80
TEXTCRAFT PLUS 59.95
THEXDER 23.95
THINKER 38.95
THREE LITTLE PIGS 19.95
THREE STOOGES 35.95
THUNDERBOY 22.95
TIME & MAGIK 26.95
TIME BANDITS 21.95
TOOL CADDY 32.46
• TOWER TOPPLER 32.46
TRACERS 22.95
TRANSCONTINENTAL RAILROAD 25.95
TRANSPUTOR 22.95
TRIANGO 29.95
TRIGONOMETRY 36.95
TRINITY 25.95
TRUE BASIC 68.95
TRUE BASIC ARITHMETIC 45.95
TRUE BASIC TRUE STAT 32.46
• TRUMP CASTLE 25.95
TURBO PRINT 32.95
• TURBO SILVER 3.0 ..... 129.95
TV SHOW 64.95
• TV SPORTS FOOTBALL 34.95
TV TEXT 62.32
TWILIGHTS RANSOM 19.95
TXED PLUS 51.95
ULTIMA III 28.95
ULTIMA IV 38.96
ULTRA DOS 37.95
UMS CIVIL WAR DATA DISK 12.95
UMS VIETNAM DATA DISK 12.95
UNCLE D CON SOUND TRATION 25.97
UNINVITED 34.95
• UNIVERSAL MILITARY SIMULTR 32.46
VAMPIRES EMPIRE 29.95
• VIDEO EFFECTS 3D 129.95
VIDEO VEGAS 24.10
VIDEO VISIONS 1 ..... 12.95
VIDEO VISIONS 2 ..... 12.95
• VIDEOSCAPE 3D 124.95
VIDEOTITLER 99.95
VIP VIRUS 32.46
VIRUS (GAME) 19.46
VOCABULARY IMPROVEMENT 25.95
W SHELL 31.95
WAR & MIDDLE EARTH 36.99
WARLOCK 22.71
WBEXTRAS 21.95
WESTERN GAMES 31.95
WHO FRAMMED ROGER RABBIT 29.95
WILLOW 25.95
WINDOW PRINT II 22.95
WINTER CHALLENGE 19.95
WINTER GAMES 27.46
WORD MASTER 32.46
WORD PERFECT 179.00
WORD PERFECT LIBRARY 84.95
WORLD CLASS LEADER BOARD 25.97
WORLD GAMES 27.46
WORLD TOUR GOLF 27.45
WRITE 'N FILE 59.95
• WSHELL 32.95
X-CAD 389.00
ZAK MCKRACKEN 29.95
ZANY GOLF 27.95
ZERO GRAVITY 19.46
ZING KEYS 31.95
ZING! SPELL 57.95
• ZOETROPE 89.95
ZOOM 21.95
ZORK TRILOGY 47.95
ZOUND SOUNDS VOL I 21.95
ZUMA FONTS VOLS 1 THRU 4 ..... 68.95
ZYNAPS 23.95

NEW FROM CENTAUR:

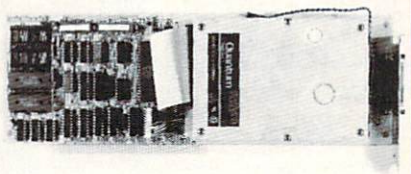
THE SILENT DRIVE $159

FEATURES: • CSI 3200 • Clickless • Small compact design • Metal case • Compatible with all Amiga computers • Low power consumption • Hinged dust cover • Drive disable switch • 1-year warranty.

ALSO AVAILABLE: CSI 2200 internal drive for Amiga 2000—100% compatible with same mechanism as Commodore 2010 ..... $149.00

HARDWARE

68020-12 CPU/PROC. 170.00
68030-16/20 CPU/PROC. 570.00
68881 CRYSTAL OSSC. 16MHZ 5.00
68881-16 MATH COPROC. 200.00
68881-20 MATH COPROC. 300.00
68882-20 MATH COPROC. 500.00
68882-25 MATH COPROC. 620.00
ALCOTINI SAMPLER 500/2000 ..... 89.95



GVP GREAT VALLEY PRODUCTS

For Amiga 2000:
IMPACT HC/45—48 MB 28ms Hard Card 799.00
IMPACT HC/40Q—42 MB 11ms Hard Card 799.00
IMPACT HC/80Q—84 MB 11ms Hard Card 1199.00
For Amiga 500:
IMPACT A500-SCSI/HD20—20 MB HD 749.00
IMPACT A500-SCSI/HD45—45 MB HD 995.00
IMPACT A500-SCSI/HD40Q—42 MB 11ms High-Speed Hard Drive 1049.00
IMPACT A500-SCSI/HD80Q—84 MB 11ms High-Speed Hard Drive 1449.00
Quantum 80S, 84 MB 11ms 3.5" HD 995.00
Shock mounted, 64KB cache (for 11ms speed), SCSI interface. Compatible with IMPACT or A2090 boards.
Quantum 40S—42 MB version of above drive 599.00

M.A.S.T. PRODUCTS

MINIMEGS: Expandable, external FAST RAM (up to 2-MBs), low power — available for Amiga 500 or 2000 —
• MINIMEGS 512K $299
• MINIMEGS 1 MB $449
• MINIMEGS 2 MB $749
TINY TIGER: Low cost, high performance, SCSI hard drives for all Amigas — complete — nothing else to buy —
• TINY TIGER 30 MB $629
• TINY TIGER 40 MB (Quantum) $799
• TINY TIGER 80 MB $1129
UNIDRIVE $159
TWIN DRIVE $269
(special price/limited time only)

MICROBT. HARDFRAME SCSI 239.00
MIDI GOLD 64.20
MIDI GOLD 2000 (INT) 68.47
MIMETICS MIDI INTERFACE 43.00
NERIKI GENLOCK 1975.00
OKIMATE 20 W/PLUG N PRNT 249.00
OKIMATE PLUG N PRINT 79.95
OMEGA STR. SAMPLER A1000 ..... 79.95
PAINTJET COLOR PRINTER 1095.00
PANASONIC WV1410 CAMERA 225.00
PANASONIC WV1500 CAMERA 320.00
PEOPLE METER BIO FEEDBACK 39.95
PERFECT SOUND DIGITIZER 67.95
• PERFECT VISION 169.95
PRO RAM A2000 2/8 MG 699.00
• PRO SOUND DESIGNER 119.95
PROCESSOR ACCEL CMI 159.00
PROGEN 399.00
QUANTUM 40 MB DRIVE, 11MS 599.00
QUANTUM 80 MB DRIVE, 11MS 995.00
• ROLLAND MT-32 TONE MOD. 549.00
RUGGEDWRITTER HP PRINTER 1395.00
SOUND SAMPLER 86.95
SPIRIT 0 MB FOR A1000 ..... 249.00
• SPIRIT DELUXE MIDI 214.95
STAR NX1000 PRINTER 199.00
STAR NX1000 RAINBOW 279.95
STARBOARD 2 SCSI MOD. 100.00
STARBOARD 2 UPPER DECK 80.00
STARBOARD 2/A500 0K 300.00
STARBOARD 2/A1000 0K 250.00
STARBOARD SB2000 ADAPTER 42.00
STEREO SOUND SAMPLER STRV 87.95
• SUPERGEN 699.00
• SUPRA 2400 MODEM 149.00
SUPRA DRIVE 20 MEG A500 ..... 699.00
SUPRA DRIVE 20 MEG A1000 ..... 699.00
SUPRA DRIVE 30 MEG A500 ..... 799.00
SUPRA DRIVE 30 MEG A1000 ..... 799.00
TOOL BOX, ESCORT FOR A500 ..... 170.00
TRUMP CARD SCSI CNTR 2000 ..... 168.96
• TWIN-DRIVES EXT 3.5" FDD 269.00
• UNIDRIVE 3.5" EXT. DRIVE 159.00
• VAULT-30 HARD DRIVE 30 MB ..... CALL
VI 500 VIDEO INTERFACE 59.95
VI 500 VIDEO/RF MOD. 69.95
VI 2000 VIDEO INTERFACE 69.95
VI 2000 VIDEO/RF MOD. 79.95
X-SPECS 3D 99.95
XEROX 4020 INK JET COLOR 1140.00
XEROX 4020 STARTER KIT 156.00

ACCESSORIES

A1084 CARRING CASE 51.95
A500 & MONITOR CARRY BAGS 69.95
AMIGA BAG 29.95
AMIGA BRASS KEY RING 3.95
AMIGA FASHION GOLF SHIRT 19.95
AMIGA FASHION JACKET 39.50
AMIGA MUG 6.95
AMIGA NOTE PAD!! 4.99
AMIGA PEN & PENCIL SET 19.95
AMIGA PINS 4.95
AMIGA PLASTIC VISOR 1.95
AMIGA SLEEVE TSHIRT 7.95
AMIGA TERRY CLOTH VISOR 5.50
AMIGA TOWEL 15.95
AMIGA TWILL CAP W/CORD 7.95
BOSS JOYSTICK 12.95
CABLE, 10' CAMERA 12.95
CABLE, 500/2000 IMAGE-1 ..... 19.95
CABLE, 500/2000 IMAGE-2 ..... 19.95
CABLE, 6' MIDI LINK 9.95
CABLE, A1000 TO IMAGE-1 ..... 19.95
CABLE, A1000 TO IMAGE-2 ..... 19.95
CABLE, AMIGA TO NEC II 24.95
CABLE, AMIGA TO SONY 1302 ..... 19.95
CABLE, AMIGEN TO 1084 ..... 19.95
CABLE, DB25M DB25F 8 FT. 19.95
CABLE, DB9M TO DB9F 6 FT. 16.95
CABLE, DRIVE EXT. 2 FT. 19.95
CABLE, DRIVE EXT. 3 FT. 27.95
CABLE, FLCK FIX TO NEC II 19.95
CABLE, FLCK FIX-SONY 1302 ..... 19.95
CABLE, M-CENTR TO M-CENTR 22.95
CABLE, MONITOR EXT 4FT 21.95
CABLE, MOUSE EXTENSION 14.95
CABLE, PARALLEL A1000 ..... 19.00
CABLE, PARALLEL A500/2000 ..... 19.00
CABLE, SCSI RIBBON, 2 FT. 15.95
CABLE, SERIAL A1000 ..... 19.00
CABLE, SERIAL A500/A2000 ..... 19.00
CLEANING KIT (ALLSOP) 14.95
CLEANING KIT SM. ALLSOP 6.95
CONTROL CENTRE FOR A500 ..... 71.95
COPY/CAMERA STAND, LIGHTS 64.95
CURTIS DIAMOND 33.95
CURTIS DIAMOND PLUS 46.95
CURTIS EMERALD 40.95
CURTIS PHONE LINE SURGE 12.36
CURTIS RUBY 58.95
CURTIS SAPPHIRE 56.95
DESKJET BLACK CART. 15.95
DESKJET COURIER FONT CART. 62.95
DESKJET DUST COVER 29.95
DESKJET EPSON FX-80 EMUL. 62.95
DESKJET HELV 8 & 10 PT. 79.95
DESKJET HELV ASCII FONTS 104.95
DESKJET LANDSCAPE FONT 79.95
DESKJET LANDSCAPE UPGRADE 79.95
DESKJET LETTER GOTHIC 79.95
DESKJET PRESENTATION FONT 79.95
DESKJET PRESTIGE ELITE 79.95
DESKJET RMN/HELV SOFT FNT 79.95
DESKJET STAND/ORGANIZER 84.95
DESKJET TMS RMN 8 & 10 PT 79.95
DESKJET TMS RMN ASCII 104.95
DIGI-DROID 69.95
DISK FILE 30 ..... 7.95
DISK FILE 80 ..... 19.95
DUST COVER FOR A500 ..... 8.95
DUST COVER FOR A2000 ..... 11.95
DUST COVER, A1000 W/MON. 13.95
EPYX 500XJ JOYSTICK 14.95
ERGO STICK 17.95
FLICKER MASTER 13.95
FLOPPY WALLET 7.95
FOUR PLAYER ADAPTER 11.95
• FUJI DISKETTES 19.95
GAME PLAY COMPACT DISK 12.95
GENDER BENDER (DIGI-VIEW) 20.95
KEYBOARD SKIN A2000 ..... 19.95
KEYBOARD SKIN A500 ..... 19.95
KEYBOARK SKIN A1000 ..... 19.95
KRAFT MAZEMASTER JOYSTICK 9.95
LASERJET-2 TONER CART. 104.00
LASERJET-2 8.5 X 14 TRAY 104.95
LASERJET-2 COURIER FTS. 144.50
LASERJET-2 ENVELOPE TRAY 79.95
LASERJET-2 LASER CNTRL SW 117.95
LASERJET-2 PLOTTER SOFTW 117.95
LASERJET-2D ENVELOPE TRAY 279.95
LIGHT GUN 48.95
MICHTRON DISK FOLDER 10.95
• MIDI MAGIC 97.95
MIND LIGHT 7 ..... 164.95
MOUSE COVER W/GLASSES 5.95
MOUSE MATS 6.95
MOUSE WASH 6.95
PAINTJET BLACK CART. 23.60
PAINTJET COLOR CART. 29.10
PAINTJET CUT-SHEET PAPER 19.10
PAINTJET DUST COVER 19.95
PAINTJET PAPER CATCHER 23.95
PAINTJET PRINTER STAND 66.95
PAINTJET TRANSPARENCY FLM 54.05
PAINTJET Z-FOLD PAPER 14.95
POWERPLAYERS JOYSTICK 19.95
PRINT & WEAR 13.95
QUICKSHOT II JOYSTICK 12.95
RAM, 1 MEG X 1-10 CHIPS 30.00
RAM, 1 MEG X 8-12 SIMMS 340.00
RAM, 256K X 1-12 CHIPS 12.00
RAM, 256K X 1-15 CHIPS 10.00
RAM, 256K X 8-12 SIMMS 88.00

PROGRAMMERS BOX:

LATTICE C 5.0	$195.00
LATTICE C++	$345.00
AREXX	$ 32.95
W-SHELL	$ 32.95
GFA BASIC 3.0	$ 90.95

RUGGED W. 16KB +4 FONTS! 124.95
• SONY DISKETTES, COLORED 22.95
SONY DISKS 10 PACK 20.95
TAC-2 JOYSTICK 10.95
TEAK-TECH 120 DISKHOLDER 32.95
TEAK-TECH 60 DISKHOLDER 27.95
TRACKBALL (2 BUTTON MOUSE) 39.95
TRANSVESTOR 1000 ..... 23.95
TRANSVESTOR 2500 ..... 41.95
WINNER JOYSTICK 14.95
XEROX 4020 4-PACK INK 19.95

MORE CREATIVE PROMOTIONS:

NEW NEW NEW

SCULPT-ANIMATE 4D JR. $99.95

CENTAUR TRUE FLIGHT $59.95

(Proportional control yoke for Flight Simulator II)

Computer systems & package deals available ..... CALL FOR DETAILS!

■ **FREE VCR with purchase of computer — call for details.**
■ **Amiga Live! 2000 ..... $349**
■ **Flicker Fixer (A2000 only) — *Eliminate all flicker and scanline gaps 100% — optional multisync monitor* $479**

FREE SHIPPING!*

CREATIVE COMPUTERS is both a mail order company with a store's support and three store showrooms with mail order prices. Visit one of our showrooms today. You'll be amazed!

3 RETAIL SHOWROOM LOCATIONS TO SERVE YOU

SANTA MONICA & WESTSIDE: 318 Wilshire Blvd., Santa Monica, CA 90401. Tues.-Sat. 11-7 p.m./Sun. 11-5 p.m./Phone: 213-394-7779

LAWNDALE & SOUTH BAY: 4453 Redondo Beach Blvd., Lawndale, CA 90260. Mon.-Sat. 11-7 p.m./Phone: 213-542-2292

VENTURA, OXNARD & SANTA BARBARA: 2112 E. Thompson Dr., Ventura, CA 93001. Tues.-Sat. 11-7 p.m./Sun. 12-5 p.m./Phone: 805-652-0325

COMMODORE AMIGA™

THE CREATIVE COMPUTERS ADVANTAGE:
- Authorized Amiga Dealer
- The largest dealer of Amiga products in the World
- Three store locations means excellent support
- Amiga-specific—unlike the competition, we don't claim being Amiga specific while selling other brands under another business name
- Authorized service center
- Uniform low pricing and largest selection, no hidden costs or catches
- We don't charge your card until the product ships

CUSTOMER SERVICE: Call 213-542-2292 from 11 a.m. to 7 p.m. PST for technical questions.

VISA MasterCard AMERICAN EXPRESS Card DISCOVER

***SHIPPING INFO:** No surcharge for Visa/MasterCard; 4% surcharge for American Express; 1% surcharge for Discover. Shipping within the continental United States for software orders over $100 (U.S.) is FREE. Please call for all other shipping information. Educational, corporate and aerospace purchase orders accepted.

RETURN POLICY: Call Customer Service at (213) 542-2292 for return authorization. All returns without authorization number (RMA#) will be refused. Returned products must be in original condition and packaging. No refund on defective products or products that do not perform satisfactorily. We make no guarantees for product performance.

CONDITIONS: Creative Computers reserves the right to limit the sales of any items to local in-person pick-up only. Prices and availability subject to change without notice.

CREATIVE COMPUTERS GOES INTERNATIONAL!

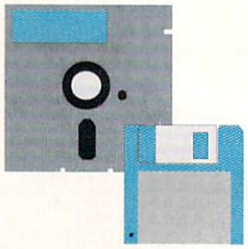
INTERNATIONAL TOLL-FREE ORDERING POLICIES: Minimum order $100 U.S. Orders only please. Absolutely no product inquiries, or any shipping inquiries, will be taken over the toll-free phone lines. For any other information, please call (213) 542-2292. We have operators versed in the following languages: English, French, and Spanish, only. Shipping prices vary and are quoted following your order. Payment is made via credit card or electronic fund transfer. For any other information please call our regular toll lines.

INTERNATIONAL PHONE NUMBERS: Canada 1-800-548-2512; Italy 1678-74086; United Kingdom 0800-89-1178; France 19-0590-1099; W. Germany 01-30-810466; Japan 0031-11-1351; Australia 0014-800-125-712; Netherlands 06-022-8613; Norway 050-12029; Denmark 0434-0297; Switzerland 046-05-3420.

WE CAN BEAT ANY ADVERTISED PRICE! BUT WE SELDOM HAVE TO — OUR PRICES ARE THE LOWEST! (IF YOU SEE A LOWER PRICE ON AN ITEM, GIVE US A CALL.)

COPY CORNER

By David W. Martin



Lake Forest Logic's Disk Mechanic is a collection of disk utilities for Workbench and CLI users which includes the following: disk tune up, hard disk backup, disk repair, disk editor, and a variety of CLI programs.

TUNE ME UP!

Tune Up rearranges data on your diskette to improve disk speed, and should not be confused with cache programs like *BlitzDisk* which create extra memory buffers. The rearranged files and directories are not fragmented, which keeps DOS from spending all its time seeking pieces of a file or directory all over the disk surface. The increased speed created by Tune Up is semi-permanent, depending on how often you add and delete files from the tuned-up disk.

HARD DISK BACKUP

Double Back is a fully interactive hard disk backup program, though some options must be set up by the user. Double Back copies your hard drive data to multiple destination drives -- up to four floppies and one non-standard device (i.e. tape backup, etc.). The backup process is for the most part automatic. You need only have the correct number of diskettes (formatted or unformatted) to hold the contents of your hard disk.

Double Back lets you use AmigaDOS wild cards to help select a file or group of files, or you can backup files by date. You can even request a selective backup which tests a file's "protection bits", and then skips files that have not been modified since a previous backup.

FILE FIXER

The Repair recovers deleted files, salvages files that are damaged, and repairs corrupted disks and files. The program works rather well, but will never rival the undelete utilities for the C64. This, I'm told, is because of what happens when AmigaDOS deletes a file. It seems that there is a 50-50 chance that AmigaDOS will overwrite the deleted file's header with bit map information after a file is deleted. Such a file can sometimes be salvaged to another disk, and disks using the Fast File System may yield a higher success rate.

During the repair process, the program will scan a diskette for files that can be recovered, if you have not already specified a file or files (wildcard support is available) to repair. Files can be restored to their original directory or in some cases to another disk.

WORK PLACE

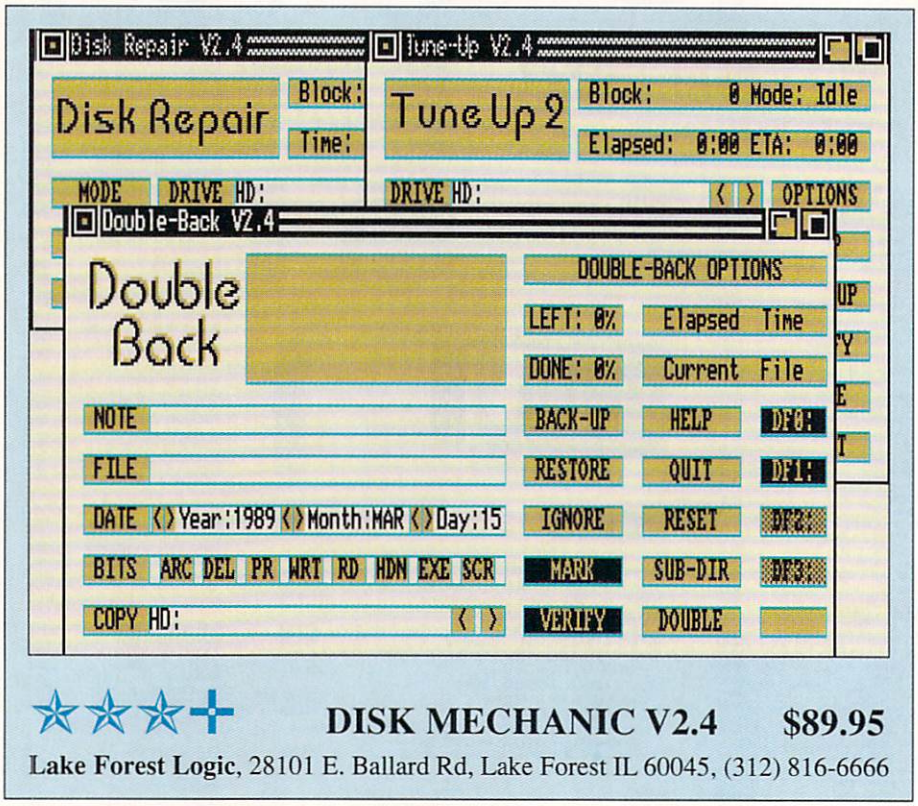
The Workshop program is great for exploring your Amiga diskettes on a sector level. However, I'd really like to see a better Amiga sector editor -- perhaps something as good as one of my favorites on the C64, with sector disassembly, MFM editing, a bootblock save feature, scanner, etc.

CLI STUFF

The Disk Mechanic disk utilities allow fast disk formatting, file search ability, file merge and split, and a means of measuring system performance.

CONCLUSIONS

The Disk Mechanic is a great addition to your software library if you own a hard disk or are interested in getting more out of AmigaDOS. The software now supports the Fast File System throughout and is constantly being updated. A recent bug fix fixed the problem with V1.3 ROMs which did not allow access to DF0: (V2.4 or higher of *Disk Mechanic* fixed this problem). Its features, support and free upgrades make *Disk Mechanic* a good buy. ★



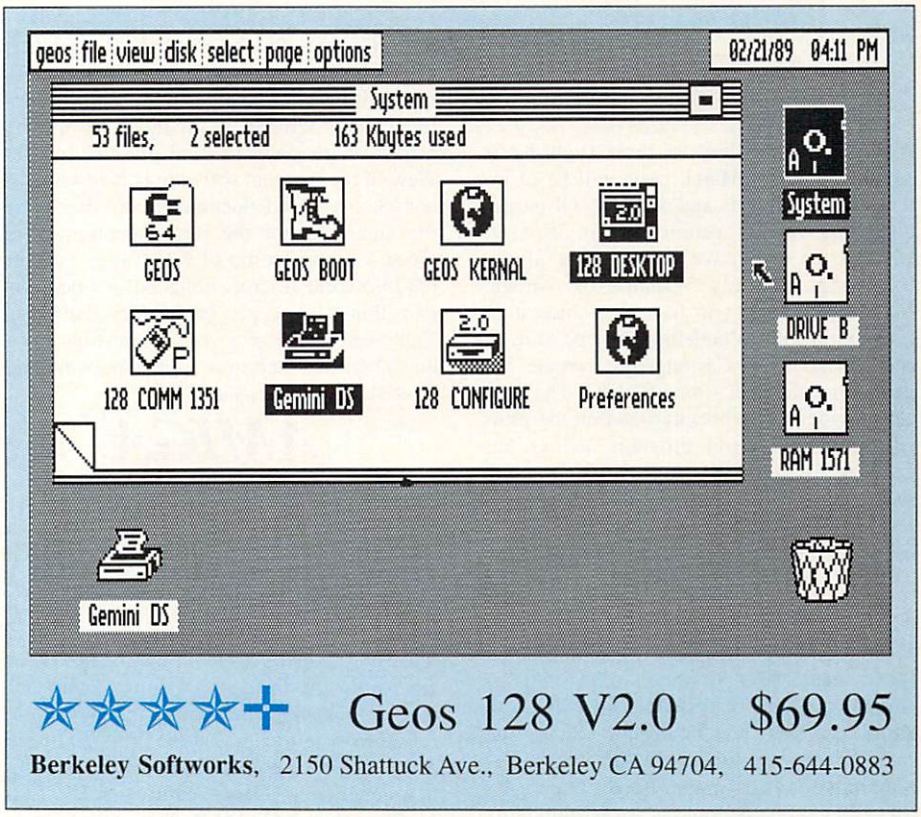
★★★+ **DISK MECHANIC V2.4** **$89.95**

Lake Forest Logic, 28101 E. Ballard Rd, Lake Forest IL 60045, (312) 816-6666

geoSTUFF

By Don Romero

Geos 128 V2.0



If you remember my praise for version 2.0 of *GEOS64*, this review will probably strike you as deja vu. But after all, **GEOS128 2.0** is a port of the former. The only significant difference is that it autoboots (in both 40 and 80 column modes). All the great new *2.0 DeskTop* features are there: multifile selection; three logical storage devices (any two active simultaneously); support for RAM 1571 (or an extra 165K of RAMdisk with the 1750 REU - if you can find one!); an on-screen clock/calendar; and increased color support.

GEOS128 v2.0 comes on three 1541 format flippy disks. Disk One includes the System (Boot) disk on the front and several programs advertising GEOS applications on the back. The bootable Backup System disk (side A) and several GEOS applications (side B) - *GeoWrite128 v2.1, GeoPaint, Photo Manager, Calculator, NotePad* - and six standard fonts fill disk Two.

Write Utilities (Text Manager, Text Grabber, GeoMerge, GeoLaser), four laser printer fonts, and numerous doublestrike, quadstrike and two reduced-size printer drivers fill the front of Disk Three; and last, but not least, there's *GeoSpell* and its dictionary.

APPLICATIONS

GeoWrite 128 v2.1 (a.k.a *Writer's Workshop 128*) offers a ton of advantages over v1.4: search and replace, headers, footers, more keyboard shortcuts and the ability to read *GeoPublish* files, full and right justification, variable line spacing, variable margins, paragraph indents and tabs by paragraph, superscripts, subscripts, and more. If you don't already have *Writer's Workshop*, this enhancement alone will be worth the upgrade.

GeoPaint remains functionally the same, but quicker, and with two nice new features: constraint, which makes using some draw features easier, and a rescaling function borrowed from *GeoPublish* - very useful for handling the differences in aspect ratio (pixel 'height' vs. 'width') between screen (especially 80 column) and printer.

The other biggie is an 80 column *GeoSpell 128* which runs noticeably faster than the 64 version. Thank you, fast mode, for, like its predecessor, it only gives the word count after checking the spelling.

THE DORK SIDE

Having experienced *GEOS64* version 2.0 already has probably jaundiced my sense of value. Compared to the original *GEOS128*, version 2.0 is a real eye-opener. But relative to *GEOS64* version 2.0, most of the performance enhancement seems to spring from the 128 itself - its faster CPU, drives and its 80 column screen. The 'BSW 128' system font eases the eyestrain, but a real 80 column monitor is a must-have. The Gemini (and presumably other) dual density printer driver makes two passes rather than utilizing the printer's underused 240 dpi horizontal resolution, slowing the printing process.

CONCLUSIONS

Every *GEOS 128* user owes him- or herself version 2.0, even if they already have *Writer's Workshop*. *GeoSpell 128* is also worth the upgrade cost. I'd urge the less-than-GEOS-faithful to give v2.0 a look, too.

Novice GEOS users ask how to put more zip into GEOS. My usual response is get v2.0, get a 1351 mouse, and get a RAM expander or/and a 1581 disk drive. Now there's *GEOS128 2.0*, and "get a 128" belongs on the list.

But after all that (I thinks to myself) why *not* just get an Amiga? ★

Magazine Index

INFO's Guide to the Best From the Rest

Amazing COMPUTING

A long, in-depth look at three flight/battle simulators in the March issue will be of interest to the goggles and scarf set. Of particular note is the section on *Air Warrior*, which is an interactive simulator on GEnie. (Note that it's only available for Amiga, Mac, and ST.) If you have any interest in fractals and the Mandelbrot set, be sure to check out Paul Castonguay's article on generating them in AmigaBASIC. The article provides a good background on the principles involved, and program listings are given in AmigaBASIC, True BASIC, and C for comparison. And their long-awaited Product Guide is now available - it made its debut at AmiEXPO in New York.

AMIGA+

Mark brought back a copy of the first issue (coverdated May) of Antic's entry into the Amiga magazine market from the New York AmiExpo. There's an interesting article from Joel Tessler, who did the graphics for the last Superbowl on an Amiga. A cover piece by Steve Segal on creating his latest animation, *Happy Guy*, is also a worthwhile read. An optional disk with the animation, some games, and art is available for $10.95.

THE AMIGA SENTRY

Sentry's March issue takes a look at *Pagestream, Professional Draw,* and *Superplan,* among other new software. They've added color to some of the inside pages, and the paper is now slick throughout.

AMIGA TRANSACTOR

In the January issue, there is an excellent reply to all the doomsaying about how the Amiga is falling behind technologically. Larry Phillips admits that while certain aspects of the Amiga have been picked up on and developed for other computers, as far as capability and price/performance go, there just isn't any equal to Amiga. Tim Grantham, in the first (February) installment of his new *Hard Copy* column of book and manual reviews, has clearly set forth what should be the hallmarks of computer writing: Clarity, Precision, and Readability. There has been so much incomprehensibly bad writing in the industry that anyone contemplating writing a manual should be forced at gunpoint to read this column. In view of the fact that software is increasing in complexity, good documentation should be the standard, not the rare exception. This piece, coming on top of Jeff Angus' plea in his Infoworld column, holds out a little hope that things may get better. The February TransAmi also has a very interesting piece on 3D fractals and how to create them. The rendered illustrations are killer.

AMIGA WORLD

In the March issue, Lou Wallace takes a knowledgeable look at hard drives, which ties in with the hardware buyer's guide in the same issue. It's only a list, sans useful commentary, but it will serve well as a jumping-off place if you're in the market for any hardware. In the April issue, Bob Eller takes a look at business presentations. He offers some good ideas, but the best part of the piece is the sample page of a dummy newsletter from "North Security - A Division of Oliver North Global Protection Services". It's hilariously on target. In the same issue, Sheldon Leemon explains the mysteries of icon manipulation using the INFO command on the Workbench.

AMIGO TIMES

This slick publication (up to its fourth issue now) features lots of color on heavy stock, and some nice graphics. It comes with a disk and a cover price of $8.95. The disk for issue 1.4 has one of the niftiest PD screen hacks we've seen in quite a while. *Vac* changes your pointer into a little vacuum cleaner and lets you suck up all the pixels on your workbench screen. There are a bunch of game reviews in the same issue, along with a pretty good piece on creating an animated opening for a video presentation. [PO Box 1158, Champlain, NY 12919]

BYTE

In the March issue Jerry Pournelle allows as how the Amiga 2000 is the Most Improved Computer of 1988, what with its new chip set and 68020 CPU. Someone must have led him astray, but at least his intentions are aimed in the right direction. Keep trying, Jerry, you are doing better.

Commodore MAGAZINE

The March issue features a look at Amiga MIDI sequencers, along with a very entertaining report by Russ Ceccola on last November's World of Commodore Show. The April issue contains a long feature on Intracorp's new game, *Search for the Titanic*.

COMPUTE!

Orson Scott Card's *Gameplay* column in the March issue talks about Programming For Its Own Sake and the way some games, usually mediocre, have of evolving from one nifty programming trick. It's a good, and enlightening, read. Gregg Keizer's editorial in the same issue is a satirical look at celebrity computer ads. He thinks Andre the Giant should be touting IBMs, William Shatner should be brought back to push C64s and, inevitably, Max Headroom should be selling Amigas. The feature is on getting various brands of computers talking to each other.

COMPUTE!'S AMIGA RESOURCE

The Summer issue (which is a lot more colorful than the premiere issue) offers columns by the ever-funny Arlan Levitan, the devilishly clever John Foust, and the eminently informative Rob Peck, among others. A conversation with Jay Miner is also included. Anything the Father of the Amiga says is always worth reading, and the good news is that Miner, who has had serious health problems, is recovered and is ready to get back to work. Also of note in the issue is a look at Canon's *Zapshot* still-video camera. It's ideally suited for Amiga video work when attached to a framegrabber. Amiga Resource, like Amiga+, is also offering an optional disk ($7.95 plus $2 S & H). The disk includes some art files (we've seen a lot better), along with a poker solitaire game, an enhanced version of the old Compute! type-in *Laser Chess*, and a nifty utility called *X-Ray*, which provides a window from one screen to another, along with the ability to cycle through them.

Magazine Index

COMPUTE!'s GAZETTE

Having just gone through the March, April, and May issues of C!G, I feel like I've been on a trip through the Department of Redundancy Department. About the only difference immediately apparent is that starting with the April issue, the magazine has a different logo. The March issue has a feature on the designers of simulator games while in the April number, Keith Ferrell talks about science fiction games. The dearth of new 8-bit products is evident in the May issue, where there's not one new product mentioned that isn't a game, and the feature is on dot-matrix printer maintenance.

COMPUTER Gaming World

The February issue features a long report on the Game Developers' Conference. It also has the INFO Quote of the Bi-Month: "Marketing is based on yesterday. It is similarity thinking and this is fundamentally opposed to creativity." Truer words were ne'er spoken. Too many of the games (as well as other products) that pass through the INFO offices are based on marketing decisions rather than playing games.

INFO WORLD

Anyone out there who puts word to paper, or characters to screen, please read Jeff Angus' column in the February 13 issue of *Infoworld*. He talks about the mutilation of the English language by the computer industry. We particularly like the quote, "I'm not a linguistic purist, but some of these folk are doing to the language what Hitler did to Poland in 1939." We couldn't agree more. He then goes on in the Feb. 27 issue to lament the state of U.S. education and the number of Techno-Turnips it is turning out. If you've been curious about the new magneto-optical disks and how they work, take a look at Steve Gibson's *Tech Talk* column in the Jan. 23 issue. He gives a clear explanation of how the things operate. The Feb. 6 tabloid has a couple of items worth noting. Believe it or not, George Morrow's column is an insightful look at Marketing Myopia, by which he means figuring out exactly what business you're in. It's much more complicated than you might think.

Electronic Musician

We're more than usually impressed with EM this bi-month. The March issue offers a batch of signal processing tips that look to be greatly useful to musicians. Not that EM has given up its occasionally esoteric pieces; in the same issue is an exploration of East Indian microtonal music. The April issue has a well-said editorial by Craig Anderton on the damage vaporware does the entire industry. It's gotten to the point where we're anticipating each issue of EM as much for the hilarious pun-laden headers as much as the articles themselves. A few choice bits: in the review of *M* , the algorithmic music composition package from Intelligent Music (reviewed on the Amiga, by the by) one subhead is "Algo My Way". On the regular Q&A column, "My Synth Hertz". And finally, on a review of a mixer, "I Sync, Therefore I Am". Groan. Also in the issue is the first of a two-parter on digital audio tape.

RUN

The March RUN has a listing for an 8-bit paint program that looks pretty good, supporting such Amiga-like features as anti-aliasing, blending, shading, and even an undo function. It's available on their disk to save you the aggravation of typing in about a ten-page listing. After that worthwhile effort, the April issue is something of a letdown, featuring a piece on computing in a healthy way. You know - sit up straight, use proper lighting, and all the other things your mother told you to do. However, Ellen Rule continues her fascinating look at computer-innards, this time with a dissection of the 1541 and 1571.

SCIENCE NEWS

It's time to start harping again on the virtues of being a well-informed person and reading *Science News*. The two are strongly connected. The news items are thought-provoking and presented (usually) in a readily understandable way. For instance, the February 4 issue has very interesting pieces on quantum-well wires (incredibly tiny wires built up one layer of atoms at a time) which have a potentially revolutionary effect on computers, particularly since much of the experimentation is being done on gallium arsenide alloys. [231 W. Center St., Marion, OH 43305]

TRANSACTOR

Yes, *Transactor* is back and it's better than ever. The February issue is a treasure trove of useful, albeit somewhat esoteric, programming stuff for the 8-bit machines. The majority of the articles deal with the C128, and there are even a couple of CP/M pieces! GEOS programmers will want a copy of the issue if only for the two-page, cross-referenced chart of GEOS label names.

TWIN CITIES 128

If you'd like more details about publisher Loren Lovhaug's proposal to take over the phase-out marketing of the 128 from Commodore [see the interview with Loren elsewhere in this issue], the whole thing is in issue 23. There is also a piece by Fred Bowen on partitioning a RAM disk.

Magazines on Disk

JUMPDISK

The March disk has an item or three worth noting. The PD fractal landscape generator, *Scenery*, that I've been wasting hours playing with is included. Check it out for some extremely naturalistic results. Also included is the latest *VirusX*, version 3.10 [note: at presstime, the latest version is 3.20], which will check for the nasty new IRQ virus. Publisher Richard Ramella also announces that he's left M.A.S.T. (makers of disk drives) in order to put all his energies into Jumpdisk. The April disk is probably the best issue yet. It's packed to the bitmap with fun stuff. There's a sine rose generator that makes pretty patterns, a demo of *IconLab2*, and for those of you who saw the Nova episode on the newly popular science of chaos, a graphic demo program. Interesting stuff.

REMOVABLE MASS STORAGE

by Mark R. Brown, Technical Editor

So you've got an Amiga and you're thinking about getting a hard drive. Only problem is, you don't know how much storage will be enough. Most IBM/PC and Macintosh owners seem happy with 20 to 40 meg drives. But the Amiga is not just any personal computer. It generates lots of huge graphic, sound, music, desktop publishing, and animation files.

Twenty megs, or even a hundred and twenty, is an artificially low storage limit for an Amiga system. No matter how big a hard drive you buy, the Law of Amiga Storage will kick in: "Data files will expand to overflow the storage space available." If all you're going to do is type words and crunch numbers, a hard drive is probably fine. But if you're going to get into the artistic applications of your computer (and that is why you bought an Amiga, isn't it?), you should think twice before investing in a hard drive. Why? Because there are mass storage devices that have speeds and capacities comparable to hard drives, but removable media like floppy drives.

COST

Removable-media mass storage systems cost more than hard disk drives of the same capacity. The savings come over time. For example, if you pay $1800 for a 20 meg removable-media device, you are paying about three times what you'd pay for an Amiga hard drive of comparable size. But if the media cost is, say, $50, your second 20 megs will only cost $50 more instead of the $600 that a second 20 meg hard drive would cost. By the time you get to your third 20 megs, you've broken even. Everything after that is practically free.

INTERFACES

All the systems we'll discuss here interface to the Amiga via a standard SCSI hard drive interface card. As with a hard drive, the Amiga generally can't talk to any of these units unless someone, somewhere, has written a software driver for it. (Version 3.0 of C Ltd's SCSIdos gets around this limitation by including a "roll your own driver" program that lets you build a custom driver for just about any SCSI interfaced device.) Fortunately, many of the third party purveyors of hard drives have taken on the challenge of writing drivers for some of the more popular removable mass storage devices. These drivers work only with the company's own SCSI interface, so make sure you check with the source company before you plan on connecting a particular device to a particular interface.

BIG FLOPPIES

There are several approaches to the question of removable mass storage. Perhaps the the most obvious solution is to buy a bigger floppy disk drive. You can get a 10 megabyte floppy drive right now from Supra, Pacific Peripherals, and C Ltd. The 10 meg systems that are now available use a high-density 5.25" floppy disk. The speed of these disk drives is no challenge to a hard drive, but they'll certainly blow the doors off a regular floppy. The cost with interface is around $1000-1200, and the disks list for less than $40. This is the cheapest of the removable media, and these high-density floppy disks are just as durable and transportable as regular floppies. That can't be said for all of the other media mentioned here, and that makes high-density floppies a perfect medium for transporting large amounts of data back and forth between systems.

BERNOULLI BOXES

Floppies are more prone to wear than their high-speed, stiff-plattered hard drive cousins, and that's one of the reasons you can't store as much stuff on them. You can't spin them as fast, because they wear out sooner. The Bernoulli Box II takes a floppy disk and injects a layer of air between the spinning disk and the drive heads, allowing them to spin at speeds approaching those of hard drives. The current crop of Bernoulli drives stores 20 megabytes on a $50 disk, but Iomega has recently announced a new 44 megabyte drive with a media cost of $125. The cartridges are encased in a plastic shell, and they're tough.

At INFO, we've installed 20 meg Bernoullis with Comspec controllers in four of our A2000s (at a cost of about $1875 each). Judi's unit is a dual 20 meg drive we use for making backups. Twenty megs of storage is more than enough for all the work that goes into a single issue of INFO, and we can easily archive an issue by simply putting the working Bernoulli on the shelf and formatting a new one for the next issue.

REMOVABLE CARTRIDGES

Approaching the problem of removable mass storage from the other side, it might make sense to you to ask for a hard disk drive with a removable storage platter, like SyQuest's 44 meg removable cartridge drive. It's as fast as a hard drive - after all, it is a hard drive. The only difference is that the platter is encased in a removable hard plastic shell. Though the harder media allows for faster data access, it is correspondingly more fragile. It's tough enough in daily use, and travels fine if you pack it well, but you don't want to drop one three feet onto a concrete floor! Great Valley Products and C Ltd both sell the SyQuest unit, which retails for around $1300. 44 meg cartridges list for about $180.

REMOVABLE DRIVES

One step further down the line is the concept of the removable hard drive. These units encase an entire drive mechanism in a removable shell that slides into a receptacle on the controller card. This makes a media change almost as expensive as purchasing an entirely new hard drive, and the "cartridge" is almost as fragile to handle and ship as a hard drive unit, though the manufacturers put some extra effort into heavy-duty shock mounting. We haven't seen one marketed for the Amiga yet, though IBM and Mac users have their choice of several.

OPTICAL STORAGE

WORM (Write Once, Read Many) drives are capable of storing 200 or 400 megabytes of data on a single durable optical disk (double sided disks can be flipped for double the storage). They are a cheap medium ($80-$120) for storing lots of archival data, but they have a couple of limitations that make them less than desirable for everyday storage. Not the least of these is base system cost - a 200 meg single drive system from Laser Gamesmanship runs about $3300, and 400 meg systems from CSA and C Ltd are $6000. You can write to each position on these disks only once, so you don't want to use them for data that changes often, like inventory information or intermediate saves of artwork in progress. It's best to use one in conjunction with a regular hard drive, using the hard drive for volatile data and transferring it to the WORM when it is ready for permanent archival storage.

COMING SOON

Until inexpensive solid-state bubble memory units become widely available, it looks like we'll be stuck with some form of removable mechanical recording for long-term data and program storage. But the R&D labs keep coming up with new twists on the current technology.

Coming soon is the "floptical" disk, which is a standard high-density magnetic disk with an added optical sync track. This track allows the read/write head to be positioned much more accurately, so that a $20 3.5" disk can store about 20 megabytes of data. C Ltd says they will make a 20 meg floptical drive available for the Amiga as soon as they come on the open market.

There are also new read/write optical storage systems under development, such as the THOR system being developed by Tandy. This is a completely optical technology, like WORMs, but the media can be written to, erased, and rewritten indefinitely. It has the added advantage of being compatible with CD-ROM, audio CD, and videodisc formats, so that one drive will be able to read all three types of data. But it may be another year or more before they become available.

Another interesting new technology is Digital Paper, developed by the British chemical company ICI. This laser-based optical film promises storage capacities approaching a gigabyte on a 5.25" format disk. So far, the medium is only available on huge reels for megacorporate monolithic mainframe computer systems, but disk formats are promised soon.

WHAT'S BEST?

When you compare storage media, resist the temptation to get bogged down in meaningless statistics. While a drive's "seek time" is a valid technical specification, it tells you little about its actual performance in the real world. Truth is, most of the files an average user manipulates won't tax the capabilities of any of these systems. All of them are much faster than floppies, and in terms of real-world access times all are perceptually indistinguishable from using a hard drive. We would suggest that the quality of the drive and the SCSI interface, and the reputation of the company that provides them are much more important considerations than any hair-splitting over technical specs.

But you expected an opinion, right? Okay, okay, here it is: We love our Comspec-interfaced Bernoulli Boxes. They're fast, reliable, and fun to use. Truthfully, though, they're the only one of these systems we work with on a day-to-day basis. Some people we know and respect are set up with SyQuest removable cartridge drives and would rather fight than switch.

As for the other systems mentioned here - WORMs, 10 meg floppies, removable

THE SOF DRIVE

If you already own a hard drive, or feel all you can afford is an inexpensive hard drive, here's how you can get many of the advantages of removable mass storage without the cost. All it takes is a little time and a few floppy disks. We call it the SOF (Stack Of Floppies) Drive.

1. Buy a hard drive backup program.
2. Partition your hard drive into two parts (or at least make a separate directory at the root level that's reserved for all your work files). Put all your permanent files in one partition. Back this part up normally for archival purposes.
3. Put all your work files into the other partition. Back up this work section when it gets full, and put the disks aside. Then erase the partition, and you can start all over again.
4. If you want to work on any of the previously saved files, back up your current work area to another set of floppies, then restore the previously saved set. You can repeat the process as often as you want, effectively turning a fixed hard disk drive into an open-ended removable mass storage system.

Obviously, this system trades off cost at the expense of convenience. It works best if you're organized in your approach. For example, you might want to keep one set of backups for all your video digitizing work, another for animations, and another for sound and music.

REMOVABLE MASS STORAGE

. . . continued

hard drives, and such - these are out of the range of our daily experience. But to us, WORMs seem best suited for offices where they keep lots of "permanent records", or maybe for artists and animators who want to store multi-megabytes of art. And if I were computing on a shoestring instead of on the boss's money, I'd probably take a close look at 10 meg floppies for use on my Amiga setup at home. On the other hand, the whole concept of removable hard drives sounds incredibly costly and silly to me. I think I'd feel self-conscious even seriously considering such a drastic "solution". But I am looking forward to the emerging floptical, Digital Paper, and THOR drive technologies, and will give them a serious look when they finally appear on the market.

SOURCES

C Ltd, 723 E. Skinner,
Witchita KS 67211, 316-267-6321

Comspec, 74 Wingold Avenue, Toronto
Ont Canada M6B 1P5, 416-785-3553
CSA, 7564 Trade Street,
San Diego CA 92121, 619-566-3911
Great Valley Products, 225 Plank Road,
Paoli PA 19301, 215-889-9411
Laser Gamesmanship, 958 Pullman Court
Concord CA 94518, 415-827-3655
Pacific Peripherals, PO Box 14575
Fremont CA 94539, 415-651-1905
Supra, 1133 Commercial Way SE,
Albany OR 97321, 503-967-9075

BACKUP PROGRAMS

Removable mass storage devices are no less reliable than hard drives, but they're no more reliable, either. No matter what type of mass storage device you own, you need a backup program to ensure against the loss of your valuable data. Here's a quick look at four of them for the Amiga. As a test, I used each to back up and restore the data that happened to be in the dh0: partition of my own SCSI hard drive - about 4.3 megabytes worth. Most of these programs offer a verify mode, which I turned off for the fastest speed if that was an option, and I used two floppy drives when possible.

★★★

EXPRESS COPY $44.95

Express-Way Software,
PO Box 10290, Columbia MO 62505,
314-474-2984

At 10 minutes and 20 seconds, *Express Copy* was the slowest backup program of those I tested. Where the other three all employ some form of data compression, storing the backed up data in a format unreadable except by the backup program itself, *Express Copy* stores files in standard AmigaDOS format. This means you can stick any of the backup disks in a drive and access your files directly via WorkBench or CLI. But storage is much less efficient with this system than the others. Where they each took five disks to hold my data, *Express Copy* took six, and each disk was only somewhere between 89% and 99% full. The user interface is well-organized, intuitive, and nice to look at, and you can select files using any combination of date, filename, and archive bit. If direct file access is important to you (and it might be), consider *Express Copy*. Otherwise, you'll appreciate the speed and data compression features of the other programs more.

★★★

HARD 'N FAST N/A

The ComputerWorks,
6641 Scott St., Hollywood FL 33024

Hard 'N Fast backed up my 4.3 megabytes of data in 8:45. My major aggravation with this program was its need to "mark" disks before it let me save to them. I found myself stopping more than once to select the "mark" option before the program would continue with the backup. It uses these marks to track a set of three progressive backups. If you are the type who needs a harsh taskmaster to discipline you into making properly rotated, scheduled backups, this program may be what you need, but I found it annoying. Besides archive bit and date, *Hard 'N Fast* has a unique selective backup option that lets you exclude and include files using a scrollable list of filenames with wildcards. But I found the user interface generally cluttered and confusing. Like all of the programs tested, *Hard 'N Fast* allows you to restore to any Amiga device, including floppies, a feature that is absolutely critical should your mass storage device give up the ghost permanently.

★★★+

SUPERBACK $79.95

The Disc Company,
3135 S. State St., Ann Arbor MI 48108,
313-665-5540

This trilingual backup program (English, French, and German) took six minutes and 20 seconds to back up my 4.3 megs to floppies. It only allows you to use one drive for both backup and restoration, a limitation that I find short-sighted. It covers up by buffering a great deal of data to RAM and prompting for swaps while it works from the buffer, but I would still prefer to use both drives. The user interface is pretty and very easy to use. If you are familiar with the history of Amiga backup programs, *Superback* was written by MK-Soft, who did *LV Backup*, and the files are cross-compatible.

★★★★

QUARTERBACK 2.0 $69.95,

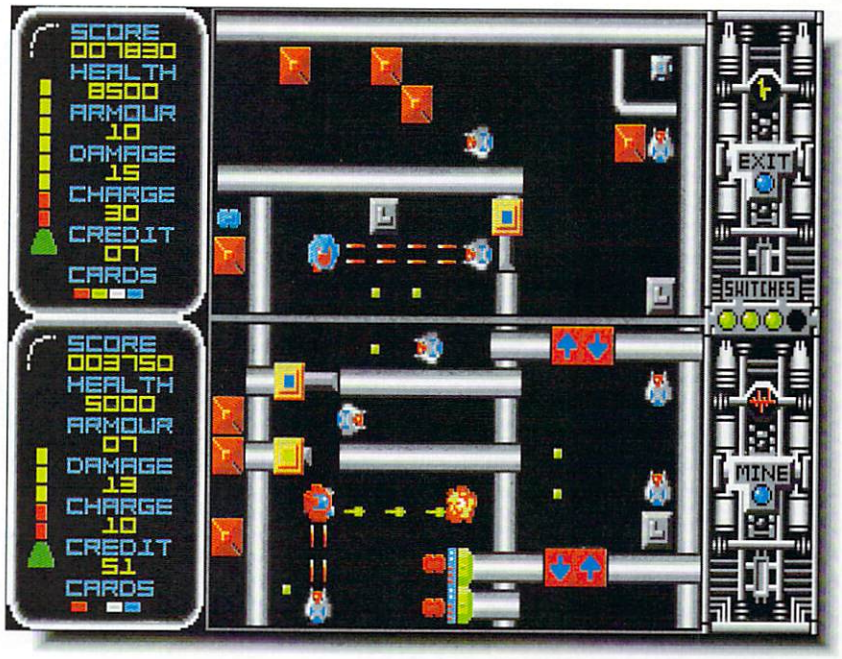
Central Coast Software,
424 Vista Ave., Golden, Colorado
80401, 303-526-1030

The fastest of the lot, *Quarterback 2.0* copied my 4.3 megs to five floppies in four minutes and fifty seconds. The user interface is smooth and intuitive, the process painless and reliable, and the speeds a good sight better than even second runner up. You can select files to include or exclude by combinations of date, archive bit, and names with wildcards, as well as selecting them manually. There are just enough gadgets around to make things easy, and not so many as to make them confusing. This is the program we use to back up our hard disk and Bernoulli data.

You'll have to plug a joystick into each port, find a friend, and work out a co-operative strategy (not necessarily in that order) in order to win this game. Something of a departure from Psygnosis' usual fare, *Captain Fizz Meets the Blaster-Trons* requires two players to win. It still plays well with only one player, if you don't mind not getting to the end of the game.

The screen presents you with two separate play windows, each of which follows one player. It's a novel experience to suddenly see your partner appear in your window. The graphics aren't what we're used to seeing from Psygnosis's games, being much smaller and less detailed, but that's just because enough space was needed for both windows. They're not at all bad, just different.

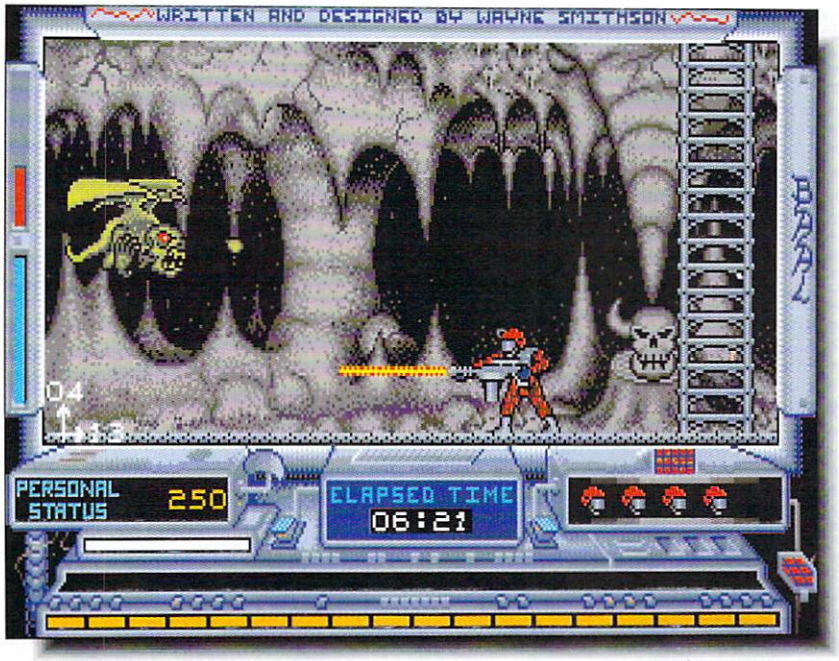
I like the idea of eliminating the competition between the players and making them cooperate. I do think, though, that some provision should be made for a single-player game. The play is as frantic as you would expect; you're constantly besieged by baddies. About the only thing I don't like is having to leave the heavily copy-protected disk write-enabled. Another winner from Psygnosis. - Tom Malcom



CAPTAIN FIZZ

★★★★

Psyclapse/Psygnosis
2150 Executive Drive
Addison, IL 60101
312-620-4444



BAAL

★★★★+

Psyclapse/Psygnosis
2150 Executive Drive
Addison, IL 60101
312-620-4444

The documentation for *BAAL* warns, "This game is tough". They're not kidding. I've played this arcade adventure for hours and have barely scratched the surface. *BAAL* has all the flash we expect from Psygnosis - beautifully detailed graphics, flawless animation, and a great soundtrack. Of course, it's insanely addictive as well.

The plot (as if one was needed) has you as an archaeologist unearthing an ancient tomb chamber and unleashing the forces of evil onto the world. Your mission is to collect pieces of a war machine and stop the impending destruction. (Baal, by the way, was a widely-worshipped ancient Sumerian deity who had an insatiable appetite for human sacrifice.)

The underground chamber is of the ladders and platform variety, where about anything you touch will destroy you. It is an evil place, populated with all sorts of grotesque creatures, all delightfully animated but deadly. It will take you a great deal of effort to figure out how to defeat or avoid them.

BAAL is a massive and supremely difficult game, but also one that provides an extraordinary amount of gaming pleasure.

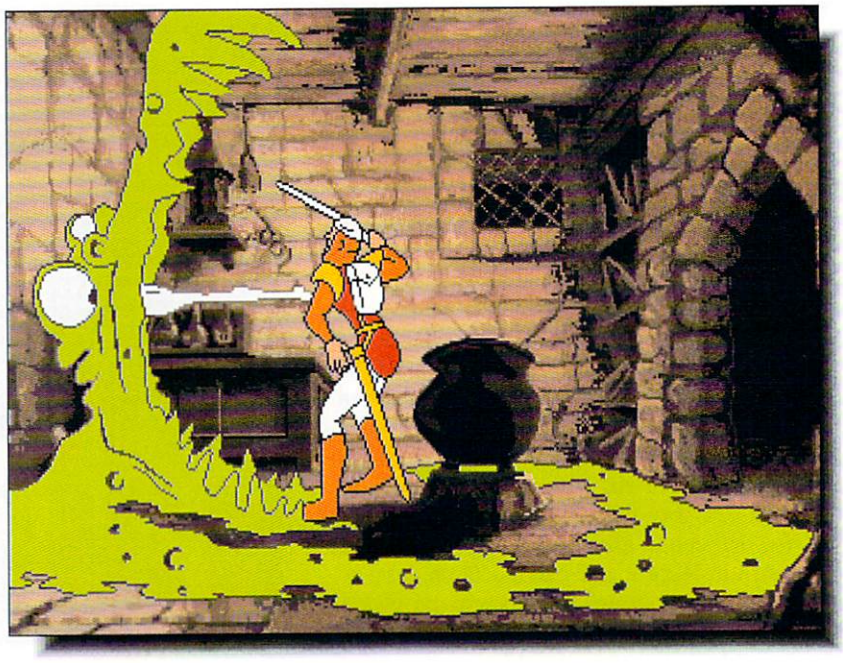
- Tom Malcom

In a lot of ways, this game reminds me of the early Cinemaware titles - it's pretty, but there's not much to the gameplay. *Dragon's Lair* is, of course, an adaptation of the successful arcade game, which featured 200 megabytes of laserdisc graphics. The Amiga version has been trimmed down to fit on six floppy disks, so in the course of a game you'll see most scenes twice, sometimes flipped to add some variety.

The timing of your joystick movements has been made super-critical in an attempt to extend gameplay. Though your quest is so preprogrammed as to be of little challenge, it could take you hundreds of attempts before you get to even the third or fourth scene. If it hadn't been for the "demo mode" we published last month, I'd have never been able to see the final scenes. (Press **ESC R / L N 7** simultaneously just after the credits finish loading; the screen will flash, then press the joystick button.)

As a demo, *Dragon's Lair* is pretty, but you need the demo mode trick to see enough of it to make it worth your while. As a game, *Dragon's Lair* is both too easy and too hard.

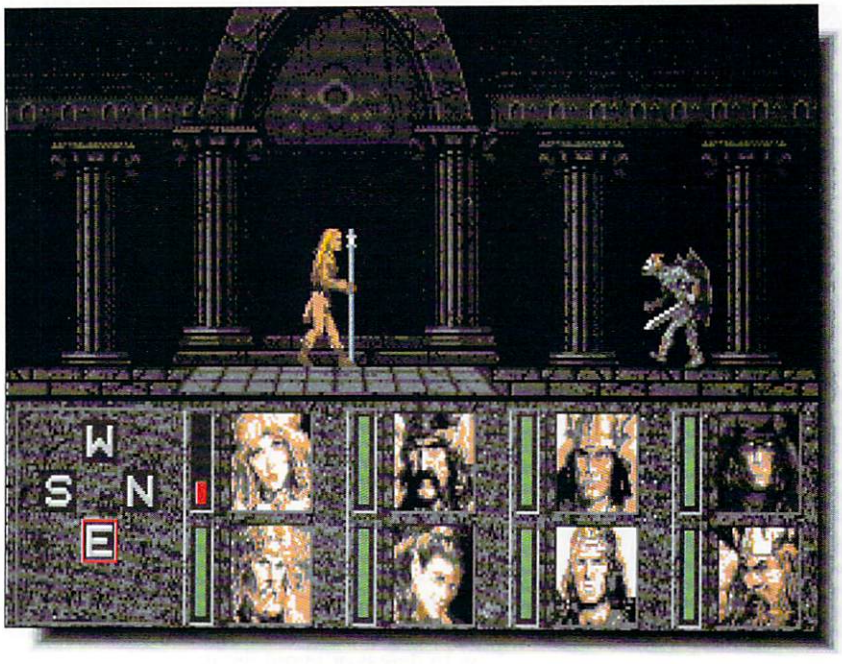
- Mark R. Brown



DRAGON'S LAIR

★★★

VDT/Readysoft
25 Red Oak Drive
Richmond Hill, ON L4B 1B9
Canada, 416-731-4175



HEROES OF THE LANCE

★★★★

SSI/EA
1820 Gateway Drive
San Mateo, CA 94404
415-571-7171

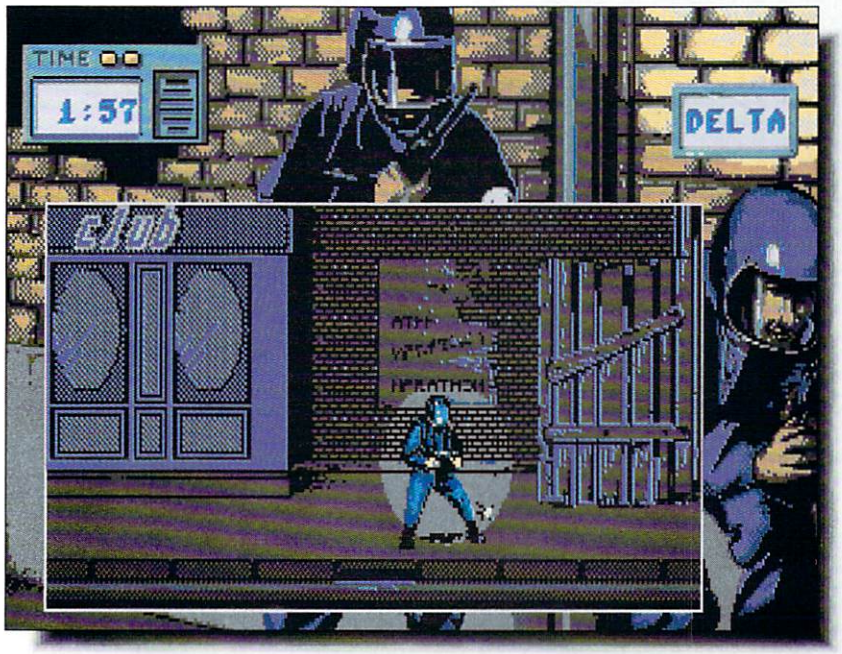
Heroes of the Lance is the latest in a series of official Advanced Dungeons and Dragons action adventures produced by SSI, based on the concept of traditional D&D roleplaying games by TSR. You have been sent to recover the precious Disks of Mishakal hidden deep inside the ruins of Xak Tsaroth, which are crawling with evil Draconians, spectral minions, Black Dragons, and other assorted nasties. You guide eight pre-rolled characters - Companions of the Lance - through the fantasy world of Krynn using menus and joystick to control real time combat with weapons and magic. The world of Krynn is portrayed with highly detailed and beautiful graphics. Your party moves through the ruins and confronts enemies in full animation, with your lead Hero front and center. Sounds, on the other hand, are limited to generic groans and crashes. Joystick control for combat is touchy and takes some practice. *HOTL* does a great job of hiding the dice rolling and table referencing found in traditional D&D games, freeing you to concentrate on the adventure. If you like action oriented games as opposed to puzzle oriented adventuring, you'll love *Heroes of the Lance.* - Judith Kilbury-Cobb

If you you find terrorism and hostage-taking entertaining, you'll like *Hostage*. If, on the other hand, you find trivializing such a serious subject offensive, you won't like the game. There doesn't seem to be much middle ground on this French import, programmed by Infogrames.

The object of the exercise is to coordinate a team of commandos under your leadership to rescue hostages from an unnamed embassy which has been overrun by terrorists. The game is divided into three main arcade sequences. The first has you positioning snipers, the second shooting terrorist snipers and rappelling down the side of the embassy to break in, and in the third sequence you must rescue the hostages without getting them killed.

The game is very detailed, and definitely not easy. The graphics are nicely drawn and the animation fine. Control is by joystick and function key, and the response is quick.

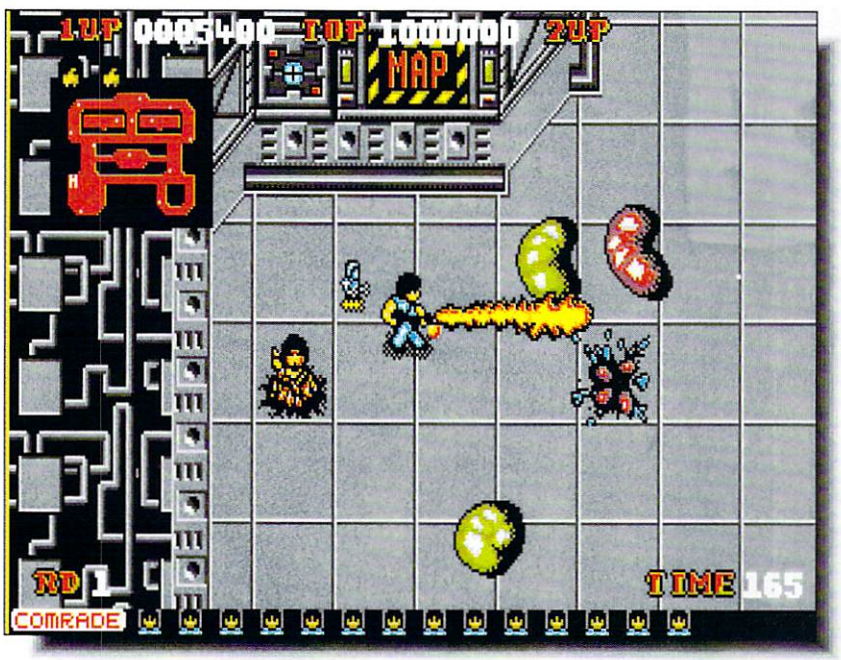
As a game, *Hostage* plays well, though I obviously have considerable distaste for the subject matter. Terrorism is not a game, nor do I feel it should be made into one. *Hostage* has, for me at least, the feel of cashing in on a currently hot news topic. - Tom Malcom



HOSTAGE

★★★+

Mindscape
3444 Dundee Road
Northbrook, IL 60062
312-480-7667



ALIEN SYNDROME

★★★+

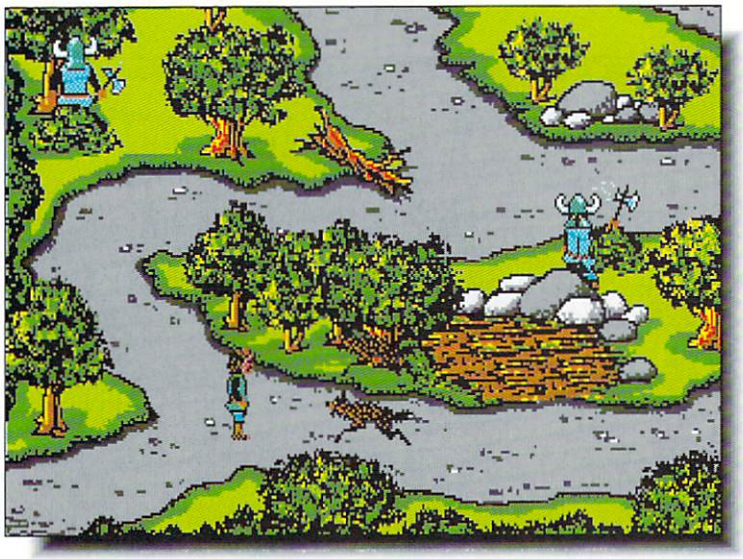
Sega/Mindscape
3444 Dundee Road
Northbrook, IL 60062
312-480-7667

It takes speed of light reflexes and an eagle eye to get very far in *Alien Syndrome*. This arcade alien-blast, like most arcade games, has only the flimsiest of plots. But then who really needs one for arcade games, anyway? You must rid a human space colony of the aliens who have invaded it and rescue hostages along the way. The aliens themselves look like grub worms, though they move much faster and frequently give birth to little projectiles that will do you in just as surely as the grubs themselves. Even worse, the grubs aren't even the mature creatures. Those await you when (and if) you can clear a level and rescue all the hostages. These Super Aliens are even more fiendish and nearly impossible to destroy.

Fortunately, you do have a few things to help in your mission, like a variety of weapons and online maps to show you where the remaining hostages are and to help you find your way around.

The graphics are good, though nothing to write home about, and the screen scrolls smoothly as you move about the outcolony. Good action overall.

- Tom Malcom



WILLOW

★★★

Mindscape, Inc.
3444 Dundee Road
Northbrook, Il 60062
312-480-7667

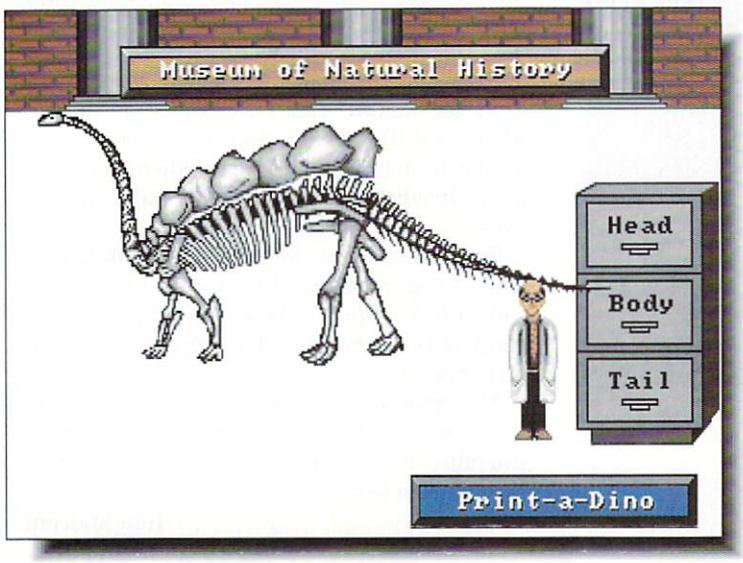
Willow is a collection of seven action adventure games based on the movie of the same name; guiding Willow Ufgood and Madmartigan through all seven scenarios is your objective. You can play the games in any order and can reset them to create new maps, scenes, and spells. The game features colorful graphics and nicely digitized pictures from the movie, but the music is really cheesy. The gameplay itself is relatively quick, but is slowed far too much by painfully long and noisy disk accesses (thanks mostly to the atomic copy protection); you'll spend more time waiting for the game to load than playing it. If you loved the movie you'll probably be disappointed by the game. - JKC

LANCELOT

★★★+

Datasoft/EA
1820 Gateway Drive
San Mateo, CA 94404
415-571-7171

Lancelot is a charmingly illustrated text adventure based on Mallory's quintessential adventure *Le Morte D'Arthur*, and is reasonably faithful to the original. The game recreates Lancelot's arrival at Camelot and his subsequent search for the Holy Grail. The illustrations are quite beautiful and the text is descriptive, at times humorous, and very readable. The parser is flexible, but your actions as the chivalrous Lancelot are somewhat guided. Unless you've lived under a big rock, you know King Arthur's denouement, but tagging along with Arthur's #1 knight as he adventures through Merry Olde England is still a good time. - JKC



DESIGNASAURUS

★★★★

Britannica Software
345 Fourth Street
San Francisco, CA 94107
415-546-1887

Designasaurus is a learning game (read "educational," parents) that lets you move, create, and print prehistoric giants chosen from a museum of dinosaur bones. Select a head, neck, body, and tail, and put them together to populate your primeval forest with some of the strangest looking creatures to walk the face of a computer display. The graphics are large and colorful, and the opening music catchy. *Designasaurus* will make regular, poster size, and T-shirt transfer printouts. I haven't met a kid yet who didn't go through a 'dinosaur phase' and *Designasaurus* is a great way to encourage that interest. With a little help, even pre-literate kids can have fun with this one. - JKC

TRUMP CASTLE

★★

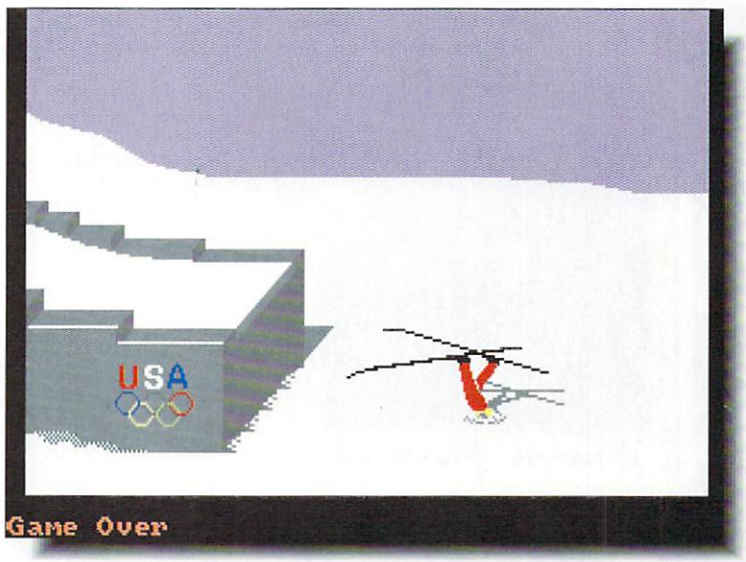
Intracorp
14160 SW 139th Court
Miami, FL 33186
305-252-9040

With sound effects rivaling a poorly oiled door hinge, and graphics that would make a first grader wince, I'm surprised this turkey hasn't drawn a law suit from Donald Trump for malicious mischief. If these programmers ever discover pull-down menus, they'll be dangerous! Billed as "The Ultimate Casino Gambling Simulation", Trump Castle is easily the ***worst*** gambling simlulation ever released on the Amiga. Devoid of options, this six-game collection was apparently written by someone who has never been in a casino- why else would the slot machine reels spin *UP*? - BD

THE GAMES: WINTER EDITION

★★★

Epyx
600 Galveston Drive
Redwood City, CA 94063
415-366-0606



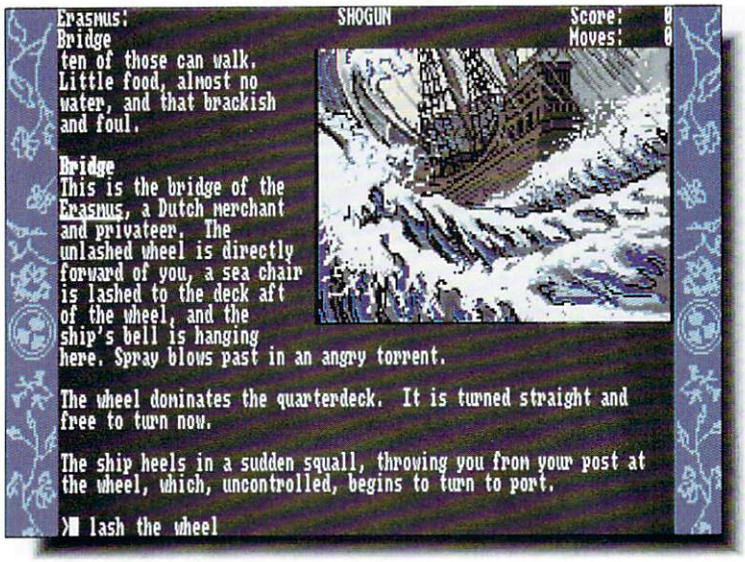
Cross-development is all well and good, but this latest in Epyx's long-running series of sports simulations is ruined by PC conversion-itis. While the music and sound are well done, the graphics are completely inferior by Amiga standards. The events in this collection include downhill skiing, ski jump, luge, figure skating, speed skating, cross-Country skiing, and slalom. The play isn't bad, using Epyx's usual joystick control, but overall, Epyx can do better, and so can you. - TM

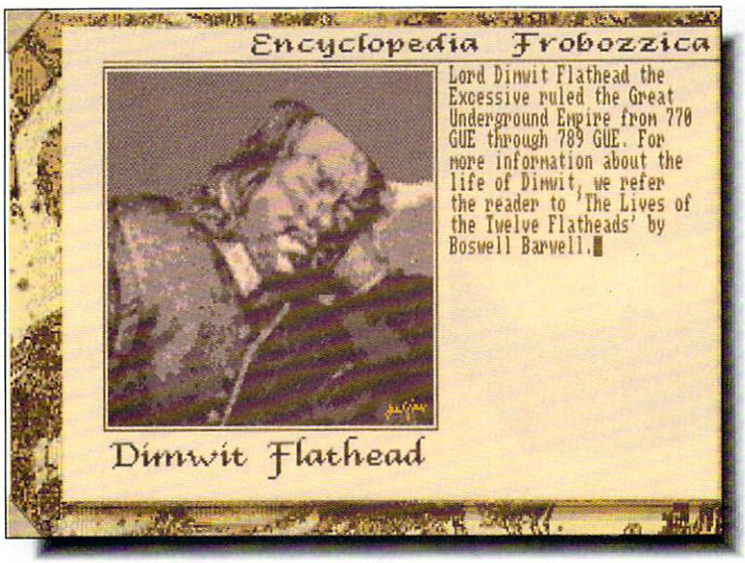
CRASH GARRETT

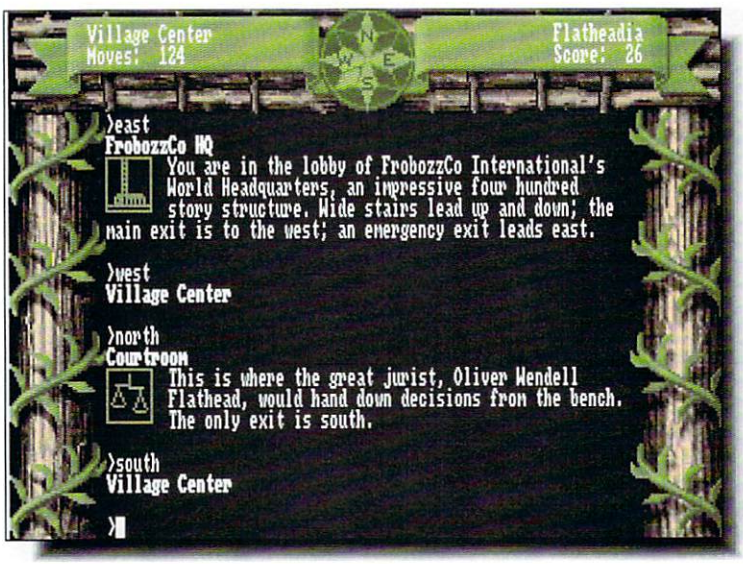
★★★

Terrific Software
544 Second Street
San Francisco, CA 94107
415-957-0886

The giveaway that something was amiss came when I picked up the packaging and quickly realized I was going to need my French-English dictionary if I was going to get anywhere with this 1930's era 'Swashbuckling Hero versus Evil Nazis' adventure. Though the manual is in English and carries a translation of the package blurbs, there's still the odd bit of French in the translated code. The parser, I suspect, also has a French accent; it won't recognize standard adventurese (like Inventory) nor is it terribly sophisticated. And still the game is well worth looking at for its excellent graphics handling, movie-serial plot, and the novelty of its French origin. - TM







PREVIEWS

ZORK ZERO, SHOGUN, JOURNEY

Infocom
125 Cambridge Park Drive
Cambridge, MA 02140
617-492-1031

My first hands-on experience with a computer was playing the original *Zork*. Since then, I've seen more software than I even like to contemplate without ever finding another title that held as much appeal for me. *Beyond Zork* tried hard, but somehow didn't have quite the same flavor as the original series. With *Zork Zero*, I've come full circle. All the wit, charm, and delight are back, along with the delicious snottiness and cheerful rudeness.

Steve Meretzky, *Zork*'s author, has done a superlative job of elaborating on areas of the Great Underground Empire we've not yet explored. And that's the strongest point of the game: it connects and intertwines perfectly with what has gone before, while adding graphics, other modern conveniences, and letting us in on more of the lunatic history of the realm of Lord Dimwit Flathead and the fall of the Empire. What graphics are present are unobtrusive, consisting mainly of beautifully drawn borders around the text, illustrated entries in the Encyclopedia Frobozzica, and some nicely done versions of classic board games (like the Tower of Hanoi and a peg-jump game). Thankfully, there are no actual pictures of the locations; I think everyone who has played *Zork* has his own personal view of the landscape and I, for one, would rather not see someone else's idea of what is so clearly drawn in my own imagination.

With *Shogun*, I have a slight philosophical difference of opinion. James Clavell's book and the miniseries made from it are among my favorites, and for that reason, I have some doubts about the ultimate satisfaction of the game. Since I already know where the plot, which is set in feudal Japan, is going, getting to that end seems to me something of an exercise in anti-climax. On the other hand, I find that I do enjoy playing it and interacting with the characters I know so well. It's rather like meeting old friends again. The look of the game is considerably different from previous Infocom games, with illustrations appearing along with the text. The same look is found in *Journey*, a new fantasy adventure which uses graphics in the same manner as *Shogun*.

Don't let the pretty faces of these new games fool you. The parser is still the best in the business, and the addition of online hints make playing less frustrating and time-consuming than it used to be.

I feel, somehow, that this is a wonderful, unexpected gift, a serendipitous surprise for all of us who thought we'd already played the last of a classic series. With *Zork Zero*, we now have the absolute pleasure of another one.

- Tom Malcom

THE DUEL: TEST DRIVE II

PREVIEW

Accolade
550 S. Winchester Boulevard
San Jose, CA 95128
408-296-8400

New cars and new scenery are the highlights of this sequel to the original racing simulation. In a bid to make the game more realistic, Accolade is simultaneously coming out with additional data disks for the game. The first contains additional cars, and the second provides a race course that runs the length of California. If you've ever been on highway 101, you'll know it presents not only breathtaking scenery, but also the supreme challenge of staying alive long enough to see it all. - TM

LOST DUTCHMAN MINE

PREVIEW

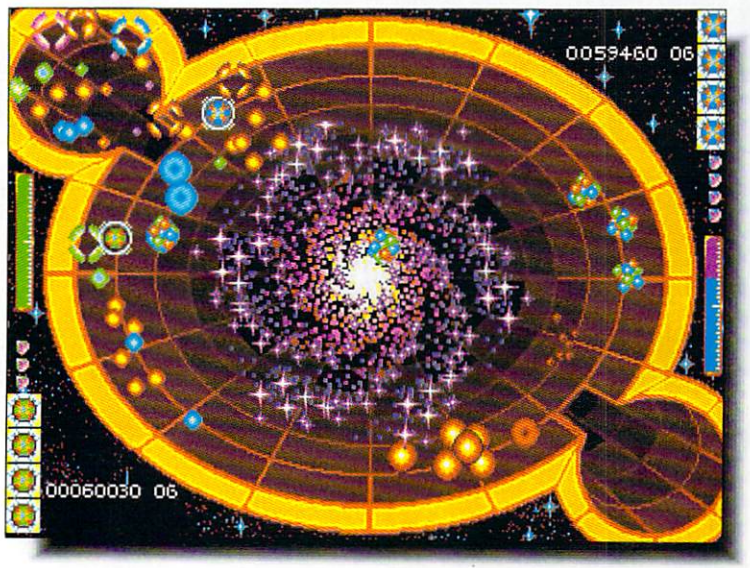
Magnetic Images
1506 E. Missouri Avenue
Phoenix, AZ 85014
602-265-7849

So far, all I've seen of *Lost Dutchman Mine* are static screens, but it looks like it's going to be fun. It's an icon driven graphic adventure, something on the order of *Cosmic Relief*, though with more options and an old west theme. I like the look of the graphics and the roly-poly characters, which lead me to believe the game will have a sense of humor, an element too often missing from games. - AF

VORTEX

PREVIEW

Visionary Design Technologies
45 Whitehorn Crescent
North York, ON M2J 3B1 Canada
416-497-0883



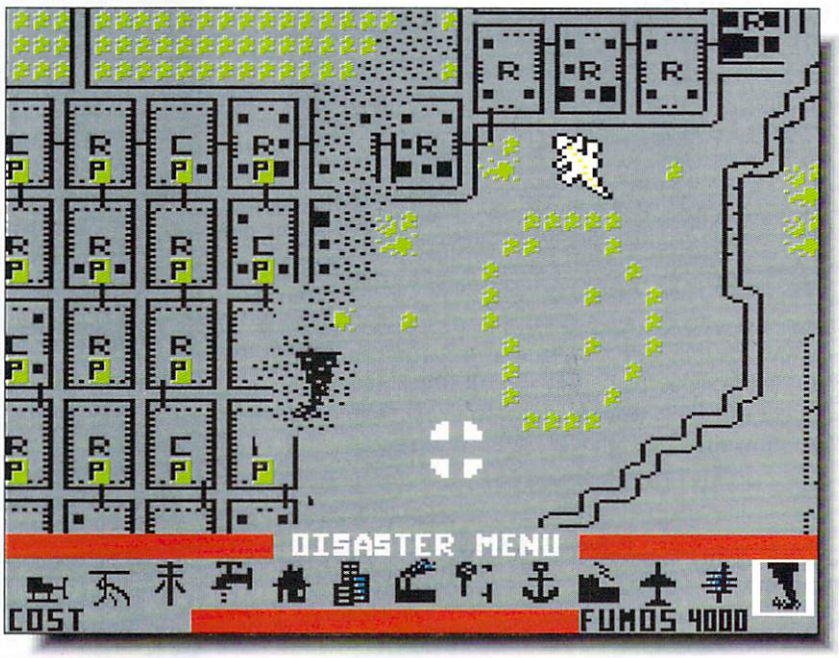
Vortex is a graphically flashy game vaguely similar to *Ebonstar*, though much more colorful. The idea is to keep extra-dimensional creatures from entering through a rip in the fabric of space-time that Man has accidentally opened. You destroy these creatures by bashing them up against the side of the whirling vortex. They can and will, of course, do the same to you. The game has a fine soundtrack and supports multiple players. - AF

While it's not a game in the strict sense of the word, *Sim City* offers the ultimate in gaming: you get to play God in the game of Life. It is an intricately detailed simulation of the life and growth of a city.

There are several ready-made real life cities on the disk, but the main point of the game is to grow your own. The simulation covers everything from clearing the land with a bulldozer to constructing airports. You have to keep track of such things as population growth, and thus the tax revenues which allow you to expand your domain, just like real cities.

The mechanics of the game are sensibly joystick controlled via icon menus. The play takes place on a map with two levels of magnification.

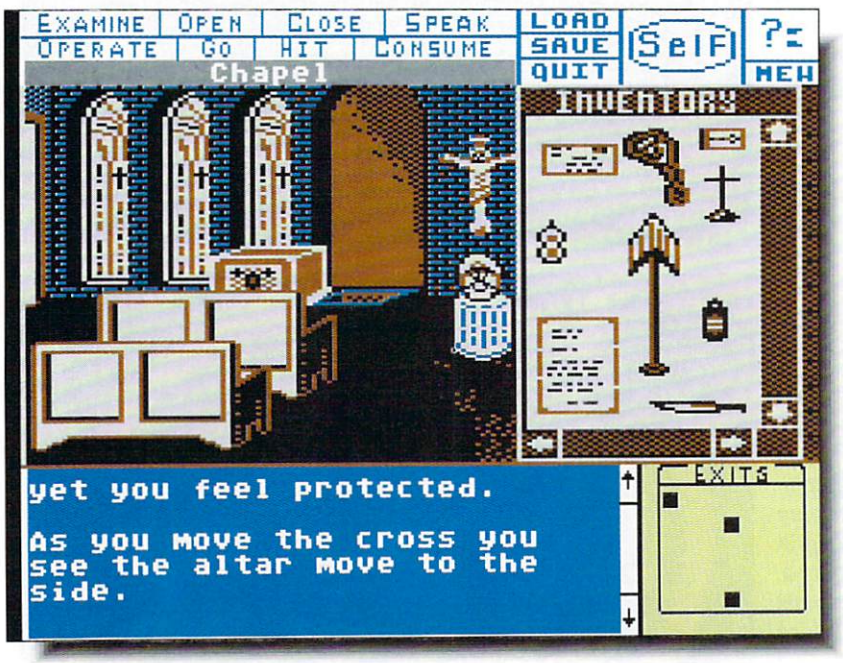
My favorite part of the game, though, is the disaster menu. It lets you loose tornados, earthquakes, and other devastation (including a wonderfully whimsical Godzilla-like monster) on your city. The beauty of *Sim City* is that it becomes anything you want it to be; you control the destiny of your own creation, whether it's managing the growth of your home town, or visiting destruction on Tokyo with a big lizard. - Tom Malcom



SIM CITY

★★★★★

Maxis
953 Mountain View Dr., #113
Lafayette, CA 94549
415-376-6434



UNINVITED

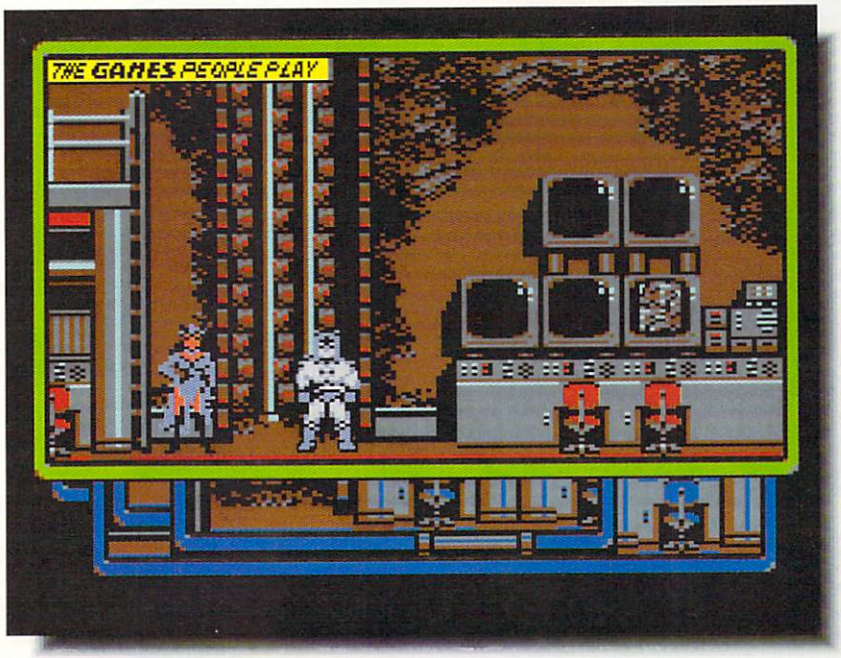
★★★★

Mindscape, Inc.
3444 Dundee Road
Northbrook, IL 60062
312-480-7667

Uninvited, which has been around for a couple of years in other formats, has finally come to the 64, and it was well worth the wait. The translation retains all the mystery, intensity, and frustration of the other versions. You are the Uninvited guest, suddenly stranded outside the gates of a graphically detailed Gothic mansion by a car crash, who must search for your missing younger brother. You confront a host of ghostly apparitions, mind teasing puzzles, and seemingly unsolvable obstacles that contrive to keep you from your objective.

The point-and-click interface of the Amiga version has been faithfully adapted for the 64's joystick. This method is still easy, but somewhat slower to use than a mouse. Shortcut keyboard commands are a nice addition. The 64 version even includes a full complement of scary sound effects, designed to chill your soul, along with the intricately detailed graphics that are the hallmark of ICOM Simulations. *Uninvited* ala 64 is still a terrific adventure.

- JKC



BATMAN

★★★★+

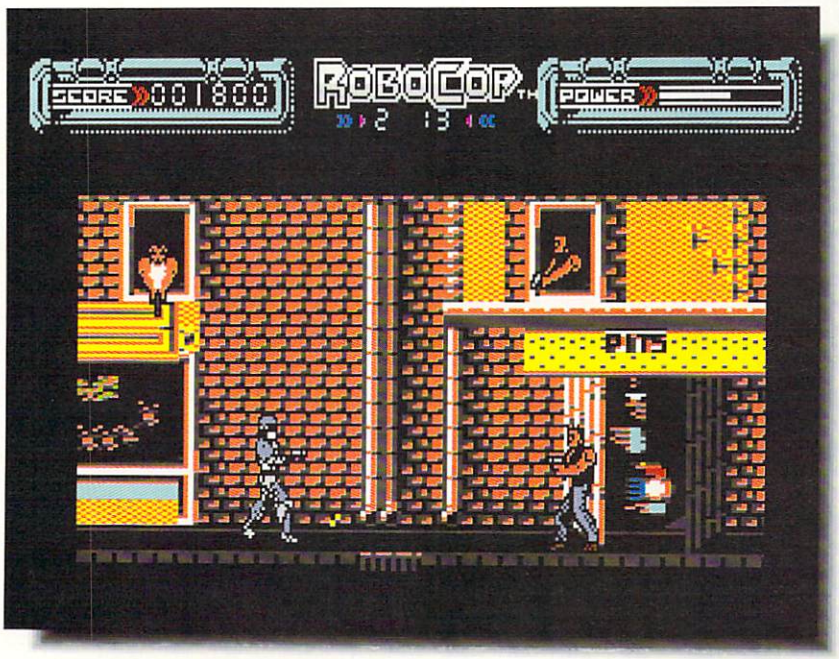
Data East
470 Needles Drive
San Jose, CA 95112
408-286-7074

DUH NUH NUH NUH NUH NUH NUH NUH, DUH NUH NUH NUH NUH NUH NUH NUH, BAAAAT-MAAAAN! I thought I'd give you the real Bat-music instead of the ersatz Bat-theme provided in the Bat-intro to this Bat-game. (I have to assume licensing problems as the reason the TV theme wasn't used.)

It was a pleasant surprise to start this graphic arcade adventure and find some innovation in it. The locations are shown in windows, and as you move the Caped Crusader through them, the previous window is ghosted as a new one opens on top of the old. The effect is highly pleasing.

The user interface is very good, and more sophisticated than it initially appears. It operates by popping up an options screen (instantaneously, I might add) on which are various icons for manipulating objects and reading your vital signs. They are activated by moving - what else? - a Bat-cursor over them. There is not, unfortunately, a save feature.

There are two separate adventures on the disk, one with the Joker and the other with the Penguin. Holy joysticks! If you're a Bat-fan, don't miss this Bat-venture. - Tom Malcom



ROBOCOP

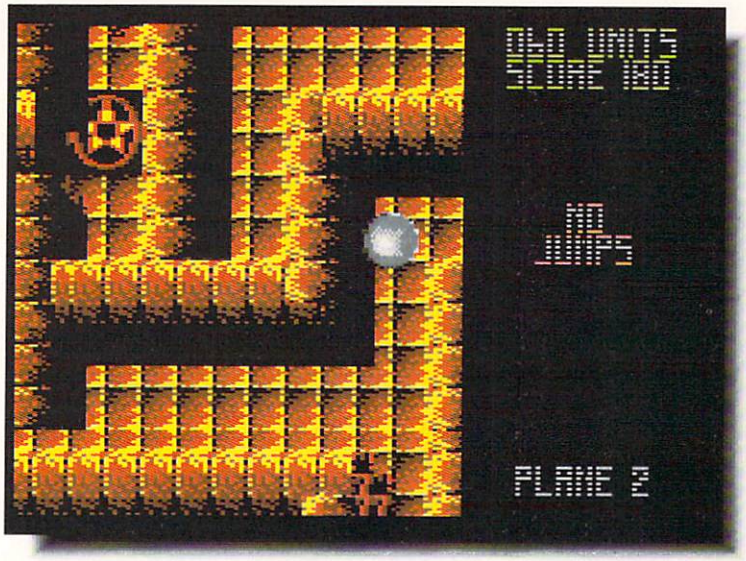
★★★

Data East
470 Needles Drive
San Jose, CA 95112
408-286-7074

All the humor that made the movie of the same name such fun has been painstakingly removed from this pedestrian and disappointing arcade adaptation. The Robocop character has been reduced to an inch-high, semi-recognizable gun-toter. The nine levels are based on scenes from the film, but they might be from any arcade game with a cops and robbers theme.

The soundtrack is listenable, but the graphics are something less than exemplary. The play area occupies only about half the screen, with the remainder left an uninteresting blank.

There's nothing wrong with licensing hit movie titles, provided the end product has some effort put into it to make it worthy of the name it bears. Robocop is just the latest in a long line of games that are obviously rushed out the door for the sole purpose of removing cash from your wallet, with little regard for the quality or playability of the product. If you liked the movie (or even if you didn't like the movie, or haven't seen it), stay away from this game. If you do like mindless bad-guy killing, it might be worth a few minutes of your time. To paraphrase one of the bad guys in the film, "I don't like it." - Tom Malcom



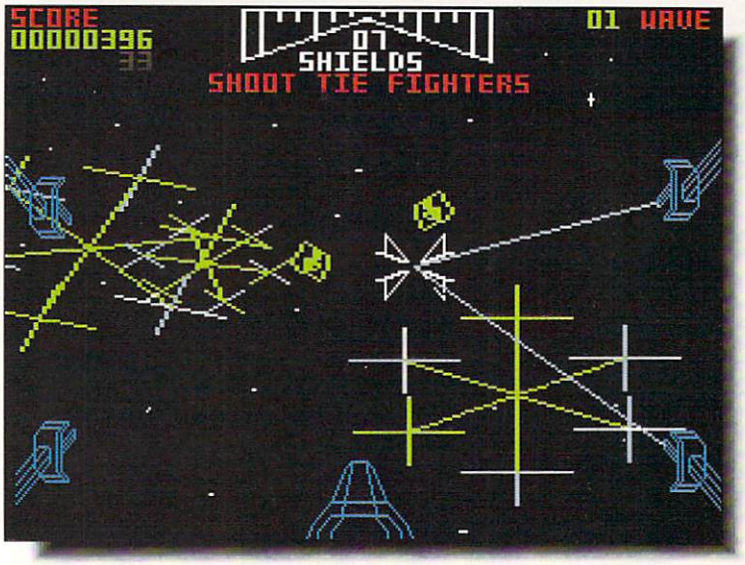
MIND-ROLL

★★★+

Epyx
600 Galveston Drive
Redwood City, CA 94063
415-366-0606

An oddly compelling diversion, *Mind-Roll* has a kinship with *Marble Madness*, but with a more abstract feel. There are ten planes, or levels, to roll a ball through, each with its own hazards and rewards. The play is very fast, the scrolling smooth and seamless, and the soundtrack driving. You're playing against a clock, something I'd like to have to option of disabling. An interesting game, and well worth a look.

- AF



STAR WARS

★★

Broderbund
17 Paul Drive
San Rafael, CA 94903
415-492-3200

The old C64 cartridge version of this Atari coin-op conversion played better than this version. This one's extremely sluggish; the tower sequences are snail-paced. Joystick control is jumpy, and the vector graphics are drab and minimalist. The Amiga version of Star Wars is a much more faithful clone of the original coin-op, if you're into arcade games from 1983. And we wish they'd get rid of the tinny little beeper in the box that plays a greeting-card version of the "Star Wars" theme every time the box is jostled. The marketing droid who dreamed up that gimmick ought to be julienned with a light sabre. - MRB

MODEM WARS

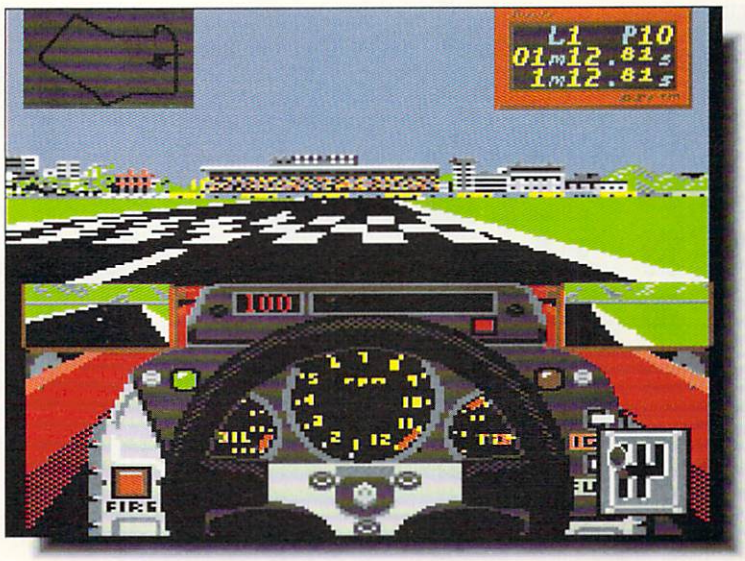
★★★★

Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
415-571-7171

Modem Wars is the latest effort by Dan Bunten, who gave us *M.U.L.E.*, *Robot Rascals*, and *7 Cities of Gold*. Like all of his games, this one is innovative, interesting, and fun. It's a wargame, but there's no mucking about with attack and defense points and the like; it's intended to be more like football, but with robots, terrain, and cannonfire. The graphics are simple but effective, and there are lots of options. You can play against the computer, but as you can tell by the title, the strength of this game is in playing a human opponent via modem. If you're into telecom munications and games, you've got to get this game. - MRB

GRAND PRIX CIRCUIT ★★★+

Accolade
550 S. Winchester Boulevard
San Jose, CA 95128
408-296-8400



Games most often have the problem of sluggish response; *GPC* has the opposite problem. The joystick control in this race car simulation is far too touchy. I wonder, too, why when I deliberately bash another racer, nothing happens and the other car just disappears. You have a choice of three cars and eight courses. The display is detailed, with all sorts of gauges and readouts, the tracks speed by smoothly, and the soundtrack is good. But for all the realism of the cars and tracks, I just wish the game were a little more realistic in the actual racing.

- TM

JACK NICKLAUS' GREATEST 18 HOLES ★★★★

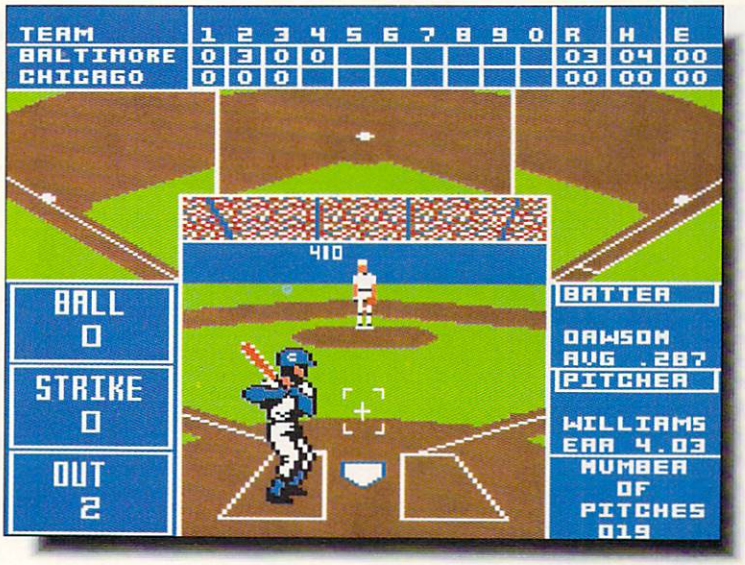
Accolade
550 S. Winchester Blvd.
San Jose, CA 95128
408-296-8400

Tidbits of advice from the Golden Bear himself punctuate this golf simulation. The three-click play system is quite good, and uses a nearly screen-high gauge. It's the same intuitive system that was used on *Mean 18* for the Amiga and gives good control of your shots. The play is tough, but then these are tough holes. The main weakness I see is that putting is overly sensitive, but enough practice should enable you to overcome that. The graphics are adequate, but the sound is abominable. All in all, a good choice.

- TM

SPORTING NEWS BASEBALL ★★★★+

Epyx
600 Galveston Drive
Redwood City, CA 94063
415-366-0606



This is a great simulation of the great American past time. You can play any combination of two human or two computer players (watching the computer play itself is a real kick), and pit two statistically-correct pro ball clubs against each other. Or you can build your own team made up of baseball greats. The display is informative and easy to play from, with a point of view that changes depending on the action The joystick controls are intuitive and responsive, and there are plenty of options. Play ball!

- MRB

THUNDER BLADE

PREVIEW

Sega/Mindscape
3444 Dundee Road
Northbrook, IL 60062
312-480-7667

The beta version of this game is killer. You're piloting a combat helicopter through an urban setting, laying waste to enemy tanks and other such. The real innovation is the implementation. You begin with an overhead view, which, as you change your altitude, correspondingly changes how close things appear on the ground. Then your view changes to head-on perspective and has you flying through city streets. It should be available by the time you read this.

- TM

PURPLE HEART

★★★

CRL/Scorpion
19 Harbor Drive
Hopatcong, NJ 07849
201-663-0202

Distinguished by a better than average introduction, with a pair of commandos who look suspiciously like Arnold Schwarzenegger and Chuck Norris, *Purple Heart* itself is something of a letdown. It's the standard military shoot 'em up, where you race around killing what seems like bazillions of enemy soldiers, picking up more powerful weapons so you can kill and maim more efficiently, and ultimately rescuing prisoners of war. The implementation isn't bad, but we've seen the same thing far too many times already.

- TM

OPERATION WOLF

★★★

Taito
267 W. Esplanade Plaza
N. Vancouver, BC V7M 1A5 Canada
604-984-3344

The coin-op version of this ultra-violent game has the advantage of a gun for blasting the vaguely Central American-looking enemy soldiers, and that is the weakness of the 64 translation. The conversion is very accurate, but controlling where your fire goes with a joystick is much more difficult; I think faster scrolling or some sort of defensive option would make it much better. The supposed plot involves rescuing hostages, but violence for its own sake generally leaves a bad taste in my mouth, and this game certainly does.

- TM

INFO UPDATE

FLASH!!!

KILLER BEES FOUND

The initial shipment of **Epyx**' *720°* accidentally shipped without the killer bees of the arcade game. The insects were added as soon as the oversight was noticed.

VERSIONS

Express-Way Software let us know that the first version of *ExpressCopy* went out with an obscure bug that could possibly bring a visit from the Guru and on rare occasions damage the integrity of a backup disk. They are, commendably, sending out free updates, Version 1.01, to all registered owners.

Caligari, the high-end rendering package from **Octree Software**, is being re-released in a consumer version. It has all the features of the now renamed *Caligari Professional* except the animation module and 68020/68881 support. It supports IFF, can be used to create objects translatable by **Syndesis**' *Interchange*, and retails for $249. An upgrade module adding broadcast quality rendering capability for *Caligari Professional* is being released in the second quarter. The add-on will cost owners of the $1995 program an additional $995. Octree Software, 311 W. 43rd St., Suite 904, New York, NY 10036. 212-262-3116.

Lattice is now including new documentation in their *C++* compiler. It covers the 300-plus functions of *Lattice C*, of which C++ is a superset. Registered owners will get one for free.

SOGWAP has released version 2 of their *Big Blue Reader* text transfer utility package for the C64. It requires a 1571 or 1581, using their fast serial routines for transferring IBM ASCII and PETSCII files. It can also be used as a file copier for the Commodore drives. $29.95. 115 Bellmont Rd., Decatur, IN 46733. 219-724-3900.

C Ltd. has upgraded their *SCSIdos* to 3.0. Registered owners can get it, along with a manual for $20. 720 E. Skinner, Wichita, KS 67211. 316-267-6321.

KFS' *The Accountant* is now at version 1.3.

MicroSearch is shipping version 2.0 of *City Desk*. The preliminary specs make it sound like an entirely new product. The page layout software now supports text flow around irregular objects, screened boxes (from 10% to 100%), and will convert IFF graphics to 300 DPI grayscale images. It also supports the A2024 hi-res monitor and the graphics editor has been revamped. Price is $199.99, and registered owners of the earlier version can upgrade for $35. 9896 SW Freeway, Houston, TX 77074. 713-988-2818.

WHIPPING POST

Tom gets strung up by the toes for last issue's Magazine Index look at *AmigaWorld*. It seems he reviewed the January '88 issue rather than January '89. He is deeply ashamed of committing the cardinal journalistic sin of sloppy research. He promises, on pain of chocolate removal, never to do it again. He privately maintains that *AW* issues are so generic, it's hard to tell one year's issues from another's.

OOPS

Classic Concepts tells us that they accidentally printed an incorrect number in some literature they sent out. The correct number is 206-733-2720.

Graphic Design Studios' number in issue #25 was incorrect. The correct number is: 504-455-0341.

MOVES

Jason-Ranheim has a new address: 3105 Gayle Lane, Auburn, CA 95603. The new phone is 916-878-7805.

The Software Toolworks has moved to 19808 Nordhoff Place, Chatsworth, CA 91311. Their phone numbers are 818-885-9000 voice, 818-772-6809 FAX.

DigiTek has moved to new quarters at 8910 N. Dale Mabry, Suite 37, Tampa, FL 33614. Their phone remains the same at 813-933-8023. FAX 813-932-4564.

We don't usually report on personnel changes, but *Marla Svoboda* has left **NewTek** and we just wanted to say: "We'll miss you, Marla!" You really made a great Party Queen of the Amiga.

CLARIFICATIONS

ANIMATION

The way in which the descriptions of **Hash Enterprises**' animation products were worded in the feature in #25 made it sound like they were support modules for *Animation:Apprentice*. They are, in fact, stand-alone programs. The company also let us know that *Animation:Editor* will convert formats.

Also, the folks at **Antic Software** inform us that, contrary to our assertions, the conversion module included with *Zoetrope* will export, as well as import, ANIM format files.

Allen Hastings also reminded us that, in its latest incarnation, *VideoScape 3D* does support HAM and HalfBrite modes. We didn't have those boxes checked in our comparison chart.

One clarification regarding the animation comparison chart: "Tweening" was taken to mean "Shape Tweening" (also sometimes called "Morphing"), which is the actual point-by-point transformation of one object into another. A couple of the programs listed (like *Deluxe Paint III* and *Zoetrope*) do a a type of "Motion Tweening" in regards to moving or rotating objects, but that feature wasn't considered in making up the chart. We would probably call that function "Translation".

GEOS

Reader B. J. Hudson wrote to tell us that contrary to what Don Romero said in issue #24, Shadow Drive is still an option in *GEOS v2.0*.

Show Report

AMIEXPO NEW YORK

by Mark R. Brown

After 19 months on the road, the weekend of March 3-5 marked the triumphant return of AmiEXPO to the Big Apple, this time with *Amiga World* billed as the "Official Sponsor". Over 60 exhibitors crowded into the convention hall of the Marriott Marquis Hotel on Times Square. The narrow aisles and the crush of attendees resulted in frequent gridlock, and it was often almost impossible to get close enough to actually see a product demonstration. But over the show's three-day run, 11,863 people tried.

Gail Wellington delivered the opening day keynote speech, which was mostly devoted to cheerleading Commodore's latest round of new products. Besides announcing that the A590 hard disk for the A500 and the A2286 AT Bridgeboard had begun shipping the week before, there was little news. In answer to audience questions, she indicated that it was likely that the new Janus 2.0 libraries included with the 80286 AT Bridgeboard would become available to owners of the XT Bridge in an "Enhancer Pak" format, much like the AmigaDOS v1.3 upgrade.

NewTek's [913-354-9332] **Video Toaster** was the first thing to greet attendees on their way in the front door. The software has been improved and the hardware has been upgraded to include four software-selectable video inputs, effectively turning the *Toaster* into a TV studio-in-a-box. The waiting will be over "probably in June" say NewTek spokespeople. Allen Hastings was showing a new 3D animation created with an "early alpha" version of a 3D rendering and animation program he has under development for NewTek. No delivery date is projected. However, available by the time this issue hits the stands will be **Digi-Paint III**, a vastly improved HAM paint program (see review elsewhere in this issue). Yes, you're right in noting that there was no *Digi-Paint II*. According to NewTek staffers, there were "too many improvements to just call it 'Two'". We suspect market positioning against MicroIllusions' *Photon Paint II* to be more of a factor.

Across the aisle, *MicroDeal* [313-334-8729] was showing **Fright Night**, a graphic arcade adventure game with giant animated characters, ala *Sword of Sodan*. They also had **Airball**, a kind of *Marble Madness* clone, **JUG**, a space shoot-em-up, **Goldrunner II**, and **TaleSpin**, an interactive program generator with programmable menus and buttons.

Next door, *New Wave* had version 3.0 of **Dynamic Studio** kickin' out the jams. It features a vastly improved new graphic user interface.

Impulse [612-566-0221] has added stereo imaging to **Turbo Silver**. A complete package with software, interface, and SEGA LCD shutter glasses is a hundred bucks. **VD1** is their new framebuffer/digitizer, and they're importing a game called **Evil Garden** from Germany. They also introduced **Harmony**, a music program that lets you hum or sing (or play an instrument) into a microphone and have your tune translated into a musical score which can be edited, modified, and played back. It's innovative, it's fun, and it's yours for a song: Two C-notes. (Think about it...) Also in the booth was *Beeshu*, giving the public their first look at the new **Zoomer** yoke controller.

InterChange purveyor *Syndesis* [508-657-5585] announced an updated module for *Turbo Silver 3.0*, as well as a new converter for *Professional Draw* objects. But their biggest news was **TSSNet**, a DECnet implementation for the Amiga.

R&DL's [718-392-4090] new **LightBox** animation software is a pencil-test animation program for pros. It works well with their digitizing tablet (see review in the New Products section).

Around the corner, *Progressive Peripherals and Software* [303-825-4144] had a new version of their **FrameGrabber** that grabs video frames in 256 gray levels ($700). The long-promised *EXP 8000+* internal 8 megabyte board for the A500 will be available in May, and includes an option for a 68010 cpu and a math co-processor. Their new **Vault** hard drive will go for $600 including controller card in a 20 meg version; up to 120 megs will be available. On the software front, the **Baud Bandit** ($50) is PP&S's latest telecommunications package, and **UltraDesign** is a $400 professional CAD system, due out in May.

The big news at the *Ronin Development* [415-769-9325] booth was their new 68030 accelerator board, though I was impressed by the Chinon 300 dpi b&w scanner they were also showing. Through software twiddling, they're going to be able to get grayscale scans.

Nearby, Ed Lippert of *C. Ltd* [316-267-6321] told us that his *LaserXpress* virtual page scanner/laser printer system now includes *PrintScript*, a software PostScript interpreter, for no extra charge.

Show Report

Brown-Wagh [408-395-3838] impressed us with a showing of their killer new color graphic wordprocessor **Pen-Pal** (see preview in the New Products section). For productivity types, **Project Planner** and **EasyLedgers** are aimed at easing planning and bookkeeping headaches.

BAAL, Menace II, Ballistix, and **Captain Fizz Meets the Blastertrons** are four hot-looking new game titles that were getting lots of joystick action in the *Psygnosis* [312-622-4444] booth.

Dr. T's [617-244-6954] displayed hot music titles like **The Copyist** in the booth next door. (See Jamie Krutz's NAMM Show report in News & Views for more details on *The Copyist*, as well as on *Intelligent Music*'s [518-434-4110] **M**, also shown at AmiEXPO.)

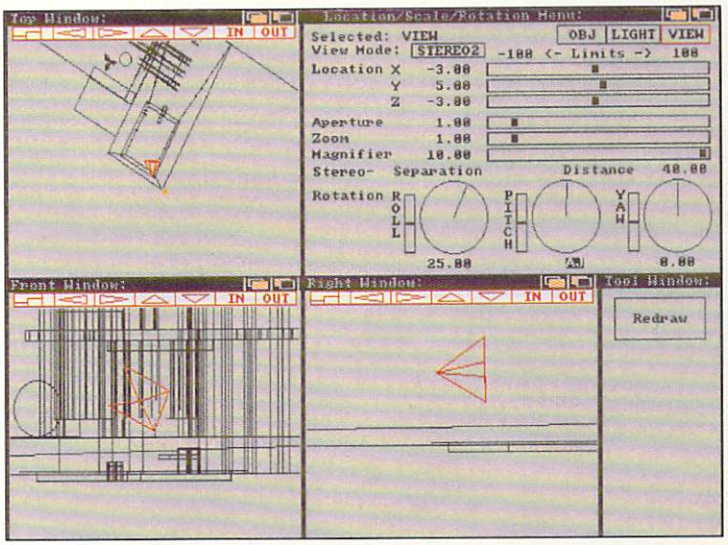
Down the next aisle, *Great Valley Products* [215-922-2163] had a couple of new tricks up their sleeves, including the new **IMPACT 68030** card, available in 16 and 26 MHz models with up to 8 megs of 32-bit RAM. We were most interested in their SCSI 44 meg removable hard drive, which offers a real mass storage solution for heavy-duty Amiga users. (See details in this issue's feature on removable mass storage.)

Networking is the coming thing on the Amiga, and *CMI* [503-684-9300], not to be outdone, announced **CMInet**, implemented in a card that includes two additional serial ports and an additional parallel port.

ASDG [608-273-6585] called a press conference to announce **ReSep**, a utility for generating 24-bit color separations that are compatible with *Professional Page*. It requires their *Professional ScanLab* hardware. Also coming: a $300 dual serial port card for the A2000.

Incognito [313-255-5387] displayed their **Optiks** raytracing system (previewed in INFO #24).

Gramma Software [206-363-6417] was showing not only *Nag Plus 3.0*, but also **FreD**, a "demon dialer", and **NoMo**, a hardware box that interfaces Amiga audio to the telephone.



Optiks from Incognito

In their booth at the end of the aisle, *Visionary Design Technologies* [416-497-0933] was promoting **CAST**, the design system they used to create *Dragon's Lair*. Also announced were two new arcade titles, **DataStorm** and **Vortex**, and a MIDI music system called **Orchid.**

Mindware International [705-737-5998] introduced **PageSync** at the show, a $100 addition to their line of professional video software which allows you to sync MIDI to video scripts.

One of the most interesting Amiga applications we saw was **Piano Professor** [718-793-8112], a music teaching system that links a genlock, an inexpensive b&w video camera, and a MIDI-interfaced keyboard to software that indicates which keys to play when. It's obviously not a home-use system, but one for piano teachers and schools.

The last booth in the hall belonged to -- surprise, surprise! -- *Comp-U-Save*, back in the AmiEXPO Show at the last minute after being officially banned because of their escapades at the Chicago show. However, they were warned in advance this time: No rubber chickens!

In a suite upstairs, *Gold Disk* [416-828-0913] talked about several new products in their new home productivity software line. **Transcript**, their new wordprocessor, was developed by Nick Sullivan and Chris Zamara of the *Transactor*, and includes hooks to transfer text directly back and forth in memory to an updated version of *Professional Page*. **Advantage** will be the name of their spreadsheet entry; it will include the ability to export charts and graphs in *Professional Draw* format. (The update of *Professional Page* will also import those *Professional Draw* graphics.) **Desktop Budget** rounds out their current planned schedule of introductions, though more wait in the wings, and *Gold Disk* is actively pursuing acquisitions and "affiliated titles".

It was a fun show, as always. And even though it seemed like there wasn't much new as I was wandering around, I was surprised when I got home and started tallying up all the new stuff that I saw there.

Look for INFO's booth at AmiEXPO Midwest, at the Hyatt Regency Hotel in Chicago, Illinois, the weekend of July 28-30!

SINCE THE BEGINNING, AND INTO THE FUTURE- INFO. YOUR GUIDE TO COMMODORE AND AMIGA COMPUTING.

#1 INFO 64, Fall 1983
Premiere issue! Review and product guide. Reviews: games, Flexfile 2.1, Sorcerer's Apprentice.

#2 INFO 64, Winter 1983/84
Buyer's Guide to 1000 C64 product listings. Koala pad, Flexidraw, UltraBASIC-64, Home Accountant vs. C.P.A.

#3 INFO 64, Spring 1984
Product Round-up: 1000 product listings for C64. Superbase 64, Commodore LOGO, C64 Forth, Model Diet, Computer Mechanic.

#6 INFO 64 Spring 1985
Color Gallery! C64 hard drives. Intro to Assembly Language, COMAL 2.01 Software reviews: The Print Shop, C/PM. More mini-reviews.

#9 INFO Dec/Jan 1985/86
Expanded C64/128, Amiga color gallery. Guide to C128 software. Network Wars. 1571 Disk Drive Survival Guide.

#10 INFO May/June 1986
Monitor Roundup! C64 word processors, Multiplan for C64/C128, Amiga BASIC. News, reviews, tips and tricks.

#11 INFO Aug/Sept 1986
Product Roundup issue: over 1500 hardware and software product listings for C64, C128 and Amiga.

#12 INFO Nov/Dec 1986
Graphics report: C64/128 and Amiga painting, drawing, CAD, drafting video animation,tools and utilities. Idea-processors reviewed. Network Wars, 8 bit business software.

#13 INFO Jan/Feb 1987
Games issue: gallery reviews of Amiga, C64/C128 games. C64/C128 business and application software reviewed, part I. telecom networking. Amiga Music.

#14 INFO Spring/Summer 1987
PRODUCT ROUNDUP! Over 2000 hardware and software products listed for the C64, C128 and Amiga computers. First look at the A500 & A2000 systems.

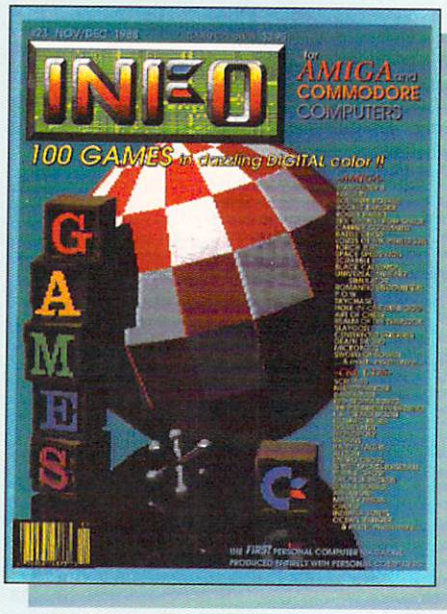
#15 INFO July/Aug 1987
History of INFO, part 1. Survival Guide: how to get started in Commodore Amiga computing. 1st C.H.U.M.P. Magazine, introducing the Midnite Software Gazette. Interview with game-programmer Anne Westfall. *COMPUTE!* exposed!

#16 INFO Sept/Oct 1987
History of INFO, conclusion. Graphics Renaissance for Amiga and C64/128! GEOS Update, C128 BASIC compilers, Hands on Amiga Hardware, Amiga Multi-tasking,

#17 INFO Nov/Dec 1987
Annual GAMES issue! 39 new games reviewed for 8 & 16 bit. GEOS Update, part II, C128 ROM upgrades, 16/32 bit comparison. 8 & 16 bit hardware and software reviews.

#18 INFO Jan/Feb 1988
Desktop Publishing! Amiga word processors, part I. Show reports! Virus diagnosed, Best of Public Domain. Amiga, C64/C128 reviews!

#19 INFO Mar/Apr 1988
More Desktop Publishing! Leo Schwab interview, hard drives for 8 bits, Amiga word processors, part II. Arkanoid secrets revealed! GEOS Update, part IV.



#20 INFO May/Jun 1988
Desktop Video! INFO visit to NewTek, AmigaDos 1.2 Bugs. Reviews for all! Article by demo-master Joel Hagen.

#21 INFO Jul/Aug 1988
Jay Miner interview, Mort Kevelson's "Easing The Upgrade Path", Annual C.H.U.M.P. Lampoon section. Over 40 8 & 16 bit software reviews. Virus prevention.

#22 INFO Sep/Oct 1988
Fifth Anniversary issue! Digitizing made easy. Mac VS. Amiga. Over 50 reviews for C64, C128, and Amiga computers. INFOmania Game Tips! BRYCE debut!

#23 INFO Nov/Dec 1988
ANNUAL GAMES ISSUE! OVER 100 GAMES IN COLOR!!

#24 INFO Jan/Feb 1989
Amiga 3D Graphics Round up. Interview with Reichart Von Wolfsheild. Over 30 games reviewed. Extensive News, New Products & Show Reports.

#25 INFO Mar/Apr 1989
Amiga Animation. Interview with Rodney Chang. Over 30 games reviewed. CES Show Report. C128 T.H.I.S. GeoCalc 128. Amiga Lightpen, Dr.Term Pro, AC/BASIC.

INFO BACK ISSUES $5.50 EACH

USE THE TEAR OUT ORDER CARD or
charge by phone with your VISA or MASTERCARD (319) 338-0703

ALL INFO Back Issues (1-25) Now available on **MICROFICHE** for $5.50 each!

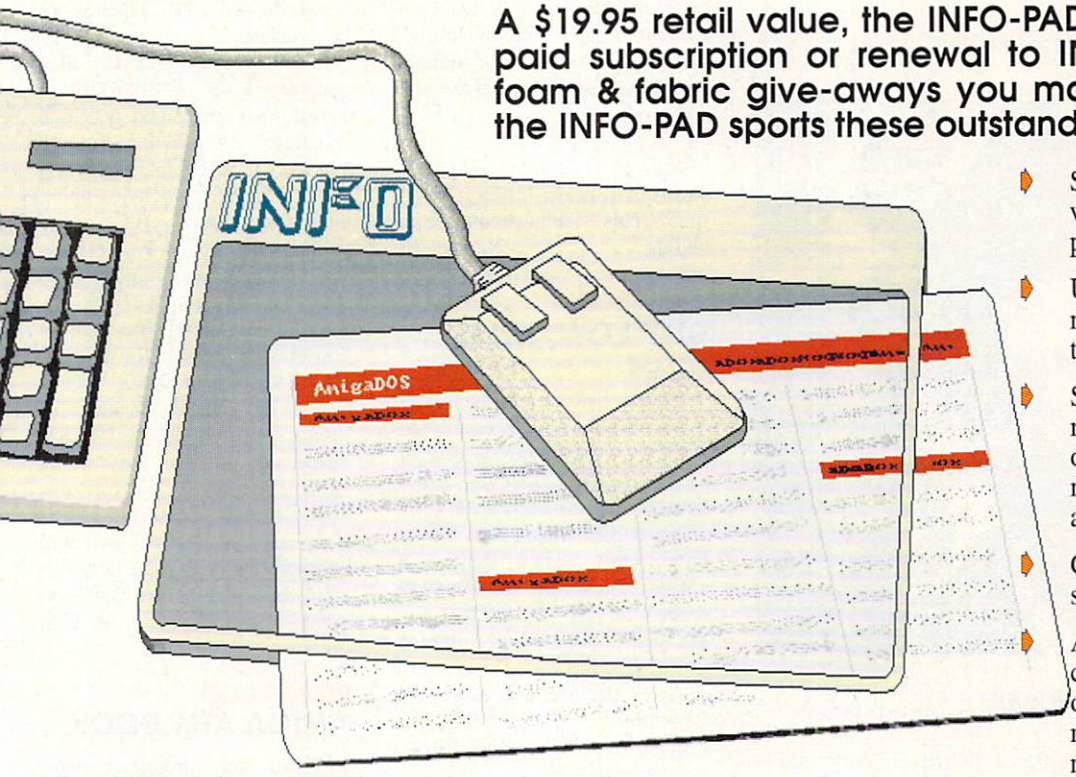
INFO 'S *BEST EVER* SUBSCRIPTION & RENEWAL DEAL!!

WOW

UP TO 50% OFF Cover Price

PLUS

the incredible INFO-PAD™ !



A $19.95 retail value, the INFO-PAD is yours FREE with your paid subscription or renewal to INFO. Unlike the cheap foam & fabric give-aways you may have seen elswhere, the INFO-PAD sports these outstanding quality features:

- Space age plastic surface for whisper- smooth tracking and prolonged mouse life.
- Unique Data- Window displays reference templates beneath transparent tracking surface.
- Subscribers will periodically receive free templates as new ones are developed (mailed right along with your magazine and your INFO WRAP-UP!).
- Comes with AmigaDOS™ starter template.
- Also great for displaying notes, calendars, computer art, photos of the real people in your life, recording hi game scores; you name it!

Please allow 4 to 6 weeks for delivery. Void where prohibited.

30%	40%	50%
1 Year	**2 Years**	**3 Years**
6 issues now only	*12 issues now only*	*18 issues now only*
$16.50	**$28.50**	**$35.50**

VISA

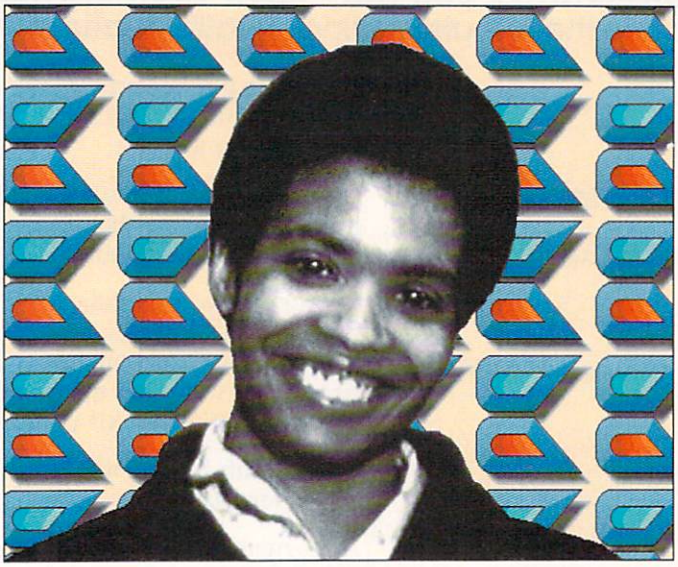
Credit Card orders accepted by phone: **(319) 338-0703**
or use the handy return mail card for check, m.o. or credit card.

MasterCard.

News & Views

ALKA-SELTZER, PLEASE!

Klingon Commander: *Have you tried the Gahg, Commander Riker?* (offers him the platter)
Riker: (momentarily disconcerted by odd activity in dish) It's still moving.
Klingon Commander: Gahg tastes best when it's still moving.



Wanda Haight

You may have viewed this unforgettable dinner scene from the cleverly-woven double plot of *"A Matter of Honor"* on this year's vastly improved series, *"Star Trek: The Next Generation"*. The storyline and dialogue were produced by co-authors Wanda Haight, using her trusty Commodore 128 with *Pocket Writer 2* in San Francisco, and her brother-in-law Gregory Amos, using a Mac Plus in Los Angeles.

Wanda acted as the idea person for the duo, with Gregory developing the dialogue. "At first Gregory didn't have a modem, so we were using the mails and experiencing a minimum of 5 days between a proposed change and the reaction. After I talked Gregory into a modem purchase for his Mac, it was wonderful...our interchange became almost instant."

Applause from Wanda for the unique timesaving feature of *Pocket Writer 2* that quickly converts the Standard ASCII she receives via modem to Commodore PETSCII files. When an idea strikes her during her daily job (which involves working on an IBM) she saves the note to disk. At home later, she easily converts to Commodore format with *Big Blue Reader*.

Will success spoil Wanda Haight? She gave an emphatic negative to any plans to switch from her 128 -- "Why ruin a good thing?" Not a surprising reaction, considering Wanda is a past-president and an active member of CWEST, the San Francisco Commodore Users Group. Indefatigable, she is returning to school next year for an elementary school teaching credential and, in the meantime, the imaginative pair of authors are plotting scripts for two more TV productions.

Missed *"A Matter of Honor"*? Fear not Terrans! Catch it in reruns. This one's gonna be a classic. - Sue Albert

BUY LOW, SELL HIGH

If you had bought stock in Commodore International Limited when it hit its low of $6.50 in December of 1987, then sold it in March of 1989 when it hit $17.50, you would have made $11 a share - a 170% return on your investment - in just 15 months time. We just thought you'd like to know. (By the way, if you want to track the ups and downs of Commodore stock, their symbol on the New York Stock Exchange is CBU.)

COMMODORE AT CeBIT

At the recent 1989 CeBIT computer show in Hanover, Germany, Commodore concentrated mostly on products that had been previously announced, such as the A2000HD and A2500UX Amiga models, the Amiga hires color video card (still under development), and the A590 hard drive/RAM expansion unit for the A500. But there were some surprises.

Commodore's European Division is bundling an Amiga Desktop Publishing system that combines an A2000HD (including 2 megs of RAM and 40 megabyte hard disk drive) with a Sharp color scanner, hi-res monitor adapter, *Professional Page* and *Professional Draw* software, and a NEC PostScript laser printer.

Commodore Europe also announced an A500 Desktop Video Package aimed at video "amateurs". Configured for the European PAL television standard, the system includes paint, animation, video effects, and titling software, as well as the *Videobox*, a combination genlock, digitizer, and RGB splitter. There is apparently no equivalent of the *Videobox* for the U.S. NTSC video standard.

On the MS/DOS side of things, Commodore's 80286-based PC 30-III was being shown again, as was a new 80386-based machine. This floor-standing "tower" unit will be available in Europe later this year, but there's no word on when it might reach the U.S. market.

AMIGA ART BOOK

Have you produced some great Amiga art? Would you like to see it published in a hardcover art book? This may be your big chance. Machlan Enterprises is planning to publish a series of high-quality computer art books, the first of which will be a full-color volume devoted exclusively to Amiga artwork. (Mac and IBM books will follow later this year.) Amiga submissions must be in the form of photographic slides (duplicates only -- no originals) and must be received by June 30 to be considered. Send to: ABACI Gallery of Computer Art, attn: Daria Barclay, 312 NW 10th, Portland OR 97209. For more details, call Daria at 503-228-8642.

SOFTWARE SALES

The final software sales figures are in for 1988. The Software Publishers' Association reports that, in comparison to the previous year, MS/DOS software sales were up 44.5%, Macintosh software sales were up 63.4%, Apple II software sales increased 3.8%, and Commodore 64 sales were up only 1/2 of 1%. (The SPA does not track Amiga software sales.) Sales of all categories of computer software were up a total of over 40%.

U.S. software sales for 1988 exceeded $2.87 billion, with over $2.2 billion of that figure attributable to sales in the MS/DOS market. Sales of C64 software were down in all categories but recreation, where the figures showed a 13.4% increase. C64 software sales totalled $84.4 million in 1988.

HACKER JAILED

Herbert Zinn, Jr., an 18 year old hacker, has been sentenced to nine months in prison with no opportunity for parole and fined $10,000 for illegally penetrating computers owned by AT&T and the U.S. Department of Defense. He will serve time in a federal facility for 18-21 year olds in South Dakota.

Zinn was only 16-17 years old when he committed the electronic break-ins, and was convicted on Jan 23rd of copying $1.2 million worth of programs and destroying files valued at $174,000. He was also accused of publishing passwords, telephone numbers, and directions on how to breach AT&T's computer security systems on underground electronic bulletin board systems in Illinois and Texas.

He could have been ordered to make full restitution of the $174,000, but the prosecution thought that was an unrealistic amount. However, if Zinn had been an adult of 18 instead of a minor at the time of his offenses, his sentence could have been 13 years with fines of up to $800,000!

The judge who handled the case made it clear that he wanted the $10,000 fine to come from the hacker himself and not from his parents!

- Bob Baker

INFOmania Game Tips

Here are some secret "side doors" and "back doors" to your favorite C64 and Amiga games, discovered by INFO readers!

C64

Gauntlet: If one player dies during a two-player game, pressing the spacebar will reincarnate the dead player. - Sean Graham

Ikari Warriors: If all your men die, press A, B, B, A before GAME OVER flashes and you can continue where you left off.
- Josiah Raabel

Space Taxi: A secret menu is available that will let you manually select screens, turn off sprite/sprite collisions, and even record your own demos. From the title screen, pull down on the joystick to get to the instruction screen, then press the pi key until the word "fire" in "Press fire to continue" turns dark grey. Then push the up-arrow until it returns to black. Then press the asterisk key. - Jeff Parham

Superstar Ice Hockey: Choose to play Center and position your player exactly between the two face-off circles. Shoot high at your opponent's net and the shot will go right through the goalie's pads for a score. The goalie has to be controlled by the computer and you must be precisely between the circles for this to work. - Jeffrey Isaak

AMIGA

Sword of Sodan: Just as a clarification to a tip printed last issue, Mark Lucas tells us that in order to get unlimited lives by typing Nancy on the brag screen, you must be in the top slot, and after hitting return, press the firebutton until the next game is started and the number of men will show an exclamation point.

Zoom: Pressing F10 when choosing your level of play will let you choose any level up to 30.
- Gaelan D. Griffin

Captain Blood: Using the alien icons, ask CODE GG 1. The alien will then give you the coordinates of another alien called GG. Go to the specified planet and you can get the coordinates for all the other aliens around by asking CODE INFORMATION HELP. If you're met with blind ignorance, put in the name of an alien after the HELP.
- Paul McLeod

If you've discovered hidden "secret tricks" in your favorite game, share them with other INFO readers! We're not interested in strategy tips, but true "side doors" or "back doors" that work to your advantage, or let you do something weird and wonderful. If we print your tip, we'll include your name and send you a world-famous INFOManiac Kit! Don't forget to tell us which machine the tip is for! Send to: INFO Mania, PO Box 2300, Iowa City IA 52244.

COMMODORE IN THE MEDIA

INFO's readers report Commodore sightings on film, on television, and in print.

The Amiga was featured on an episode of the PBS television show *Computer Chronicles* in March. There were demos of games, video applications, and EA's *Deluxe Paint III*, as well as interviews with users from Stanford University and some musicians.

On the March 9th episode of *Days of Our Lives*, a C64 system appeared in the office of Diana Coldville, editor of the local newspaper. It didn't play anyone's love interest.

An A2000 showed up on a desk in Carol Goldman's Wall Street office on the January 18th episode of *Wiseguy* on CBS.

On an episode of PBS' *Nova* called *"The Strange New Science of Chaos"*, an Amiga was shown displaying a pattern analysis of the chaotic behavior of heart fibrillation.

In the forefront of the news, a February 15th report on CNN about the disappearing ozone layer at the North Pole included a look at the problem via false-color imaging on -- you guessed it -- an Amiga 2000.

In *Get Smart Again*, the *Get Smart!* reunion movie that appeared on ABC on February 26th, an A1000 with 1080 monitor was used in an early scene to pull up and graphically display Maxwell Smart's personnel file.

The old Commodore actors never disappear, it seems. On the February 25th episode of the syndicated TV spook show *Friday the 13th*, a Commodore PET made an appearance. The plot involved a kid who loves werewolf movies so much he eventually turns into a werewolf himself.

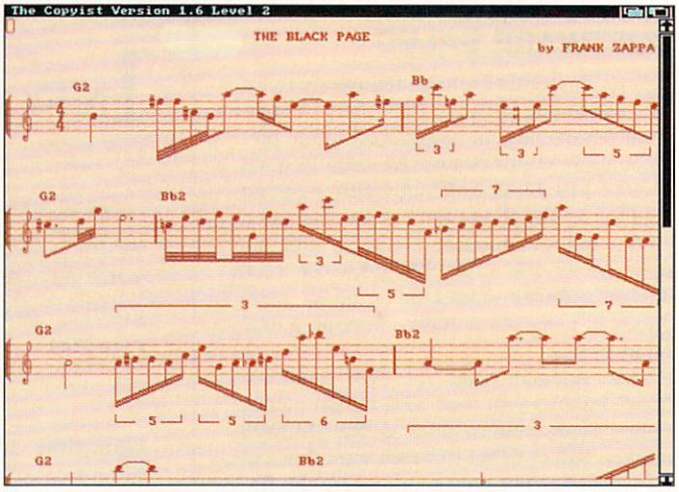
You may have seen a newspaper ad for MCI FAX services that advises you how great it would be for your business if you would dial up their FAX service using your PC. In this day of the MS/DOS domination of business, it's amusing to note that the system pictured is clearly an Amiga 1000.

On cable TV's CBN, a segment on one of the February installments of the *700 Club* depicted musical interpretations of the DNA structure of human cells. The system creating the music was, of course, an Amiga.

An Amiga 1000 was prominently displayed in a recent issue of *Scientific American* that focused on computer graphics.

Thanks to Commodore spotters Charles P. Vinson, James J. Perry, Harry R. Meyer, Kenneth Jennings, David Martin, Tom Gall, David W. Ferguson, Gordon S. Eggleston, and David Yavner.

If you've spotted a Commodore product in the media, report it to INFO Sightings, PO Box 2300, Iowa City IA 52245, or on QLink send EMail to INFO Mag. If it's the first we've heard of it, we'll print it here and give you credit. Such a deal!



Dr. T's Copyist Professional

AMIGA AT NAMM

This January, Commodore brought the Amiga to its second National Association of Music Merchants (NAMM) show to battle it out with Atari, Apple, and Yamaha (which makes an MS/DOS compatible laptop music computer). The twice yearly NAMM shows are serious forums for music products, and the Anaheim show attracted over 35,000 people to see the wares of more than 600 exhibitors.

The hot news in the Amiga booth (and in the Dr. T's booth) was **The Copyist**, a 16-stave music transcription and printing program ported from the IBM by way of the Atari ST. *The Copyist* prints beautifully at the highest resolution of any printer, even a 9-pin dot matrix printer. It can create traditional music notation from Amiga SMUS files and standard MIDI files (even those created on other computers), as well as from files saved using Dr. T's *Keyboard Controlled Sequencer* (KCS) and *MIDI Recording Studio* sequencer (MRS) programs. The program lacks automatic spacing for inserting notes onto a score, and it still has some kludgy aspects betraying its IBM origin, but it has been steadily improving. *The Copyist* is being marketed in three versions. **Copyist Apprentice** supports Epson FX, HP Deskjet (300 DPI!), HP Inkjet printers and up to 5 pages. **Copyist Professional** adds HP Laserjet Plus and HP plotter support at up to 50 pages, plus the ability to export files back to sequencers. **Copyist DTP** supports Postscript and Imagen Ultrascript (a Postscript clone) and up to 100 pages. Prices are $99, $275, and $399 respectively. *Copyist Professional* was released just before the show, and the company expects to release the other two versions in March or April. They are talking of bundling *Copyist Apprentice* with their inexpensive *MRS* ($69) sequencer for an as yet undecided discount price. Dr. T's also showed **KCS Level II** ($349) for the Amiga, a not-yet-shipping higher level version of their *KCS* ($249) sequencing program.

continued on the next page

. . . Amiga at NAMM continued

Also shown was Intelligent Music's **M** ($200), an interactive algorithmic compositional program that lets you set up and interact with parameters to generate musical patterns. The ideas you come up with can be saved as standard MIDI files for importation into sequencer or notation programs. *M* was first released on the Mac, where it runs in black and white. The Amiga and Atari ST versions add color, and the Amiga version goes another step by taking advantage of the internal sampled sound capabilities of the Amiga. That makes the Amiga the only computer that lets you use *M* without having to have a MIDI synthesizer.

Over in the Apple booth, Apple was announcing a not-yet-ready-to-release set of *MIDI Management Tools* that will actually let multiple MIDI programs run together at the same time on the Mac. Of course, the multitasking Amiga has been able to do this for quite a while. There were no Apple IIGSs to be seen. The front of the Atari booth sported a wall of monitors, each showing screens from a different company's MIDI software. The Atari ST has attracted a lot of MIDI development, and they are reaching the music market by selling the ST through music stores. Commodore is following their lead by signing up music stores through a company called Imagine Music Group. Imagine's CEO Glyn Thomas reports "ups and downs" with Commodore, and he says they are fighting a situation where mail order Amiga 500 prices are lower than the price Imagine can sell to music stores. Negotiations with Commodore over that issue and a few other "little things" will determine whether Imagine will continue to market Amigas, although Thomas says Imagine is still excited about the Amiga. He reports that Soundquest's *Texture 3.1* sequencing software ($299) is a big seller, probably due to a bundled deal Imagine has been offering. Imagine will be distributing an Amiga version of Steinberg's **Pro 24** sequencing software from Germany sometime in April.

This was Commodore's second NAMM, Apple's third, and Atari's fourth. It's good to see Commodore establishing a presence in the music market. It can't help but have a positive impact on the number of developers working on quality music software for the Amiga.

- Jamie Krutz

Rumor Mill

DISCLAIMER: The following are among the most entertaining rumors we've heard the past couple of months. They are presented for your entertainment and amusement only. Please do not make any important decisions based on these rumors, as many will prove to be inaccurate or just plain false.

➢ By the time you read this, barring any major acts of God, Commodore will have sold its one millionth Amiga computer. About 35% of them are in the United States, with almost all of the rest in Europe.

➢ We hear that Emerald Intelligence, makers of the *Magellan* AI system, is beta testing a *HyperCard* clone for the Amiga that will read and execute Macintosh HyperTalk files.

➢ It seems that Lou Wallace (of RUN magazine) was asked by Commodore to demo Amiga multitasking on the PBS television show *Computer Chronicles*. When he asked them to supply him a machine, they reportedly sent a bare-bones, single drive, one meg A2000. We have to ask: why didn't they set him up with an A2500UX with a 2286 AT Bridge, so he could show AmigaDOS, MS/DOS, and UNIX running all at the same time? Why not show off the top-of-the-line model? That's what Apple and IBM do when they're invited on *Computer Chronicles*, which is a heck of a lot more often than Commodore.

➢ It looks like Legend Software's *Onion* animation program may hit the market as *Disney Animator* from Buena Vista, the Disney software arm.

➢ Look for TSR, the originators of Dungeons & Dragons, to set up a gaming area soon on QuantumLink.

➢ Software giant Rainbird is for sale. Mediagenic is said to be nibbling, though no deals had been signed at presstime.

➢ Have you noticed how many European and Australian software companies are coming into the U.S. market? And more are on the way. We can't dig up any overwhelming reason for all the foreign activity, but it could be the sign of a "maturing" U.S. Amiga market.

➢ We hear Steve Tibbett, author of the indispensable public domain virus checking program *VirusX*, received the largest single shareware contribution in Amiga history from a large Swedish users group: $4500. Not bad for a program that wasn't even promoted as shareware!

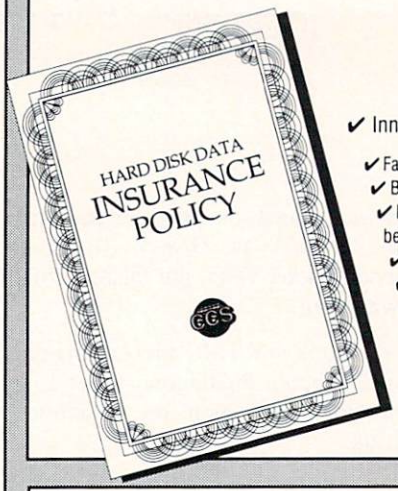
➢ *VirusX3.2* now checks for sixteen known viruses: SCA, Byte Bandit, North Star, Byte Warrior, Revenge, Obelisk, IRQ, Pentagon Circle, H.C.S., DiskDoc, Graffiti, 16 Bit Crew, Phantasmumble, Old Northstar, UltraFox, and Lamer Exterminator. There's a *VirusX3.3* making the rounds, but Tibbett says it's a version that's been modified by someone else, and he can't and won't vouch for its validity. Stick with v3.2 for now.

Protecting your valuable hard disk files is easier and faster than ever before!

FOR THE AMIGA

QUARTERBACK™

*The **FASTEST** Hard Disk Backup Utility!*



Backup to or restore from:

✔ Floppy Disks ✔ Streaming tape (AmigaDOS-compatible)
✔ CLtd's Konica 10.7MB high-density floppy drive
✔ Inner-Connection's Bernoulli drive ✔ ANY AmigaDOS-compatible device

✔ Fast backup - 20MB in 30 minutes or less ✔ Uses two floppy drives (if available) for backup/restore with automatic switching ✔ Builds, sorts and displays catalog of files and subdirectories ✔ Provides FULL/Subdirectory/Individual file backup/restore ✔ Includes or excludes files by name (with wild cards), file date, or archive bit ✔ Calculates the number of floppies you'll need before you start ✔ Handles files of unlimited length, unlimited subdirectories and unlimited files per subdirectory ✔ Automatically formats diskettes with no delay as it writes ✔ Sequentially numbers and date/time stamps backup diskettes ✔ Checks the sequence number and date/time stamp of each diskette before restoring files from it ✔ Restores original date/time stamp, file notes, and protection bits on both files and subdirectories ✔ Runs with Workbench or CLI ✔ Produces backup/restore report to disk or printer ✔ Beeps for floppy change ✔ Accepts CLI parameters and batch command files ✔ Detects bad disks during backup or restore ✔ Convenient/user friendly error recovery ✔ Multitasking ✔ Runs in 512K ✔ No copy protection ✔ Works with all AmigaDOS compatible hard disk drives.

Only $69.95 Plus $3.00 shipping and handling, CO residents add appropriate sales tax.

Coming Soon!

OPTIMIZE HARD DISK PERFORMANCE

QUARTERBACK TOOLS™ provides a collection of high-quality, user friendly utilities to enhance use of your Amiga.

- ✔ Optimize hard disk organization to speed file access
- ✔ Undelete deleted files safely and easily
- ✔ Map disk space usage
- ✔ Verify readability of every block on disk
- ✔ Automatically map out bad sectors
- ✔ Detect and fix disk corrupted directories
- ✔ Verify file integrity
- ✔ Edit files and disk sectors
- ✔ Search for files throughout the disk
- ✔ Compare file contents

QUARTERBACK TOOLS™
works with any Amiga.

Read/Write Macintosh Disks

Mac-2-Dos™ transfers Macintosh files to and from the Amiga. You can quickly and easily import those graphic images from the Mac, or output your PostScript document to a Mac disk from which you can have it printed using high-quality, professional typesetting equipment. Mac-2-Dos reads, writes and formats single-sided disks (flat file format) or double-sided disks (hierarchical file format). It translates ASCII files and provides IFF conversion utilities to/from MacPaint and other popular Mac graphics formats.

Mac-2-Dos includes a custom interface and a Macintosh external 3.5-inch drive. Mac-2-Dos also includes a special driver which allows the Mac drive to read/write standard Amiga diskettes.

Mac-2-Dos will also be available without the Macintosh drive. This option DOES NOT include the ability to use the Mac drive to read/write Amiga diskettes.

DOS 2 DOS™

DOS-2-DOS transfers MS-DOS and Atari ST files to and from AmigaDOS!

DOS-2-DOS version 3.0 permits access to any MS-DOS volume available via AmigaDOS, including MS-DOS partitions on hard disks and MS-DOS volumes on LANS or SCSI networks.

✔ Supports single and double sided 5.25-inch as well as 3.5-inch 720KB MS-DOS diskettes ✔ Reads/Writes 3.5-inch Atari ST diskettes (GEM format) ✔ Reads a variety of 5.25-inch MS-DOS floppy formats via the CLTD Konica high-density floppy drive ✔ Converts ASCII file line-ending characters and translates extended ASCII character sets ✔ Supports full directory path names, with wild cards in the file names ✔ Allows selection of MS-DOS and AmigaDOS subdirectory and displays sorted directory listing ✔ Formats 3.5-inch and 5.25-inch MS-DOS diskettes and Atari ST diskettes ✔ Provides duplicate file name detection with query/replace options ✔ Provides TYPE and DELETE commands ✔ Permits renaming of files where file name restrictions occur ✔ Remains resident to permit AmigaDOS disk swapping.

Only $55.00
Plus $3.00 shipping and handling
CO residents add appropriate sales tax

CCS™

Central Coast Software

424 Vista Avenue, Golden, Colorado 80401 • Phone 303 / 526-1030 • FAX 303 / 526-0520

DEALER INQUIRES WELCOME

MasterCard VISA

FOR COMMODORE 64/128

RAPIDOS

AND FOR CP/M COMPUTERS

So all your friends have IBM's and Macs?

Now you can feel sorry for them.

THE SUPERFAST PARALLEL DOS FOR THE COMMODORE 64/128 AND 1541

You're a Commodore owner. You've got great colors and fantastic sound, dynamic features that IBM and Mac owners can only dream of. You've got it all - except speed.

Well, you don't have to be left in the dust anymore! Lawrence Hiler, one of the original "Basement Boys", brings you the most exciting development in the history of Commodore computers - RapiDos! Packed with features, RapiDos will transform your slug into a bullet - just take a look at the chart below!

Get your RapiDos, then invite your IBM and Mac friends over to see your "new" super computer. But be nice - make sure they're sitting down before you blow them away!

Sample RapIDos Features:

- ALL disk access commands execute at superfast speeds!
- Designed to support multiple drives!
- On board DOS Wedge / Screen Dump / M-L Monitor!
- Centronics parallel printer support available!
- Fully Commodore compatible & your cartridge port is left free!

RapIDos Professional Features:

- Gives even faster disk access than RapiDos!
- 8K RAM track buffering and hardware GCR conversion!
- Provides 40 track extension (749 blocks FREE)!
- Adds 20 NEW disk commands (lock files, rename disk, etc)!

SPECIAL: RAMBOard™ capabilities are built in! RapiDos Pro can use Maverick™ parameters to backup some of the newest, hottest titles on the market today!

Parallel Utilities Disk Available For Both Versions - Only $19.95

Function	Normal DOS	RapIDos	RapIDos Pro	Your System
Load 202 blocks	128 seconds	15 seconds	3 seconds	?
Save 202 blocks	196 seconds	98 seconds	8 seconds	?
Format 35 tracks	90 seconds	24 seconds	18 seconds	?

RapiDos - Only $49.95 / RapiDos Professional - Only $119.95

These prices are for a standard C-64 and 1541 drive. RapiDos is availabe for other Commodore configurations, but prices do vary - contact us for details. RapiDos requires a socketed kernal ROM U4 in your C-64. RapiDos is easily upgradeable to the Professional version. The RapiDos Professional drive controller is ©1987 mts data GbR, the creators of the best parallel systems in Europe!

• *A Hiler Design* •

THE MSD MASS DUPLICATOR

If You're Looking For Speed, You've Come To The Right Place

No one will deny that a stock Coorvette is a fast car. But in the hands of a knowledgeable expert, it can get faster. Much faster. Lawrence Hiler is a Commodore hardware expert. The first time he saw an MSD SD-2, he liked what he saw. But he knew it could go faster.

Much faster.

The MSD Mass Duplicator is firmware that turns an ordinary SD-2 into a professional, high speed disk copying system of unequaled performance. What kind of performance? How about:

- 15 second backup of standard formatted disks!
- 18 second full GCR QuickNibble for archiving protected disks!
- 9 second disk format - even for two disks at the same time!

Not bad, eh? But that's not all - our AutoCopy ROM Option allows you to use your SD-2 WITHOUT having it connected to your Commodore computer at all! Your MSD is transormed into a DEDICATED High speed duplication machine - a machine so fast and reliable that it is the same system we use here at Software Support to produce our own commercial software!

If You're lucky enough to own an MSD SD-2, you're just a simple, solderless, plug-in step away from owning the finest, fastest high speed disk duplicator we've ever seen. Why waste any more time - order Mass Dupicator today!

THE MSD MASS DUPLICATOR/ONLY $39.95

Special Bonus-Now Includes Our Dynamic AutoCopy ROM Option FREE!

TURBO 64

Life In The Fast Lane

What does a Turbo 64 cartridge have in common with a Lamborgini? They're both fast. Expensive. And definitely not for everyone. For most people, the Turbo 64 cartridge would be overkill. But for the few who can handle it, it can be as satisfying as a fast ride in a hot car.

Just plug the Turbo 64 cartridge in, and the on board 65816 processor takes over. This is the same high speed 8/16 bit chip that's found in the Apple IIGS. You can adjust the clock speed from 100khz (1/10 of normal) to a blistering 4.5mhz (4 1/2 times normal speed)! Your games, graphics, and applications (including GEOS) will flow. Get Turbo 64 - and get into the passing lane!

Turbo 64/$199.00

C-64 Burst ROM / C-128 Burst ROM

Exceed The Speed Limit

If you own a C-64 with a socketed Kernal ROM U-4, you're in luck. With our C-64 Burst ROM chip installed, you can access the burst mode of a Commodore 1571 or 1581 disk drive. This means that you can load 100 blocks in just 6 seconds on a 1571 (even double sided format), and 4 seconds on a 1581 drive! In addition, you get super fast access of directories and sequential and relative files. There's even a DOS wedge built in!

The C-128 version provides the same features as found on the C-64 version, and allows the C-128 to run at burst speed when in the 64 mode. Get the version for your machine, and start speeding today!

C-64 Burst ROM/Only $39.95 C-128 Burst ROM/Only $49.95

Please Note: The Kernal ROM U4 Chip In Your Computer Must Be Socketed To Accept A Burst ROM Chip

SOFTWARE SUPPORT INTERNATIONAL

PLEASE READ BEFORE ORDERING: We accept money orders, certified checks, VISA, M/C and, Discover. Previous Software Support customers may use C.O.D. and personal checks. Orders shipped to U.S.A. (48 states), F.P.O., A.P.O., or possessions, please add $3.50 per order for S & H. U.S. shipping is by UPS ground in most cases. FAST 2nd DAY AIR available: add $1.00 per pound additional (U.S. 48 states only). Alaska or Hawaii (all orders shipped 2nd day air), please add $7.50 per order for S & H. C.O.D. available to U.S. customers only (50 states): add $2.75 along with your S & H charges per order. Canadian customers may calculate the S & H charges by including $4.00 (minimum charge) for the first two pieces of SOFTWARE and $1.00 for each additional piece per shipment. All monies must be submitted in U.S. funds. Canadians must call or write for hardware shipping charges. Foreign customers must call or write for shipping charges. Defective items are replaced at no charge if sent postpaid. All in stock orders are processed within 24 hours. U.S. SOFTWARE orders over $100 will be shipped 2nd Day Air at our regular $3.50 S & H charge (48 states only). Washington residents please add 7.6% additional for Sales Tax. All prices subject to change. All sales are final unless authorized by management.

Mail your order to: Software Support, Int.
2700 NE Andresen Road / Vancouver, WA 98661

Or call our toll-free order line at 1-800-356-1179, 9am-5pm Pacific time Monday-Friday
After hours orders accepted at (206) 695-9648 7 days a week.
Technical support available. Call (206) 695-9648, 9am-5pm Pacific time. Monday-Friday.
Orders Outside USA call (206) 695-1393.

VISA MasterCard DISCOVER

DEALERS — WE HAVE THE SUPPORT YOU'RE LOOKING FOR!

LET'S FACE IT—MAIL ORDER HOUSES ARE *NOT* ALL THE SAME!

SOFTWARE SUPPORT INTERNATIONAL

CONVENIENCE—FAST SERVICE—RELIABILITY—SUPPORT

Abacus Software

128 Internals (book)	17.36
128 Tricks & Tips (book)	17.36
1571 Internals (book)	17.36
Basic Compiler 64	24.97
Basic Compiler 128	36.97
Becker Basic for Geos	33.97
Cad Pak 64	24.97
Cad Pak 128	36.97
Chart Pak 64	24.97
Chart Pak 128	24.97
Cobol 64	24.97
Cobol 128	36.97
CP/M for the C-128(book)	17.36
Fortran 64	25.97
Geos Inside & Out Book	17.36
Geos Inside & Out Disk	12.76
Geos Tricks & Tips Book	15.20
Geos Tricks & Tips Disk	12.76
Super C Compiler 64	36.97
Super C Compiler 128	36.97
Super Pascal 64	36.97
Super Pascal 128	36.97

Absolute Entertainment

Crossbow	21.97
F-18 Hornet	21.97
★Space	21.97

Access Software Incorporated

Echelon w/Lipstick	27.97
Heavy Metal	25.97
LB & Tourn & Exec	13.97
Mach 5	21.97
Mach 128	30.97
World Class Leader Board	24.97
W/C L/B Fam/Courses 1	12.97
W/C L/B Fam/Courses 2	12.97
W/C L/B Fam/Courses 3	12.97

Accolade

Apollo 18	18.97
Bubble Ghost	18.97
Card Sharks	18.97
Fast Break	18.97
Fourth & Inches	18.97
Fourth & Inches Team Const.	10.97
Grand Prix Circuit	19.97
Jack Nicklaus Golf	19.97
Miniputt	18.97
Power at Sea	18.97
Rack-em	18.97
Serve & Volley	18.97
Steel Thunder	19.97
T.K.O.	18.97
Test Drive	18.97
The Train	18.97

Activision Entertainment Software

Aliens	10.97
Blackjack Academy	24.97
Chop 'N Drop	19.97
F-14 Tomcat	25.97
Faery Tales	30.97
Last Ninja	21.97
★Last Ninja II	22.97
Main Frame	25.97
Maniac Mansion	21.97
Maniac Hint Book	7.97
Might & Magic	24.97
★Might & Magic II	25.97
Might & Magic Hints	10.97
Neuromancer	25.97
Predator	10.97
Rampage	21.97
Shanghai	10.97
Sky Travel	30.97
USS Ocean Ranger	21.97
Zak McKracken	21.97
Zak Hints	7.97

Batteries Included Softworks

Desk Pak Plus*	18.97
Font Pack Plus*	18.97
Geos 64 V2.0	36.97
Geos 128 V2.0	42.97
Geocalc 64	30.97
Geocalc 128	42.97
Geochart 64	19.97
Geofile 64	30.97
Geofile 128	42.97
Geoprogrammer 64	42.97
Geopublish 64	42.97

Big Top Office

$100,000 Pyramid	9.97
Alf	9.97
California Raisins	15.97
High Rollers	9.97
Psycho	15.97

Broderbund Software

Arcade Game Const. Set	18.97
Bank Street Writer	30.97
Bank Street Filer	18.97
Bank Street Mailer	15.97
Bank Street Speller	15.97
Carmen Sandiego Europe	24.97
Carmen Sandiego USA	24.97
Carmen Sandiego World	21.97
★Downhill Challenge	15.97
Print Shop	27.97
Print Shop Companion	21.97
P/S Graphics Disk 1	15.97
P/S Graphics Disk 2	15.97
P/S Graphics Disk 3	15.97
P/S Holiday Graphics	15.97
Quest for Clues (book)	19.97
Star Wars	18.97

Capcom

Ghosts & Goblins	18.97
Hat Trick	18.97
Minigolf	18.97
Side Arms	18.97

Cinemaware

Defender of the Crown	21.97
Sinbad	21.97
Rocket Ranger	21.97
Three Stooges	21.97
Warp Speed (Cart)	30.97

Data East

Batman	16.97
Breakthru	18.97
Commando	9.97
Guerilla Wars	19.97
Ikari Warriors	18.97
Karate Champ	9.97
Karnov	18.97
Kid Niki	18.97
Kung Fu Master	9.97
Platoon	18.97
Robo Cop	19.97
Speed Buggy	18.97
Victory Road	18.97

Datasoft

Alternate Reality:City	19.36
City Hint Book	7.97
Alternate Reality:Dungeon	25.48
Dungeon Hint Book	7.97
Androids Decision	16.30
Firezone	16.30
Hunt For Red October	25.48
Time & Majik	20.97
Video Title Shop w/Comp 1	19.36

Electronic Arts

Bard's Tale I	25.48
Bard's Tale I Hints	9.97
Bard's Tale II	25.48
Bard's Tale II Hints	9.97
Bard's Tale III	25.48
Bard's Tale III Hints	9.97
Caveman Ugh-lympics	19.36
Chessmaster 2100	27.47
Chuck Yeager's AFS	22.42
Deathlord	19.36
Deathlord Hints	9.97
Double Dragon	22.42
Instant Music	19.36
Jordan vs Bird One on One	19.36
Mars Saga	22.42
Mars Saga Hints	10.97
Mavis Beacon Typing	25.48
Modem Wars	22.42
Monopoly	19.36
PaperClip 3	31.60
PaperClip Publisher	31.30
Power Play Hockey	17.30
Project Firestart	20.36
Risk	20.97
Scrabble	21.40
Scruples	25.48
Skate or Die	19.36
Skyfox II	19.36
Strike Fleet	19.36
Wasteland	25.48
Wasteland Hints	9.97

Epyx

500XJ Joystick	17.95
Battleship	18.97
California Games	24.97
Create A Calendar	18.97
Destroyer	24.97
Dive Bomber	24.97
Fast Load Cartridge	24.97
Final Assault	24.97
4 X 4 Racing	24.97
The Games:Summer Edition	24.97
The Games:Winter Edition	24.97
Home Video Producer	30.97
Impossible Mission II	24.97
L.A. Crackdown	24.97
Legend of Black Silver	24.97
Metrocross	12.37
Mind Roll	24.97
★Skateball	24.97
★Skate Wars	25.97
Space Station Oblivion	25.97
Sporting News Baseball	24.97
Sports-A-Roni	15.97
Street Cat	15.97
Street Sports:Baseball	24.97
Street Sports:Basketball	24.97
Street Sports:Football	24.97
Street Sports:Soccer	24.97
Sub Battle Simulator	24.97
Technocop	24.97
Tower Toppler	24.97
★Trials of Honor	25.97

Free Spirit

Basic 8	26.95
Home Designer	29.95
Home Designer Data #1 (Circuits)	9.95
Newsmaker 128	21.97
Sketchpad 128	21.97
Spectrum 128	25.97

Gamestar

Champ. Baseball	11.97
Champ. Basketball	21.97
GFL Football	21.97
★Pete Rose Pennant Fever	22.97
Star Rank Boxing II	18.97
Take Down	18.97
Boxing I/Tennis	18.97

Infocom

Lane Mastadon, Vol. 1	10.95
Gamma Force, Vol. 1	10.95
Zork Quest, Vol. I	10.95
Zork Quest, Vol. II	10.95

Inkwell Systems

Flexidraw 5.5	24.06
Flexifont	20.76
Graphics Integrator 2	20.76
Light Pen (184C)	42.97
Graphics Gallery 1	20.75
Graphics Gallery 2	20.75

Konami

Boot Camp	18.97
Contra	18.97
Rush'N Attack	18.97

Microprose

Airborne Ranger	21.97
F-19 Stealth Fighter	24.97
Gunship	21.97
Pirates	24.97
Red Storm Rising	24.97

Mindscape Inc.

720	22.97
Alien Syndrome	19.97
Bad Street Brawler	18.97
Block Buster	18.97
Captain Blood	21.97
Clubhouse Sports	18.97
Crossword Magic	19.97
Gauntlet	21.97
Gauntlet (Deeper Dungeon)	15.97
Indy Jones/Temple of Doom	21.97
Outrun	22.97
Pole Position II	16.97
Road Raider	19.97
Road Runner	21.97
Space Harrier	19.97
SuperStar Ice Hockey	21.97
SuperStar Soccer	21.97
Uninvited	21.97
Willow	19.97

Origin Systems Inc.

Autoduel	33.36
Ogre	20.40
Times of Lore	25.97
Ultima 4	39.84
Ultima 5	39.84
Ultima 5 Hints	10.97
★Ultima Trilogy (1-2-3)	39.84

SSI Strategic Simulations Inc

★Demon's Winter	20.97
Dungeon Master Assistant	20.97
Gemstone Healer	10.97
★Heroes of the Lance	19.47
★Hillsfar (A D & D)	25.97
Phantasie III	25.47
Pool of Radiance	25.47
Pool of Radiance Hints	10.95
Questron I	10.97
Questron II	25.47
Typhoon of Steel	31.97
Wargame Construction Set	19.47
Wizard's Crown	25.47

Sharedata

Card Sharks	9.95
Concentration	9.95
Family Feud	9.95
Jeopardy	9.95
Jeopardy II	9.95
Jeopardy III	9.95
Sports Jeopardy	9.95
Wheel Of Fortune	9.95
Wheel of Fortune 2	9.95
Wheel of Fortune 3	9.95

Solutions Unlimited

Billboard Maker	24.97
Grafix Link	12.97
Icon Factory	24.97
Photo Finish	18.97
Screen F/X	21.97

Springboard

Certificate Maker	14.97
Certificate Maker Libr.I	10.97
Newsroom	14.97
Newsroom Clipart 1 or 2 or 3	10.97
P/S Graphic Expander	23.64

subLOGIC

Flight Simulator II	33.97
Flight Sim Scenery 1	14.16
Flight Sim Scenery 2	14.16
Flight Sim Scenery 3	14.16
Flight Sim Scenery 4	14.16
Flight Sim Scenery 5	14.16
Flight Sim Scenery 6	14.16
Flight Sim Scenery 7	17.46
Flight Sim Scenery 11	17.46
Flight Sim Scenery West. Europe	17.46
Flight Sim Scenery Japan	17.46
Flight Sim Scenery SanFran	17.46
Jet v2 w/Japan Scenery	27.36
Stealth Mission	33.96

Taito

Alcon	18.97
Arkanoid	18.97
Bubble Bobble	21.97
★Gladiator	18.97
Operation Wolf	24.97
Qix	18.97
★Sky Sharks	18.97
Rastan	21.97
Renegade	21.97

Timeworks

Accounts Payable	33.36
Accounts Receivable	33.36
Data Manager 2	17.16
Data Manager 128	33.36
Electronic Checkbook	13.92
General Ledger	33.36
Inventory Management	33.36
Partner 64	33.36
Partner 128	39.84
Payroll Management	33.36
Swiftcalc/Sideways 64	17.16
Swiftcalc/Sideways 128	33.36
Swifttax 1988	31.97
Word Writer 3	33.36
Word Writer 128	33.36
Writer 64 (for Geos)	24.97

Unison World Incorporated

Art Gallery 1	15.97
Art Gallery 2	15.97
Art Gallery 3	15.97
Printmaster Plus	21.97

MISCELLANEOUS

Advanced Art Studio	27.97
Art Worx/Bridge 5.0	21.97
Barbarian	25.97
★Better Dead Than Alien	22.97
Big Blue Reader 128/CP/M	27.97
Bob's Term Pro 64	30.97
Bob's Term Pro 128	36.97
B/W Business Form Shop	24.97
★Carrier Command	22.97
Club Backgammon	20.40
CSM Drive Align Kit	30.12
CSM Protection Manual I	23.97
CSM Protection Manual II	27.97
Doodle	24.97
Elementary Commodore (Book)	7.95
Elite Hint Book (Leroy)	6.97
Font Master 2	30.97
Font Master 128	36.97
Geneology:Family Tree 64	36.97
Geneology:Family Tree 128	36.97
Geos Companion 1	18.97
Hes Mon 64 (cart)	9.95
Hollywood Squares	10.97
IHT/CAD 3D	30.97
John Elway Q.B.	19.97
Lotto Program	24.95
Merlin Assembler 64	30.97
Merlin Assembler 128	42.97
Microlawyer	36.97
Microleague WWF Wrestling	24.95
★Obliterator	19.97
Paul Whitehead Chess	21.97
Roger Rabbit	19.97
Sam's/C-64 Prog. Base Ref. Guide	16.97
Star Empire	15.97
Strip Poker	18.97
Poker Data Disk 1	12.97
Poker Data Disk 2	12.97
Poker Data Disk 3	12.97
★Stunt Car Racer	22.97
Superbase 64	25.97
Superbase 128	31.97
Superbase the Book	13.97
Superscript 64	22.95
Superscript 128	25.97
Tab Books/Adv 128 Grap/Snd	13.97
Tab Books/C64 Trouble Shoot	14.97
Tab Books/C64 Serious Prog	9.97
★Terrorpods	19.97
Twin Cities C-128 Compend.(Book)	14.95
Vampire's Empire	18.97
★War in Middle Earth	31.97
Wizardry/Sir Tech	24.97
Wizardry 2	24.97
Zoom	19.97

ACCESSORIES

1541/71 Serial Cable	4.95
1541/71 Power Cable	4.95
C-128 RGB Monitor Cable (Color)	7.95
C-128 RGB Monitor Cable (Comp)	5.95
C-64 Color Monitor Cord	4.95
Commodore 64 H/D Power Supply	29.95
Commodore 128 Power Supply	44.95
RS-232 Interface (Omnitronics)	36.95
MW 350 Printer Interface	49.95
Aprospand 64	27.95
Aprospand Extender Cable	15.95
Aprotek 1200 Baud Minimodem C	79.95
Aprotek User Port Extender Cable	15.97
Commodore 1670 Modem (1200 Baud)	69.95
Commodore 1764 Ram Expander	129.95
Commodore 1351 Mouse	37.95
Mouse Holder	5.95
Mouse Mat	8.95
Numeric Key Pad C-64	49.95
Computer Hand II	6.95
Disk Mailer	.49
1541 Dust Cover	8.95
1541 II Dust Cover	8.95
1571 Dust Cover	8.95
C-64 Dust Cover	8.95
C-64C Dust Cover	8.95
C-128 Dust Cover	8.95
C-128-D Dust Cover	13.95
Disk Notcher-Square Cut	4.95
5.25" Disk Drive Cleaner	5.95
10 Cnt Disk Storage	1.95
50 Cnt Disk Storage	8.95
100 Cnt Disk Storage w/Lock	12.95
80 Cnt 3.5" Disk Stor. w/Lock	9.95
5.25" Disk Labels-96 cnt	1.00
5.25" DS/DD Diskettes-Black	.39
5.25" DS/DD Diskettes-10 colors	each .79
Write Protects-100 cnt Black	1.00
Tyvek Sleeves-High Quality	ea .09
Slik Stik-Joystick	6.95
Quick Shot II-Joystick	7.95
Tac 2-Joystick	10.95
Tac 3-Joystick	11.95
Touch-It Static Strip	8.95
Suncom Icon Troller	17.95
Surge Protector/Power Pad	39.95

★ ALL ITEMS CARRYING THIS STAR WERE NOT RELEASED AT THE TIME OF AD SUBMISSION, PLEASE CALL FOR AVAILABILITY

1541 RAMBOard*

Byte The Copy Protection bullet!

Let's face it - war is hell. And in the Commodore world, one of the ugliest wars of all is being waged by the copy protection industry. They're tough. They're clever. And they're very, very determined. If you've seen some of the current ice out there, you know just how determined they are. Well, we're just as determined. And we've got a way to walk right through the coldest ice out there.

What's our secret? The new RAMBOard, a small card that can easily be installed in your 1541 in 5 minutes using just a screwdriver. With this remarkable piece of firmware in place, backup hassles are a thing of the past!

RAMBOard gives you speed - it comes bundled with a fast copier that can archive an unprotected data disk in under 60 seconds. RAMBOard gives you power - working with our dynamic Maverick software, RAMBOard will back up programs that other systems can't even scratch the surface of. Best of all, RAMBOard won't become obsolete - when newer, even tougher protection schemes come along, we'll create new Maveric/RAMBOard parameters to cut right through them. Backed by our famous R&D, you know that we'll do whatever it takes to keep RAMBOard operating behind enemy lines!

Get your RAMBOard today. And the next time some company tries to charge you for an "authorized" backup of a program you've already paid for, remind them that war IS hell - and you know how to raise a little hell of your own.

1541 & 1541C RAMBOard/ONLY $34.95

In Most Cases, Plugs Right In-NO Soldering Required

1541II RAMBOard/ONLY $44.95

This Version DOES Require Soldering

Profesional Installation Available-Contact Us For Details

***RAMBOard Is An Optional Accessory For Use With Maverick™**

NEW V2.0

MAVERICK™ *

NEW V2.0

A New Tool-From Some Old Friends

You know us. When copy protection began throwing 1541 drive heads out of alignment, we gave you Kracker Jax. When V-Max™ reared its ugly head, we created the Kracker Jax Elite series. When the copy protection wars escalated, we responded with Bull's-Eye and the Hacker's Utility Kit. And when you decided to explore the mysteries of commercial-grade protection schemes, we were there with Kracker Jax Revealed.

Now the copy protection industry has upped the ante again. They've made it harder than ever to make legitimate backups of your expensive software. Do you think you should have to spend money to buy "authorized" backups of software that you already own?

Neither do we.

Introducing Maverick, the best weapon we've ever made to let you defend yourself from copy protection profiteering. Maverick is so advanced, it has actually replaced every other backup utility we've ever created. That's right - Maverick is now the ONLY archival software we manufacture. All of our R&D efforts go into making sure that Maverick remains the most powerful backup utility available - from ANY source! Take a look at some of these features:

- NEW — 1541/1571/1581 fast file copier - any direction
- GCR Editor for the experienced hacker
- NEW — GEOS™ file copier - works under desktop
- Error scanner with unique sector editor
- Directory editor helps you organize your disks
- Works with C-64/C-128 & 1541/1571/1581 drives
- Scrolling M/L monitor with Drive Mon
- EXLUSIVE Popular subscriber service available
- Single or dual state of the art Nibbler
- 300 + parameters for those tough to backup disks
- Capable of archiving Rapidlok protection
- Single of dual drive high speed data copier
- EXCLUSIVE GEOS™ Module: PARAMETERS & TOOLS
- NEW — Dump a formatted parameter catalog to printer
- Byte pattern scanner for high speed searches
- Technical support from our staff experts.

And this is just the beginning. Our future plans for Maverick include expanded RAMBOard support, RAM expansion module support, and even a 1541/1571/1581 relative file copier! And with our unique Subscriber Program, you can receive Maverick updates automatically - the instant they're released!

You know us. We're the company that has worked hard for years to establish an ironclad reputation for dynamic products, fair prices, and superb customer support. We've always been a part of your past. And as long as you have your Commodore, we'll always be a part of your future.

Attention: Registered Maverick owners!
Parameter Module #4 is now available, Only $9.95
Maverick V2.0 Upgrade also available, Only $9.95

MAVERICK 2.0/ONLY $34.95

Now Includes Parameter Modules 1, 2, & 3!

***Maverick Was Formerly Known As "Renegade" From Kracker Jax**
Not To Be Confused With The Game Of The Same Name

THE 1581 TOOLKIT

Without It, You Don't Know What You 1581 Is Capable Of

It blew people away at the "World Of Commodore Show" held in Pennsylvania in November 1988. It's power and scope astonish anyone who sees it work. And, if you have a 1581 drive, it is the single most important piece of software that you can own. It is The 1581 Toolkit-and it will transform your 1581 into something remarkable.

We know the market, and we know that if you've bought any other 1581 utility in the past, you've probably been disappointed. But while other companies rushed ill-conceived and poorly executed products to market to "cash in" on the new 1581 drive, we did things differently. Our programmers took the time to become experts on the 1581 before they even looked at a drawing board. So when they finished the Toolkit project a full year later, they had accomplished what no one else had - the creation of a tight, integrated package of essential utilities that make the 1581 more than the sum of its parts. Take a look at these Toolkit utilities and see why we're so excited about it:

- Fast Disk Copier
- Directory Editor
- File Track & Sector Tracer
- Fast File Copier
- Byte Pattern Search
- Ultrafast Formatter
- Partition Creator
- Track & Sector Editor
- Error Scanner
- Relocatable Fast Loader

All 10 of these custom utilities use extremely fast read/write routines. Wherever appropriate, they allow full access to partitions. It's obvious we created The 1581 Toolkit to be the finest set of utilities available for the 1581 drive. But we didn't stop there. Order now, and we'll also send you the 1581 DOS Reference Guide FREE! With over 100 pages of concise, valuable information, you'll quickly find this book indispensable! Written by David Martin (INFO Magazine's Copy Corner reviewer), this manual represents a year's worth of research and investigation into the inner workings of the 1581 drive. We've also added extra utilities, including such handy items as a machine language monitor with DriveMon, the perfect companion for the 1581 DOS Reference Guide.

We've spent a lot of time working hard to make sure that nobody knows more about the 1581 than we do. Don't sell your 1581 short. Get the 1581 Toolkit today, and let us show you just what it's really capable of. We'll take your 1581 absolutely as far as it was designed to go. And then we'll take it farther.

THE 1581 TOOLKIT (ON 3.5" DISK)/ONLY $39.95

Includes Your FREE 1581 DOS Reference Guide

The 1581 Toolkit Works On The C-64 Or The C-128/C-128D In The 64 Mode

ALL NEW

ALL NEW

THE 1750 CLONE

Thanks For The Memory

Most Commodore users are content to use their computers within the constraints placed on them by a limited amount of RAM. But some people want more. More speed. More power. And that means just one thing - more memory.

Power users have long known that the ideal solution to their memory problems is out there in the form of Commodore's incredible 1750 RAM expansion module. Just plug it in and you've got a whopping 512k of onboard RAM - the same amount of memory found on most IBM computers! This is the memory cartridge that all serious Commodore power users want. There's only one problem.

You can't find them.

That's right. These RAM units are almost impossible to buy. We've always specialized in finding solutions to Commodore related problems - here's what we came up with.

First, we bought brand new Commodore 1764 RAM expansion units, the ones with only 256k of RAM onboard. Next, we had Chip Level Design engineer and produce a custom upgrade that takes a 1764 to a full 512k! That's the same half meg of RAM as a regular 1750! Finally, we tested each and every cartridge, and warranteed them to be free from defects.

Now there's nothing to stop you from taking your Commodore 64 or 128 to levels of power and sophistication that the original designers never even dreamed of! If you're using programs like GEOS from Berkeley; the Pocket Series from Digital Soutions; future versions of Maverick from Kracker Jax; Fleet System IV from Professional Software; or the potent PaperClip III from Batteries Included; if you're using ANY of these programs, you won't believe the difference that the extra memory makes!

IMPORTANT NOTES - READ CAREFULLY

*C-64/64c (but NOT C-128/128D) owners MUST buy a heavy-duty power supply to use these units. The power supply is NOT included - it is available from us seperately.

* If you ALREADY own a 1764 RAM cartridge, we can upgrade it for you. Your unit MUST be in perfect working order for us to upgrade it. The turnaround time on upgrades is approx. 2 weeks. It will NOT be necessary for you to purchase a new power supply - the one that came with your 1764 will still work fine.

THE 1750 CLONE
ONLY $199.95
1764 UPGRADE
ONLY $124.95

ATTENTION C-128 OWNERS

Solderless 64K Video RAM Upgrade

Now that Commodore has released the C-128D with 64K of video RAM, we should be seeing 128 programs address this fantastic new feature soon.

BASIC 8 already has the capability of using all 64K of video RAM. If you own the C-128 in stock condition, you own all 16K of video RAM that Commodore felt was necessary. Using Basic 8 format and the full 64K of video RAM provides you with the ability to scroll through video memory as well as enhanced color resolution.

Up until now, to upgrade the C-128 to 64K of video RAM you would have to first search out the components, then find a competent repair outlet to desolder and install the parts. **What a hassle!**

SOLUTION — We have developed a module that simply plugs in to the mother board of your C-128. **No splattered solder — No heat damage — No hassle.**

This package is available in two different forms. Model A has all parts necessary to complete your upgrade, and Model B is identical except that you supply the RAMs. Again, no soldering is necessary. If you have access to low cost RAMs, we suggest Model B.

Both models include easy to follow installation instructions, a test program to verify proper installation, and the plug in Video RAM Upgrade.

Model A (complete) only $49.95
Model B (no RAMs) only $29.95

ALL NEW

ALL NEW

COMMODORE HEAVY-DUTY POWER SUPPLIES

WATTS The Matter - Can't Get ample power?

Sorry about that. Actually, it's no laughing matter. Our technicians tell us that the majority of Commodore computer problems can be traced back to an inadequate power supply. When the power supply fails, it can (and often does) cause additional damage to the computer itself - and a computer meltdown is no joke.

This doesn't have to happen to you. We are now selling a heavy-duty power supply that will greatly diminish your fear of a power supply failure. These are NOT aftermarket units - they are made by Commodore, and are ideal for use with RAM expanders. They will provide you with a more stable, dependable source of power. This unit will work on ALL C-64's and 64c' on the market.

If your system is important to you, take the extra step to safeguard your investment by getting a Commodore Heavy-Duty Power Supply today. Power you can depend on - with no unexpected shocks.

COMMODORE HEAVY-DUTY POWER SUPPLY

C-64 Version - Only $29.95
C-128 Version - Only $44.95

SOFTWARE SUPPORT INTERNATIONAL

PLEASE READ BEFORE ORDERING: We accept money orders, certified checks, VISA, M C and, Discover. Previous Software Support customers may use C.O.D. and personal checks. Orders shipped to U.S.A. (48 states), F.P.O., A.P.O., or possessions, please add $3.50 per order for S & H. U.S. shipping is by UPS ground in most cases. FAST 2nd DAY AIR available: add $1.00 per pound additional (U.S. 48 states only). Alaska or Hawaii (all orders shipped 2nd day air), please add $7.50 per order for S & H. C.O.D. available to U.S. customers only (50 states): add $2.75 along with your S & H charges per order. Canadian customers may calculate the S & H charges by including $4.00 (minimum charge) for the first two pieces of SOFTWARE and $1.00 for each additional piece per shipment. All monies must be submitted in U.S. funds. Canadians must call or write for hardware shipping charges. Foreign customers must call or write for shipping charges. Defective items are replaced at no charge if sent postpaid. All in stock orders are processed within 24 hours. U.S. SOFTWARE orders over $100 will be shipped 2nd Day Air at our regular $3.50 S & H charge (48 states only). Washington residents please add 7.6% additional for Sales Tax. All prices subject to change. All sales are final unless authorized by management.

Mail your order to: Software Support, Int.
2700 NE Andresen Road / Vancouver, WA 98661

Or call our toll-free order line at 1-800-356-1179. 9am-5pm Pacific time Monday-Friday
After hours orders accepted at (206) 695-9648 7 days a week.
Technical support available. Call (206) 695-9648. 9am-5pm Pacific time. Monday-Friday.
Orders Outside USA call (206) 695-1393.

VISA MasterCard DISCOVER

DEALERS — WE HAVE THE SUPPORT YOU'RE LOOKING FOR!

InterComputing Inc.

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

In business since 1984; Amiga support since 1985
Member of Dallas Better business Bureau

A SERVICE ORIENTED BUSINESS AT DISCOUNT PRICES
Complete Product List available

Call Toll Free 1-800-622-9177
Customer Service & Order Status: 1-214-988-3500

HARDWARE

Memory

8-Up Memorycard 0K	145.75
8-Up Memory with 2MB	649.75
8-Up Memory with 8MB	22.95.00
Starboard with 0k	239.75
Starboard II with 0.5MB	399.75
Starboard II with 1MB	599.75
Starboard II with 2MB	997.75
Starboard Upper Deck 0k	44.75
A1000 256k Front Panels	199.00
A501 - 512k w/clock	179.75

Drives

FData-10 ext. Drive	139.75
FData-20 ext. TwinDrive	249.75
int. 3.5" Drive A2000 only	145.75
AIR-Drive	169.75
Cal.Access CA-880	169.75
HardFrame SCSI Card	239.75
Starboard SCSI Module	97.75
Quantum 80MB Drive	875.00
Supra 20MB HDisk	649.00
Supra 30MB HDisk	749.00

Video / Graphics

A-Pro Draw 12x12	499.75
Amiga Live A 500	299.75
Amiga Live A 2000	329.75
Amiga Live A 1000	219.75
Color Splitter	85.75
Digi View 3.0 NTSC	139.75
Digi Droid	64.50
Easyl 500	299.75
Easyl 1000	349.00
Easyl 2000	349.00
Flicker Fixer	499.00

Imprint	399.75
Mitsubishi Multisyc Monitors for use with FlickerFixer :	
13" Screen size	549.75
16" Screen size	1349.75
20" Screen size	1895.75
Panasonic 1410 Kit	249.75
Perfect Vision	175.00
Polaroid Palette	1995.00
Super Gen	699.75
X-Specs 3D	97.75

Sound / Midi

ECE-Midi w/ RS-232 thru	44.75
Future Sound Sampler	129.75
Soundscape Sampler	79.50
Perfect Sound A500/2000	59.75
Perfect Sound A1000	59.75
Midi Cable 5ft	8.75
Midi Cable 8ft color coded	11.95
Midi Gold for A2000 internal	69.95

Miscellaneous

Epyx 500XJ	17.50
Mouse Pad	6.95
Modem Cable A500/2000	9.95
Multifunction Card	69.75
Phasar Gun	46.75
Processor Accelerator	149.50
Sony 3.5" DS/DD Disks	18.75
Supra Modem 2400 Bd.	149.75

Flexible Data Systems

FDATA-10 Disk Drive

This external 3.5" Drive is a very inexpensive unit to make the life with your Amiga easier.
The FData-10 is compatible with the original Amiga-drive but is quieter, smaller and has a longer cable (27inch) to connect it to the Amiga.

only **$139.75**

Need more than one drive?

FDATA-20 Disk Drive

is the answer-two drive units in one.

only$249.75

Graphics & Video

Aegis Animator	82.50
Aegis Draw 2000	179.75
Animate 3D	99.75
Animation Multiplane	56.75
Animation Apprentice	199.75
Butcher 2.0	21.75
Calligrapher	87.75
Comic Setter	66.75
Deluxe Paint 2.0	94.75
Deluxe Productions	144.75
Director	44.95
Fantavision	39.95
Flipside	39.75
Forms in Flight II	77.75
Interchange	29.75
Intro CAD 2.0	49.75
Kara Fonts	52.75
Lights, Camera, Action	52.75
Modeler 3D	72.50
Pageflipper Plus F/X	99.75
Photon Paint	66.75
Pixmate	49.75
Pro Board	379.75
Pro Net	379.75
Pro Video Plus	199.75
Sculpt 3D	69.75
Sculpt 4D	399.75
Terrain Disk	19.75
TV Show NTSC/PAL	62.95
TV-Text	62.95
Turbo Silver	129.75
Video Effects 3D	129.75
Video Titler	99.75
Videoscape 3D	119.75
Window Print II	22.75
X-CAD	349.75
Zoetrope	99.75

PROGRAMMING & LANGUAGES

A/C Basic Compiler	129.75
A/C Fortran (AB-Soft)	179.75
Aztec C Developer	199.75
Aztec C Professional	145.75
Aztec Source Level Debug.	59.75
Benchmark Amiga Library	64.75
Benchmark C-Library	64.75
Benchmark IFF Library	64.75
Benchmark Modula-2	134.75
DSM Disassembler	42.75
Lattice 5.0	219.75
Lattice-C ++	395.00
Lint	69.00
MCC-Pascal	79.95
Power Windows 2.5	56.75

SOFTWARE

Music

Audio Master II	69.75
Dr. T's DX-Heaven	99.75
Dr. T's Kawai K1 Libr.	99.75
Dr. T's KCS 1.6	166.75
Dynamic Drums	47.75
Dynamic Studio	129.75
M	154.75
Midi Recording Studio	44.95
Music Mouse	49.75
Sound Quest Casio CZ	84.75
Sound Quest D-110	99.75
Sound Quest D-50	99.75
Sound Quest DX-7	99.75
Sound Quest DX-7 II	117.75
Sound Quest Generic	84.75
Sound Quest MT-32	99.75
Soundsc. Pro Midi Studio	124.75
Synthia	66.75

Business

BEST Management System	299.75
Cygnus ED	69.50
Excellence	189.75
Logistix	99.75
MaxiPlan 500	99.75
Maxi Plan Plus	129.75
Microfiche Filer	69.75
Microfiche Filer II	112.75
Money Mentor 2.0	59.75
Phasar 3.0	66.75
Prowrite 2.0	72.50
Scribble 2.0	57.95
Softwood File II (GS)	79.75
Superbase Personal II	99.75
Superbase Professional	199.75
TexEd Plus	54.75
Word Perfect Library	79.95
Wordperfect	197.75

WIN Yamaha Synthesizer complete with MIDI Interface & Cables

All orders placed between January 1st 1989 and May 31st 1989 are automatically entered in our drawing. No purchase is necessary; to enter, send a postcard with your Name, Address, Phone number and type of Amiga to: InterComputing, Inc. - Yamaha Drawing
2100 N. Hwy 360, #2101
Grand Prairie, TX 75050

Games

4th and Inches	29.75
Andromeda Mission	27.75
Arazok's Tomb	24.75
Arkanoid	19.75
Balance of Power	33.75
Barbarian	24.75
Battle Chess	31.75
Capone	29.75
Carrier Command	29.95
Centerfold Squares	22.50
Defender of the Crown	35.75
Destroyer	27.75
Ebonstar	29.75
Faery Tale Adventure	29.75
Ferrari	32.75
Final Assault	31.75
Flightsimulator	39.75
Foundation Waste	27.75
Guild of Thieves	29.75
Heroes of the Lance	29.75
Hollywood Poker	24.75
Hybris	27.75
Interceptor	34.75
Into the Eagles Nest	24.75
Jet	32.75
Knight Orc	29.75
Major Motion	27.75
Mindwalker	27.50
Obliterator	29.75
Offshore Warrior	28.75
Pioneer Plague	27.95

Portal	34.75
Ports of Call	29.75
POW	25.75
Q-Ball	19.75
Realm of the Warlock	24.75
Return to Atlantis	34.75
Road Raider	27.75
Roger Rabbit	29.95
Scenery Disk 7/11	19.75
Scenery Disk Europe	19.75
Scenery Disk Japan	19.75
Shanghai	27.75
Silent Service	27.75
Sindbad	33.75
Skychase	27.75
Space Cutter	19.95
Space Quest	32.75
Starglider	29.75
Starglider II	29.75
Street Sports	14.95
Strip Poker	27.75
Strip Poker Data 4 or 5	14.95
Surgeon	29.75
Terror Pods	29.75
Three Stooges	34.75
Torch 2081	19.75
Vampires Empires	29.75
Wintergames	14.95
World Class Leaderboard	29.95
World Games	27.75
Zoom	21.75

Desktop Publishing

Comic Setter	66.75
Font Set I	24.75
Laserscript	29.75
Newsletter Fonts	29.75
PCM-Fonts Vol.1-3	27.50
Page Setter	89.75
Professional Page	239.75
Shakespeare	149.75
Studio Fonts	29.75
Zuma Fonts 1,2,3,4 each	24.75

Utilities

Arexx	32.75
Disk Mechanic	56.75
DOS-2-DOS	42.75
EZ-Backup	32.75
Facc II	19.75
Fine-Print	32.75
Project D	32.75
Quarterback	44.95
Raw Copy	39.95

GVP Products

IMPACT 68030 Card	Call
IMPACT 2000 2Meg/0K	299.75
IMPACT 2000 2Meg/2MB	699.75
IMPACT 2000 0k /80Meg	1199.75
IMPACT 2000 2MB/80Meg	1699.75

Trade up!

We will trade in your Amiga 500, 1000 towards a new Amiga 2000 or 2500! Please call for details.

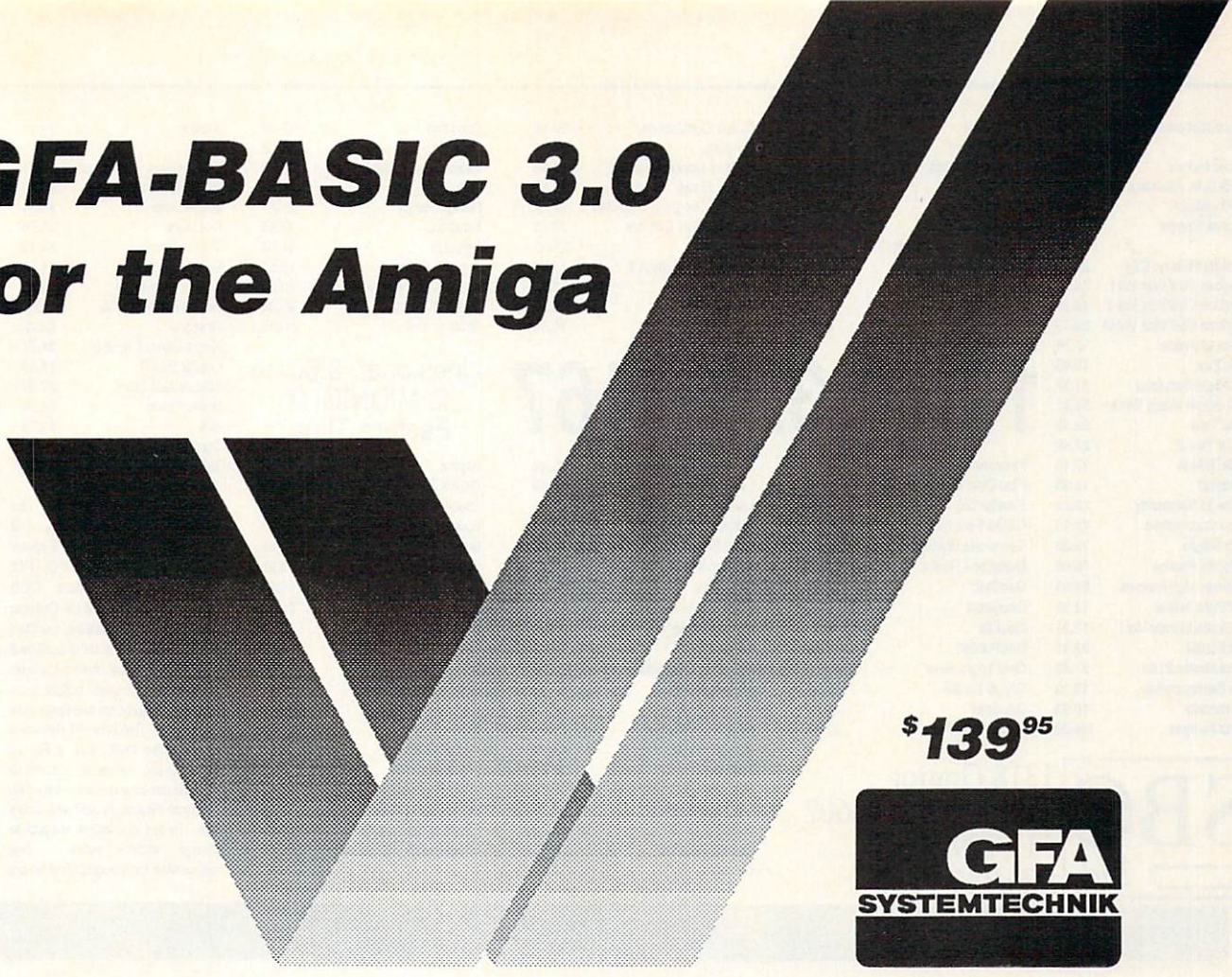
NEW PRODUCTS

GFA Basic 3.0	99.75
Pagestream	139.75
Fast Trak 20Meg/A500	599.75
Tiny Tiger 20Meg	589.75
30Meg	629.75
40Meg	779.75
50Meg	799.75
80Meg	1199.75
Tool-Box w/Power	219.75
Mini-Meg A500 0.5MB	329.75
1MB	489.75
2MB	789.75
Mini-Meg A1000 0.5MB	339.75
1MB	449.75
2MB	789.75

Micro-Meg 512k/Clock	179.75
Micro-Meg 0k/clock	59.75
Synergy 500	199.75
Overdrive	199.75
Subsystem 500	229.75
Subsystem 1000	279.75
Phoenix A500/1000 22Meg	599.75
32Meg	699.75
48Meg	799.75
80Meg	1299.75
Phoenix A2000 22Meg	549.75
32Meg	749.75
48Meg	749.75
80Meg	1249.75

As always we have the most 'customer friendly' terms: S/H $3.95 in cont. USA; Minimum order is $30.00; MASTERCARD & VISA with NO credit card fee; in Texas add 7% Sales Tax.
We ship to APO addresses, RMA# required on all returns. 18% restocking charge. All prices subject to change without notice.

GFA-BASIC 3.0 for the Amiga



$139.95

GFA SYSTEMTECHNIK

Boldly goes where no BASIC has gone before.

- High-Speed Interpreter for easy program development
- Over 300 powerful commands
- FAST! – Execution times comparable to C
- In-line C and Assembler Commands
- Easy access to all Amiga libraries
- Extensive Amiga commands with submenus and built-in file requester
- Built-in Text Editor with syntax checking, procedure hiding and auto-indenting
- 400-page comprehensive manual
- Includes Run-Time Interpreter

Available NOW

from

Antic Software

544 Second Street, San Francisco, CA 94107

Call today to order:

800-234-7001

or see your local Amiga dealer.

(GF9200)

GFA-BASIC 3.0 is a trademark of GFA Systemtechnik, Germany; Antic Software and Antic are trademarks of Antic Publishing, Inc.; Amiga is a registered trademark of Commodore-Amiga Inc.

Commodore 64 & 128

Title	Price
4th and Inches	24.73
AD&D D.M. Assistant	20.59
AD&D Hillsfar	28.40
Airborne Ranger	24.27
ALF	9.75
Alternate Reality: City	21.29
American Civil War Vol I	28.39
American Civil War Vol II	28.39
American Civil War Vol III	28.39
Annals of Rome	17.74
Arctic Fox	10.65
B24 Flight Simulator	21.37
Bank Street Music Writer	34.81
Bards Tale	28.39
Bard's Tale II	27.46
Bards Tale III	27.46
Battleship	18.96
Battles in Normandy	28.39
Bionic Commando	17.15
Black Magic	15.26
California Raisins	15.46
Caveman Ugh-lympics	20.60
Certificate Maker	12.95
Certificate Library Vol.I	13.21
ChartPlot64	22.91
Chessmaster 2100	27.46
Club Backgammon	18.10
Commando	10.93
Computereyes	146.20
DeathLord	21.29
Death Sword	20.90
Demon Stalkers	21.29
Dive Bomber	13.56
Double Dragon	22.71
Dragon's Lair	17.16
Electronic Checkbook	4.73
F18 Hornet	24.36
F19 Stealth Fighter	31.30
Faery Tale Adventure	34.79
Family Feud	8.54
Firezone	17.16
First Over Germany	34.32
Flexfile 128	19.08
GEOS Font Pack +	20.88
Gemstone Warrior	10.65
Gemstone Healer	10.65
GeoCalc	34.83
GeoChart	18.97
GeoFile	34.83
GeoPublish	40.18
GeoProgrammer	48.76
GEOS 2.0-64	37.98
GeoSpell	19.27
GeosWriter 64	27.86
Global Commander	20.59
Gunship	24.27
Halls of Montezuma	27.46
Heavy Metal	25.30
How To Program In BASIC	19.47
Hunt for Red October	27.46
Implosion	11.43
Impossible Mission 2	13.56
Jet-Boys	10.92
Jordan vs. Bird	19.47
Lancelot	20.59
Legacy of the Ancients	21.29
Legend of Blacksilver	27.86
Lords of Conquest	10.65
MacArthurs War	28.39
Mars Saga	24.02
Modem Wars	24.02
Monopoly	20.59
Napoleon In Russia	17.74
Panzer Strike	30.89
PaperClip III	35.49
Patton Vs. Rommel	10.65
Phantasie I	28.39
Phantasie II	28.39
Phantasie III	28.39
PHM Pegasus	21.29
Pirates	27.85
Powerplay Hockey	16.22
Print Master Plus	26.73
Print Shop	29.96
Project Firestart	20.59
Questron	10.65
Questron II	27.46
Rack Em	18.52
Reach for the Stars	28.39
Risk	20.59
Rocket Ranger	24.27
Scrabble	22.88
Scruples	31.94
Serve & Volley	18.52
Seven Cities of Gold	10.65
Shard of Spring	28.39
Skate or Die	20.59
Skyfox	10.65
Skyfox II	21.29
Space Harrier	20.86
Sporting News Baseball	27.81
Starfleet I: War Begins	22.68
Stat Manager	9.91
Steel Thunder	18.54
Strike Fleet	20.59
Test Drive	18.76
Tetris	13.60
Three Stooges	23.26
Time & Magik	21.29
Typhoon Of Steel	35.49
Ultima V	41.72
Vegas Gambler	18.10
Wasteland	27.46
Wheel of Fortune	8.41
Wheel of Fortune II	10.01
Wheel of Fortune III	9.72
Yeagers Adv Flt. Trainer	24.02

Amiga

Title	Price
AD&D Heros of the Lance	27.46
Black Cauldron	22.00
Black Lamp	17.34
Destroyer	13.56
Double Dragon	27.46
Empire	34.32
F/A-18 Interceptor	34.32
Ferrari Formula One	34.32
Firezone	24.02
King's Quest I, II, or III	34.77
Leader Board	24.36
Leisure Suit Larry	27.83
Police Quest	34.79
SDI	33.25
Sorceror Lord	24.84
Zany Golf	27.46

1-800-326-7167

Lines open 8:00am to MIDNIGHT Eastern Time!

Shipping Terms: 3% for shipping, with $3.00 minimum. Call for shipping charges on Federal Express, UPS Overnight, APO, FPO, HI, AK, and foreign orders. COD orders add $3.00. **Mail Orders:** We accept money orders, certified checks and personal checks. Allow 2 weeks for personal checks to clear. We accept purchase orders from qualified Educational and Corporate Institutions. **Returns:** All defective merchandise must have a Return Authorization Number, otherwise they will not be accepted. **General:** Michigan Residents add 4% Sales Tax. Prices and terms subject to change without notice. Not responsible for typographical errors.

SBC Ltd.
1318 Gratiot
Saginaw, MI 48602
517/799-2775
800/326-7167

DR. OXIDE SLICES PRICES!

Comp-U-Save's cost-cutting clinician is at it again! This month Dr. Oxide, a bargain-basement surgeon if there ever was one, offers the industry's lowest prices on hardware and software, plus special deals on products available only through Comp-U-Save! Buying from just any mail order house can be hazardous to your fiscal health. Let Dr. Oxide cut you in on these super Comp-U-Save sales!

Come See Dr. Oxide at ALL World of Commodore Shows!

TONS OF C-64, C-128 & AMIGA SOFTWARE & HARDWARE!!!

SUPPORT! SUPPORT!

OUR EXPERT STAFF CAN ANSWER YOUR QUESTIONS ON THE SOFTWARE AND HARDWARE YOU BUY FROM COMP-U-SAVE.

AMIGA PUBLIC DOMAIN
OVER 700 DISKS!
Largest Amiga PD Library in the World
also C-64 & C-128 – Write for Free Catalogue
Amiga PD – $4.00 each

BUILD YOUR OWN HARD DRIVE KITS!!
5 1/4" or 3 1/2" powered hard drive chassis w/fan **ONLY $120.00 Each**
1000 or 500 SCSI interface with passthru and software for **ONLY $145.00**
All you need is a SCSI hard drive and you're ready to Rock and Roll!
- Call for SCSI hard drive prices

Amiga Hard Drives 500 - 1000 - 2000
20 Meg - $585.00 32 Meg - $699.99
48 Meg - $799.99

Amiga External Drive $139.99
Only Uses Half the Power of 1010 – with Pass Thru Disk Drive & Monitor Extension Cables 30"– $19.99

Panasonic WV1410 Video Cameras
For Digitizers - $199.99 16MM Lens - $25.00

Special 2400 Baud Modem – $144.99

Comp-U-Save

410 Maple Avenue
Westbury, NY 11590
In NY State (516) 997-6707 (Tech Support)
Outside NY State
(800) 356-9997 (Orders Only)
Fax (516) 334-3091

★ Trackball	$45.00
★ Plastic Diskbank (Holds 120 3.5 in. Disks)	$16.99
★ Copy Arm (Heavy Duty)	$29.99
★ Mouse Mat (Fabric)	$ 5.00
★ Mouse Mat (Teflon)	$11.00
★ Gender Changers – All Types	Call
★ Static Mat (23.5 x 25.5 in.)	$24.00
★ Rapid Fire Joysticks	$12.00
★ Printer Buffer (32K–512K)	Call
★ RF Modulator	$14.99
★ A/B Switch (Ser.)	$13.99
★ A/B Switch (Par.)	$14.99
★ A/B/D/E Switch	$29.99
★ Crossover Box	$39.99
★ Cables 500 – 1000 – 2000	Call
★ Teak Diskbank (holds 150 3.5 in. disks)	$39.99
★ Teak Diskbank (holds 200 5.25 in. disks)	$39.99
★ The Library (holds 80 3.5 in. disks)	$19.99
★ Floppy Wallets (Many Sizes)	Call
★ 3.5 in DS/DD Disks (Bulk)	$1.30 ea.
★ 5.25 in. DS/DD Disks (Bulk)	$ .39 ea.
★ Books – All Titles 20% Off	Call
★ Memory 512K – 8 Megs	Call

Call for Details

VERSION 4.0 JUST RELEASED

1541/71 Physical Exam

Disk Drive Diagnostic

New Features of the Disk Drive Test Program

1. Does both 1541 & 1571 formats.
2. Automatically interprets test results
3. Two modes: user and technician.
4. HOW to FIX: includes revised adjustment instructions on the screen.
5. Continious readings for adjusting speed, alignment and stop position.

$39.95 plus $3.50 S & H

Cardinal Software,

14840 Build America Dr., Woodbridge, VA 22191 Info: (703) 491-6494

orders: **800 762-5645**

Faster than a Speeding Cartridge
More Powerful than a Turbo ROM

It's Fast, It's Compatible, It's Complete, It's...

JiffyDOS™

Ultra-Fast Disk Operating System for the C-64, SX-64 & C-128

- **Speeds up all disk operations.** Load, Save, Format, Scratch, Validate, access PRG, SEQ, REL, & USR files up to **15 times faster!**
- **Uses no ports, memory, or extra cabling.** The JiffyDOS ROMs upgrade your computer and drive(s) internally for maximum speed and compatibility.
- **Guaranteed 100% compatible with all software and hardware.** JiffyDOS speeds up the loading and internal file-access operation of virtually all commercial software.
- **Built-in DOS Wedge** plus 14 additional commands and convenience features including one-key load/save/scratch, directory menu and screen dump.
- **Easy do-it-yourself installation.** No electronics experience or special tools required. Illustrated step-by-step instructions included.

Available for **C-64, 64C, SX-64, C-128 & C-128D** (JiffyDOS/128 speeds up both 64 and 128 modes) and **1541, 1541C, 1541-II, 1571, 1581, FSD-1&2, MSD SD-1&2, Excel 2001, Enhancer 2000, Amtech, Swan, Indus & Bluechip** disk drives. System includes ROMs for computer and 1 disk drive, stock/JiffyDOS switching system, illustrated installation instructions, User's Manual and **Money-Back Guarantee.**

C-64/SX-64 systems $59.95; C-128/C-128D systems $69.95; Add'l drive ROM's $29.95

Please add $4.25 shipping/handling per order, plus $2.50 for AK, HI, APO, FPO, Canada & Puerto Rico. $10.00 add'l for other overseas orders. MA residents add 5% sales tax. VISA/MC, COD, Check, Money Order. Allow 2 weeks for personal checks. Call or write for more information. Dealer, Distributor, & UG pricing available.

Please specify computer and drive when ordering

Creative Micro Designs, Inc.

P.O. Box 789, Wilbraham, MA 01095 Phone: (413) 525-0023
50 Industrial Dr., Box 646, E. Longmeadow, MA 01028 FAX: (413) 525-0147

More than just a Disk Copier!

Project D is the most powerful Amiga disk copier ever created. It allows you to protect your software investment by making backup copies of your personal, public domain, and commercial software (it even copies copy-protected software!). No other copier allows you to copy to all four disk drives at the same time. No other copier keeps a list of the errors that happened during the last backup. No other copier lets you set the starting and ending tracks of a backup. No other copier has been continuously supported for the past two years.

Project D was designed with the future in mind. We offer registered owners inexpensive, frequent upgrades to our parameter file so you can backup your latest software without having to wait months for new 'Brain Files'.

Project D includes three other useful utilities as an added bonus! The **OmniCopy** Tool can be used to make backups of software that you have for other computers (like MS-DOS or Atari ST). **EditorTool** allows you to examine and edit AmigaDOS disks all the way down to the MFM level. **CatalogTool** is a powerful automatic disk cataloging utility that lets you maintain detailed lists of your software library.

Compare the features of Project D to the competition and you will see that Project D is quite simply the best disk copier package money can buy!
All these great features for only **$49.95** and that includes shipping and handling! Order Today!

See How Project D Stacks Up Against The Competition

	Project D	RawCopy
Duplication Speed	80 Sec.	100 Sec.
Easy To Understand User Interface	YES	NO
Upgradable With Parameter Files	YES	NO
Catalog Utility Included	YES	NO
Copies other formats	YES	NO
Copies Itself	YES	NO
Copies RawCopy V1.3	YES	NO
Price	**$49.95**	**$59.95**

"Project D is by far the most comprehensive disk-utility package available for the Amiga today."
Mitchell Lopes - Editor, Robo City News

"I consider Project D to be akin to a well equipped luxery automobile; it gives a smooth ride and lots of easy to use operations."
Denny Atkin - AmigaWorld (Feb. 1989, pp. 92-94)

"The user interface is wonderful..." Info Rated: 4+ stars
David Martin - Info Magazine (Sept/Oct 88, p. 16)

To order, send check or money order to:

Fuller Computer Systems, Inc.
P.O. Box 9222
Mesa, AZ 85214-0430

or call (602) 835-5018 for more information.

Project D: The Disk Copier... Plus!

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

Dealer Inquiries Invited

Arizona residents please add 6.5% sales tax.

Banks are built around the vault.
The Memory Location is built around the *AMIGA* !

COMMODORE AMIGA

The Memory Location

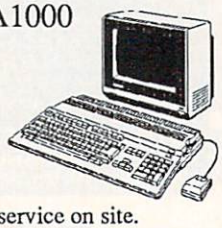
396 Washington Street
Wellesley, MA 02181
(617) 237 6846

Store hours:
Mon.-Thr.
10-6
Friday
10-8
Saturday
9-5

Our crew has over 30 years total combined experience with the Amiga!

Nothing but the best! Satisfaction guaranteed!

New items now in stock!
AT Bridgecard 2286
A ProDraw graphics tablet
F-Data 20 dual floppy drives
SyQuest 44MB removable harddrive
Tool Box A500 & A1000
Boing Mouse
MindLight
PageStream
Caligari



Commodore authorized repair service on site.

DOS LAB
... from JUMPDISK

Learn AmigaDOS™ 1.3
The Interactive Way

When we decided to publish a book teaching AmigaDOS™ 1.3, first thing we did was eliminate the book.

DOS LAB by Brad Webb is a booting two-disk set with text and work area on the screen at the same time. There are 85,000 words in 22 chapters, plus AmigaDOS™ 1.3 commands.

DOS LAB: $25 shipped anywhere on earth. (Californians, $26.50 including tax) COD $2.90 extra. Order shipped day received. Make check payable to JUMPDISK.

Not convinced? Order the $2 DOS LAB demo disk. Circle our Reader Service Card number. Write us. Or call us at (916) 343-7658 and ask tough questions.

DOS LAB published by JUMPDISK, the Original Disk Magazine for the Amiga™. We've published 33 monthly issues. This is our third bookdisk ©.

JUMPDISK
1493 Mt. View Ave.
Chico, CA 95926 U.S.A.

AmigaDOS™ is a trademark and Amiga® a registered trademark of Commodore Amiga, Inc.

FormAtion

The Amiga Form Maker

Including all these features:

Design custom forms used in everyday business situations, using any AmigaDOS font, varying line thickness and patterns, along with rounded or squared corners. After the designing is done, fill the form in automatically on the computer screen! This powerful business package with its many features will cut down on time and effort in the office or at home.

—Use of all AmigaDOS fonts
—Bold, Italic, Underlined
—Import text from word processors
—Center or justify text
—Three line patterns
—Four line thicknesses
—Dual lines
—Round or square corners
—Automatic form fill-in

$69.95 plus $3 S & H

P.O. Box 31323
Richmond, Va 23294
(804) 273-0312

Iconoclassic Software

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

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

AmigaTEX

Full TEX functionality
On-screen preview
ARexx compatibility
Includes LaTEX, SliTEX, and BibTEX
Over 1500 previewer fonts
Main package is only $200

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

Radical Eye Software

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

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

UPGRADE YOUR AMIGA!

The attractive design of the Phoenix Expansion Chassis compliments your Amiga, and makes upgrading affordable by permitting use of A-2000 cards on your A-500 or A-1000 Computer.

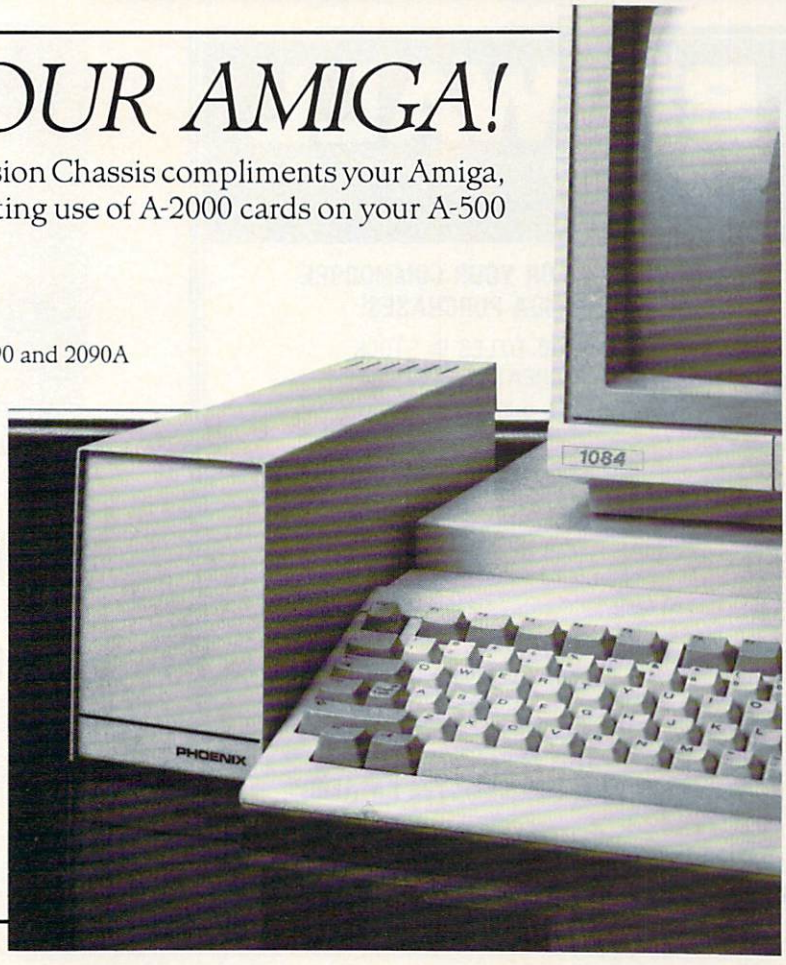
- Runs all major A-2000 Expansion Cards, such as:
  - IBM 2088 Bridge Board
  - Hard Disk Controller Cards, such as Commodore 2090 and 2090A
  - Commodore 2052 and 2058 RAM Boards
  - Third Party SCSI Controllers
  - Other A-2000 Specific Products
- Two 100-Pin Expansion Slots
- With or Without Internal Power Supply
- Room for Card with Attached Hard Drive
- Complete Auto Configuration and Pass-Thru Capabilities
- All-Metal Card Cages and Enclosure
- One Year Limited Warranty on Parts and Labor

$253.95 With Internal Power Supply
$179.95 Without Power Supply

"We accept VISA and MasterCard"

PHOENIX ELECTRONICS, INC.

P.O. Box 156, 314 Court St., Clay Center, KS 67432
(913) 632-2159 / FAX (913) 632-5382



DEALERS: Call about INFO's *NEW IMPROVED* DEALER PROGRAM : (319) 338-0070

Twin Cities 128
The Commodore 128 Journal P.O. BOX 11578
MINNEAPOLIS MN 55411

Find out why we are **growing** while the others are **shrinking**!

Six issues $12.50
Twelve issues $25

Twin Cities 128 Compendium
Book #1 the best of issues 1-18
$16.95

This ad was laid out with Professional Page from Gold Disk, printed on the HP DeskJet using PrintScript, then reduced by half.

Print PostScript files on your non-PostScript printer!

PrintScript
The PostScript interpreter for the Amiga.

$89

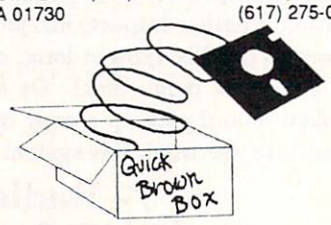
Dixelations
Pixelations, Inc.
P.O. Box 547
Northboro, MA 01532 USA
508-393-7866

Dealer inquiries welcome. Visa and MC accepted.

PostScript is a trademark of Adobe Systems, Inc.

YOU *CAN* HAVE IT ALL
THE CONVENIENCE OF A CARTRIDGE!
THE FLEXIBILITY OF A DISK!

THE QUICK BROWN BOX stores up to 30 of your favorite programs - Basic & M/L, Games & Utilities, Word Processors & Terminals - READY TO RUN AT THE TOUCH OF A KEY - HUNDREDS OF TIMES FASTER THAN DISK - Modify the contents instantly. Replace obsolete programs, not your cartridge. Use as a permanent RAM DISK, a protected work area, an autoboot utility. C-64 or C-128 mode. Loader Utilities included. Price: 16K $69 32K $99 64K $129 (Plus $3 S/H; MA res add 5%) Brown Boxes, Inc, 26 Concord Road, Bedford, MA 01730 (617) 275-0090



THE QUICK BROWN BOX
BATTERY BACKED RAM

BRiWALL
SOLID PRODUCTS & SOLID SUPPORT
PO Box 129/58 Noble Street
Kutztown, PA 19530

THE PLACE FOR YOUR COMMODORE AND AMIGA PURCHASES!

OVER 1000 TITLES IN STOCK AT GREAT PRICES!

Our Fourth Year In Business!

Toll-Free 24 Hour Order Line
1-800-638-5757
24-Hour Order Line Outside USA
1-215-683-5433
24-Hour FAX Line - 1-215-683-8567
Customer Service - 1-215-683-5433
Technical Support - 1-215-683-5699

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

VISA MasterCard

Write or Call for our GREAT AMIGA OR C64/C128 CATALOG
(Please Specify)

MAIL OR BRING IN THIS AD & RECEIVE $2 OFF YOU FIRST ORDER!

We take a byte out of the price!

Software & Hardware Sales & Service

M.A.S.T.
TWIN DRIVE $275.00
UNI DRIVE $149.00
MINI MEG .....$Call

AUTHORIZED GVP DEALER
51 Norwich New London Turnpike
Quaker Hill, CT 06375

Amiga is a trademark of Commodore-Amiga, Inc.
Authorized Commodore Amiga Repair Center

INFO WINDOW SHOPPER

About the WINDOW SHOPPER

NEW in **INFO** this issue, the WINDOW SHOPPER is a cost effective way to deliver your product information to over 160,000 Commodore/Amiga enthusiasts.

***INFO** IS NOW OUT-SELLING ALL OTHER AMIGA MAGAZINES ON NORTH AMERICAN NEWSSTANDS.*

INFO is distributed worldwide by Select Magazines, and is available at Commodore/Amiga dealers, B. Dalton, Walden Books and other large chains through International Periodical Distributors.

To reserve your WINDOW ad in the next issue of **INFO**, call Carol Brown at (319) 338-3620. Checks, money orders, Mastercard and VISA accepted.

PURE COLOR

COLOR CHART FOR ALL COLOR PRINTERS

PRINT OUT YOUR OWN QUICK REFERENCE COLOR CHART

- 500+ COLOR SETTINGS
- ALL COLORS CLEARLY LABELED WITH RGB NUMBER SETTINGS
- INCLUDES DOT PATTERN CHARTS
- WORKS WITH ANY TYPE OF PRINTER
- COMPATIBLE WITH AMIGA DOS 1.3

$19.95 PLUS $3.00 S & H

TO ORDER SEND CHECK OR MONEY ORDER

FOR MORE INFO 1-504-455-0341

GRAPHIC DESIGN STUDIO 417 TRANSCONTINENTAL DR. METAIRIE, LA 70001

Schedule Assistant

NAG PLUS 3.0

Perpetual Calendar—*Enter 99 events per day.*
Print—*One click prints any event or appointment list.*
Auto Dialer—*Connects YOU, not your modem.*
AREXX Port—*Commands any timed event or action.*
Notepad—*Click on any word to open text editor.*
Voice and Sound Reminders *& much more!*

Suggested Retail $79.95 Ask your dealer or contact:

Gramma software For Your Own Good
17730 15th Avenue N.E.
Suite 223
Seattle, Washington 98155
(206) 363-6417

NEW Bible Search

Complete KJV New Testament with very fast word and verse search capabilities. Complete text and Concordance on two disks. Word(s) in text can be found and displayed in seconds. Includes both C64 and C128 mode programs. Please specify 1541, 1571 or 1581 formatted disk. **ONLY $25.00**

SOGWAP Software
115 Bellmont Road; Decatur, Indiana 46733
Telephone (219) 724-3900

SONY DS/DD 3.5" disks. 10 per box. Factory sealed.

BUY 2 boxes at $17.50 each

U.S. Ship/Hand. $3.00
New York Residents add 7.5% sales tax

and

GET 1 Flip-top disk storage unit (20 disk capacity) FREE!

Make check or money order out to:

ABBOTT CHOICE

P.O. Box A
Mastic Beach, NY 11951

same day shipping on cashier checks & money orders (others 3 wks)

REAL WORLD

WEIRD SCIENCE

Most hackers seem to have a fascination with science and technology -- and the weirder, the better. In the days before computers, many of us spent our free time mixing chemicals to see what would happen, packing homemade gunpowder into primitive rockets, and soldering together white noise generators and matchbox-sized FM transmitters. Now most of us are "computer professionals", and we're lucky if we can find a little time to even read about such things.

Lindsay Publications publishes technical books that deal with lots of weird, hard-to-find, and sometimes downright dangerous arcane technical and scientific topics. Like spark-gap radios. Or making liquid air. Or building high-voltage coils. True, many of the books in their one-dollar "Technical Books" catalog have to do with the home shop -- lathes, bandsaws, drill presses, forges, and the like -- but there are also titles like *Experimental Physics, Mad Inventions*, and *Chemical Technology* that are filled with fascinating experiments and interesting information. Most of Lindsay's books are reprints of antique experimental guides and shop manuals that went out-of-print in the 20's and 30's. There are lots of steam engines, condensing coils, and vacuum tubes in the illustrations. It looks like a great first-hand way to gain a perspective on the interesting history behind modern technologies like radio transmission, refrigeration, and power generation.

Lindsay's "Electrical Books" catalog (also a buck) is even more fascinating, with dozens of planbooks for building everything from Tesla Coils and Wimhurst machines to shortwave receivers and dynamos. (I can't wait to order my copy of *The Inventions, Researches, and Writings of Nikola Tesla.*) The catalog is rounded out with several pages of books on fringe science, with titles covering Charles Fort, perpetual motion, hollow earth theories, and more.

Best of all, Lindsay's catalogs have an honest, down-home feel to them (kind of like INFO). They convey a real love of the subject matter -- you can tell they're not in it just for the money. Lindsay's catalogs even tell you which books are the best and which are only so-so, and they refuse to sell any out-and-out bad titles. We haven't ordered from Lindsay yet, so we can't tell you anything about service, but we're certainly looking forward to getting our hands on some of these books! You can order either of their catalogs by sending a dollar for each to: Lindsay Publications, PO Box 12, Bradley IL 60915.

- Mark R. Brown

INFO UNCLASSIFIEDS

INFO UNCLASSIFIEDS
$2.00 per word
Send with check or money order to:
INFO Unclassifieds
123 N. Linn St., Suite 2A
Iowa City, IA 52245
Ads received with payment by
May 10, 1989 will appear in
issue #27 (on sale June 27, 1989).

AMIGA FRACTAL & 3D Graphics Disk $3.50. Female Art Disk $4.50. B.D. Olsgard, Box 460891, Aurora, CO 80015.

TAKE LAST EUROPEAN NEWS! Write: BP26 B-1080 Ganshoren, Belgium or MODEM SWAP 091/86.95.14 and 050/38.69.87 Only Amiga. Do It Today!

COMMODORE REPAIR C64 $45, 1541 $50, 1571 C128 $65, C64C $60, includes parts & labor & 30 day warranty. Add $5/unit shipping. Commodore Authorized Service Center. Micro-Sys Computer, 2521 34th St. NE, Canton, OH 44705. (216) 456-8116.

ANIMATORS!...SELL YOUR Original computer animated cartoons, shorts, screens and computer music. $6/info ...FLIGHTS, 335 High, Calhoun, KY 42327.

KINDER, GENTLER PRICES! Panasonic WV-1410 $185, Uni-drive $154, Twin-drive $259, and much more! Electronic Ecstasy: price quotes 805-682-8330. Orders only 800-999-9670. 12pm-7pm Mon.-F ri.

EUROPEAN SOFTWARE AVAILABLE! Get hot commercial titles long berfore they arrive in America. Information: 805-682-8330 12pm-7pm Mon.- Fri.

COMMODORE-AMIGA Sales and Service. Free Estimates on repairs. We have all hardware, software and accessories for Commodore-Amiga in stock. Also sales, repair IBM compatible computers and printers. AMPEX SYSTEMS, Inc., 5344 Jimmy Carter Blvd., Norcross, GA 30093. (404) 263-9190. Authorized Commodore-Amiga Service Cntr.

POWERFUL AND EASY! E-Z Checking/E-Z Mail List program. Daily reminder, search/edit, unlimited records, pulldown menus, sorts, multitasking, time/date displayed, client-tracking, printouts, ail labels. GUARANTEED! Send $10.00 for all! RobbSoft, 220 S.E. 27th, Moore, OK 73160. *
**Editor's note: If you ordered this program from Homesoftware as advertised in INFO #25, we regret the address was printed incorrectly. Please use the address above.*

IMPROVE YOUR OUTPUT! Incredible Amiga Clip-Art, Hires IFF and PDraw formats by "BRYCE's" best friend. FREE information. WRITE: CLASSIC, Suite 321-I26 , 3778 Rocky River Drive, Cleveland, OH 44135.

WORDSTAR C128:CP/M $39.95, complete with 736 page manual, keytops. Version 2.26 c. c.MicroPro. PDSCCO, 33 Gold L3, New York, NY 10038. Don Johnson 800-221-7372.

ATTENTION GAMERS! Turn your joystick, mouse, trackball, or other favorite controller into an automatic firing assault weapon! RapidFire™ plugs into the joystick port and lets your controller fire up to 10 shots per second. Let RapidFire™ put you in the Top Gun position on your favorite game. Only $19.95 plus shipping. Order from AMPEX SYSTEMS at (404) 263-9190. Dealers contact DDM Technologies, PO Box 921722, Norcross, GA 30092. Phone (404) 923-8489.

DO YOU HAVE THE RIGHT STUFF? Software Visions publishes only the highest quality software. If you are developing productivity, creativity, or video products for the Amiga and you think you have The Right Stuff, call us for a free publishing kit. Software Visions, Inc., P.O. Box 3319, Framingham, MA 01701. (508) 875-1238.

JOIN AAA -AMIGA Artist's Alliance. Send $5.00 for two HAMshows, newsletter, More! LUDE, 4401 Devilhole, Luckey, OH 43450.

Due to INFO's continuing concerns about piracy, and the difficulty of screening public domain collections for copyright violations, INFO has never printed ads for software "rentals", and will no longer be printing ads for public domain collections.

ADVERTISERS' INDEX

83 1 UP
17 ANCO, Inc.
21 ANCO, Inc.
77 Antic Software
C2 Beeshu, Inc.
P1 Beeshu, Inc.
C3 Britannica Software
82 Briwall
82 Brown Boxes
5 Brown-Wagh, Inc.
79 Cardinal Software
72 Central Coast
78 Comp-U-Save
9 Computer Mart
13 Computermate
42 Creative Computers
43 Creative Computers
79 Creative Micro Designs
79 Fuller Computers
83 Gramma Software
83 Graphic Design Studios
80 Iconoclassic Software
66 INFO Back Issues
67 INFO Subscriptions
76 Intercomputing, Inc.
80 Jumpdisk
11 Lake Forest Logic
80 Memory Location
3 Michtron, Inc.
23 MicroIllusions, Inc.
C4 NewTek, Inc.
82 One Byte
15 Pacific Peripherals
81 Phoenix Electronics
82 Pixelations, Inc.
81 R & DL Productions
81 Radical Eye Software
83 S.O.G.W.A.P. Software
73 Software Support Intl.
74 Software Support Intl.
75 Software Support Intl.
7 Software Visions, Inc.
78 Superior Business Cntr.
82 Twin Cities 128

INFO SUBSCRIPTIONS

1 Year	2 Years	3 Years
only $16.50	only $28.50	only $35.50
you save 30%	you save 40%	you save 50%

* Canada/Mexico: add $4 per year
*Foreign: add $12 per year

Card # or payment MUST accompany order. We do not bill.

BACK ISSUES

$5.50 EACH ($6.50 outside USA)

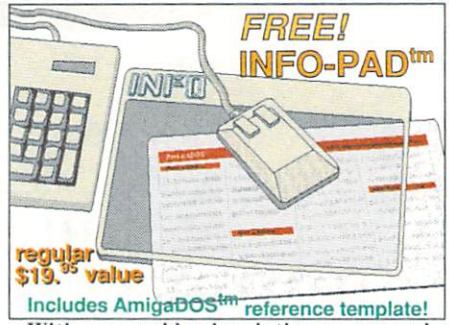
CIRCLE THE ONES YOU WANT:

1 2 3 6 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25

☐ Check here if you prefer your back issues on microfiche.

SUBSCRIPTION $_____
BACK ISSUES $_____

TOTAL $



With your paid subscription or renewal to INFO Magazine. While supplies last.

U.S. funds only! Credit card, check, or money order only. Make payable to: **INFO**

NAME _____

ADDRESS _____

CITY/STATE/ZIP _____

☐ Check box or attach INFO mailing label if this is a RENEWAL.

I'll use my VISA ____ Mastercard ____

card # _____ **expiration date** _____ **signature** _____

ORDER *NOW* BY PHONE!

VISA MasterCard

with

VISA or MASTERCARD

CALL (319) 338-0703

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO 171 IOWA CITY, IA.

POSTAGE WILL BE PAID BY ADDRESSEE

INFO MAGAZINE
P.O. BOX 2300
IOWA CITY, IA 52244-9941

WINNER!

Best Educational Program

With Designasaurus from Britannica Software your child will see dinosaurs come alive with sights and sounds* that will astound you. Designasaurus recently won BEST EDUCATIONAL PROGRAM and BEST PRESCHOOL or PRIMARY PROGRAM categories of the SPA's Excellence in Software Awards.

Designed to never become extinct, Designasaurus for the Apple //GS has three *dino*-mite activities.

Survive as a Brontosaurus, Stegosaurus or T-Rex did millions of years ago. Thunder through forests, mountains and swamps. See if you can earn a certificate to the Dinosaur Hall of Fame.

Create your own prehistoric giant from a collection of fossilized bones. Select different heads, bodies and tails from the Museum of Natural History. Build and name your own dinosaur!

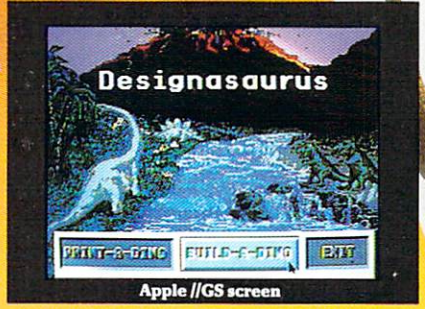
Print out 12 different dinosaurs. Each complete with descriptions and information. Select from 3 formats: regular, poster and even T-shirt transfer. Color or paint them. Frame them or wear them. We even include a free T-shirt transfer in every box!

Artwork courtesy of:
SOFT-KAT INC

SUPER HI-RES GRAPHICS!*

DIGITIZED SOUND!*

Now Available!
- MS-DOS
- Apple *IIe*, *IIc*
- Apple *IIGS*
- C64/128
- Amiga



Apple //GS screen

Don't wait another million years. Get it today at B. Dalton's Software Etc., Babbage's, Egghead, Electronics Boutique, Software City, Waldensoftware, Sears and wherever fine software is sold.

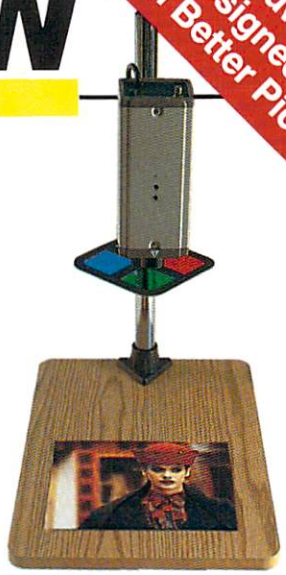
*Apple //GS and Amiga versions only

DIGI-VIEW GOLD

All-New!
Hardware and Software Designed for A500/2000—Even Better Pictures Than Before!

1.

2.



Actual 4096 color Digi-View Gold picture

3. Simply the Best.

The all new Digi-View Gold is the best video digitizer for the Amiga. Period. Nothing else even comes close. Why? The secret is that Digi-View Gold captures 2.1 million colors in memory, giving you an incredible 100,000 apparent colors on screen simultaneously.

And it's easy to use. Just 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 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.

Digi-View Gold is designed specifically for the Amiga 500 and 2000, and plugs directly into the parallel port. Digi-View Gold's powerful image capture and manipulation software (version 3.0) now has complete control of color and sharpness, full overscan, extra halfbrite, and a special line art mode for desktop publishing.

Only Digi-View Gold:

- Can digitize in all Amiga resolution modes from 320x200 up to 768x480 (full hi-res overscan)
- Uses 2 to 4096 colors (including extra halfbrite)
- Uses exclusive Enhanced HAM for super fine detail
- Is 100% IFF compatible and works with any graphics software
- Can digitize 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
- Has powerful Image processing controls for complete IFF picture manipulation

If you want the highest quality graphics for your Amiga, as easy as 1, 2, 3; then you need the new version of the best selling video digitizer of all time: Digi-View Gold.

*Requires standard gender changer for use with Amiga 1000. Video camera required; not included. NewTek sells a video camera, copy stand, and the Digi-Droid automated filter wheel for Digi-View Gold. If your local retailer doesn't carry these products, call us at 913-354-1146. Digi-View Gold is a trademark of NewTek, Inc. Amiga is a trademark of Commodore-Amiga, Inc. Be seeing you!!

Only $199.95

Digi-View Gold is available now at your local Amiga dealer.
Or call 1-800-843-8934

NewTek INCORPORATED