



Ami Exchange's

Disks Inside!

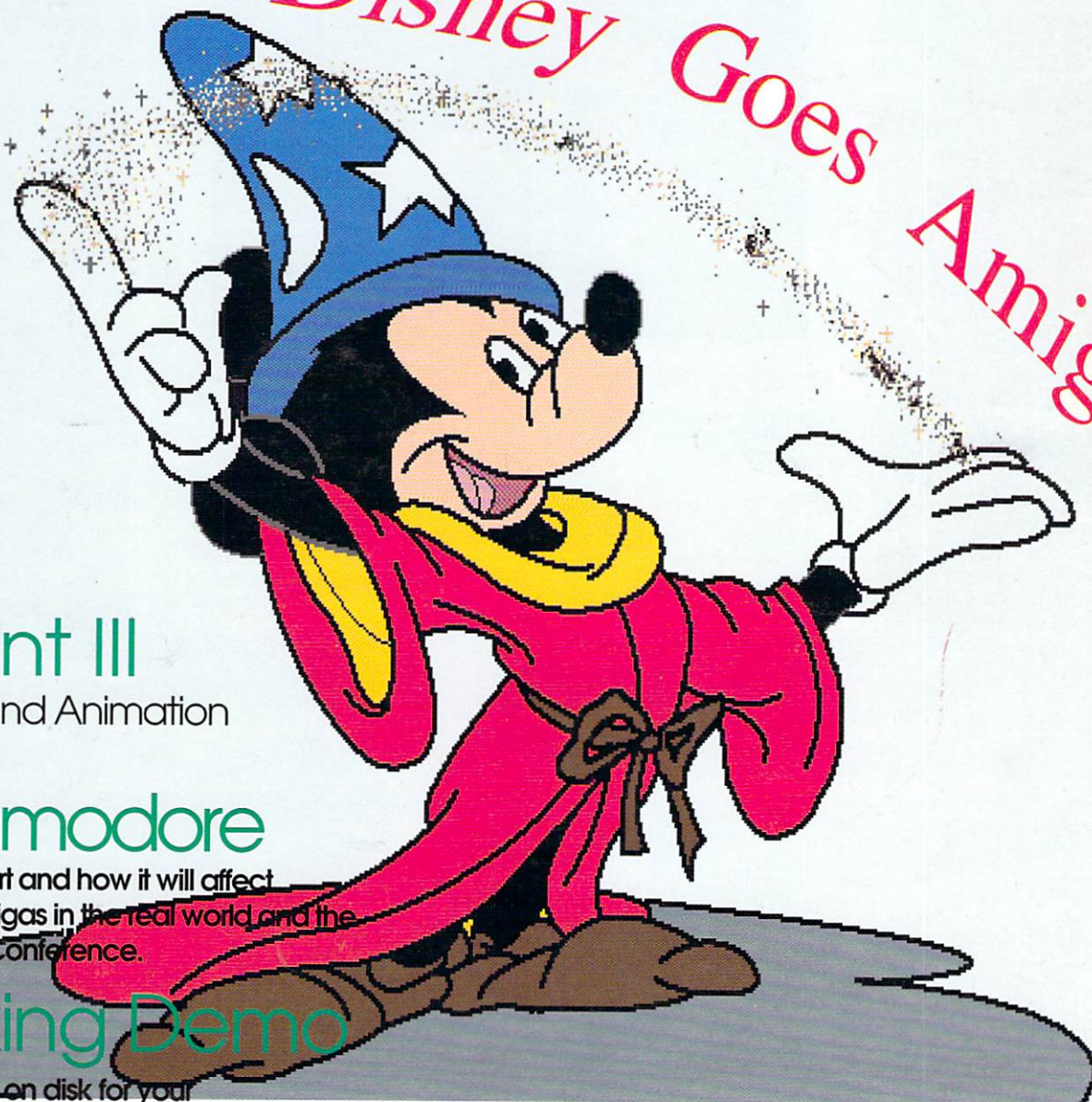
AMIGATM

Software & Information

\$14.95 U.S. / \$18.95 CAN.

Volume 2, Number 4

Disney Goes Amiga



DPaint III

Tutorial, and Animation
on disk!

Commodore

Market Report and how it will affect
you. Plus Amigas in the real world and the
Developers Conference.

Working Demo

Cel Animator on disk for your
testing pleasure. Also Thinker,
hypertext at its best.



Music

Music From Down Under On
Disk, Music-X Reviewed,
Copyist Reviewed, NAMM
News, MIDI Switcher project,
and more!

Plus...

Gossip, New Products, Modula II Tutorials,
C++, Benchmark Debugger, CAD Parts,
Thinker, Optimizing C, SimCity, Gunship,
Deathbringer, Speedball, Populous,
Super Hangon and more!

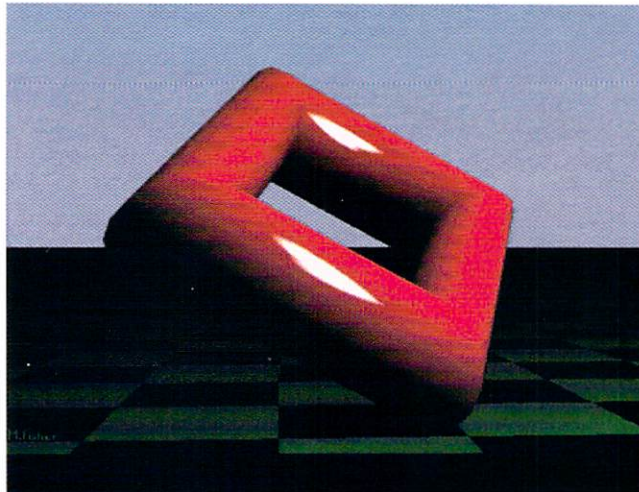
PREMIER ISSUE

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Amiga

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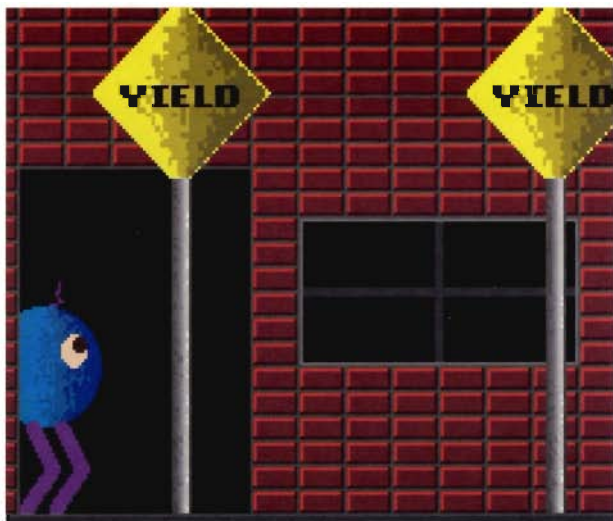
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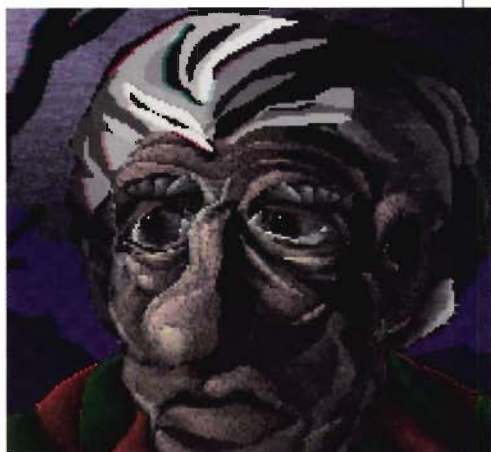
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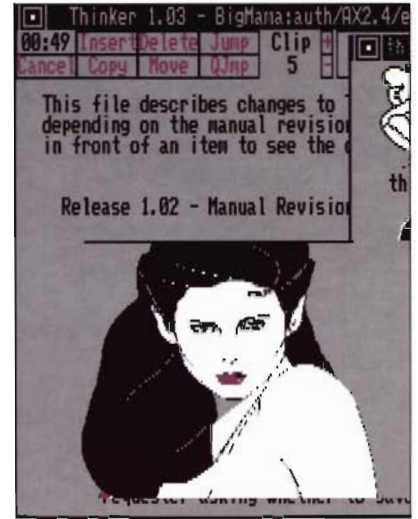
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On disk for your pleasure.




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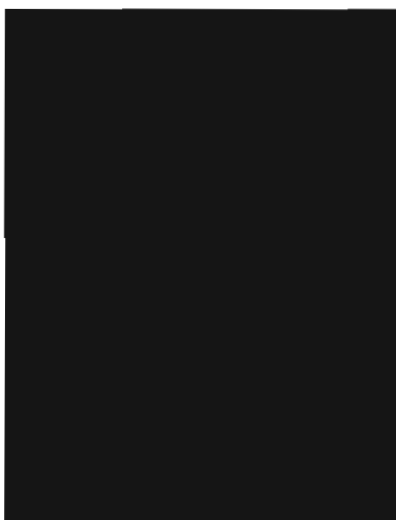
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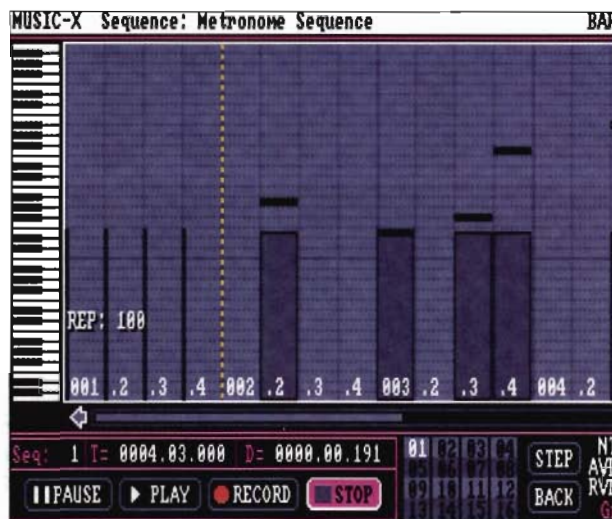
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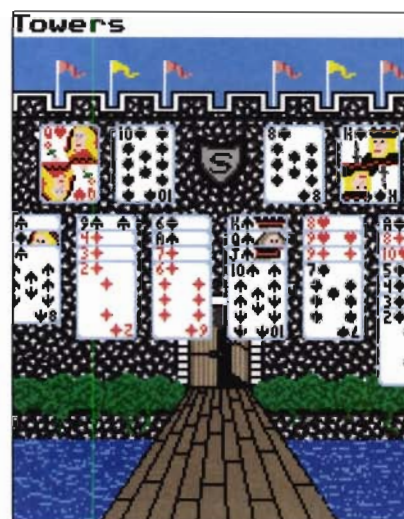
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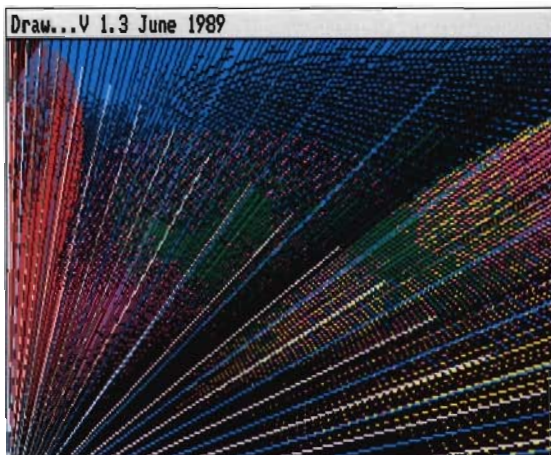
No need for city council approval, this little executable program lets you write your sim city town, village, or thriving metropolis a loan. CLI only!
Program by Doug Smoak



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Solitaire card game at its most addictive. Check out the

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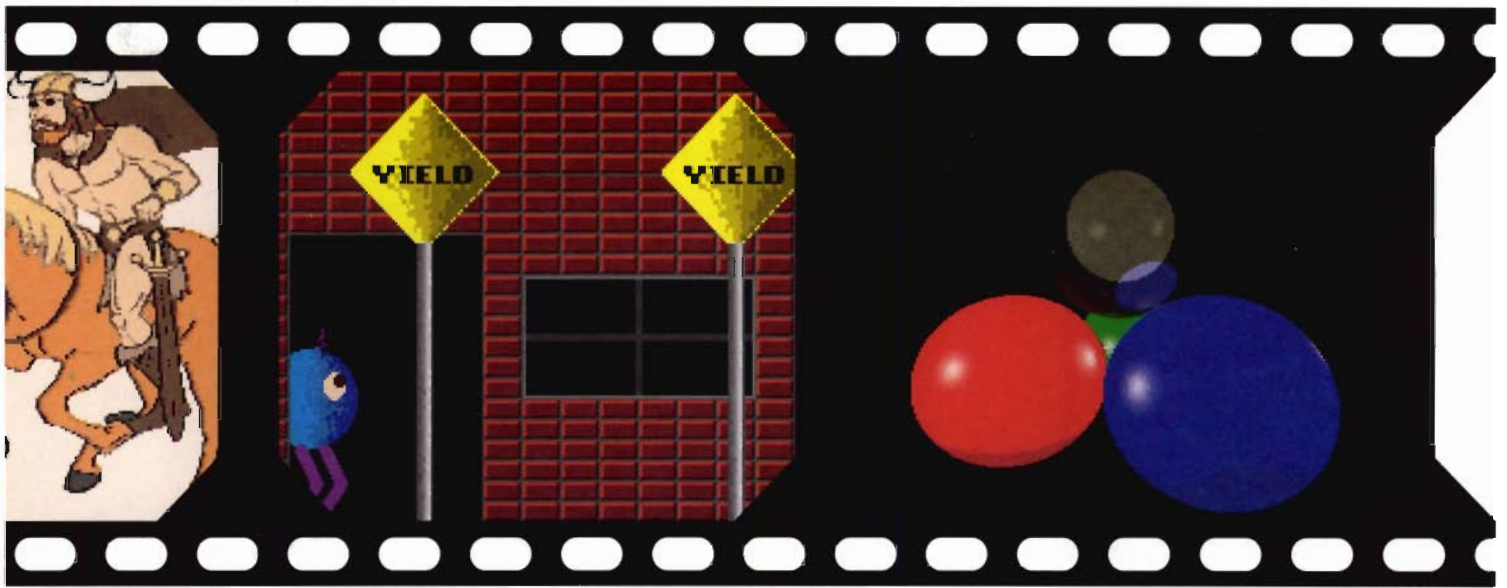
The next installment of the exciting adventure into the world of object oriented programming with Lattice's new C++ compiler on the Amiga. Article by John E. Ramspott



book.cp - C++ Sourcecode

The example program for the C++ object oriented programming article. this is C++ source, not C. C++ Source by John E. Ramspott

Animations



In This Issue

Animations In This Issue

Animations, animations and more animations. In this issue, we are featuring three animations from Turbo Silver, Cel Animator and Deluxe Paint III.

This issue, we included three animations for your viewing pleasure. They will all run on a 512k Amiga, and can all be executed from their icons. One of the animations comes from the Cel Animator demo, and the others come from Turbo Silver and DeluxePaint III.

Cel Animator Demo

If you have a 1-Meg Amiga, you can load this animation, modify, play it back modified, and basically do everything with the demo except for save. If you only have 512k, don't worry, you can still load the demo program and make animations, you just cannot load the animation provided.

You can find further information about this animation in the ON DISK article which has more details and instructions.

Trouncer

This animation was created to illustrate the Deluxe Paint III tutorial on stencils. You can run the animation from its own icon. If you want to move this animation to your own disk, simply drag the icon, but just make sure you also drag its associated player program to make it work.

Rotating Spheres

This animation has an interesting background. Someone showed us a picture of a ray trace that was being displayed on a MAC. Evidently, the ray trace originated on a mainframe, and the MAC II was being used to display the image. It was suggested that it would not be possible for the Amiga to create a similar image.

Well we took the dare. But when the ray trace was done, it looked interesting, but it would probably look more interesting in a different angle from the original mainframe ray trace. So we figured: gee, if we are going to re-trace this thing in a different angle, why not have it animate in lots of angles. This would not only show off the Amigas ray tracing ability, but also the ability to animate those ray traces. And thus, the animation you see. It was originally done in Turbo Silver, then converted to .ANIM format by using Deluxe Paint III.

NOTE:

All of these animations are Copyright 1989 by A.X. Productions, and are not distributable. Permission is granted for the private use of these animations by our readers. You may move them onto your own disk, but please do not distribute them to networks, BBSs and the like. Thank you.

Jay's Way

Jay Gross, the editor of A.X. Magazine, touches on some of what's in this issue. There is quite a lot of information in each issue. Take a moment, and let Jay tell you about some of the things to keep your eyes open for.

Have you tried to boot this issue's magazine disks already? Didn't work, did it. A.X. Magazine is finally caving in to the whiners. The people who over the years have accused (falsely!) A.X. of bringing Amiga virii into their otherwise eventless lives. This issue of the magazine, like *all* previous issues, contains no bootblock virus, no way, no how. Except *this* time, it's because it contains no bootblock code. It's not a bootable Amiga Workbench disk. The magazine interface is still there. To see it, just boot your system on your own Workbench disk, and then operate the magazine from its icon. The slight trade-off for this extraordinary measure of virus protection is that folks with a single disk drive will have to swap disks in order to get the mag up and running.

Another big change this time is that all of the many articles have been moved to the paper sections (and did you notice the paper sections got *thick* in the process!). This measure, along with omitting the Amiga Workbench, allows the magazine to fit onto two disks instead of three. After all, it's kinda silly to go out every issue and buy something you already have - a Workbench disk. By omitting the bootable Workbench, the magazine saves cash, and you save yourself from the dreaded bootblock viruses for absolute perfect certain. Besides, you now get a nice thick paper magazine that you can take with you into the "reading room", or place strategically on the coffee table to torture your non-Amigoid friends with.

Don't worry. Any major chunks of source-code are still included on the disks (as well as in print), so you won't have to type them in. Any really last-minute items will still be squeezed into the disks, especially the "Stop the Presses" column, which is the currenttest of the current gossip, when there is some (as there inevitably is). The disks are, as always, chock full of nice stuff, and now they're devoted entirely to things that work best on disk - music, animations, pictures, programs, working demos, that kind of stuff. Leave the old-tech paper to hold the articles in a convenient form for reading.

As to what else is in this issue, there's the usu-

al kaboodle of things "too numerous to mention." Undaunted, however, here's a quick mention of the high points.

C-More. That's what the C programming crowd is calling C-Plus-Plus compilers. In C, two plus signs means "increment", so C++ compilers are "incremented C" or "C-More." Get it? It won't be long before that gets further corrupted to "Seymour", so it's good to be in on the ground floor of these things so you can tell your grandchildren the "why" of things someday. See? C++ itself could use a bit of explaining, so that's just what's in store in the second part of the continuing saga of Object Oriented Programming, by John Rampott.

Start the Music

Glen Deskin kicks off a new column on music. To start things off, he lays into the hardware with a little MIDI switch box project, and rounds up the doings at NAMM and the new (and very serious) Amiga music softwares. Shamms Mortier, a jazz composer and performer of 35 years' experience, reviews the brand-spanking new Music-X (it shipped!) and Dr. T's Copyist, a program for making music manuscript out of MIDI (and other) musical sequences.

Video hasn't been treated fairly in Ami Exchange lately, so here's where the score gets evened up a bit. On the disks are some neat video utilities from the pen (compiler?) of Mike Berro. The disk utilities include Mike's Bars-N-Tone. If you normally keep your monitor tuned fairly bright, how will you know what your pictures will look like on someone else's computer or on videotape? Bars-N-Tone. Greatest thing since test patterns.

For Amigoids who are waiting with baited breath for the next development in HyperText, breathe easy. This issue, Everitt Mickey takes on the task of explaining Thinker, an im-

pressively complete implementation of HyperText principles on the Amiga. The disk set contains a working demo that lets you do anything but save. You can see how Thinker and HyperText work.

Lights! Camera! Animation!

Animators! First, a working (except save, but you *figured* that) demo of Microllusions' Photon Cell Animator program, as well as an animation that you can load (The demo won't load anything else but the one provided) and play with. Shamms also takes on Lightbox, an animation program that (ahem!) needs a bit more work to be ready for prime

Greatest thing since test patterns...

time.

The Amiga's avid gamers are having a blast these days with the latest round of the World's Finest Games (Amiga ones, of course). Near the top of the time-eater category is Brøderbund's Sim City. Let John Thompson tell you all (well, not *all*) about it in his review, and then check into Doug Smoak's SimLoan program. You operate this little ditty from the CLI to write yourself a loan (tax-deferred municipal bonds?) for those unexpected SimCity expenses.



As usual, the space is full, but plenty of stuff hasn't even been mentioned. This issue is strong on technical articles, too, talking about Modula-II, and C, and optimizing and all sorts of other things.

Oh, and don't forget the tidbits of Amiga news from the wires of... of... 110 volts.

J:

Ami Exchange's

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Software & Information

More affectionately known as A.X. Magazine

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A.X. Magazine's PD Disk Contents For Issue 2.4

Available to A.X. Magazine readers for only \$2.50! See reader survey for details.

Issue 2.4 of Ami Exchange Magazine has an associated PD Disk, to help hold all the things flat-out wouldn't fit on the regular disks, but are nice to have. This is a "collection" of things, some related to the magazine's contents, and some not. This issue's PD Disk was assembled and edited by Jay Gross and Clyde Wallace.

In alphabetical order, here's what's on the disk.

German

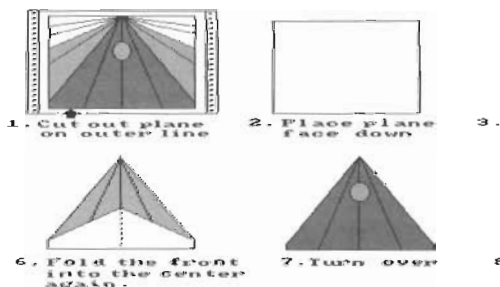
Acht Du Lieber! (or something like that), Ein GermanTutorProgram. Ja! If your command of the German Language is limited to words like Lowenbrau, struedel and wiener schnitzel, never fear. GermanTutor. This neat little program helps you learn a basic vocabulary of German words and drills you in their meanings.

Hopalong

Just when you thought you were safe from Yet Another Mathematical Plotting Program, here's Hopalong. Hopalong is yet another mathematical plotting program. It's neat! This one makes nice grey-scale patterns, slowly "developing" them for you to watch. There's a picture, ingeniously titled "Example.IFF", so you can see one of the plots up front to decide if they're worth waiting for. Sourcecode in C also included, as well as a documentation file with pointers for supplying just the right parameters to get pretty pictures.

UltraCard

This issue's Thinker articles were planned a long time in advance, but right as deadlines approached, a new HyperText implementation appeared for the Amiga. This one is UltraCard, hailed by another of the Amiga magazines in an "exclusive" article. Well, here's a working demo of UltraCard. It's Browser, a demonstration UltraCard application which will load a couple of "stacks" (to coin a term), including "Calendar" and "UltraDex", the latter of which, as its name implies, keeps track of names and addresses.



TitleGen

Roll credits! If you're assembling Amiga animations onto video tape, when you come to the "roll credits" part, you either have to (labariously) edit animation sequences that do the credit rolling, or you have to do without rolling credits. TitleGen fixes that. It gives you rolling credits by scrolling a simple text file in real time while you tape. Read the Readme's and the documentation to see how to format the text you want scrolled, in order to get all kinds of nice effects.

PaperPlane

What's more fun than painting with DeluxePaint III? Painting paper airplanes, of course! PaperPlane isn't really a program. It's a set of templates you can load into your favorite Amiga drawing program (even if that's not DeluxePaint III). There's a guide on how to fold the airplanes (for aerodynamic precision), and a collection of neat stickers you can add to your paper airplane creations. The Example plane is neat, too. Print these airplane creations out on your (color?) printer, fold them to specifications, and look out Boeing!

Worms

The program that answers the question "What do programmers do while they're waiting for a program to compile?" Remember the electronic game "Life"? Worms is sorta like that, but sorta not, too. Anyway, it's interesting.

J:

Thinking About THINKER

Thinker is the premier HyperText program for the Amiga.

by Everitt Mickey

Thinker is the premier HyperText program for the Amiga. It's not a shabby effort. Thinker is *powerful*, but like any powerful program it can initially be intimidating. This soon passes. Thinker was designed with Amiga users in mind.

If you've not heard of HyperText then you are no doubt confused. I recommend reading the excellent (a-hem... cough cough) series of articles on the subject in issue 2.1 of Ami Exchange. Just in case that's not available to you, I'll briefly introduce the topic.

The human mind is not necessarily sequential in its thought processes, so why should it be limited to sequential information access? Such as books. HyperText is a computerized method of information organization and presentation. Highly customizable, not necessarily sequential. Versatile, interactive, and fast! The mechanics are thus: HyperText is based on "links". For example, suppose you're reading a HyperText document such as the "Engines" one pictured.

Notice the words enclosed in the angle brackets - < > ? That is an indication that the word is linked. In a HyperText document, double-click on the linked word and a window will open. Of the two windows shown, one is linked to <Science Fiction> and the other is linked to <nanotechnology>.

Only two subordinate windows are shown. Thinker can handle up to 8 windows at a time, each of which may display a portion of the same document or a portion of a different document. All windows are independent from any other. They may be resized, flipped to front and back, moved and scrolled. Windows may be opened from within windows from within windows . . . , etc.

THINKER's projects can be designed in a number of different ways. Just as a word-processor may mangle words into different forms (short stories, business letters, thank-you notes, poems . . .) so may Thinker produce different types of HyperTexted documents.

The style I used in the demo was that of a book report with many of its terms being linked to various definitions, pictures and resources. This can get as intricate as necessary. I could have done it differently, though. One of the more natural ways is that of an outline. Thinker is, to quote it's manual "a Hierarchical Text processor with HyperText."

A hierarchical text processor is what's generally known as an "outline", or "idea" processor. This type of program is capable of "nesting" text in outline format. For example, look at the illustration again.

This is one of the many methods of constructing a "Thinker" Document. Notice the "+" to the left of topic and the "Clip level" of 1 in the upper right corner. The "Clip level" determines how many levels will be visible on the screen. There are an almost limitless number of levels possible. The "+" indicates that the statement to its right has subordinate levels.

Notice that the "clip level remains unchanged when the subordinate level is revealed. Also notice that the "+" changes to a "-". The "+" beside "Democrat" indicates that there is a subordinate level for it.

Another outline example, both brief and imaginary, demonstrates the versatility of this technique. If this were all there were to Thinker it would be well worth its moderate cost. Indeed, there are two other Amiga "Idea Processors" on the market which cost as much, and they don't even have HyperText. However this is only the beginning of Thinker's capabilities.

For one thing THINKER is capable of displaying pictures. It can display them full screen or reduce them in size to be shown in windows. The windows can then be moved around as necessary.

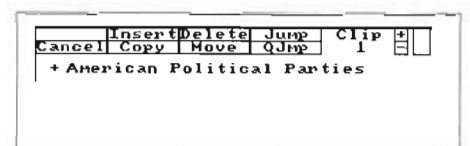
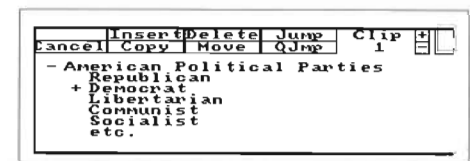
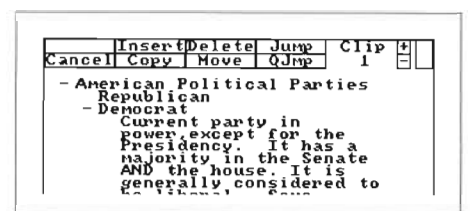
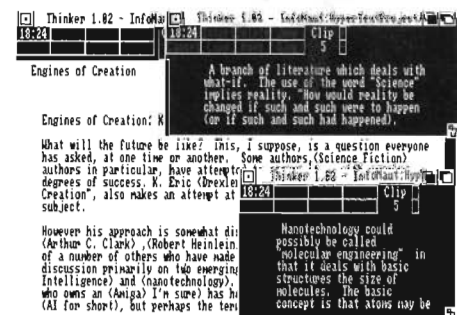
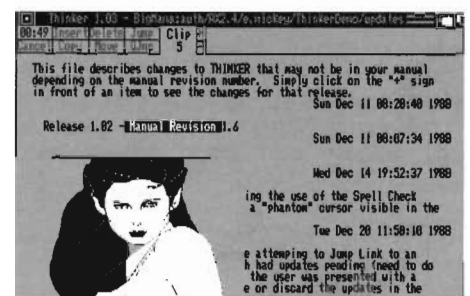
Now hang on to your hat. "Links may designate labeled statements in the same or different Thinker documents, IFF picture files, or any Workbench application such as a music player, paint package, or CAD application." (emphasis added)

Digest that for a minute.

What this means is that Thinker is pretty much the ultimate presentation engine. Using a Thinker document as a "Table of Contents", all manner of information can be presented in multimedia fashion. No limits.

Think about *that* for a minute.

The first thing which comes to my mind is that



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DEVCON '89

DevCon 1989: San Francisco

by Gerald Hull

This is being written at the last minute, so don't expect a balanced account or thoughtful analysis. Like this report, my decision to attend Commodore's 1989 Developer's Conference in San Francisco, was a last-minute thing. What follows is something in the grand literary tradition of those "How I Spent My Summer Vacation" reports we used to write in gradeschool.

The Conference was hosted by the Holiday Inn Golden Gateway, which was nowhere near the Golden Gate Bridge, but still right in the heart of things in downtown San Francisco. It's a nice hotel and provided a fine site for the proceedings, except for the speed with which they removed the food during the Friday night reception.

People and Information

There are two important reasons for attending a conference like this: the people and the information. The people part is known as "networking" - establishing contacts and relationships with others working in the same or related areas of Amiga development. The other part consists of the vast amounts of accurate, detailed, and useful if not indispensable information about all phases of the Amiga and where it is heading.

You get to meet people like Justin McCormick (PIXMate), Wesley Howe (C.A.P.E.), John Foust and Harriet Tolly (Syndesis), John Toebe (Lattice), Perry Kivolowitz (ASDG), Anthony Wood (SunRize), William Hawes (ARexx), Jez San (Argonaut), and Tomas Rokicki (Radical Eye Software). This is just a sampling; it's not an exaggeration to say that almost everyone of importance in the Amiga development community was there.

CATS - Commodore-Amiga Technical Services - was there in force, as you might expect. You get a chance to meet and talk to people like Gail Wellington, Lauren Brown, Carolyn Scheppner, Jim Mackraz, Randall Jessup, Bryce Nesbitt, Dave Haynie, and Andy Finkel, just to name a few.

There were many others I didn't get to meet. Carl Sassenrath was there, promoting his new book: "Guru's Guide To The Commodore Amiga: Meditation #1 - Interrupts". Jay Miner was rumored to be about, blessing the blossoming of his wonderful chip set;

and even the new Commodore President, Harry Copperman, was present.

The information transfer that takes place is exemplified by the two, giant, three-ring binders that were handed out to each participant: 15 pounds of critical documentation. One held the papers that were the subjects of the many conference sessions. It's impossible to attend them all, even if you arrive on time (many are scheduled concurrently), but the papers contain all the important details.

The second volume is what Bryce Nesbitt referred to as "Amiga Mail: The Book". It's essentially a reformatted compendium of many of the important articles that have been published in the CATS newsletter. Although some of this material is dated, going back to 1.2 and earlier, most of it continues to be extremely useful. In addition, there seems to be a lot of additional material that I don't recall appearing in the newsletter.

The Sessions

The overwhelming amount of information swarming around at the Conference put me into a dazed, overloaded condition. I rambled round, chit-chatting with friends, smiling amiably, while in the back of my brain a voice was saying, "Omigosh. . . omigosh. . . omigosh. . ."

The actual discussions took place in four or five rooms arranged around a central area containing the registration desks, stacks of coffee cups with urns of hot fluids and snacks, tables covered with third-party handouts, press releases, brochures, magazines, and the like, and bulletin boards full of announcements, ads, and notices.

In addition, there was a computer room full of Amiga 2000 HD's that maintained a blooming, buzzing confusion for most of the night, as Amigoid hackheads demoed their latest inspirations. Two hundred and twenty Fred Fish disks were on hand, to ensure information junkies the latest fix.

The range of Conference topics was pretty diverse. There was an "Introduction to Programming the Amiga" that I missed, but the notes are excellent. Amix, Commodore's version of Unix, was addressed in papers on software portability, graphics, and device drivers. An essay on "International Compatibility" is a must for anyone designing software for the Amiga world market.

Other talks concerned A500/A2000 peripheral design, the Janus 2.0 software, a new high resolution graphics card, an IFF (Interchange File Format) parser, 24-bit ILBM specifications, legal protection for software, and how to overcome the barriers to exporting high-tech products.

The 1.4 Operating System

If DevCon 1989 consisted of no more than that, it would have been a substantial feast. But the big story of the Conference was the emerging details of the forthcoming 1.4 release of the Amiga operating system. Since the development work is currently at the "Alpha" level, it's good to repeat Commodore's cautions:

"There is no promise that a particular feature will make it into the final release of V1.4. These features are on our current 'goals' list and we intend to provide them if possible."

Keeping that in mind, let's look at some of the things that may show up in the new operating system. William Howe's ARexx will be a standard part of the system software. There will be an "ASL" library that can provide standard requesters for files, fonts, color palettes, and the like.

A "Commodities Exchange" facility will coordinate and integrate programs that need access to the "input food chain." The commands in the C: directory will be rewritten in C (replacing the slower, bulkier BCPL). There will be optional scrolling history and PET-style screen editing in CON windows.

Many of the new features revolve around the new Enhanced Chip Set (ECS). Of course, the one-megabyte "fatter" Agnus is already a reality. There will be provision for 32k by 32k rectangular blits. The new Denise will permit a new SuperHiRes mode with up to 1280 pixels per row. With the 1.4 Kickstart, an additional Productivity mode will be available: 640 by 480 non-interlaced screens in four colors. Genlock capabilities will be significantly increased.

Many of the hidden features of Exec are scheduled for improvement: autoconfig, powerup strategies, pre-use testing of memory and ROMS, automatic detection of the availability of 68030 and 68882 chips for optimal utilization, memory allocation, semaphores, interrupts, and so forth. The supervisor stack and ExecBase can be in fast memory.

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The Fast Filing System will be extended to floppies, along with other improvements. The graphics library will be extended to support the ECS, and will support color fonts; the speed of text displays will be enhanced.

Intuition will provide more gadget types, overscan support, and "public screens" which can be used by more than one application. A new floating point library will automatically use a 68881 or other coprocessor if available. Preferences will expand the features subject to user control. In addition, assorted improvements to Workbench, diskdrive handling, layers, keymap, disk fonts, and timer are in the works.

There is a lot more planned than this, and much more could be said about each of these features. What should be clear is that the 1.4 version of the Amiga operating system is an extraordinarily ambitious undertaking.

Winding Down

Omigosh. Even if their current plans for 1.4 change drastically, it is clear that Commodore is taking this new release very seriously. It became apparent at the show that they have hired a lot of new, quality people, and are in an expansive phase of Amiga development. Enough was said at the show about the Amiga 3000 to confirm that it is a reality, and will satisfy the wishlists of many speculators.

San Francisco, it turns out, could hardly have been a nicer place for the Conference. The Conference ended with a pool-side bash Saturday afternoon, held outside on the sixth floor of the hotel. The sun was warm, but the wind was brisk, so not many of the participants actually got wet. People were encouraged to dress silly, and many did. Amiga developers are a friendly, garrulous bunch, especially in the presence of mass quantities of food and drink. (And this time the goodies weren't whisked away after an hour.)

I have a lot of reading to do. I have seen the future of the Amiga, and it works. I have no doubt that what's afoot will solidify the professional reputation and continue to augment the already amazing capabilities of the best damn personal computer in the world.

At A Glance Workbench 1.4

Commodore handed out what they stressed were "early Alpha" versions of AmigaDOS 1.4 at the recent Amiga Developers Conference in San Francisco. From this release, new features might be added, or those listed might be removed or changed. AmigaDOS 1.4 is not yet in Beta-testing, so none of this is certain to be in the finished version of the operating system, and there might be other things as well. Oh, and as for the eternal question (a good one), "when?", that's anybody's guess. If past performances are any indication, and considering the ambitious undertaking laid out, don't look for it before the beginning of 1990. Now, with disclaimers applied in abundance, here, at a glance, is what's in 1.4 at this early stage.

System stuff - some of the techie stuff is good news for programmers, but out of the realm of consciousness for regular users.

- AREXX will be part of the system software, enabling powerful interprocess communication.
- Say goodbye to the friendly Amiga Guru. The infamous *Guru Meditation* will be removed in 1.4, replaced by a "system requester" that conveys the same information as the guru (including the nature and memory location of the problem, for debugging purposes) with no sense of humor.
- FastFileSystem on floppies.
- New high-res "Productivity mode" - display option. It's 640x480 non-interlaced (meaning no flicker) with up to four colors. Requires a multi-frequency monitor to work with.
- The new Denise will let you define colors other than "Color 0" as the background color, and set the border to either opaque or transparent. This gives a pseudo "ChromaKey" effect in genlock applications.
- Much fancier Preferences program, probably relocated again.
- ASLlibrary - a set of standardized system requesters, for wreaking some order in the applications' handling of such things.
- Commodities Exchange - for sharing among Amiga tasks
- Commodore "PET" and 64-style screen editing for standard console windows. This amounts to a full-screen editor for insert, recall or edit commands.
- "Enhanced Chip Set": new versions of Agnus (now available) and Denise. Denise controls screen resolution.
- Improvements to Exec, the lowest level of the Amiga operating system - the one that controls everything else.
- New graphics, Intuition, Layers, and math libraries.
- New Keymaps

Workbench 1.4 features, changes, and improvements.

- It multitasks! No more Z's while you wait for the Workbench to complete its task before you can have it do something else.
- Windows will be able to display not just icons for files, but also text filenames, file sizes and date of creation.
- A completely new look, with new menus and new options.
- Apparently won't be in ROM chips, as previously intended
- The "gas gauges" on Workbench disk windows will be replaced by a statistics line in the window's drag bar.
- Workbench will be closeable by the user, within some constraints.
- Workbench will automatically create icons for programs and files that don't normally have them.
- Enhanced support for mouse operations on the Workbench. You'll be able to select all icons in a window at once, or drag a box around a group of them you wish to select, and deselect any one or all.
- Disk icons will reside in a window off the "backdrop screen."
- Workbench windows will permit background patterns, and the system software will include a pattern editor to create and modify them.
- Filenames associated with icons may use a font other than the usual Topaz system font, and the Workbench's "cleanup" feature will recognize the font change and adjust the icon spacing correctly.

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Commodore

Commodore Watch: Fire, Ready, Aim, DUCK!

by Jay Gross

If things are changing at all at Commodore on account of the new president, Harry Copperman, things are changing very slowly. Harry's bringing in some folks from Apple to help him out, too. The latest is Howard S. Diamond, who has been named Director of Education at Commodore. Howard will direct CBM's efforts to penetrate U.S. education markets.

You have to give Harry credit for that one. If you want somebody who knows the education markets, you raid Apple, 'cause that's where the education markets trade.

Meanwhile, Wall Street has given Commodore, if not Harry, too, a resounding vote of no-confidence, even in spite of rumors of a buy-out. CBM reported just recently that its earnings for the most recent quarter would be less than previously anticipated due to the current strength of the dollar versus foreign currencies.

The company's pathetic "marketing" plays in this country have been such that most of the company's income is from foreign sources, and converting those currencies to dollars is troublesome in times of a strong dollar.

The stock market's initial reaction was a week-long slide in the price of CBM's shares. Actually, it's hard to say what triggered the price drop, since the market never actually tells why it does something, though the stock watchers will always drum up an explanation. The stock market is always difficult to predict and sometimes impossible to fathom.

Before the drop, most of which recovered in the next week or so, CBM stock had been hovering around its high-water-mark for the year, slightly shy of 20 points.

Just before the price slipped, the New York Times reported that Commodore's "...sales were expected to be below the \$215 million reported in the 1988 quarter and that it might manage a modest profit or suffer a modest loss." There are those in the Amiga-watchers club who take the word "sales" in that statement as an omen, and they're probably right. A drop in sales figures is a drop in sales, although a drop in profits can be sustained despite increases in sales figures. The bottom line is: sales is sales, and there ain't as much dollar-wise as the same quarter last year, disregarding the currency conversion for the moment.

Nonetheless, Harry put in an appearance at the Amiga developers' conference in San Francisco recently, and his enthusiasm has Amiga developers purring and smiling. Harry talks a hardline policy of dealer-channel

product lines, dealer support, dealer training, customer support, etc., etc. It's the same line Max Toy, whom Harry has replaced, spoke of at the outset of his brief tenure at CBM's helm.

Harry, so far, has set the policy in motion among some of the people in charge of the Xerox machines at Commodore. One recent letter (over an underling's signature) to Amiga dealers announced that it was CBM's official policy that initial sales to an Amiga customer must be conducted in person. Such a "policy" is part of the original, 1985 dealer agreements which Amiga dealers signed and which, with riders to include the Amiga 500 and 2000 model computers, still remains in force at any of the dealers who are still Amiga dealers. Those dealers, and many recently recruited ones, took the letter with not a little bit of cynicism. It came, they pointed out, from a company whose own house magazine ran many pages of ads for mail-order companies, none of which had any hope of meeting the personal contact requirement and who were "authorized" Amiga dealers.

Some Amiga dealers are now trying to organize not just a revolt but a lawsuit.

Among other things, Harry's publicly touting the education market as the "place" for the Amiga. This isn't a new idea at CBM. Its first big proponent was Irving Gould, who owns enough of CBM's stock to run the place. Irving told a dealer meeting a while back that getting the Amiga into the education market was top priority. A couple of years later, CBM is just now pursuing the education market hot and heavy, and with some small successes here and there.

At the National Educational Computing Conference trade show in Boston recently, Commodore made its presence felt. Of course, there were yawns all around at Apple and IBM, but CBM staked out a big booth, almost as large as Apple's. CBM had about 20 Amigas in the booth as well as some other machines from the company's product line, not to mention some more in a separate classroom, where they were holding classes on programs related to education.

The company showed the usual educational things like Robot Readers, alongside the gorgeous new Brøderbund title, Where in

AMIGA & VIDEO

And the Winner Is... The Amiga!

The video industry *likes* the Amiga. Readers of *AV Video* and *Video Manager* magazines elected the Amiga 2000 as those publications' "Product of the Year - Most Helpful in the Performance of Your Job (Computer Graphics/AV Products)".

The award was presented by Knowledge Industries Publications, which publishes both magazines, during the recent National Association of Broadcasters trade show in Las Vegas.

"By choosing the Amiga, our readers have indicated that personal computers have become an integral tool in presentation and production technologies," said Dan Baucher, vice president and group publisher for the firm.

Both publications have said lots of very nice things about the Amiga in their recent issues.

Report

the World is Carmen San Diego, and things like MyPaint and SimCity.

CBM was showing off the Amiga Graphic Design workstation, too, which most any Amiga power user could improve on without much trouble (but it's pretty good for an entry system). Then there was the company's new authoring system, a chunk of vapor being temporarily referred to as "AmigaVision".

Commodore demonstrated the Polaroid FreezeFrame unit for making slides and prints from video or computer video frames. People walking by got their pictures taken and received a Polaroid print of themselves with nice Amiga graphics on top. One of the training sessions was on the new Amiga Logo package from Carl Sassenrath.

It's a gallant effort, and it might do some good, coupled with the other things CBM has been doing to court the education markets. A pilot program launched at winter's end might bear some fruit by the time schools get back into session, and once the foot is in the door, the world of education might be changing the way it thinks about computers - which is a shock in itself.

The education market is nonetheless the most difficult market for CBM or anybody else to attempt to capture. That market is caught in a stranglehold by IBM and Apple, not necessarily in that order, and wrenching it away from them will be an incredibly difficult and expensive undertaking. For one thing, neither the Amiga nor CBM offers exactly what the education market has been indoctrinated (by Apple and IBM) into thinking it wants. That definitely includes heavy stress on networking and some of the most appallingly boring software titles ever to grace a computer screen. Logo is an example. Logo is a language used to teach computer-esque reasoning. The education markets absolutely insist on having Logo, and if the Amiga offered Pixar performance in animation for nine dollars (which it almost does!), the education market wouldn't be interested if it didn't have the familiar (and largely boring) titles they've always had, Logo among them. The only thing on the planet that moves slower than education is glaciers, and it's a close race!

These obstacles aren't the only ones CBM faces in the education markets. Another

big one is the small network of Amiga dealers. Education buyers want to know there's a place they can call and have the disk drives serviced (something they need frequently with their old Apple-II equipment), and if there isn't a strong Amiga dealer to handle that service, the education buyers are (understandably) wary. Another problem is money. Adding another type of computer to the ones the education markets already have means they have to part with money, and even though the prices for Amigas are fairly low, they're not lower than making do with existing machines and buying nothing, especially if you

add in the cost of a new (even though vastly superior) software library.

CBM is noted for stubborn, and stubborn just might win this one. However, the score so far is: Harry 0; Apple and IBM 100.

Now for the other side of the coin. Part of the reason Apple is successful is that they start the indoctrination process early, in the schools. The first computers many people play with are Apple II's in grade school, high school, kindergarten, college, or what-

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Amiga's Winning Software

NEWS: Amiga Product Wins CES Prize

Software Visions' Microfiche Filer Plus database program for the Amiga has won a prize. It's the Consumer Electronics Show's *Innovations 89 Award* for the business software category. Microfiche Filer Plus beat out more than six hundred programs for other computers (and the other Amiga ones, as well) for the prize.

Gary Samad is president of Software Visions, and he wrote the program, too, so he's right proud of the award. "It's great to see the rest of the computing world recognizing an Amiga program as among the best in a market dominated by Macintosh and PC software," he said.

Software Visions publishes Microfiche Filer, MicroFiche Filer Plus, and Designer Databases, a line of applications templates for those programs.

Microfiche Filer Plus is an unusual approach to a database that takes advantage of the Amiga's graphics abilities. Records are stored in a compressed, graphics format and displayed on the monitor as though they were "microfiche" film cards. The user can - by dragging the mousepointer around - scroll around through the data instantly, just as though the data were being "magnified" into normal, readable form - which it is!

The unusual approach has many potential applications where picture data and text information must be retrievable easily.

The Consumer Electronics Show is the king of trade shows devoted to consumer items of an electronic nature. Lately, that stuff has included personal computers, as well as the usual synthesizers, stereos, and such.

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COMMODORE Canada

*James Dionne, President and General Manager of Commodore Business Machines of Canada
speaks about a new Amiga, marketing directions and more.*

From The Computer Paper

CBM's Canadian President on The Amiga

Here are some excerpts from an interview with James Dionne, president and general manager of Commodore Business Machines of Canada. The Q&A interview appeared in The Computer Paper, Western Canada's Computer Information Source, (circulation 100,000 in British Columbia and Alberta provinces). The Computer Paper is not an Amiga-specific publication. The interview was conducted by Kiran Singh Khalsa, editor. CBM originated in Canada, and enjoys a strong position in the

computer marketplace there.

We plan to bring the Amiga 3000 out this fall!

...I was hired (in 1978) as Commodore's original sales manager when we were just starting up. There might have been a couple of dealers signed on when I came on. We were selling calculators and filing cabinets. In the early days, we had one dealer, Conti, in Vancouver. They still are a dealer here. Then we signed up Computerland. They no longer sell our stuff. We will be successful with or without them... Would we like to do business with them again? -- sure. They have a big share of the reseller market. But we are not going to sit back and lose sales without them. Our independents are very effective. Because we don't have a national chain, we have to look to our independents to carry the ball. It is more work for us to deal with them, but sometimes they are much more effective because they own their own stores. They will go the extra mile.

How do you work with your dealers?

Dionne: We are dealing with corporations, but we let the dealers do the installations. There is still an incentive for dealers to go and talk to corporations. We get involved ourselves because some corporations will not deal with a small dealer. He may not be able to service their requirements across the country. So we work with the dealers and coordinate for them across the country...

We have just recently got the products that we feel are worth pursuing this way.

We have a very good AT. We have announced a 386 which will be available for September. It will be a total Commodore designed product, not just an OEM board.

In the fall we plan to bring out the Amiga 3000, which will be a 68030 based computer. We are putting things in place to sell. This week we are interviewing some corporate sales people for the Vancouver office. We are starting slow and building our base keeping the overhead down. I would like to think that next year we will have a lot more corporate sales people in place.

Can you give an example of what constitutes a corporate sale?

Dionne: We have been successful with employee purchase programs. We negotiate a sales program where we sell them to their employees. With Air Canada we got in the back door this way, and now they are starting to consider these machines for use internally.

How do your sales break out? Where does your money come from?

Dionne: I would say now the C64 and C128 computers account for about 20 percent of our revenues. Sales now are stable, but they have come down since 1986. We will do about \$100 million this year in total sales. In 1983, we did 100 million just on C64's. Our sales are growing, but they are growing from the MS-DOS and Amiga lines. That means about \$20 million in sales for the C64 line, and the rest about evenly split between the Amiga and the MS-DOS machines. The Amiga revenues are split between the 500 and 2000, though we sell many more 500's, but the 2000's cost twice the price. Revenue is evenly split.

What is the most profitable?

Dionne: The C-64 because it is older technology... then the Amiga, because we own the technology, and then the lowest profit margins are in the MS-DOS line. It is very tough to make money in the MS-DOS world. A lot of guys are in it that don't want to make money at it, and it is very competitive. We are not interested in being the cheapest. What we do is include a lot of

features built right in. They are very advanced. What we always say, is that we offer the best value. It is not the cheapest.

Where do you build your computers?

Dionne: Right now we have switched all the production to West Chester, (Pennsylvania). We are looking right now at taking advantage of free trade.

...

Commodore is really big in Germany. Why is that?

Dionne: Yes that is true. This year, 70% of the revenues of Commodore will come from Europe. We are strong in Canada (and) Australia. But in the U.S. some people don't even realize that Commodore is still in the computer business. Some of that spills over into Canada as well.

How many Amigas have you sold now?

Dionne: In March, we just shipped the millionth Amiga. That is faster than the Macintosh got to its first million.

How many Amigas have you sold in Canada?

Dionne: I would say 50-60,000, so many of the one million sold are in Europe. In Germany they have gone completely crazy for the Amiga. At one point they were selling 15,000 machines a month. The pricing is very attractive over there because the Deutsche Mark is so high. Germans also love the best technology. The German company has also done some good marketing. They got good association by sponsoring sports teams. Many of our competitors in America are not so strong over there.

Another factor is that in the early days when we had a supply problem, the company would make more money on the machines over there, so they would ship the Europeans supplies first. So quite often they would get the shipments and we would not. They built a stronger presence because of it.

We are starting to get a much stronger presence in Canada with the Amiga.

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Deluxe Paint III Stencil Tutorial

Adding three dimensional effects to your Deluxe Paint III animations can be easier than you think.

by Clyde R. Wallace

Adding Depth With the Stencil Function - by Clyde R. Wallace

Although Deluxe Paint III is a fantastic animation tool, it is designed to work with two-dimensional objects. To add depth to an animation, you can have objects move behind, or in front of each other. For instance, you could have a man walking in a forest, and as he walked, he would move behind some trees (out of sight), and in front of others. This adds that three dimensional feel.

Normally, to achieve this effect, as you are stamping your brush, or animated brush across the screen, you will erase the parts of the background you stamp on. So, to have the man walk behind a tree, you would have to redraw the tree on top of the man, or part of the man, in order to simulate depth. If the tree is simple, redrawing it could be simple, but for complicated objects, you would have to save parts of the screen, then replace them on top of the man and so on. Very time consuming.

There is a better way.

With the stencil function, you can instruct Deluxe Paint III, that there are certain colors that should be permanent. No matter what you draw on them with, you can neither erase those colors once drawn, or draw over them with another color. These permanent colors are like the solid parts of a stencil. All other places, where those colors aren't present, are like the holes in a stencil.

In the animation demonstration (see this issue's disk set), I chose a city scene with buildings, doorways, windows, and even some sign posts. My design was to create a background of stencils, then when I stamped my little animated character brush on the screen, he would move behind the doors, windows and sign posts automatically.

Since I originally planned to use stencils in my animation, I designed my palette accordingly. I kept all the colors of the stencil together, and only used those when drawing the background. For instance, I made a group of reds for the brickwork, whites for the sign posts and some darker colors for the window sills. Then I made a separate group of colors for the little character, and did not use any of those colors when I painted the background.

If I had jumped around in the palette when drawing the background, or used some of the character's colors in the background, the stencil would not work properly. This is because, any colors you choose for the stencil be-

come protected colors. When the stencil is created, you cannot draw on, or erase those colors. So by using unprotected colors in the background by mistake, those unprotected colors wouldn't be permanent, and could be erased.

The next step was to create the stencil. From the menu, I picked CREATE STENCIL. Up popped a palette. I chose the colors I wanted to be permanent. First I picked the sign post colors. After that, the sign posts would be permanent fixtures, no matter what I did; I could not draw on top of the sign posts. This would be true for whatever else I drew using those colors. Then I selected the other brick colors and window sill colors. Once they were selected, I clicked the MAKE button. This button turns the stencil on and makes all the selected colors "permanent". So at this point, if I wanted to edit the background picture any more, I would have to temporarily turn off the stencil (there is a ON/OFF TOGGLE menu item to do this.)

At this point, I saved the background picture to clear the area and created an animated brush. Now that the stencil was created, I was free to use any non-stencil colors in my little character. Once I created my little animated character - let's call him Gus - I reloaded the background picture, checked the stencil once more to make sure I had all my colors straight, and

then began the animation.

Using the SET NUMBER OF FRAMES option, I chose 30 frames for my animation. That would give Gus enough frames to make it across the screen in some sort of disk-space-efficient-yet-still-smooth manner. Then the stencil function made the actual animation creation simple.

Starting with frame # 1, I stamped Gus on the far left, switched to frame # 2, stamped Gus a little farther to the right and so on. That's it. From the picture, you can see that Gus would automatically move into doorways, behind windows, window sills and even the sign posts. Once this was done, I wanted to add a few embellishments. And the stencil even made these easy.

I wanted to make a little hair on Gus's head, and have his eyes move depending on where he is in his little hop. So I drew these in with non-stencil colors. As I drew them in, I didn't have to worry about drawing onto the brick or sign posts by mistake, they were stencils. So I could let the brush draw wild, and I couldn't hurt any stenciled colors.

Was stenciling worth the trouble? Consider this. Once I had my background drawn, and made Gus, the entire animation creation process, including the embellishments took a total of eight minutes, and a trip to the fridge for a drink took up two of those minutes. Without the stenciling, I would have had to repair the brick and signposts where Gus was stamped in all 30 frames. •



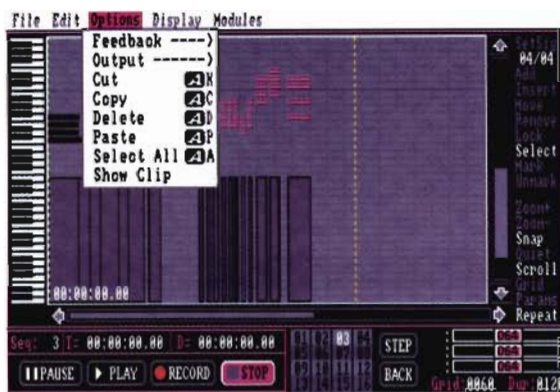
This animation is included on this issue's disk set.



MUSIC-X Reviewed

The long awaited Music-X, you've read about it, heard about it, seen ads for it, but alas... here it is.

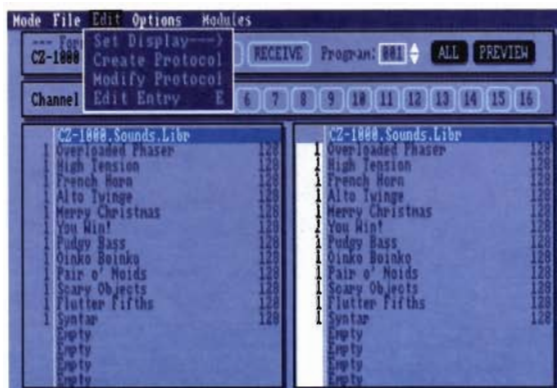
by R. Shamms Mortier, PhD.



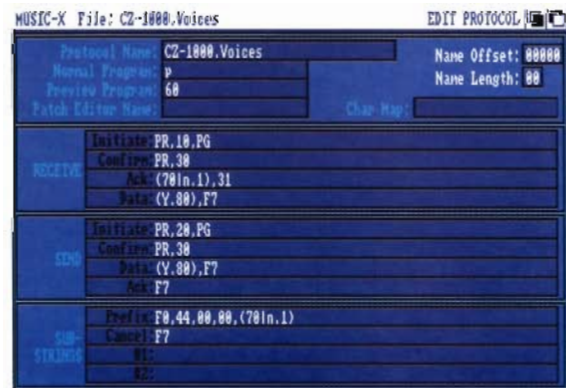
The Bar Editor



The Sequencer



The Patch Librarian



The Protocols

From the moment it pops up on the screen in thrilling new-wave chartreuse and fuchsia, you know something's waiting for you around the next click. Oh how long the wait has been! Glitzy fancy-shmantzy ads to whet our earpatites, to torture and taunt us... and now it's here... Music-X, from Microllusions. Was it worth the wait? Is it worth almost \$300.00? Stay tuned.

Music-X is the first multi-music program of its kind to come in one package for the Amiga, and is not a port from any "other" machine. All of the screens tell you this at a glance. The signature "made for the Amiga" would only be a surprise for those of you who haven't appreciated the visual dimensions of Amigaware.

Music-X's screen design is everything that Amigoids expect, in clarity, outright beauty, and functionality. First, have a look at Sequencer page. There are a host of very specific pages in Music-X, and it's wise to read and reread all 421 pages of the manual before getting too deep in your creative endeavors (although in just a session or two you can produce some interesting mini-compositions). The Sequencer page is the first one up, and like the main road on a journey, it leads to several places worth exploring and experimentation.

Like all sequencers, it is here that you put together snippets of a piece, recording them to spe-

cific tracks as you go. Just a word about the MIDI implications of Music-X here. Although built mainly to satisfy the appetites of Amiga MIDI enthusiasts, Music-X also allows the sequencing/recombination of IFF internal samples. So even if you don't have a MIDI studio set up yet, that doesn't necessarily preclude you from utilizing the program in a creative fashion. With some MIDI gear in hand, however, you will really be able to take advantage of this software.

You may set up to twenty sequences in operation at any one time, with a maximum length of 4096 measures. Songs can be loaded/saved as "Performance Files", which are environments that take all of the other parameters (or those that you wish to call upon) into consideration at the same time (i.e., Libraries, IFF samples, and other data settings). You can also save and load author data (name of author and song). Since MIDI works in discrete, 16-channel options, you can also use Music-X to redirect any track to an alternate MIDI channel for recording/playback purposes.

Segments can be "Punched-In" and out in precise time/track places, so getting just what you want for the finished product is only a matter of learning to use specific tools and spending the necessary polishing-up time. After recording segments of the composition, you can place them in track positions by emptying the storage buffer (which is where they initially go). Much care has been taken to implement exacting time-codes in many formats on this screen, and you have both versions of MTC (MIDI Time Code) and a SMPTE-like counter, as well as very attentive instructions for additional professional hardware use. Pieces can be played back immediately, and tracks can be set to play or to be silent (mute). There's a lot more, but this touches on the core of the possibilities.

Once a track has been recorded, you can access two other screens from this page: The Bar Editor and the Event Editor. From these screens, editing can be accomplished in a visual or textual fashion, with a whole list of cut/paste/copy/select tools. The Bar Editor feels like a paint program. Whichever editor you select, you can alter the recorded/selected track in a way that will radically alter its characteristics, or you can touch up the smallest subtleties.

This is also where you engage in "Quantizing", a term most novice MIDI musicians dread to hear. The Microllusions manual is clearer on the meaning and possibilities involved in the quantizing process than many other publications (including MIDI-specific books). So don't be afraid, jump right in and quantize your brains out!

The FILTERS Page

Filters are siphons that MIDI data must pass through before interacting with notation information. Filters can color MIDI note information in many ways, and there are a host of tools here that allow this to take place. In addition to note quality, MIDI also allows you to address items such as Aftertouch, Program Changes, Control Changes, and Pitch Bends for specific synths. You can also set an "echo" here that will play an internal IFF sample along with the synth's sound when you play a note on the synth. You could tape a whole session right here without ever accessing the sequencer page, and have it be multi-timbral! This is also the page that has a sub-page called "Keyboard Maps", a way of visually allocating your keyboard so that specific ranges of keys do very different things. Certain keys can be set to "playback" entire sequences when struck, so you can see that your creative options approach infinity very quickly.

The Librarian

Just as books line the walls of a neighborhood library, so are sounds stored for "reading" in a dedicated MIDI library. Sounds are stored in "banks", collections of up to sixteen sounds per bank. You can have ten banks in memory (available RAM permitting), although only two are viewable at the same time. The banks of sounds must be those suited to your brand of synth, although Music-X outright supports only a limited list of manufacturers.

You can download sounds to your synth for preview before you load all of them in the song sequence. If you have a Casio 1000, make sure you set the MIDI switch in the back to make this possible, then set it back again before recording. Library files can be saved and loaded, and are connected to specific "Protocols" (programs that let your system know what make of synth it is supposed to talk to). The Protocol page is reached from the EDIT menu of the Librarian page. With a lot of study, it can be edited and reformatted for a specific synth.

The Amiga Samples Screen

Unlike other MIDI music programs on the Amiga market, Music-X doesn't neglect the rich world of IFF internal sample libraries of sounds. It allows you to load IFF and SONIX samples, and to manipulate their waveforms. Version 1.0 has a fairly small list of conversion possibilities, though useful. More than likely, you'll have to retune the sample so that it is in the same pitch as the MIDI synth, but that's easy here. Just hit an "a" on the Amiga keypad for A440 or a "c" for Middle-C, and you're given a standard pitch to tune to. Then use the slider on the screen to

retune the note. You can also chop octaves off of the sample. The IFF sounds can be played with the MIDI synth.

Comments

Do I like Music-X? Does a bear compute in the woods? I've used it since it arrived, and there's nothing like it. It took some hours of dedicated study, but with a program of this size, would you expect otherwise? Again, there's even more than I've mentioned here. That doesn't mean that there's nothing that's worth adding - there most certainly is, and here's a list:

1. Joyport and Parallel port sampler interfacing, so that samples could be created without leaving the program.
2. An option that called out the Amiga keypad as a piano keyboard, so that IFF samples could also be manipulated without a synth or MIDI.
3. Load/Saves in other IFF formats (Music Studio and Soundscape, although the latter can be accessed by changing the file extension name).
4. More control over the editing of IFF and Library bank samples.
5. The Direct saving of Dr. T's "Copyist" file formats.
6. A rough printer dump in a notation-like format.
7. A Western notation compositional module.
8. An international music composition/recording competition for users of Music-X.

A few other notes. Music-X needs expansion RAM, the more the merrier. There is an excellent SMUS/MX converter on the Utilities disk (MX comes with three disks and the manual). It is not only free from copy protection, but has one of the most human remarks concerning that filthy pirating habit in the manual. I'm repeating it here for everyone's hearing. "... Please accept this gift of vulnerability with honor."

Music-X
Microllusions
17408 Chatsworth St.
Granada Hills, CA 9134
800-522-2041
Suggested Retail Price: \$299.00

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Does a bear
compute in the
woods?

WHAT'S NEW IN THE AMIGA WORLD

Moving
massive
amounts
of data.

Speeding Up PostScript
In desktop publishing, PostScript is noted for its power, for the beauty of its finished work, and . . . for its snail's pace execution. The biggest problem is moving the massive amounts of data from the computer to the printers. *Massive* is the correct word. For example, most of the pages of this magazine require downloading more than *two million bytes* of PostScript code to the printer - either laserprinter or laser typesetter. Since that's usually done through the serial port at the rather slow speed (in computer terms) of 9600 bits per second, getting the PostScript to the printer can be a very slow process.

ASDG has come up with another application of their Dual Serial Board which helps this process out considerably. The Dual Serial Board goes in Amiga 2000's, and adds two serial ports to the machine, in addition to the one on the Amiga's motherboard. The company supplies a software replacement for the Amiga's serial.device, so the Amiga can talk to the additional serial ports. The multiple ports Mount as AmigaDOS devices. ASDG accidentally discovered that PostScript printers running versions of PostScript later than 3.0 are capable of running straight RS-232 (that's a computer "standard" for ports) connections at speeds far higher than the documented 9600 baud.

Most newer PostScript devices are shipped with PostScript versions numbered above 4.1.0

ASDG makes a couple of changes via interactive PostScript, and runs their own Apple LaserWriter at 57,600 baud over an Amiga logical device they call LW: (for LaserWriter).

LW: is a mountlist entry calling ASDG's serial.device, SER:, clone with a default rate of 57,600 baud. From Professional Page, the company prints to LW: instead of SER:, and the PostScript output proceeds

at six times its normal speed through the SER: device. This won't work with the standard Amiga port since (among other reasons) it won't support baud rates higher than 19,200 from Preferences.

The same system will work on Linotronic laser typesetters if connected directly to the Amiga, and most anything else that has an RS-232 port for receiving PostScript. •

Arex Support Continues
Since William Hawes' ARexx programming language is to be included in the next release of the Amiga operating system (1.4), a good question to ask is: how about the current owners of the product? Here's an official statement from Bill on that very subject:

I will continue to provide support (and marketing) for ARexx until it ships with 1.4, but after that it will be up to Commodore to set priorities and schedules for further changes. You'll be seeing lots more developer support for ARexx now that it's official, though, so overall it should be a win for everybody.

I expect to continue to offer support via PLINK and other networks, so your questions are always welcome.

-Bill Hawes

The ARexx language package, now in version 1.1, lists for \$49.95, and if you can't wait for AmigaDOS 1.4 you can get it from your local Amiga dealer or direct from Bill.

J:

News for the

DO YOU HAVE THE LATEST VERSION?

Tips for using excellence!

Inserting Text

If you're inserting text in the middle of a document and need fast response time, try the following macro key:

(menu format, insert page

break){left}

Assign this to the F10 key. It places a page break at the insertion point, moving the insertion point to the left of the page break marker. In effect, you're typing at the end of a page, therefore excellence! has no problem with re-formatting the document as you type. When done inserting the text delete the page break marker.

This trick is useful only when inserting several sentences or paragraphs. For just a few words it's faster to just type in the text.

Indexing

When excellence! indexes a word it looks for a specific pattern of characters. If you index the word "The" it finds "there", "therefore", etc. To obtain with a "word only" match, force a space between the word and its first or second index marker. The program will then find only full words.

Hewlett-Packard DeskJet printer owners have had difficulties configuring their printers to work correctly with excellence! in Draft and NLQ modes. If you set DIP switches A-8, B-1 and B-2 to ON and all others OFF, you can use excellence! with its default **Page Setup**. This means no further changes to system preferences for the number of lines per page. Other software titles you use might not like this configuration, however, so watch out, and make sure you record the switch settings before you change them, so you can put them back like they were, if necessary.

Excellence! supports PostScript printing, but doesn't include many screen fonts for doing it. If you own excellence! 1.14 and AmigaDOS 1.3, you can copy the excellence!.metric files (they're in the fonts section) to your *AmigaDOS 1.3 Extras* disk (or pool them on your harddisk drive), and then use the Adobe screen fonts supplied. The Commodore-supplied Adobe fonts will

A tip
for making
inserting
text easy.

ruin the display in Professional Page if you are also using that program with the same FONTS: directory; if you need to use both programs, maintain separate FONTS: directories for them. Don't copy the Commodore-supplied Adobe fonts to any Amiga desktop publishing package's fonts directory and expect to see proper PostScript fonts on screen. The Commodore ones are mapped at the wrong resolution.

The work fine in excellence!, however, as you can set the program up to accommodate them. To make them work, you will have to make two changes to excellence!: The **Pitch** setting through **Page Setup** must be **9** and you must set the scaling option to **72**. This is done by adding an **S=72 tooltype** to the excellence! application icon (using the **INFO** command from the Workbench) or by using the **-s72** switch from the command line in a CLI window. Tooltypes are case-specific; you must enter the exact characters (shown in *italics* in the previous sentence) or it won't work.

If you don't have the 1.14 version of excellence!, contact the company for details of their update policy. The usual cost to update to version 1.14 is \$9.95, but call for a "return authorization number" first.

M

NEWS: Micro-Systems Updates Available

Are you confused about the version numbers of Micro-Systems Software titles? Here's the official word. Title

name is followed by current version number.

excellence!	v1.14
Scribble!	v2.11
OnLine!	v2.11
Analyze!	v2.11
Organize!	v1.10
BBS-PC!	v4.20

If you have a program is numbered lower than listed here, and you wish to convert it to the newer

Amiga

product, you can contact Microp-Systems Software for information on obtaining an update. Generally, MSS' product updates are \$9.95 for each disk to be upgraded. Please send the master disk(s) along with a cover letter requesting the latest version. Please call the company first, though, for a "return authorization number."

In addition to these version increments, MSS now has "Platinum Edition" updates for many of the items in their product line. The update fee for these products is higher, but the improvements in the programs are more dramatic, some of them entailing complete re-writes of the program. Contact the company for information on converting to the "Platinum" series.

Micro-Systems Software
12798 Forrest Hill Blvd.
West Palm Beach, FL 33414
407-790-0772

P

PeopleLink Restructures Rates

American PeopleLink, well known for its extensive support of the Amiga through its AmigaZone conference, has restructured its rates, giving people who call at higher telecommunications baudrates a considerably lower bill. Rates for lower-speed data calls and for extensive downloading, however, have increased.

The rate change is more of a restructuring than an increase or decrease, overall, but the debate on the net has been hot and heavy as to which it is or isn't and who it benefits or doesn't. To decide whether the result is a rate increase or decrease, you have to take your own, specific calling situation into account. If you do a lot of calling, you might even find out it will be more economical to buy a faster modem, in order to take advantage of the lowered high-speed rates. Well, maybe it won't be cheaper, but it's a good excuse for getting a fancier modem, anyway.

Following is a slightly abridged version of the official announcement posted to the net, in case you haven't seen it.

...The volume of data transmitted is the primary area of increasing expense when a user is connected to Plink. With the increasing amount of file transfers since clubs were installed, our costs have been rising steadily. The point has finally been reached where we must do something to bring our expenses back in line... With due consideration, we do not feel that an across-the-board rate increase is justified...

We have opted for a plan which benefits the average customer while addressing the... excessive costs. It seems a fairer method than a general rate increase.

-Elizabeth McGinnis President

The new rates, which became effective June 20th, are:
LOCAL/PC

W

ordPerfect Lowers Pricing

WordPerfect Corporation has reduced the retail price of WordPerfect for the Amiga. The price, originally \$329, has been changed to \$250.

The company said the reason for the price reduction was "to bring the product price more in line with the Amiga software marketplace. We hope this will encourage Amiga users who wanted to buy WordPerfect, but couldn't afford it, to go out and look again."

WordPerfect for the Amiga, currently in version 4.1, is file-compatible with WordPerfect versions of that same number on many other computers, including MS-DOS. The Amiga product, however, is not file-compatible with the newer WordPerfect 5.0 available on MS-DOS machines.

The Amiga implementation includes a 115,000-word, expandable speller, an on-line thesaurus, keyboard macros, math capabilities, an elaborate mail-merge facility, and support (through custom printer drivers) for more than 250 printers. The program requires 512-K, minimum, and runs on all Amiga models.

T

ry the F9 Key!

Another CES award winner on the Amiga. Titan Software's new game Titan won the Consumer Electronics Show's 1989 Innovations Award for gaming products. It's available for the Amiga, as well as a host of other machines, but surely it's the Amiga one that cinched the award, eh?

Titan is a strategy puzzle with an overscan screen that scrolls in eight directions (on the Amiga, of course - some of those "other" computers can't do that). It's a new and different plot. You save the world.... No, really, it all takes place in 2114 - just a few years hence - in a place called Vegapolis. There are analytical conceptors, and bonuses of 1000 Kronurs involved in the plot, and all these people, see?, are playing the Evil Professor's game to their death.

You, on the other hand, o intrepid gamer, must guide the Power Sphere across the 80 (that's eighty!) immense worlds (the levels in the game). You get to avoid all manner of deaths on the way, too. As you go along, the levels get more difficult, and the strategy puzzles are increasingly difficult.

Mental breakdowns? Little do they know about the editing business! Another little tidbit from the cover letter on the selfsame news release is: "try the F9 key." Got it? •

C

-Ltd Joins Scanner Competition

C-Ltd has announced they are preparing a hand scanner implementation for the Amiga. The C Ltd hand scanner comes with Amiga software drivers and operates at resolutions of 100, 200, 300 and 400 dots per inch. The company says it can handle 16 gray scales, with three dithering patterns.

C-Ltd's scanner is similar to those available on PC's and clones. Maximum scanning width is 4.13 inches. It is not motorized, but must be drawn over the scanned area by hand.

C-Ltd's promotional material recommends 1.5 megabytes of memory as the minimum configuration for using their hand scanner. Software included with the scanner is Impulse's Diamond, a graphics and paint program developed for editing Turbo Silver's HAM and RGBN files. It will also deal with the 16-color (or greys, of course) images produced by the scanner. •

A

nother Color Scanner For The Amiga

ASDG's Scanlab software is available for two scanners, not just one. The company markets a special version of the Scanlab software for the Howtek PixelMaster color scanner. Howtek's scanner is built by (who else!) Howtek, but it's based on the same Sharp color scanning engine as the Sharp JX- series scanners.

Howtek markets their scanner as part of a turnkey, PC-based, desktop publishing, page layout, and color separation package which also includes one of the most unusual (and most capable) color printers on the market.

ASDG's Howtek-specific version of their Professional ScanLab software is priced at \$1095 (the Sharp version is \$995), and includes the hardware and software needed. Contact ASDG for complete details of the interfacing before making any purchasing decision. •

Designer Database

by Mike Hubbard

Microfiche Filer: Business Designer Database

Microfiche Filer Plus is an Amiga database management program from Software Visions, which has released a couple of database template disks called the "Designer Databases" for users who are too inexperienced or have insufficient time on their hands to create their own. One of these is the "Business I" package, which includes templates for both Microfiche Filer (the program version without ARexx compatibility and a few other niceties) and Microfiche Filer Plus.

With Microfiche Filer Plus and the Designer Databases, ARexx provides the programming language, so you will need Bill Hawes' ARexx program to take advantage of these features. The templates will work without ARexx, but much of the power of the Business I templates is in the ARexx macros.

Microfiche Filer Plus uses the microfiche approach to displaying information: move the magnifier around the sheet of data to view the enlarged information on the screen. The ease in displaying the information within a database is one of Microfiche Filer Plus's outstanding attributes - it is quite user-friendly.

With the Business I package you get: Billing, Inventory, Calendar, Mail Merge, Expense Reports, General Ledger, and Employee Records. The Billing database, which Software Visions themselves use for order entry of this very product, contains the standard data fields such as customer and company names and addresses, price, quantity, etc.

As with any database, you can specify a search field for specific information. Want the orders for June, over quantity-10 each? Nothing easier. The macros defined for this database tie it to the Inventory database to easily update the information for you. Sound easy? It is.

The Inventory database keeps track of products and their components. It can be tied to the Billing database, to reflect changes in inventory for reordering purposes. The main macro for this database processes all inventory reports, generating three reports (Transaction, Reorder, and Current Inventory) to ease the task of keeping up with parts movement.

The Calendar database is one of my favorites. It can set and remind you of ap-

pointments, even printing a daily To Do list if you have a command in your startup-sequence to load the proper information. Software Visions includes the proper command, so you don't have to figure it out yourself. To me, this database alone is worth the price of this product. I generate a list every morning, and check off each item when completed. It makes it difficult to forget important items, like picking up new Ami Exchange magazines, writing home this week (or month, or year), going to work, etc.

The Employee Records database holds general information: name, address, Social Security Number, etc. The documentation suggests including a picture of each employee with the record, and even printing identification badges. Not bad, eh?

The Expense Reports database keeps track of important information for those with expense accounts. There are three pre-defined formats to print out this information from macros, which you can alter to fit your (or your boss's) requirements.

I use the General Ledger database to keep track of checks written for expenses, and checks received for work I've done. It is far more flexible than this, but these are the only needs I have for it myself. The Mailing List database will provide mail merge files for five different word processors: WordPerfect, excellence!, Kind-Words, Scribble!, and ProWrite. The ARexx program is required for these macros to work. Handy for form letters. Another benefit is that it will dial a phone number for you, if you have a modem connected to your phone line. Talk about a simple but useful feature!

This product has databases useful for both small businesses and home businesses, even part-time home businesses. The templates helped me learn to better write other database applications myself. There was insufficient documentation with this product, however, and I was required to print out the documentation (18 pages) for each database, and I consider this a minor inconvenience. Overall, I liked this product and can certainly recommend it to the home and small businessman.

Yes, you *must* have either Microfiche Filer or Microfiche Filer Plus to use the Designer Databases. Neither product stands alone.

Designer Databases: Business I
by Software Visions
List price: \$59.

East West Software

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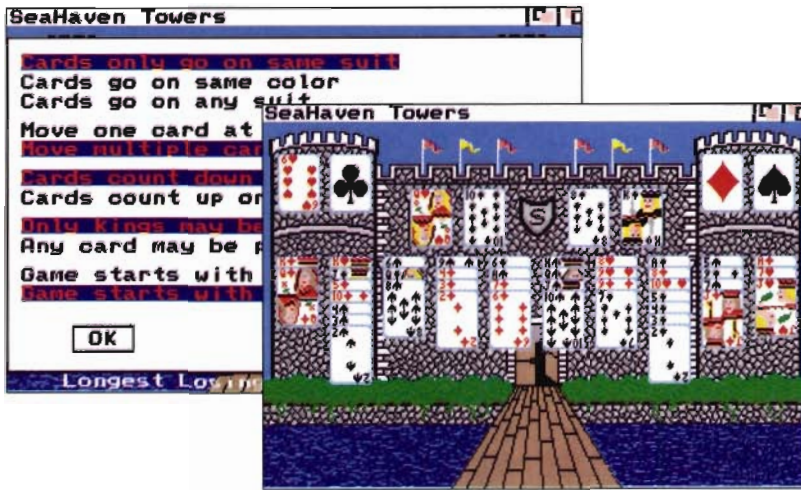
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- 100% Compiled Code
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- Intuition Interface
- Suggested Retail Price \$49.95 + 1.50 (S&H)
New York residents add 7% state tax.

On Disk This Issue

Some quick instructions on some of the items you will find in this issue's disk set. There are more items on disk that aren't mentioned here!



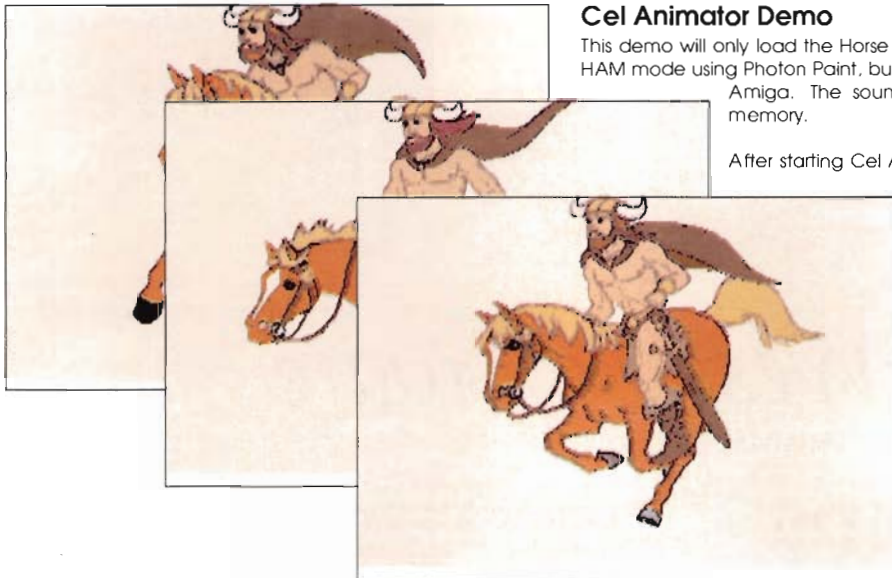
SeaHaven Demo

Included is the working demo of SeaHaven

ABOUT: SeaHaven.Demo

SeaHaven Towers is a solitaire card game by UnSane Creations. The rules of play are embedded in the game - just use the pull-down menu for HELP. Sea Haven Towers is shareware, and this is the demo version. It works fine and perfectly - even saves statistics on your play - but it only has four different starting card configurations. Once you learn the trick of solving them (the ARE all solvable!), you'll want the thrill of the real game - randomly generated card startups that are not necessarily winnable (groan).

Doubleclick the icon to run the game. What else can be said for a game that has a pull-down menu for "CHEAT"!



Cel Animator Demo

This demo will only load the Horse & Rider animation. This animation was originally done in HAM mode using Photon Paint, but was converted to 16-color to allow it to run on a 1 meg Amiga. The sound file (Horse.smp) was also not included to conserve memory.

After starting Cel Animator, select "Load Animation" from the requester. Select "Horse.anim" from the file requester and click on "OK". This will load the animation and the order (script) file. Once it is loaded, select "Animate" from the "Animate" menu. This makes it run at full speed. To slow it down, select "Set Rate" from the "Edit" menu, and choose 15 or 10 frames per second (12 or 8 in PAL). Now select "Slow Motion" from the "Edit" menu to run using the rate you select. You can also use "Set Order" from the "Edit" menu to change or loop the playback order.

Cel Animator is available now direct from Microlutions, or at your local Amiga dealer.

If you have only 512-K of memory in your Amiga, you can load and run the Cel Animator program, but you cannot load the animation - it's too big for your computer's memory. You can still see how the program operates, however, and make your own simple animations.

Cel Animator Demo

Also included is a working demo of Cel Animator!

Confuser Font

The Confuser Font is a 2-D representation of a large 3-D font.

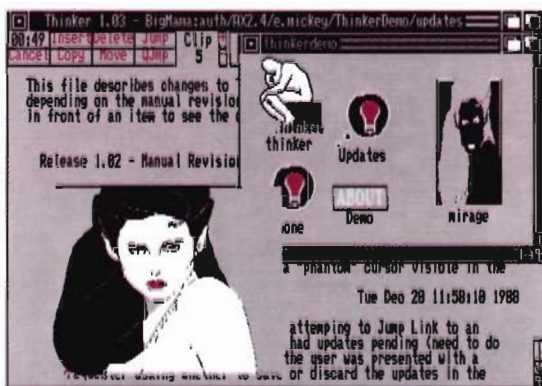
Capitals and numbers only. To use it, you need to move it to your own fonts directory.

Do this with the CLI. The commands are:

COPY ax1:fonts/Confuser fonts:Confuser all

COPY ax1:fonts/Confuser.font fonts:

There's a picture to show you what the Confuser Font looks like. Double-click its menu entry to have a look at it.



Thinker Demo - Hypertext

Now you can get a taste of what the fervor is all about. Try this working demo of Thinker.

THINKER DEMO

Thinker is an Amiga implementation of HyperText principles. The demo tells you about itself USING the very techniques it demonstrates. Just doubleclick the DEMO icon in the ThinkerDemo drawer.

IMG Scan Demo

Copyright 1989 SunRize Industries

This .arc file contains a demo version of the IMG Scan software. IMG Scan is a combination of hardware and software that allows you to digitize pictures in 256 gray scales with resolutions up to 360 dpi. No video camera is required. IMG Scan works by attaching a fiber optic receptor to your dot matrix printer. This allows you to use your printer as a very low cost scanner as well as a printer. IMG Scan has a suggested list price of \$149.95.

The arp library (located in the LIBS directory on magazine Disk 1) is used by IS_Demo for its file requester. If you don't have this file in your LIBS: directory, Before running IS_Demo, copy this file to your libs: drawer. Use A CLI window and issue the command:

Copy AX1:libs/arp.library libs:

IS_Demo

This software is identical to the real thing, except Save and Scan don't work.

Girl.pic

This is an 640 X 400 IFF picture that was scanned with an IMG Scan. To view the picture and try out the IMG Scan software:

A. run IS_DEMO

B. pick "Set Screen Type" and change to 640 X 400 (1 MEG is required for interlaced mode. If you only have 512K, use a show program to view the picture)

C. pick Open IFF from the Project Menu and load girl.pic

For a demo of IMG Scan in operation, contact your local Amiga Dealer. For more information, call SunRize Industries at (409) 846-1311.

Video.Toolbox

Just click the icons to make these programs work.

BarsnTone:

After clicking through the instructions, you exit the bars by clicking the left mouse button. You can then adjust the audio level, or exit the program.

Lace:

Simply toggles the interlace mode on and off each time it is run. It is only 524 bytes!

Lacer:

Continually monitors the interlace mode. If interlace goes off, Lacer will turn it back on after less than one second. This forces interlace on, no matter what program you run in your Amiga. You need interlace on if you're taping the Amiga's output.

These programs are all by Mike Berro.

ABOUT: SimLoan

Help For Impoverished Sims
by Doug Smoak

How to use SimLoan.

First, save the city you are working with. To operate SimLoan, you must use the CLI command window, in order to modify the file that Sim City has

saved. Get a CLI running and use either one of the following commands:

SimLoan + cityfilename
SimLoan - cityfilename

SimLoan lets you either add or subtract a flat \$10,000 from the city's coffers before re-loading the city. Yes, you can do it more than once, if you need more than \$10,000, but it's in \$10,000 increments only. If you wish to borrow money, use the + . To pay back a loan, use - . Of course, you must supply the full pathname to the city's filename. That's the name you've saved your Sim City city with.

SimLoan loans (or repayments of them) take effect when you reload the city. The amount of money you have in the city coffers will be changed when you reload the city. You're on your own to keep track of how much you've borrowed, and whether to pay interest (real cities do!).

Before you do this, of course, you must put the SimLoan executable program where the Amiga can find it. You can either run it from the Ami Exchange magazine disk, or move the program to one of your own disks.

- Doug

SimLoan is copyright 1989 Doug Smoak, all rights reserved. You may use it all you like, but don't sell, re-sell, rent, alter, post to BBS's public or private, publish, or re-publish it in any form without prior, written consent.

MUSIC MUSIC MUSIC

The MUSIC on this issue's Ami Exchange disks is by Vincent Chu, of Tasmania, Australia.

PICTURE: Just For Fun

Did you ever wonder how the world got along without batteries?

This picture clears up that mystery. Art by John Thompson

PopDir and PopInfo Utilities

PopDir and PopInfo are neat little ditties for getting the directory of a disk, or for getting the computer's "info" display without having to dig up the Amiga Workbench, and without having to open a CLI window. The trick is to drag the icon (whichever, or both) onto your work disk. Then, without further ado, you can click PopInfo or PopDir and see what's what. PopDir is especially useful for Amiga owners who have only one disk drive.

Trouncer Animation

Trouncer.ANIM is an animation that illustrates STENCIL painting/animation techniques within DeluxePaint III. The idea is to make an animated brush move behind objects already drawn into the picture (as here, with the brick foreground). If you had to redraw the foreground every frame, it'd take a while, and you'd get little benefit from DeluxePaint III's animation facilities. The STENCIL

option takes care of that almost automatically.

Fujitsu Printer Driver

In the Printerdrivers drawer is Fujitsu DL3400, an AmigaDOS 1.3 printer driver for the Fujitsu DL3300 and DL3400 printers. This driver was contributed by Jim MacWilliams, after he read the review of those printers in A.X. Magazine Issue 2.1.

Jim's custom driver includes support for color, and provides support for the Fujitsus' native tricks - unobtainable through its many "other" printer emulations. Of course, there aren't many people who have the Fujitsu's, but at least there is now a printer driver for its powerful native mode.

Jim provided full, commented sourcecode (in C and Assembler) for this driver, and it's available from the magazine, though not included here, on account of space limitations. If you need it, contact the editor.

ABOUT the Stocksheet.WKS

If you need to track a stock or two, here's a Lotus 1-2-3 (1a) compatible worksheet to help you do just that. The Lotus format is either loadable, or convertible to most any of the Amiga spreadsheet programs, so it's the "medium of exchange" here for such things.

The spreadsheet is pretty self-explanatory. You just put the dates in, fill in the closing prices, and the worksheet does the calculating for you. You can use it to do a WHAT-IF analysis (for those attacks of pure fantasy, or when the market takes off in one direction or another).

This worksheet deals with only one stock issue - rather than a whole portfolio. You can, however, modify it to suit your needs. Just copy the entire sheet as a range for each of the issues you wish to track, and provide a totaling mechanism to work across all the ranges. If you do the totaling at the TOP of the sheet, the ranges can have uneven (and pretty much unlimited) space for entries at the bottom. Totals at the bottom fix the amount of entries you can have, and require you to MOVE the totaling formulae if that space fills up.

Note that the worksheet itself is on disk 2, though this explanation is on disk 1.

DRAW - Paint Program

The program DRAW is Richie Bielok's continuing, demonstration program for his draw program techniques in Modula-II series of articles. .MOD source files are located in the

There's an electronic version of his "figure 1" illustration on the disk, too.

**See the Table Of Contents for
listings of more items on disk!**



GOSSIP

By Jay Gross

One thing you can say about the Amiga, there's never been a shortage of gossip and conjecture, never a shortage of hot debate regarding its fate, its worth, or its purpose.

The latest round of gossip - dignified by inclusion in the regular computer magazines, instead of just being confined to the Amiga press - concerns a buyout.

Hewlett-Packard. Well, The Gossip Fence predicts this is not true, based entirely on conjecture and without even any decent rumor to back it up. But a lot of common sense. In addition to being "too good to be true", the problem with this juicy bit of gossip has been twofold. First, Wall Street isn't snapping up CBM shares in the hope of tidy profit, as is usually the case when a buyout is rumored. That means Wall Street doesn't believe the rumor. If such a move were in the works, somebody on Wall Street would know; such a move isn't likely to occur without large sums of money, and not even H-P could finance it out of pocket cash. A merger, on the other hand, could be effected with stock trades, technology swaps, and such, and not much cash would change hands. In that case, Wall Street might not know, or might not stand to profit, and that would explain things as they stand, somewhat.

Another possibility is that CBM has seen AX writing on the wall, and figured out that they don't have the expertise nor the dealer base to market the Amiga Unix box in the real world. (Target stores aren't noted for their commitment to the Unix platform, and the unit didn't go over well at the Consumer Electronics Show). H-P does have that expertise, and the distribution channel (and VAR's, Value Added Resellers). Perhaps there's a joint venture in the works regarding the Amiga Unix machine, or CBM could be licensing or even selling the Unix machine or its technology to H-P.

There are things to say for an H-P purchase plan, on the other hand. H-P recently bought out Apollo, makers of some of the finest (and most expensive) graphics-based workstations on the minicomputer market. Of course, that market is considerably higher-end than the Amiga, but if you bring some of the Amiga's airware down out of the clouds and do some more development on the machine, you'd have that level of performance, and you wouldn't necessarily have that level of pricetag. H-P could be shop-

ping for technology for their Apollo computers, or they could be shopping for a lower-end line of workstations (either the Amiga itself or the Amiga Unix machine). Everybody *else* in the workstation market is lowering the low end, so why not H-P, too.

For Amigoids, an H-P/CBM association - whether buyout, or licensee, or licensor (could be H-P is selling something, not buying, you know) - could only mean new and welcome respect in the computing world.

Now for the good news.

While all this talk of AmigaDOS 1.4 has caught the media's attention, CBM has quietly begun shipping (that's right, shipping, not just talking) an improved AmigaDOS 1.3. It's the 1.3.1 version, and it's what's currently supplied as the "1.3 Enhancer" package. The only way you'd know it's the new one is to look on the Workbench disk in the package; it has a small white sticker that announces it's version 1.3.1, version 34.25. The previous version number was 34.20, as shipped in the 1.3 package.

Incidentally, to check what version you're running, issue the command:

VERSION

from a CLI window, and you'll get a report that looks like this:

Kickstart version 34.5. Workbench version 34.20

You'd have to reboot the machine on the updated Workbench to make that version number change. Also, just for good measure, you shouldn't mix different versions of the programs. Select the version you wish to use and use all of the programs from that version. Mixing and matching is asking for trouble.

Workbench, of course, is not part of the chip-based operating system (the KickStart ROM chip), so it can change without swapping a chip (In Amiga 1000's even KickStart code can change, just by substituting a new KickStart disk).

Version 1.3.1 includes revised editions of many of the Workbench programs, some with additional features, and (guessing, but probably guessing right) fewer bugs. Notable among these

Hewlett
Packard
buying
out
the
Amiga?

MINDWARE SHIPS PAGE RENDER 3D

changes are a new Diskcopy program which adds a VERIFY step to its process (yes, you can turn it off, but it's dumb to do so) and revised FastFileSystem and printer.device code chunks. Presumably, the revision to FastFileSystem either fixes bugs or enables something for a future development.

Naturally, there is no official word from CBM on obtaining any updates, so check with your dealer and (ahem!) take along your original 1.3 Enhancer Workbench disk, in case there's a store policy on such things. Close as the Gossip Fence can see, there are no changes in any of the other disks, just the Workbench.

Oddly, the numbering of 1.3.1 would normally indicate a very minor change to the code. However, there are a lot of changes, and some of them are feature additions (as in Diskcopy, for example).

Announcing... The Amiga 3000

The secret is no secret anymore. News of the Amiga 3000's being planned has leaked out. At the Developers' Conference in San Francisco, the 3000 was rapped about as though it were *fait accompli*. Besides that, the head of Commodore's Canadian operation dropped a mention of it in an interview with a computer publication there. Well, don't fault CBM for not saying anything about it sooner (or yet, in fact), 'cause the announcement of a new computer has traditionally ruind sales of the existing models until the new one comes out. Of course, no official word, on when the 68030-based Amiga 3000 might become a reality. Who'd believe it, anyway?

Okay, so there's a new vapor Amiga named the 3000. Most likely, you can just build one of these babies by taking a stock 2000 and adding the newest vapor CPU card, the 2630, just as adding a 2620 CPU card and some other goodies makes a 2500 out of a 2000. That's the one that runs the Unix software, too, but the 3000 will most likely be sold by itself, as well as running the Amiga Unix. •

J:

The
secret
is
out!

Mindware Ships PAGErender 3D

Mindware international has shipped PAGErender 3D, a 3-D rendering and animation system for the Amiga which incorporates ARExx support and a large object library.

The product also supports stereo imaging through either red/blue stereo vision glasses (they're included with the package) or Haitex' X-Specs 3-D glasses (they cost money). Animation controls include accelerate, decelerate, and move, along a straight or arbitrary path, as well as move or spin around x, y, and z axes.

PAGErender 3D automatically generates its own animation scripts while you work, and these scripts can be edited or produced externally to drive the program's animation engine. The product's inclusion of an ARExx port will permit other programs with ARExx ports to send messages to PAGErender 3D to direct animation, or, for example, create a script for doing one.

The program works in Cartesian (x, y, z) Spherical, Cylindrical or Tetrahedral coordinate systems - pick the one you like. the program supports adjustable dither and light intensity, four different draw modes in each resolution, and the ability to create scenes larger than the monitor screen.

PAGErender doesn't raytrace. It renders. The product lists for \$159.95, and works on all Amigas with 512K or more memory. The package comes with a specialized version of the software specific to the Amiga 2500's 68020 processor (and some of the Amiga speedup boards, too). Mindware also markets the animation programs PageFlipper and PageFlipper Plus F/X, and Decartes!, a mathematical graphing product. •

Modula II Draw Tutorial Part IV

Graphics Draw Routines in Modula II is the fourth in a series. This edition adds more sophisticated menu structures.

by Richie Bielak

Graphics Draw Routines in Modula-II
by Richie Bielak
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DRAW PROGRAM MENUS - VERSION 2

So far the menus for our DRAW program have been very simple. We used text strings in all the menu items. Although text is appropriate for the 'Actions' and 'Tools' items, text is a poor choice for the color menu. The color menu should show rectangles of the appropriate color, rather than strings 'color1', 'color2', etc. To remedy this situation we will rewrite the DRAWMENU module, in order to implement a fancier color menu.

Until now, we took the easy way to build the menu for our program. We used the 'SimpleMenus' module that is supplied with the Benchmark Modula-II compiler. Although easy to use, this module does not provide a way to set up menu items that are images. Therefore, instead of using 'SimpleMenus' we will build the new menu structures from scratch. This way we will have the menus we want, and we will also learn more about Intuition menu structures.

The revisions that we will discuss today are all localized to the DRAWMENU.MOD and DRAW.MOD modules. DRAWMENU.MOD was rewritten completely; whereas, only a routine to set up colors for the program's screen was added to DRAW.MOD.

We begin this excursion by examining the data structure that represents the menu strip.

Menu Structures

The menu strip is represented by a linked list of 'Menu' records. In turn, each of these records points to a sublist of 'MenuItem' records. Each 'MenuItem' describes an individual item within a menu. Figure #1 shows a hypothetical menu structure. As you can see, the menu is somewhat complicated. Let's begin by examining the component records of the menu strip in more detail.

The 'Menu' record is shown below (this declaration was copied from the INTUITION definition module):

```
Menu = RECORD
  NextMenu    : MenuPtr;
  LeftEdge, TopEdge: INTEGER;
  Width, Height : INTEGER;
  Flags       : MenuFlagSet;
  MenuName    : ADDRESS;
  FirstItem   : MenuItemPtr;
  (* Internal Intuition fields below *)
  JazzX, JazzY : INTEGER;
```

```
BeatX, BeatY : INTEGER;
END;
```

The first field in the 'Menu' record is a pointer to the next element in the menu strip. As expected, in the last 'Menu' record this pointer is set to NIL. 'LeftEdge' and 'TopEdge' indicate where on the strip this menu will be placed. The numbers here are in pixels relative to the top lefthand edge of the screen.

In the current version of Intuition (1.3) the menu is always placed at the top of the screen, therefore 'TopEdge' is assumed to be zero, and the value inserted in this field is ignored. The value assigned to 'LeftEdge' specifies the position of menu name on the menu strip. 'LeftEdge' in the first 'Menu' record of the list should be 0, and in the following records it should be incremented by the pixel width of the previous menu name. Rather than figure out the pixel width of a string, I use a simple rule of thumb - allocate 10 pixels for each character. For example, if the first menu name is 'Action', the 'LeftEdge' field in the second menu record would be 70. Once the menu is displayed, it can be 'eyeballed' and the numbers altered to suit one's artistic sense.

'Width' and 'Height' define the size of the menu select box. As with 'TopEdge', 'Height' is ignored by Intuition - it is assumed to be equal to the height of the title bar. The 'Width' is the pixel width of the select box. Since the menu name must fit inside this box, the width should be large enough. As before, I use 10 pixels per character.

'Flags' is a bit mask (represented as a set in Modula-II) that controls properties of the menu. In particular, this mask controls whether the menu is enabled (i.e., whether the user can make selection from it). Usually all menus are enabled.

The 'MenuName' field contains the address of the string that is used as the menu name, and 'FirstItem' is a pointer to the first element in the item list. The other fields in this record are reserved for exclusive use by Intuition.

The other basic element of menu structure is the 'MenuItem' record, pictured below:

```
MenuItem = RECORD
  NextItem    : MenuItemPtr;
  LeftEdge, TopEdge: INTEGER;
  Width, Height : INTEGER;
  Flags       : MenuItemFlagsSet;
  MutualExclude : MenuItemMutualExcludeSet;
  ItemFill     : ADDRESS;
  SelectFill   : ADDRESS;
  Command      : BYTE;
  SubItem      : MenuItemPtr;
  NextSelect   : CARDINAL;
END;
```

The "NextItem" field is used to link together the list of the menu items. "LeftEdge" and "TopEdge" specify the position of the item in the menu pop-up box. These numbers are relative to the upper lefthand corner of the box. For example, if the first item has "LeftEdge" set to 5 and "TopEdge" to 0, the following items have the same value for the "LeftEdge", but "TopEdge" must be increased by height of the previous item (I use 10 for height of text items).

"Width" and "Height" describe the size of the item select box. The height should match the number used in computing "TopEdge", otherwise select boxes will overlap. "Width" must be equal (or greater) than the pixel width of the picture displayed as this menu item. I always set the width for all items to the width of the longest item.

The mask in the "Flags" field defines various characteristics of the item. For example, the type of object displayed in the select box (i.e. text or image) is defined by these flags.

When menu items can be checked off, as in the "Tools" or "Colors" menu, we usually want only one item checked at any time. In this case we use the "MutualExclude" field. This field is a 32 bit mask which specifies which item cannot be chosen concurrently with the current item. We will discuss the use of this field in a section below.

The "ItemFill" contains a pointer to a structure describing the picture to be displayed in the select box. To show text this field must point to an "IntuiText" record, to show graphics to an "Image" record.

Sometimes it is desirable to have keyboard equivalents of menu selections. In the "Command" field you can store a character that, when pressed along with the Left-Amiga key, will have the same effect as the menu selection.

"SubItem" points to the list sub-items, if they are associated with this menu item. Finally, "NextSelect" field is used when multi-item selections are allowed.

Mutual Exclusion

We use the "MutualExclude" field in the "Tools" and the "Colors" items in order to allow selection of only one tool and only one color at a time. "MutualExclude" is declared to be a set type. A set type is just a mask, and that's how Intuition treats this field. Each bit in "MutualExclude" represents one menu item - bit 0, the first item; bit 1, the second; etc. When an item is selected the "MutualExclude" field is used to de-select all the items that are marked for "exclusion" (i.e. have their corresponding bit set to one). For example, the following values (in binary) will be contained in the item records for our color menu:

```
11111110 - first color
11111101 - second color
11111011 - third color
11110111 - fourth color . .
01111111 - seventh color
```

As you can see, selection of one color excludes all the others.

The easiest way to set up the above bit patterns in Modula-II is to have a set that has all bits set to one, and then clear the bit appropriate for each item.

In DRAWMENU this is done by using a constant called "full" whose value is "MutualExclude-Set(0,1,2,3,4,5,6,7)". "full" represents the pattern 11111111 (in binary). To remove single elements from this set we can use the built-in Modula-2 procedure EXCL (for EXCLUDE). Here is a code fragment that sets up the "MutualExclude" fields for the "Colors" menu:

```
FOR i := 0 TO MaxColors-1 DO
```

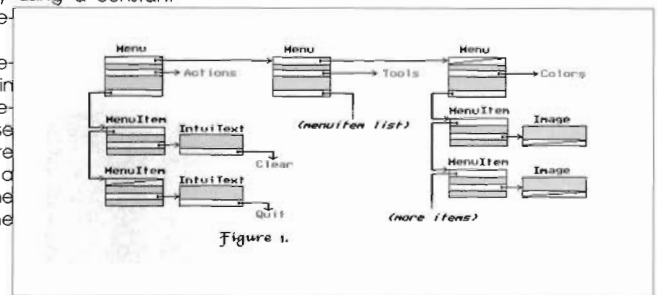


Figure 1.

Images in menus

To have images appear as menu items we have to set up a number of "Image" records and then link them to the appropriate "MenuItem" records. In addition, the flags in each menu item must be set up differently. In particular, the "HighImage" item flag must be on, to tell Intuition that an image is to be displayed (see the "ColorFlags" constant in DRAWMENU.MOD).

The image that will appear is described by the Intuition "Image" record. Here is its layout (from INTUITION definition module):

```
Image = RECORD
LeftEdge : INTEGER;
TopEdge : INTEGER;
Width : INTEGER;
Height : INTEGER;
Depth : INTEGER;
ImageData : ADDRESS;
PlanePick : BYTE;
PlaneOnOff : BYTE;
NextImage : ImagePtr;
END;
```

The fields "LeftEdge", "TopEdge", "Width", and "Height" describe the position and the size of the image rectangle. "Depth" specifies the number of bit planes in the image data; and "ImageData" is a pointer to a contiguous area of memory that holds a bit-mapped representation of the image. "PlanePick" tells Intuition in which bit plane the image is being drawn (for multi-plane images, this field specifies where the first plane goes). "PlaneOnOff" is used to decide what to do with the bit-planes that are not filled by image data. These planes can be either set to all ones or all zeros. Finally, "NextImage" points to another image structure if multiple images are to be drawn, otherwise it is set to NULL.

To create a single color rectangle we use the "Width" and "Height" fields to define its size, and the "PlanePick" and "PlaneOnOff" fields to define the color. We do not need to use any bit-mapped data.

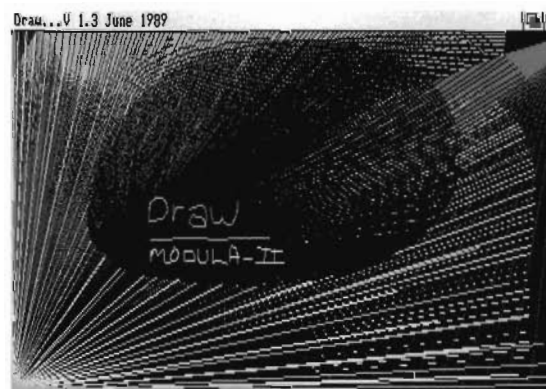
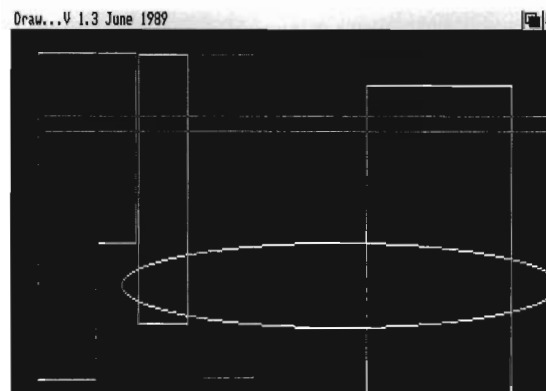
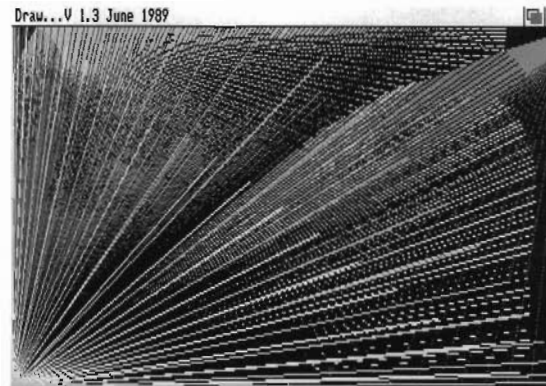
First, the "PlanePick" field is set to 0 to indicate that no image data will be used. The whole trick of getting the right color is in the use the "PlaneOnOff" field.

The contents of the "PlaneOnOff" field tells Intuition to fill specified bit planes with zeros or ones. The filled shape is a rectangle defined by the "Height" and "Width" fields of the "Image" record. Each bit in the "PlaneOnOff" is associated with one bit-plane. Bit 0 corresponds to bit-plane 0, bit 1 to bit-plane 1, etc. If a bit is set to one in "PlaneOnOff" then all the bits in the corresponding plane are set to one, otherwise they are set to zero. The various combinations of "zero-ed" and "one-ed" bit-planes produce rectangles of various colors.

For a three bit-plane screen only three bits of "PlaneOnOff" are needed. Therefore the possible values for this field are: 000, 001, 010, 011, 100, 101, 110 and 111 in binary; or 0, 1, 2, 3, 4, 5, 6, 7 in decimal. By storing these values in the "Image" records connected with the "Colors" items, we obtain rectangles of different colors as the menu choices.

Summary

This completes our discussion of the new menu structure. Read the code in DRAWMENU to better understand Intuition menus. In the next instalment we continue playing with colors and add a requester that will allow the user to modify screen colors.



```
exclude := full;
EXCL (exclude, i); (* Remove i-th element *)
(* Now "exclude" contains the appropriate bit pattern *)
(* for the i-th color. *) ...
END;
```


Transcript

Do we really need another wordprocessor? Isn't the market already saturated with Amiga wordprocessors?

by Mike Hubbard

Transcript is Gold Disk's entry into the Amiga wordprocessing market. Why do we need another wordprocessor? Isn't the market already saturated with programs? No way. Looking at how many different word processors are out for the IBM and the Macintosh computers, our marketplace looks like it could use a few more products!

To navigate
around... Transcript
has bookmarkers!

the Amiga. The text is displayed as fast as I can type, no matter how large an article I used to test it. Text inserted into the middle of a large document is apparently displayed at the same speed as when you start the document.

The program's 90,000-word spelling checker is also the fastest I have used on the Amiga to date. The spelling checker is started as a separate Amiga task, working either from the Amiga's memory or from the disk, and it can be activated by either mouse or keyboard equivalents. What I did not like about the spelling checker was the need to run it before loading Transcript from the CLI - a message will state that the spelling checker is unavailable. You can use the *Tiny Window* option to shrink the Transcript editing window and then run TransSpell if you forgot to do so before starting Transcript. The spelling checker can also work as a stand-alone product, to check documents already written and saved to disk.

The program's maximum document size is limited by available memory. To navigate around in those documents, Transcript has bookmarkers to hold your place; four per document is the limit.

Transcript multitasks, so you can have several windows open at the same time. Now this is useful if you want to use an outline in one window, notes on what is being written about, and the article itself in a third window. Mercy, but ain't it nice to multitask!

Want one of the editing windows out of the way? Just use the *Tiny Window* option, which shrinks and deactivates the window. Clicking in the shrunken window reactivates and repositions the window.

Feel like changing a series of words to UPPER CASE for emphasis? Transcript has this feature for those (such as editors) with the need, and has the opposite feature of converting highlighted text to lower case. As for working with a portion of text, Transcript can quickly save a block - a portion of your document - to another file.

User options are easily selected with pull-down menus or the Function keys (Shift-F7 brings up the *Set Option* window). The window title bar can display either the name of the current document, or the size (in bytes) of the current article and the relative position of the cursor within the document. Insert mode is toggled on or off from this menu, as is the *Save With Icons* option. The colors for text, background, border, and title are selected here, too. Setting the cursor size and flash rate may not be important to some, but I like having the option of choosing if I want to change either myself, and Transcript allows this option. The cursor and other options apply to the window in which you set them, so you can have several active windows, each configured differently, to help you keep track of which one you're working on. The options are also savable and loadable as a configuration file on disk, one of which can be made the default.

As for printer options, they are the standard ones, but are simple enough for most users to select from the print requester without bothering with the manual. If you want to preview your document before printing it,

print it to the screen to see the text formatting. There is no guess work on how to select single, double, or triple spacing of text - just click the gadgets.

The manual itself was done with Transcript. It is 80 pages, and explains the features of the product quite well. I found more information by completely reading the manual than by skimming it and trying to use the index, but this seems to be true with most products anyway. The manual is small, but with a rigid backing, making it nearly impossible to keep open for reference while working with the product.

TransEdit, a scaled-down version of Transcript for *just* editing documents, is also provided in the package. TransEdit has all the features of Transcript, except printing and automatic hyphenation.

An area of text is normally highlighted to mark the area for editing, cutting and pasting. I did not like the way Transcript requires the user to select a menu item to turn off any highlighting, which is a waste of time. Overall, however, my impressions of Transcript are quite favorable (read THRILLED!). I think a thesaurus is an important and needed addition for the next upgrade for this fine product from Gold Disk. The authors of Transcript are none other than Nick Sullivan and Chris Zamara, editors of the *Transactor for the Amiga* magazine. Not meant for importing graphics, this serious word processor is for those of us without a need for pictures in our letters or articles.

Transcript, at a suggested retail price of \$69.95, is the bargain of 1989. •

--

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ORDER FORM 24

Pen Pal

This new word processor by Brown-Waugh offers a little bit of database, and a good bit of desktop publishing elements to warrant a look.

by Jay Gross

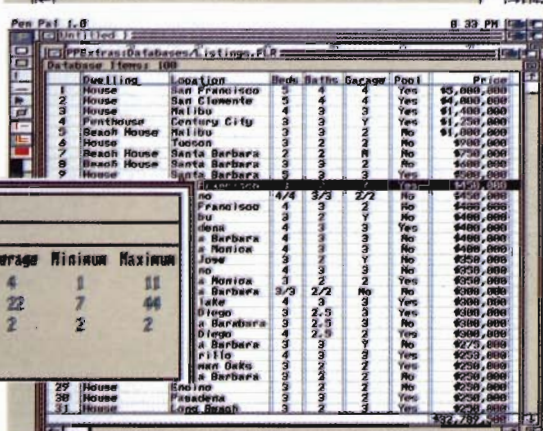
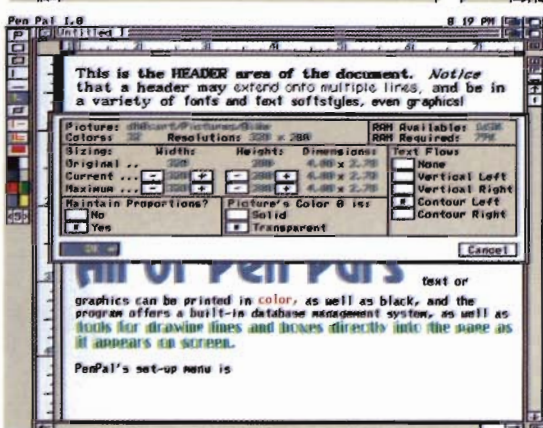
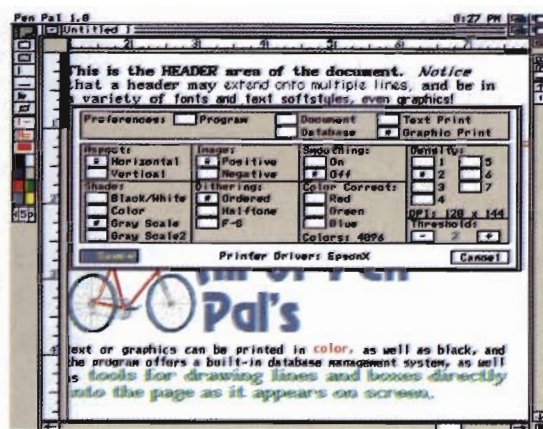
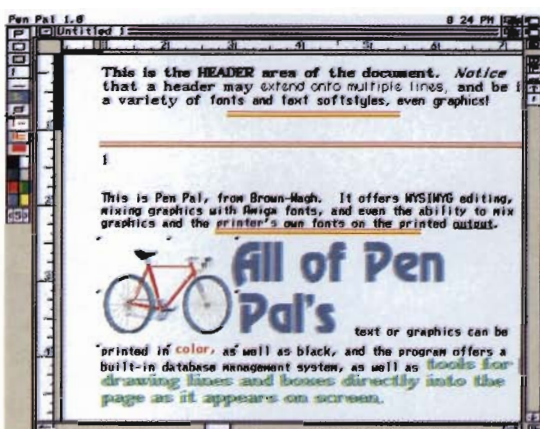
A Quick Look At Brown-Waugh's New Pen Pal

The already indistinct line between desktop publishing software and wordprocessing has got a good bit less defined with the release of Brown Waugh's Pen Pal, an integrates wordprocessor and database program with enough desktop publishing elements in it to almost call it one of those, too.

Pen Pal does the neat trick of combining the Amiga's screen fonts with graphics and stuff, all on the same page. Interestingly, it can print the pages to dotmatrix printers while still relying on the printer's (usually nicer-looking) fonts to do the text in. The result is a page that looks like you went to the trouble of formatting it with a block of white space, then sending it back through for a graphics print in the space.

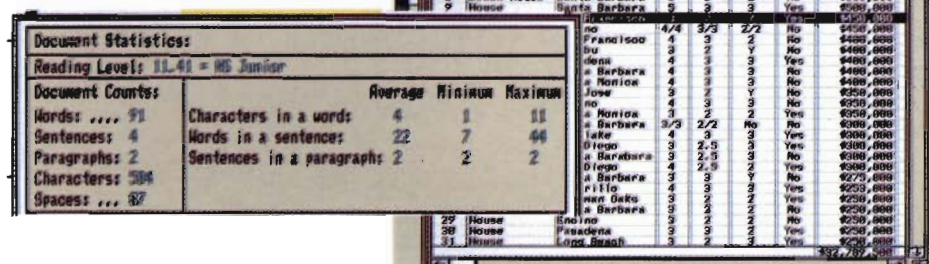
Except Pen Pal does it all in one pass. If you prefer to use the Amiga fonts, it does those, too, and regardless of which it uses, Pen Pal can automatically wrap text around irregularly shaped objects. So, if your object is (what else!) a Boing ball, Pen Pal will kitty the text around the curvature of the ball.

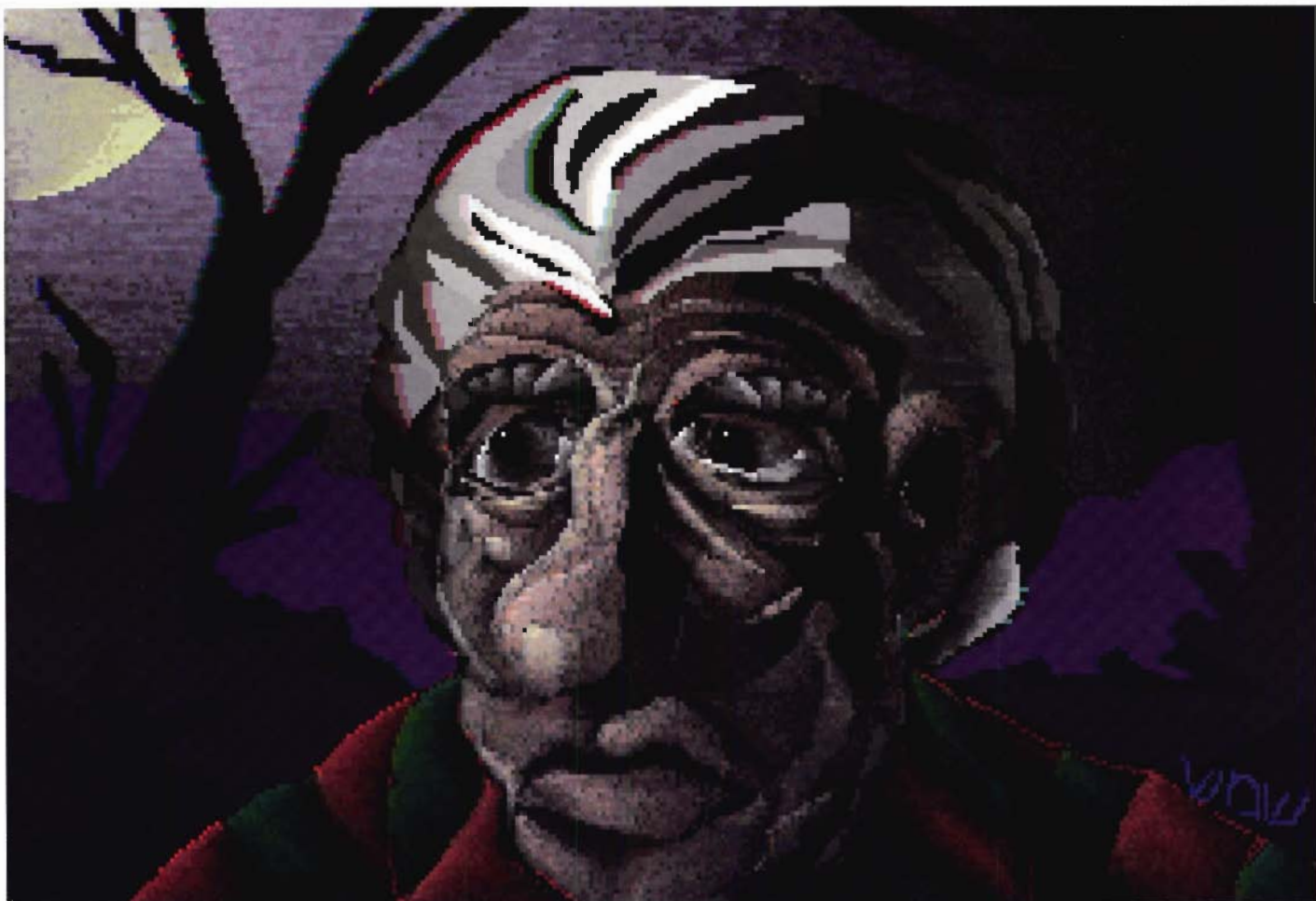
The program shows you Amiga fonts on the screen, so you have to do some adjusting to get a What You See Is What You Get display if you're using printer fonts. However, it's not difficult to achieve at all. The program can exchange data happily with its built-in database, which can also save out its records as an editable, ASCII file.



Pen Pal is a large executable, and requires a megabyte or more of memory to run in. It has a very elaborate (and nice!) set-up option for establishing paths to the files and utilities it needs. These setup options are particularly welcome in systems which have harddisk drives.

Pen Pal supports color printing, and its import of graphics is very quick. If you use the program in hi-res mode (it defaults to low-res, however, you can reconfigure its default), the output on the printed page is very closely matched to the size of the image on the normal Amiga screen. •

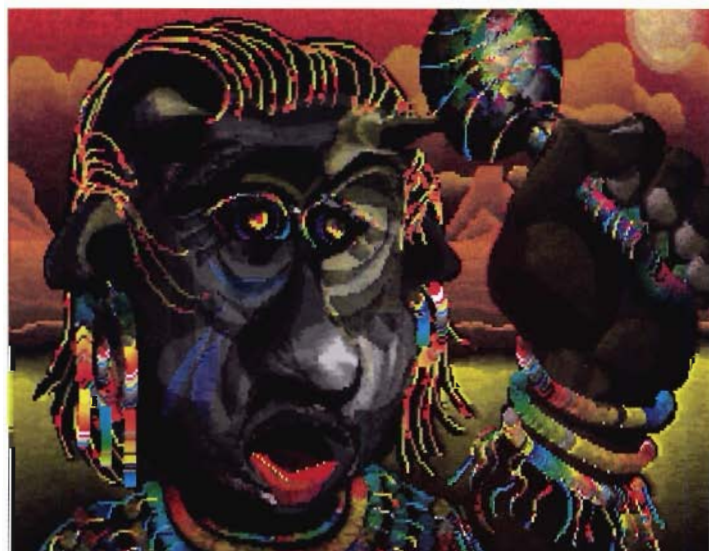




Above. *The Old Vermonter* - A tribute to a real Vermonter, a tough old friend who passed away this year. This painting shows the marvelous capabilities of the dithered fill routines, which can be layered in transparent blocks. All paintings by R. Shamms Mortier, PhD.



Above. *Caution* - A Sci-Fi fantasy that was created with the help of the STENCILING utility in Photon Paint 2.0.



Above. *Witch Doctor* - A colorful painting demonstrating the color cycling capabilities of Photon Paint 2.0.

Photon Paint

Now you can see the power of Photon Paint 2.0.

Countour, 3D and more

by R. Shamms Mortier PhD.

Photon Paint 2.0: It Just Keeps On Getting Better by R. Shamms Mortier, PhD.



Above. Original contour map in shades of gray to show the contours.

Let me summarize before I even begin. Photon Paint 2.0 was worth the wait, even if I do feel somewhat manipulated by the protracted PR and the repeated promises. Here are some of the reasons why.

So, What's New? Photon Paint 2.0's manual is thicker than 1.0, and with good reason. It contains many more tutorials than its predecessor, and more tools to reference tutorials to, as well. Unfortunately, Micröllusions still sees no need to include in an index, something which should be included on all serious Amiga software. Maybe, if we complain loudly enough, 3.0 will address that issue. Otherwise, though, Heidi Turnipseed has managed to put together a clear and helpful text, and her graphics expertise shows through the pages.

The manual suggests 512K of memory minimum for lo-res HAM and a megabyte for hi-res HAM, but I doubt you'll escape the guru for long without at least a Meg and a half. I run four and a half megabytes, and have still managed to succumb to memory problems with some intense painting sessions. Usually what happens is that each operation has to access the drive that Photon Paint is in, and specific menus just stop being accessible. So, save your work often, and avoid frustration in the wee hours should the fates decide against you.

The PROJECT Menu - the leftmost of the menu bar - adds some new capabilities. Photon Paint now boasts a simple flip-screen animation utility. The number of screens you can have loaded depends upon your RAM expansion units. I've had 15 full color overscan paintings on at one time, and could flip between them for editing. The manual says that it's possible to load in 30 lo-res non-overscan pages using two gigs of memory.

When you hit the "Print" command, a very different result is obtained from Photon 1.0. This time, a full print requester pops up, mimicing the gadgets in Workbench 1.3. There are choices for halftone and color output, margin settings, and RGB color correcting. A far cry from a vanilla print dump.

Under "Base Colors", you can choose to get the palette from the "next page" to facilitate moving

brushes back and forth. The "Alternate" setting now contains commands for adding more than just one alternate page, but addresses the new animation capacity of 2.0.

O.K., time to talk more about Photon's animation capabilities. Photon 2.0 offers basic HAM flipbook animation. You can insert and delete pages at any time, as well as appending to the end. When these pages are complete, a simple "a" keystroke brings up a small requester that allows you to flip through the pages in a set frames-per-second rate. Like other pageflipping utilities, Photon uses a delta compressing routine when saving the screens to disk. This means that only the differences in pages are saved, so that disk space is optimized. The pageflipping is really smooth - there is no HAM artifacting involved. You could easily tap this out to a VCR. The project menu offers the command "Video", which disappears the cursor for recording purposes. What few people realize is that you can also disappear the cursor by using the familiar DeluxePaint II keystroke "F8", which is nowhere documented.

The FAST Menu

Let's see what new toys 2.0 has for us here. The most interesting is that the scissors can now cut out brushes in three different fashions. The normal scissors tool "cuts" out a brush based on a rectangle defined by the crosshairs; the "Lasso" tool allows you to draw a freehand boundary around a shape and to cut it out as a brush; and now... (something I remember asking for on my reply card) a polygonal cut-out brush feature. This allows you to cut out a brush shape with a series of straight lines drawn around the object. It's great for cutting shapes out of thickly colored backgrounds, and is the same feature found in DeluxePaint. There is also a new polygonal fill tool, accessed by double clicking the "line" tool.



Another new (and sometimes annoyingly redundant) feature is a cousin to the countdown numbers that appear when you perform computer-intensive operations (wraps and grabs). Now, in addition to the 1.0 numbers that appear on the fast menu, there is a percentage figure that counts upward and that is attached to the cursor. One or the other would really do fine.

Above. The same contour map translated to 3D by Photon Paint 2.0.

Continued On Page 70.

What To Keep An Eye Out For In This Issue's 2 Disk Set.

Productivity

Thinking About Hypertext?

Then think about Thinker! This working demo of Thinker is available for you to try on disk.

StockSheet - A Worksheet

This is a spreadsheet worksheet designed to track stock market stocks. You can use it as is, or convert elements of it to your own applications. Of course you need a spreadsheet program to make it work.

Utility:

This icon driven utility will let you switch between your normal Workbench, and a HIRES Workbench screen without going to preferences, and without rebooting.

Video.Toolbox

These icon driven utilities include:

BarsnTone: For adjusting video and audio levels.

Lace: Simply toggles the interlace mode on and off.

Lacer: If interlace goes off, Lacer will turn it back on after less than one second.

Confuser Font

The Confuser Font is a 2-D representation of a large 3-D font. Capitals and numbers only. You can use this font from your favorite paint or word processing program.

PopDir and PopInfo Utilities

PopDir and PopInfo are neat little ditties for getting the directory of a disk, or for getting the computer's "info" display without

having to dig up the Amiga Workbench, and without having to open a CLI window. The trick is to drag the icon (whichever, or both) onto your work disk. Then, without further ado, you can click PopInfo or PopDir and see what's what. PopDir is especially useful for Amiga owners who have only one disk drive.

Graphics

DRAW - Paint Program

The program DRAW is Richie Bielak's continuing, demonstration program for his draw program techniques in Modula-II series of articles.

Fujitsu Printer Driver

In the Printerdrivers drawer is Fujitsu DL3400, an AmigaDOS 1.3 printer driver for the Fujitsu DL3300 and DL3400 printers.

PICTURE: Just For Fun

Did you ever wonder how the world got along without batteries?

This picture clears up that mystery. Art by John Thompson

IMG Scan Demo

IMG Scan is a combination of hardware and software that allows you to digitize pictures in 256 gray scales with resolutions up to 360 dpi. This demo allows you to see the interface that makes all this possible.

Trouncer Animation

Trouncer.ANIM is an animation that illustrates STENCIL painting/animation techniques within DeluxePaint III.

Cel Animator Demo

This demo will load the Horse & Rider animation. With this demo you can get a feel for this animation product by MicroIllusions.

Music

Music From Down Under

The talented Vincent Chu provides more great SONIX music for your listening pleasure. All music is playable right from the magazine!

Games

SimLoan

Help For Impoverished Sims. The game lets you sneak money. Well, this program will let you borrow money to build or rebuild your city. Then you can repay the money.

This is done in the real world, and the government occasionally calls this "defecit spending".

SeaHaven.Demo

SeaHaven Towers is a solitaire card game by UnSane Creations. Beware, it is addictive.

Play at your own risk. And dare to try the pull-down menu option called "CHEAT"! Just double click the icon to begin.

All this and so much more. When you run the disk magazine portion, it will tell you about more of the items in this issue!

The A.X. Magazine Two Disk Set

DISK INSTRUCTIONS

1. At the Workbench prompt, boot with your favorite Workbench disk.
2. After your Workbench screen has appeared, place the magazine disk (AX1:) in any drive. A few moments after you do this, an A.X. disk icon will appear.
3. From here, everything is point and click. Double click the disk icons to expose more icons. The MAGAZINE icon will begin the central magazine interface. Other animations and items can be started from their icons also.

2 Amiga Disks Full of More, More, More.

THE DISK PORTION OF A.X. MAGAZINE

The user interface which drives the disk portion of this magazine is state-of-the-art in every way. The entire interface is written in 100 percent Assembly language to be quick and smooth.

As you read the articles, you are not just looking at text. We have integrated graphics and illustrations right into the text, and the entire thing smooth scrolls. Then we added sound and music on top of it all, to add to the multi-sensory experience. In addition to the articles, there are some useful Amiga system utilities, as well as other executable programs that can be run directly from the user interface.

Beginners will be happy to know that the interface is designed to be extremely simple to use. Just point and click. Yet, it is designed to also be quick and efficient for more advanced users. Single-drive owners will delight in the fact that you don't have to constantly swap disks to use the magazine. In the Table of Contents, articles are marked as to which disk they're on. So you will know in advance if you must change disks. And even then, you will only have to change disks once to read an article, show a picture, run a program or whatever.

The disk portion of A.X. Magazine is organized in the same way as the table of contents of this issue. For instance, everything shown in the FEATURES/COLUMNS section, can be found in that section on disk. The only difference is that there is more on the disk portion than is listed in the paper table of contents.

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1-301-220-1296

Modula II Source Level Debugger

Avant-Garde software ships a Source Level Debugger for their Benchmark Modula II product.

by Jay Gross

Avant-Garde Software has shipped the Source Level Debugger, a new programming utility for the company's Benchmark Modula-II compiler package. The product operates on source generated for Avant-Garde's compiler, and flags the source when an error occurs or when a breakpoint is encountered.

The product has an object-oriented user interface, to ease the strain of debugging. It allows execution of a program under manual control, permitting one statement or group of statements to be acted on in turn, in order to step through the program in search of bugs and problems. Through the debugger's windows, you can examine the contents of procedure and module variables - the fields in a record, for example, the elements of an array, or the value of a pointer.

The program comes with a large, softbound manual. Here are some specifics of the new debugger's features:

Source Window: Displays the source code for a program and tracks the current program position. Set or clear break points by using the mouse to select statements.

Symbolic Data Window: Examine the current contents of procedure and module variables in the high-level form in which they were defined.

Memory Window: Browse through memory in one of many useful display formats. Display formats include floating point, character, string and number.

Disassembly Window: Displays the assembly language instructions of the program and tracks the current program position. Set or clear break points by using the mouse to select instructions.

Registers Window: Examine the contents of the CPU registers and the status flags.

Procedure Call Chain Window: Displays a list of procedures which have been called. Use

the mouse to select a procedure to be examined.

Module List Window: Provides a list of the modules contained in the program. Use the mouse to select a module to be examined.

Break Point Window: Displays a list of the break points which have been set at various points in the program.

Information Window: Displays information from system lists including message ports, resident libraries, devices, tasks and resources.

Directory Window: Allows files to be selected using the mouse, rather than typing in the filename.

Complete Customization: Open as many windows as you wish, adjust the colors until they are perfect; set up the options, and then save the entire debugger configuration to a file.

Execution Control: You have complete control over the execution of your program at the Modula-II or Assembly language level. Single-step one statement at a time; run at full speed until a break point is encountered, or run at slow speed to monitor the actions of your program.

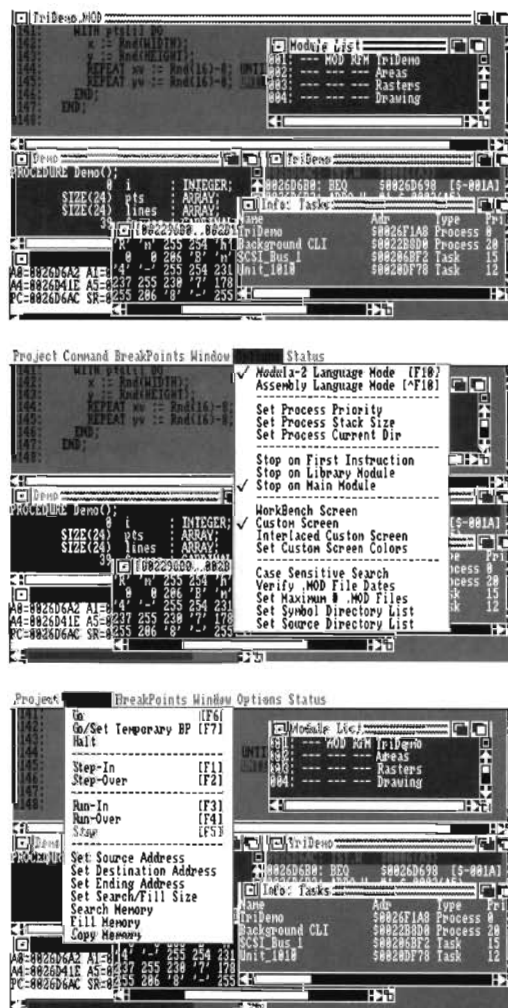
Post Mortem Debugging: It's almost like having two debuggers in one. By using a module included in the package you can debug a program which has actually stopped due to a fatal error. "Crashed" is the official computer terminology. The Post Mortem Debugger lets you examine and change the variables of the program and then continue execution.

J:

Avant-Garde Software

2213 Woodburn
Plano, TX 75075
214-964-0260

Requires Benchmark Modula-II compiler



Better Dead?

*Just when you thought all those little
beasties were gone...*

by Bill Miller

Thought you got rid of all those mean little nasties in Space Invaders didn't you! The people at Electra sure didn't think so! They found more of those stubborn little buggers in the closet and came up with Better Dead than Alien. This game not only resembles Space Invaders, but it does a so-so job of mimicking Galaga and Asteroids. Brad Zoom, the typical Buck Rogers-type superhero, seems to have found himself stuck on the infamous planet Mars with an amazing collection of enemies. Your job is to guide Mr. Zoom through the alien-infested surface of Mars, blasting everything you can set your sights on.

When you first rip open the box, you will be astounded by the sheer volume of information you receive. It might serve as a placemat for a small child. Who needs any documentation when all you have to do is shoot anything that moves? Well, to tell the truth, you do need to know a few things. Like, what those eight little bars in the lower right hand corner of the screen, are, and what those eight funny icons are.

Once the game is booted, you're confronted with a screen that looks like a 1950's comic book, complete with 12 cents price tag. Better Dead than Alien looks pretty good from the title screen, but you're in for a disappointment, though not just yet.

When the option screen comes up, you can choose whether to play this game with one or two players. It makes life on Mars a whole lot easier if you have a clone of Brad Zoom fighting alongside the original. The option screen also allows you to skip other levels if you know the name of the one you want to go to. It's therefore important that you remember the name of each level, so you can return to it later.

Now to "Start the Slaughter" (the other option on the start-up screen). You will notice six nice, neat rows of aliens, just like your everyday, run-of-the-mill Space Invaders. Below these is Brad's ship, a fine looking one, if you like traveling in things that get shot at. Here's where the disappointment starts. The aliens and the ship are well drawn, but are not animated very well. The sprites, instead of deftly moving, jump and jitter across the screen.

Yes, the aliens, dive-bomb, ala Galaga, scrolling off the bottom, back to the top of the screen until they're destroyed, but they never seem to move as smoothly as they should.

Ah, Brad's control panel. You will notice eight bars in the lower righthand corner of the screen. They show how much energy you have left. You start with three of these bars fully charged and are quickly destroyed if you haven't found out what those eight icons are for above the energy indica-

tained from the stricken alien. Needless to say, these "Power Pellets" are the key to keeping Brad alive long enough to make the high score list.

After completing the first few screens of neatly ranked aliens, you will be come to the Asteroids-type part of the game. You have just entered an Asteroid or Meteor belt and must clear the entire area of rocks. This would be good, except that Brad's ship doesn't rotate like the ones in Asteroids. It moves up and down, pointing north to south, just like in the Space Invaders part of the game. This is either a twist to Asteroids, or a blunder on the programmers part. Likely the former, but it sure becomes a pain when you have a lot of asteroids around and can't shoot until you line up with a rock in front of your gun. This screen has a little better frame-rate than the Space Invader type game, but it still is very slow.

Every once in a while, you come upon a screen which has no game to compare it to. It seems that a large alien has made a habit out of getting in your way every few screens. The object seems to be to either destroy it or hit it several times so that it will go away. There isn't much reason for this screen, except maybe that it breaks the monotony of shooting beady-eyed aliens and rocks. Here again, the objects do not move very smoothly.

There are a few other things that make Better Dead than

Alien fairly good. The sound of fiendish laughter as Brad's ship is blow off the screen is a nice touch. Also, the applause when you make the immortal list of alien killers is also a real surprise. The game has good graphics, but very poor animation. It'd be best if you could play the game on the store machine with the store copy and spend money on something else.

Alien fairly good. The sound of fiendish laughter as Brad's ship is blow off the screen is a nice touch. Also, the applause when you make the immortal list of alien killers is also a real surprise. The game has good graphics, but very poor animation. It'd be best if you could play the game on the store machine with the store copy and spend money on something else.

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Than Alien?

Disney Goes Amiga

Disney/MGM Studios Epic Park

by Jay Gross

When the Disney-MGM Studios Theme Park adjacent to Epcot Center and Walt Disney World in Orlando, FL, opened the gates, *guess* who was in charge. The Amiga! That's right, much of the technical operation of the exhibits theatres is controlled by Amigas, selected for (ahem!) their ability to multitask.

Disney-MGM Studios Theme Park is a sound installation of truly epic proportions, and a recent one, too. Its grand opening was May 1. An attraction of

the park is a "stunt" theatre, the Indiana Jones Epic Stunt Spectacular, where a second-unit movie stunt crew goes through the motions of filming so the

tourists can get a vicarious thrill without risking their own necks - and without even visiting Hollywood. To achieve the illusions and realism, as Disney is known worldwide for doing in *the* most spectacular manner, the theatre spares no expense, heaping attention upon the finest of small details. Behind the scenes is a very sophisticated, computer-controlled system that pretty much runs the show. Computer sophistication is another Disney hallmark. Kind of tells you something, doesn't it, when you learn that the CSIC (Computer System In Charge) is an Amiga!

"We've put together sets and sound system to give the audience a real thrill," said Bill Platt, manager of design for creative entertainment at Disney, and quite adept as well at the fine art of understatement, it seems. Platt was in charge of the design of the theater along with K. C. Ladnier. "There are live theatrical things going on, along with pre-recorded sound effects and music tracks."

Disney does things on a grand scale, and the stunt theatre is no exception by any stretch of the imagination. The installation's sound system pumps out more than a million watts of audio power.

"We have several systems coming on line



that are pretty unique," Bill said. That "unique" stuff includes a gigantic array of computer-controlled EPROMs which contain digital, sampled sounds. Those are Erasable Programmable Read-Only Memory; it's like computer RAM, but not randomly accessible like in the computer. There are also two Sony 2500 DAT machines for mere music playback. "DAT" means "Digital Audio Tape" - they're like tape decks, but digital, instead of analog; read "*high quality to the max*".

For sound effects, announcements and some of the earthquake effects (!), the theatre has a nine-rack, Nuoptix system of 16-bit EPROMs. Ambient sounds are supplied by an Otari eight-track tape deck. When it says "Otari" on it, it's decidedly not what you might be thinking of as an eight-track tape player. And that's with an "O" not an "A", too - this is not a misprint! A Yamaha PM-3000 console does mixing, slicing and dicing, blending and filling for all that audio gear.

Oh, you read right. That is indeed "earthquake effects." A million watts of audio power definitely rates a place on the Richter scale, but it also does a pretty convincing job (along with some other Disney magic) of simulating an earthquake.

The master controller for the

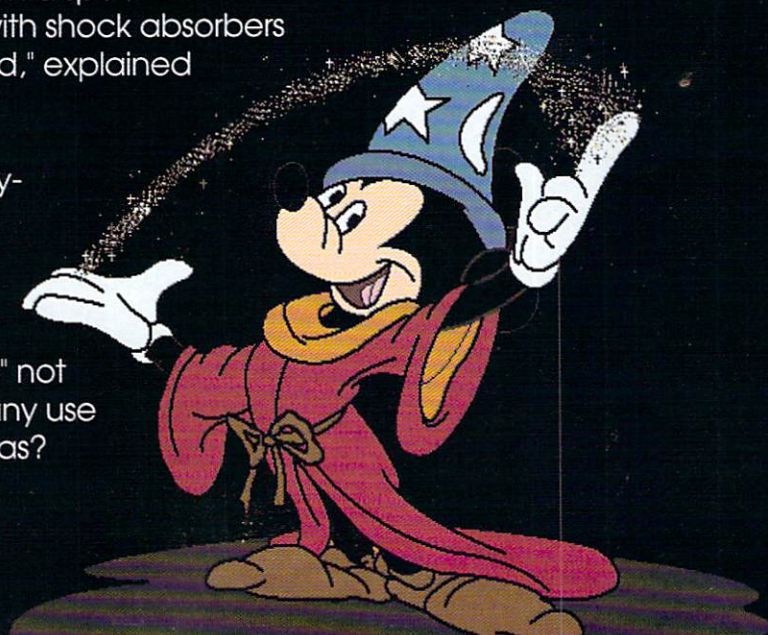
whole set-up is a computer program by Richard Sound Design of Vancouver, Canada. The program runs on (aha!) an Amiga. It acts as a router and switcher for all the EPROMs sounds, as well as handling a whole rack of hardware electronics controlling the automatic panning and routing of EPROM sound effects to the appropriate speakers. Get it? "Automatic" panning... to the appropriate speakers." This stuff is slick!

"A surround sound system provided by Richard literally looks at all the speakers as individual outputs," said Bill. Oh, and the system comprises more than ninety speakers, driven by Crest amplifiers, Model 4001s and 8001s. Big ones.

For the earthquake effects, there are over 64 18-inch speakers (Meyer EAW KF-850's) loaded into 32 dual cabinets. "The earthquake system is mounted in the ceiling grid on a special catwalk system with shock absorbers overhead," explained Bill.

Now, anybody want to talk about "business" not having any use for Amigas?

J:



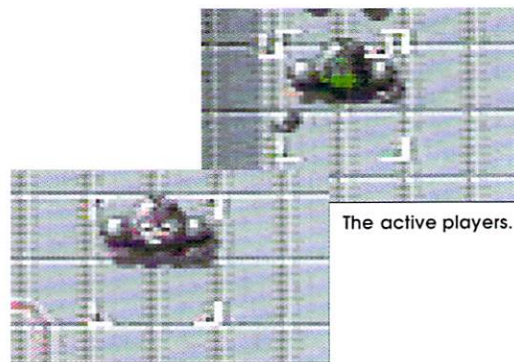
Speedball



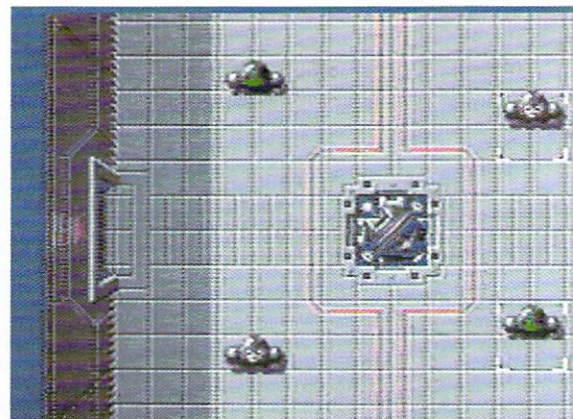
Choose your representative.



Battling it out midfield.



The active players.



Waiting for the speedball from the center shoot.

Death Bringer



DeathBringer: Bring Your Own Sword
by Mike Cooley

Cinemaware's new "Spotlight" title, DeathBringer, enters the software ranks of fantasy role-playing alongside such greats as Dungeon Master, Bard's Tale, and Faery Tale Adventure. The first thing to catch my attention was the poster, which depicts the hero deflecting a fireball away from a beautiful damsel.

Wow. Not the poster. The damsel.

After getting that out of the way, it was time to get down to business. Popping disk one into df0: and disk two into df1:, I sat back and started to skim through the documentation. Within a minute, the program prompted me to please insert disk two. Hmm... Thumbing back to page two of the manual revealed that this game uses only one disk drive, even if you have two. Yikes. First impression was lots of disk swapping. Luckily this proved otherwise, as all of the game play is done with the second disk. Relief.

As the game opens, you stand in a room inside the Palace of Secnar. A few blurbs float across the message bar asking you to search for the five gems of Zator which when brought together supposedly

GAME REVIEW: Cinemaware's SpeedBall

by Mike Cooley

Ever wonder what Mad Max did for entertainment? What kind of sporting events would survivors of a nuclear blast like to play? Well, here's SpeedBall. Cinemaware's latest release under their new Spotlight logo is more than just another sporting event. It's a challenge to your ego!

Speedball captures all the thrills of major sporting events such as soccer, rugby, and even, to some extent, those annoying foosball games that were so addictive in the arcades. To the casual observer, this game may seem to be repetitive and boring, but to the avid game player this game presents an obstacle which must be hurdled to maintain one's sanity! When booted on a properly configured Amiga (meaning patched into the stereo), this game transforms your ordinary room into a 21st-Century arena where many will surely lose their grip on reality. Only with the right combination of moves will you emerge the victor.

SpeedBall is a very well written game which combines stunning graphics with mind-tingling sound effects. Combine with these the slick animation and you have the beginnings of a classic game. The object of the game is to

score more goals than your opponent. Sounds easy enough, right? Ha! Standing between you and that ever-glorious goal are six opponents ready to knock you to your knees and swipe your legs from behind.

The controls are pretty straight forward. You control one man at a time with the standard up, down, left, and right movements of the joystick and the fire button to hurl the steel ball towards its destination. If you press and hold the firebutton for a slightly longer burst, the ball will shoot upwards into the air above the players. You can then jump for the ball or try to anticipate its trajectory and run to where you think it might land. Remember to flatten that opponent on your way, or he will surely return the favor once you grab hold of that ball.

At the opening of each round of play and after each point scored, there's a face-off in the center of the arena. A large rotating sphere emerges from the floor whose only purpose is to eject the ball at a random time and angle. Your fingers sweat as you try to anticipate when and where the ball will be ejected onto the playfield. Crucial to a good offensive is being able to anticipate and get that initial jump on the opponent. Game play ends only when the timer runs out. No penalties!

Other features include picking up coins that randomly appear on the playfield to buy extra items between rounds. You can increase your power, strength, and stamina as well as reduce your opponents' with these valuable coins. If worse comes to worst, you can resort to bribing an official or timer for more time or extra points. There are also other pellets that will appear on the playfield, but it's up to you to figure out their effects. Some cause the opponents to freeze in their tracks or to start running in the wrong direction. Others will shoot out power balls while you make your move toward the goal.

Game variations include one player knockout where you must win two out of three games to advance to the next round, one player tournament where you play in a league and you see how you compare with the computer teams after each round, and the ultimate - two player. The game is very addictive and will keep your attention for many nights, especially if you and a friend are battling to see who will strut away and who will sulk away from the awesome Amiga!

--

bestow great powers. Grab for the mouse and make a quick turn to the south, and head off into the palace. After getting lost after about the first 20 moves, I decided it would be wise to do a little mapping.

To move your character around the lands, you click on direction icons with the mouse or by using the arrow keys on the keyboard. In the bottom left hand edge of the screen are six icons which represent actions or give important facts for gameplay. They include a compass that constantly displays which direction you are facing, a heart which will display your vital information, a sword to choose which weapon is to be active, and two icons for choosing a potion or spell. The remaining icon pulls up the subcommands like talking to inhabitants, opening doors, buying ale, and saving a game.

Quickly mastering the user interface, I was ready to venture forth. After quite some time, I finished mapping the initial palace and was ready to venture elsewhere. Now where could one of those gems be? Well, the documentation was no help, so onward I went, exiting the palace and out onto the lands of Mezron. I encountered many travelers in the open land and first inclination was to draw my mighty... *dagger!* Ahem! Alright, what's the deal? I'm to recover all five gems and I have only a loaf of bread, a lantern and this piddly dagger? Lets get real. So, the first matter of business was to find myself a weapon worthy of a self-proclaimed legend such as myself. In my search for a weapon, I decided to try talking to these seemingly

homeless nomads, and in the process I got clues to the location of one of the gems. Now I had two quests.

Only with the right combination of patience, diplomacy and brutality will you find all five gems. Combat occurs when you encounter an unfriendly foe or decide to take out your frustrations on one of the peasants. To fight, you ready your weapon and point to the enemy with your mouse pointer. With one mighty push of your left mouse button you decide the fate of many inhabitants of Mezron. Clicking on the spells icon brings up a list of available spells. Selecting one will automatically invoke its wrath.

There are many caves, towers, huts, and forests to explore, so it is doubtful that you will finish the game in a short time. All the screens contain superb graphics and sound effects which keep you playing for hours on end. As with most games, I do have a few complaints, and I found some bugs. First, the save game option only allows *one* saved game per disk. This means you must invest in a box of ten disks and keep track of which disk contains the game you wish to retrieve. If you were in a cave, castle or forest when you saved the game, then watch out. When you retrieve that game, your compass will most likely be *backwards*. North is now South and East is now West. This little bug can cause hours of torment if you are mapping.

Another bug deals with the gems. I had just captured one of the gems and was making my big escape to safety. But one last step brought

me to my knees. What? Out of *Stamina*. Grrrr.. No problem. I pulled out my save disk, loaded up a saved game and headed back to the previous encounter. Strangely, when I looked at my status, I noticed that I still had the gem that I had captured in the previous game. I haven't figured out whether this could be advantageous to the adventurer.

Besides the few bugs, DeathBringer proves to be a game worthy of purchasing. If you have DeathBringer, you also have Galdregons Domain. It comes in a different box, but it's the same game, exactly. Galdregons Domain, also written by Pandora is the European version of DeathBringer; oddly, both are sold in the U.S.

Well, back to the labyrinth to face Medusa - at last I can draw my mighty Magical Sword!

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What's Up?

The Amiga that is. And it's popping up in more than a few places. Slowly the Amiga is making inroads, but is it surviving in the real world?

by Jay Gross

What's Going On?

Dig through issues of video magazines, computer magazines, sometimes even PeeCee magazines, and even the non-computer press, and buried in the material here and there you'll find mentions of the Amiga. Many of the publications go to the trouble of bashing Commodore for failing to market the Amiga, and a few bash the Amiga, but grudgingly or not, most pay at least some respect to the machine.

Lately, this phenomenon has picked up steam. For one thing - though many people would never know it - the Amiga has starred in television and movie productions, not as a producer of them (though it's done that too!) but as computer characters in the movie. So, almost everyone has seen an Amiga, even if CBM hasn't bothered to tell them what one is, or can do.

The July issue of *Computer Graphics World*, a journal mainly of high-end (expensive!) graphics computing, features the Amiga in a rather complimentary, four-page article (though there are some barbs and inaccuracies). Moreover, the Amiga was recognized by two video magazines at this year's National Association of Broadcasters show as the "Most Useful Video Product of 1988." One of the pure-PC magazines even suggested the Amiga as a good thing for people to resort to - while waiting for PC's to get true multitasking. Indeed, even one of the stubbornest of the dyed(blue)-in-the-wool anti-Amiga magazines, *Byte*, has lately mellowed out somewhat. Is the Amiga on the verge of making its presence known in the regular computer press, thus to be proclaimed to the real world?

The fact is, if you dig a while, the Amiga has already made it in the real world. With all the hooplah about PeeCees being "the machine of business" there are an astonishing number of exceedingly serious-business applications which don't center on, much less go ga-ga over, PeeCees. The Amiga crops up in those places, holding its own in the heady company of Sun, Waveform, CubiComp, AT&T Pixel Machines, and Unix boxes - all with pricetags that make Mercedes-Benz seem bargain basement.

Around the country (and the world) there are many Amigas serving in enormously high-tech applications. At a major research hospital, for example, an Amiga monitors ambulatory patients' vital signs, fed to it from little transmitters the patients carry with them! Each patient, as well as each item being tracked, is another concurrent "task" to

the Amiga. And now you know why PeeCees and Macs weren't considered for the job.

At NASA, Amigas monitor multiple data streams at once while updating a graphic display of the data as another simultaneous task. The Amiga figures prominently into NASA's computer population. The agency has more than a hundred. And remember the Super Bowl scoreboard display? Amigas.

The newest, highest-of-the-high-tech, attractions you can visit at Walt Disney World near Orlando, Florida, is controlled by an Amiga. If you doubt the Amiga's ability to multitask, listen while the music plays during the earthquake! Disney Studios in California uses Amigas to prototype animations for their bigtime productions. ABC television uses Amigas to overlay animated graphics on national, broadcast television, and to prototype intros and animations before rendering on CubiComp and other high-end, high-ticket equipment.

The Stanford Linear Accelerator lab runs on Amigas. The Library of Congress operates one of the earliest applications of the Amiga's graphics power. General Dynamics uses Amigas. Michelin Tire uses Amigas. CNN, the University of Vermont, educational and cable television stations and networks nationwide, Wheel Truing, General Motors, the national television of New Zealand, airlines and airports... the list goes on and on.

Is the long-kept secret of the Amiga slowly leaking out, at long, long last?

Did you know that it is currently not possible to desktop publish this magazine on *anything* but an Amiga? The reason is all the color. Although there are many quality programs for desktop publishing on Macs and PeeCees, none can color separate (to PostScript) page layouts containing bitmaps. The Macintosh products that support color seps either do not support bitmaps, or don't support page layout. Proof? MacWorld recently made a big deal out of converting their magazine to desktop publishing on (what else!) Macintoshes. They admitted they have to use conventional color sep methods, and didn't save any money. Maybe they should just buy some Amigas, eh?

Oh, but while all this wonderful stuff is taking place, the competitors - unlike CBM - aren't sitting on their hands. Apple is heavily promoting the Mac-II into professional video markets, a place it has zero legitimate claim to. Yet, given the ingenuity of Apple's marketing and the cleverness of their third-party developers, there's no question that the Mac-II will (at whatever price) somehow carve out a place for itself in video. This while

CBM keeps infuriatingly silent?

We'll see.

Recent issues of several of the desktop publishing magazines contain a rarity. An actual advertisement for the Amiga. Same with some of the music magazines, and even the occasional issue of the *New York Times*. It's but a drop in the bucket, and although the ads are slickly produced, they don't get right down to the nitty gritty and tell people what they need to know. For example, the information that the desktop publishing ad is color-separated on the Amiga is buried in the ad copy. Would Apple do that? No! They'd buy double-page spreads in every publication on the planet and haul out the nine-hundred-point type.

Some of the time, it's an exciting thing being an Amiga owner in these times, when the world is sort of "discovering" the machine, and when the software and development is getting really hot and heavy. It's also frustrating, knowing the power that loafs inside this smart little box and watching while CBM's dallies away.

Once the only repository of color on the affordable desktop, the Amiga now has serious competition. Apple's Mac-II invented color a little over a year ago, and the company has skillfully and effectively marketed it ever since. That crowd previously claimed color was useless to business, but their tune has changed to saying color is a pretty nice thing to have after all (And please make the check out to...). IBM announced to the world (no kidding) that they have *invented* multitasking.

To keep up, the Amiga is in the process of developing new tricks, some of them at the source - CBM - but most by the ingenuity of the Amiga's third-party developers. Paint boxes that work in 16-million colors on hardware yet unmarketed. New displays, new expansion possibilities, and maybe even a new customer base (Unix). There's a new Amiga operating system in the works (AmigaDOS 1.4) which will include an upgrade of the specially designed custom chips that give the Amiga its uniqueness, its power, and its multitasking (and most everything else). With the promise of higher screen resolutions, it's been a long time coming, and will yet be a little while longer - anybody's guess as to when, but every minute it waits is precious.

Where once the Amiga's boast of 4096 colors was a desktop phenomenon, there are now several

Continued On Page 66

CAD Parts

CAD Parts Clip Art for IntroCad by Brian Roberts

Cad Parts from East-West Software is "an extensive collection of the symbols used in electrical and electronic engineering design." So reads the back cover of the manual included with CAD Parts. Indeed, the list of component symbols provided is formidable.

The symbols are divided into four libraries: TTL ICs, Solid State Devices (SCRs, Diodes, Transistors, Linear ICs, etc.), Passive Components (Resistors, Capacitors, Transformer, etc.) and Other Symbols (Antenna, Ground, Relay, Switches, etc.). The libraries are designed for use with the IntroCad program from the people at Progressive Peripherals & Software Inc.

An alternate package, not under review here, offers the symbols in Aegis Draw/Draw2000 format for use with those CAD products. The Aegis file format is also honored by some other programs.

Overall, CAD Parts is a nice collection of symbols. The scale of the components is consistent throughout the 4 libraries, an attribute greatly appreciated by a weekend hobbyist like me. After several false starts with various paint programs to design such a library, I picked up IntroCad with grandiose ideas. The drudgery of drawing each different IC soon got the better of me, and the library notion faded away. I resigned myself to drawing each IC and resistor every time I mapped out a design.

With CAD Parts, the dream is alive once again, and I wouldn't begin a design session without it.

There are a few very minor flaws in the collection, however. Some ICs are drawn with pins, while others are not. This is an inconsistency which I will remedy slowly but surely in my library as I use each IC without pins. Also, noticeably absent from any of the IC components are pin numbers. The input and output signals are labeled as to their function, but the pins (when present) are not numbered. A big black mark for this omission.

One last point: The IC library is not complete and justifiably so. Providing every IC known to man would have been ridiculous and a waste of space. What should have been provided, however, is a template (to scale with the other components) of several different ICs (8, 16, 20, 22, 40 pin, etc) and a set of letters and numbers (also to scale) to provide a means of drawing that exotic (the NCR SCSI chip is not provided) or mundane (a 7400 or 7406 would have been nice) IC. This would have come in handy for drawing the 74LSXXX series of ICs also.

CAD Parts lists for \$24.95. This collection of symbols for IntroCad is a nice base for building that definitive library of pieces and parts you use most often in your designs. However, the missing pin numbers, pins and templates for additional ICs somewhat limit this package's appeal for someone who designs boards with more than a few ICs. Even so, with a little work, the templates I described above could be formed by editing the existing symbols. •



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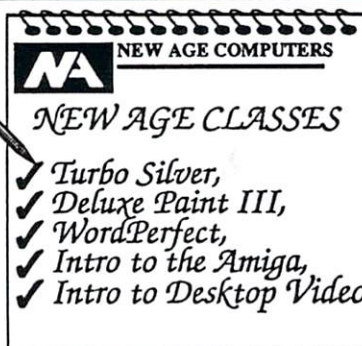
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Getting Started *with* On The Amiga

by Mike Hubbard

Few people claim C is easy to learn,

and it is not generally recommended as a first computer language, since some of the language's concepts can be difficult to grasp. There are some helpful tools, however, in addition to a good C compiler, that will be of invaluable help in learning the language. This is an overview of some available C support materials, to help you choose the tools you need.

The three most important items for Amiga C programming are: a good C compiler, a good text editor, and documentation on C.

The three most important items for Amiga C Programming...

Compilers first. There are three public-domain C compilers: PDC, Small C, and Sobon C. All three of these are in Fred Fish's library of Amiga freely distributable software - on disks FF 110, FF 141, and FF 171 respectively. These free compilers lack most of the features of commercial C compilers, however.

Of the commercial ones, the Manx compiler is currently in version 4.0, and has a "feel" more like a UNIX environment, considering its command structure and the Z editor which resembles UNIX's vi. It defaults to using 16-bit integers, which execute faster than larger integers. The Lattice compiler was the original Amiga C compiler, is currently in version 5.0, and defaults to using 32-bit integers. Currently, the Amiga market is about divided fifty-fifty in compiler camps. Picking between them isn't easy, since both companies offer updates at a reasonable

price, provide a debugger to check code with, and provide good customer support. Sourcecode created for one compiler, however, won't necessarily compile on the other without some modification.

When you're ready to make your choice between these compilers, ask the people who know. Read the magazine reviews, and consult people (from your local Amiga User Group, for example) that have used the compilers.

First Steps

Before you do any compiling, you have to get the sourcecode into a text file. Enter the text editor. There are many Amiga text editors to choose from, both public domain and commercial. Editors come with a variety of options. A good editor will have pull-down menus, should allow multiple windows open simultaneously, and shouldn't take up a lot of memory while in use. An editor should be chosen for not only what it can do, but also how easy it is to use.

Although not in the public domain, Ed, Edit, and MicroEmacs editors come with Amiga-DOS' Workbench v1.3. Many programmers swear by MicroEmacs. DME is an outstanding public domain editor written by Matt Dillon, and it's available on the Fred Fish disks, too. TxEd Plus, CygnusEd, and Uedit are some other outstanding commercial text editors for the Amiga. These programs are loaded with features and well worth buying.

What to Type

A good shelf of C documentation has got to start with *The C Programming Language*, by Kernighan and Ritchie. This book is the definitive C reference, although it's not the best book for learning C from. *Programming in C* by Stephan Kochan is an excellent book for learning about the specifics of the C language.

Some additional books important for C development on the Amiga include the Addison-Wesley Amiga Manuals and also *Inside the Amiga with C*. The four manuals from Addison-Wesley cover: Intuition, Libraries/Devices, Exec, and Hardware.

The *Intuition* manual contains the information needed to work with windows, gadgets, screens, and menus - the components of the Amiga's Intuition interface. The *Libraries/Devices* manual contains specific information on Amiga libraries and devices and on graphics support, and how to write code to access them. The *Exec* manual contains information about Exec, which controls the Amiga's 68000 microprocessor. The *Hardware* manual contains specific information about the Amiga hardware.

Inside the Amiga With C is a single volume containing information similar to that in the *Intuition* manual, as well as a smattering of information from the *Libraries/Devices* and *Exec* manuals. This is an excellent first book for the Amiga, but it should be used to support, not replace, the Addison-Wesley manuals. The book has plenty of helpful C example programs and is well written.

Other useful programming tools on your shopping list might include Power Windows and Inovatools, both from Inovatronics, as well as a debugging aid or two, a shell to the CLI, and a good printer.

Power Windows is a program that is used to generate code for screens, windows, menus, and gadgets. This program lets you design your screens, windows, gadgets, and menus, and then simply *generate* the sourcecode to create them. Power Windows will generate code for both Manx and Lattice compilers, as well as other Amiga languages. This tool is a real time saver, and it provides instant example code for doing things in Intuition.

Inovatronics also has a program called Inovatools, which is a library of specially written functions that are quite useful. The flashy window open function, for example, is unique and does catch your attention.

Debugging is the term for removing errors from a program's code. There are a few debugging tools for C programs, including not only commercial, but also some good public domain ones as well.

To start off with the commercial debuggers, consider Lint by Gimpel Software. It can be a life saver. This program will examine several code modules at the same time, so it finds errors that a compiler will generally miss. Lint works on C code that has not yet

Continued On Page 67

Populous

*Just the thing, when your ego needs
a little feeding.*

by John Thompson

Gloria in ElectronicArts Deo
Populous is for people who want to play God. Not THE God, but one of those squabbling ancient Greek or Norse types. You can be a God of Good or of Evil. It's up to you. In Your role as Deity, You must lead Your chosen people to prosperity, power, and victory in battle. There's just one problem: there is another god who wants to do the same thing!

You don't get involved directly in the fray, however. Using Your divine powers, You guide and influence behind the scenes, influencing Your people to migrate, band together, settle and build, or fight. You might want to raise some of Your people to the status of Knight; Knights rampage through enemy territory, killing everyone in sight, destroying houses and setting them aflame. Or, You may also work through natural forces like raising and lowering the land, creating swamps, even causing earthquakes and volcanoes to disrupt your competitor's followers.

Your power isn't unlimited. In the beginning, You are barely strong enough to bring forth new lands from the waters. Each divine Act exacts a price. Creating a knight takes a good bit of power (more than an earthquake!), and making a swamp or a volcano costs still more. At the top of the power scale is Armageddon, where everyone moves to a convenient central location and fights to the death in one huge final battle, winner take all.

You derive Your strength from Your people. As they are fruitful and multiply, You become more powerful. You can help them prosper; they need flat, smooth land on which to grow crops and build houses. They will settle in the mountains or on the coast if they have to, but they can only build crude huts, hardly fit residences for Your humble worshippers. If You provide them with fertile plains, they will build stone houses, then towers, forts, and finally castles.

Okay, you're not a god any more, just a mere mortal reading a game review.

Not only is the theme of Populous unusual, the game itself looks like nothing I've seen before. The Book of Worlds, which looks like a big atlas, is opened to a map of the world you are fighting for. Tiny, color-coded dots indicate friend, foe, and their dwellings; you can tell where the land has been leveled by the colored contours on the map. Below the map is a three-dimensional close-up of one map section; here is where you do most of your work. You can scroll this area using arrow buttons on the screen or you can click on the big map to move instantly.

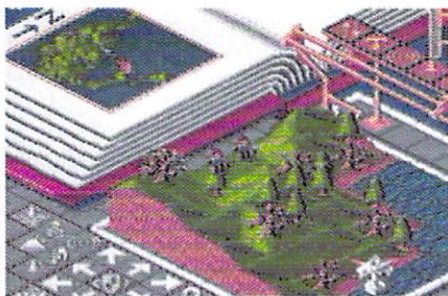


An arrangement of golden rods projects from the Book of Worlds; each time you use

this is your Manna Indicator. Each time you use your power it drops a little bit. A gold sliding arrow shows how much power you have by pointing at icons depicting various miracles; you can do things to the left of the pointer, but the deeds on the right are out of your reach. All miracles are controlled by icons at the bottom left of the screen. Another icon lets you investigate people and buildings closely; a summary is displayed on a shield in the up-

per right corner of the screen.

Yet another group of icons, in the bottom right corner, gives access to the game controls. You can turn music and sound effects on and off; restart, save, or load games; alter the speed; there are even several ways to adjust the difficulty. You can also call



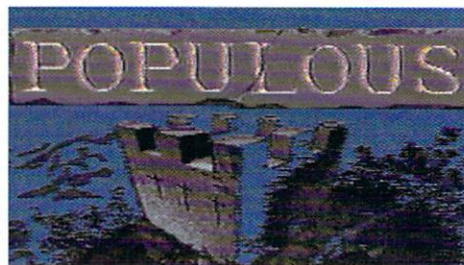
alter the rules of the game. Does a person who falls in water drown or swim? Are the swamps shallow or bottomless?

The screen is attractive and well laid out, and the controls are intuitive and easy to use. This is amazing, considering how much Populous does! The meanings of the icons are not clear at first, but they make sense after you play for a half hour or so. There is a 'Tutorial' level, and the documentation - which you shall need for that first half hour - is

very clear and easy to understand.

Populous is not a fast action game; a lot happens on the screen, and you'll stay busy trying to keep up, but speed is not as important as strategy and a well thought-out plan. It isn't an adventure game either; there are no puzzles to solve, no items to collect. Like an adventure game, a round of Populous could take hours, or even days, but unlike some adventure games there is the possibility that you will someday finish.

Populous is that rarest of all games: *something new!* It's not a flashy clone of some antique arcade game; not another war game, not another adventure. Populous, like Sim City, falls outside all of these categories. The key to these games is resource management. You must choose where to invest time and effort, and many times the decisions are not clear cut. It's a lot like life, except that if you're losing you can always reboot.



Populous reminds me of the software Electronic Arts published back in my Commodore 64 days. Games like Archon, M.U.L.E., Seven Cities of Gold, and the Pinball Construction Set earned EA a

reputation for quality, ease of use, and originality. Every new product seemed to stretch the limits of computer gaming a little farther. Amiga products like Deluxe Music and Deluxe Paint were just as incredible when they were released, but lately EA has been, well, just another software company. Let's hope that Populous signals a new wave of freshness and creativity.

What else can I say? Quite a bit, actually; there are dozens of things I haven't even mentioned. Since writers get paid by the word, I am tempted to continue, but right now I would rather end the article and start playing.

The Bottom Line

Most games are not worth what they cost; some are so bad they're barely worth the price of a blank disk! It's a rare game indeed that is worth more than it costs: Populous is such a game. PRICE: \$49.95; WORTH: \$80.00

Populous
Electronic Arts
\$49.95

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Hangon!

A screaming engine, a long twisting road, and the objective... hangon!

by John E. Ramspott

I opened my eyes to the sight of my legs raised off the bed, wrapped in plaster. I could only see out of my right eye, and I could feel the patch on my left. When I looked at the sore spot on my right arm, I found a big I.V. needle. My ears were filled with sounds of the machinations of modern medicine. The beeps of monitors and the huff-and-puff of the breathing apparatus drowned out my own thoughts. A nurse walks in and says, "I see you've decided to rejoin the land of the living." I am still in good enough shape to realize she is one hot blonde. Before stepping out she says, "There is a guy in the waiting room who has anxiously been awaiting your awakening. I'll send him in. Good thing you were wearing your helmet and all those pads."

Helmet? Pads? Have I been playing football? No, it's the wrong time of the year for that. My life support system sputtered for a second, sending quite a thrill up my spine. That sputtering sounded familiar, like when I was tuning up my Suzuki before the big race. Ah, that's what happened. I had just won a big race in Africa the week before, but this race was a longer and tougher course in Asia. Motorcycle racing experts said I was just lucky in that African race. Looks like I wasn't so lucky this time...

The memory of that big win is still sweet, even though I am now a crashing failure, laid up in some hospital. I took over the first position in the high score table that day. *High score table?* Anyway, the race was very intense. A great musical score filled my ears as I got set on the starting line.

Red light, yellow light, and then green light launched me off the starting line, but my opponents seemed to gain a big lead almost immediately. Eventually I caught up with them, weaving between them while navigating tough curves. My tires squealed and smoked on those tight curves, but my competitors hadn't seen anything. I worked my speed up on a straightaway to 280 k.p.h. That's when I kicked in the nitro, which fired me up to 324 k.p.h.! The landscape bobbed up and down as I took the hills, then I screamed into a hairpin turn with only a few inches separating my bike from the street signs passing by. I completed the stage in record time, so I went on to the next stage as "Extended Play" flashed before me. *Flashing text?*

I won that race, but the Asian one apparently didn't go so well. The turns were harder, and the competitors were not as willing to let me pass. The scenery was a lot different too. I had selected a different soundtrack for this race. Before starting this ill-fated race, I tuned my bike to the same sensitivity as the previous one - medium (low and high being my other choices). You want a responsive feel, but not have the bike over-react to everything you do. Then I selected joystick control over mouse. Joystick?

I snap out of my reverie and find myself back in the hospital room. The blonde bombshell is gone, but someone very familiar is looking very perturbed

at me. I just remembered that big crash I had when I hit a lightpost at 250 k.p.h. I took quite a tumble before blacking out. Very nice graphics indeed. Graphics? Uh, well, that nasty fall took me out of the race and landed me here. The figure looming over me is my editor, and he doesn't look pleased. He's mum-

bling something about the high cost of insurance for his magazine, and how dead authors don't write good copy.

Finally he says, "So, was it any good? Should our readers buy the thing?"

Confused, I replied, "Buy what? I haven't been reviewing any software lately. This is racing season, and I've been off to race around the world, letting a breeze of soft, cool pixels flow through my hair. Pixels? Ack! It was all a game. Darn, I've done it again. I've lost my ability to differentiate between a great game and real life."

"Well, that must mean you enjoyed it. There has been such a big wave of Amiga games lately that the good ones stand a good chance of getting lost in the shuffle, and the kennel is overflowing."

"No, really, Super Hang-On is a great game. I have

never seen animation so fast and smooth on any machine except at the arcade. Electric Dreams Software has done Sega a big favor by pushing the Amiga to its limits, and getting a lot more mileage out of an arcade classic. I could have sworn there was an '020 board in there. That motorcycle screams down the highway, while one of

four hard-drivin' rock tunes coming at you in stereo. I really love those night stages, and the way the road twists, turns, and flows up and down. "You feel like you are actually moving, and fast. And I've never seen a game match the original arcade so well, and enhance it so well with options for changing the sensitivity,

selecting music, selecting input device (mouse or joystick), and saving or loading high scores."

"So you're suggesting that our loyal readers part with \$49.95 for this? Does it multitask? Can I load into Professional Page? Aren't there enough games already?"

"Uh, no, it doesn't multitask, and you wouldn't want all that motor oil in the magazine, so maybe you'd better leave it out of Pro Page. But, but... The game does load very fast, especially considering how long the races are. The backgrounds change, the things you pass by change, and the

roads are definitely different among the four classes of races - Beginner, Junior, Senior, and Expert. Once you start a race, the game never pauses. You flow from one stage to the next until the race is over or you fail to complete a stage in the allotted time. This is simply the best arcade-style race game I have ever seen! It is a pure

adrenalin rush! I--"

"Okay, okay. Get hold of yourself! You'll be all right, now. Really, you will. You'll be fine... They're well equipped to take care of you here. Just a little rest and recovery, and..."

Sega games are distributed by Mindscape
3444 Dundee Road
Northbrook, IL 60062
312-480-7667

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Darkside

Taking a walk on the darkside.

by John E. Ramspott

Darkside is one of several new titles from Spotlight Software, distributed by everyone's favorite Amiga filmmakers, Cinemaware. So far Spotlight has turned out some really neat games, my favorite being Speedball. Darkside continues that tradition, being very similar to Spotlight's first release, Total Eclipse.

This game is in real time... so get cracking!

Both games sport nice 3-D graphics that you can really move around in. You feel like you're walking around in a VideoScape3D animation. You can move around freely, circling buildings and objects. Although you can change the size of your "step", the default step size is very fine, allowing you to glide around slowly and smoothly, watching objects in the distance get gradually larger, exposing more detail with each step. You can look in all directions, including up and down. You can even tilt your view. It's kinda like F-18 Interceptor, which also features smooth scrolling, 3-D animation, except that Darkside allows you to walk around in a very complex world, moving at a much slower pace, with the ability to examine objects more closely.

The storyline is simple. You live on planet Evath, and you have placed all convicted criminals on a moon called Tricuspid. The criminals are angry and have developed a weapon system that soon will have enough energy to blow up your planet. There you were,

sitting back in a comfortable chair playing Speedball, when Evath's leaders pay you a visit. Lucky you have been picked to be dropped on the moon by yourself to put their deadly weapon out of commission. Hey, don't worry. You have a gun and a jetpack. Your fuel and shields are low, but your leaders have confidence that you can find more. You must destroy all the Energy Collection Devices (ECDs), but you don't have much time to do it in. Unlike the typical laid-back graphic adventure, this game is real-time, so you'd better get crackin'!

You can move around with the keyboard or a joystick. The mouse can be used to aim and fire your gun. You can also use the mouse to select items on the screen, that allow you to activate your jetpack, move, kneel, stand up, save/load game, change the angle at which you turn left or right, and adjust the size of your step. There are keyboard equivalents for these actions as well.

When you activate your jetpack, the stand/kneel button controls your altitude. Even considering all the possible movements and view changes that this game allows, it won't take you long before you are moving around freely. Like an arcade game, there are moving objects that shoot at you, and you can shoot back. Unlike an arcade game, this world is very 3-D and pretty large and complex.

Darkside has the fast action and shooting of an arcade game, but with fancier controls than most arcade games, and the complex landscape of a

graphic adventure. Darkside provides a 3-D world where you can take practically an infinitely varied view of any one "scene", especially if you jetpack into the air and change your viewing angle. The animation system called Freescape is simply astounding, and decent-sounding sound effects assail you to warn you of an attacker, or to remind you that you have just ran into a wall.

In conclusion, Darkside is a game that every Amiga graphics fanatic needs to have. At \$39.95 list, it's a little pricey for a graphics demo, but the game has good and exciting game play too. Once you figure out the pattern of disabling ECDs, you won't want to play much anymore, but it will still make a great way to show off the Amiga doing fast and smooth 3-D graphics.

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Westlake Village, CA 91362
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Dr. T's Copyist

While the rest of the world was swimming in soundful goodies, Amiga folks were twiddling their thumbs, but now at long last...

by R. Shamms Mortier, PhD.

Amigoids have waited a long time for professional music software. While the rest of the micro world was swimming in soundful goodies, Amiga folks were twiddling their thumbs, waiting for some developer to pull into "port" (ha-ha...sorry). Now, at long last, the wait has been rewarded on several fronts - samplers, sequencers, and professional copy programs that give your scores good enough looks to send in to a publisher. Dr. T's software has been in the forefront of microcomputer software for years, and now Amigoids the world over can thrill to several of their wares.

I've written a lot of music over the years, and suffer the lack of shelf space to prove it. There's nothing worse than laboring over a manuscript with quill pen in hand, turning out a piece that takes you days and weeks, only to be told by other members of an ensemble, "I can't read this crap! Is this a quarter note or an eighth note?!" Ah, the subtle tortures of art. My reason for purchasing Dr.T's Copyist professional was to avoid this and also to produce scores clear enough to be submitted to a publisher. Have I achieved this? Read on...

It's not easy to plunk down hundreds of dollars on a hunch, based mostly on hype and PR from glitzy magazine ads. But because I'm one of the "one's born every minute" that P.T.Barnum spoke about, I've done this (and continue to do it) more than once. My Amiga obsession especially makes me vulnerable to this automated reach for my credit card. So, I bought the Copyist. It came with a nice 5-1/2 x 8-1/2 hard covered, metal-ringed binder, and on two serial-numbered disks (it is also copy-protected, by the way). It requires at least one megabyte to run, and acts better with two drives (with the auxiliary disk in drive two). It is also multitasking. I cracked the manual, and the gauntlet began.

The program is a port from the Atari (and was first produced for the IBM). Apparently, Dr. T's thinks the Atari and the Amiga must be the same, since they both start with an "A". There are a number of annoying references to the other "A" in the manual, and a good number of key call-outs that mistake one for the other. I hope this changes before the next major upgrade. There is also the assumption that you'll be working with an Amiga 500/2000 or better, so you

might have to hunt and peck for Amiga 1000 command keys.

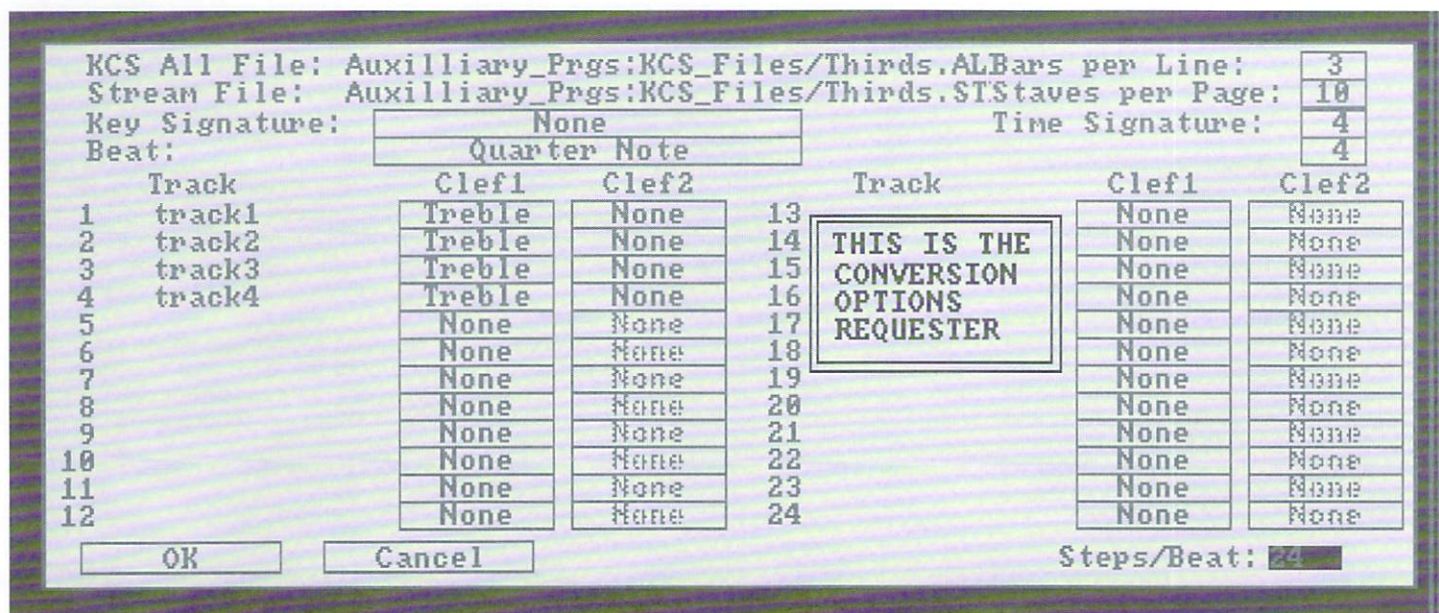
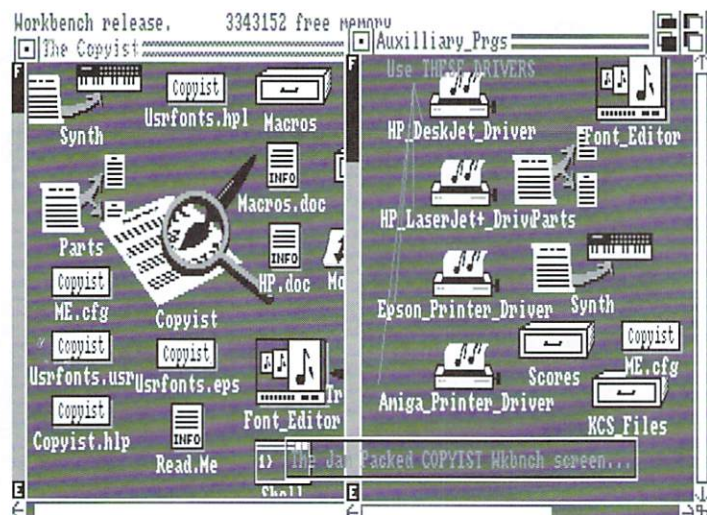
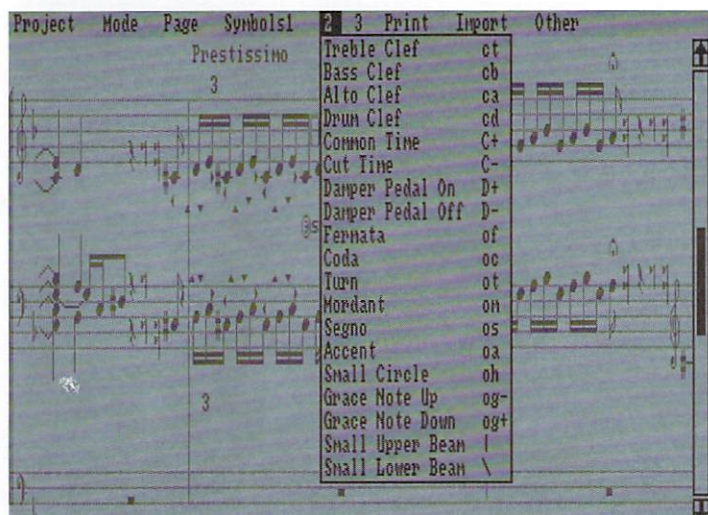
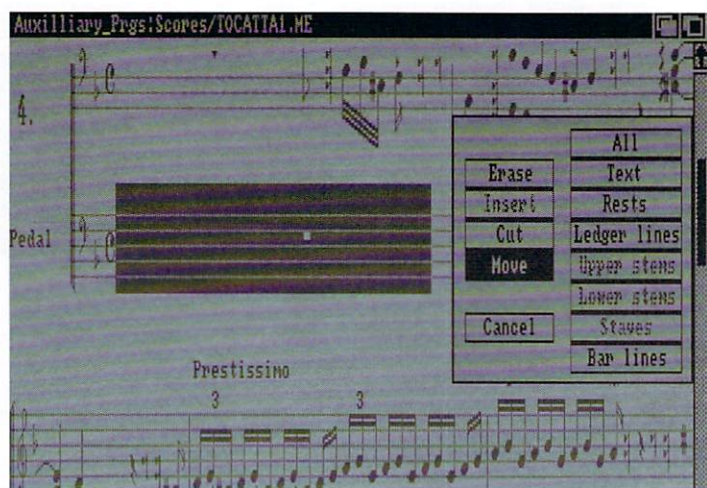
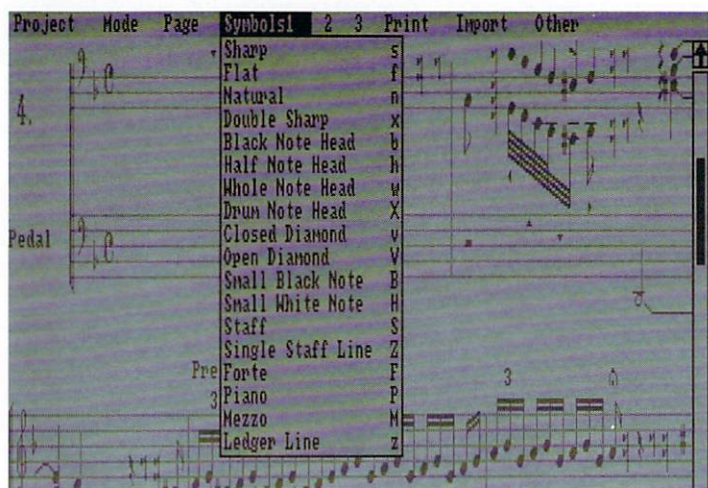
The manual looks nice, but reads as if it were designed by some sadistic gnome. It comes in a close second to the manual that was produced by Mimetix for their "Soundscape" software. I would advise users of Copyist to go immediately to the "Expert Section" in the back, because that's where several of the pathways become clear and a measure of "aha!" can set in. There's only one short tutorial here, and that just isn't enough for one of the most complex programs for any microcomputer.

The purpose of Copyist is to produce class-A printouts of your music scores, whether you produced the original on a sequencer (their KCS product is mentioned frequently, as if it were the only one), or whether you write the music right there on the screen. I would not suggest this second option unless self mutilation is your favorite pastime. Editing a score in Copyist is one thing, involved and fairly complex as it is, but writing one fresh off the cuff is definitely not my way of enjoying the creative process. The biggest problem with the Copyist is the manual (in case you missed my hints in that direction). Unfortunately, because the program operates with many non-intuitive commands and uses of syntax, this can be a big block to your actual use of the software. Contrast this manual with the excellent and clear manuals written by MicroIllusions and MindWare International for opposite results in equally complex software.

Not that the actual software is blameless when it comes to obfuscation (I heard Lyndon Johnson use that term once). Deluse Music Construction Set (Electronic Arts) does some things far simpler, although its printout capability can't hold a candle to this package. Here's the worst-case example, a command sequence that the Copyist uses to allow you to place a slur between notes:

```
"!-cursor-@-cursor-#cursor-$"
```

Now, that's intuitive, isn't it?!... Not unless you're a re-born cyborg it's not. C'mon guys! I want a music printing utility, not a PhD in obscure syntax. This is programming *laziness*, because commands of this sort



should be taken care of with imbedded variables in the program. If I didn't want an easier life, why would I use a mouse in the first place? Better to mark the slurs in by hand afterward.

Copyist goes through a number of steps in the translation process before your previously saved .SMUS music file is poured onto the screen. The sequence file is translated to a "stream" file (with the extension ".STR"), and then into a Music Editor (.ME) file. There are also .BAK files (automatic backups of .ME files), .MAC files (macro files that can save you work once you're accustomed to the Copyist maze), .EPS and .HPL files (for Epson and Hewlett-Packard printers), .USR files (user created symbol files), .ALL files (sequence files from Dr. T's KCS), and .MID files (standard MIDI files, in formats 0, 1, and 2). These can be accessed through keyboard and

however, when you finally become accustomed to the roadmap. When you import a composition, you can separate the tracks (you can also do this after working in the program, so that you can have both a master composition and parts for players). If the piece has triplet notation, you are warned to turn quantization off beforehand, so that the program can convert note patterns in the correct fashion. The main editor screen has a host of hierarchical menus and keystroke combinations provided, so you can graphically design every corner of the work. I had the most trouble (again, because of the confusing way the manual reads) in doing the simplest of tasks - putting in ascenders and descenders on notes, moving notes, putting in staff brackets - although once I stumbled on the method, it was simple to remember.

There is ample room to edit/create large scores in this environment. The maximum length of a page is 330 cursor spaces, and you may have up to 50

pages in a score. Each page holds a maximum of 9000 symbols. Some of the symbols are placed on the screen with keystrokes alone, which is where a clearer manual could make the process smoother. Some are placed with a longish command line of function keys, alternate keys, cursor placements, and commands. A "Range-Edit Dialogue Box" pops up when you delineate an area for change. In it, you can move, erase, cut (which they use instead of "copy"), and insert data symbols. You can place symbols in the textual info (lyrics, notation additives, etc.) that tell the printer to print the text as bold, italic, condensed, compressed or double width, but don't expect to see those changes on the screen. In this way, Copyist is like an archaic word processor, and a future revision should address this issue.

There are four separate modes to choose: Standard Mode, Text Mode, Keyboard Mode (where note values can be placed with more ease on the screen), and Join Mode (wherein the joining of notes in perpetual matrimony takes place, allowing the placement of flags, beams, and slurs).

A very nice option in Copyist is the ability to read sequencer files, and convert them to printed material. It's much more human to play a sequencer than to program cold

notes into a computer. There is some trickiness, however, in getting all the nuances of playing into a note-for-note transcription, and this would be where the editing techniques of Copyist would intervene. As the notes are coming in, tracks (up to a maximum of twenty-four) can be divided up so that they appear in different staff lines in the Copyist. A very complete "Transcription Options" window allows you to address such matters as rests, bars per staff, staves per page, quantization (the numerical denominator that decides how timing values will be "seen" by the Copyist), and other variables.

Once past the painful initiation, you are ready for the most pleasant part of the Copyist process, printing out the score. You can print out preview works within the program, but Copyist expects you to save your work to disk, and to exit the program to access the letter quality print drivers. Make no mistake. I mean *letter* quality...even on a dot matrix printer. There are three main drivers at this point: Amiga (which addresses the preferences printers), Epson, and HP (for the HP Laser printers). Real Soon Now, they're coming out with a DTP version that will address PostScript printers. The printing is first rate, and can be compared to any professional manuscript around.

Aside from the manual, I have some other frustrations with the program. There is no UNDO function, which increases time spent correcting mistakes. "SMUS" files can only be read if the ".SMUS" extension appears in the filename, which means renaming Deluxe Music files. The placement of the cursor is difficult at times, due to its size. It would be better designed as an arrow or other pointer. Either the guitar tablature should be bigger, or a dedicated zoom requester should allow for better manipulation. And lastly, Dr.T's doesn't list a phone number or address, and you're bound to have questions about the processes involved. Once you get their phone number, however, the service is friendly and knowledgeable.

The program, however, was worth my investment. It prints out manuscripts in the highest quality that I could hope for, all the more miraculous on my dotmatrix printer. It will (when the module that is supposedly included is debugged) allow me to translate sequencer data to written symbols. And, it will allow me to interface with MIDI data.

I also trust that the software will be upgraded in the near future, so that the Amiga's capacities are not confused or downgraded by associations with other systems.

Dr. T's Music Copyist Professional (Version 1.6)
Dr. T's
220 Boylston Street #306
Boston, MA 02167
617-244-1542
Suggested Retail Price: \$300.00

This is not a WYSIWYG package, but more like IHTAWIGTG...

requester input. Many of these files are stored temporarily on your work disk, and erased when you leave the program.

Let me say a few words here about interface design and user vision. Copyist works in two resolutions, medium res (which they call Hi-Res) and high res (which they call Interlace). Hi-Res is great for a nicely proportioned screen, but it's "print" is far too small for anyone except hawks to read and work on. Medium res looks terrible, because all the characters are squooshed into thin replicas of their natural selves. Given the choice, however, I'd rather work in Medium Res. At least I can see the screen.

The colors that boot up are awful - light red text on a gray background (Copyist is a four-color program). You can change the colors with a palette requester, but there's no way to save the palette. The most terrible symbol that suffers from all of this is the one that represents guitar tablature. Only a flea could see well enough to place notation in this box, although it prints sharp and clear. Obviously, this is not a WYSIWYG package, but more like IHTAWIGTG ("I Hope This Ain't What I'm Going To Get"). . . and luckily, it ain't.

The Copyist does sport some nice features,

TxE_d

A new look at the New TxE_d Plus V2.01

by Mike Hubbart

Why buy a text editor? Aren't they just for programmers? Won't ED do? Let's look at one of the Amiga commercial text editors as an example and see what it offers that would make you lay out hard-earned cash for something other than a new game (or food, or other nonessentials like electricity).

Aren't they just for programmers?

languages such as C or Modula-II. It's for viewing "readme" files on disks, or even for writing letters. If you want to change your Amiga's startup-sequence, you will need a text editor to do it. ED and EDIT are text editors; they come with Workbench, but they're limited, compared to commercially available editors.

For example,

TxE_d+ is Charlie Heath's major update to his TextEd 1.3 text editor for the Amiga. This update contains not only the TextEd+ editor, but also includes the FF, Blitzdisk, and Funkeys programs previously sold as a separate product, FastFonts. FF, now included in AmigaDOS 1.3, is a global text routine speedup utility; Blitzdisk is a disk caching program, and Funkeys adds keyboard macros independent of any application's intentions. The new TxE_d+ is also ARexx compatible, a feature of growing importance since ARexx has been picking up support among newer Amiga products such as Magellan and Microfiche Filer Plus, and since it's now scheduled for inclusion in the Amiga's operating system, beginning with AmigaDOS 1.4.

The TxE_d+ update contains so many

changes, it's like getting an entirely new text editor.

When you first open the package, boot up your Amiga with TxE_d+; this lets you see the messages you'll see when using the FF (Fast-Fonts), FunKeys, and BlitzDisk programs. This bootup will also bring up a TxE_d+ window with menu selections to copy the ARP commands and/or the needed files for TxE_d+, FF, FunKeys, and BlitzDisk, to your main system disk. MicroSmiths has made getting started as painless as possible.

One of the additions to TextEd+ is a proportional gadget to move through the file without having to use the cursor to move through the text. It gives a relative idea on how big the file is that you are viewing, by using the size of the slide bar as a reference. Naturally, the slide bar lets you move rapidly through a file, although the JUMP menu option moves the cursor directly to a known line number.

The editor also has a user-configurable menu bar. You can use the menus that are provided, or make your own, for example, to reflect custom ARexx macros. Changing the menu setup lets you set TxE_d+ up similar to another text editor you may previously have used, which means you won't have to completely relearn the layout of the menu items. You can remove unused menu items, although you can still access the menu item commands from the command line.

As mentioned earlier, TxE_d+ has an ARexx interface. There is a demo version of ARexx on the disk and some sample ARexx macros for doing tasks such as printing a custom greeting in the titlebar on each startup of the editor, a macro for generating mailing labels, and a macro that saves you the four steps of marking a block of text for printing (you can use either a single menu item, or a macro key combination).

As ARexx macros can add commands to TxE_d+, the editor becomes quite powerful

when used with the Bill Hawes' ARexx program. There is a chapter in the manual that explains how to add these macros to the editor for use, and the examples are clearly stated. ARexx macros can be entirely new commands for your editor to process, instead of those normally included with it, which adds the flexibility that we have come to expect of Amiga products.

The manual is one of the most important aspects of the program. It's in an attractive red binder that folds flat for easy reference. It is nicely organized, with an adequate Table of Contents for each of the three areas separated by dividers. There is a 50-page area describing TxE_d+, and separate areas for the accessory programs and the ARP commands.

TxE_d+ has a command line option accessible from the menu or by pressing the HELP key. These commands are for text editing and program setup, and this is where you find the commands that you add to the menu bar. There are over 50 commands to choose from.

The accessory programs with TxE_d+, FF, FunKeys, and BlitzDisk, are all very small, so they take up little space for the additional features they provide. These three guys do a lot to enhance the editor or any other environment, such as your friendly shell or Workbench. They are useful with other programs too.

Dollarwise, the editor is worth every cent of its \$79.95 list price; it has the important features to look for: flexibility of setup, ARexx compatibility, a good owner's manual, good customer support, and several powerful utilities. Upgrading from the earlier version of the program costs around \$25, and you get so much more. Contact the company for details on the upgrade.

TxE_d Plus
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617-354-1224

C++ The Adventure Continues

Will C++ make a difference in your life? Is it something to bother with? If you are working on a large project, or in a group, there is something you should know.

by John E. Ramspott

For those who made it through my first article on C++ and object oriented programming, here is some more information that I hope will help you decide whether or not you want to get into C++ for your programming projects. Once again, I present the main concepts of OOP - object oriented programming - and in this article solidify that understanding with some concrete examples of C++.

If you are working on a large project, if you're part of a large group of developers, or if you are developing a series of applications that all manipulate the same or similar objects, then you should seriously consider using C++. If you already know C, then C++ is a logical choice indeed. With the Lattice C++ compiler list priced at \$300, even the Sunday afternoon programmer can join in the latest "movement."

Reviewing somewhat, the main concepts of object oriented programming are *encapsulation*, *message passing*, and *inheritance*. Encapsulation allows you to define an object, with private and public data, as well as the actions on that object. Done correctly, it can provide a clear and consistent **Application Programmer's Interface** to the programmer who needs to manipulate that object. He doesn't need to be concerned with underlying implementation details. Once you have defined an object, you can reduce duplicated effort by defining other objects in terms of existing objects and have those new objects inherit some or all of the functionality of the parent object. You only need to write functions for the child object that do not already exist for the parent. The idea of child objects sharing functions with the parent is called *inheritance*. Finally, message passing is what allows you to perform actions on that object.

In my first article on C++, I described the benefits of message passing with examples of sending the same "message" or "action" to completely different types of objects. For example, a programmer could send a draw message to a circle, a square, or even a picture

of an F-15 fighter plane, without having to worry about the underlying differences in how the different objects might be drawn. This feature of object oriented programming that allows sending the same message to multiple objects is called *polymorphism*. Polymorphism does have one limitation. For two different objects to receive the same messages, somewhere along the line they must have the same parent object. If two objects don't have any parents in common, they cannot share the same messages.

For example, let's say I define two parent objects - bitmap objects and drawn objects. My "drawn" object has three objects as children - line, circle, and square. The bitmap has two child objects - picture and brush. I could send the same "draw" message to picture and brush, since they have the same parent. Line, circle, and square could all have the same "draw" message since they are all children of the drawn object. However, the "draw" message would have to be different for line and brush, since both are derived from different objects. The only way for the two to share the same message is for the bitmap object and the drawn object to be parents of yet another object.

I also mentioned that an object consists of private data that only functions for that object can access. The user of an object cannot access that data, nor can a function for another object type. However, sometimes it is convenient for functions for two different objects to share data, even though you don't want that data available to the object user or functions for other objects. You can do this by declaring two different objects as "friends", and specifying what private data the two objects can share. You wouldn't want to make too many friends since that would hurt your sense of data encapsulation, not to mention making those objects less independent. However, it can sometimes help reduce the amount of code used by the application.

OOP in C++

Now's the time to discuss how these object oriented programming concepts are realized in the C++ programming language. I'll mention a few of my favorite new features of C++ that, even though they have little to do with object oriented programming, just make programming a little easier. So even programmers who have no interest in becoming an object oriented programming convert would have a good reason to make the move from C to C++. I will assume that you already know C, but hopefully you'll get something out of the discussion even if not fluent in C.

In C++, an object is an instance of a **class**, in the same way that a variable is an instance of a type (int for integer, float for floating point, etc.). The attributes and functions for an object are found by examining the definition of the class that object belongs to. While you can only have one class definition, you can have as many objects as you like that are instances of that class. What I was calling "child objects" that inherit functions from parents are instances of a **subclass** in C++. A subclass is a class that is defined in terms of a parent class, and inherits data and functions from that class. It is the existence of classes that provides the encapsulation feature of object oriented programming.

Let's take a simple example. We need to write an application that manipulates books, so we will define a *class book*. If all the books we need to manipulate are of the same type, say novels, then that may be all we need to do. A specific object, like the book *Moby Dick*, would be an instance of the class *book*. However, if your application needs to deal with a variety of books, like novels, cookbooks, encyclopedias, and magazines, you may want to make them subclasses.

There are many things common to all books. They can all be opened, closed, and read. They have similar attributes in that they are printed on paper, have covers, and have one or more authors. But each type has unique attributes and operations. For example, an encyclopedia has many volumes, and is always non-fiction so it can be used as a source of information for a knowledge search. Magazines have different issues, where a novel always has the same content. If you were looking for data on whales, you would consider looking at encyclopedias and magazines in your program, but not at fiction like *Moby Dick*.

Novels don't come in volumes or monthly issues. So the best setup would be to declare classes *novel*, *magazine*, and *encyclopedia*, and make them subclasses of class

book. The common operations can be stored in class *book*, while unique operations are stored in the particular subclass. So while *Moby Dick* is an instance of a book, it is more descriptive to say that it is an instance of a novel, which in turn is a subclass of *book*.

For now, we'll just deal with the simple case of having a class "book" with an instance "moby_dick". We need to define the class, its data, and its functions. Within the class there are two divisions - private and public. There is a third division, "protected", that comes into play with subclasses, but we won't deal with that now.

We need three operations or messages for our book class - *check_in()*, *check_out()*, and *is_available()*. *check_in* will mark the book as available, and *check_out* will mark it as unavailable. Both functions will return the integer value 1 if the operation succeeds, and 0 if it fails. *is_available()* will return "Yes" if the book is available to be checked out, and "No" if the book has already been checked out. The class definition is as follows:

```
class book
{
private:
    unsigned int available;
public:
    book(); /* Constructor - initialize available flag */
    int check_in();
    int check_out();
    char *is_available();
};
```

We'll keep the implementation simple. We know if the book is "in" if the "available" flag is 1. Note that this flag is private data. Only the four functions in this class can access it. The program that uses this object cannot directly access this flag. If it wants to know if the book is in, it must use the *is_available()* function to find out. Our current implementation sets this flag to 0 when the book is checked out, and sets it back to 1 when the book is checked in, but this implementation detail is kept hidden from the programmer using the object. This is what is meant by information hiding, which is one of the main benefits of encapsulation. A whole program or system of programs could be written using this object and the *check_in*, *check_out*, and *is_available* messages.

Since the underlying implementation isn't doing very much, such a system would be a prototype. However, we could completely redo the implementation and the only thing we would have to do is recompile the program since the implementation is unknown to it. The real implementation would probably update a database for every transaction, and maintain lists of "in" books and

"out" books. The available flag would be replaced with datafile names, pointers to lists, etc., but all of that would go in the private area. The actual functions like *check_in()* would change, but the interface to the user (in this case the application programmer) would remain the same. We would have made drastic changes, but all of these new variables and pointers would still go in the private area, so they could not and would not be accessed by the application programmer.

A traditional C programmer could accomplish the same thing by using a C structure that contained the available flag, but then the user of that structure would be aware of that implementation detail. If only one programmer is working on the project, he can make a mental note never to look at that flag except in the

The declaration of moby_dick as an instance...

check_in(), *check_out()*, and *is_available()* routines, but he might forget. If there are other programmers on the project, there is nothing you can do to prevent them from directly accessing that data. On the other hand, the C++ compiler will generate an error message if they try to access private data.

You will also notice another function in the public section called *book()*, suspiciously the same name as the class we are defining. Such a function is called a *constructor*. Constructors are optional; they're a way to automatically initialize private data, allocate memory, and whatever you would like to do for the object before the user can send a message to it. The constructor function is automatically invoked when the object is declared. If you look at Listing 1 (*book.cp*), you will see the declaration line:

```
book moby_dick;
```

This declaration of *moby_dick* as an instance of *book* invokes the *book()* function automatically. The programmer/user doesn't even have to know that it happened. While this example doesn't need a destructor function, you can have one named *~book()*, which would free any allocated memory when the object was deleted or the block containing the object was exited, but since we only have a *int* variable, we don't have any memory to free. Our constructor need only initialize the "available" flag to 1, indicating that the book is "in".

If you look at the listing, you will also notice that all functions for a class are declared with the return type, the class it belongs to, two colons, and then the function declaration along with any function parameters. For example, the `is_available()` function is a member function of class `book` that returns a string pointer, and it has no parameters, so the declaration is:

```
char * book::is_available()
```

That `::` string is called a scope control indicator. The function `is_available()` is limited in scope to an object of class `book` (or a subclass of `book` that inherits this function). It has other uses in C++ besides declaring member functions.

In C, since a given function can have only one data type, we would need two functions that did the same thing, and the user would have to remember which function goes with which data structure, which usually makes for longer function names, e.g. `check_in_novel()` and `check_in_encyclopedia()`. In C++, it would always be `object.check_in()`, regardless of the implementation of the object.

Now I'll tell you about a few of my favorite features of C++ that I think are nifty even if you aren't the least bit interested in object-oriented programming. The first is the ability to create and delete variables on the fly in the middle of code. You do this with the **new** and **delete** statements. For example, in the middle of your routine you could de-

clare a string my-name with length specified in the

would look like:

```
extern int add(int arg1, int arg2);
extern long add(long arg1, long arg2);
extern char *add(char *arg1, char *arg2);
```

You can even have a different number of arguments if you need to. Somewhere in your program you would need to actually write the three different `add()` functions. The C++ compiler will know which one to use by looking at the data types in your function call, and then call the version of the `add()` function with the same data types. While you still have to write three different `add` functions, they are all called the same thing. Once written, other programmers can just call `add()` to add up whatever data types they want.

Another neat little feature is to declare a function with an unspecified number of arguments. That way the caller can call the same function with only the needed arguments, instead of passing `NULL` or `0` for unused positions. If you wanted your `add` function that prints integers to add up an arbitrary number of integers, your declaration would look like:

```
int add(int...);
```

The ellipsis indicates an unspecified number of arguments.

Conclusion

In conclusion, C++ offers many improvements over the standard C language. If you already have the Lattice C compiler, you can get C++ for \$200. This is still a lot of money for a casual purchase, but if you do a lot of programming or just like to keep up with the state of the art, C++ can be rewarding. You need to have 1.5 megabytes of memory at least, and preferably a hard drive. I am quite happy that C++ is available on the Amiga, which is a good environment for it. C++ makes Amiga programming a lot easier. Next column, an example of inheritance, and maybe some delving into the specifics of how C++ applies to the Amiga.

--

Some nifty features of C++ for object oriented programming.

But how do we pass a message like "check out" to the object in C++? In traditional C we would call the function and pass the address of the structure that had all the data like the available flag. If this structure instance was called `moby_dick`, the C way to do it would be:

```
check_in(&moby_dick);
```

As you can see, this is a straight C function call. The emphasis is on the action instead of the object. In C++, we would send the "check_in" message to the `moby_dick` object like this:

```
moby_dick.check_in();
```

The emphasis is on the object, and then the action on that object. The real benefit of this isn't obvious until you consider passing the same message to even a slightly different object. For example, let's say we had two subclasses of `book` - `novel` and `encyclopedia`. Both classes inherit the `check_in` message. In traditional C, both of these objects would require a different structure since different data needs to be maintained about an encyclopedia, such as how many volumes there are, what each volume covers, etc.

`name_length` variable as follows:

```
char *myname = new char (name_length);
```

And then reclaim this memory later with:

```
delete myname;
```

This is used in place of the normal `malloc()` and `free()` calls. I prefer **new** and **delete** since even the name of the variable is declared where it is used, rather than declaring a pointer before the code and then calling `malloc()` in it, as in traditional C.

My favorite feature is overloading function names. For example, let's say you're writing a small application that instead of or in addition to objects, manipulates a lot of basic data variables like strings, integers, and longs. You want a function called `add()` that adds the second argument to the first argument and returns the result. You don't want to have to remember the names of three functions like `add_integer()`, `add_string()`, and `add_long()`. You just want to be able to call `add()`. In C++, you can overload the `add()` command by first specifying the function to be overloaded, followed by declarations for the different "versions" of the function that are available. It

SimCity

Good morning, Mayor...

by John Thompson

Do you crave power? Have you ever wanted to hold the fate of thousands of innocent little electronic lives in the palm of your hand? Have you ever desired strength untold, so much that one flick of a finger (on a mousebutton) could create a paradise of good roads, low taxes, clean air, and high property values? Maybe you would rather condemn your citizens to a life of pollution, earthquakes, nuclear meltdowns, floods, or even attacks by Japanese-movie-style monsters! Do you have delusions of grandeur? Sim City is the game for you!

It's the ultimate power trip. You aren't exactly God; you're *Government*, but I guess that's close enough. You zone land for Industrial, Commercial, or Residential use. You build power plants and run power lines. You build roads and railways. You construct police and fire departments. You decide when, and where, your city needs a seaport, an airport, or a stadium. And you collect taxes to pay for it all!

Your simulated city ("Sim City," get it?) is populated by simulated people called sims. The sims build houses and apartment buildings, drive on the roads, and work in the factories. Like any large government, you never care about individual sims; they are faceless masses. Still, you have to keep an eye on public opinion. If your city becomes an unpleasant place to live, your population will migrate elsewhere, leaving you with a city full of crime, unemployment, and vacant lots.

Have you considered how many factors go into city planning? Sim City can't take everything into account, but it does consider an amazing array of things like crime, property values, tax rates, traffic patterns, public transportation... the list goes on. Even more amazing is the way all of these factors interrelate!

An example. You zone some residential areas. They need power, of course, so you lay power lines. People won't move in if they don't have jobs, so you create industrial areas too. People can't get to work without roads, so you build them too. Oops! Industrial zoning causes the property values of nearby residential areas to go down; people don't like living next to a factory. (Have you ever smelled a paper mill?) So, zone some more industrial areas farther away and convert the first ones to residential use. The new industrial areas need power, and naturally the people need roads to get to work, so you build some more. Put some commercial areas alongside your main roads; retail business loves a good flow of traffic. Time passes, your town grows... and the crime rate rises!

All this construction gets expensive. The sims take care of building factories and houses, but roads,

power lines, police and fire protection, and even the cost of zoning land are bought with taxes. A quick look at the city's books shows bankruptcies in the near future. Should you raise taxes? Of course, high taxes don't just cause the sims to complain; industrial growth may slow or even stop.

Where do you find out about all this? The Map and Chart screen. Here you can find out about the crime rate, population density, pollution, growth rate, traffic snarls, and the amount of police and fire protection any area has, etc. With one click on an icon, color-coded information is superimposed on a map of your city. You can also look at line graphs showing the growth (or decline) of industry, commerce, residential population, etc., over a ten- or one-hundred-twenty year period.

Your city is growing by leaps and bounds, but that very growth creates problems. All your new industry creates pollution. Traffic creates pollution too. Traffic and pollution lower property values, and that leads to crime, which causes property values to fall even more. Lower property values mean less tax dollars to pay for things... like police departments and good roads. What to do?

Urban renewal. Lots of parks, better roads, and lots of police? That could be expensive. Maybe you could demolish several blocks of residential property and rezone it all as commercial. That might work; you might also be stuck with a whole section of vacant lots if things don't work out. Maybe we could just live with slums?

Our city coffers are depleted, but we don't have enough money to build and fund all the police stations we need, and our streets have potholes because we've been skimping on maintenance. The streets are jammed with traffic, too; the sims demand a mass transit system, but these are expensive to build and maintain. Industry needs a seaport and Commercial business needs an airport. And the sims still complain their taxes are too

high. Sounds like fun, doesn't it?

If you would rather work with real cities, seven scenarios are provided. Save Tokyo from monster attack, help Hamburg, Germany, rebuild after World War II bombing, and if you want a real challenge, try to solve Detroit's crime problem. (Hint: to save Detroit, rip out almost all of the rail system!) I prefer to watch my own cities grow, but the scenario cities are a lot of fun too. As Robin Williams said, "Reality: what a concept!"

Sim City gives me a sense of accomplishment to see my city prosper. Somehow, I never get that feeling with an outer-space shoot-em-up or yet another climb-run-collect-treasure game. Best of all, Sim City is *original*; it adds new ground to the realm of computer gaming.

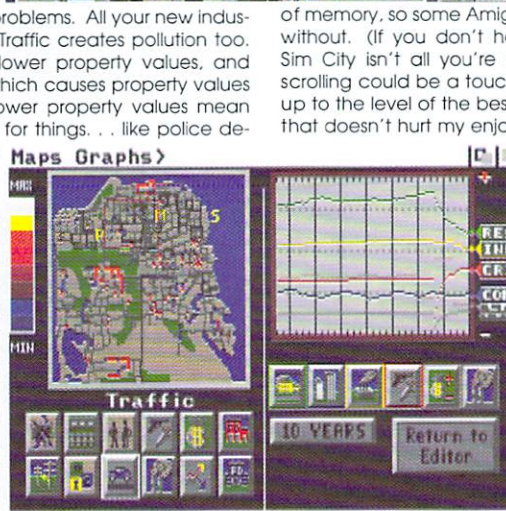
Does Sim City have any flaws? The game only runs with one megabyte (or more) of memory, so some Amiga owners will have to do without. (If you don't have a Meg of memory, Sim City isn't all you're missing.) The full screen scrolling could be a touch smoother; it's not quite up to the level of the best arcade games, though that doesn't hurt my enjoyment of the game. My only real gripe is the blasted traffic helicopter that patrols the city after you build an airport; after hearing "Heavy traffic reported" a few thousand times I'm ready to times that little sucker away. Otherwise, Sim City is great.

The bottom line

How many things in life are worth what they cost? If you

paid ten bucks for a meal, did you get ten dollars worth of enjoyment from it? My dog was free, but I can't even begin to price his worth; on the other hand, I've never had a car that was worth what I paid. How about computer games? Good games might be worth forty or fifty bucks, but most aren't. A few (very few indeed) are worth more than their price, and I place Sim City in this elite group. PRICE: \$49.95; WORTH: \$100.00 (The highest rating I have ever given!)

SIM CITY
Maxis/Brøderbund
\$49.95



Product Review



Did the award winning game deserve it?

by John E. Ramspott

Titus has released more than enough games involving driving a car or boat through various simple courses. **Crazy Cars**, **Fire and Forget** (best forgotten), **Offshore Warrior**, and **F40 Pursuit** are all very similar. Most of the above look like Titus used the same basic program over and over, except for adding a few things and changing the scenery. When I heard there was a new release from Titus, I was expecting *Offshore Pursuit*. When I saw **Titan**, I knew they had hired a new staff of programmers.

This game is very different from not only anything they have done, but from most other games that anyone else has done. The closest thing I can think of is Discovery's **Arkanoid**. The small similarity is that you're trying to knock out bricks on the screen, but it is really different, not to mention quite good.

The graphics and music are extremely well done, far better than anything else Titus has done. The animation of the sphere and control unit is smooth. The screen scrolling is what is really slick. You steer the magnetic control unit, and try to direct the power sphere around the screen in search of bricks, which get knocked out when your power sphere makes contact with one.

As in **Arkanoid**, some bricks take several hits before they go away. However, you're not trying to keep the ball from falling past you to the bottom of the screen; you're trying to help the ball navigate a maze that is usually much larger than the computer screen. The scrolling that takes you from one part of the maze to the next is very smooth, and the sound effects are very well done. As you progress from level to level (there are 80), you run into more problems than just a different maze with different colors and music. Once you get past level three, you run into skulls positioned throughout the maze. The green skulls are fatal to your power sphere, and the white skulls will kill both of you on contact. Some obstacles, like the walls on level three, can be removed by your control unit. How you choose to remove them can help you take out the bricks they protect.

However, there is much more than even this. If

your control unit hits an Energizer, you switch positions with the sphere (not to mention hearing the singing of angels). One of the clever traps is a strange-looking brick in a prominent position. Every time it's hit, it looks more like a skull. I quickly

the screen.

The story is that you are playing this game to win a lot of money, 1000 Kronurs, quite a fortune in Vegapolis in the year 2114. One quote in the manual says, "The ultra-fast scrolling of this game, the graphics, the variety of levels, have already driven many people ill". I must add my name to that list. The graphics and scrolling are superb, but the motion of chasing that sphere around and hearing weird sound effects has gotten to me on a number of occasions. The game can be frustrating because it really is tough to direct the sphere where you want it to go. I have gotten stuck in little sections of the maze for minutes trying to get it through a narrow opening. I played for over 45 minutes to finally work my way to level 11. And I waited until the next day before I bothered playing it again because it had driven me about nuts.

Another complaint I have is that some of the levels have no way to die on them, so it is simply a matter of time before you clean up all the bricks. I could

started protecting it, because eventually a hit will be fatal. Some objects on the screen change ev-

understand this for the first level, to give people a chance to learn the controls, but it gets downright boring after you play the game awhile. The game lets you back up to levels you have already played, but there is no way to skip past levels that are either too hard or too dull.

In conclusion, Titus has come up with a very different game this time. Their first game, **Crazy Cars**, was cute, but the others really wore out the theme, not to mention the driving algorithm. **Titan** is a very impressive game. The programmers really knew how to use Amiga graphics and stereo sound. The production values are very high. The biggest problem is that gameplay can get very annoying. I really get frazzled nerves chasing that sphere all over the place, only to have it ricochet around me. •



every time your control passes over, until eventually they won't let you by. I haven't got past level 11. I've yet to see some other documented traps like oil spots, and obstacles that will let you or your sphere pass by, but not both. On one of the levels, the bricks you are trying to take out move around

--

GunShip

*Never before has the graphics of the Commodore 64 been captured so well in an Amiga game.
Yawn.*

by John E. Ramsport

Microprose's Gunship: Yawn
Never before have the graphics of the Commodore 64 been captured so well on the Amiga! Microprose spent three years integrating the C64 version of Gunship with their 64 emulator/interpreter. Gunship has been a long-awaited and long overdue game that fans of the original 64 version hoped would look fantastic on the Amiga. Unfortunately, the game hasn't improved much. Had it come out several years ago when it was supposed to be released, it would have been a highly rated Amiga game. However, in the wake of flight simulators like F-18 and Falcon, Gunship looks like a real pooch.

While new Amiga owners who have never seen or played the 64 version laugh at Amiga Gunship, die-hard fans of the original are glad they can at long last play the game on their favorite machine. I came to the Amiga ranks nearly four years ago from the Radio Shack Color Computer and the IBM PC, so I look upon Gunship as I would any other new game. It doesn't make me feel nostalgic.

Gunship is a simulation of the AH-64A Apache, one of the U.S. Army's combat helicopters. The packaging is very nice. The box cover has a slick picture of an Apache, the manual looks very nice, and it has keyboard templates for both the Amiga 1000 and the Amiga 500/2000 keyboards. Although the program is copy-protected by both the key disk method and asking you to identify a picture (type of tank, helicopter, etc.), you can at least make a backup disk that takes the brunt of disk access during gameplay. It will even install on a hard disk, although I don't consider the game good enough to even consider that. At least Microprose thought about more sophisticated Amiga users with hard drives. Only recently have games provided such a facility.

Actually, you do get a few clues that Gunship is running on an Amiga, or at least on some computer with color and a mouse. When you aren't actually flying, you can use the mouse to point and select objects and actions. For example, you select what

pilot you wish to be by clicking on the name, select weapons on the arming screen, or select an action after you have landed the helicopter. It does have a variety of missions, ranging from training runs to guerilla warfare.

The keyboard template clues you in very fast that this simulation is complicated, with maneuvering keys, keys for chaff and radar jamming, three keys for starting/stopping the engines, view angle keys, weapons, maps, and others. Available weapons are AIM-9L Sidewinder, 2.75" FFAR, AGM-114A Hellfire, and 30mm cannon. The flight screen is loaded with gauges, maps, messages, and indicators.

When I first saw the graphics, I decided Microprose sacrificed good, detailed graphics for speed. Once I started playing it, I realized that they had sacrificed both. While the manual warns you that helicopter response is not immediate, I feel pretty sure that the scenery still goes by smoothly in the real thing. I knew I was in trouble when after starting all my engines and hitting F1 (the "Up Fast" key), I wasn't moving. I held down the F1 key. Nothing happened. When I hit the key repeatedly, I finally moved up. Once again, I feel pretty safe in saying that pilots don't repeatedly hit a button to make the copter rise. I think allowing the user to hold the key down would have been reasonable.

The most impressive aspect of Gunship is the attention to detail. In addition to all the gauges and controls, it analyzes your performance during a mission, and awards medals and promotions as appropriate. Weapons selection is nice, as well as a detailed status screen of your helicopter. There are also a variety of factors you can set that affect the difficulty of the mission, so that if you really like this game, you have many combinations to work through. For example, you can change the region of the world, the pilot, the style of flying, and what are called "reality levels". Nonrealistic settings would have perfect, clear, sunny weather with no wind, and crash landings would be impossible. The computer protects you from

dying. A more realistic level would allow crash landings, have variable weather and deadly opponents. You can steer by keyboard, mouse, or joystick, but you have to make heavy use of the keyboard no matter what else you use.

The other positive aspect of Gunship is that I liked it the more I played it, even though the general appearance of the game is lackluster. The game has a lot of options and missions that would take a great deal of time to fully master. Big fans of C64 Gunship and simulation freaks, especially those into instrumentation flight, should enjoy Amiga Gunship.

In conclusion, Gunship is not a bad game, but it isn't worth \$54.95; it's mediocre for something three years in the making, and it doesn't do the Amiga's graphics or sound capabilities justice. F-18 Interceptor and Falcon really blow Gunship away, but those are plane simulations. If you want a helicopter simulation, Gunship is the only way to fly. I give it high marks on depth of play, but low marks on graphics, sound, and playability. This is no arcade shoot-em-up, but Microprose doesn't pretend it is. They warn you up front that you need to read the manual before playing, and they are not kidding.

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OPTIM

OPTIMIZING LATTICE 5.0 CODE TO ASSEMBLER

by Gerald Hull

Even with today's powerful and memory-rich computers, there are reasons for wanting code as small and fast as possible. For one, the user will prefer programs that respond faster, all things being equal. Also, augmented memory is often depleted by expanding requirements. And for the programmer, the very process of simplification helps clarify and improve software design.

Aside from this, there is an aesthetic joy in writing concise and elegant algorithms. In what follows I indulge in that pleasure by showing some of the kinds of optimization that can be performed. We'll begin in the Lattice 5.0 C development environment, and finish with the tricks and traps of assembly language.

The object of this effort is a function that is time-critical in sorts: an ordering routine. During the course of optimization, we reduce it by nearly 80 percent, from an initial 86 bytes down to a final 20. This amount of reduction isn't always possible, of course, but it gives an idea of the degree of improvement that can be achieved.

alpha_lower()

On Fred Fish disk #41, Charlie Heath of MicroSmiths, Inc., released source code for a filename requester. This `getfile()` routine has proven very popular, judging from the number of programs that have adopted it. It reads the data from a chosen directory into an internal buffer, alphabetizing as it goes along.

One reason for the popularity of `getfile()` is the immediacy of its response. This distinguishes it from file requesters that force you to wait until an entire directory has been digested before revealing the contents. However, sometimes good things can be made even better.

One of the useful features in Lattice's 5.0 release of their C compiler for the Amiga is the ability to profile the execution history of a program.

First, with `LPROF yourprogram` you run your program as usual, but at the same time accumulate a data file called "prof.out."

Next, by running `LSTAT yourprogram` you generate a statistical analysis of this data. Assuming you have compiled your program in the appropriate debugger mode, LSTAT can provide a routine by routine, and even line by line, breakdown of where your software is spending its time.

Using these tools to analyze the `getfile()` software, it appears that nearly half the time was taken up by the alphabetizing subroutine: `alpha_lower()`. This routine is the basis for what is called an "insertion sort." This is an extremely efficient sorting method, especially for small (20-25) numbers of items.

Obviously, any improvement that can be made in `alpha_lower()` will speed up the sorting process and lead to even greater responsiveness in the requester routine. And because `alpha_lower()` is a relatively simple function, it makes an ideal candidate for exploring methods of optimization.

At the C Level

The data structures that are being ordered consist of the following:

```
struct dirent
{
    struct dirent *next;
    BOOL isfile;
    char *dE;
}
```

The variable `next` is used to link each structure with the next in order. A boolean variable, `isfile`, indicates whether we are

dealing with a directory. Finally, the character string `dE` is null terminated, and may be from 1 to 35 bytes long.

The purpose of the `alpha_lower` routine is to return a yes or no answer to the question: *Should the new item precede the old?* It sorts on two "keys." We want both files and directories to be alphabetized, and for directories to be grouped together following the files. The algorithm used to accomplish this is rather clever (see Listing One).

It first checks to see if both items are files or both are directories. If so, all we need concern ourselves with is alphabetization. However, if the items are dissimilar, `alpha_lower` simply returns whether the new item is a file. If it is, it should be listed prior to the other; otherwise not.

There are some rules of thumb that are helpful in optimizing at the C level. First, the fewer tests or comparisons, the better. Second, try to reduce the movement of data to a minimum. And third, eliminate unnecessary variables whenever possible.

Looking at Listing One in light of these maxims, we can see a number of possible simplifications. The allocation of the local variable `pnew` appears to be spurious. Since no two files or directories should ever have the same name, we should not have to check both whether `c > d` and `c < d`. Indeed, the local variables `c` and `d` appear discardable if the second comparison can be eliminated.

Applying these insights, we arrive at a new C version of `alpha_lower` in Listing Two. The while loop has been greatly simplified: `while (*ps1++ == *ps2++);`

Now all it does is increment the pointers to the two character strings being compared, halting when it finds a difference.

The return statement indexes the pointers back to the characters that produced the difference, and assesses whether the new item is alphabetically prior (in terms of ASCII):

ZZING

```
return((BOOL)((-ps1) < (-ps2)));
```

Notice that `alpha_lower()` is now classified more specifically as returning `BOOL`, which `exec/types.h` defines as a "short." For Lattice 680x0 C, this is implemented as a word (two bytes).

In quantitative terms, Listing Two represents a significant improvement. The number of local variables has been reduced from five to two, and the second comparison has been eliminated. We have gone from ten lines of code to six. More revealing as a measure of achievement, the runtime size of the routine has been reduced from 86 to 76 bytes.

Optimizing With Lattice 5.0

Of course, to a great extent the degree of improvement represented by Listing Two will depend upon the compiler. Whether a "single line" of C is spare or verbose on the assembler level very much depends upon the code generation strategy involved.

The new Lattice compiler cuts through some of these complications by providing user control over the way code gets generated. With `GO`, a global optimizer, you can automatically invoke some of the talents of an "expert" C programmer. And with special keywords, like `'__regargs'` and `'__asm'`, you can considerably reduce the overhead of subroutine calls.

Simply turning on `GO`, using the `-O` compiler option, `LC -O alpha_lower.c` is enough to reduce the code produced by Listing Two to 62 bytes. Even the Listing One version is brought down to 64 bytes. Although Lattice's promotional literature talks of reductions of 40%, an amount in the range of 10 to 30% seems more realistic.

Still, Lattice's optimizer provides a dependable benefit, more or less independently of simplifications like those in Listing Two. It achieves this with things like making better use of register variables, eliminating unnecessary `LINK` and `UNLK` instructions, and

converting additions and subtractions on pointer registers into indirect offsets.

Other tools in the Lattice 5.0 development system help by reducing the overhead of subroutine calls. For example, by using the `'__regargs'` keyword in function declarations and definitions, you can cause parameters to be sent via registers instead of on the stack:

```
BOOL __regargs alpha_lower(struct dirent *snew,  
struct dirent *sold);
```

```
BOOL __regargs alpha_lower(struct dirent *snew,  
struct dirent *sold)  
{  
    ...  
}
```

Even more powerful is the `'__asm'` keyword. It lets you specify which register contains which parameter (see Listing Three). Currently, `'__asm'` can only be used with the Amiga scratch registers: `A0-A1/D0-D1`. This is a consequence of a bug that fails to guarantee that `'__asm'` registers are saved and restored by the calling routine.

Implementation of this third version of `alpha_lower()` eliminates yet another 4 bytes. So by pursuing improvements on the C level, especially with the assistance of the Lattice 5.0 development system, we have reduced the size of the routine from 86 to 58 bytes. This 33-percent reduction is already a significant accomplishment.

Into the World of Assembler

C enthusiasts sometimes exaggerate the closeness of that language to assembler. In truth, even with all these optimization techniques, C-generated code is no match for a decent assembly language programmer. Whereas a compiler has to allow for every contingency, an experienced assembler can take advantage of particular circumstances.

Listing Four provides a pretty straightforward translation of the code in Listing Three. A fundamental principle in writing optimal assembler code is to keep variables in registers. The use of the `'__asm'` keyword in the

declaration of `alpha_lower` now simplifies the task of interfacing C and assembler.

This assembler version is a mere 36 bytes long, a size reduction of nearly 60 percent from our starting point. It is almost 40 percent better than our best C version. For practical purposes, this is more than enough improvement to justify our optimization efforts, but we can, if we dare, take things even further.

Shoot the Moon

A final level of simplification can be achieved by taking advantage of particular tricks and peculiarities of the 68000 instruction set. You can get a good idea of what's possible here from a couple of articles: "68000 Trips and Traps" by Mike Morton in the September 1986 *BYTE*, and "Assembly Language Optimization Tricks" by John Toebe in the April 1989 *Transactor for the Amiga*.

If you look at the machine code generated by the code in Listing Four, you will see that the address register indirect with displacement always requires 8 bytes. By eliminating these displacement offsets, we can immediately save a number of bytes. This is done in Listing Five, starting with a `CMP.L` whose only function is to increment both address registers (by four) to point at the `isfile` data: `cmp.l (a0)+(a1)+`

By using postincrement mode for the `isfile` comparison, the registers are further indexed to their respective character strings

```
move.w (a0)+,d0  
cmp.w (a1)+,d0
```

Finally, we can replace the character comparisons with subtractions, since we don't care what happens to the data being compared.

```
move.b (a0)+,d1  
sub.b (a1)+,d0
```

This allows us to dispense with the final branch, and use the `ADDX` instruction in-

CONTINUED ON PAGE 67

Cockeyed Art

Dw exposes us to the world of Cockeyed Art. You apply it every day without realizing, now you can apply it to the Amiga.

by Dwin R. Craig

The World Of Cockeyed Art

We are blessed with TWO eyes for good reasons. An extra comes in handy when one is puffed shut after losing an argument. Also, you can wink at someone and still see their reaction. These are obvious and rarely used reasons for having two eyes.

Most important, two different viewpoints of our surroundings lets our brain judge the distance to various things that we want to touch and/or things that we don't want to run into.

Instead of one above the other, our eyes are side by side so that we are best at judging distances to vertical things. We move around on a horizontal plane where most of the obstacles are vertical. Very handy when you are running through the woods to escape from a maneater - or when you are running after one.

When looking at distant objects, the optical axes of our eyes are parallel. When we concentrate on close objects, the axes converge and they cross to intersect at the point of interest - we are then looking crosseyed, affectionately known as "cockeyed". Part of learning to read is training our eye muscles to be comfortable with sustained convergence during long periods of study. SO-we are all able to look cockeyed without really trying. For some it's easy when trying but for some it's tough. So, we have devised a little aid to let you look at some "COCKEYED ART" generated on the Amiga.

COCKEYED ART is a stereo pair of images shown side by side and arranged so that the left image is the right eyed view and visa versa. When looking at the pair of images with crossed eyes, you will see three images - the middle image exhibits depth !!You should see some outstanding stuff.

For those who are bothered by seeing three images, we have figured out a simple way to

mask the two outside images from view. What can be simpler than looking through a hole in a piece of paper? The hole is the same as a small window through which each eye sees a different view - no big surprise. Hold the paper at normal reading distance and read whatever message surrounds the window. Then line up the window with the pair of images so that your right eye sees only the left image and your left eye sees only the right image. Wink your eyes alternately to check alignment and distance, then with both eyes open treat yourself to the illusion of depth. Like training wheels on a bike, you can do without the window after a little practice.

It's a COCKEYED WorldSo Enjoy !!!!

PHOOTNOAT

"COCKEYED ART" was originated by Dwin R.Craig -a dirty old man Amiga fan.

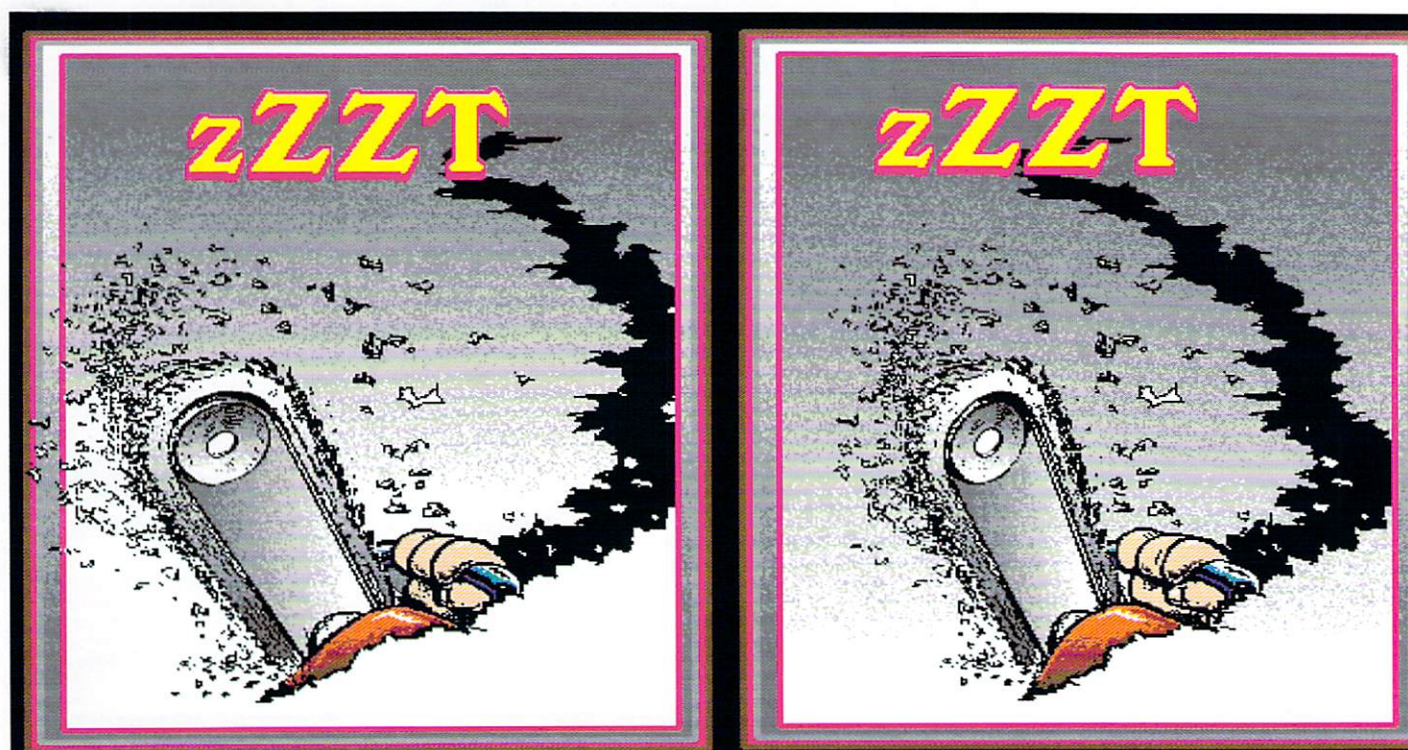
Some folks think that "Dwin" is short for something ..Actually, it is long for "Dw".

This may usher in a new art form for computer graphicists to mess around with. Try it. You could learn something about perspective and at the same time benefit from useful eye exercises.

Realizing that each of us sees the world from two different viewpoints could help us to become more tolerant of the viewpoint of others ... aint this heavy stuff ??

Meanwhile, back on the planet, all of my "art" has been done with Deluxe Paint I,II and III. Anyone smart enough to own an Amiga can think of lots of other ways to generate stereo pairs of images to wow their cockeyed friends. So, here's looking at you - one way or another !

Best Regards,
Dw



Cut Here

Cockeyed Art

by Dwin R. Craig

What can be simpler than looking through a hole in a piece of paper? The hole is the same as a small window through which each eye sees a different view - no big surprise. Hold the paper at normal reading distance and read whatever message surrounds the window. Then line up the window with the pair of

images so that your right eye sees only the left image and your left eye sees only the right image. Wink your eyes alternately to check alignment and distance, then with both eyes open treat yourself to the illusion of depth. Like training wheels on a bike, you can do without the window after a little practice. Enjoy

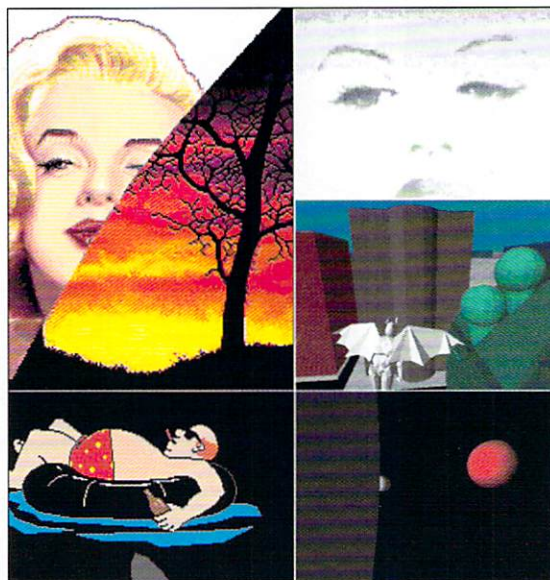
Cut Here

Now Available...

**Disks
Inside**

ANIMATION

Amiga Animation • A Limited Edition



Animation Program Covered This Issue

*Included so you can
try your hand at
animation!*

•Deluxe Paint III •Fantavision
•Videoscape-3D •Sculpt!Elan
•Turbo Silver •Zoetrope
•Framegrabber •Interfonts and more.

About This Special Issue
What you get, and how to get more information about the products mentioned.

Taking a Good Look at Amiga Animation
by Jay Gross
Overview of Amiga Animation Software, Hardware, techniques and expectations for the future. News about new developments and new products and improvements to come.

MakeAnim Program
Get in on the act, and make your own animations, even if you don't have one of the commercial animation programs, yet. Here is MakeAnim, a freely distributable program for putting your own ANIM format files together from pictures. Complete and working, on the disk, along with a how-to file to tell you how to use it.

Product Review: Zoetrope
by Mike Hubbard
Here's a look at one of the newer Amiga animation products on the market, Zoetrope. It has serious limitations for serious video enthusiasts, but if you just want to make things move for the fun of it, it fills the bill.

ZoeAx2.RIF Animation
This neat animation gives you some idea about what you can do with Zoetrope in the way of moving titles around on the Amiga screen. Animation by Mike Hubbard.

Frogmovie Animation
First thing you notice about this neat tree frog is his eyes. Then his lunch flies into the picture and kerplop! Yummy.

DeluxePaint III: The Next Generation
by Mike Hubbard
Electronic Arts' new upgrade to DeluxePaint adds animation to the world of Amiga paint programs. DeluxePaint III makes it easy by keeping track of the frames for you.

Example Animation: DeluxePaint III
by Mike Hubbard
This is an example of what you can do quickly and easily with DeluxePaint III and a little poring through the manual to see how it works.

AX Animation
The car on the cover of Amiga Exchange Magazine Issue 2.2 springs to life, and a few other rather startling things occur, as well. This animation was created with DeluxePaint III from digitized images (and a little tinkering here and there) by Shamus Mortier.

Product Review: Fantavision
by Brian Roberts
Brian explains a little about what was involved in creating the NCR Fantavision animations.

Marilyn - Fantavision Style
A colorized Marilyn Monroe animation done with Fantavision.

Objects
This is a whole subdirectory of objects for your animating and raytracing pleasure. The first batch goes with the Videoscape tutorial. Next is an object for raytracing in Sculpt-3D. It is: HangGlider.scene

3D Font
Some of the most difficult to make objects in raytracing packages are alphabet characters. They're complicated and time-consuming. Here for your raytracing pleasure is a set of capitals in a 3-D font named AX.Bold. It's in Turbo Silver 3.0 format.

Turbo Silver: Animation Made Simple
by Clyde R. Wallace
A walk-through tutorial on how to do an animation with Turbo Silver 3.0 (and the new 'SV' update) from Impulse, Inc. What to watch out for, and how to get the most out of the time you invest.

Spacial FlyBy: A Turbo Silver Animation
by Clyde R. Wallace
The animation, Spacial FlyBy depicts a planetary system in 3-D space, through which the viewer (that's you!) moves, taking in the sights as you go. This is the tutorial's demonstration animation.

Marilyn
By Clyde R. Wallace
This is an explanation of how the Marilyn animation was created. This was not just your average frame grabbed animation. Several considerations were kept in mind when creating the animation. For instance, the animation was designed to have many frames that would create a long running animation in a short amount of memory.

Marilyn The Animation
By Clyde R. Wallace
This is the accompanying animation from the Marilyn article. Clearly, Norma Jean and the Amiga belong together.

Where to Get More Information
This is a list of company names, addresses, and telephone numbers for the products mentioned in this issue.

Selling Your Animations
by Jay Gross
After you get all the hardware and all the software you need, and after you gain all the experience and skills you need to do animation on the Amiga, what then? You don't have to sell your animations, of course, but if you want to, here are some suggestions for marketing your work, your services, or your animated features.

Get Set for MovieSetter
by Chris Bailey
Gold Disk's animation entry on the Amiga scene is MovieSetter, one of the so-called sprite-based animation products. Here's an article on the program, including a discussion of how the demonstration animation was produced.

MovieSetter Animation: AX Movie
by Chris Bailey
This MovieSetter animation shows off the smoothness of MovieSetter's animations. In only about 60 kilobytes of disk space, and within the memory constraints of a standard, 512-K Amiga, it produces an animation lasting a full 42 seconds. The program supports sampled sounds, too, but they couldn't fit into a 512-K Amiga on top of this slick animation, so the sounds have been omitted from this demonstration.

You can order this Special Issue with your Order Form, or by calling 1-800-284-3624.

Writers Wanted

A.X. Magazine - Setting the standards for the rest of the world.

from Jay Gross, Editor

Authors Guide To Writing For A.X. Magazine

It ain't hard to do. Getting articles (good ones) into A.X. Magazine, that is. The magazine imposes very few stylistic restrictions, in order to encourage a variety of creative material. We want A.X. to be a forum for new writers and new talent, and we want the magazine to concentrate on imparting information in a clear, readable form, rather than on useless conformity to stuffy stylebooks. At A.X., we *define* style. Everyone else can follow us!

Editorially, we do have a few policies of which you should be aware before you submit your work to us. First and most important is ACCURACY, in the longstanding, conservative journalist's sense of the word. Second is FAIRNESS, and third is READABILITY. These are *musts*.

Here are the high points on some other matters.

A.X. insists on original, previously non-published material. We will, however, consider programs and art which have appeared in limited-circulation club newsletters, but we must be informed of any prior use the material has had. Programs and other material from the freely distributable libraries may be included for illustration purposes, and as a convenience to the readers. The program authors' permission must be obtained before inclusion in the magazine.

Unassigned, freelance articles are welcome. However, freelance writers will avoid a lot of grief and frustration by querying first. Send an informal letter to the editor (me!), along with a sample of your writing if you're a new writer.

A.X. prefers a chatty, informal, readable writing style. We will think very hard before running something stodgy and formal. This is not the place for term papers; Strunk and White are useful around here only for keeping pop bottles from staining the desk. This

doesn't mean we won't consider formal pieces. It does mean that anything very formal will have to be REALLY interesting.

Technical articles are welcome. The requirement for technical articles is the same as regular ones, and informality is the rule, to keep the material from being too dry.

We carry the informality to our naming conventions, too. Generally, use first names after an initial full name mention. Common sense, of course, sometimes overrules. If you are going to call people by their last names, use "Mr." or "Ms." on living people, and last names only for the dear departed. Mention Isaac Newton, for example, and then call him Newton. Talk about Harry Copperman, and then call him Harry.

Article lengths in A.X. tend to be much longer than those in other magazines. The editorial policy on article length is: long enough to cover the subject thoroughly. A.X. doesn't want a short article that doesn't say anything any more than we want a long one that doesn't say anything. We want articles that cover the material, thoroughly and succinctly. Divide really huge articles into two or three pieces if necessary, but cover the subject.

Reviews

A product review is the writer's opinion, one hundred percent. Don't waste the reader's time with repetitive "in my opinion" qualifications. Don't fudge the information, either. If you're not sure, chase down the information till you are.

Evaluate all aspects of the program, including documentation and support (whichever ones reasonably apply to the product you're reviewing). Be honest, and don't mince words. A.X. has no particular sacred cows (no axe to grind, so to speak). Our editorial department is completely separate from the advertising department. However, to assure that this very desirable

situation stays that way, we insist on our reviewers' being *fair* to the products under review. By all means point out anything that's wrong, but do so in an honest, fair, thorough manner.

Stylistically, reviews (and most articles, even) are too often written in the first person. If you need the first person, by all means use it. If you don't really need it, please leave it for somebody else.

Do not "rate" products. No "four stars," "three and a half stars," "nine and three-eighths stars," etc. If you wish to convey a rating, use the product's pricing as your scale. A product that rates list price is an outstanding one - it's worth what it costs, even if you don't get a discount. A product that rates above list price is a bargain, indeed. The real question, after all, is whether the product is worth what it costs. Please make it clear, too, that the rating is yours, not A.X.'s.

Don't state discount, especially not mailorder, pricing in your review (or articles, most of the time). Use the list price as your basis for comparison (Exceptions will sometimes have to be made, of course). Product pricing varies widely across the country, and our readers in foreign countries don't necessarily have access to the same discount channels, anyway. Besides, everyone already knows that list pricing is only a "suggestion" from the manufacturer. If known, please include Canadian and U.K. list prices, for those of our readers who spend pounds or Canadian dollars on their Amiga habits.

Be precise. Watch out for names of different companies or products that are similarly spelled, and make your writing reflect the exact styling of a company's or product's name, including capital letters and any normal punctuation.

If known, state the names of the program *authors*, not just the name of the company selling it. Companies don't write programs. People do. Also, many Amiga products are

Continued on page 67

Getting Started In Modula II On The Amiga

When you don't want to get bogged down with details, and still want the power, here is a language to consider.

by Steve Fajwiczewski

Modula-II is a strongly typed, high-level language and is a descendant of Pascal. Niklaus Wirth, the creator of Pascal, developed Modula-II mainly to create a language which was well suited for development of large programs. Its advantage over Pascal is that, while allowing easy access to low-level operations, Modula-II promotes programming on a higher, more abstract level.

Other commonly available languages for the Amiga are Assembler, BASIC, and C, so why use Modula-II? A comparison with the other languages tells us:

Assembler programming is never as easy as programming in a high-level language. While the resulting code maybe more streamlined and faster, programming in Assembler usually bogs down in little details, distracting the programmer from the "big picture". It is also a lot easier to make mistakes with Assembler.

Programming in Basic is certainly easier, but Amiga-BASIC has many faults - aside from its bugs, it's very slow, and its access to the low-level routines that make the Amiga so unique is quite limited. Also, BASIC was not designed for large programs.

C is certainly as fast and powerful as Modula-II. Modula, however, provides a much cleaner and clearer syntax, and allows the programmer to break down a program into smaller, more manageable modules. (C also supports modules, in a manner of speaking, but in a very primitive way). Modula-II, therefore, is much more suitable than C for the neophyte, as well as the experienced, programmer. Some people will claim that C is preferred over Modula-II since it is the "official" Commodore-Amiga language. However, it is quite simple to convert C programs into Modula-II.

Implementations on the Amiga

There are more Modula-II compilers available for the Amiga than any other programming language.

While there are two commercial C compilers, there are four Modula-II compilers. Modula-II/Amiga by TDI Software Inc. was the first commercially available compiler, but it's already showing its age. The other compilers currently available are M2Amiga by Interface Technologies, Benchmark M2 by Avant-Garde Software, and M2Sprint from M2S.

Modula-II is very similar to Pascal. There are five classes of entities in Modula-II programs: constants, types, variables, procedures, and modules.

Constants

Constants are data objects whose value never change. A constant can be expressed literally, as a number or a string. For example, 2 and "hello" are "literal constants". The value of literal constants is apparent from the constant representation. A constant may also be represented by an identifier, and its value is defined in a "constant declaration". Modula-II differs from Pascal in that Modula allows expressions to be used in constant declaration.

An example of a correct constant declaration section is:

```
CONST
WelcomeString = 'hello';
radius = 4;
Pi = 3.141592;
Area = Pi * radius * radius;
```

The semicolon is used in Modula-II to separate one statement from the following one. Note that Modula-II, unlike Pascal, is case sensitive. That means that an identifier called WelcomeString is different from an identifier called WELCOMEString. Modula's reserved keywords must be specified in uppercase. This may take some getting used to, but after a while it becomes quite natural (C is also case sensitive, although in the opposite manner: all C keywords are lower-case).

Types

Every data object in Modula-2 is of some "type". A type determines the range of values that the object may assume, and the operations that are valid on the object. The compiler checks every operation to make sure that it's legal for the given object's type. This is what is meant by "type checking". Modula-2 is very strict about enforcing type checking, and that is why Modula is known as a "strongly typed" language. A few types are built in, and other types can be created by the programmer. The built-in types are:

i) **INTEGER** - Positive and negative integers (currently in all Amiga Modula-2 implementations, **INTEGER** range is from -2^{15} to $2^{15}-1$ which translate to a range from -32768 to +32767). Valid arithmetic operations are +, -, *, DIV, MOD, INC, DEC (which are, respectively: addition, subtraction, multiplication, division, integer division, increment, decrement). Valid relational operations are =, <, >, <=, >=.

ii) **CARDINAL** - non-negative integers with range 0 to $2^{16}-1$ (65535). Valid operations are the same as for **INTEGER**.

iii) **CHAR** - character values from 0 to 255. Valid operations are =, <, >, <=, >=, INC, DEC, ORD. **ORD** returns the "ordinal value" of the character, which is its "location" in the sequence of character values. This is basically its ASCII value (for example the ordinal value of the character Control-A is 1).

iv) **BOOLEAN** - has allowed values of **TRUE** and **FALSE**. Valid operations are =, <=, AND, OR, NOT.

v) **REAL** - floating point numbers. Allowed values are positive and negative real numbers. The range is implementation dependent. Valid operations are +, -, *, / (floating point division), =, <, >, <=, >=.

In addition to the built-in types, new types may be defined in a "type declaration". New types can be defined from scratch, where every possible value of a type is itemized (such a type is called an "enumerated type") or can be built up from already defined types. For example:

```
TYPE
suit = (hearts,diamonds,spades,clubs);
months = (1..12);
calendar1 = ARRAY(1..12) OF CARDINAL;
calendar2 = ARRAY(months) OF CARDINAL;
```

The type "suit" has four different values. **ORD**(hearts) (the ordinal value of hearts) is 0, because it's the first value defined for suit (in Modula-2, a lot of things start with 0, not with 1); "months" is a type built upon the **CARDINAL** type, but its valid values range only from 1 to 12. This is known as a "sub-range type", since it is a subset of an existing

type. Both "calendar1" and "calendar2" are arrays of 12 **CARDINAL**s. Note that even though both calendar types are really the same, the compiler will treat them as two separate and different types, since they were declared separately.

Variables

Variables are data objects whose value may change during the course of a program run. Variables must be of some type, either built in, or defined by the programmer. Variables are declared in a "variable declaration", for example:

```
VAR
Counter : CARDINAL;
card : suit;
Year : calendar1;
year2 : ARRAY(1..12) OF CARDINAL;
```

"Counter" is a variable of type **CARDINAL**, and therefore may assume all values which are legal for the **CARDINAL** type. "card" is of type "suit" (which was defined in the previous type declaration), and can assume the four values defined for "suit". "Year" is an array of 12 **CARDINAL**s, and so is "year2", but the compiler will treat these two as variables of different types.

Procedures

Procedures (also called subroutines, functions, etc.) in a sense permit the programmer to extend the language, since complex computations may be defined and invoked through the use of a single identifier. Thus, procedures contribute to program abstraction (keeping the programmer's thoughts on the problem at hand without immersing her in bothersome details). Procedures are the main mechanism for breaking programs into smaller logical units, and their judicious use promotes good structured code. The syntax of a procedure is:

```
PROCEDURE <ProcedureName> ((ArgumentList)) (: <ReturnValueType>);
BEGIN
.. <statements> ..
END <ProcedureName>;
```

As you can see, a procedure may or may not have arguments, and it may or may not return a value. When a procedure returns a value, it is known as a "function procedure". The optional argument list is enclosed in parenthesis, and consists of a list of variable declarations. A function procedure has the type of its return value specified after the argument list. Some examples of correct procedure declarations:

```
PROCEDURE DoSomething; (* no arguments to this procedure *)
```

```
PROCEDURE CountNumbers(Start : CARDINAL; Finish : CARDINAL);
```

```
PROCEDURE CelsiusToFaren(c : REAL) : REAL; (* this is a function *)
```

```
PROCEDURE Time() : CARDINAL; (* a function with no arguments *)
```

Note that a function procedure **MUST** have the parenthesis regardless of whether the procedure accepts arguments. Arguments (also known as parameters) are a means of passing procedures some specific data. The code that calls a procedure will specify some values (variables or constants) as parameters in the procedure call.

A procedure may contain private constants, types, and variables. These are said to be "local" to the procedure and are not visible to anyone else. A procedure may even contain other procedures.

By the way, anything enclosed between a "(" and ")" is a comment, and may appear anywhere in the program.

Modules

One level above procedures are modules, which may be thought of as logical collections of procedures and associated constants, types, and variables. Modula-2's main strength lies with its use of modules. This is the one Modula-2 feature that contributes to concepts with popular buzzwords today: object oriented programming, information hiding, and data abstraction.

A module may contain lots of code (procedures) and data (constants, types, and variables) which is hidden from other modules. The only part that is visible to other modules, are constants, types, variables and procedures which the programmer specifically wanted to be visible. Basically, the idea is to group logically related procedures in the same module. So, for example, a programmer might create one module which only performs conversions of one type to another, while another module will be set up to handle file I/O, etc.

When a module wants to use (refer to) some object that was defined in another module (and is visible), then it must explicitly import that object from the other module. This is a nice feature, enabling the programmer to always know "where things come from".

Type Compatibility

When Modula-2 allows one variable to be assigned the value of another variables, then these two variables are known to be "assignment compatible". When Modula allows an operation on two different variables in an expression, those variables are "strictly compatible". **INTEGER**s and **CARDINAL**s are assignment compatible, but not strictly compatible, so in the following program segment

CONTINUED ON PAGE 68

You scored a bit of a coup when you got the Ontario government to approve Commodore for education purchases...

Dionne: Yes, we worked for two years on that. It helped when the government changed...

The Amiga lacks the polish on the operating system that you see on the Macintosh. Is Commodore planning to enhance the operating system?

Dionne: With version 1.4, you will see a much more sophisticated operating system. We will be releasing a new chip set also which will give higher screen resolution. You will be able to upgrade 500s and 2000s...

How can you network an Amiga?

Dionne: ...We are developing a fully Amiga solution for the schools in Ontario. We are also looking at making it compatible with the more accepted standards like Ethernet. We can see using the new Amiga 3000 as a Unix workstation. There are some third party cards around though.

What computer do you use yourself?

Dionne: Well, the most use I get on a computer is at home. I use the C-128 only because over the years, I have acquired the software, and the kids like it. I have been meaning to make the change to the Amiga, but you know how it is with getting the time to change. In the office, we use PCs and Amigas and a (IBM) System 38. The PCs and Amigas work as terminals.

Editor's note: Thanks to Dave Allen of RSI "where WEDGES come from" for posting this to Usenet, thence to the clutches of PeopleLink's AmigaZone, and now, at last, re-edited and reprinted in these pages without permission of any of the above. The Computer Paper, Western Canada's Computer Information Source, can be reached at 604-733-5596. •

What's Up? - from page 42

computers and display adapters that talk of larger and larger palettes. The video market, for one, would like more colors. The artists, too, could use a few more, and for really high-quality raytracing and color desktop publishing, a larger palette would be welcome indeed.

There are on the horizon new Amiga products to address those "needs." These include Commodore's airware, a display card developed at the University of Lowell, MA, and the Professional Video Adapter, which does for video things that the video market will dearly love having done. Special effects at the push of a button, and all in a palette of 16.7 million colors.

Even though some of these amenities will likely not be affordable to normal humans, it's an exciting time to own an Amiga. However, the Amiga is in a race against time where the stakes are its very survival. These new features and capabilities have to get to market soon, before the competition closes in. Moreover, the advertising and marketing effort has to increase exponentially. Real advertising, this time, that talks to real markets, and makes the Amiga's real capabilities clear.

To further these aims, there is new management at Commodore USA. Make that "new management" lured over from none other than Apple.®. Lately, the new guy has been raiding Apple's execs for more help, and the executive directory in West Chester is starting to look like who was who at Apple.

The management change, however, is not in the spot in CBM's power structure where technical developments are decided on. Currently, Amiga development would have to stop totally to get any slower. CBM's expenditures - proportionally - for "R&D", the lifeblood of the computer business, are abysmally small, compared to other companies of its size, and especially compared to its competitors' expenditures. This very fact is the subject of a formal stockholder's proposal which will be presented at the next annual shareholders meeting.

The Amiga's prosperity is in CBM's hands (and vice versa), but rabid Amiga users have brought it this far *without* CBM's help, so why expect help now! The buyout? Rumors abound. None other than Hewlett-Packard is rumored to be looking things over to see what's what. If there is any truth to this rumor, Wall Street doesn't believe it yet - CBM's stock continues to lollygag around at a third off their high for the year. This while the rest of the market is booms.

Meanwhile, we Amigoids can just enjoy what we have and somehow keep the faith. What we have works fine. Outstanding, in fact. This magazine can publish happily for many months before the vastly more expensive Mac II systems will be able to do the job. And then? Well, maybe by then the Amiga 3000 will have some developments of its own with which to even the score. •
J:

Amiga Musician - from page 44

want to be able to switch which keyboard is controlling the rack. With the MIDI switch box, you simply connect a MIDI cable coming from the rack into the center jack of the MIDI switch box. Then connect each keyboard to the left and right MIDI jacks of the switch box. Now all you have to do is throw the switch when you want to change keyboards. No MIDI cords to repatch!

(See figure 1).

WARNING!!! DO NOT THROW THE SWITCH WHILE ANY NOTES ARE BEING HELD OR ANY DATA ARE BEING TRANSMITTED!!!! You will get hanging notes and other weird effects. This is equivalent to pulling a MIDI cable out of a synth while it is playing another synth or sound module. A "note on" command is transmitted from the controlling synth, and when you pull the MIDI cord, the slave synth doesn't receive a "note off" command, so the note or notes being played will sustain forever until the unit is powered down or until it receives a "note off" command. Some sequencer programs

have a function that sends an "all notes off" command on all MIDI channels for just such occasions.

The MIDI switch box works the opposite way as well. For instance you could have one master keyboard controlling two racks

(see figure 2).

How to build it:

Even though MIDI cables use the 5-pin DIN standard, only three of the five pins are actually used. They are pins 2, 3, and 4, with pin three acting as a common ground, therefore there aren't many connections to be made. The first step is to mount the four components in an enclosure such as an electronics project box. You will probably have to drill holes to fit MIDI jacks and the switch. You may not have a bit for a regular 3/8" drill big enough for the MIDI jacks to fit, in which case you can easily file the hole the rest of the way after initially drilling with the closest bit size you have. I used a round file that's made to fit in a drill, and it worked fine. File bits can be found at a hardware store for a few dollars. The plastic project boxes found in electronics stores are the easiest to work with.

Once you have the three MIDI jacks and the DPDT toggle switch mounted, all that's left is to make a few solder connections. First connect all of the center pins of the MIDI jacks together (PIN #3). Next, connect PIN #2 from each jack to the switch. See the accompanying diagram. Do the same for PIN #4 of each jack. (NOTE: You may have noticed that the wires cross over to the opposite side of the switch from the MIDI jack. The reason is that when you throw a DPDT toggle switch to one side it actually connects the center with the opposite side (See figure 3). If you were to wire each jack to its corresponding side, when you throw the switch to the right, you would activate the left MIDI jack, and vice versa.)

That's it! An hour of work, and you saved yourself a few bucks and a few headaches patching MIDI cables.

Parts List:

- (1) DPDT ("Double Pole, Double Throw") Mini Toggle Switch
- (3) Female 5-pin DIN jacks (Flush mount)
- (1) Project Box or other enclosure
 - Electrical connecting wire
 - (non-stranded is easiest to work with)
 - Solder and a soldering iron

Modifications:

If you're a bit more electronics minded, the MIDI switch box can easily be modified with, for example, a rotary switch and more jacks, or any other combination. Several of these could be combined into a rack mount unit to create a MIDI patch bay. Well, good luck with this project! I hope a lot of folks find it a useful addition to their MIDI setup. I know I sure did.

That's all for The Amiga Musician for this issue. Till next time...

Send questions, ideas, or comments to:

The Amiga Musician
Glen Deskin
3811 Federal Lane
Abingdon, MD 21009

stead.

If the last subtraction generated a carry -- that is, if the "sold name is greater than the *snew name -- then

```
addx.w d0,d0
```

will put a 1 in D0. Otherwise, it will remain clear. Since the routine that calls `_alpha_lower` will interpret any non-zero value as TRUE, this is all we need.

This final stage of optimization results in a version of `_alpha_lower` that is merely 20 bytes long, a 77 percent reduction from the 86 bytes with which we started. This degree of improvement is quite unusual, however. We have here one of those rare instances in which all the pieces just happen to fall into place.

A Bridge Too Far?

Some people regard tricks like this as the difference between "good" and "great" assembly language programming. However, there is a risk in an obsessive indulgence in the aesthetics of optimization. What can suffer is the intelligibility and adaptability of your code.

In **Listing Four**, the source code will automatically cope with changes in the dirent structure. In **Listing Five**, by contrast, a particular variant of dirent has been "hardwired in." The whole routine will have to be rewritten if the structure definition is altered.

Furthermore, the ADDX instruction has some hidden pitfalls. For example, if you try to use the code in Listing Five in a larger assembler routine, innocently following the ADDX with a branch:

```
addx.w d0,d0
bne.s MOR
```

This failed, however, because ADDX does not set the Z (zero) condition code if the result is 0; it only clears it if the result is not zero.

The moral? You should be wary of overindulging in the pleasures of code optimization. Sometimes the simplest measures are the most effective, in cost/benefit terms. On the other hand, that aesthetic does produce tangible results.

According to LPROF and LSTAT, replacing the code in Listing One with Listing Five has reduced the time my program spends in `_alpha_lower` by nearly 50 percent. As a result, my program's file requester provides the user a even more gratifying immediacy of response. This, as much as anything, justifies the effort to optimize that routine. •

written by somebody, marketed by somebody else, and "published" by yet another company. Be precise in stating who the program is "by," sold by, published by, etc.

In particular, a review is *not* just a catalog of a program's pull-down menus, with some promo copy from the package tacked on. Let the reader know how the product lives up to its promotional material, how well it operates, and how it's organized. The magazine considers a product poor if it does not adhere to the Amiga "look" of programs, and honor the portions of the usual Amiga user-interface that are appropriate for the product. Productivity programs that disable multitasking, for example, are not good Amiga citizens.

Remember your job as a reviewer is to *evaluate* a product's user interface, not to catalog its contents.

Articles

Articles are welcome on any subject. A.X. does not do "theme" issues through the regular issues, although we will try to treat a "major issue" or two in each magazine - whatever is a current hot topic. There can be only one front cover, however, so that kind of sets the tone for the rest of the issue. Please query about articles as far in advance as possible, so that we may schedule things appropriately.

A.X. will not type anything in from manuscripts on paper. Bah! paper! Old Tech! We like getting a paper copy with article submissions, but all material must be received either through the electronic networks or on a genuine Amiga disk to be considered. Use any Amiga text editor or wordprocessor you wish, but save the document in plain, vanilla ASCII format on the disk you send.

Authors who do product reviews are strongly encouraged to screen-grab the screen during the process of their evaluation, and include these screenshots - or and other suitable ones that illustrate the points in the review - with the review. We want them in Amiga IFF format on an Amiga disk. Transparencies, prints and such are of no use to us.

Speling

Non-writer types, never fear! The editors do not mind correcting spelling, punctuation and grammar, in order to encourage good material, especially on technical subjects, from non-writers. This also keeps copy editors off the streets.

Art, Animations, Music, and Programs

Each issue of A.X. is an exhibit space for Amiga artists working in electronic art, animation, and music. You may submit work to the gallery by sending it to the editor on an Amiga disk. Animations should include the appropriate player program, and don't forget to include a piece of paper containing your name, address, background information and any instructions or information needed to view the work. Please put your name, address and telephone number on

the disk label.

DEADlines and Other Details

For assigned articles, reviews, art, and whatever else, deadlines must be strictly observed. Generally, the deadline for general articles (not news) is the 45 days before the issue date. For October's issue, the general deadline is August 15, for example. However, deadlines are assigned on a per-item basis, and material for the news sections will be assigned much later deadlines, up to only a few days before the issue goes to press. We must know the material is coming and when, however. Please take deadline assignments seriously. Missed ones make life in the editing business miserable.

A.X. does not send acceptance letters for assigned articles. If you worry about your materials arriving in good order, give a quick call, or drop a post card to follow up. Unsolicited material which is accepted for publication will be acknowledged; please allow two weeks consideration time. Unsolicited materials not accompanied by return packing and postage will not be returned.

Even if the articles you are writing are a series, please do not refer the reader to "future issues," particularly not "next issue."

Money

A.X. buys exclusive world first publication rights to all material, including all rights for 60 days from date of publication, which is pretty much the "lifespan" of an issue. After that time, all rights automatically revert to the author, except that A.X. retains unlimited, non-exclusive rights to reprint or to republish in collections and anthologies without further payment. Payment is made after publication. Rates are agreed on at time of acceptance and vary according to type, volume and quality of material.

The magazine assumes (and insists) that any materials you submit are your own, original work, that you have not violated anyone else's copyright restrictions, and that you have full, legal rights to market the material. If any of this doesn't apply to the material you send, say so up front.

Where to Send Stuff

A.X.'s intrepid editor hides out in the boonies of South Carolina. The telephone number (yes, we even have electricity now!) is 803-957-1106.

Send artworks, programs, animations, and letterbombs to:

Jay Gross, editor
P.O. Box 2521
West Columbia, SC 29171
803-957-1106

You can also send messages to Jay Gross/A.X. Magazine, at PeopleLink User ID "Ax.Mag" or to CompuServe ID# 72517.326.

Now, Get To WORK!

Okay, get out your thinking cap, clean off your glasses and get busy. A.X. Magazine is one hundred percent freelance produced, and the door of opportunity is wide open. • •


```
VAR
i,j : INTEGER;
b,c : CARDINAL;
BEGIN
i := c;
b := i + c;
j := i + c;
END.
```

the first assignment ($i := c$;) is correct, but the last two assignments will be flagged as errors. Using the previously declared variables and types, the assignment statement

```
Year := year2;
```

will also be flagged as error, because the two variables are of different types which are not compatible at all.

Statements

Modula-II provides two classes of statements: assignment statements, and control statements. Control statements can be further broken into three groups: procedure calls, conditional execution statements, and looping statements. There are two conditional execution statements: IF and CASE.

The IF statement is used to execute, or to **not** execute a group of statements. It is the most flexible conditional statement in Modula-II. There are three variations of the IF statement:

i) Simple:

```
IF <ConditionExpression> THEN
..<statements>..
END;
```

ii) With an ELSE clause:

```
IF <ConditionExpression> THEN
..<statements>..
ELSE
..<statements>..
END;
```

iii) With one or more ELSE IF clauses:

```
IF <ConditionExpression> THEN
..<statements>..
ELSIF <ConditionExpression_2> THEN
.
ELSIF <ConditionExpression_n> THEN
..<statements>..
ELSE
..<statements>..
END;
```

The CASE statement provides a way to specify a multiway branch of control. While the IF statement selects its execution path based on the boolean value of the conditional expression, a CASE statement selects its path based on the value of an expression of a scalar type (a CARDINAL, INTEGER, CHAR, BOOLEAN, or any enumerated type). Its form is:

```
CASE <expression> OF
value_label_1: <statements> |
value_label_2: <statements> |
.
value_label_n: <statements> |
ELSE
<statements>
END;
```

What the compiler does for a CASE statement: the expression is first evaluated, and if the result matches one of the specified value labels, then the statements corresponding to that label are executed. If no match is found, then the statements in the ELSE clause are executed. This differs from the "switch" statement in C in that only the statements of a given label are executed, and then flow of control continues past the END of the CASE.

Looping Statements

There are four different looping statements in Modula-II:

i) FOR statement. This loop is used to execute a group of statements a specified number of times, while updating the value of a specific variable, known as the "index" variable. The syntax is:

```
FOR <IndexVariable> := <InitialValue> TO <FinalValue> (BY
<Increment>) DO
... <statements> ...
END;
```

The index variable can be any scalar type (CARDINAL, INTEGER, CHAR, BOOLEAN, or any enumerated type). The BY part of the statement appears in brackets to denote that it's optional. If omitted, the increment defaults to +1, but when specified, it can be any positive or negative value. The index variable is first assigned the value of <InitialValue>. It is then compared to <FinalValue>. If the index variable is within the range specified by <InitialValue> and <FinalValue>, then the group of statements will be executed. Being within the range means that the index must be less than, or equal to the Final value if the increment is positive, or it must be greater than or equal to the final value if the increment is negative. Once the group of statements is executed, the increment value is added to the index variable, and the program loops back to the comparison code. The FOR statement terminates when the index variable falls out of the InitialValue - FinalValue range.

ii) WHILE statement. A WHILE loop is used to continuously execute a group of statements as long as some condition is true. When that condition is false, the loop will stop executing, and program executions will continue with the next statement. The syntax of a WHILE statement is:

```
WHILE <BooleanExpression> DO
..<statements>..
END;
```

iii) REPEAT/UNTIL statement. A REPEAT/UNTIL loop is very similar to a WHILE loop, except that the loop will terminate when some condition becomes true. Another difference from the WHILE loop is that the condition is tested at the bottom of the loop (after the statements are executed), while in a WHILE statement, the condition is tested at the top

of the loop (before the group of statements is executed). Note, therefore, that the body of a REPEAT statement is executed at least once, while the body of a WHILE statement might not be executed at all, depending on the condition. REPEAT's syntax is:

```
REPEAT
.. <statements> ..
UNTIL <BooleanExpression>;
```

iv) LOOP statement. The LOOP statement will loop forever until the program encounters an EXIT statement. When EXIT is encountered, the program will execute the first statement following the END of the LOOP statement. The syntax:

```
LOOP
.. <statements> ..
EXIT
.. <possibly some more statements> ..
END;
```

It is a bad programming practice to have LOOPS with multiple EXITS.

Wrapping up

Clear and simple, isn't it? Check out the reading list for Modula-II programmers, and have a look through the sample program, and start studying. After you get the hang of it, it's fun! •

Modula-II Reading List

Compiled and commented by Steve Falwischewski

If you want to read up on Modula-II.
Here's a list of a few good books:

Programming in Modula-II,

by Niklaus Wirth, 3rd Ed. / Springer Verlag.
This is the definitive work on Modula-II. A bit terse and hard to read, but full of good stuff. Recommended.

Modula-II for Pascal Programmers,

by Richard Gleaves / Springer Verlag.
If you already know Pascal, and want to get a crash course on Modula-II and how it differs from Pascal, then this is the book for you.

Modula-II: A Software Development Approach,

by Gary Ford & Richard Wiener / John Wiley and Sons.

This is a very good book that covers Modula-II as well as programming practices and software development in general. Highly recommended.

Sample Program Listed On Page 69

A Sample Modula-II Program

by Steve Faiwshewski

This is a sample program, to go with the Modula-II programming introduction article. Now that you are familiar with the Basics of Modula-II, see if you can understand this Modula-II source:

```
MODULE FirstProgram;
FROM InOut IMPORT WriteString, WriteLn;

CONST
  GoodbyeMessage = 'The End!';

TYPE
  Colors = (red,blue,pink,green,yellow,brown,purple);

VAR
  Crayon : Colors;

PROCEDURE PrintColor(c : Colors);
BEGIN
  CASE c OF
    red : WriteString('red') |
    blue : WriteString('blue') |
    pink : WriteString('pink') |
    green : WriteString('green') |
    black : WriteString('black') |
    brown : WriteString('brown') |
    purple : WriteString('purple') |
    ELSE
      WriteString('Hey!! I don't know this color!');
    WriteLn
  END;
  WriteLn;
END PrintColor;

BEGIN
  WriteString('Hello everyone! Look how many crayons I
have:');
  WriteLn;
  FOR Crayon := red TO purple DO
    PrintColor(Crayon)
  END;
  WriteString('Now, I will list the same crayons backwards:');
  WriteLn;
  FOR Crayon := purple TO red BY -1 DO
    PrintColor(Crayon)
  END;
  WriteString(GoodbyeMessage);
  WriteLn;
END FirstProgram.
```

What it means

The second line of the program imports two procedures from a module called InOut. The "WriteString" procedure will display a string of text in the current CLI's window (a string is really just an array of characters), while the "WriteLn" procedure will move the cursor to the beginning of the next line in the window.

A constant, a type, a variable, and a procedure are declared. "Colors" is an enumerated type with seven possible values. "Crayon" is a variable of type Colors, so it can assume only the seven possible values. The procedure "PrintColor" accepts one parameter, of type Colors, and it will attempt to print the English word which corresponds to the value of the parameter.

Simple, eh? •

Sample program also included on this issue's disk set.

ever. After that, they can easily think computers are Apple, unless somebody (an Amiga national advertising campaign, perhaps?) wises them up. So, when they get ready for a computer, guess what they look at first. The plot's simple, and it works, but it'll work for CBM just as well as it has worked for Apple. The advantage is: once the children get their hands on an Amiga, it'll be hard to get 'em to accept anything else.

The bottom line on this one necessitates a "wait state". Wait a while and see. See if there is any real Amiga advertising around year-end. Also, whether the current, very slick ads continue running in the music and desktop publishing journals). See if there is any improvement in CBM's horrendous "marketing" of the Amiga in the USA, and see if the long-standing blunderers can be nudged out the door by one or another of the new waves of "management," of which Harry is the latest.

The facts are, *properly* pursued, CBM could have any market they want, including education or anything else. The ingenious Amiga computer architecture will work in any environment with a little development (considerably more of it than is currently being done), and good marketing techniques (which do not include keeping the machine a secret). However, no matter what he market, pursued in the usual CBM manner, they'll get nothing and have no one to blame but themselves. Again. •

Thinker - from page 9.

if I wanted to publish a "diskazine", and being the nonprogrammer that I am, Thinker would be more than adequate for the job. Merely add the "meat" (pictures, text, sound, etc.); Thinker is already a fine skeleton.

A program such as Thinker doesn't just spring up over night. It's been a long time in the making. Thinker's roots reach almost to the dawn of time - speaking of computers, of course. The author, Alan Bomberger, is a professional software engineer. He programs big computers (mainframes- IBM 370's) for a living and programs small computers for a hobby. He's been doing it since the early 1970's, or earlier.

Early on he met Doug Englebart. Doug Englebart is the guy whose work influenced Ted Nelson to begin work on his Xanadu project. Ted Nelson coined the term "HyperText". (I told you to read the articles in issue 2.1!) At any rate Alan worked with Doug for a while and subsequently used Doug's product "Augment" in his work. Augment is an early mainframe version of HyperText.

THINKER's first debut was on CP/M machines and later on MS/DOS. This was unsatisfacto-

ry due to limitations inherent in those systems. Then along came the Amiga and THINKER found a home.

So Thinker has quite a lineage.

And quite a future. Alan released version 1.0 around the first of the year at an introductory price of \$59. THINKER is now up to version 1.03. All registered owners of earlier versions are entitled to the new version free of charge. Version 2.0 is in the works, too. It's gonna be sumthin'. ARexx port, Amiga Clipboard support... and more.

Besides offering a great product at a great price POOR PERSON SOFTWARE also has a great guarantee. Most, and I mean the majority, of current software producers guarantee that the "disk will be of a rectangular shape and of a generally blue color". That's just about all they can be pinned down to. Caveat Emptor with a vengeance. Buyer beware. Poor Person Software's warranty is not like that. Buy the program; Use it for 30 days. If you don't like it, return it for a refund.

Is that legal? •

Poor Person Software
3721 Starr King Circle
Palo Alto, CA. 94306
(415) 493-7234

Requires: 512K, Workbench 1.2
List price: \$79

--

Preferences

There are a couple of new features added to the program's Preferences menu. "Fast Brush" allows you to paint with a brush, at least this is the promise. The manual explains that this is difficult in any HAM painting program because of the constant color corrections needed. I found that my brush doesn't really "paint" in this mode, but sort of skipped around as if a "dotted freehand" tool were chosen. I can't find much of use for this tool, since its applications are duplicated by the plain old brush mode. "Clear to First" is also a new choice. This allows you to automatically select the current color 0 as the background color, no matter how you've altered it.

Many of the Brush Menu Commands in 2.0 now have keyboard equivalents. A new command, "Solid", turns your brush into a one color silhouette (Like the "color" command in DeluxePaint III). The biggest addition is a wrap-on alternative called "Contour". This turns a 2D color brush into a representational color map whose intensities are read by the program as 3D elevation parameters. I can just hear the discussion that went on prior to this addition:

"Hey. What can we add that no other paint program has even thought of?"
"How about video animation in six dimensions...no...that's too memory intensive. Hey! How about a Contour Mapping routine. Let's see NewTek top that one!"...

and so it might have gone...

This facility could actually be developed into a whole new program. It's so novel and potentially very useful. I can sense a whole list of uses that might be found for it, with some R&D in the field, and some additional adjustments to the ease of its use. Right now it's fun, but very time-intensive on the learning curve. With it and the light source/intensity requester, you can create marvelous folded surfaces that mimic either mountains or towels thrown in a heap. This is an unheralded addition to PP2.0.

"Bend", "Stretch", and "Twist" now are grouped together in a sub-menu called "Special". "Stretch" and "Bend" are new. "Stretch" lets you resize the corner marks (any or all) of your brush in any direction, including folding it over upon itself. "Bend" works in much the same way, but offers more pseudo-3D characteristics.

The LUM (Luminosity) requester has been altered considerably. "Contrast" allows readjustment of the degree of contrast between the light source and the subject on a scale of 0 to 15. "Dither" blends the light source with the subject in various degrees of smoothing. These commands could really

use a graphic display to give you a visual hint on what will occur. "Fine Shade" interpolates a special Boolean algorithm that gives you additional #d lighting across the object.

Really SPECIAL

Microllusions listens! No greater compliment can be given to any developer then this. That the statement applies, though, is obvious when you dip into the new SPECIAL menu. Listed there are: *cycle draw*, *stencil*, *grid*, and *shadow*. "Cycle Draw" lets you paint in a range of colors from the selected foreground paint pot to the selected background paint pot. Considering that this is a HAM paint program, and that you can infinitely alter the palette to suit your needs, the number of cycling ranges approaches infinity as well.

(Although we've been told it's "impossible", wouldn't it be nice to be able to cycle all of these colors as well?! Think of the color cycling animations!).

"Stencil" may be worth the cost of the upgrade alone, and no doubt comes from many of our suggestions. With it, you can denote areas of the screen upon which no painting can occur, so you can now paint around and in back of objects very securely. This option uses a "freehand" drawing mode, and I would like to see it have a polygonal mode as well, for more delicate needs.

"GRID" (the "constrain" function) allows you to define and toggle a horizontal/vertical grid for the exact placement of objects and text. This is very useful for textual slide work. "Shadow" drops a shadow behind any brush, and has a list of choices connected to it. "Define" sets the placement of the shadow's offset from the object, while "Relative" sets the shadow's position at a standardized distance (which works in adherence to the "Define Base Size" command). There is a helpful "hints" section in the manual to guide you through shadow placement and usage.

Accessible from the MODES Menu is the BLENDING requester. BAK (background) and GRD (Gradient) are two new choices. BAK blends the foreground color over the background color. GRD renders any filled shape with a gradient calculated between the background and foreground colors. The "Curve" gadget smoothes the lines in the blending graphs.

Following the Blending requester in the MODES menu is a list of other alternatives that will effect the way a brush is drawn upon the screen:

ADD: Adds the brush colors to the background color

SUBTRACT: Subtracts the brush colors from the background color

MAX: RGB values are used at their maximum intensities in comparison to underlying pixels

MIN: RGB values are used at their minimum values compared to the underlying pixels

USE H: Matches the Hue of an applied color

USE H & S: Matches the Hue and Saturation of an applied color

AND, OR, XOR: comparative binary color placements

The SOURCE option (with the following sub-menus) determines the source of your pixel operations.

COLOR- Default source to foreground color.

PATTERN: Uses the last brush as a drawing/fill tool.

PANTO (Pantograph): After setting a screen offset position, you can copy a section of your work to another area of the painting.

UNDER: Allows you to perform a "Rub Through" operation from the work on the previous page, another new feature that I'm sure was suggested by users of version 1.0.

For getting to know all these options, menus and sub-menus, the manual contains a host of clear and useful tutorials and lists a number of appendices at the back. I wish there was an index, but Microllusions doesn't seem to believe that they are necessary in any of their products, so that's that. The rest of Photon's functions are carryovers from 1.0, and are as exquisite as ever.

No Amiga artist will want to pass this one up.

Photon Paint 2.0

Microllusions

17408 Chatsworth Street
 Granada Hills, CA 91344

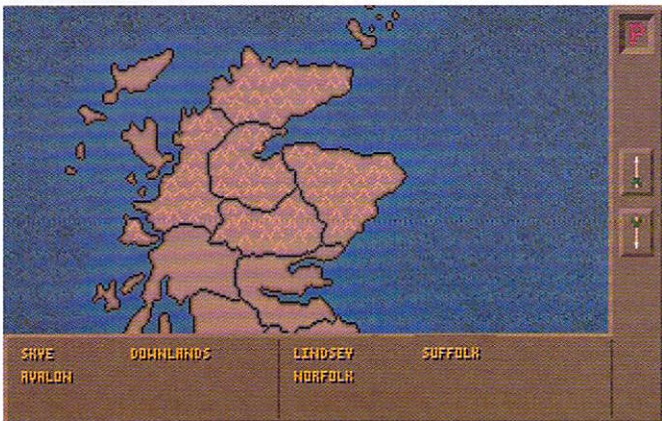
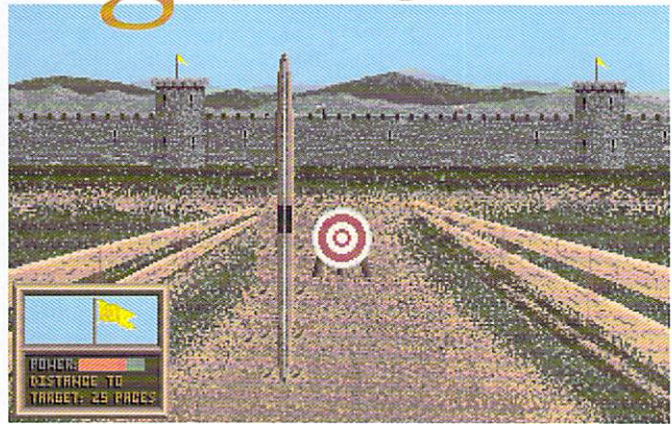
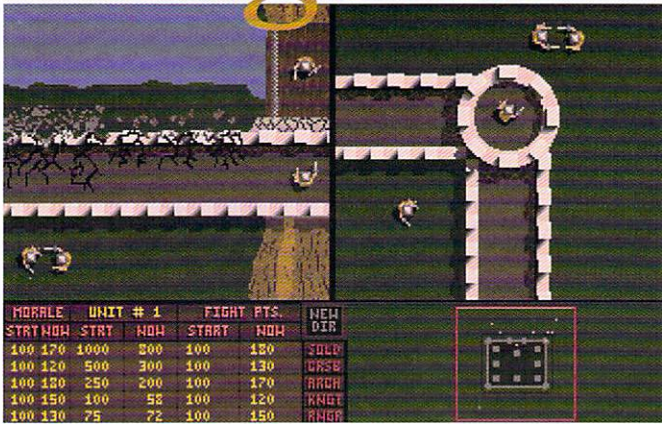
Suggested List Prices: \$99.95

Registered owners of version 1.0 may upgrade for a \$40.00 fee.

Contact the company for details. •

The A.X. Magazine Games Gallery

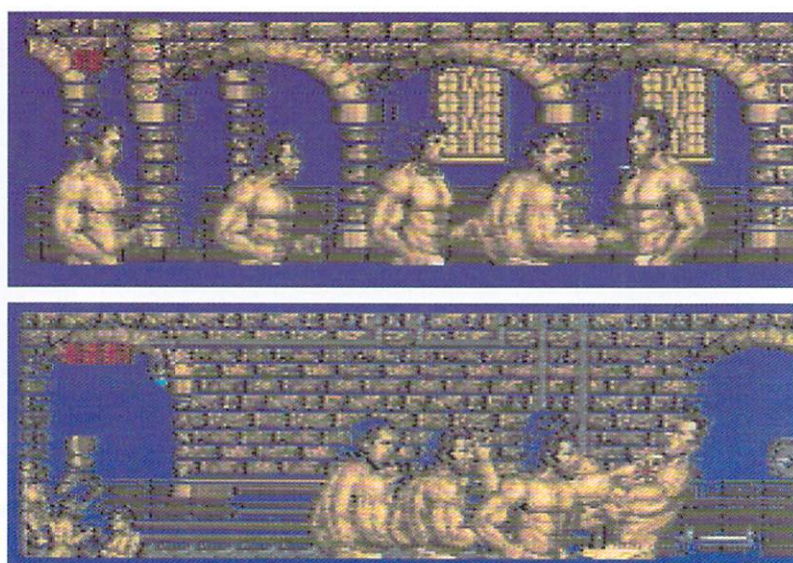
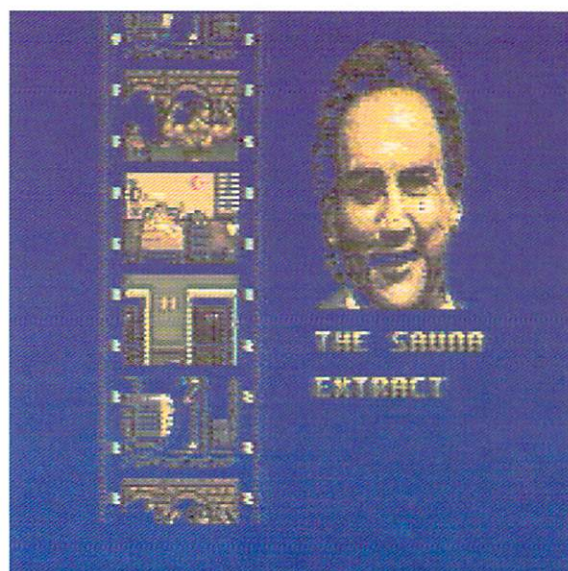
Kings Of England



This new game is a cross between King Maker and Defender of the Crown. In Kings of England, the primary objective is to conquer as much land as possible by purchasing armies, hurling them against castles and getting more money to buy more armies... and so on.

The Arnold

Red Heat



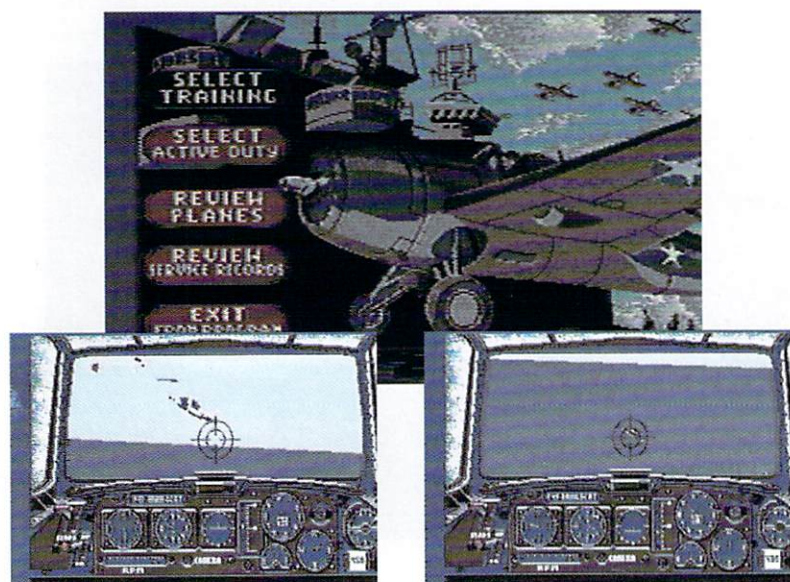
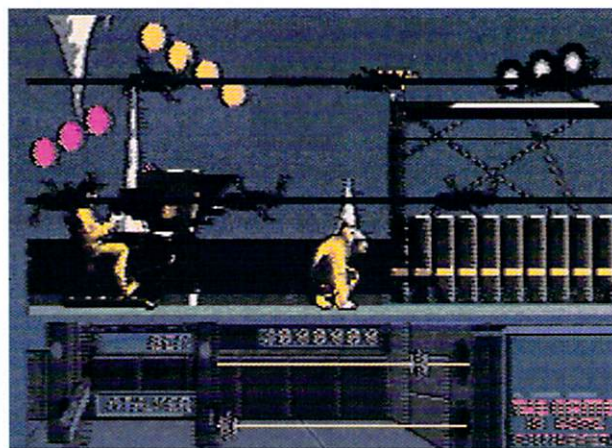
A fighting game based on the movie.

Influence

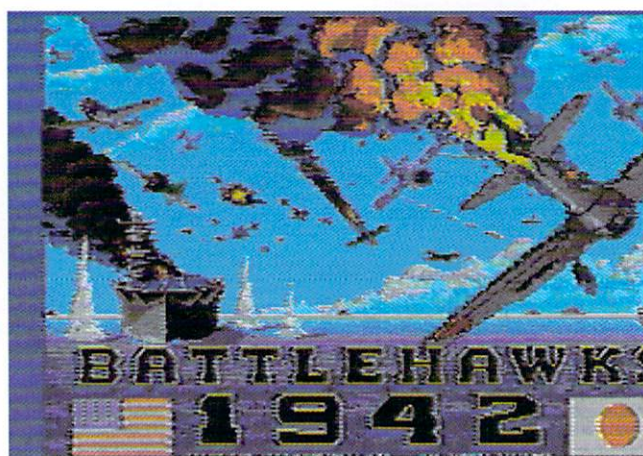
Running Man



Also based on the movie, The Running Man features extensive digitized sequences from the movie, including the sound. An action type strategy game.

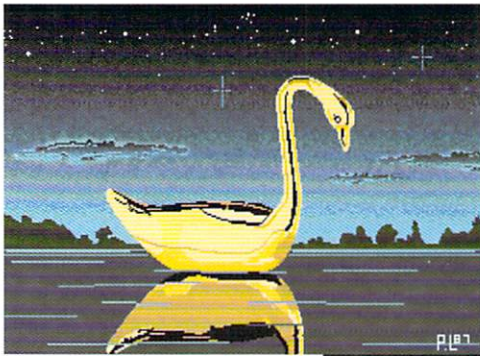


BattleHawks



A new flight simulator game.

A.X. Magazine's Reader Gallery

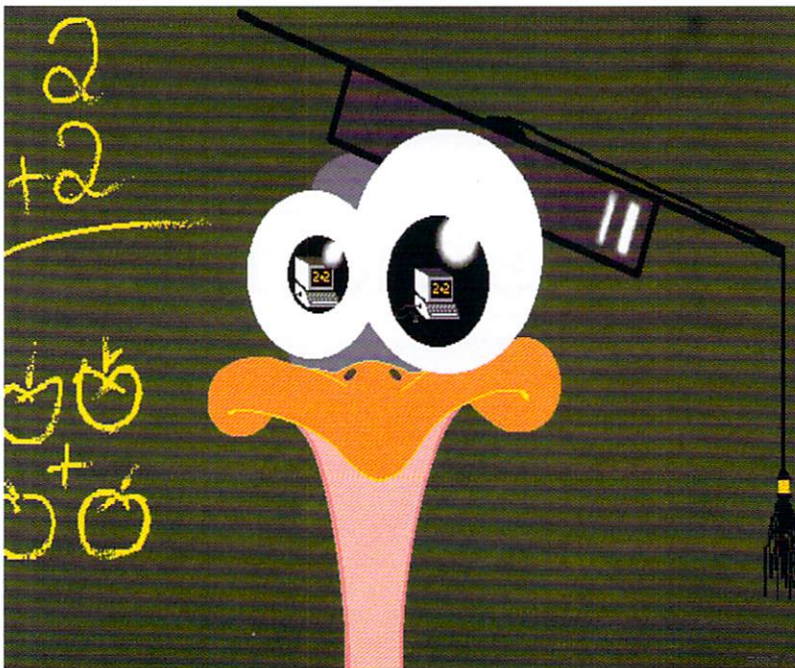


The Swan

The Swan and Battle Cruiser were painted with Deluxe Paint II by Peter Leisner of Chatham, Ontario Canada.

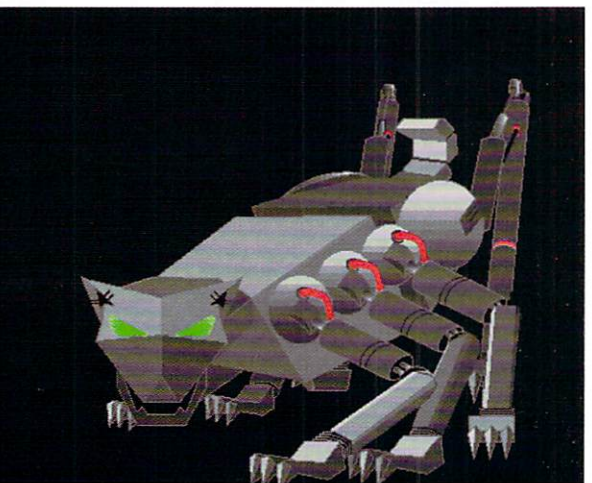


Battle Cruiser



Ostrich

Shane Mecklenburger created the Ostrich picture to make a statement about education and computers as well as about Commodore's approach to the education markets. The ostrich is Commodore who often sticks its head in the sand, and the education market is blind to anything but Apple (which is reflected in the Ostrich's eyes). These images were drawn by Shane Mecklenburger of Alexandria, Virginia.

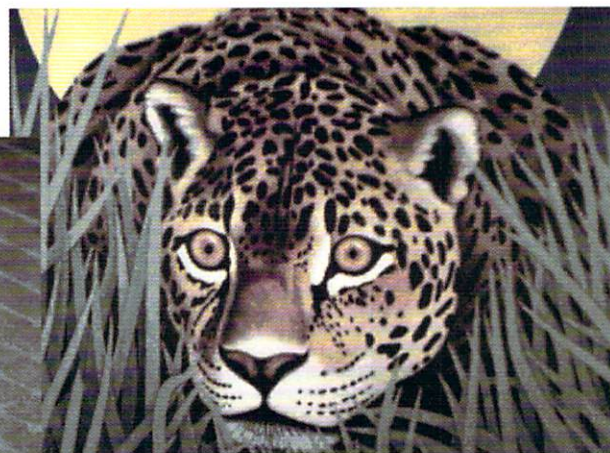


The Hound

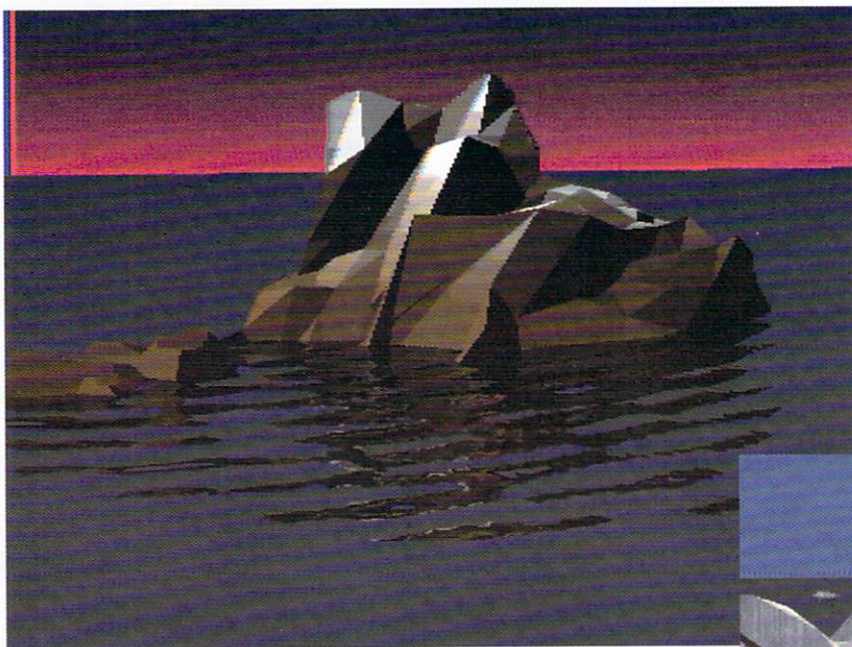
These stunning digitizations by Bruce Yarbor of Oklahoma City, Oklahoma just go to show how good digitizing can get.



Adjustments

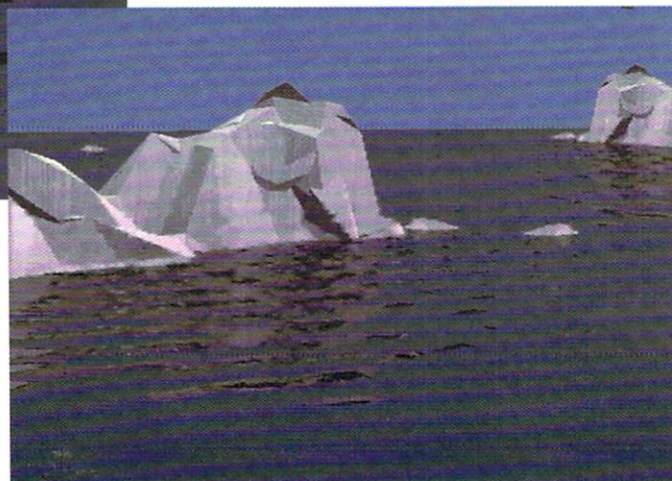


Jaguar



MarsScape

These Fractal Images by Dennis J. Spranger of Eland, Wisconsin were created with DBW Render (a public domain ray tracing program). They were created to serve as backgrounds for video work. They are the original tracings.



Iceburg

In the previous issue...

Amiga News and New Products

Amiga news from COMDEX in Chicago, the National Computer Graphics Association show in Philadelphia, and incredible new Amiga graphics boards. Article by Jay Gross

The Gossip Fence

A little bit of knowledge can be a dangerous thing. Total Fiction by Jay Gross

Stop The Presses

The latest news. Paper articles have lag times, but disks don't. Here is the latest on a new Amiga computer and more.

Virus Warning

A purported newer version of VirusX3.3 is really a virus. Important Information

WORKING DEMO: Font-Works ICON

Load an Amiga font, add a drop shadow, color, and a lot of other things. The demo does everything but save. You MUST use the icon! Included are some tips on how to make the best use of the demo version included in this issue. Have fun.

ABOUT the Font-Works Demo

PLEASE read this first, before running the Font-Works demo. The guru will haunt you if you don't!

FONTs: To Add To Your Own Workbench

Whether you are using a paint program, or wordprocessor that supports different fonts, you are probably tired of your typical, same old fonts. Here are some more fonts to add to your collection. Complete with an ICON utility to install them on your own disk.

UTILITY: Workbench Toggle

This icon driven utility will let you switch between your normal Workbench, and a HiRES Workbench screen without going to preferences, and without rebooting.

ICONS: For Your Workbench

If you are tired of looking at those same old Workbench icons, here are a few more to spruce up your Workbench screens. Simply "drag" them over to your own Workbench disk.

What's New

From the latest in hardware add-ons, a new mouse, Word Perfect's Amiga policy, software, a new president at Commodore, and more.

UTILITY: FreeSpace Indicator

This convenient icon driven utility will display in a small window exactly how much space you have free on your disk drives, memory and virtual RAM DISK (if you have one). When ever you are copying things, or just looking for a disk with a little extra space, this is the just the ticket. Program by R. L. Stockton.

DeluxePaint III: Even More "Deluxe"

Dan Silva's third generation of the king of paint programs is now shipping! Article by R. Shamms Mortier, PhD.

What's Up With Caligari?

The \$2,000 3D art program readies a scaled-down version for normal humans! Article by R. Shamms Mortier, PhD.

Image Processing Overview

An overview of what Image Processing is, and exactly what it can do. Take a look at this article for a general understanding before diving into the separate articles.

The 80286 Amiga Bridgecard

All the information worth knowing about the latest in

Bridgecard technology: 80286.

PageStream: New DTP On The Block

Soft-Logik's PageStream is a new desktop publishing program for the Amiga. Article with screenshot illustrations by Shamms Mortier

PageStream: A Second Opinion

Some like it, some like it not. This is another view of PageStream. Review by Hap Aziz

SPREADSHEET: Template - Expenses

This template will help you keep track of expenses on a business trip. To use this, you need Analyze! or some other 123 compatible spreadsheet program. You can use this application as is, or adapt it to your own needs.

Professional Page Template: Business Stationary

This version 1.2 template, creates business cards, letterheads, and business # 10 envelopes on your Amiga. Requires Professional Page 1.2

HARDWARE NEWS: SubSystem 500

Adding A2000 cards to an A500 with the SubSystem 500 by Pacific Peripherals Article by Jonathan Hardy

Draw Routines in Modula-II

The adventure continues continuing. More neat features to the program. Article, program, and Modula-II source by Rich Bielak

SOURCE CODE: Modula-II Draw

The .MOD and .DEF source files for the demonstration program Draw are on disk # 3 in the DRAW directory.

PROGRAM: Draw

This is the compiled, working program so far.

Program by Rich Bielak

Object Oriented Programming

First of a series on C++ and object oriented programming on the Amiga. Article by John E. Ramspott

Introduction X Window System

What is it? Who needs it? How does it Work? Article by John E. Ramspott

Using Lint

Lint is a program for helping you program in C by finding those errors. Article by Mike Hubbard

DMCS Printouts: The Complete Story

The full story on how to get good-looking music scores out of DMCS. PART 1 Article by John Thompson

"M" - Let Your Amiga Do The Walking

This new algorithmic composer for the Amiga gets overviewed by our resident musician, Glen Deskin. He takes a look at what M is, and what it can do for you musically.

DMCS Printouts: The Story Continues

More tips and tricks for getting good-looking scores out of DMCS. PART 2 Article by John Thompson - continued from part 1

A New Standard MIDI File Format

It is about time. Now you can move sequences back and forth between different MIDI programs easily, get sequences from other computers and convert them for the Amiga and more. By Glen Deskin.

Getting Started With Amiga Music

A beginner's guide to Amiga music software. What does what, and how well. Article by Sally Ann Hubbard

Article by Sally Ann Hubbard

Music Sampler Library

Here's how you can get disks of A.X.'s music columnist's creations. PD and shareware disk library by Sally Ann Hubbard

MUSIC: Rockin' Bach

The music you hear is the A.X. Theme Song for this issue, Rockin' Bach. Original Sonix music composition by John Thompson

MUSIC: Tropical Treats

This is music from the land of eternal summertime. Original Sonix music composition by John Thompson

BBS Spotlight

Taking a closer look at a couple of Amiga BBS's around the country. Column by Chris Bailey

Protocols Continued Again

Everything you never even wanted to know about good ol' Xmodem.

You're Cordially NOT Invited...

Mindscape's Uninvited puts you in the drivers seat. Then the fun starts... Review by Kevin C. Rohrer

Blast! ... From the Past

Incognito's Footman and Demonware's Evil Garden. Arcades revisited. Article and reviews by John E. Ramspott

Falcon vs FA/18

The latest salvo in the Amiga Flight Simulation wars. Review by Mike Hubbard

How 'Bout Them Hobbits!

Looking around Tolkien's fantasy world with War in Middle Earth. Review by Mike Hubbard

Three New Ones From Sega

Alien Syndrome, Outrun and Space Harrier - new Amiga arcade-style games. Article and reviews by John E. Ramspott

PROGRAM: DrawPoker ICON!

Get your odds charts and your rabbit's foot out. This is the REAL THING! Program by NEEDTHIS - run this from ICON ONLY!!!

The Meanest Streets

Double Dragon and Techno Cop, gorey games for the action-oriented. Article and reviews by John E. Ramspott

Painting Pictures Under Duress

PowerStyx: Like playing with Deluxe Paint's polygon fill option. Review by John E. Ramspott

The Amiga Exchange Social Register

Here's where and how to send what and to whom at A.X. Magazine.

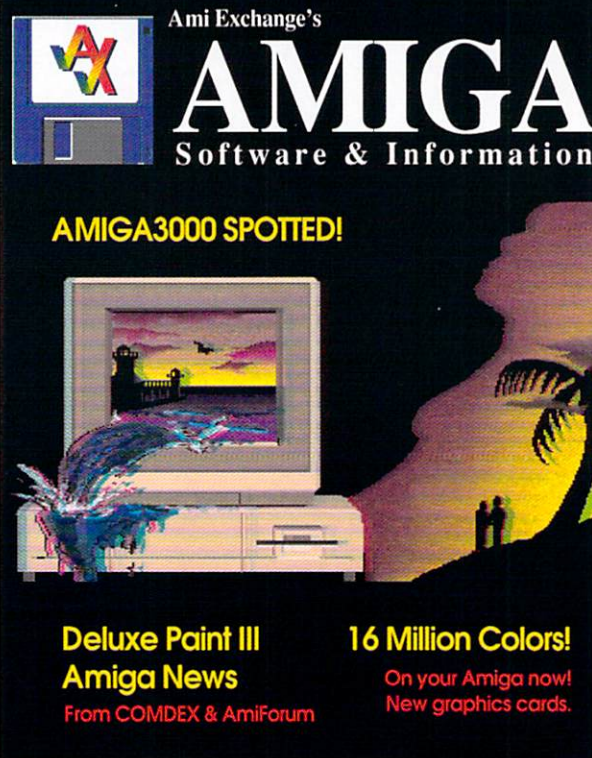
Artists, Get Published!

An engraved invitation to artists to submit work for use in A.X. Magazine.

The Just For Fun Department

Bud and Sally take a turn at Battle Chest. Er, Chessssssss. Humor by Everitt Mickey

All of this and more appeared
in Issue 2.3 of A.X. Magazine.
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Ami Exchange's
AMIGA
Software & Information

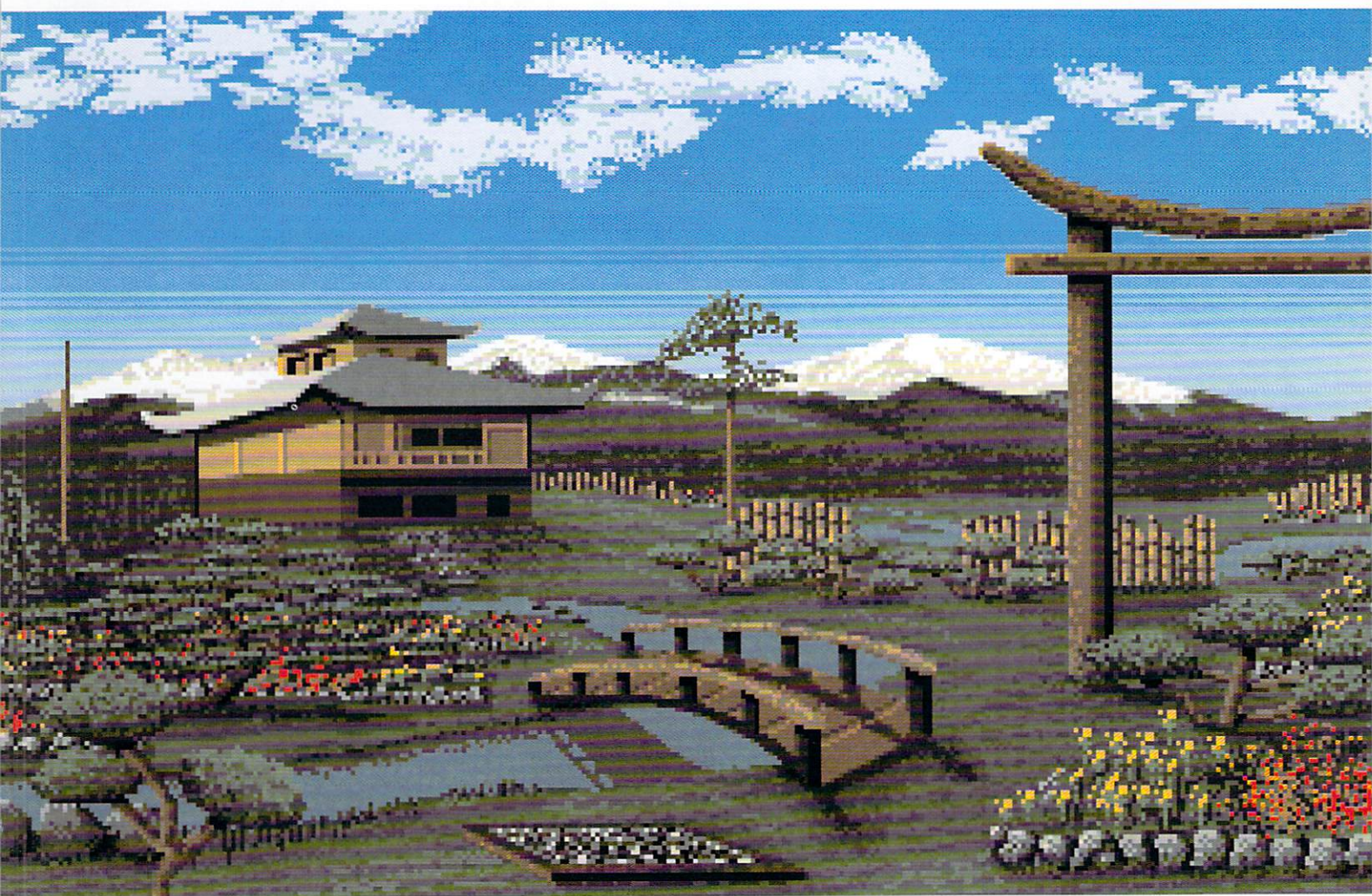
AMIGA3000 SPOTTED!

Deluxe Paint III
Amiga News
From COMDEX & AmiForum

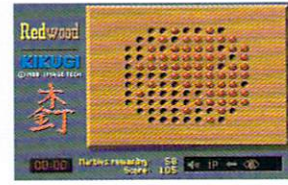
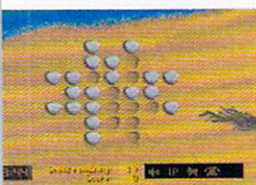
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