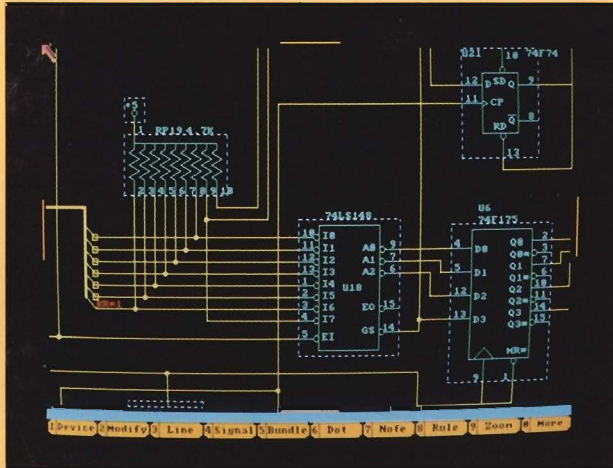


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Pro-Net 2.0

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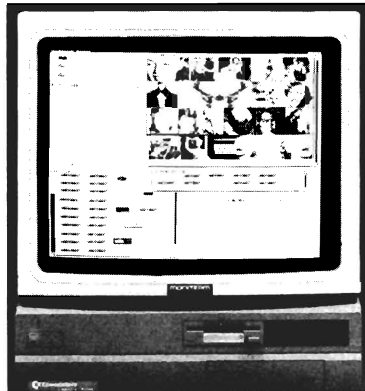
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# On Point

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*Notes from Editor, Tom Bucklin*

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Well, here we go, changing again. Just when you get used to a certain look and feel, we start moving things around (it does keep you on your toes, doesn't it?). It's actually good training, because we're planning a number of changes for this year. But the bottom line is that you, the reader, will benefit.

Open  
During  
Reconstruction

One thing that we don't plan to change, however, is what we do and how we do it. We're here to bring you the absolute *latest* Amiga related news. Along those lines, I think you're really going to enjoy this issue. The entire staff contributed to our coverage of the recent Ami-Expo show in Chicago, resulting in a fairly massive work.

Even more recent, the Siggraph show in Atlanta produced some interesting product announcements. You can read about them in our coverage of the show in this issue. For the technically inclined, Dave Haynie takes a long look at Prolific's "Pro-Net," and compares this product to professional design systems. We also take a look this month at C-Ltd's mass storage, removable media drive. Using a high density format, this unit packs 10 megabytes of data onto a single 5 1/4" disk (just when you thought it was safe to throw out all your 5 1/4" disks).

Another new and welcome addition to the Amiga product family is ASDG's CygnusEd Professional. This high end text editor seems to have been designed for the impatient, displaying some of the fastest access times that we've seen in any program. You can read about the other features that make this product unique in our review in this issue.

Meanwhile, watch for continuing enhancements in the magazine.

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# From the Frontline

## AmiExpo MidWest

The Amiga event makes its first stop in the windy city

**A**miExpo was held from July 22 through July 25 in the Hyatt Regency in downtown Chicago. Fortunately, a cool dry spell blew into town just in time for more than 10,400 attendees and over 100 exhibitors, who made this the largest AmiExpo to date. AmiExpo Midwest was the best yet in many ways. Besides the largest turnout of attendees and exhibitors, it had sold out seminars and business forums, an extensive

AmiExpo art theater, a third birthday party for Amiga, and the most enjoyable "downtown" district so far. Another first for AmiExpo Midwest was the official presence of Commodore.

The regional marketing office staffed a large booth with many Amiga's showing key applications. It was nice to finally see the manufacturer of our favorite computer joining in with the successful AmiExpo format. One of the new trends at this Expo was the presence of professional video systems. Sure we've had genlocks, and

Live! to connect our systems to video recorders. No other personal computer has had the wealth of 3D animation and rendering software that Amiga has, but this was something new. Magni Systems Inc. has been producing "true broadcast quality" video boards for IBM systems for a while and introduced their 4000 series for the Amiga 2000 at the show. The Magni 4000 uses both a standard Zorro expansion slot and the internal video slot. The resulting video out can be genlocked, faded and keyed. Is this quality worth the \$1600 price tag? Magni brought along a professional video test system to answer the ever popular question: "What is broadcast quality?" The visual impact of the Magni was certainly impressive, and the waveforms on the tester made those in the know smile and nod. Look for Magni 4000's to be incorporated in turnkey video workstations, using the Amiga as the processor.

Another big-name professional video system was being shown by Compu-Art from Montreal. Compu-Art was demonstrating a Neriki "broadcast quality" genlock, bundled with an Amiga and a Fairlight effects generator. This package is also intended as a turnkey package for broadcast video studios. Another entry in the high-end video workstation arena is RGB Computer

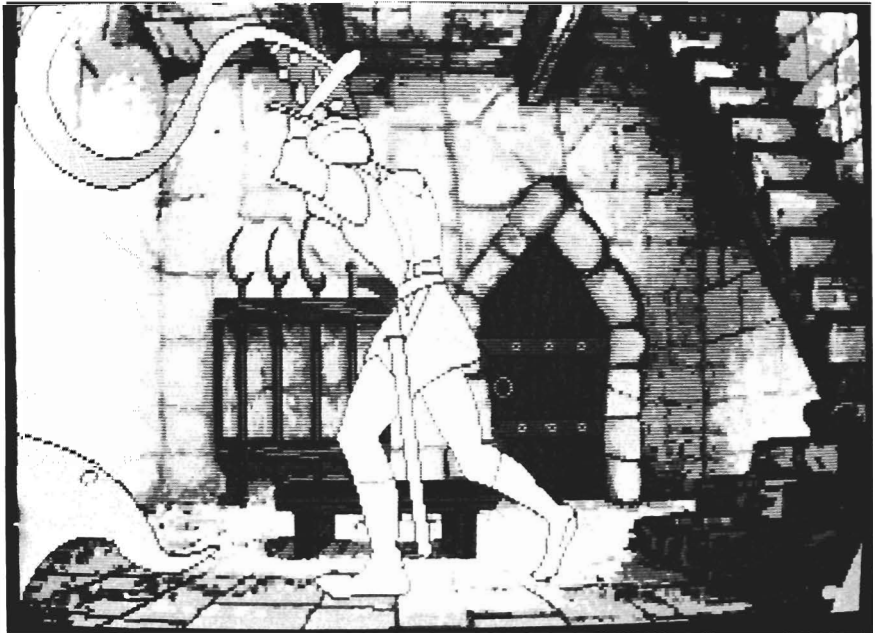
*ASDG was showing their forthcoming interface/software combination for support of the Sharp color scanner*



& Video Creations from Tampa, Florida. Their Super-VHS editing workstation was described in the August Sentry.

Finally, Amicore International of Ludlow, Mass. was promoting its integrated video solutions using the Amiga, Magni genlock, and Edit Line AB. Edit Line is a software package from Sweden, which lets a video producer perform post production editing online. The Amiga will build an edit list with wipes, dissolve, split and key commands, reel numbers, move, copy or delete events, etc.

Of course, there were plenty of new video and graphic products for the more typical Amiga user. Progressive Peripherals was sharing booth space with one of their dealers and selling a new Framegrabber, along with the ProGen genlock. The Progressive Framegrabber uses the parallel port and can capture a full color frame in 1/30 of a second. Not bad for \$499, but not to be confused with the interactive frame manipulation capabilities of Live!. A-Squared was demonstrating the recently completed A500 version of Live! and an almost ready version for the A2000. The 2000 version has several new special effect capabilities such as: switchable dual video inputs, 160 pixel images, with multiple images on screen in real-time, full overscan, high resolution, and mirroring. This board is scheduled to ship in September. Speaking of Live!, a new firm, Elan Design was selling a software product which works with Live! to produce an incredible variety of special effects under mouse control in realtime. Invision lets you program keys and mouse events to change palettes, include Iff images as stencils, composite with genlocks and



*ReadySoft's demo of their upcoming port of the laserdisc game, "Dragon's Lair" was a popular attraction*

more (see review in this issue). Live! related software seemed to be a popular species. Broderbund was demonstrating a new 2D animation package. "Fantavision" has the ability to work with Live! by grabbing a real world image and animating it!

Byte-By-Byte was selling and showing several new 3D videos in their booth. A video tape of the upcoming Animate-Sculpt 4D demonstrated the new features we can expect. A couple of these are metallic surfaces, a utility to import AutoCad objects, and time travel. If you've enjoyed the popular rotating AMIGA and apple video from Byte-By-Byte, and tried to create your own 3D text, then you'll be interested in two new products. Access Technologies was selling Fancy Fonts, a set of three typefaces for use with Sculpt. These are high quality proportional fonts and should be a boon to many 3D productions (see review in this issue). Syndesis was showing their new prod-

uct, Interfont, which works with several 3D rendering programs to produce high quality 3D titles. Interfont is scheduled to ship in September.

Speaking of high profiles, NewTek was very visible with a large booth, with great giveaways. A Calcomp color printer produced 11 by 17 inch full color copies of a DigiPaint image, and pocket protectors with screwdrivers went to the first several hundred attendees. Special events were held several times per day at the booth. Mark Randall performed a magic show which involved many inside Amiga jokes, along with first class tricks. We especially enjoyed watching Mark "blit" coins from place to place. Allen Hastings also used the NewTek booth to show his latest video "Rush Hour." This is a stunning production which Allen is entering in the competition at SigGraph. For all the magic and hopla, NewTek still isn't shipping the Toaster or DigiPaint 2.0.

*( continued on next page )*

## *AmiExpo Chicago* ( continued from previous page )

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We've got to admire their showmanship though. GoldDisk is also a player in the Graphics market. The long awaited ComicSetter was again being demonstrated. Even before this product is delivered, GoldDisk was showing Professional Draw, a structured drawing package which will compete with Adobe Illustrator. Using bezier curves and Postscript output, this high-end system is aimed at the Commercial Art and advertising markets. At a news conference, GoldDisk also announced a 3D animation package to be produced in the near future.

We were also able to see two animation products which were notable as much for their user interfaces, as the end product. Mindware International will be shipping PageFlipper Plus F/X as you read this. PageFlipper Plus is a 2D animation system which can show as many as 40-60 frames per second. You can change resolutions or palettes from frame to frame as well as use fades, dissolves, wipes, etc. Several animations can be running in parallel using separate bit planes. All this control is accomplished with a context sensitive script building process. PFX is written in assembler, so every action pops up on the screen, making it a very responsive program.

The other impressive product is available in Germany and hopefully will soon appear in the US. Starvision International took 3 booths to show a series of new products. Avalon is a 2D animation package which reminds me of Aegis Animator. You can create objects and change their shape or location, as well as loading IFF pictures and brushes which will be moved through "tweening." Avalon supports four channels of sound which can be turned

off and on in any frame. Four different sounds can be used to really spice up your film. The user interface is unique for an Amiga program in that there are no pull-down menus. A series of gadgets on screen perform every action needed. The gadgets reminded me of the international symbols which appeared on auto dashboards a few years ago; one explanation and they make sense. Avalon is another 100% assembler language program, and the speed of Directories, window openings, and file loading will astound you.

We were pleasantly surprised at the abundance of new hardware products. The single most significant exhibit was at ASDG's display. In this one area you could see an Amiga connected to a bar code reader, controlling 120V lights, operating additional serial ports, and scanning color images at 300 DPI and 24 bit planes of color. All these new uses for the Amiga are made possible by ASDG's Twin-X bus board for the A2000. Using Twin-X, ASDG can plug-in commercially available subboards and extend access to many existing industrial, process control, and engineering peripherals. The SpectraScan system was a show stealer. A \$7000 Sharp JX-450 color laser scanner was connected through its IEEE 488 bus and a Twin-X IEEE bus module. ASDG had to write software to take the 24 bit planes of color information from the IEEE bus and read it into a useful Amiga format. Pixmate was used to merge the data into IFF format and voila! A 30 second process for importing full color images at incredible resolution. ASDG is hoping to have SpectraScan ready for sale this Fall. Another A2000 sported two Twin-X boards. One was equipped with a 120V switching relay which could be used to turn

off/on any household equipment. The other board had two additional serial ports installed. The 120V controller was connected to an array of four light bulbs with barcodes below each one. A handheld bar code reader was attached to one of the auxiliary serial ports and was programmed to toggle a light on or off as you passed the reader over the barcode. Attendees from Europe were ecstatic at this demonstration. It seems that the Atari ST sells many systems there due to a bar code reader which is readily available. A Summagraphics graphic tablet was also connected to the auxiliary serial port and could also be used to activate the lights. Yet another serial port was connected to a high quality sound digitizer. Wouldn't it be nice to keep your modem connected while using graphic tablets, laser printers, or even supporting multiple users from your A2000? Hats off to Eric Lavitsky and Perry Kivlovitz for moving the Amiga into the commercial and industrial marketplace.

There were many new expansion products from a variety of vendors. C-Ltd. was showing their Removable Media Drive unit which connects a Konica KT-100 10 Megabyte floppy to their SCSI controller (see review this issue). The Lazer-Xpress scanner and printer were also on display, but not shipping yet. An Australian firm, MAST, introduced single and double 3.5 inch floppy disk drive units, a hardware virus detector, and a 1 Gigabyte SCSI harddrive (that's 1,000,000,000 bytes of storage). A small company called Bill's Boards was showing a unique product for A1000 or A500 owners. The Bus Expander is an IBM AT chassis and box with six Amiga 2000 Zorro slots, six IBM AT slots, and its own power supply. You can install a bridge board,



A2000 memory cards, hard disk drive and controller cards, and even the ASDG Twin-X cards. All this for \$299. Here is the way to even up the score with the A2000 (the A2000's special Video slot and coprocessor slot are not available with the Bus Expander).

HardCards for the A2000 have arrived. The GVP Impact card was available in 20, 40 and 80 megabyte configuration. Expert Services was showing a 100 megabyte hardcard based on the Pacific Peripherals board, and Supra was distributing literature about their soon to be released hardcard. Inner Connection retains their monopoly (so far) of Bernoulli technology removable harddrives. They were also promoting their VIVA authoring software for controlling Laser Video Disks. Spirit Technology is offering a new controller for

connecting ST506 disk drives to your A2000. Most Amiga harddrive controllers support the SCSI format, which is more expensive than the IBM ST506 format.

Haitex was drawing crowds with X-Specs 3D, their recently introduced three-dimensional viewing product. While most attendees enjoyed playing the 3D space game (Leo Schwab was particularly expert at it), many recognized the potential shown by the Molecular Model demonstration. There are real needs in science and medical technology for 3D imagery. Many developers are already working on X-Specs software products, so we can look forward to 3D CAD, true 3D animation, and more. The Amiga was a fast machine when first introduced, but processor speeds of 7.14 MHz are slow by

today's standards. Fortunately, several companies are marketing accelerator cards to remedy this situation.

CMI has a novel approach to speed-up cards. Rather than upgrading to the newer 68020 or 68030 chips, their Processor Accelerator replaces the standard 68000 chip with a faster version and circuitry to run your Amiga at 14.2 MHz. The board also has a slot for a 68881 math coprocessor, for even more throughput. At \$199.95 without the 68881, you will see from 20-40% improvement in many operations.

Of course, CSA is the well known supplier of Amiga accelerator products. Their Turbo-Amiga chassis has been around for years, and the newer 68020 and 68030 products for the A2000 are (continued on next page)

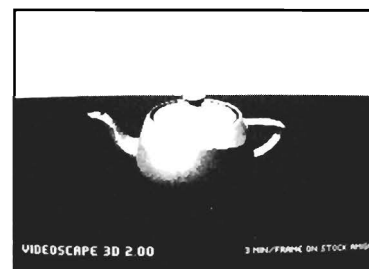
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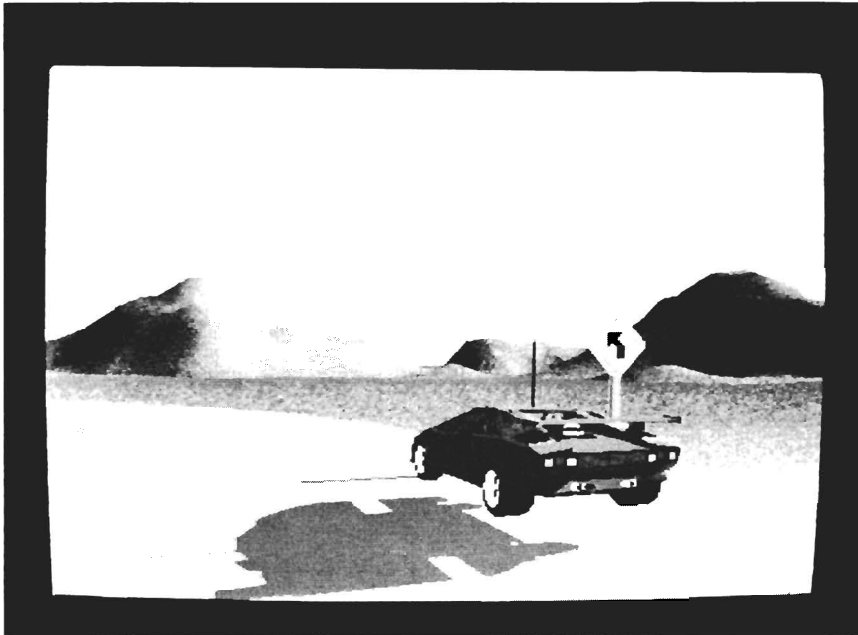
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## AmiExpo Chicago ( continued from previous page )



A frame from Allen Hasting's artistic and humorous "Rush Hour" animation

established successes. A newer player in this arena is Ronin Research and Development, who designs and manufactures the Hurricane Boards. During the AmiExpo, an Amiga dealer, Expert Services, who sells both lines of products, arranged for a series of benchmarks between the CSA and Hurricane products. Both vendors sell 68030 as well as 68020 boards, and the idea of side by side comparisons intrigued us. Over a period of two days, Sentry staff members ran many hardware configurations with several different software benchmarks. The results show that there now are two well matched product lines available for high-end Amiga performance acceleration.

There were relatively few productivity products shown. Abacus is adding to their line of word processor and database products with Professional Data-Retrieve. Software Visions was showing the latest release of MicroFiche

Filer, which now includes an ARExx interface (ARExx is a product of Bill Hawes, which is a version of a popular IBM mainframe interpretive language). Through use of the ARExx connection, MFF can now dial a phone number from your database.

ARExx is big news in the developer community. At least four commercial products now incorporate an ARExx interface, and many more are under development. It seems that Bill Hawes has provided a secure inter-process communication method which can standardize sharing of data between two or more running programs. We expect to see and hear more from Mr. Hawes and ARExx.

The "news" from WordPerfect is WP Library, which we reviewed in July. The next Amiga product, PlanPerfect, won't be ready until 1st quarter 1989! As far as WP 5.0, which is selling

now on the MAC and IBM, WP users will have to wait even longer for WY-SIWG and graphics.

Another long-awaited product, Publishing Partner Professional from Soft-Logik, is still a work in progress. Every time we see the high quality dot-matrix and laser output from Publishing Partner, we wonder when the final product will be ready?

In the meantime, Excellence! from MSS is promising a significant speed-up based on a recompiled version (we're still waiting for this version). New Horizons is extending their Color WY-SIWYG word processor into the Post-Script marketplace with a new add-on module, which allows scaling and rotating.

Progressive Peripherals will no longer be marketing this product in the US. Instead, Precision Software Ltd. has opened a US division, based in Dallas, to sell and support Superbase Personal, Superbase Professional and Logistix.

The most significant new software product may be "Magellan" from Emerald Intelligence. This is a full blown expert system toolkit, which brings the world of Artificial Intelligence to Amiga users. Magellan does not use Pro-Log or LISP, but is written in C and can even multitask. We saw an interesting demo based on the diagnostic rules for Amiga 1000 repairs. Rules make the heart of an expert system. "If screen is solid black then 80% probability of Agnus chip failure", is an oversimplified example of a rule. When all the rules are entered, they are called a knowledge base and Magellan can use the probabilities to diagnose the prob-

( continued on page 10 )

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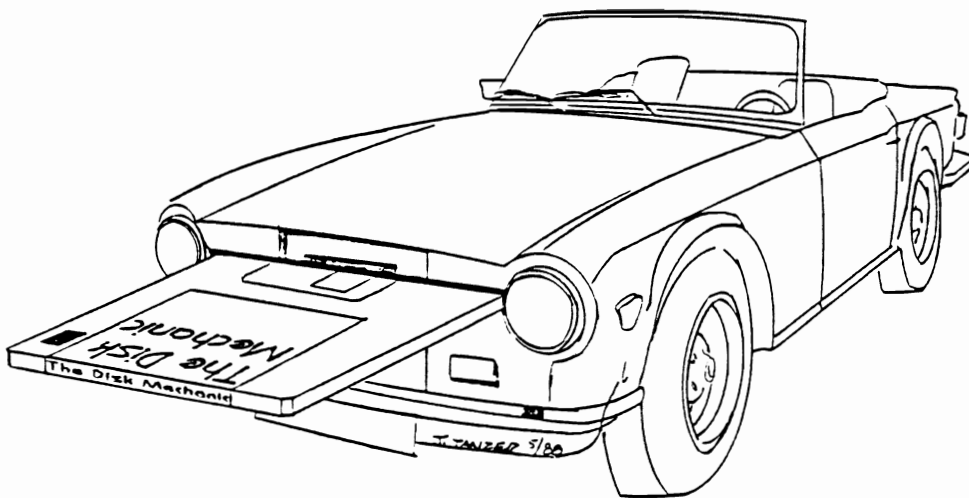
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## **AmiExpo Chicago** ( continued from page 8 )

---

lem and suggest solutions. Since Magellan can use Amiga sound, graphics, speech and DOS functions, an accurate diagram of the suspect part was displayed in response to the problem. Magellan can even be used to write programs! We'll keep you posted about this exciting product.

New tools for the programmer include another product which incorporates an ARexx port. Cygnus ED Professional from ASDG is a very high performance text editor which offers the fastest screen scrolling yet, along with vertical block cut/paste and 1,000 other features (see review this issue). OTG has introduced DSM, an "intelligent" disassembler for those of you who need to reverse engineer some code (see review this issue).

The other contender for "Most Important Software" product has to be Dale Luck's XWindows server. XWindows is widely used in Higher Education and some research environments as a networking/operating system. Dale was running his X server on a standard 2000 as an Amiga task. He did have the benefit of an A2024 high-resolution monitor prototype. Xwindows looks something like an Amiga or Mac windows and Icon interface, but the methods for opening and dragging windows are different. X applications must be ported to run on the Amiga, and Dale has completed a calculator, text display utility, and a couple of others. The demo of Arabic text was outstanding! Dale is working on tools to make application ports easier. The main use for the X server is not for running XWindows applications, but as a display station on an X network. Dale assures us that the product already works well in this mode. This X Windows server will not

be a Commodore product, but will be marketed independently in the near future. Compared to the Los Angeles Expo, there was a shortage of Music products in Chicago. The infamous Music-X was nowhere to be seen, but NewWave made a hit with Dynamic Studio 2.0. Version 2.1, which should be just about finished, will include support for SMPTE. NewWave was also making some wild sounds with Sound Oasis, an innovative product which brings high quality sampled sounds from the Mirage into the Amiga (see review in August Sentry).

There may have been a shortage of Music software, but there was no lack of computer sound on the exhibition floor. StarVision provided a hurricane of sound with their realistic car-crashes, explosions, and rocket-blasts recorded with their new stereo sound sampler. This European import uses separate connections to the serial and parallel ports to keep the audio signal clear of power inputs. The sampler includes its own pre-amp and fader controls. Played back through a 200 watt amplifier, these sound samples were all too convincing.

For games, EA's Bard's Tale II was there (see review this issue) along with F/A 18 Interceptor. Discovery software was demo-ing a couple of new fantasy/action games which looked very impressive.

Digitek was selling Vampire's Empire and showing a soon to be released Miniature Golf game that they have been developing for some time. Microdeal introduced Tanglewood, a new adventure with very impressive graphics. Unfortunately, the Tanglewood boxes we received on two separate oc-

casions lacked the game disk. Readysoft is shipping two action games, Ganymed, and Bomb Busters (see review this issue), and announced four future products as well. The most impressive of these is Dragon's Lair, the laser disk based arcade hit. If the demo we viewed in Chicago is truly representative of the product...move over Defender of the Crown.

The keynote addresses were filled to capacity at AmiExpo, but we did notice the lack of a high-level Commodore Marketing executives to reassure us of Commodore's plans (probably all on summer vacation?). What was reassuring was the large number of Amiga User groups who took booths and bused in members by the hundreds. The record turn out was in large part due to the active support of Amiga owners in the Midwest. The next AmiExpo is Los Angeles in October. We hope that some of these "real soon" products will come to market by then.

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### ***The Hurricane and CSA 68020-030 Benchmarks***

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The busy floor of AmiExpo Midwest is not an ideal spot for conducting performance benchmarks. However, when Terri Timko of Expert Services, realized that they had the latest accelerator products from CSA and Ronin, along with a set of 68020, 68030, 68881 and 68882 chips in their show stock, it seemed like a good time to give it a try.

Expert Services is an Amiga dealer from Cincinnati who specializes in packaging high-performance Amiga systems. Since the Sentry booth was across the aisle, we were asked to mon-

itor and record the results. Both CSA and Ronin offer a base board, with optional math coprocessor, a 68030 adapter board, and 32 bit wide memory boards. The particular products differ in many design details, especially in the 32 bit wide memory boards. CSA includes Kickstart 1.3 (1.21) in a 32 bit ROM chip on its memory board so that you can autoboot from a harddrive. This particular package leaves about 384K of the fast 32 bit memory available. Ronin's 1 Megabyte memory board gives a true 1 Meg of 32 bit memory when used with the 68020 processor. When using the 68030 (which contains a built-in MMU), Ronin maps Kickstart 1.2 to the 32 bit memory to achieve the same operating system speedup as CSA, without using up as much 32 bit address space. The Hurricane board will not autoboot a harddrive.

Performance benchmarks can be a less than exact science. We used three programs to tease out the differences between the two sets of products. Bill Reed of CSA provided a mandelbrot program which performed one set of calculations, drawing the resulting mandelbrot to the Amiga screen as it worked. Brick Eckstein from Ronin provided a scaled Sieve of Eratosthenes, which ran a continuous set of calculations, and showed the resulting performance relative to an Amiga 1000. Finally, we used the 68881/68020 version of Sculpt 3D to render the coffee cup with maximum antialiasing, and photo quality. The Sculpt test

is the closest we could come to real-world testing during the Expo. It was a good representative, since it is computation intensive, and ray tracing is a prime market for accelerator products.

The actual tests were performed using two Amiga 2000's with all harddrives and expansion products removed or disconnected. We used just the 680x0 boards and the internal floppy drive. During the two days of testing, we swapped the boards among the two machines to determine if one was noticeably faster, and we swapped the actual 68020 and 68030 chips on the boards to verify repeatability. Given the limits of an on-the-floor head to head competition, the results below should be repeatable by anyone. You have to be

careful reading the table, since in the Ronin Sieve, higher numbers are "better," while the other results are in seconds, with lower meaning faster.

Well, what does it all mean? Stated in the simplest terms, you could speed up your Amiga by a factor of 609% to 1600% by using the complete set of accelerator products. Using only the 68020 family with 32 bit memory, you could obtain a speed-up of 575% to 1461%. Without the purchase of 32 bit memory, the best speed improvement you can expect is from 96% to 718% (the range of percentages reflects the differing performance on various benchmarks). The overall pattern of results makes sense. The benchmarks get better as you use faster chips. The one exception occurred with the 68020,

68882 and 32 bit memory configuration. Here, the additional memory available on the Hurricane 32 bit board and the effect of Kickstart routines in 32 ROM on the CSA board produced a lopsided advantage for the Hurricane board, which completed the Sculpt 3D process 1 minute and 31 seconds faster. When the same configuration was used with the 68030 chip, this was reduced to a 2 second difference.

Our overall conclusion is that Ronin offers CSA serious competition across the spectrum of accelerator products. In most of our trials, the Hurricane products were faster. Since the current pricing of these products ( *continued on next page* )

Benchmarks Results of CSA and Ronin Accelerator Products						
	SYSTEM		MANDELBROT		Sculpt 3D	SIEVE
	CSA / Hurricane		CSA / Hurricane		CSA / Hurricane	CSA / Hurricane
	(Seconds)		(Seconds)		(Relative to 1.0)	
Base A1000	----		862		1.00	
68020 14Mhz	57.3	44.9	172	140	1.15	1.88
68881 14Mhz						
68020 14Mhz	45.5	34.1	155	120	1.14	1.89
68881 25Mhz						
68020 14Mhz	23.1	26.6	150	59	4.57	4.35
68881 25Mhz						
32 Bit RAM						
68030 14Mhz	38.2	34.1	147	122	1.25	1.96
68882 25Mhz						
68030 14Mhz	22.8	21.4	55	53	4.57	6.09
68882 25Mhz						
32 Bit RAM						

## *AmiExpo Chicago* ( continued from previous page )

also favors the Hurricane products by several hundred dollars, prospective purchasers should seriously consider both product lines. Be sure to consider the differences in design philosophy prior to making your selection. Autoboot capability is just one example. Search out experienced dealers like Expert Services for the advice and support you will need.

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### *AmiEXPO Theatre*

by Diane & Don Nafis

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Theatre! Yes! AmiEXPO Midwest '88 featured an Amiga Theatre. But how frustrating it was trying to get there from the main exhibit hall. The theatre was located in the Hyatt West Tower Building, about a quarter of a mile walk from AmiEXPO's center of action in the East Tower Building.

First impressions? What a letdown! The "theatre" was tiny. It consisted of about 50 chairs, two VHS video tape setups, an Amiga 500 with a Supra

hard drive, and four black and white dot matrix printouts all packed into a 30 by 30 foot room. The slide show was tucked into a back corner of the room displaying individual Amiga graphics in a continuous loop from the A500's harddisk. The wall art was overlooked by most visitors. Our first instinct was to sit down in front of the A500 to watch the slide show. Two or three slides clicked by and we began to lose awareness of the din around us. We were hooked! The slide show was a spectacular presentation. As the program handout stated, "The images in the AmiEXPO slide show demonstrate the wide variety of techniques provided to the artist by the Amiga. Images in the show include 3D optical illusions, color cycled animations, commercial designs, reproductions of old masters, cartoons and cards from an original Tarot deck." Each artist, each slide, seemed to present something new - a new style, a new feeling, a new technique. We were treated to some great

art and the work of some innovative "new" artists, that is, artists turning their full talents to this new medium of computer graphics.

The program provided with the show allowed us to keep track of the slides as they flashed past. Whether commercial or amateur, the artists offered amazing works of art. Of particular interest to us were the 13 slides submitted by the K-6th graders of the Joseph Keels Elementary School, Marty McClain, teacher. The children's art exhibited a mastery of the computer program, lots of imagination and talent, and a large degree of artistic skill. It was noted in the handout that Marty had won the Computer Teacher of the Year Award in South Carolina from IBM, and was presented with a PS/2 machine as her prize (hopefully, she has been able to trade it in on an Amiga). Other artists whose work was presented in the slide show included groups from Scottsdale Community College, Ohio State's Advanced Computing Center for the Arts and Design, San Fernando Valley Graphics/Video SIG and 11 individual artists.

Next, we turned to the video presentations. These were amalgamations of short subjects and excerpts from longer works, all created on or with the help of the Amiga. The video quality was at best, horrible, colors constantly fading and shifting, reds bleeding all over the screen. The audio response was at about the level of a voice grade telephone line. But, once we became acclimated to the poor video quality, the content took over and swept us away.

Who could ever forget Steve Segal's "The Dances of the Tumblers," or was it "The Dance of the Stumblers?" It is by no means just a demo of the power of the Amiga, but a full fledged, top quality animation that had viewers on the edges of their seats (when they wer-

*One of the exhibits from the Amiga theatre*



## ARexx

### *The REXX Language for the Amiga*

ARexx is a multitasking implementation of the REXX language, an elegant high-level language especially suited for macro-processing. Its clean, simple syntax makes REXX easy to learn for novices — and experienced programmers will appreciate advanced features like compound variables, INTERPRET instruction, and source-level debugging.

- Interactive, Interpreted Operation
- Exceptional String-handling Facilities
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- Built-In Source-Level Debugger
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### **The Emerging Standard**

ARexx is the *de facto* standard for inter-program communication. Software that supports the ARexx command interface can be customized, extended, and combined with other ARexx-compatible software in integrated applications. Watch for announcements of ARexx support from a growing list of Amiga software vendors!

**Available Now ... Only \$49.95**

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WShell is the best command shell on the market, with features and convenience of use that go well beyond the CLI and 1.3 AmigaShell. And yet it's highly compatible with the CLI, so you don't have to learn a new command language to use it!

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- Transparent Support for ARexx Macros
- Script-bit Support for "Execute" Scripts
- Compact, Reentrant Code — Only 10K

### **ARexx Command Interface**

With WShell you can use REXX-language macro programs like executables — even as filter programs in a piping system. Use the source-level debugging to single-step through a system of concurrently-running "piped" programs!

**Available Now ... Only \$50**

Ask your Amiga dealer for ARexx and WShell, or order them directly from the author. Please include a check or money order plus \$2/item shipping (\$8 for overseas airmail) and any applicable taxes. Dealer inquiries welcome!

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en't rolling in the aisles). It ended all too abruptly with the credits, sending loud moans through the audience.

"X-man" by Iguana Productions, a tongue-in-cheek super hero story, went Clutch Cargo animations one better by revealing bits and pieces of the actors behind the mouths and eyes and around the frame of the animations. There was imaginative footage ranging from a 30 second animation of a music box dancer created by William W. Lister, to a rock video submitted by QVS Productions; from the "LightBox Demo" by R & D L Productions to "Nuclear Holo Take 3" by Ohio State; from the "Undergraduate Demos" by ACCAD Ohio State University to the commercial quality "Leviathan Rising" by RGB Computer and Video Creations.

After attending the theatre presentations, we sought out Stephen Jacobs,

the producer of the Amiga Theatre. He had the final presentations ready in New York only to find, when he arrived in Chicago, that the promised big screen video setups would not be available. With a week remaining before the show, he managed to find VHS setups and re-dub his second generation presentations to third generation VHS. As Steve pointed out, this final unplanned for dub (with its resultant signal loss) and the inherent inadequacies of the VHS format accounted for the poor quality of the result. The originals, he assured us, were far better.

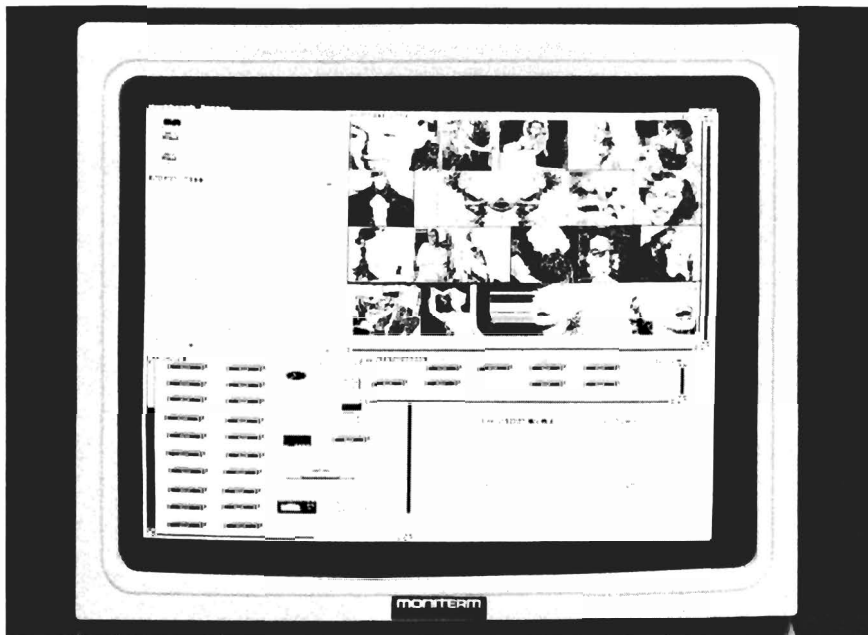
However, technical difficulties aside, the production was excellent. Right now all Amiga artists can help to make the next show(s) a resounding success (es). Steve Jacobs has issued a call for original submissions for inclusion in future AmiEXPO Theatre presenta-

tions. Send a copy for submission to AmiEXPO Theatre for exhibition in Los Angeles in October. For details call 1-800-32-AMIGA.

## **Siggraph '88**

The 1988 edition of SIGGRAPH, was held in Atlanta from August 1 through 5. Since this event was held only two weeks after AmiExpo Midwest, we assumed that there would not be too many surprises. In general, our assumption was correct, but there were several newsworthy happenings. Commodore placed a high profile booth in the main exhibition hall. The booth was overflowing with Amigas and its

( continued on next page )



*Moniterm's new Viking full page display for the Amiga 2000*

high profile was matched by high level executive representation. Max Toy, President of Commodore USA, and Dr. Henri Rubin, Executive Vice President of Engineering, were both present. About a dozen firms were exhibiting in the Commodore booth at Siggraph.

Among the most appreciated exhibits was Dale Luck running his Xserver on a 2000, with a 19" high resolution Moniterm monochrome monitor. This was a pleasant surprise since Moniterm is a well known manufacturer of over-size, high-res displays for PC's and Mac's. The combination of this crisp 1008 by 800 19" display and Dale's fast XWindows grabbed the engineers in the crowd by their pocket protectors. On top of this, the A2000 was networked to a SUN workstation using Ameristar's ethernet connection. The aerospace boys should be placing orders by the hundreds!

Another surprise was an Amiga infrared medical imaging system from ACDA. Attendees could stand in front

of the sensor and see the different temperature bands of their body displayed in real-time on a monitor. Those with glasses were surprised to see black holes in their heads. Speaking of glasses, HaiTex was using their LCD shutter 3D glasses with a prototype of a three-dimensional XCAD. CSA took the opportunity to introduce an 8-16 Megabyte DRAM board. This board uses bank switching to extend beyond the normal 9.5 meg limit of the Amiga.

Last year at Anaheim, many Amiga announcements focused on 3D Ray Tracing or rendering products. This year, the focus was on animation. Maybe it's related to the success of Roger Rabbit, but the Hollywood crowd were searching for computer tools which would help them get a piece of Roger's action a little faster. Even though the floor was littered with expensive Mac II's, the easy NTSC output from the Amiga systems caught

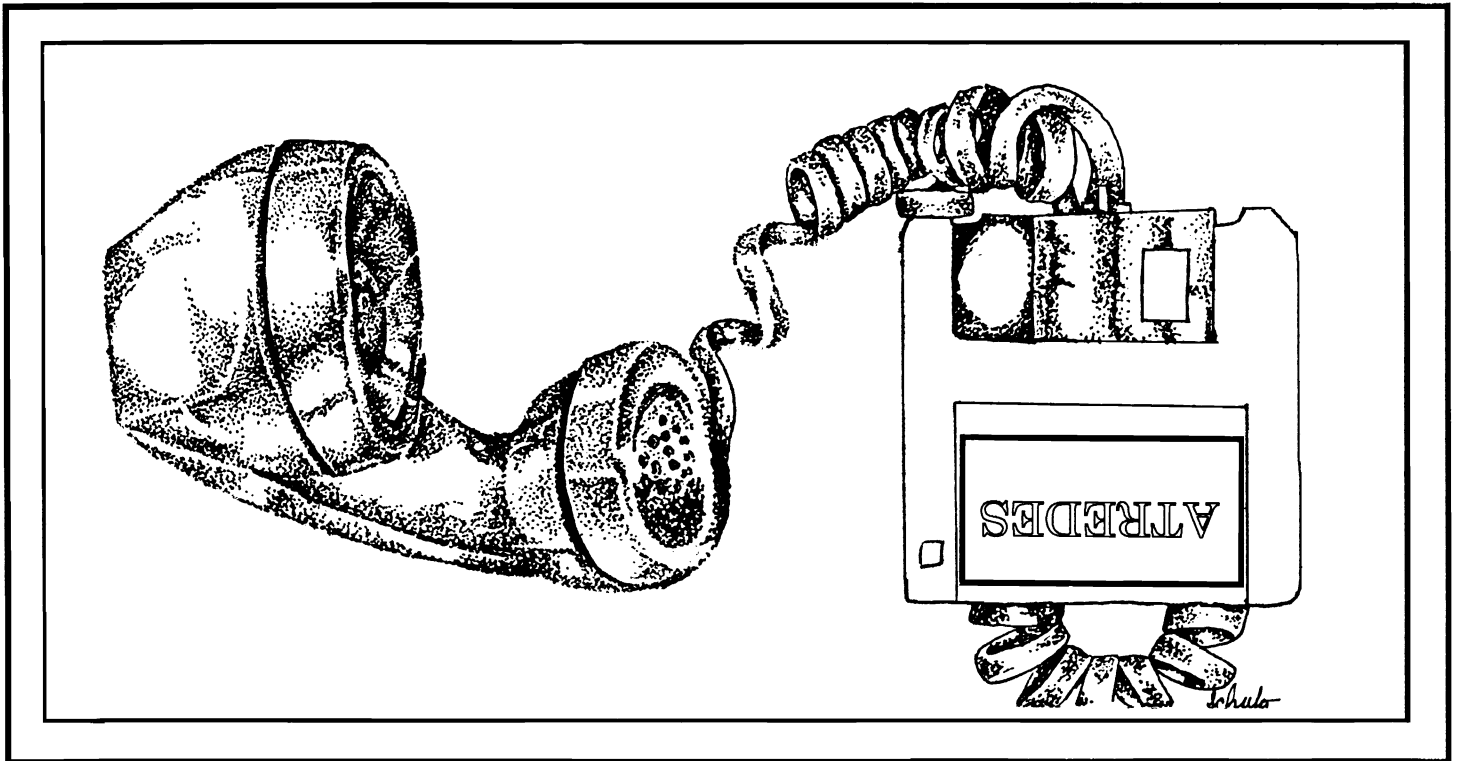
the eye of many movie moguls. Among the surprise exhibitors was Oc-tree showing the now completed Caligari 3D rendering and animation system. At \$2000, it is by far the most expensive Amiga graphics software. Microillusions was present and showed a "completed" Photon Paint 2 which should be shipping soon. They also demo-ed Photon Cell Animator and promised that it too was finished.

Another frame buffer was also in the booth. The VD-1, from Impulse, was showing Turbo Silver objects rendered in 24 bit planes and overscan. The VD-1 also has a frame grabber option. Impulse's HAM paint program, Diamond, was also showing along with Terrain, a program that works with Turbo Silver to produce mountains, waves and landscapes. An intriguing new service was also introduced by Gossett Graphics. Send them your disk with 3D objects and animations, and they will use custom hardware to render them at 746 by 484 resolution using 2,000,000 colors. The end product can be professionally processed to video tape in your choice of formats and mailed back to you in days.

The high-end video products which first appeared at AmiExpo were also present. RGB Video Creations was swamped with interest in their Amiga controlled SuperVHS editing station. Magni was also promoting their new Amiga genlock and keying system.

Overall, Amiga made another strong showing at SIGGRAPH. The new support from third party developers for high end productivity products is a reminder that this machine is still up and coming.





Incognito, the newest player in the Amiga software field, is introducing a full line of Amiga hardware and software. This line will include utilities, games, programming languages and a full complement of very affordable hardware for your Amiga 500, 1000 and 2000 computers.

The first of the new software is the Atredes line of telecommunications software. This will include a full Bulletin Board System as well as a well integrated Terminal package. The Atredes system features a fully rewritten serial interface for fast and efficient communications.

The Atredes Terminal package will of course feature an Intuition type phone directory, which will include signon scripts and terminal descriptions. Atredes will support all popular upload/download protocols such as X,Y,Z modem, Kermit, Sealink and windowed protocols as well. Atredes will also feature a "Multi-Link" protocol to allow parallel transfers and access to the host system. This Incognito developed protocol will be released into the public domain. As per the wishes of the authors and Publisher, our Atredes products will be accessible to the

public for customization as desired. We at Incognito feel that our products are only made better by user interaction and modification. That is why the Atredes system is modifiable by our users.

The Atredes Bulletin Board system is the star of bulletin boards. Boasting numerous security levels as well as a full remote sysop access system. Of course the Atredes BBS supports all of the popular transfer protocols as well as our "Multi-Link" protocol to allow the user and the sysop the maximum flexibility a BBS can offer. The BBS terminal library will be available to users to allow expansion of the system for any purpose. Extensions to the system will be available to users through Incognito as well as through other companies. Incognito will announce these products as they become available. Call us for the details on the Atredes way of communications.

## Games?

Incognito likes entertainment as well. Introducing the Real Life series of games that are as close to life as you would like them to be. We will be introducing several titles among which include: Dr. Morbid, Of the Flesh, Warlock and California Highway.

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# INVISION

*Interactive Video Software for use with Live!*

by Gary Gehman

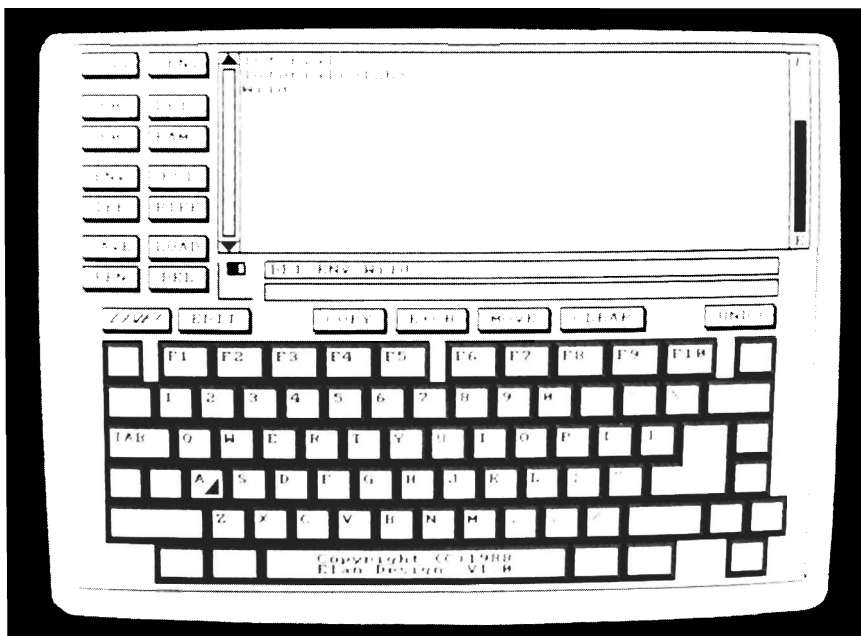
**L**IVE! is a real-time device that receives ordinary NTSC video input and transforms it into digital imagery in real time. The software provided with Live! provides a simple set of color effects, a few image processing routines, as well as the ability to save out individual captured

frames as IFF image files. Sequential runs can be saved as RIFF animation files. Now there's a LIVE! for the A500 and sales are starting to take off. There's also an upcoming A2000 LIVE! with 640 x 400 screen capability and TWO camera inputs!

LIVE! continues to be a video product that challenges us to think differently. Unlike other frame grabbers or buffers that

concentrate on seizing a rock-steady frame and turning it into a digital still, LIVE! wants to splatter motion across the screen. It's 4-bit, Analog-to-Digital converter performs incredible feats of technology, turning a fifteenth of a second (4 video fields) into a single 16-grayscale frame. Yet, when you stop and save an image, its just another IFF picture. You fuss and fight with it until finally you realize that you're missing the whole point of LIVE!

*INVISION allows you to define your keyboard for video operational macros*



The people at Elan Design have not missed the point with their new program INVISION. They looked at LIVE! and saw that it was a moving experience; That it was for playing with. And they wrote INVISION to turn LIVE! into the same kind of real-time instrument that a saxophone is.

INVISION comes on a bootable disk and replaces the LIVE! software. Since any sort CPU interrupt is visible in LIVE!'s stream video, all applications that work with Live! will insist on shutting down Intuition. This means that the program will not multitask, so just pretend you're working with a Mac II. Aside

from this, INVISION looks just like any other Amiga application.

Once booted, you're immediately rocketed into a pyrotechnic world of colors. Invision uses the term "environment" to describe the arrays of effects that are available at any given time. The closest analogy for these effects would be a programmable synthesizer, where you can assign different waveforms and tonalities to each key. INVISION programs its effects into the Amiga's keyboard, and these are saved in an elaborate video keymap called an environment. INVISION automatically loads its Tutorial environment and what greets you are the blazing colors of a high-contrast, saturated red and green gargoyle. Pull back the mouse an inch or two, and now it's upside down. Tap the A key and it's only black & white Donna Reed, taking a pie out of the oven. Tap the X key and you can stutter-stop-frame her out in 15 second intervals. Hit the D key and the screen drops to two planes of Black and White. Move the mouse up, and Donna comes apart into a mosaic of bigger and bigger pixels. INVISION is the first Amiga application I know of that uses Over-scan mode exclusively. Anything coming through the LIVE! digitizer fills the screen from edge to edge and top to bottom.

We can sit and play all day with the key definitions Elan Design has provided in the Tutorial environment, or we can create our own. INVISION uses two

separate screens in addition to the main Performance screen. First, is the Environment Screen. This screen contains a representation of the entire Amiga keyboard, a filename window, and all the gadgets you might find in a file requester: Drives, directories, Save, Load, Rename and Delete. Because it can't use Intuition, INVISION doesn't have menus or pull-downs. Instead, you get a control panel much like the popular utilities CLI-Mate or Jobs. Every function is activated by clicking the appropriate button. The Amiga keyboard buttons also respond to direct typing. To select the G key, for instance, you can either click on the G represented onscreen or simply type the G. Each key will activate a particular video effect or event. Since the effect is predetermined and assigned to the key, it is called a preset.

Pressing on a key will activate it and, if it already has a preset function in the INVISION environment, that function will be displayed in the filename window. If it doesn't, either click on the Edit button, or double click the keyboard button, or type the actual key twice, and you will be switched to the Preset Screen.

In the Preset Screen you find all the controls that actually create the effects. There are controls for creating and adjusting the color palette, for enacting certain "one shot" effects, and for defining the interpretation of various kinds of mouse movements. You

can approach the construction of a preset in any way that is comfortable, but it really helps to have a mental image of the effect you want before beginning. I like to start by defining the colors.

Before setting colors, however, you first have to decide how many of them to use. LIVE! passes video information to the Amiga in bit planes. By combining bit planes, and comparing the relative intensities of each pixel, INVISION derives its grayscale or color information. Unfortunately, the more information we want to derive, the more bit-planes we need for comparison. If we limit ourselves to 2 or 4 colors, we will use only 2 bit planes, and can get our video at a snappy 30 frames per second (fps). If we add another bit-plane to derive 8 colors, we slow our rate to 20 fps. Sixteen levels takes 4 planes and 1/15 of a second. By the time you get to a 32 color image, you're creeping along at 12 frames per second, and any motion on the screen leaves red, green and blue trails. INVISION even goes so far as to support Extra Half-Brite mode on the A500 (and some A1000's), but this takes 6 bit-planes and yields 10 fps.

For our theoretical G-key preset, let's stick with 4 colors. This will require only 2 bit planes, and will cook along on the screen at an almost TV rate. Depending on the subject being digitized, or the treatment it's getting, four levels

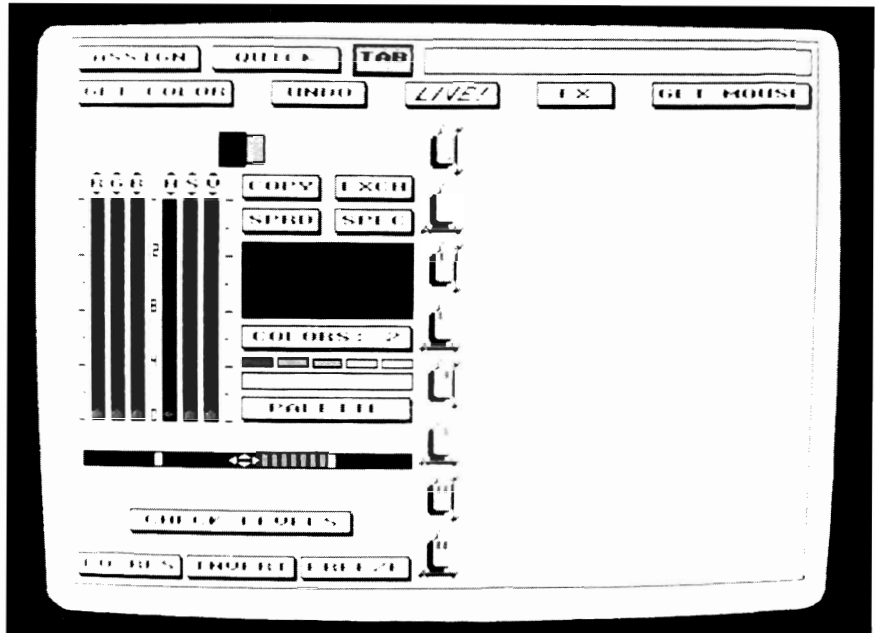
*( continued on next page )*

## INVISION ( continued from previous page )

of gray might not be aesthetically pleasing, but for what we're going to do, it will be fine. We will pick 4 colors by clicking in the "Colors" gadget until it displays the numeral 4. As we cycle through the color options, the number of cells in the color map at the top of the color adjustment window will grow to match our selection. This is the palette and we can set values for each color cell in typical Amiga fashion using the set of RGB and HSV sliders at the left of the window. For now, we'll simply assign a deep royal blue to the background color, and three different shades of rose to the other three cells. For elaborate palettes, INVISION includes the familiar Copy, Exchange and Spread gadgets, as well as a new one, spectrum, which creates a rainbow of shades between any two selected colors.

At the bottom of the color window are the level controls. In grayscale, there is only one slider with settings for both high and low threshold, while in color modes we have a separate slider for each of Red, Green and Blue. The slider values can be set to arbitrary limits, or we can click on the Check Levels button and LIVE! will come on, allowing us to control the video levels by dragging the mouse. Once we have a setting we like, we'll hit the ESC key and return to our Preset Screen.

Now we have a G-key that contains a 4-color palette, and we can specify whether it will be Lo-



*Like the keyboard, your mouse can be set up to perform a number of video functions*

Res (368 x 240) or Hi-Res (380 x 480). The difference here is that extra planes are digitized and added in as interlaced information. The images get smoother, but more "active." There are two other "one shot" effects we can select: Invert and Freeze. Invert flips the screen upside down, and Freeze stops motion and holds a single frame onscreen (this is not the same as Capture - see below). If we select either Invert or Freeze, these will be in effect every time we use our preset. So, if we want to use these features, we already have to clone our G-key to two other keys. One can be set up for straight 4-color digitization, one for inverted display, and one just for frame freezes.

Assuming that we have our color map and levels set, we are free

now to add mouse-controlled effects to our preset. We can assign four different levels of mouse control to the preset: Mouse with no buttons pushed, Mouse with Left button held down, Mouse with Right button held down, and Mouse with Both buttons held simultaneously. Click on the FX button and the color window disappears to be replaced by a new selection of buttons. First of all, the mouse can serve as a controller for color effects with some combination of Saturation, Hue, or Value attached to either right and left or forward and back mouse movement. We'll let the Un-buttoned mouse effect Saturation and Hue by clicking the SAT/HUE button, and then the first of the mouse images that line the center of the screen. We can now select from among the following other video

effects:

**Cycle** -- Like Deluxe Paint, will cycle the colors within the color map.

**Nuke** -- Alternates Positive and Negative images in a pulsating "radioactive" effect.

**Invert** -- Mouse controlled temporary inverting of the screen.

**Strobe** -- Holds a frame, then strobes it into the moving video at a variable rate.

**Blinds** -- Like "Venetian Blinds," breaks up the screen horizontally into bands (this can be used with a genlock to mix video in the background).

**Mirror** -- Works similar to blinds, but uses an inverted version of the image instead of solid color bands.

**Mosaic** -- Pixelizes the image into successively bigger blocks.

**Screen Position** -- Moves the image up and down on the screen. Similar to a vertical "Wipe."

**Zebra** -- A contrast effect that resembles steel brush line art.

**Super Gen** -- When used with Digital Creations' Super Gen genlock (which allows for cross fades) will do a software-controlled fade.

I can't detail all of these effects, because they all look different depending on what colors you're using and how they are combined with each other. Let's just attach cycle to the left mouse button, mosaic to the right mouse button and strobe to the combina-

tion of both left and right mouse buttons. Then, by clicking the assign button at the top of the Preset Screen, we return to the Environment Screen and can click on the G key, thus fixing all the above assignments to that one key: Preset. That leaves just 57 other keys open for other preset combinations.

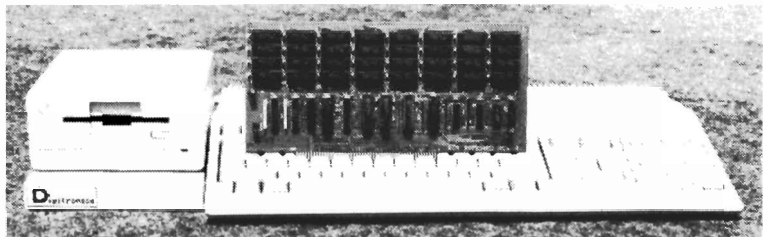
If we click on the LIVE! button, the performance screen reappears and LIVE! resumes, controlled by the new environment we've helped create. If we hit the G key, we see Mr. Ed in three shades of pink against a blue backdrop. If we move the mouse the color values change. If we hold down the left mouse button,

( continued on next page )

## 4 MEGS FOR YOUR AMIGA!

### RC4 RAMCARD

- ✓ No wait-state "fast" memory.
- ✓ Uses standard 20 pin DIP DRAMs (256k x 4).
- ✓ All 32 RAM chip locations are socketed.
- ✓ Conforms to Amiga auto-config protocol.
- ✓ Configurable as low as 1/2 meg, up to 4 megs!
- ✓ RAM can be added in 1/2 meg increments.
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### A500 ADAPTER

- ✓ Allows the Digitronics RC4 Ramcard to be used on the Amiga 500.
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As every new Amiga owner quickly discovers, memory is the key to unleashing the full power of their machine. AmigaDos' multitasking operating system needs room to flex its muscles in order to run today's more sophisticated larger programs. Consequently, memory is usually first on every Amiga owner's shopping list. So, what is the best path for upgrading?

For the A2000, a 2 meg board may seem the cheapest way to add memory, but it's too quickly maxed out. The sticker shock of an 8 meg board populated with its minimum configuration of 2 megs makes this route unappealing as well. The Digitronics RC4 Ramcard solves these problems.

For the A500, the same RC4 Ramcard designed to plug into the A2000 can be plugged into the expansion slot on the side of the A500 when installed in our adapter box. This means that if you should ever upgrade to an A2000, your RAM board can go along.

RC4 Ramcard (assembled and tested) ..... \$225.00 (0k RAM)

Call or write for pricing of boards populated with various amounts of RAM, or for information on our do-it-yourself kits. Dealer inquiries invited.

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## **INVISION** ( continued from previous page )

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the colors in the palette will cycle. If we hold down the right mouse button and drag forward, Ed will be pixilized into huge square blocks of pink and red. If we hold down both mouse buttons, Wilbur will freeze momentarily, then disappear. The action will continue and then suddenly be interrupted by the previously frozen image. As we move the mouse forward, the rate of strobe increases; as we move it back, the strobe subsides and will eventually freeze in place.

We might have chosen to assign to our G-key the Capture function. Capture is mutually exclusive and will not allow the key or the mouse to alter the image in any way. Any key preset as a Capture simple seizes the screen, whatever its condition, and stores it into RAM for as long as the key is held down. You can capture images into RAM until it's completely filled. Once an image, or series of images, have been captured, they can be replayed simply by striking the same key again. Stills come up as frozen images. Sequences, called RIFFS, can be played back continuously as a loop, as a Forwards/Backwards "Bounce" effect, or under complete mouse control. When the effect is mouse controlled, we can alter the rate at which the sequence plays. Each incremental movement of the mouse advances the sequence one frame. Inch forward and we can dissect a Golfer's swing. Sweep the mouse out in a broad, scythelike motion and watch a diver plunge into the

pool. These same captured images may be saved to disk as single IFF frames or as LIVE! RIFFS. Elan Design has written the Overscan RIFF format that A-Squared's software lacks, and they are planning to release a player version into the public domain channels. With this player, Amiga owners will be able to display RIFFS even if they don't own a LIVE! themselves. The ability to capture frames to more than one key makes new movement-analysis applications possible. You could actually assign all the Amiga's alphanumeric and function keys as capture keys, and memory permitting, stop-frame an entire gymnastic performance. Or use one assign and capture the whole event as a single RIFF.

INVISION's manual is an attractive and comprehensive spiral bound book that lies horizontally in front of you, and takes you step by step through the program's various screens and effects. It might benefit from an index, but the organization is such that you can quickly find any particular item you need to read about. It's also heavy laden with illustrations, so there's rarely any confusion about what's going on.

The combination of packaging and performance provided by Elan Design is superb. The ease of use, almost infinite variety of real time video effects, and use of overscan push Amiga performance to new highs. Unfortunately, the package will be ham-

pered by technology and the pedestrian tastes of the average video viewer. The best effects are high contrast, primary color posterizations and, even though they may be constantly changing, they become monotonous unless you are in the proper frame of mind. Your mother will not like INVISION, unless, perhaps, she studied Fine Art under Jackson Pollock or collects Leroy Nieman prints. On the other hand, your heavy metal kid brother will love it, and will probably want an Amiga and INVISION of his very own.

And that's the true arena for Invision. The pop vocal group, Timbuk 3, feature the Amiga and LIVE! prominently in their latest MTV video. You can bet they will run out and buy INVISION if they don't already have it. It's taken a long time to happen, but hardware and software designers have been steadily and reliably producing tools that can transform the Amiga from a mere "toy" into a productive member of the computer society. People are beginning to use it in very creative ways. I predict that LIVE! and INVISION will be gracing a number of DiamondVision baseball stadiums in the coming months, and maybe they'll be part of your creative environment, too.

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# *C-Ltd's* Removable SCSI Media Drive

## *C-Ltd's 5 1/4" 10 Meg Floppy Drive*

by George Rapp

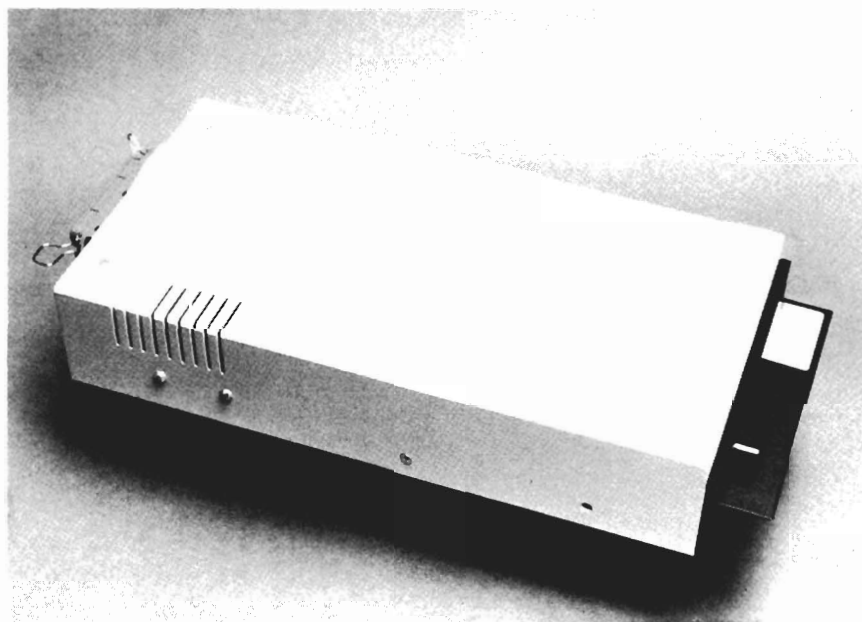
**E**arly Amiga owners were limited to the Amiga standard 3.5" floppy format for all disk activity. In 1986, the microdisks were new and unusual, and the 880K density of the Amiga format was higher than most other machines. Times change, and the variety and lower costs of hard disks have made the SCSI hard disk drive the de-facto standard for Amiga "power-users". Hard disks are very fast and store large amounts of data, but every one is limited since they are not portable and eventually fill up with information. C-Ltd. has a new product that tries to bridge the gap between hard disk performance and microdisk convenience.

C-Ltd. has packaged their existing SCSI controller with a Konica KT-100 high density removable media drive. The drive uses a modified 5.25" floppy disk that is specially formatted to 10 Megabytes per disk. The special floppy disk looks like any other 5.25" disk since formatting

is magnetic. The formatting is done at 480 tracks per inch, and is therefore a much higher density than the standard 96 tracks per inch high density, or the common 48 tracks per inch disks. There are other benefits to the KT-100 besides portability. Since the information is packed closely on the disk, access is much faster than ordinary 5.25" disks like those used on the Commodore 1020 drive. Installing the drive is not difficult. You

need only insert a single Zorro card on the Amiga 2000, or connect an expansion box on the Amiga 1000. The Konica drive then attaches to the controller through a cable, which is included. The drive itself is powered through its own independent power supply via a grounded AC plug. C-Ltd. provides installation software to set up the drive and create a boot disk for you. The process is kept simple  
( continued on next page )

*The 10 Megabyte Floppy Drive uses a 5 1/4" disk medium*

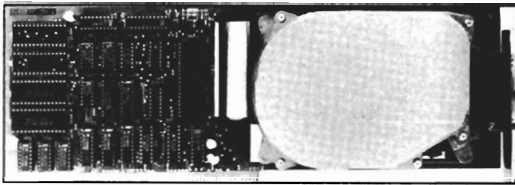




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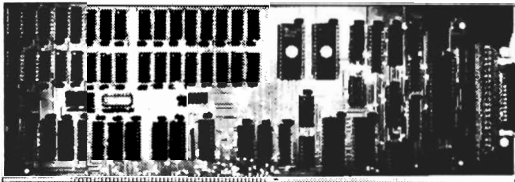


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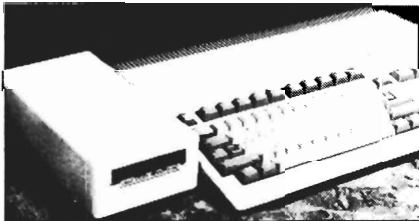


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## 10 Meg Floppy

( continued from previous page )

by providing *no options* for configuring the drive. The Amiga 1000 controller is the same basic unit that C-Ltd. has been selling for a quite a while. However, the A2000 board includes two mounting screws spaced appropriately for mounting a hard disk drive on the card. While hardcards are a good idea, this particular design may not work well since four screws are needed to properly support the weight of most hard disk drives.

This board has one nice feature that I have not seen on any other SCSI adaptor. This is a jumper to connect the hard disk LED of the Amiga 2000 directly to the controller card, instead of just one drive. The LED then shows the activity of the card, and any device that you have attached, instead of just one device. The simple design still permits full SCSI compatibility according to C-Ltd. They claim to support the new WORM drives, which allow you to store large amounts of information once to the disk and read it back as needed. The simple design of the interface can be tailored to a wide range of hardware configurations through the software, but set-up can be more confusing than on most other SCSI controllers.

The disk supplied with the controller does have utilities to create a boot disk and handle formatting of drives. If you want to use the default configuration, the software makes the job easy. If you want to use something different from the items supported, the process can get difficult. The documentation does provide complete information and instructions for the uses of the SCSI interface, but some of the terminology is very technical, and may be obscure to people without hardware experience.

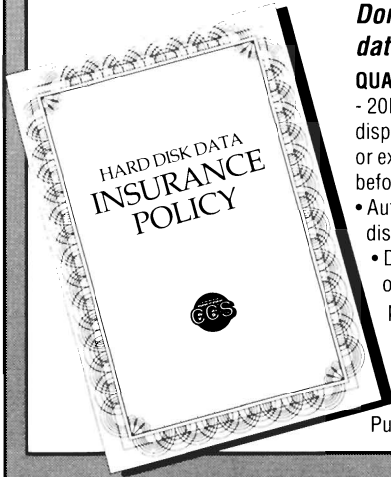
Actual use of the Konica drive is slightly more familiar. You insert the disk and rotate a small handle to keep it in place. The same handle is turned up to eject the disk. This differs from standard Amiga drives in that a command must be executed to tell the computer if you have changed disks in the drive. Failure to do so can be confusing to both you and Amiga Dos. C-Ltd has includ-

( continued on page 24 )



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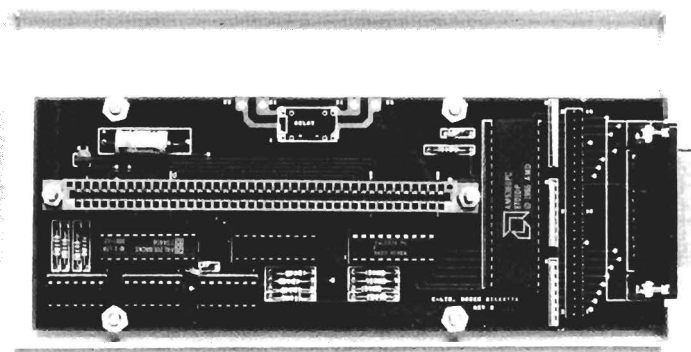


## 10 Meg Floppy ( continued from page 22 )

ed a script file and icon for issuing a diskchange command to simplify this process. I was pleased by the speed of the Konica drive in many floppy operations. When reading or loading a large, contiguous file, it approaches hard disk speeds. It does slow down considerably if the file is split into smaller sections, or when reading several smaller files. Since the disk heads are in contact with the sur-

out modification. Use your favorite directory utility, wordprocessor or graphic software. If your Amiga computing requires large amounts of disk storage for each project (a 3D video or a series of training slides for instance), then the concept of 10 meg removable disks will be exciting. The actual media cost about \$25 each and this makes it practical to keep the software and the project together for even long

mountable Amiga device. While I enjoyed using the KT-100, I do have several suggestions and concerns. The Konica unit is a half height drive and could have been marketed to mount internally in the A2000. This could help its marketability, since the external case and built in power supply make for a large unit. I'm also puzzled by the choice of a 25 pin connector on the SCSI card, and a 36 pin Centronics style connector on the drive. That combination is identical to the printer cable, which might increase the chance of a disastrous confusion. A more serious shortcoming, however, is the lack of a pass through for the SCSI connector. The passthrough nature of SCSI is one of its major positive points, so this is a serious omission in the design. Normally, additional devices are hooked to the one SCSI controller by daisy chaining. I find this particularly puzzling since it is C-Ltd that has the widest range of SCSI devices for the Amiga, including a variety of drives, a scanner and a laser printer.



*C-Ltd's SCSI controller for the A1000 attaches to the expansion port and interfaces the 10 meg drive to the Amiga*

face, there is more resistance and slower motion in traveling from-track to track. Directories and WorkBench Icon displays are generally slower than a harddrive, but faster than a 3.5 inch floppy.

Once the unit is installed and booted, you will find that all AmigaDos, Workbench and application software works well, with-

term work. Of course there is the problem of backup. If you depend on the Konica for critical work, you will want to keep regular backup copies of your data. You could copy each KT-100 disk to 10 regular floppies using AmigaDos, or you could use Quarterback from Central Coast Software, which has recently been updated to support any

I also discovered some apparent compatibility problems when I experimented with several SCSI disk controllers on the same Amiga. The C-Ltd. controller worked with the GVP SCSI controller present, but with either the Pacific Peripherals or the Commodore 2090 units installed, the Amiga would not boot. While it is unlikely that anyone would need two SCSI controllers at once, the problems that I experienced may occur with other boards as well.

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The boot problem indicates that the controller card needs a revision of the PAL chips, better buffering, or both.

I would also like to see some changes in the manual and software to make the installation of SCSI devices easier, without having to search through directories for files with short, cryptic names, or through the manual for instructions and examples. In all fairness, I do have one of the first of these units, so a few rough spots that exist now may be eliminated by the time it is widely available.

My opinion of the C-Ltd controller and drive is positive, but it lacks some polish that would

make it widely acceptable. If you are confident in your knowledge of AmigaDOS, and the thought of using CLI or modifying MOUNTLISTs does not bother you, than the C-Ltd controller can be an alternative. The range of items that C-Ltd offers makes it possible to use only C-Ltd equipment, avoiding potential compatibility problems. Another point in C-Ltd's favor is the SCSI network that they have developed. With C-Ltd controllers on several Amigas, you can have only one hard disk, and yet allow all the Amigas to access it. There are no provisions yet for sharing files, but each Amiga can access one or more corresponding partitions on the hard disk. I hope that C-Ltd continues to improve

the SCSI controllers for the Amiga line and add more devices like the Konica drive to the list of devices that the Amiga can support. While not as fast as a hard disk, the extended high density floppy is an inexpensive medium for mass storage. However, even though there is high value in removable mass storage, this one also carries a high price. One will have to weigh this value against the quite affordable hard drive systems now available for the Amiga.

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# Bard's Tale II

The legend lives on in "The Destiny Knight"

by Anthony Bevivino

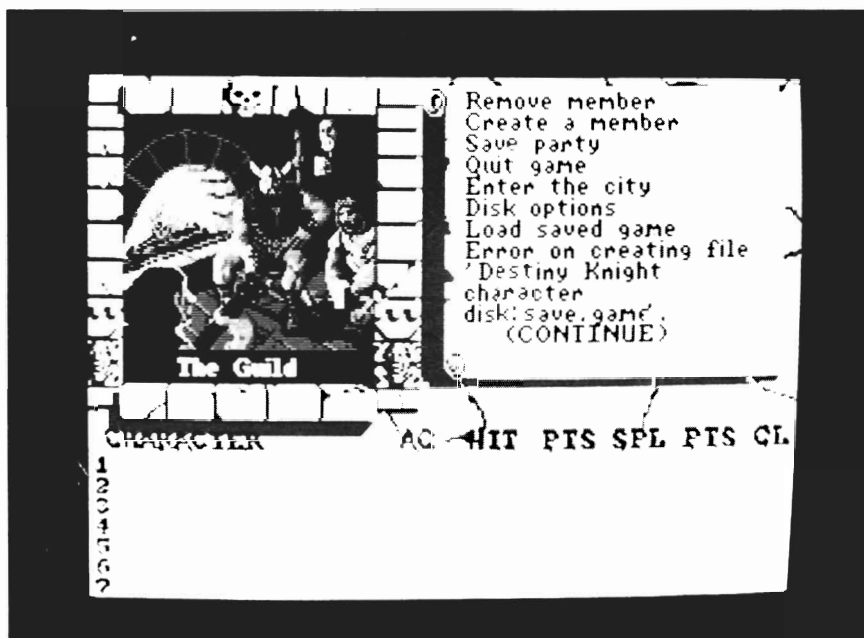
"Death and drek!" you curse. Before you are 3 Stone Giants (each 10' tall), and 2 Sorcerers (even bigger). Once again our mighty party of adventurers is locked into mortal combat with the evil forces of Lagoth Zanta. The group quickly decides upon their actions, with the

assurance of a band of veterans confident in their abilities, and yet uncertain of victory. Arishem, a Monk, is the first to strike, his hands and feet are a blur, but the large chunks of rock that fall from a Stone Giant's body are proof of Arishem's skill and power. Tefral, a master Hunter, fires an arrow into one of the most dangerous of our foes. His aim is true, as one of the Sorcerers drops with an arrow through his throat.

This could be a typical day in "Bard's Tale II: The Destiny Knight." The much-awaited sequel to "The Bard's Tale" is an even greater adventure. You must face the Archmage Lagoth Zanta and reforge the legendary Destiny Wand.

Your band will face hundreds of monsters, tricks, and traps to find the seven segments of the Destiny Wand and use its power to defeat the greatest of magicians. Can even a group as mighty as yours face a challenge as great as this?

*As in the original Bard's Tale,  
you begin your journey from the Guild*



The first step in playing BT II is creating a party of adventurers to use in the game. There are seven races to choose from, each with its own set of advantages and disadvantages. After choosing a race, the player must then determine the class of his character. There are eleven classes, only eight of which are usable by a newly generated character. There are Warriors, Paladins, Rogues, Bards, Hunters, and Monks. They are the masters of martial arts. At upper levels, their bare hands are more lethal than the most magical of swords. Conjurers, Magicians,

## ***Bard's Tale II*** ( continued from previous page )

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Sorcerers, and Wizards are all different types of magic-users. Each has its own type of spells and specific powers. Only the Magician or the Conjurer may be chosen at first, the other types of magic must be mastered at higher levels.

Spells and the use of magic are critical in BT II. Without a firm knowledge of the spells and the ability to use them, your party is finished. The conjurors create objects and affect physical states, while Magicians give magical power to common objects. Sorcerers deal with illusion and the power of the mind, and Wizards summon and control forces from the other Planes of Existence. The Archmage is a master of all of the arts of magic. He is the most powerful spell caster there is. Knowing how to use the spells in BT II is the difference between life and death. My advice to all Bard's Tale II players is to read-read-read the spells and know when to use them!

Other than spells, your party can get involved in melee combat, a hack 'em, slash 'em, free-for-all where only the strong survive. Melee combat is the strong point of Warriors, Paladins, Hunters and Monks. With these fighting machines in your front line, monsters will fall like wheat before a scythe and the spell casters have the protection they need to fry your enemies.

A new twist to melee combat is the distance factor. Enemies can appear anywhere from 10 to 90

feet away. At more than ten feet, only missile weapons or spells can reach an enemy. At higher levels, spells may be used to strike at long range as long as the magic-users have the spell points. Weapons such as javelins, spears, and bows and arrows are a must for the fighters. Many a low level party has fallen

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***“...it was as if I  
was actually fighting  
the ten tons of death  
and destruction  
so aptly pictured  
on my monitor”***

---

---

before a group of Archers that filled them full of arrows before they could close in for hand-to-hand combat.

This review would not be complete without a comparison of Bard's Tale II to its forefather, The Bard's Tale. One of the features that attracted so many to BT was the tremendous quality AND quantity in the graphics. Those who were impressed with The Bard's Tale will be overcome by the graphics in BT II. The quality of these graphics is astounding. Each picture brings to life the monster you are facing and this adds immeasurably to the game play. In the case of the dragon, for instance, it was as if I was actually fighting the ten tons of death and destruction so aptly pictured on my monitor. There

is also a large quantity of graphics; there are hundreds of pictures and very little reuse of the same graphics.

In contrast, the only sound heard in BT II is when your Bard is playing a tune. While many people may feel that sound is a must in an adventure game, in this case I feel it is not needed. In BT II, the graphics and game play are so good that they combine to hold your interest, despite the lack of sound. The world you have to explore in BT II is considerably larger than the original Bard's Tale. In this game there are SIX cities, each about as large as the famous Skara Brae. Each city has its own unique features and a share of nooks and crannies to explore. There is now adventure outside the cities as well. To travel from city to city, you must brave the unknown wilderness. This timberland abounds with Forest Giants and Tree Gnomes, as well as a few "special" places. The wilderness is also the home of the Sage, a wise mystic who must be sought out many times during the quest. There are twenty-five dungeon levels, as opposed to sixteen in Bard's Tale, and each is more challenging and deadly than the last. BT II truly gives a much larger and more complicated world to adventure in.

Every feature can now be accessed through the mouse. Movement is much smoother and easier and multiple keystrokes are eliminated with one click of the left

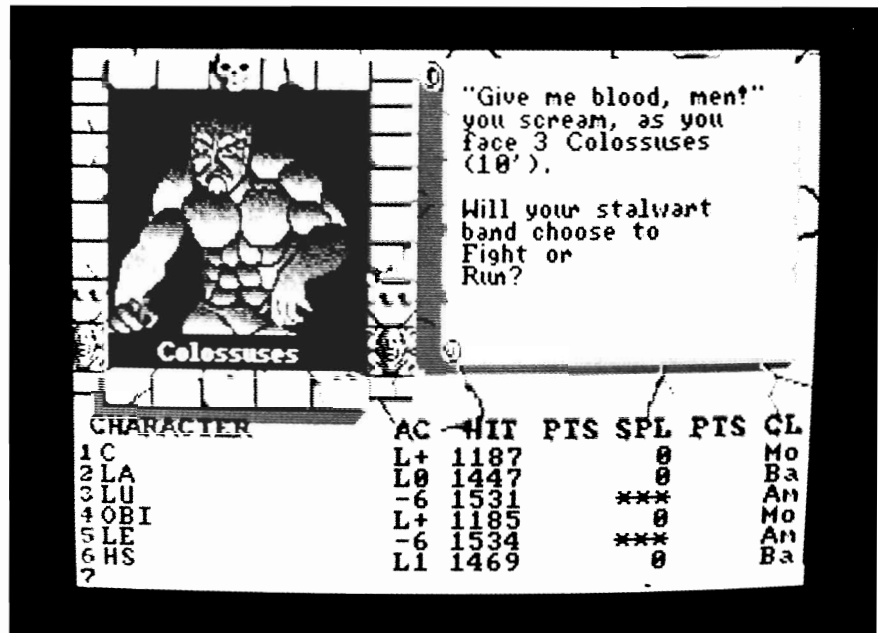
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## Bard's Tale II (continued from previous page)

mouse button. I was also ecstatic when I found all spells could be cast with the mouse. Simply click on the type of spell to cast and a full list appears on the screen. This speeds combat and makes it easier for beginners who have not yet memorized the four letter spell codes.

The original screen set up for Bard's Tale has been improved on by its descendant, as well. The graphics are still in the upper left, the messages still scroll in the upper right and the character stats are on the bottom, but there are a few minor touches present that show all the attention to detail that went into this version. The screen now looks like a broken stone wall and a simulated scroll actually turns as the messages move across it. My only complaint is that the power icons for residual spells are horizontally placed above the character stats. I prefer them placed vertically next to the graphics window, finding this position more convenient for quick access.

The playing time needed for this game is enormous. Characters must fight thousands of battles to gain the levels of experience needed. Every square of every city and dungeon must be mapped, and you usually have to fight for every square! This is a massive task for anyone and I feel it may even discourage some beginning adventurers. After a few weeks, the constant fighting becomes a true annoyance, but when you consider the beatings



All kinds of unpleasant creatures crop up as you work your way through Bard's Tale II

your characters must be taking, you find it in your heart to stick it out. My only real complaint with BT II is that the actual difficulty level of the game is not that high. All you really need to do to beat this game is fight thousands of times to gain levels of experience and to carefully map. The party goes into a dungeon, conquers it, learns a word on the lowest level, goes to the Sage with the word and proceeds to the next dungeon, where the cycle begins anew. I do not mean to say that solving this game is ridiculously easy, but merely say that I wish it were a little more imaginative in the overall puzzle.

I was sure there was a major typographical error when I read "The Bard's Tale II program disk is NOT copy protected." It is now quite possible to play BT II

from RAM:, or even a hard drive. The loading time and disk access is much faster without cumbersome protection schemes, and my drive does not hit 6.9 on the Richter scale when the game boots. Hats off to EA!

I feel that Bard's Tale II: The Destiny Knight is a fantastic adventure game. The graphics and game play are light years ahead of most other adventure games on the Amiga. It is surely the best adventure game I have ever had the privilege of playing to date. Until, of course, Bard's Tale III...

**Bard's Tale II \$49.95**

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## A schematic Capture CAD Program

by Dave Haynie

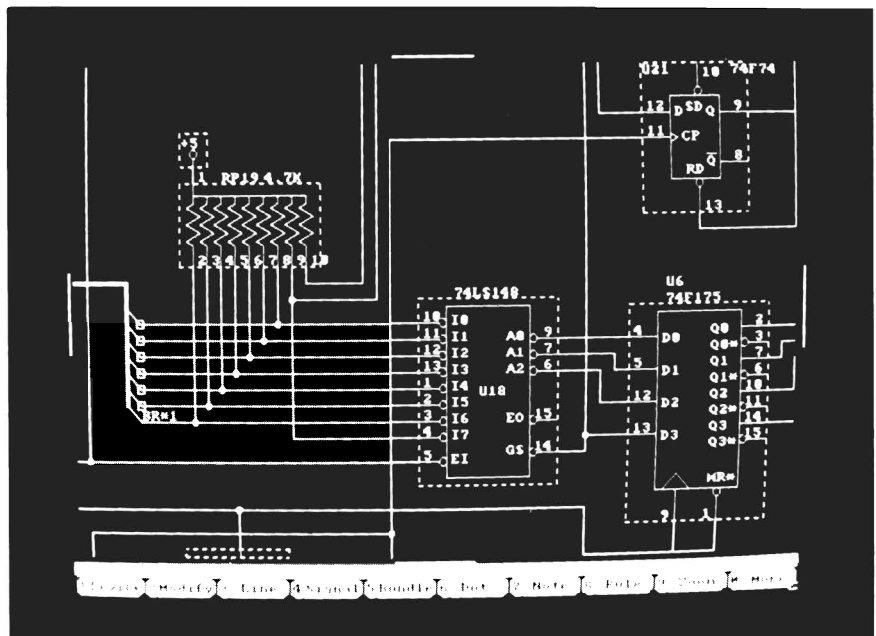
**S**chematic Capture is the art of entering a circuit schematic into a computer in some electronic form. There are numerous advantages to having a circuit schematic in computer format. It's very easy to send floppy-based schematics. They can go across the country via modem in hours, where hand-made schematics must travel in hardcopy by a mail service. Ignoring all other advantages, computer generated schematic drawings look really nice, and you don't have to be a draftsman to produce them. In general, the same reasons you'd draw anything else on a computer apply to circuit schematic drawings as well.

Once the drawing is entered in a program designed for schematic entry, the logical connection network, called a netlist, can be extracted. This netlist can then go to a circuit board layout program for circuit board generation, or possibly to a circuit simulator for logic verification. Netlist generation is usually why

a schematic capture program is required for computer generated schematics. Just about any structured drawing program (such as Aegis Draw) is capable of handling component libraries and producing pretty schematic pictures, but most generic drawing programs aren't capable of producing the netlist that a real schematic capture program can produce. Pro-Net is a Schematic Entry program from a company called Prolific. It's an Amiga-

specific program, apparently not a port from another machine, and runs on 68020 and 68030 systems, as well as the basic 68000. It requires a minimum of 1 meg to do anything, though I expect you'd be happier with 1.5 megs. Prolific also sells a PC board layout program called Pro-Board that will accept netlists generated by Pro-Net. According to Prolific, Pro-Net stands for "PROfessional NET" (continued on next page)

*A number of tools are available by clicking on the appropriate icon at the bottom of your screen*



## **Pro-net 2.0** ( continued from previous page )

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list generator". Since I'm often in the business of PROfessionally generating NETlists, I'm taking the point of view of a PROfessional user here. I created the Amiga 2000 and Amiga 2620 netlists on relatively expensive Apollo Workstations using Mentor "Idea" software, such as Net-ed and SymEd. If you're familiar with either of those packages, you may get a view on my biases here. Given the rather steep price of Pro-Net (relative to the Amiga market, Pro-Net's not outrageously priced for a schematic capture program on any machine), and the fact that I have 32 bit Amiga systems that run significantly faster than any Apollo workstation we have at Commodore, I fully expect to be set to do anything on my Amiga that I can on the Apollos. Or, put another way, I know the Amiga's got enough fire-power, now we'll see about Pro-Net.

One additional note before we start. Any users of Pro-Net may also be using Pro-Board. Assuming the interfacing between these two works OK, some of the concerns I have about netlists may not affect the average user. Here at Commodore, we have dedicated SciCards and Calay workstations that will do a much better circuit board job than I'd expect to be able to do on an Amiga. For instance, the Calay is capable of autorouting a board of the complexity of the Amiga 2000 to completion, overnight. So I'm using Pro-Net with the intent to transfer my netlists to another system.

### **What You Get**

Pro-Net 2.0 comes on four unprotected floppy disks, with a spiral-bound manual, in a very poorly constructed box. If you're used to nicely made manual boxes like the ones provided for WordPerfect or SuperBase, you may be disappointed. Although you can't judge a program by its packaging, a very well made package will give you that warm fuzzy feeling before even starting up the program. The manual is terse and confusing in some places. It's basically a guide to setting up Pro-Net, then a function by function list. There is information on the netlist format, and a walk-through of an example design, so the manual does fall into the "useful" category. I found the program generally consistent and easy to use, so I rarely found it necessary to refer to the manual. With that said, it's a big improvement over the Pro-Net V1.2 manual that came with the prior release of this software. That's a pretty common theme in this review. Everything in Pro-Net V2.0 is better than with Pro-Net V1.2.

Chapter three of the manual is called Quick Start, and it does explain the installation procedures. A nice touch is an install script for hard disks, which is good. I would expect anyone doing any serious CAD work to have a hard drive. However, this install script assumes DH0:, a rash assumption. I happened at the time to be running a SCSI drive as DH3:, with my main

partition a Fast File System partition as FH0:. Not the end of the world by any means, but I did have to edit the installation script. Alternately, one could "Assign DH0: FH0:" to fool the installation script. At least there was an installation script of some kind, a feature we hard drive users would like to see with more software packages. The installation script creates a PRO-NET directory on your hard disk, and copies all of its libraries there.

As with most programs I've used, there are a few logical names that need to be set up, most probably in your normal Startup-Sequence. Unlike most programs, however, these logical names aren't hard-coded, but read from Pro-Net's configuration file when it's started. Since Pro-Net looks one place for library files (symbols and devices), and another place for data files (schematics), I made the names PRONETLIB: for the former and PRONETDAT: for the latter. I selected the SAVE option in the configuration menu and am now all set (saving the configuration to the directory that Pro-Net is in). Or at least it seems that way if I launch the program from WorkBench. (A WorkBench startup is accompanied by the typical "do-nothing" extra window on the WorkBench screen, a result of the standard Lattice C startup code). Pro-Net actually reads its configuration file from the current directory, so if I start it from CLI, I get the default devices (DF0: and DF1:) if there's no config file in my current direc-



tory. I didn't initially like this, but it can be an advantage, in that as long as I CD to my project directory before I start Pro-Net, I can automatically have different projects load up different default directories.

### *The Pro-Net User Interface*

Pro-Net starts up in a 640x400 interlaced custom screen whether you start from CLI or WB, and that's the only resolution it supports. While I think at least 640x400 is necessary for schematic capture, and colors were selected to be almost flicker free (there's no built-in way to change them, either), I think it should also be capable of running on a WorkBench screen. This is the simplest way to let a program run on any future screen resolution, such as the Amiga A2024 1008x800 monochrome display. While Pro-Net does make use of color (it looks to me like a three bitplane screen), there's no need to use color in schematic capture; extra resolution is much more important. The Mentor software works on both color and monochrome Apollos.

In any case, the screen is divided into three main areas. Most of the screen is black, and is used for editing drawings or viewing other things (most often lists of drawings you're working with). Near the bottom, a single line of text is used for simple input and output. Below that is a row of ten keys, which correspond to the function keys on the Amiga keyboard. These are called intel-

ligent function keys, or IFKs, and they're used instead of normal intuition menus and gadgets. Pressing an IFK usually results in all the IFKs being redefined to display a new set of IFK options, a new IFK "level". The ESC key is always used to back out of a level, and most other actions are prompted for. The mouse select button will press a screen key just as well as your finger presses a keyboard key, so mouse users are not left out. While this user interface is quite unlike that defined by Intuition and used in most Amiga programs, it is a quite reasonable interface. I've used similar mechanisms on HP lab computers and both HP and Tektronics logic analyzers. I'll use the notation [IFK] here to denote an actual IFK key.

Where it's appropriate, line and shape drawing is pretty intuitive. In general, the left mouse button puts something down on the screen and may pick it up. The right mouse button will delete something on the screen or cancel the current operation, whichever is appropriate. There are a few control keys with special meaning, called hot keys in the Pro-Net manual. These can change grid sizing, grid display, and a few other display oriented things. Pressing the HELP key explains them. As an avid fan of Emacs, special control keys made me feel right at home. Most things are also object oriented. If I'm at the level that lets me draw straight lines, I can't accidentally delete any boxes or text that I've

placed. And you only work with one object at a time, with the same controls. For instance, I can use the [DEVICE] key to get me to the device level, where I can add or delete devices on-screen. To draw something else, like a net or some text, I would ESC from the device level and select another level.

In most of the drawing levels, the normal mouse pointer is replaced by a set of sliding crosshairs. I like crosshairs for drawing mode. Not all CAD programs use them, but many do. They certainly make it easier to line things up with one another. To [Copy] or [Move] an object, the mouse pointer is clicked in one corner of a rectangle to be drawn around the object, and a rubber banded box can then be used to complete the rectangle. All of these graphic effects are nice and fast, as are most of the Pro-Net operations. Scrolling isn't instantaneous, but it's acceptably fast, even on a 68000 based system. Pro-Net, as with most schematic capture programs, uses integer math for its display, and that's considerably faster than the floating point you'd expect in a structured drawing program like Aegis Draw. This is as it should be, since there's absolutely no need for floating point accuracy in schematic drawings.

Scrolling around in a drawing is controlled by either of two mechanisms. The cursor keys are always enabled for this purpose. Since that's the same way the

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*Fine detail is made possible in your schematics  
by the program's use of the high resolution interlaced mode*

Mentor software works, I'm perfectly happy using the cursor keys. One thing that is not in the Mentor software, shifting a cursor key, moves to the extreme end of the drawing. There are also four scroll gadgets, which are short bars centered on each edge of the screen. Touching the mouse on a scroll gadget will scroll in that direction. I didn't like this mechanism, but the scroll gadgets are easily toggled on and off with the DELETE key.

The last main point of the Pro-Net user interface is the file selection levels. Many IFK commands, such as [Edit], drop you into a file selection level. Files are listed in the display area, and IFKs appear to [Pick] the selected file, scroll up or down on the page, or move to the next or pre-

vious page. This works fine, but only the IFKs are active in all but one case. No mouse or other keys will do anything, although the [DevCpy] level allows you to choose several devices with the mouse. It seems that it would be much more reasonable to allow mouse selection of the displayed files. I'd also expect the cursor keys to move the select box. It would even be nice for the A2000 keypad keys labelled PgUp and PgDn to perform their expected function. One thing that's immediately obvious about these file list menus is that they produce their lists so quickly, they're obviously not searching an entire directory. I'll discuss that feature a bit later on.

### **Pro-Net Basics**

As in all schematic capture programs, Pro-Net gives you a

method to create parts, and then combine these parts to create a complete schematic. Pro-Net actually handles three kinds of drawings. A symbol is the lowest level. A symbol is the image used to represent a part. This is usually composed of a line drawing and possibly some informational text. The next level is the device. A device is based upon a symbol, and adds to the symbol information that's meaningful for connectivity and electronic analysis. Pins and pin numbers, the type of each pin (input, output, I/O, passive, voltage, etc.), the base name of the component designator (i.e., "R" for resistor, "C" for capacitor), the input and output loading, and a few other parameters are added to devices.

A device may have several sections, all of which must reference the same symbol. This is handy for devices such as TTL gates, in which the physical package contains several individual gates. A device may also contain one alternate logical symbol. For example, a positive-logic AND gate may show a negative-logic OR gate as its alternate. I found this two-step device creation to be superior to the Mentor Symed methods, in which the image and component data must be combined in a single step. Under the Mentor system, each similar device in another logic family would require a new symbol for it, instead of referencing a common image. Also, Mentor doesn't automatically have provision for creating packages of individual gates or displaying alternate logic for a gate. On the

other hand, with the Mentor system, designs can be nested to any depth. I could create high-level functional symbols for a large design and connect them in a system function diagram. Each of these large symbols might have complete schematics of normal TTL and LSI parts below them. Each TTL or LSI part might have actual transistor or gate level schematics below them. When I go to do post-processing, I can select the proper level: A PC board, requiring processing to the component level, and a simulation, which requires processing to the model and gate level. While I don't consider this feature absolutely necessary for board level circuit design, it's nice to have it there, and abso-

lutely necessary when using simulators or designing integrated circuits. Pro-Net would be much nicer with nested schematics.

The Pro-Net disks contain a large number of TTL gate devices, parts in the 54/74xx families in standard, "L", "H", and "LS" technologies. None of the newer technologies, like "F", "HCT", or "ACT" are included, though these can be created from the corresponding devices in another technology as needed without too much trouble. There are also a few CPUs, CPU peripheral chips, ROM, RAM, capacitor, resistor, transistor, and other parts. There even appears to be some kind of standard cell library, though there's no explana-

tion of it. When it starts up, Pro-Net displays IFKs that let you [Edit] a schematic, do [File] operations on schematic sets, edit devices, do [Post] processing (create netlist, create bill of materials, check things), or change around the program configuration. I'm not convinced all of these functions should be in the same program. Under the Mentor system, NetEd edits schematics, SymEd edits devices, and Expand does post processing.

While Pro-Net does have a separate plotting and printing utility, *Plot-Net*, I've found several occasions where I'd like to modify a device without necessarily having to get out of the schematic ed-

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itor. Separate tools make that natural, and they could all access a "Pro-Net.library" to save memory when multiple copies are running.

I had enough memory to fire up two copies of Pro-Net (though I have a seven megabyte system to play on), but that's a tremendous waste of resources. I will admit that the all-in-one approach makes Pro-Net easier to use than a collection of smaller programs.

### ***The Symbol Editor***

The [DefLib] key followed by the [DefSym] key gets you into the symbol editor selection level, where you can select a symbol to edit or create a new one. Once in the symbol editor, you have access to a variety of functions that are pretty standard structured editing commands. Text, lines, boxes, circles, and arcs are available, and any shape may be optionally solid-filled. Symbols can be built from other symbols, too. Those symbols made from others are called complex, and can't appear in another symbol; those made entirely on their own can be used to build complex symbols. Finally, any symbol that's created must have a reference point defined, and a boundary that surrounds it.

There are a few nice features not available in the Mentor software. If I create a line segment, I can very easily repeat the same one at several grid intervals. You can do the same with boxes, arcs, and circles, so it's pretty easy to

make repeating patterns, like pins on an IC. My main complaint with the symbol editor is that there is no provision for moving something once it's placed. It's easy to go into the TEXT or BOX level, delete the old thing, and draw in a new one, but it's impossible to move anything.

### ***The Device Editor***

The [DefLib], then [DefDev] IFKs will bring up the device selection level. There's an extra IFK level here, to allow a library to be selected. Devices can be placed in any one of nine separate libraries. While the libraries are fixed in number and name, they are a useful feature. Once the library is selected, a device within that library can be selected in the normal way, or a new one can be created. For some strange reason, the length of device names must be shorter than that of symbol names.

A device is created by calling up a symbol, and optionally an alternate symbol for a logically inverted view of the same part. Pins can be added to stems drawn on the selected symbol, along with pin numbers, and multiple package elements can be defined with separate pin numbers. The device name and device number template can be added.

Any of these items can be defined as hidden at the schematic level. Finally, a few attributes for circuit analysis can be added. The maximum current draw,

ICC, is the only device-wide attribute. Each pin can have several attributes of its own. Pins may be one of seven types, and input currents, output currents, and voltages are defined based on the pin type. Finally, there are four special Pro-Net fields. Currently, only one of these is used.

It's still pretty awkward moving things in this editor, but as before, it's reasonably simple to delete and rebuild something. One problem I noticed both here and in the symbol editor is that saving to a floppy based file takes quite some time, and the floppy seems to be stepping all over the place. For something as small as a device file, this doesn't seem appropriate. Loading, as always, is quite fast, and saving to the hard disk is quite fast, too. I think the bulk of the save time is spent in head seeking. Hopefully, a future revision will handle things in larger chunks or cache something to speed this up, though I suspect most users will be hard disk based and won't notice this slowdown.

### ***The Schematic Editor***

The main purpose of Pro-Net is, of course, schematic capture, and that's what really takes place in the schematic editor. Selecting [Edit] brings up the schematic selection level, the same mechanism used to select symbols or devices. The IFKs can move around in the list of files, or a new file can be created. Multi-page schematics are supported,

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and are named in the format <schematic name>.<page number>.

When opening a new schematic, the program will ask what size is preferred, as well as which default libraries are to be used. All of this can be changed later on (using IFK [Rule]). The top IFK level in the schematic editor comes up with IFKs to add a [Device], [Line], [Signal], [Bundle], [Dot], or [Note]. One may also [Modify] device logic level or the value and position of device and signal names. Pro-Net's smart enough to alter the device (if possible) if you ask to change either the part type or part number. Part types can be changed to other parts with similar imagery. For instance, a 74LS646 could be changed to a 74F646, but not a 74F32. Part numbers can be changed to unused numbers, or used devices on the same page (it'll prompt for a swap). Similarly, pin numbers of a multi-gate device can be changed to a gate in that package that's not used yet, or a gate in the package that's elsewhere on the same sheet, but can't automatically swap between sheets. Finally, there are options to [Zoom], [Move], [Copy], and to modify system configuration, options, or the sheet Rule (size and libraries used).

First let's look at the [Device] selection IFK. Devices can be brought up by name or after a search of the lists. A device comes up ghosted and can be positioned on screen, or deleted.

One nice feature that's not available on the Mentor systems is that devices will automatically come up numbered, and the next gate of a multi-gate device will come up with the proper pin numbers. This works even between multiple pages. For valued components like resistors and capacitors, the [Value] IFK at the [Device] level lets the component name be swapped for a component value. A device can also be rotated in 90 degree increments, though accompanying text is not rotated, and there's no way to flip or mirror a device. After initial placement, a device may be moved or copied with the appropriate IFK commands.

Once some devices are in place, lines are drawn to connect them. Lines can be drawn with numeric weights that may be considered by the PCB layout software; this would be quite useful with a smart automated router or as an aid to someone doing a layout who's out of touch with the actual designer. Lines can also be repeated, which is excellent for wiring up busses. Another nice feature of this level are reference lines. A horizontal or vertical reference line can be drawn as an aid to lining things up, yet the line is purely a comment to the designer; it won't be plotted. The Mentor software could use something like this.

On the down side, Pro-Net lines themselves function pretty weakly. Once connected, they can be adjusted either horizontally or vertically, but only if there's no

dotted junction anywhere on the line. Lines can't be drawn diagonally. The lines appear to be stored in more of a structured format than a logical format, so they always retain their original structure. This is a good idea in a generic structured drawing program, but a very bad idea in a schematic capture program. The Mentor software treats a line as a collection of connected logical segments. Any segment, branch, or entire network can be selected and deleted, independently of the way they were originally drawn. With Pro-Net, I may have to delete an entire network, or at least a big part of it, and redraw most of it again, just to change it a little bit.

Lines also can't be moved or copied on their own, but only as part of a device move. Even that doesn't work all that well. Usually when a device is moved, some lines move completely with it and some have only one end in the selected area. Pro-Net's [Move] function will normally break these second kind of lines. The [Rubber] option in the [Move] level tries to do this move properly, restricting itself to moving only one device). However, [Rubber] tries to lay out the lines in a rational pattern, and gets terribly confused, stretching any line in any way, other than a simple horizontal or vertical move. In many cases, the redrawn lines had to be deleted and re-drawn anyway. Part of the problem seems to be the structure of lines that Pro-Net tries to maintain, in that it tries to re-

route the entire line, even though it's probably just a segment or two that requires adjustment after such a move.

Though lines are somewhat poorly designed, the [Signal] function used to name them is pretty nice. It can auto-increment the signal name, so I only type A0, then hit the increment key until I reach A31, and all my address lines are named in order. This is of course only really useful when your busses are in numerical order, though that order can be ascending or descending. Signals automatically go into place based on the mouse position relative to the line they're added to, but they can be moved with the [Modify] [Label] IFK's. Signals can also have automatic page references attached to them, and any two lines with the same name anywhere in the schematic are considered part of the same net, so actual connections between similarly named nets are purely optional.

Another nice feature is the [DOT]. The Mentor software has no formal way to join lines, other than by just running them together. And the only lines that can be broken apart are four-way junctions. Pro-Net can join lines by dotting them, and break them by un-dotting, and several dot sizes are available.

Bundles for busses are available in the [Bundle] section, though these aren't true bundles. In the Mentor software, a bunch of signals can be fed into a bus net,

then extracted from it elsewhere, and the net actually knows which signals are which inside of it. A Mentor bus works kind of like an array of nets, which can be subscripted to access the internal component nets. Pro-Net bundles are really just for visual clarity. A bundle can be named, with optional page reference, and diagonal bus entries are provided to go in and out of the bundle. But actual connections between bus signals are made via the individual signal names, not the drawn bundle itself.

The [Zoom] option sounds more useful than it is. While it allows a look at more of the schematic than normally visible, it's only a look viewing option. Editing is only possible at the single, normal magnification. The Mentor systems allow editing over a wide range of magnifications, as do most CAD and even DeskTop publishing programs. This is a real weakness in Pro-Net.

To end the schematic section on a positive note, let's take a look at the [Note] section. This section allows arbitrary boxes, lines, circles, arcs, and text to be drawn on the schematic. This is great for commenting various sections of schematics, or leaving notes about options or values of components. And it's extremely difficult to do this kind of commenting on Mentor schematics. There's also a title block that can be loaded. The title block is a special purpose symbol, made in the symbol editor, that should contain standard informa-

tion, like company, designer, design name, revision number, etc. Usually, a blank title box is made and the blanks are filled in with the [Text] option. The ability to place random text easily is completely missing from the Mentor software. All Mentor text must be attached to a named property, which must first be created. And there's no way at all to create lines or shapes from within Mentor's NetEd.

### *The Post Processor*

Once a schematic is completed, the post processor is run on it, which is very typical for this kind of program. This is available via the [POST] IFK at the top system level. At this level, the Bill of Materials, NetList, Signal and Component cross references, and an Error Check can take place. In the Error Check, Pro-Net looks for loading violations. This is a really nice feature. While it can be done on the Mentor systems with some external software, it's quite a lot less trouble at this program level. One thing that worked out well for me is the Netlist Format, which is the same format our Calay machine uses. This format is fortunately described in full in the back of the manual, so in case there's a need for another format, it's pretty easy to read this format with a user-written program.

One word of caution on post processing. It takes a very long time to post process a reasonably large schematic when the output

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## **Pro-net 2.0** ( continued from previous page )

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is going to floppy disk, perhaps based on the Pro-Net file format. The floppy drive heads do constantly jump back and forth across the disk processing this data. I suspect they'd get much better performance with a little caching of their data. The post processing goes so much faster on hard disk that it causes me to suspect that more than half of the time in the post processor may be spent on head seeking. For the floppy user, I recommend splitting up the libraries, schematics, and post processor output on different AmigaDOS devices, if at all possible. Again, this is no problem on a hard disk.

### **Hard Copy**

The Plot-Net program is designed to plot or print a schematic drawing. The output to dot matrix printer, like the usable screen display, is at a fixed magnification. This means it won't scale to some of the nicer high-res printers available under AmigaOS V1.3. And unless the page is a true A size, it'll be uncontrollably spread over several printer pages, which then have to be physically joined together. Printer output is always to the preferences printer; it can't be redirected by Plot-Net to a data file.

Fortunately, the plotting control is more sophisticated. The one thing I will agree with is that if you're doing professional level design, you will need a plotter. Plot-Net will produce output for HPGL plotters, and it has specific drivers for a few Houston In-

struments, HP, and Roland plotters (HI uses a custom format, all the HP and Roland plotters use HPGL). If you have a laser printer or 24 pin dot matrix printer, it's very possible that a plotter emulator for your printer is available. I'd like to see a plotter emulator that'll produce a large IFF file from an HPGL file, but that's not available just yet. I do have an HPGL to HP LaserJet converter that I'm bringing up on the Amiga right now. Plots can be sent directly to a port connected plotter, or to a data file.

### **A Few More Bones To Pick**

One of the reasons Pro-Net is more clever about device packages and part numbers than the Mentor software is probably due to the generality of the Mentor package. In the Mentor system, things like pin labels, pin numbers, component names, component numbers, net names, etc. are just specific instances of a general property list capability. Each of the three basic entities in Mentor netlists (pins, nets, component instances) can have any number of name-value pairs assigned to it. So, for example, the average TTL gate might have simulation information on it, in addition to the basic stuff that's used for schematic entry or PC board generation. Pro-Net seems to have a fixed size descriptor for every component, and that's a major shortcoming of Pro-Net. There's no way I can add an arbitrary amount of simulator data to each device. I'd have to write an external program,

with database, to index my parts with simulation information. If you're mainly concerned about PCB layout, this isn't a big complaint. If you want to replace your Mentor system with your Amiga system, and use simulators, and design gate arrays, this is a big complaint.

A feature I expect in any professional editing package, whether I'm editing text, images, or schematics, is an undo function. Pro-Net doesn't have an undo function. You can cancel operations before they actually take place, but once something happens, it can't be undone. That's something I really miss, especially for those all-nighters, where my computer operating skills start to wane.

Another thing that concerns me is the secret file formats that Pro-Net is using for it's various directories. The very fast directory listings that you get when listing the schematic, device, or symbol lists are a Pro-Net trick. It seems that Pro-Net keeps a list of everything it knows about in each of it's directories. The manual forbids use of the AmigaOS copy command to copy drawings from one directory to another, and for good reason. The corresponding special directory list wouldn't be updated, so the copied file would never be found. There are copying functions to copy schematics and devices between disks. Symbols are automatically copied with any devices that reference them. It looks, however, that this warning is a bit more severe



than it needs to be. Pro-Net structures a disk so that the actual Pro-Net files are in subdirectories of the appropriate PNLIB directories, while the special directory files are in corresponding PNDIR directory. If my PNLIB/TTL library looks like this:

8087 8185 MC6800  
R6502 R6503

My corresponding TTL file will react accordingly, looking something like:

09-Nov-87  
8087  
2016  
09-Nov-87  
8185  
1028  
09-Nov-87

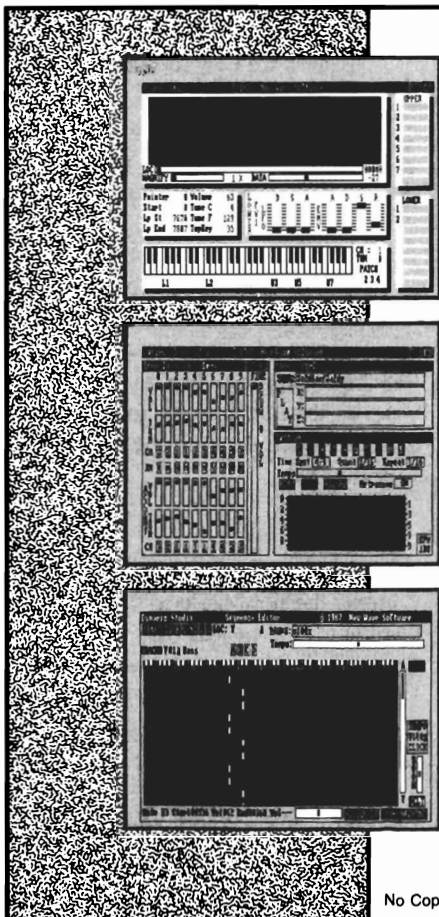
MC6800  
2068  
09-Nov-87  
R6502  
2016  
09-Nov-87  
R6503  
1548  
09-Nov-87

As far as I can tell, that's just component name, file length, and revision date that they're storing here. That's easy to fix by hand or via a custom program, if ever necessary. It should have been documented In addition, this may not be the whole story. Requiring special directory management (as they repeatedly caution in the manuals) creates many possible problems. Aside from needing

Pro-Net to copy the files around, this also makes one wonder how you'd send a schematic set via modem (perhaps via whole-floppy archives...). The above analysis of the directory file format seems to work, but of course, Prolific doesn't explain anything about it, so I don't know for sure this is correct. Use it at your own risk!

I did run into one problem, though. Once during a post process run, my hard disk showed up with a read/write error in one of the schematic pages in a five page schematic (the longest page, of course). So I tried using [File] [Copy] to move the schematics over to a floppy. This

( continued on next page )



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## ProNet 2.0 ( continued from previous page )

didn't work right. I eventually managed to get the four undamaged sheets over to a floppy disk by loading, and then saving, each sheet. However, the missing sheet couldn't just be re-created. The Pro-Net ".M" file, which apparently maintains global information (like which components have been used so far) still contained references to those missing sheets. Had Prolific included full information on the formats being used here, I could probably have fixed this to at least some degree, though I haven't given up yet .

Ideally, Prolific could have included a program that would rebuild the ".M" file. The Mentor version of this kind of program is called SALC. While it's presumably not Pro-Net's fault that my hard disk had an error on it, these things do occasionally happen (along with power failures and other tragedies). In a professional environment, your files should be as secure from such problems as possible.

### Conclusions

I've certainly found Pro-Net V2.0 suitable for the creation of netlists destined for PC board layout. Unlike the earlier Pro-Net V1.2, Pro-Net V2.0 doesn't constantly crash, and it will create correct net lists. In fact, though I've been running it pretty hard, I have yet to make Pro-Net V2.0 GURU. Even the latest Mentor software usually crashes after hours of use. I find ProNet nice and fast, and pretty easy to use. It also has a good set of fea-

tures. In fact, I'm currently using it to draw timing diagrams, with a specialized library of timing diagram components. The integer drawing speed makes Pro-Net nicer for this task than a normal CAD program, and the job of timing diagram creation seems to have some things in common with the task of schematic entry.

Unfortunately, I don't think Pro-Net stacks up fully to the professional tools I'm using at work. It doesn't allow nested designs, or arbitrary property assignments, and the default properties allowed aren't robust enough. For example, the fact that device instances use the device name for the value in the case of resistors and capacitors. This means that if I have both a 1K resistor and a few kinds of 1K resistor networks, they all show up in the bill of materials as "1K". What I want is a BOM that contains the component type and the value, or, in some cases, several values. It's just not flexible enough to do this on its own.

Also, Prolific doesn't explain enough about the file formats they're using for my satisfaction. If they want to appeal to professionals they should treat them like professionals. And professionals want to know all the dirty details that might come in handy on a given layout session.

So in the final analysis, I would recommend Pro-Net to people who want to do schematic capture on their Amigas, with the main intent of creating circuit

boards. I would not recommend it as a replacement for a workstation-based CAD program (that is, what I consider professional level), though it may be as good or better than similar programs for other personal computers. I'm sure I'll continue to use it for timing diagrams, at least until something better comes along. I may even use it for any simple PC board that comes my way, so I can work in my office or at home, instead of the CAD rooms. Unfortunately, I won't be using it for the next A2000 or A2620 project that comes along, much less the next chip I design. Although it *could* handle a job the size of the A2000, it wouldn't do everything the Mentor does for me (like generating a full Bill of Materials in the format I want). It couldn't even handle a small gate array, like the A2000's Buster chip, since I need all kinds of information included there for simulation. This is stuff I'd rather not have to add in by hand, over and over again.

I think Prolific's update from V1.2 to V2.0 is a show of good faith on their part. It looks like they plan to update the product in the future, and they are capable of creating a bug free (at least so far!) product.

**PRO-net 2.0 \$475.00**

Prolific, Inc.  
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# Superstar Ice Hockey

Mindscape heats up the ice with this new simulation

By Ken McNeill

Despite the ice underneath my skates, I was sweating heavily. The score was 3-3, and our home crowd was rowdy to-night. This was it, I thought to myself, the last game for The Cup, that cherished trophy that all teams seek to win. For me, a rookie in my first season, I was

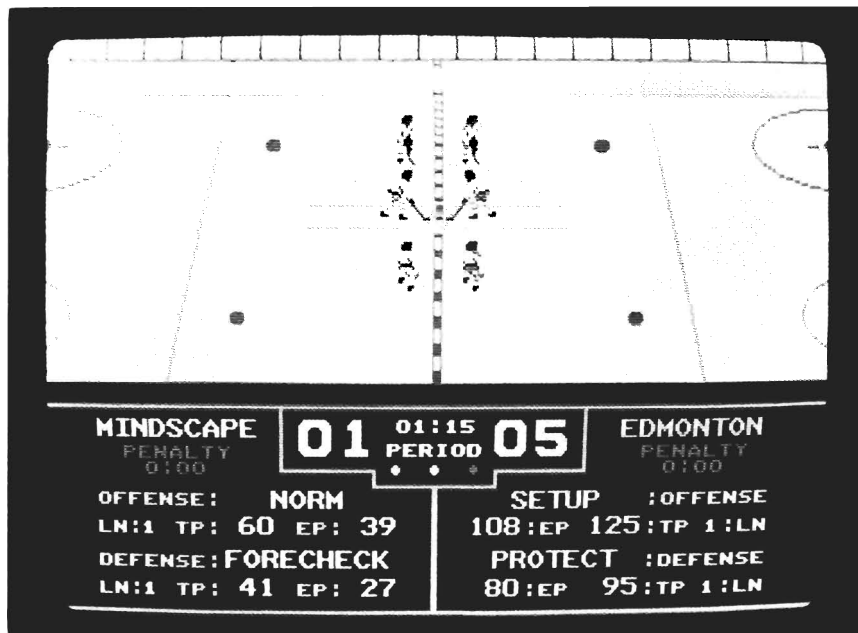
proud just to have made it to the playoffs. The referee tossed the puck back into play for a face-off. My teammate gained possession and managed to skate around his opponent. I took off in the direction of the opposite team's goal. The din of the crowd was deafening, and it renewed my energy. With each stroke of my razor-sharp blades through the newly groomed ice, I was more exhilarated. I picked up speed and sailed across the

ice into enemy territory. I received a quick pass from the center, and executed a swift fake to the defenseman. I was clear. I caught the goalie's position out of the corner of my eye as I wound up for the shot. I put everything I had into the shot, and it paid off. "CRACK!" went the puck, as it launched for the goal. Blind to the skillful save attempt by the goalie, the black projectile flew into the upper left-hand corner of the net, setting off the goal siren, which, in turn, set off the crowd. The excitement was enough to melt the ice, but the game wasn't over yet...

Such is life in the SportTime Hockey League. To become a member, simply get Superstar Ice hockey from Mindscape, put on your equipment, and boot up. Superstar Ice Hockey places you in action in the rink, and off the ice as owner/general manager and coach of a team. As a player, you can be the goalie or the center on a two, four, or six man team, while engaging in all the action of professional ice hockey: slapshots, passes, checks, fakes, and saves. As the owner/general manager and

( continued on next page )

Face off time at the Superstar Hockey rink



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( continued from previous page )

head coach of a team, you make trades, recruit players, run training camp, rearrange the lines, and call the strategies. The play progresses from league play, to division and conference championships, to the SportTime Cup Series. To explore the game, at least one joystick is required for port 1. Amiga users with a megabyte of memory are able to boot from the Workbench. Otherwise, the game must boot from startup. Before entering the game, the program asks for a specific word from one of the two manuals to be sure that you have not pirated the game. Answering correctly brings the main menu to the screen with the title, "SportTime Hockey League" at the top. There are four squares that show the two divisions of each of the two conferences, West and East. In Each square, the five teams and their standings are presented.

All of the teams are the actual teams in each respective division, with the exception of one added team "Mindscap" which is placed in division two of the Western conference. Below the league standings are the main menu options, which are selected with the joystick. The choices are: View League History, View Team History, Improve Team, Reset League, Setup New Lines, and Play Next Game. The first five options deal with statistics and skill, while the last option puts you in the rink. The Improve team option allots you a certain number of trading points to spend in different methods of bettering your squad. Resetting

the league sets all records and standing history to zero. In this way, you can begin a fresh season, rename your team, change to a different division if you wish, and tailor your own league scenario. The Setup New Line selection allows the movement of players within a team to different positions on the ice. I like moving the rookies up to first line so that they can get a chance to prove themselves, but the choice in these matters is yours. Finally, the Play Next Game option takes you to the rink with your newly improved team to play against the next team on the league schedule. Before hitting the ice, it is vital in Superstar Ice Hockey to improve your team through three different methods. The Improve Team selection brings a sub-menu to the screen containing the following choices: Send team to training camp, Recruit a player, and Player trade. As the owner/general manager of your team, you are given 250 trading points to spend on improvement. Feeling confident that I would whip my squad into shape, I first chose to send them to training camp for general improvement. I gave up only 50 points, and my players returned with slightly higher skill ratings. Incidentally, every player has an offensive and defensive rating between 0 and 49, as well as an overall skill total for reference. Next, as much as I hated to do it, I had to get rid of some of my older, washed-up veterans, and replace them with fresh recruits from the minor league. This also cost me points, and I hoped that

these rookies would prove themselves in action this season. With my remaining points, I put in a trade bid to the SportTime Hockey League(SHL) administration. Unfortunately, my offer was denied, and a 150 point non-refundable arbitration fee was taken from me. Oh well, maybe next season I'd get the star player. It was time to get going. I exited to the main menu, set up a new front line (it's great calling the shots), chose the Play next game option, and geared up for action.

I was then confronted with the Play menu. From here I was able to chose the amount of minutes per period, the number of men on the ice per team, and the uniform color for each team. Also, you may choose how to control your players. The three positions are goalie, center, and coach. The three options are Joystick 1, Joystick 2, and Computer. You could select to play against a friend, against the computer, with a friend against the computer, or even have the computer play against itself. From this menu as well, you can toggle the offside rule on or off, and choose to practice or actually play a league game. I set up the game to my liking (no offside; head to head against Edmonton, played and coached by my Amiga). After a few moments, the transition screen comes up depicting the entrance to the "SportTime" Sports arena, with lines of people waiting to enter the rink to see the game. After the final loading, the screen shows the coaching screen

which allows the player to set offensive and defensive tactics, pick and substitute offensive and defensive lines, and view essential statistics. I put my first line in, chose "normal" for my defensive strategy, and "attack" for my offensive. Two other strategies are available for both offense and defense, and are appropriate in different game situations. The referee blew the whistle, and the faceoff began. My computer controlled teammate took the puck and skated across the line. To give him room, I skated by the defense and pressed the fire button. I checked him hard, and unfortunately for me, the coach-

ing screen came up with the referee looking right at me and blowing his whistle and yelling "Slashing!" "Oh well," I thought, "I'll have to be more careful". The puck was put back in play and Edmonton took it towards my goal. My computer controlled defenseman played hard, but the opposite team's center took a hard shot at my goalie. It was saved with a high catch and immediately passed to me. I took the puck down pulled off a great fake by pushing the fire button twice in rapid succession. I passed it off for real by indicating the proper direction

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## Superstar Ice Hockey ( continued from previous page )

and pressing the button once again. A smooth pass glided to my left wing. I skated to shooting position and waited for a return pass. It came! I pressed my joystick to the upper-left corner and lifted a shot into the net. The siren blared, and the sound of the crowd boomed through my speakers. I continued to play until time was called. After you have played a full game, the pro-

player is knocked down, he spins and slides before he can gain control again and get up off the ice; when the Goalie makes a save, he really "makes a save" in that he dives, swings, slides, and raises his glove and stick. The scrolling is extremely smooth and quick. The puck moves like a real puck, and when a player has made a high shot, the shadow of the puck travels below it

can be heard such as booing, cheering, roaring and catcalls from the stands. No matter how much memory you have, you will hear the siren go off and the "Crack!" of the puck as it's hit by the stick.

All the moves of ice hockey are at your disposal once you have mastered the joystick movements. Superstar Ice Hockey is complete. It has all of the elements of fast-paced sports playing simulation as well as off-the-ice administrative decisions. The only minor complaint I have is the "manual" copy-protection. The game asks for a word from one of two separate manuals, which becomes a little inconvenient after a while.

In summary, the game itself is one of the best sports simulations I have ever played. The graphics, sound, and programming are very impressive, and the manuals are well-written and complete. In the literature, the program claims to be "an extraordinary sports simulation". I can say without a doubt that it has proved itself worthy of this praise. If you like hockey and good simulations, get Superstar Ice Hockey from Mindscape. It's the closest thing to being in the rink.

### Superstar Ice Hockey

Mindscape, Inc.  
P.O. Box 1167  
Northbrook, Ill. 60065

(312) 480-7667



Referees appear to keep you posted on the stats

gram returns you to the main menu to continue the simulation.

The graphics in Superstar Ice Hockey are first rate and fast moving. The crowd is colorful and well-done. The perspective in the rink brings you right into the screen. There are so many little details that are realistically incorporated into the game: when a player stops suddenly, he scrapes up a mist of ice; when a

player is knocked down, he spins and slides before he can gain control again and get up off the ice. The audio in Superstar Ice Hockey is realistic, and entertaining as well. Unfortunately, if you have only 512k memory, you will not get to hear any crowd sounds unless you do not have an external disk drive. You could disconnect your external drive to play if you want the better sounds, because they really do add to the game's atmosphere. For those with a meg or more, a wider variety of sounds

# CygnusEd PROFESSIONAL

The new text editor from ASDG

by John B. Sawaya

Many of us use the Amiga for more than just games. We use it for developing programs, dialing electronic bulletin boards, exploring public domain software, or simply writing letters. At times, each of these activities and many more require access to some form of

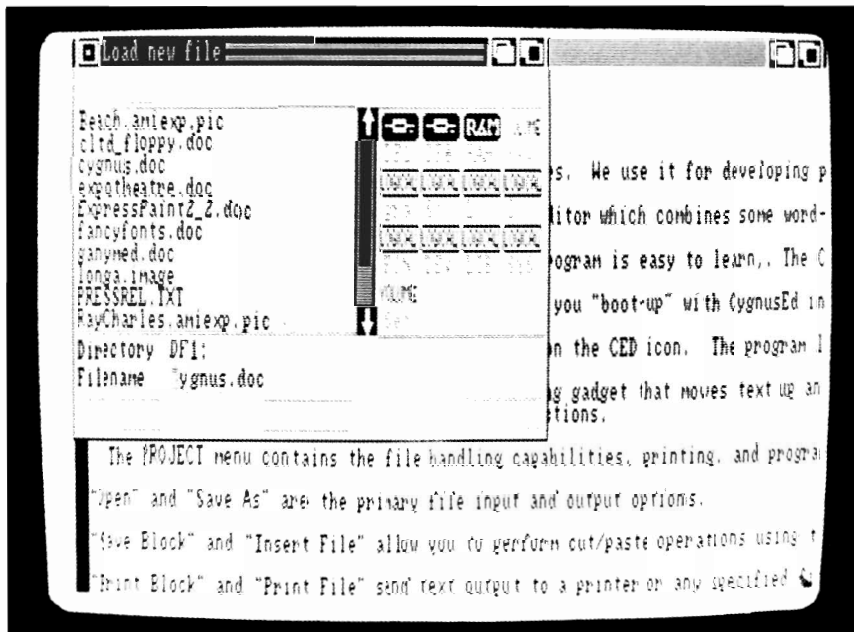
text editor. Your Workbench disk includes two, ED and EDIT, and the extras disk includes a version of EMACS. If you spend the majority of your computer time using a text editor, then saving a few keystrokes or being able to cut and paste from multiple documents can make the difference between a job and a neverending task. Since I do just that, finding the right set of editing features is an important and continuing con-

cern. CygnusEd Professional is a truly unique text editor which combines some word-processing features with some useful tools for programmers. Whether you are an Amiga expert, or just want to "dabble" with text files, this program has features that will interest you. What makes this editor outstanding is its performance. Extremely fast scrolling, screen customization, multiple "cooperating" views and user-definable macro keys are just a few of the highlights. There are also word processing features like word-wrap, paragraph formatting, vertical block cut/paste options and built-in printer control functions. For programmers, there's an interface to ARExx and DOS commands, a function that finds matching braces and parentheses, and a "HOT-Key" restart capability!

Considering the many functions available, the program is easy to learn. The CygnusEd manual has a professional appearance and is well organized. I found that very little information was missing. The manual is accompanied by one disk, which

( continued on next page )

*CygnusEd uses a fast and flexible system for file access*



## *CygnusEd Professional* ( continued from previous page )

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contains a program named CED. The program can be started by using either the Workbench or the CLI (command line interface). There are advantages to using the CLI if you want to use the editor with more than one file, or use DOS commands inside the editor.

ASDG has set up this disk to provide a demo, if you "boot-up" with CygnusEd instead of the Workbench disk. This will bring up the program with two small text files which demonstrates multiple views. You wouldn't normally work this way because the disk doesn't contain a complete DOS command directory. The disk also contains "Proff", a public domain print formatting program, and various sample programs to illustrate programming features.

Starting with the basics, you can double-click on the CED icon. Along the top of the screen, a title bar displays information such as current file name, cursor line and column numbers, and view number. Other information like page numbers and the file size can also be displayed. When any key is pressed, the mouse pointer disappears, until you move the mouse again. If you press the left mouse button, you can control the direction and rate of scrolling, simply by moving the mouse pointer up or down. If you have long lines of text, you can also scroll left and right the same way. On the left side of the screen there is a sliding gadget that moves text up and

down. This is a very handy feature. It shows visually where you are in a long document, listing, or program. When you move it, the text scrolls immediately. This gives you an easy way to jump half way into the text file, then scroll up or down to locate some text quickly. The right mouse button reveals the numerous menu options. An odd feature is under the "Environment" menu, which actually exhibits three menu lists under it, depending on whether the position of the mouse is to the left, center, or right side of the "Environment" heading. All the important menu items have an Amiga-key equivalent. Now lets take a detailed look at some of the CygnusEd functions.

The PROJECT menu contains the file handling capabilities, printing, and program exit options. CygnusEd uses a really great file requester that has up to 16 selectable gadgets for picking a disk-drive (such as DF0:), or an assigned logical directory (such as S:), or even mounted volume names (like RAM:, Cyg: (CygnusEd) or Wor: (Workbench)). You can choose a file by simply double-clicking that file name. Or, you can list the contents of a subdirectory by selecting its name. When saving a text file under a new name, a string gadget is immediately ready to receive keyboard input. When the file requester is called a second time, it appears instantly. It seems to remember the previous file list without having to re-read the disk. I wish other pro-

grams used this file requester.

"Open New" splits the screen with a new title bar. The former text view and scroll bar become smaller, ie., fewer rows of text. A new text view appears below the former text view. Into this current view, you can start a new file or open up another file from disk. Up to 10 different views can be opened at one time. Using the "Split View" option, one file may have multiple views open. This way you could see what your typing appear in more than one view. That's what they call "cooperating" views.

You can select any title bar and drag it up or down to resize that view. Another view can be made active just by selecting it, but it not easy to see which view is active.

Each open view requires at least (2) rows of text. This means that if you open all (10) views on a standard non-interlace screen, the largest view can have only (5) rows of text visible. Some other text editors must use overlapping windows to manage multiple files, but those windows never seem to be directly accessible. I like having the availability of another view at a glance.

"Save All Changes" is an easy way to write all edited files back onto disk, and "Quit" / "Quit And Die" are used to exit from the current view. If there is only one remaining view, the CygnusEd program exits. The difference between these options occurs



when the "Environment" option called "HOT-Start enabled?" is selected. With "Quit", CygnusEd can exit and still remain resident, immediately ready to restart. Just press Right-Alt / Right-Shift/ Return all together to restart CED. This feature is very handy and lightening fast. Unfortunately, it costs about 119K bytes of memory to leave CED dormant.

Under the ENVIRONMENT menu, options for customizing the screen formats, establishing macro keys, and a variety of other options are included.

"Screen Height" and "Screen Width" allow you increase the size of the screen, and switch to interlace mode. Interlace mode returns to non-interlace without any of the problems

that some other editors have. My Amdek-300A amber monochrome monitor gives a high resolution display without any interlace flicker. Using this monitor I can see up to 86 text characters plus the scroll bar. In the non-interlaced mode, 28 rows are visible.

The "Macros definitions" allow you to create hundreds of customized operations simply by

recording sequences of menu options and key strokes. These recordings can be assigned to the function keys, the keypad keys, or any combination Alt and Ctrl keyboard keys. The disk includes a large collection of predefined macros that simulate the popular MicroEMACS editor. The primary drawback with this method is that you can not re-

"AutoSave" is a convenient option that saves data at regular intervals, from 5 to 99 minutes.

"Set Icon Tool Name" is an unusual option that I will probably never use.

"Do Safe Saves" changes the way files are written back to disk. This option first stores a temporary file on the disk, then deletes the old version and renames the temporary file to the correct file name. This procedure requires more available disk space and is a little slower.

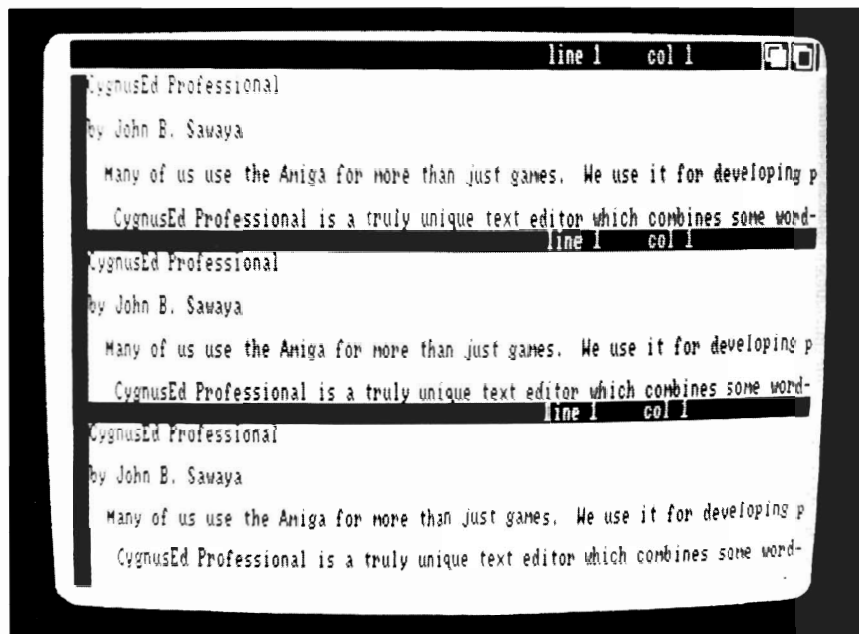
"Icon Creation" when the file is saved, can be turned on or off.

"Keypad = Movement" makes the keypad perform the IBM style of cursor movement, scrolling and insert

mode. The shift key temporarily changes the keypad mode to the alternate setting, like scroll-lock on an IBM PC.

"Save Environment" is used to store all the current option settings. You can also "Load" these settings, but CyngusEd has a wonderful feature that almost eliminates the need. By giving a suffix to the "CEDdefaults" file,

( continued on next page )



Multiple documents can be opened easily in CygnusEd

view the macro definitions, after they are recorded. Additional macro commands would really be helpful, such as an "if" statement. Some other editors have a more powerful macro command language, but they are not as easy to use as CygnusEd.

"Priority" provides the ability to increase or reduce the relative priority of CygnusEd to work effectively in multitasking.

## **CygnusEd Professional** ( continued from previous page )

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such as ".c" or ".txt", you can automatically invoke a particular set of defaults for programming or for word processing, corresponding to the suffix of the text file being edited.

"Right Border" controls the right margin used in the "Format" and "Word Wrap" options. I had problems trying to set the border past column 80. If you move the right border all the way to the right, it's supposed to prompt for the column number (sometimes it does, and sometimes it doesn't).

"Layout" mode allows you to place the cursor beyond the current end-of-line position, without forcing you to enter lots of blanks. This option can also be used for moving a vertical marked block of text, either left or right.

With the "Word Wrap" option you can type up to the right border where your word and cursor automatically get repositioned to the next row. Unfortunately, this option does not wrap by inserting words. If you insert words in the beginning of a line, causing the last words on the same line to extend past the right border, this option does not wrap these words. You would need to use the "Format" function instead.

"White Space" is a nice feature that allows you to control the visibility of certain characters. You can mask out printer control characters, or see the tab characters, if you wish. It would even be better if it could mask out the

non-printable binary stuff in an executable program file (load module), like another text editor can.

The SPECIAL menu has some functions that are for general use. "View Operations", as explained earlier, are also available by simply using the mouse pointer. The "split view" (or Amiga-d) option is the only one you can't do with the mouse. This could be suggested as an enhancement. "Format" is a word processing function that reflows a paragraph between column one and the (current) right border. This function only works if the text is flush on the left-side. Left margins are not supported until its time to print the file. There is a "fill" sub-option that makes the words appear flush on the right-hand margin (border).

"DOS/ARexx" options permit you to key in a command. Programmers can develop applications that can drive the CygnusEd program via remote control messages. The disk includes a small demonstration program with "C" language source code. With the growing impact of ARexx in the Amiga developer community, I have a feeling that every editor will need this before long.

"Enter ASCII" allows you to key in any ASCII character number. For example, you can enter the Form-Feed character (12) to force a page break (or simply Ctrl-L). The function keys (with caps-lock on) are programmed to

insert standard printer control sequences and date/time stamps into your text file. For example, just press Shift-F2 to begin the italics mode of printing.

"Find Matching Bracket" is a function for programmers that locates the matching parentheses, brace, or bracket that corresponds with the one under the cursor. This can be very handy when dealing with a lot of nested "if" and "case" statements. The editor jumps quickly to the matching bracket, then quickly jumps back. Don't blink; you might miss it. I wish it wouldn't jump back. This could have been a very quick way to "Block Mark" a group of program statements.

"Mark Location" lets you set a place holder that you can jump back to at a later time. You could do something similar just by splitting the view.

The CUT/Paste Menu has functions that are used to move, copy and delete text. First, you can mark the text you want to use by double-clicking (or Amiga-b) on the first character, then moving the cursor. Note, the mouse pointer can also be used to move the cursor.

Fairly standard keys are used to delete (and undelete) words, end-of-line, and the whole line. Some features that I wish were present in this editor are: the ability to undelete more than one text string at a time, and the ability to do

( continued on page 63 )

# FinePrint

*Better Output from your dot-matrix printer*

by William Barker

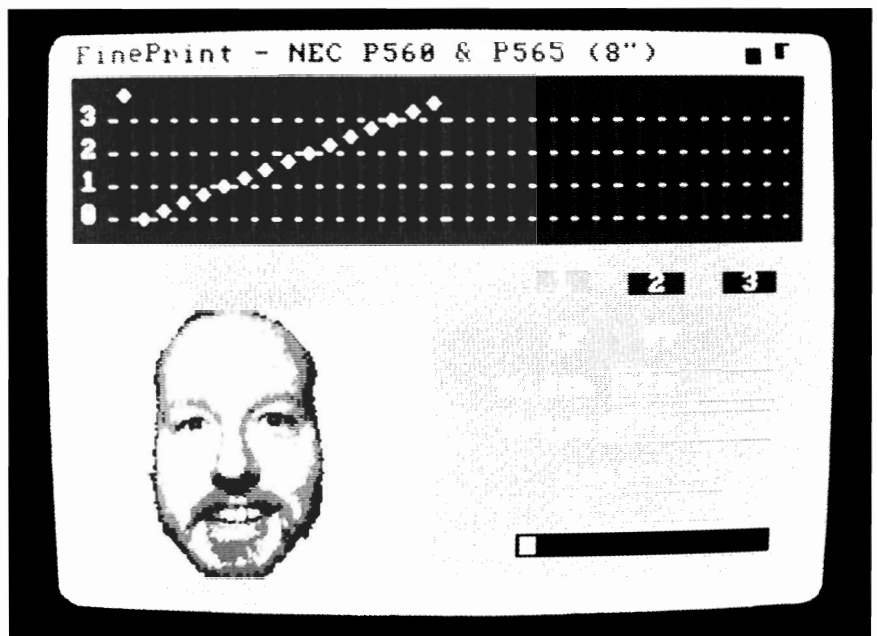
**F**inePrint by Designlab of Owego, NY, is a useful single disk program for dot-matrix printers that achieves up to 16 grey scales by using a multiple strike technique. Custom printer drivers are used, and, as is typical with a program of this type, a limited set of printers are supported. The manual (approximately 30 pages) suggests that you write to the manufacturer if your printer is not currently supported for new drivers. The program uses keyword lookup as a form of copy protection, so keep that manual handy. FinePrint is different from other programs that merely do a screen dump of an IFF image. The other programs use a technique called dithering to simulate shading by using various patterns to represent the different color, or black and white shades of the the image. FinePrint builds up ink on each dot on the paper, with dark areas receiving up to a maximum of fifteen hits per dot. This program is designed to work best with old ribbons that you would normally

throw away, but settings are provided for new and medium age ribbons as well. However, I found that using new ribbons actually yielded images that were too dark overall.

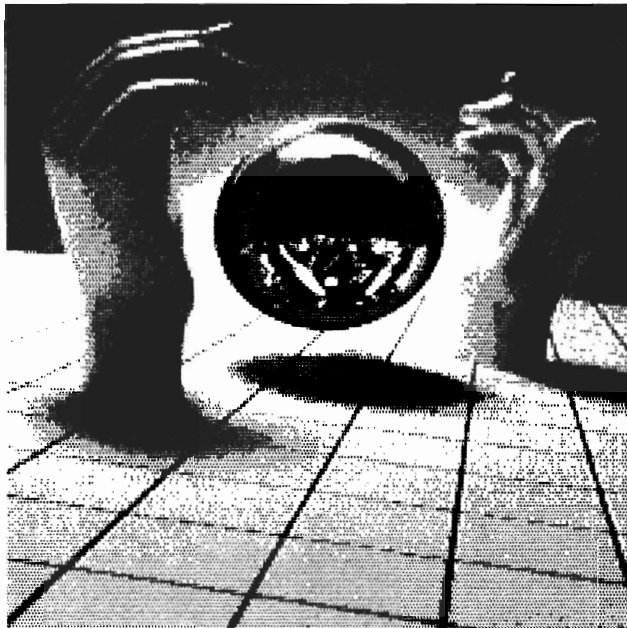
You must first run the "FinePrefs" program to select your printer and the density you wish to use. FinePrefs creates and writes a file called "fine.cfg" to your FinePrint disk. This file is used by the main program to

set up your printer similar to the way Preferences uses Devs/system-configuration on the Workbench disk. To give you an idea of the selections available for the 24 pin Epson LQ-850, the following density modes are available for printout: 60x60, 80x60, 90x60, 120x60, 240x60, 120x90, 60x90, 180x90, 120x180, 60x180, 180x180, 90x180. The lowest density modes naturally yield the

*( continued on next page )*



*Image parameters may be adjusted before printing using the sliders*



*An output from an Epson LQ-850 using Fineprint*

fastest, and as I learned, sometimes the best, printouts. The program is the first I have used on the Amiga that prints bidirectionally during graphic printing. The program will give excellent printouts with the corresponding penalty of increased time. To put it another way, for large printouts and high densities, you could cook an entire banquet or watch your children go through elementary school.

The manual also talks about three types of resolutions: that of the image, the selected printer density, and the scaling of the

image to the page. You can determine the size of your printout by multiplying the DPI times the width of the page if you wanted a full width image. If you had selected a printer dpi of 60x60, and wanted your image to be 4 inches in width, you would set the width gadget to 240.

The first task is to select the ribbon type from new, medium, or old. Next, you load an image into the program. A reduced version of the image is displayed in the lower left of the screen, along with its resolution above. Across the top of the screen is a

set of 32 slider controls, which show the number of hits for each of the grey scale values of the image you wish to print. You can adjust these slider controls to change the density of the printed image, and the onscreen image will give a rough indication of these changes. The program also provides you with the means to copy the current palette on to a second and third palette button. That way, you can alter the other two palettes, and still keep the original one unchanged. At printing time you will be asked to enter a specific word from the manual. Although this is a nuisance, it is one of the least offensive forms of copy protection, and certainly more desirable than copy protected disks.

The biggest problems with Fineprint are that the displayed image never quite matches the printout because of the ribbon age factors, and the displayed image is not the best quality on screen. Also, the slider controls should have grey scale intensities displayed beneath them. It is very frustrating trying to guess what color will be changed in the display by trial and error. This led me to use the Colors section of Deluxe PhotoLab to convert images to black and white, as well as increasing the overall brightness of the image. DPhotolab, with its ease of use and strong dithering capabilities, proved to be a real help in getting the most out of the program. I probably could have achieved the same result by using the slider controls, but, I for one, do not want to experiment for

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hours. You can also make one of two selections for averaging (smoothing) the printed image. These are provided for use with oversize prints to avoid the blocky look. There is also a control for centering of the image on the printed page, but I did not use this, as all my printouts were limited to one page or less in size. I found that the lower density ranges for my printer gave the fastest and nicest printouts. The end result is definitely higher quality than is possible using the dithering techniques of other programs. At higher densities, most images became too dark overall, and the printout time increased as the square of the side of the image. Printouts of approximately 3" by 5" in size took about 8-10

minutes at a density setting of 60x60. I tried higher densities, but the times were quite long. A printout may be aborted at any time by selecting stop, and you also have the option of saving or importing palettes for your printouts. At first, I was unimpressed by the program. I tried it on the Epson JX-80 printer and every image came out almost totally black and white. I had much better results in both speed and quality when using the newer Epson LQ-850. If only the programmer would make the slider controls a little easier to use, and the displayed screen image a better match, this program would certainly become a winner for more users. Overall, I am very satisfied with FinePrint. It can

give you the best quality printouts that your printer is capable of producing. However, I wonder how quickly it will shorten the life of a normal printhead, especially when printing poster size printouts. I do recommend FinePrint for single sheet images, but be sure to use a well used ribbon. Isn't it nice to find a use for all those ribbons sitting in the desk drawer?

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# DSM v2.0

## An Intelligent Program Disassembler

by Dave Haynie

**T**he basic purpose of a disassembler is to construct some form of human-readable assembly source file from an executable program file. Additionally, such a re-created source file should be acceptable as input back into an assembler. This permits an executable program to be turned back into some form of source, modified, and then reconstructed. DSM is a new disassembler from OTG Software which addresses these functions.

### *So, Why Do I Want To Disassemble?*

A disassembler isn't a tool for everyone, but I now believe that no serious programmer should be without some form of disassembler. One example of a real-life situation I ran into at work should point out a possible use.

As everyone knows by now, Amiga system ROM libraries can be replaced by new libraries loaded into RAM. Although there's nothing out there yet that

makes use of this, inside Commodore, the A2024 monitor does use this capability. And part of this capability involves a program called RamKick, which will reset an Amiga and allow it to find newly loaded libraries. The problem we ran into was that our 68020 systems didn't reset properly. It just so happened that I had a public domain program which did reset the 68020 properly. But I had no source code.

Enter a disassembler. One pass through the disassembler, and we had a readable assembly listing for the program. No comments or anything, but it didn't take all that long to find the section in this program that did the reset, and that pointed the way to the problem in RamKick, and a fix.

As this example points out, one specific use of a disassembler is learning. A disassembler can let you learn how various programs do various things. A good portion of the folks who became C64 experts years ago, did so by taking apart the operating system with disassemblers. Some folks have done that with the Amiga

system, too. It can also show you how well (or not so well) compilers turn your C or Modula2, or whatever, into assembler. And it's possible to use a disassembler to modify a program that's not doing quite what you want it to do...

### *A now a note from the legal department:*

...which brings up an important point, that OTG mentions several times in their user manual. Depending on the license, it may be quite illegal to disassemble a copyrighted program. That even applies to programs with bugs in them.

In most cases, there's no legal requirement for a software vendor to provide you with a bug-free program, though I suppose if it were too bad you might consider suing such a supplier for fraud. No vendor is even required to let you fix the program yourself, moral obligations aside, of course.

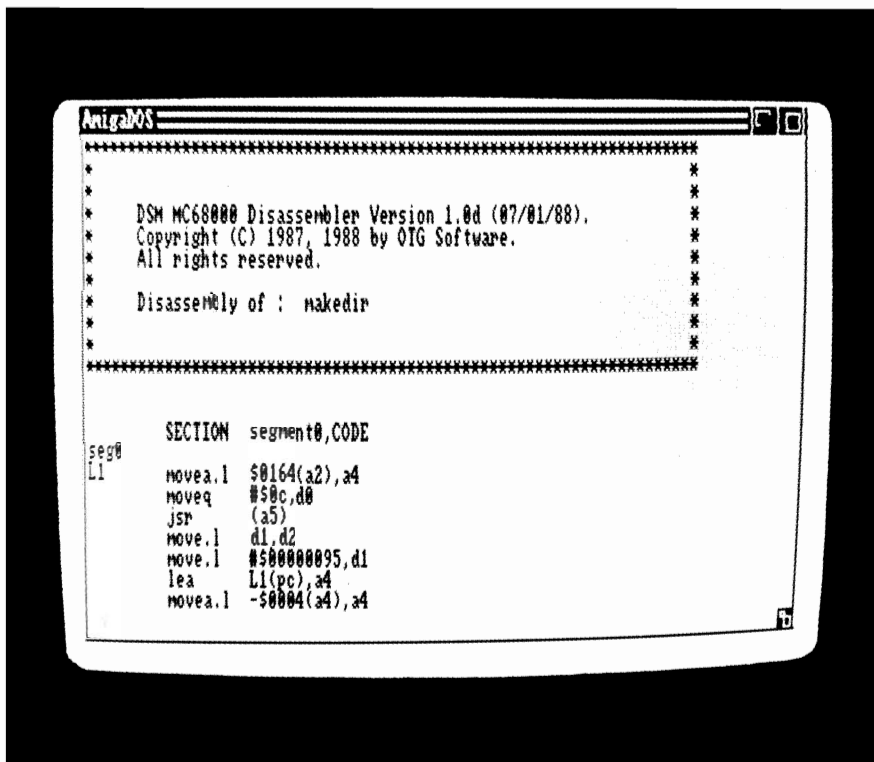
The other point is that, even with a very good disassembler, it's going to take lots and lots of work to be able to figure out the

workings of any non-trivial program. A good company will be able to fix bugs faster than you will; a bad company may be better written off as a mistake.

### *A Complete Manual*

I consider a disassembler pretty much an expert-level tool, and

The next chapters cover the use of DSM. It's run from the CLI, controlled via a few command-line options, and about as easy to run as most assemblers (which, by implication, makes it easier to run than the Metacomco assembler). There's a chapter on basic use to get you started, and then one that goes into much more



generally pretty easy to do, so I was surprised that the manual for DSM was as complete as it is. It's even in a loose-leaf manual, which is the kind I prefer. The first chapter lists the complete contents of the disk, system requirements (512K minimum, but you'll need more to disassemble very large programs), their upgrade policy, and planned future enhancements (68010, 68020, and 68881 support).

depth for more advanced techniques. Using a disassembler, as they explain here, really is a technique to master. Next, they walk through some examples to help you gain an understanding of what's involved. And finally, appendices list DSM error codes, some quirks you're likely to find in disassembled code, a bibliography of 68000 assembly references, and finally, program licence, registration, and bug forms.

### *The DSM Disk*

DSM comes on a single unprotected floppy disk. OTG encourages making a copy of this disk for backup, and that's a good idea for any software. They even outline the DiskCopy procedure for single and double floppy us-

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*“when I put it in expert system mode, it found just about all of the code, but left the ROM Tags and other data in the code section alone”*

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ers. This disk contains an update file of changes that didn't make the manual.

Also on the disk are the DSM and ATEM programs, some example programs, and a 68000 assembler validation suite. The validation suite is an assembly file containing all 68000 instructions.

This can be processed by your assembler, and then run through DSM. If the DSM output match-

*( continued on next page )*

es the assembler input, you can be pretty sure your assembler knows what it's doing. OTG found that the standard Metacomco assembler can't handle two 68000 instructions. This test is also a good clue as to what your assembler actually does with assembly instructions. Some assemblers will automatically make substitutions, and if you're doing lots of assembly coding, it's a good thing to know what these substitutions are. Neither the Lattice V4.0 nor the Manx V3.6 assemblers could handle this as is, so I imagine it's a good exercise for any assembler.

The ATEM utility is OTG's replacement for the Amiga ATOM program. Both of these tools are designed to let the user tag data segments for loading into CHIP memory. The difference is that instead of working on object modules like ATOM, ATEM works on executables.

### ***How Does It Work?***

DSM works by following the flow of an Amiga program. All standard Amiga programs are defined to start with executable code. DSM starts at the beginning and follows that code until it hits an instruction that could indicate the end of code, either unconditional branch/jumps or a return of some kind. It then goes through it's list of other known code locations (like those found after conditional branch/jumps), and does the same thing with each of these chunks. In this way, it produces a listing where

every chunk of code in the disassembly is guaranteed to be code. However, it could have missed some code. There are two mechanisms to help out, and here's where DSM is a unique disassembler. The first of these is the expert system option. With this option, the program relies on some "intelligence" to try and figure out what is code and what isn't, instead of doing it purely by rote. The other option is the use of offset files. The hex option will include as comments the hex value, and the offset of the things it finds. Using this information, the user can create a file of offset addresses that gets fed to the disassembler next go around.

The disassembler will look at the given offsets for more code, which in turn may point to more offsets to check out. In a few iterations, the user may have a complete assembly listing containing both code and data, where they belong. No other disassembler I've seen yet on the Amiga has this capability. One extra detail that's on the disk "ReadME" file but not yet in the manual, is that DSM can use any Wack-compatible symbols found in an executable file. So it's even possible to have DSM build an assembly version of a high level language program, complete with many high-level names.

### ***How Did It Work?***

As an Amiga citizen, DSM passed with flying colors. It

didn't cause any GURUs, and it ran on 32 bit (68020 and 68030) machines, as well as on the plain old 68000. First, I tried DSM on a pretty standard C program (compiled with Manx V3.6). It missed a few code chunks in normal mode, but got all of them in expert mode. I tried reassembling the disassembly produced, and except for a SECTION BSS it didn't like, the Manx assembler put it back together just as it was before.

Next I tried a more complex program, a publicly available program for playing around with 68020 and 68030 cache parameters that I wrote, called SetCPU. This program was also written in Manx C, but it contains an interrupt routine (not directly reachable code) and a little 68020 code. In this case, it missed the interrupt routine, as expected, and a little bit of other code. But the missed code was so easy to spot, the offset files got back everything else. The 68020 code was of course "db'ed" in.

Finally, I thought I'd try a tough one. I gave it a RAM disk device driver to disassemble. A device driver will be trickier than a normal program, since there's no obvious thread of code to follow (device drivers usually being with "CLEAR d0/RTS", so they return gracefully if accidentally run as a regular program). As I expected, the normal DSM mode didn't find any code at all. However, when I put it in expert system mode, it found just about all of the code, but left the ROM



Tags and other data in the code section alone. This was excellent performance, and better than I had expected.

### *Service With a Smile*

One thing impressed me about OTG Software, perhaps even more than DSM did, and that was their apparent commitment to the end user. They remind you in several places that you can only get user support if you send in your registration card. They really seem to want to be able to upgrade the program. That's a refreshing change these days from many software companies who'd probably rather they never heard from you again.

But that's only the beginning. First of all, if you don't agree to their license agreement (which is reasonable, of the "only on one computer at a time" variety, and they also want you to agree not to do illegal things with the program), you can return the program for a full refund. And it gets better. They warrant the program for a 90 day period from purchase (which is better than some hardware systems). If it doesn't perform basically as outlined in the manual, contact them and they'll do their best to fix the problem. If they can't fix the problem to your satisfaction within 90 days after being notified, they'll give you a full refund, if you so desire.

Aside from that, the manual includes a bug report form that looks pretty thorough. OTG of-

fers on-line support on BIX, Compuserve, and American PeopleLink, as well as their write-in address. About the only thing missing is a telephone number to call, though personally I'd prefer an on-line support service, when available.

### *Anything Missing?*

DSM does just about everything I could imagine a disassembler being capable of doing. Whatever magic is in the expect system mode, it seems to work very well (they do caution it may occasionally work too well. I haven't seen that happen in any of my tests). The use of any available Wack format symbols in the code is another great feature, so you can possibly get a full disassembly if your compiler or assembler leaves in debugging symbols.

While I don't know how difficult it would be, I did think of one possible enhancement. With a clever enough program flow tracking mechanism, it may be possible for an advanced disassembler to read Amiga "fd" files. This would allow it to add in symbolic information for Amiga library calls, since that's another bit of information that's readily available in the code. That is the only enhancement, other than the 68010/68020/68881 code that OTG themselves mention, that I could even think of.

### *The Final Analysis*

If you haven't already guessed, I would highly recommend DSM

to anyone interested in disassembly. It works very well on executable code, something you don't get with most compiler packages or even assemblers. And it's backed by a company that seems very committed to their users. As a tool for a rather high level user, I can't see just anyone running out to buy such a disassembler. But even if you're just learning assembly language, this tool will certainly give you code examples to learn from. Just make sure you learn from real assembly code, not the stuff some of these compilers spit out.

In regard to changing copyrighted programs, may I leave you with this thought: the fact is that anyone who is proficient enough to go through and learn the workings of a commercial program would be better off creating their own.

**DSM 1.0 \$67.50**

OTG Software  
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Fort Worth, Texas 76102

**(312) 816-3474**

*Dave Haynie is a senior hardware engineer for Commodore. Among other accomplishments, he is responsible for creating Commodore's 68020 board for the A2000*

# D-110 Master

SoundQuest's editor for the Roland D-110 Synthesizer Module

by Tom Bucklin

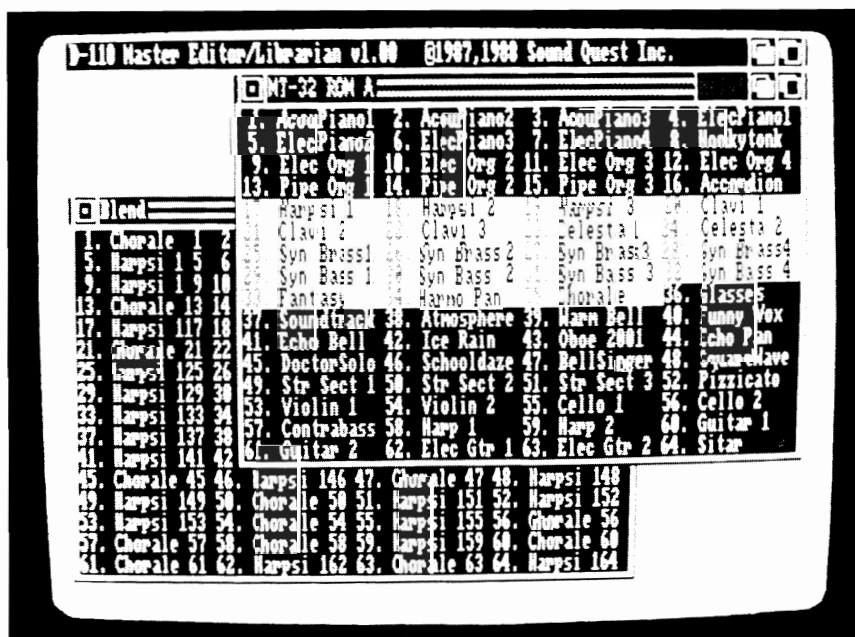
SoundQuest has been bringing us great music software for the Amiga for some time now. Their editors were the first to arrive on the scene, and they include features that remain unique to SoundQuest's approach to editing. The company has a proven record for staying on top

of what is "hot" in the music industry hardware scene. This time they have come to the support of one of Roland's most popular modular synthesizer's, the D-110.

The first thing I noticed about this editor is Soundquest's new packaging. Instead of the former plastic bound, self destructing manuals I had learned to loath, a spiffy, 3 ringed, half-sized notebook now neatly holds

your pages intact. Other nice features of this packaging are the inside pocket to hold your disk, and a tag on the back of the binder, so you can indentify your various SoundQuest editors when stored on the shelf. More than just cosmetic enhancements, these improvements contribute to a much more professional feel and usage of the product.

*D-110 Master has provisions for automatic sound creations based on selectively randomizing an existing sounds parameters*



The program comes on a single copy protected disk. Soundquest's products use the key-disk system, so after having made a back up, don't loose that original. For those who want the added security of having a *real* backup copy of your editor, Soundquest offers a (1) backup disk to registered owners for a cost of \$10.00.

Upon booting, a single title bar appears at the top of the screen, which contains all the action in the form of pull down menus. Vary that your D-110's Exclusive unit number setting matches with the setting in the program (default is #17). Also, this is the time to slide over to the MIDI # menu to select an output channel. Tones, chords, and se-

quences that are sent out from the program will be transmitted on this channel.

### *Off to the library*

It is a fact that a sound editor/librarian for a synthesizer spends most of its time doing librarian tasks for the average citizen. A good librarian and your Amiga provide a wonderfully affordable way to store, categorize, or rearrange your sounds. Soundquest typically integrates a flexible librarian with all of their editors, and D-110Master is no exception.

Although editing a sound can become rather technical, a librarian should be simple to use and quick to operate. The SoundQuest series of editors utilize a number of special features that have been performance-designed.

The "QuickSend" utility included with every SoundQuest editor is an interesting program that allows you to transmit System Exclusive data files for a variety of synthesizers. The Quicksend icon can be activated from the WorkBench screen without ever booting the main editor/librarian. However, this function only works for those sound files that have been created in the SoundQuest format.

From within the program, the power of D-110Master librarian functions are soon apparent. There are a number of terms associated with the way the D-110 manages its voice architecture.

Tones, Tone banks, Timbres, Timbre banks, Patch banks, and rhythm setups are all part of the language that is D-110. Suffice it to say for the purposes of this review, there is a need to address each one of these setup components to realize the usefulness of your D-110. However, D-110Master makes this job elementary.

To begin, access the SYS EX menu from the title bar. Select from this listing the type of system exclusive information you want to receive from your synth. Now find the "Files" menu and select "MIDI to Edit." If your settings and cabling between the synth and your MIDI interface are correct, the program will send a request to receive signal to the D-110 for the type of information you had specified in the SYS EX menu. After a pause, while the stream of MIDI data transfers to your Amiga, a new window will appear. In the case of a tone bank, this window will now contain 64 internal sounds from your D-110 in the Amiga's memory.

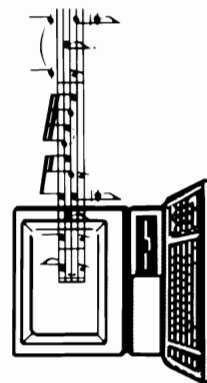
Pressing the right mouse button will allow you to see a new full length pull down named "Bank Edit." By making the appropriate selection within this menu, you can perform basic maintenance tasks, like cut, paste, and swap. This menu also contains an option for turning on the "Audition" mode. With this option activated, one click of the left mouse button over a selected

*( continued on next page )*

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- MT-32 Master
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- Generic Master

## D-110 Master (continued from previous page)

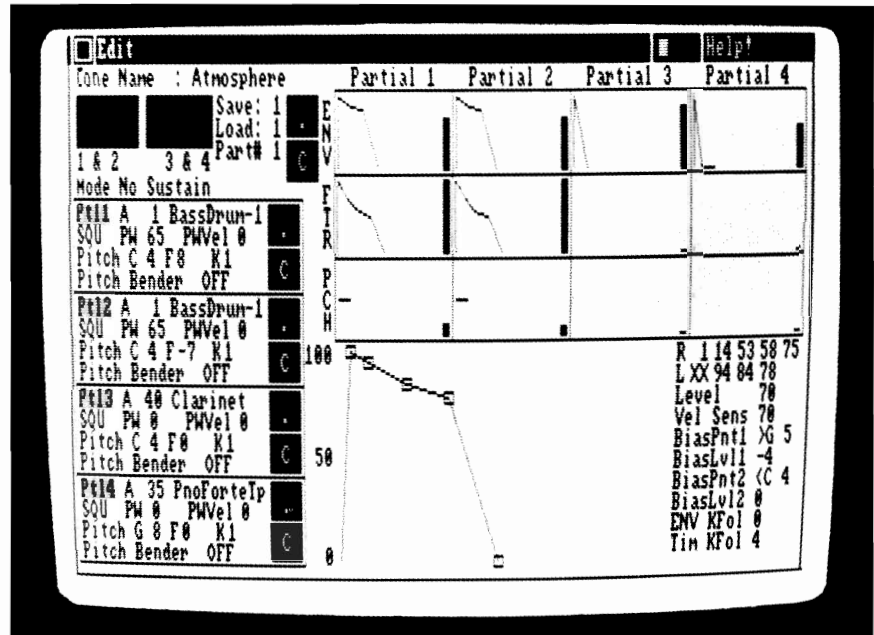
voice name and voila...the sound is sent to your D-110's edit buffer, changing the to instrument which your D-110 is set. When attempting to close your tone bank window, a requestor will appear, with options to send this tone bank to disk, MIDI, or a printer. Once sounds have been loaded into memory from either the synth or from disk, you can begin to edit your sounds. To bring up the editor, click on a sound and select edit single from the bank edit menu.

### The Editor

D-110Master's editor allows you to graphically control all sound shaping parameters for a given voice. One of the unique aspects of SoundQuest's editors is the four stage edit buffer. With this feature, you can temporarily store the results of four different editing sessions on this sound for purposes of comparison. Another neat feature in this program is the "locks." By clicking on these icons, you can lock aspects of the tone together for simultaneous editing of partials.

As far as adjustment of the numerical values displayed, you couldn't get much more intuitive. By placing the mouse pointer over the number you wish to edit, holding the left mouse button down, and sliding the mouse laterally, you can breeze through the full range of value for that parameter.

For those who are timid about creating new sounds in this manner for your D-110, SoundQuest



Full control over the D-110's voice structure is provided from the editor window

provides several variations of utilities for randomized sound creation using your Amiga. The main tools for this purpose are located in the bank edit menu and include Slide, Mix, and Blend. Each one uses a different approach to sound creation, and yields different results. This diversity of automatic sound creation methods distinguishes The SoundQuest line from many other editors.

One last method of sound generation involves the use of the program's variation window. With multiple sliders, the variation window is used to set up percentages of variance for a pre-selected sound. In other words, you start with a sound, and the variations setup will create new sounds based on your settings. This, again, is a much stronger

implementation of automatic sound creation functions than is found in many editors.

### Conclusions

Well, once again, SoundQuest has created their usual up-to-snuff offering in this editor. The user interface to this program is intuitive, and the higher functions are easy to learn (with the proper knowledge concerning D-110 operation, of course). The Quick-Send and audition functions can have the beginner off and running, and the main editor does a complete job of accessing the intricate voice architecture of the D-110.

### D-110 Master

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# 3D Fancy Fonts

Three dimensional fonts for use in your graphics programs

by Paul R. Miller

Three Dimensional Modelers to date have had to make do with the set of fonts that were included in Videospace 3D, or make their own from scratch. The latter prospect is truly horrifying, except to those who don't need to work, and have an unlimited life expectancy. While several sets of three-dimensional fonts have been announced for imminent release, these are the first that I've actually seen, and they are very nice indeed. The two disk set contains three typefaces: Bold (like Helvetica Bold), ITAL 1 (like Bookman Italic), and Fanc (like Clarendon Medium). The fonts are organized into sub-directories for Caps, Lowercase, Numbers, and Symbols (except for Bold, which lacks numbers). They are stored on disk as Scupt 3D scenes, although they can be loaded as simple objects as well. Typical symbols included are: exclamation point, question mark, asterisk, ampersand, british pound sign, German S, dollar sign, and parenthesis, al-

though this list isn't consistent for typefaces. (Bold includes colon and semi-colon, Fanc doesn't). Included with the lower case letters are typical accents: unclouded versions of a, o, and u; grave and acute e's, and a's, and a German u.

Access Technologies touts these fonts as proportionally sized and highly accurate, having been created by a proprietary process to emulate professional typesetting. They are, indeed, very clean and pretty, and render on screen without obtrusive jaggies, for a true professional look. Access has eliminated all unnecessary internal and hidden

faces and edges, so the fonts don't take up any extraneous memory, and render quite quickly. This set of disks is labeled as the Scupt 3D & Animate 3D version, so I assume that versions for other programs will shortly be available.

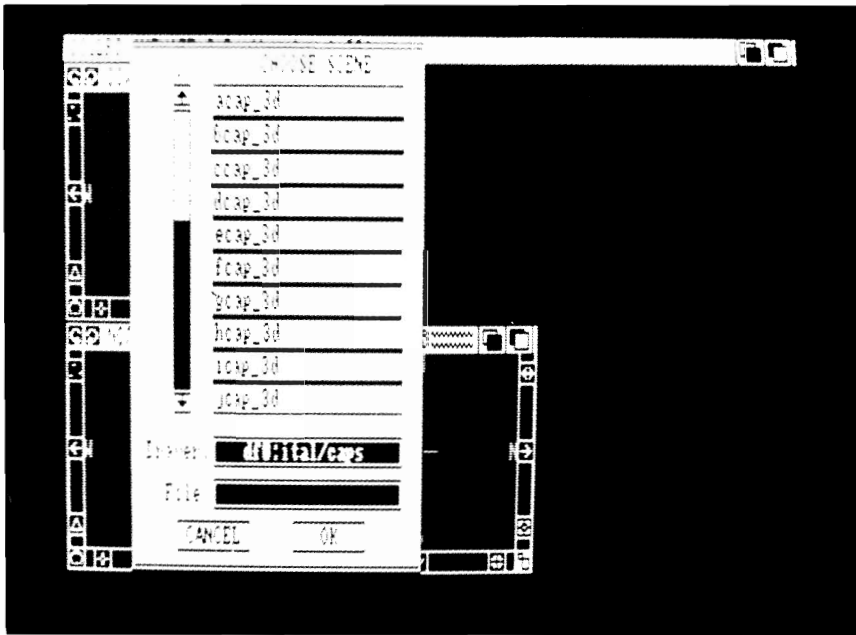
To put Fancy Fonts to use, you must first load Scupt 3D, then select "open scene" from the project menu. Since Scupt's file requestor is not very intelligent, you will have to type the full path to the font you want to use, (i.e. df1:Fanc/Caps). The spinning cogs will keep you entertained, as each letter or symbol

( continued on next page )

*An impressive display of how 3D Fancy Fonts got its name*



## 3D Fancy Fonts ( continued from previous page )



Fancy Fonts can be imported into graphic programs like Byte by Byte's Sculpt 3D

appears in the Sculpt requestor. Now click on a letter, then "OK" when asked whether to load everything. After a few seconds, the Sculpt tri-view will contain a small smudge that is the wire frame outline of your Fancy Font letter. By loading the scene versions of fancy fonts, you will get foregrounds, lights, etc. If you prefer to set every aspect of the scene, use "load object" instead.

Now you have a letter in Sculpt's 3D world and probably want to add several more to make a word or phrase. Access has made it simple enough to continue the process of loading letter after letter. However, using Sculpt's positioning tools to place each object is a non-trivial matter. Sculpt provides the user with a relative method for translating objects in the tri-view. In plain English this means that you

select the crane-like gadget, position it in the tri-view, and click. Sculpt will move the letter relative to the distance the crane is from the center of the view. It will take quite a bit of practice to create the pleasing arrangements of text which Fancy Fonts are quite capable. In the meantime, you can use Interchange from Syndesis to convert the Fancy Fonts to VideoScape 3D format or others, depending on which rendering program modules you use.

Also included on the disks is a demo version (requester screens only) of a 2D to 3D Converter program that will allow you to create 3-dimensional objects from 2-dimensional files. For \$19.95, the program will let you pick face and side colors and textures, and specify the exact numerical increment of extrusion

with simple requesters. This would be a vast improvement over the extrusion method used by Sculpt 3D. The program will include 2-dimensional versions of the Clarendon type "Fanc" font for modifications by the user.

Except for the lack of numbers for the Helvetica face, and some inconsistencies in the libraries of symbols from face to face, I can't find any shortcomings in this offering. Don't be put off by the name "Fancy." These are truly useful and attractive fonts, and are a much needed addition to the library of 3D objects. In combination with Interchange, and a good 3D object editor like 3 Demon or the anxiously awaited Modeler 3D, these fonts will find applications in the whole array of modeling, paint, presentation, and video programs, and are a must for the Amiga graphics artist.

Access asks for user requests for additional fonts and objects, so how about the following: Helvetica Medium and Italic, Times, Palatino or Optima, Eurostile, either Charette or Stencil, and my favorite, Futura. I'd also like more symbols: slashes, commas, percent signs, brackets, quotation marks, a dash and a period. An arrow or two, a star, and the basic math signs would also be helpful. In the meantime, thanks for the Fancy Fonts.

**Fancy 3D Fonts \$79.95**  
(2 disks)

Access Technologies  
P.O. Box 202197  
Austin, TX 78720

# Ganymed / Bomb Busters

Two new action games from Ready Soft

by Steve Ushioda

**G**anymed is one game in a "...series of reasonably priced arcade-style games from Readysoft," as stated on the back of the package.

After booting, Ganymed displays the high score list and credits. From there you start your mission. The screen shows a third person, 2-D representation of your fighter craft at its home base. You operate your ship using the joystick, and lasers are activated by pressing the joystick fire button. Soon after you begin, three Deathbots, walking in a line, greet you with laser shots. One hit will destroy your tiny ship, and you will need to make an average of five hits on the head of a Deathbot to destroy it. In order to survive, you need to develop a technique that will destroy your adversaries, while keeping you in as little danger as possible. After blasting all three of the Deathbots on one level, you are advanced to the next. Each successive level contains slightly more powerful Deathbots, and every three lev-

els, the icy background changes. There are also a few surprises in higher levels that make play more difficult.

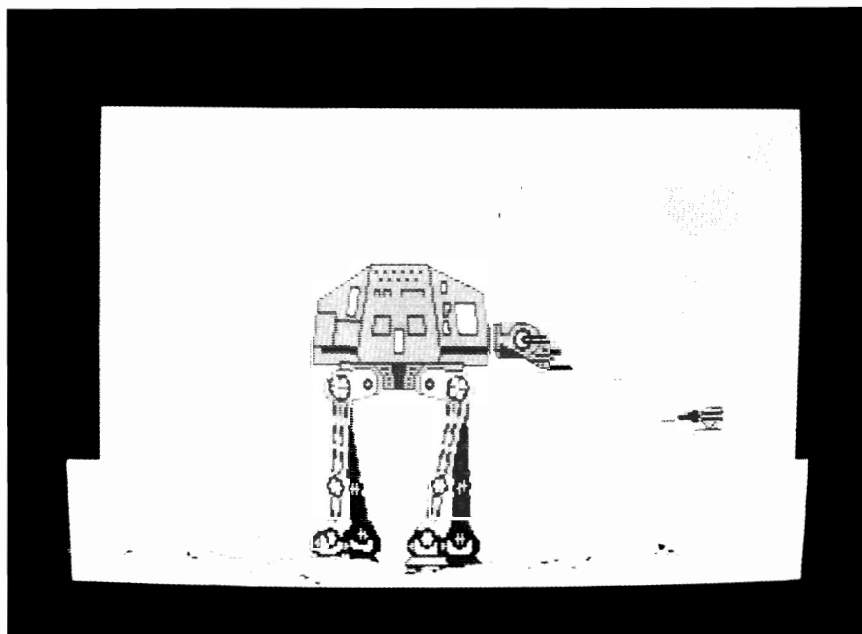
Ganymed has practically everything needed in a simple shoot-em-up action game. It has large fireballs and realistic explosions. The rest of the graphics and sound are also quite good for a game of this type. The Deathbots walk smoothly and your fighter is well represented and responsive. The gameplay

is fast and smooth, and your ship can fly at different speeds.

Its lack of originality is the game's shortcoming. Anyone who has seen The Empire Strikes Back remembers the four-legged walking robots, tiny rebel ships, everything. Though a close copy of this classic STAR WARS combat scene, Ganymed is reasonably good fun on its own merits, and may satisfy the shoot-em-up drive.

( continued on next page )

*The Ganymed Deathbot bearing a striking resemblance to another villainous vehicle*



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## **Bomb Busters**

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It is the near future and a terrorist organization has decided to plant bombs near famous sights all over the world. As the head of the Bomb Busters bomb squad, it's your job to disarm the bombs and save these historic places. This is the premise for Bomb Busters, a new arcade style action game from ReadySoft.

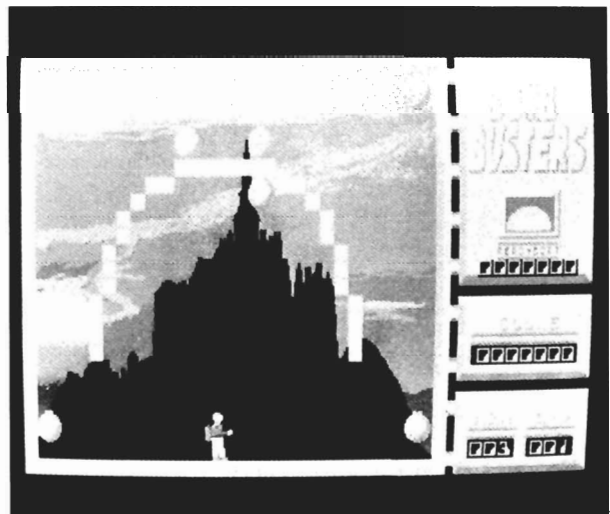
When the disk boots, you are greeted with music and sound effects, as well as a few Bomb Buster graphics. When game-play starts, the screen is divided into two parts, the status section, and the game section. The status section shows a reading for score, lives, and level. The game section presents the action and background from a third person point of view. On each level you must save one of the many famous sights across the world. Sights include the Statue of Liberty, the Sphinx, the Kamakura Buddha, the Taj Mahal, and many others. In addition to the background, each level has a pattern of blocks that serve as both a place to stand and as obstacles to keep you from deactivating bombs. A jetpack is the only item that you are supplied with for the mission. The jetpack gives you an extraordinary jumping capability and cushions falls from high places. There are a number of bombs on every screen and each is disarmed by touching it. On most levels, there is also a "robot" guarding

the bombs. Contact with a robot is lethal. Be careful! A flashing bomb indicates that it is about to explode.

Digitized sound is one of the best points in this game. The great sound is apparent at the beginning of the game when an eerie whistle of the wind is followed by pulsating drums and an electric guitar solo. The sound effects get better with the game-play. Hitting your head on a block results in a crash, and when you lose a life, you hear an indescribable groan of pain. Even after losing your last life, an evil voice lets out a terrible cackle.

A nice plus is the action of jumping very high as opposed to actually flying. This is a nice concept that I haven't seen in similar games. Every tenth level, a special code is displayed. Remember it and enter the code at the start of the Bombbusters to return to that level. This is a small but well appreciated feature.

In some areas though, Bomb Busters is disappointing. Most frustrating was the fact that the program locked up on the third use, and had more lockups after this. Hopefully this problem won't occur in subsequent versions. Another complaint is the simplicity of the game. About the only difference in each screen is the pattern of blocks and the locations of bombs. All of the



*Bomb Busters*

graphics that actually have to do with the game play are fairly decent, but the small amount of animation used falls far short of Amiga standards. Since the box reads "100 levels of play", I was anxious to see all 100 historic sights. Unfortunately, 100 levels refers to the combinations of blocks, not backgrounds (which repeat themselves). Finally, disk access between levels is far too long for a fast action game.

This game would be a sure hit if it had been released a few years ago for another computer. But there are so many great action games now available for the Amiga, that Bomb Busters will have to depend on its low price to find its way into your disk box.

***Ganymed / BombBusters***  
***\$29.95 each***

ReadySoft, Inc.  
P.O. Box 1222  
Lewistown, NY 14092  
**(416) 731-4175**



## Cygnus Ed Professional ( continued from page 48 )

undelete more than one text string at a time, and the ability to do paragraph formatting within a marked block (dream on).

The SEARCH and REPLACE menu includes some interesting features. You can specify "wild card" characters in your search string. A search can be performed either forwards or backwards. Unfortunately, the replace function only works in the forward direction (definitely a bug). The "Word Only" option allows you to search for the string used only by itself, not a part of another word. For example, in programming you may want to change the name of variable "i", without changing any "if" or "while" statements. Case sen-

sitivity can be turned on or off. I wish that the "Enter ASCII" option was also available for entering data for the search/replace strings, or some provisions for transferring a marked block to the search/replace strings was included.

### Conclusions

I highly recommend CygnusEd Professional as an excellent all-round text editor. It's extremely fast, easy to learn and operate, and very powerful. It has features for programming and general word processing. It handles very large files (and small files as well). The program is well behaved and multitasks well. I did find a bug while using the "Gamma-7" prerelease of Work-

bench version 1.3. Exiting from CED caused my system to crash without a guru message, then it prompted for the KICKSTART disk. I have never had my system crash like that! (We'll blame this on the GAMMA release). This editor is definitely one of the best I've used on any machine, and I've used many. If you need blazing speed, a rich set of features, and the ultimate flexibility that comes with an ARexx port, then find a good Amiga dealer and try it for yourself.

### CygnusEd Professional \$ 99.95

ASDG, Inc.  
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Madison, WI. 53713  
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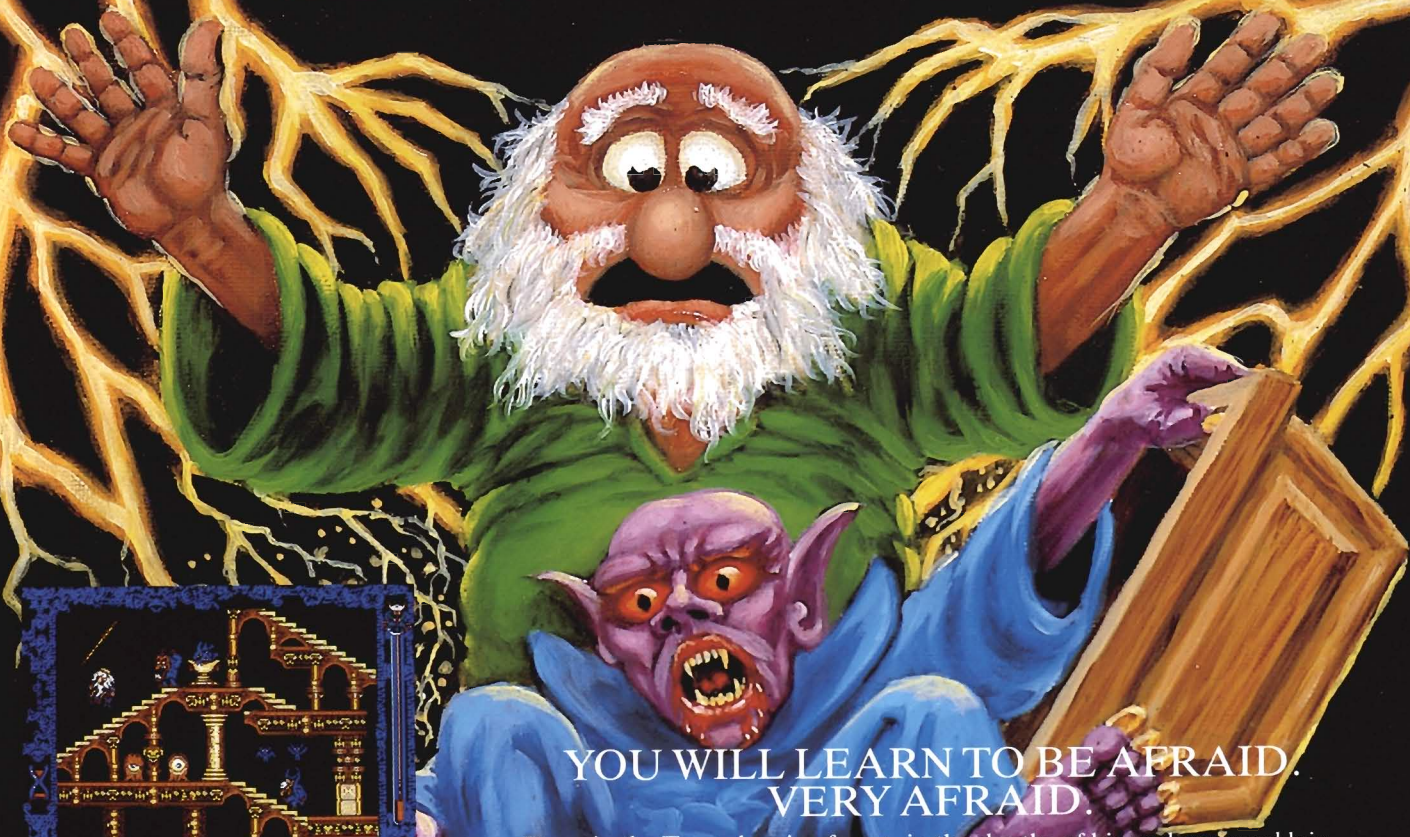
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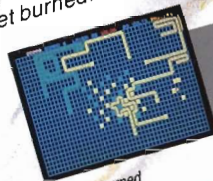


## TRACERS

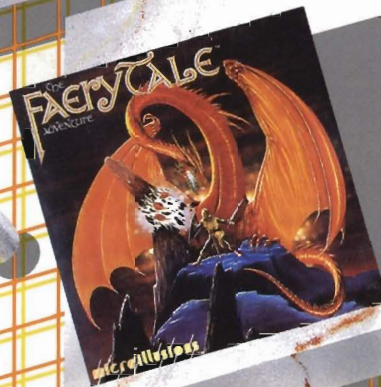
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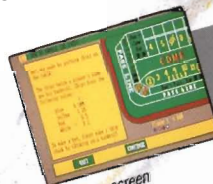


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