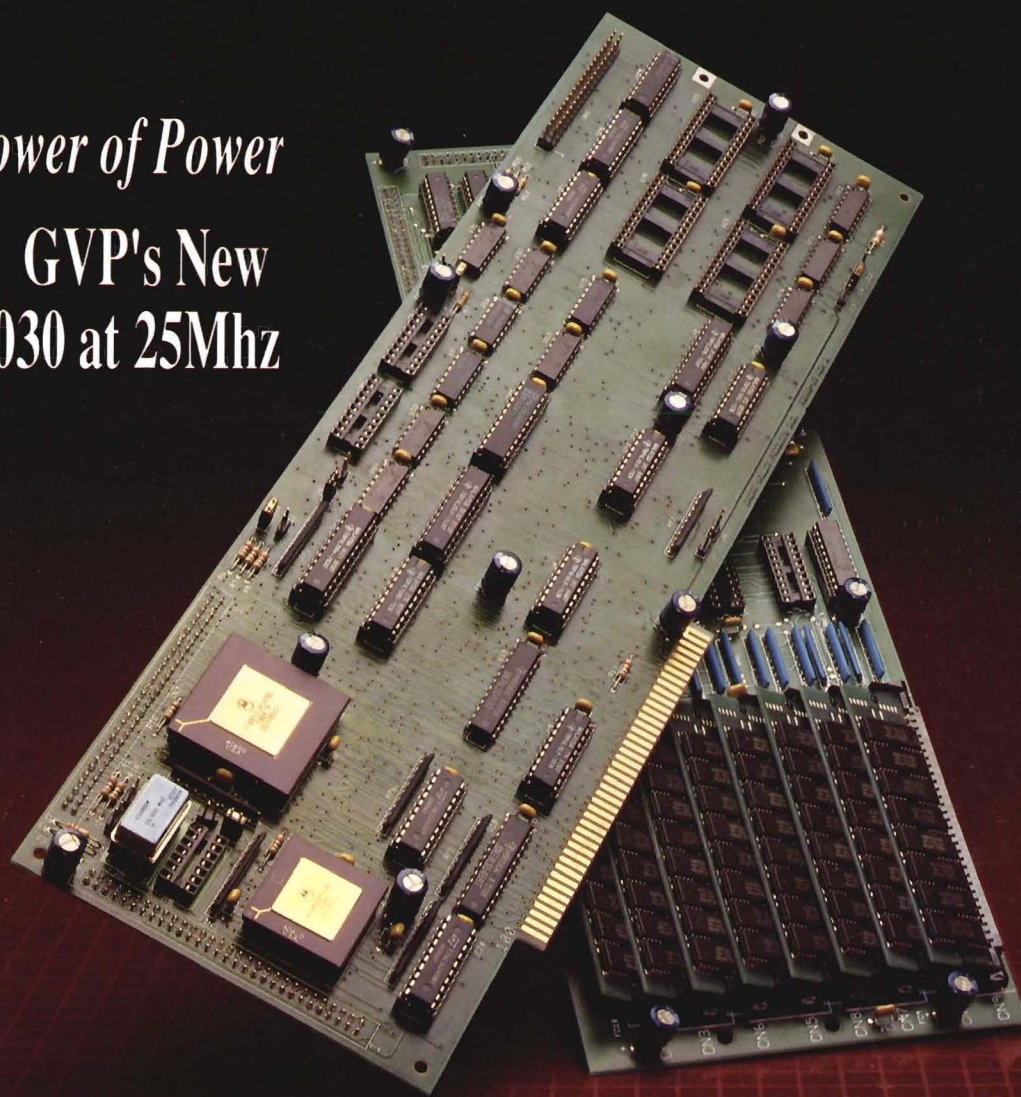


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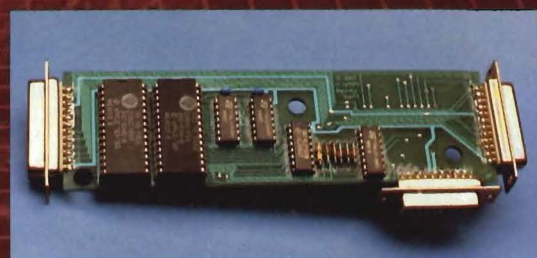
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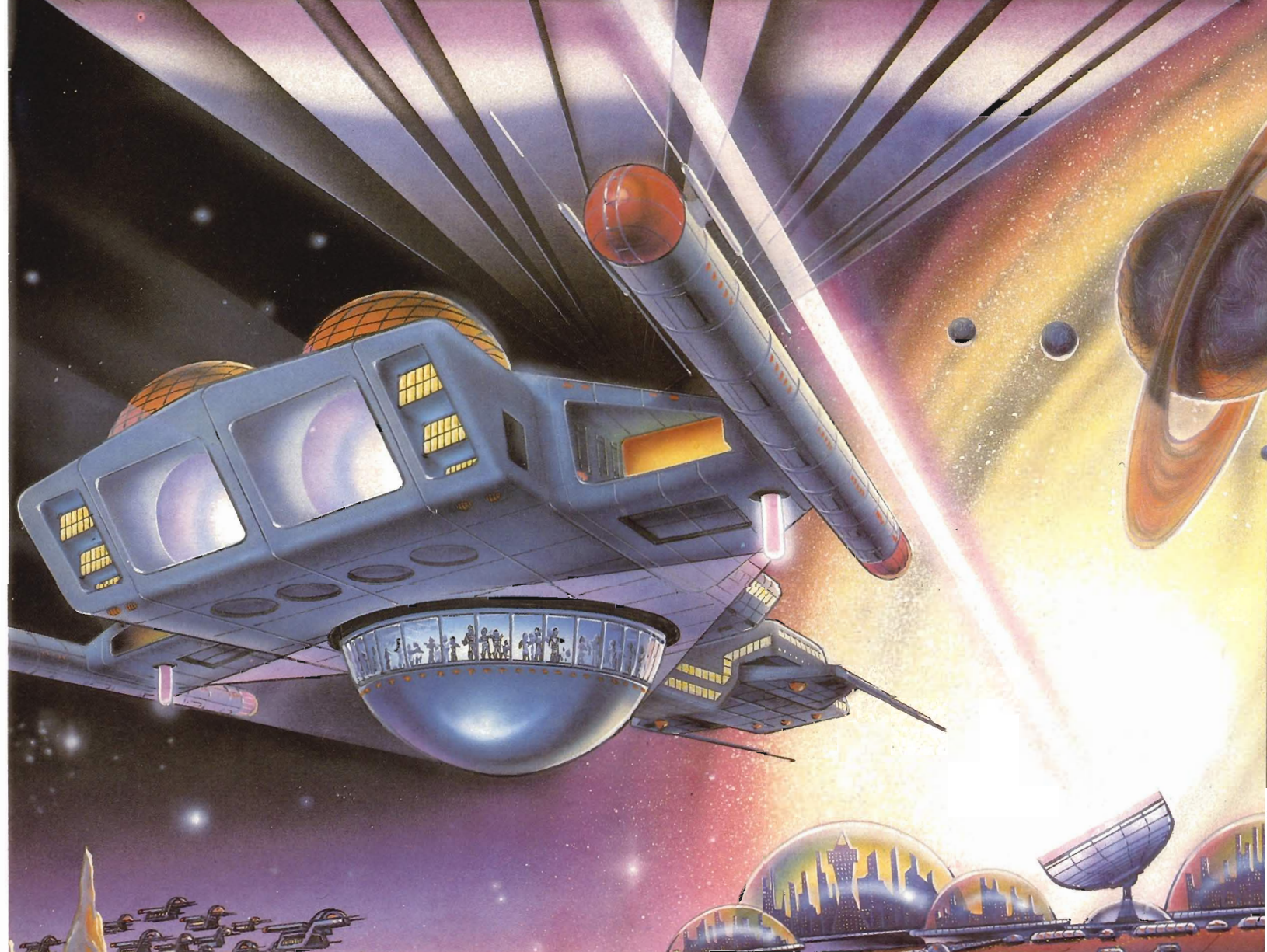
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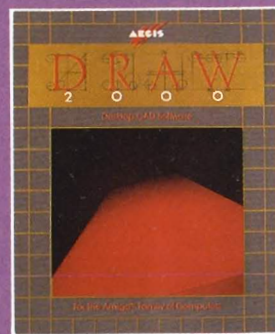
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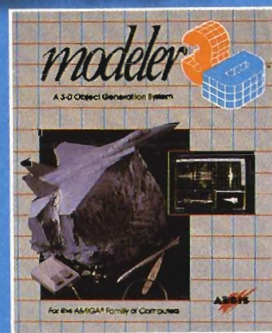
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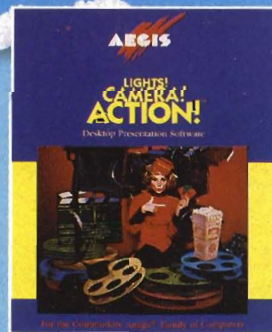
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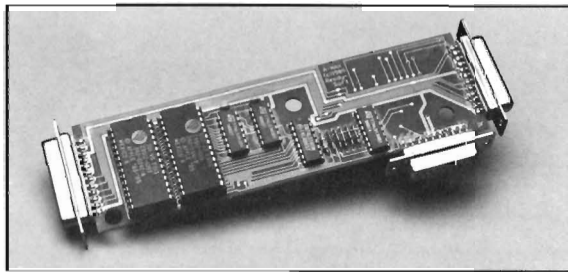
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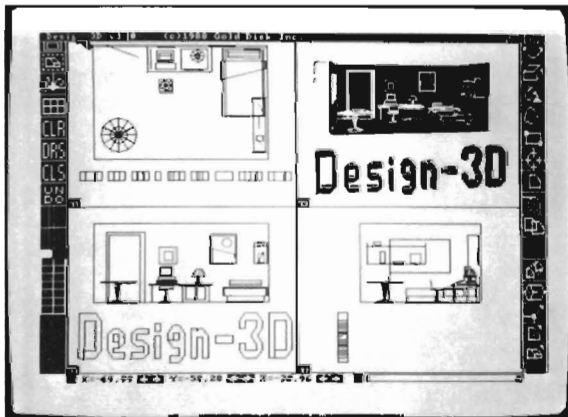
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Industry Outlook

The very first issue of the Amiga Sentry hit the streets in July 1987. One of the articles was entitled "Commodore News" and explained the abrupt dismissal of Thomas Rattigan as President of Commodore USA. Those of you with long memories may remember that in the two months prior to his exit, Mr. Rattigan was a highly visible figure in computer publications as well as in the Wall Street Journal and Business Week. It's April 1989 and history repeats itself. We've seen a lot of Max Toy, the President of Commodore Business Machines for the past 17 months. He has appeared in publications, at industry conferences and at major user groups. On April 25, 1989 Irving Gould, Chairman of Commodore International, announced that Mr. Toy had left Commodore to "persue other interests." Mr. Gould introduced Harold Copperman as the next President and Chief Operating officer of Commodore's North American operations. Until this announcement, Mr. Copperman had been Vice President and General Manager for Eastern Operations for APPLE Computer! In this role he was responsible for all sales, marketing and distribution activities east of the Mississippi. Prior to his job at Apple, the 42 year old Mr. Copperman had been an IBM executive for 20 years. At IBM he held major marketing positions in Government and Educational areas.

Why the change? Mr. Toy was personable enough, and there were no stories of conflict with Irving Gould. His experience with Compaq and IBM seemed more relevant than Rattigan's at Pepsi. He certainly seemed energetic and involved in making Commodore a success. The answer is simple; POOR US SALES. Two years ago Commodore's US sales made up almost 50% of total worldwide sales. In the past twenty-four months, this has slipped to 26%. Don't misread these numbers. Total sales for Commodore have rebounded significantly. It's US sales that are growing slowly or not at all.

What changes can we expect in the near future? With Mr. Copperman's background we could expect to see a renewed emphasis on "seeding" educational institutions with Amiga's and possibly developing a system with particular appeal in that market. Other plans will be pure guesses, but it should be clear to all that US sales of Amigas and other Commodore systems must be increased rapidly. There are a number of new products in development which can have both positive and negative effects on overall US success. Mr. Copperman had better insist on a consistent market-oriented product strategy and reign in some of those mavericks. (An 80 column 256 color C64 will not help A500 sales.)

As a very interested observer, I'd recommend that Mr. Copperman convince the people with the purse-strings to free up significant cash for a serious advertising campaign which will be repeated at least twice per year for the next two years. (By all means use one of Apple's proven agencies). Those of us in the Amiga market know what an outstanding machine we have, but for too long this has been kept secret from the buying public.

Goodbye Max, and welcome Harold. Stay tuned to this channel for the next episode . . .

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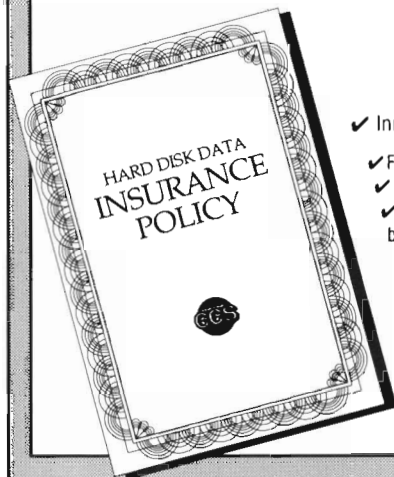
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NCGA Philadelphia '89

The Annual Graphic Feast of Philly

by Steve Dock and Tom Bucklin

This didn't start out to be a commentary about Amiga marketing technique, but it looks like it's going to turn out that way. Two years ago, the National Computer Graphics Association held its annual conference at the Philadelphia Convention Center and Commodore chose to participate with a high-profile Amiga display. Surrounded by expensive workstations and high-end IBM and Mac systems,

the Amiga exhibit surprised skeptical participants by the hundreds. They were surprised that a low cost, "out of the mainstream" system could digitize high-resolution vivid color images, render and animate 3D images, use graphic tablets and superb software to draw and paint, and send all of these out to NTSC video with ease. Here was a "graphic workstation" with all the extras built-in.

At NCGA '87 the first demos of Videoscope and Caligari appeared. Both showed capabilities like those available only on Pixar and similar systems

costing ten times the Amiga's price. The animation capabilities of the Amiga were such a positive surprise, that Dance of Stumblers, a 100% Amiga production won one of the top prizes in the animation competition. (Dance was created using Aegis Animator and overlaid music.) To add further perspective, 1987 was the year that IBM announced the PS/2 system with VGA graphics and a promised multitasking operating system. Apple, too, broke new ground by announcing the MAC II, its first color MacIntosh. Both these machines promised many features competitive with those that every Amiga already had. And this fact did not go unnoticed by graphic professionals looking for the most "bang for the buck".

Active Circuits demonstrated their new Amiga support for Targa display systems



A lot has happened in the last two years. We are still waiting for official word of the one millionth Amiga sold. The A500 and 2000 have succeeded the original 1000 and have recently been joined by the 2000-HD and 2500 systems. The graphic emphasis of Amiga software and hardware has continued with dozens of digitizers, video production, genlock, paint, 3D rendering and animation products available. Attend any Video conference or read professional video publications and you'll see that the Amiga has found a receptive market in this high visibility field. Given this state of affairs, we expected to find NCGA '89

(continued on next page)

at least as aware of the Amiga as 1987. Unfortunately, we were disappointed, mostly due to fast moving events *outside* the Amiga marketplace.

Let's begin with Commodore's display booth. Two years ago, a two story blue and red enclosure was hard to miss. This year the #1 Commodore booth was still in transit from Spring Comdex. What we were given was a dull grey booth with small Commodore banners hanging from the roof. With Sun, Tektronix and Apple displays nearby for comparison, there was little doubt that Commodore didn't take the esthetics of the 20,000 graphics professionals serious enough. The booth contained about 8 Amiga systems set up to demonstrate particular functions. Gold Disk staffed a color desktop publishing station, Deluxe Paint III was demonstrated in another, and Caligari in a third. Another area of the display was set up as a theatre to view video tapes, and about thirty seats were positioned in front of a large TV monitor. To most of you all this would be old hat, and you would expect that the non-Amiga attendees would be



impressed. As we watched, it became clear that this wasn't the case. While the products being demo'd were excellent in our market, there were similar products available on PS/2, Mac II and Sun systems. Structured drawing, color desktop publishing, 3D rendering and animation have become standard applications. The general purpose "Only

Amiga Makes it Possible" video ran repeatedly in the theatre but seemed sadly out of place. Why wasn't there a collection of top Video effects and 3D animations? Over at the Apple booth, it was painfully obvious what an informative video manned by a knowledgeable staff could produce in the way of viewer response.



Two years ago the Amiga offered graphic performance better than most of its competition. Because of the various internal delays and personnel changes at Commodore, this is now no longer the case. IBM's VGA graphic mode can provide users with 256 colors on screen from a palette of 2 million, with a flicker-free resolution of 720 by 480. Of course, there are Sun and Apollo workstations which provide millions of colors and very high resolution displays for about \$10,000. Just weeks before NCGA, Apple introduced "32 Bit Quickdraw" in its MAC II series. This update allows millions of colors on screen simultaneously. Possibly more disturbing was the content of brochures being displayed by Apple.

(continued on next page)

The brochure being distributed in the Apple booth promises new software from Electronic Arts which will support 32 bit painting (will this be Dpaint 32?), and a new 3D rendering and animation program called Sculpt-Animate 4D from Byte by Byte! By this time we were not surprised to find leading Amiga developers actively promoted by Apple. (In true Mac fashion, you have to purchase an expensive video board to make use of this new capability).

Sure, we know that a beginner's Amiga system for about \$1000 can be used to produce video titles, and that a full blown color desktop publishing Amiga system costs thousands less than other systems. While the absolute price is important to home users, its the price/performance ratio that counts with professionals. Talk to any computer artist and he/she will tell you that 16 or 32 colors is not enough. Sure the Amiga has HAM mode and a potential display of 4096 colors, but then resolution is limited to 320 by 400. The facts are clear, Amiga has fallen behind!

Commodore is well aware that they must enhance the display capabilities of the Amiga line. For over a year three projects designed to address this need have been active. Commodore has shown its own Professional Video Adapter many times and still has no firm plans to market this frame grabber, genlock and frame buffer. Commodore also sponsors two other projects, the NYIT board and the Lowell board. Both of these will provide more colors on a multisync monitor by using a Texas Instruments graphic processor chip. They reportedly include system libraries which will let software developers revise their packages to take advantage of the expanded palettes and resolutions. Again, both have been demonstrated for at least a full year with no firm plans for introduction.

There are two positive developments in the overall Amiga picture. At Spring Comdex an Amiga was shown connected to a Novell local area network. (The lack of an industry standard network is the other glaring lack in the Amiga marketplace.) Eric Lavitsky, formerly of ASDG, has a new company and product. Active Circuits, Inc. has developed software to allow the Amiga to work with Truevision's Targa graphic board. The Targa is the graphic standard for PC based systems and much high-end PC software is written to support its 24 bit 16 million colors. The product is called *ImageLink* and consists of a set of modules which convert between many Amiga graphic formats and Targa or Mac Pict formats. In addition to conversion, ImageLink allows Amiga 21 or 24 bit-plane images from DigiView, Sculpt 3D and Turbo Silver to be displayed in real-time on the Targa and then out to video media. Imagelink makes good use of the IBM slot and Bridgeboard to add an external frame buffer capable of much better displays than a native Amiga. (You can reach Active Circuits at (201) 223-5999 if you want to know more about the system and availability).

I'll close with a report of the three products which most impressed me this year. First was a 3D chemical modeling system sold by Tektronix. This is based on a Mac II, an add-on graphic engine produced by Tek, a 3D high-resolution monitor produced by Tek, and a 3D trackball also produced by Tek. This system was shown in Apple's booth and required the viewer to wear polarized glasses to get the full 3D effect. The system was designed by Chemists for Chemists and included several programs to help with molecular modeling. The Tek 3D monitor uses the same principle as Haitex's 3D glasses, i.e. LCD shutters polarizing the display. But with the LCD on the

screen, ordinary sun-glasses are all that are needed. "Tin Toy" is a computer generated animation produced by Pixar. (Pixar is the commercial company formed when LucasFilms sold off their newly developed computer animation technology.) Tin Toy won the Academy Award for best animated short just a few weeks ago. The plot involves a tin soldier and a toddler who is both an object of affection and a frightening menace. The quality of the images and animation is matched by the clever plot and directing. Watching this three minute film on a monitor is an incredible experience.

The final product was a Sun workstation in the Texas Instruments booth. This particular unit was equipped with TI's latest 32 Bit graphic processor board and was running a 3D solid modeling program. The 3D database was made up of hundreds of CAT-Scans of a living Sloth. I assume that the database consumed many Gigabytes of data storage. The combination of hardware and software could rotate on any axis a semi-transparent 3D representation of all the organs, bones and muscles of this animal. The user could zoom in, change perspective, or slice the model to get a better picture of the inter-relationships among the living tissues. The display was at least 1200 by 1000 pixels and used thousands of colors. The computational power required to maintain this kind of display is enormous and the speed of screen manipulation was nothing short of incredible.

While I don't expect the Amiga to match these particular examples of graphic tour-de-force, Commodore must add graphic features to regain a competitive position in the graphic marketplace. Time is running out. If the Amiga is to have a role as a graphic computer, more colors and higher resolution must be "on the street" in the next few months.

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IMPACT A2000-030

The New Processing Powerhouse from GVP

by Walter Steuber and Steve Dock

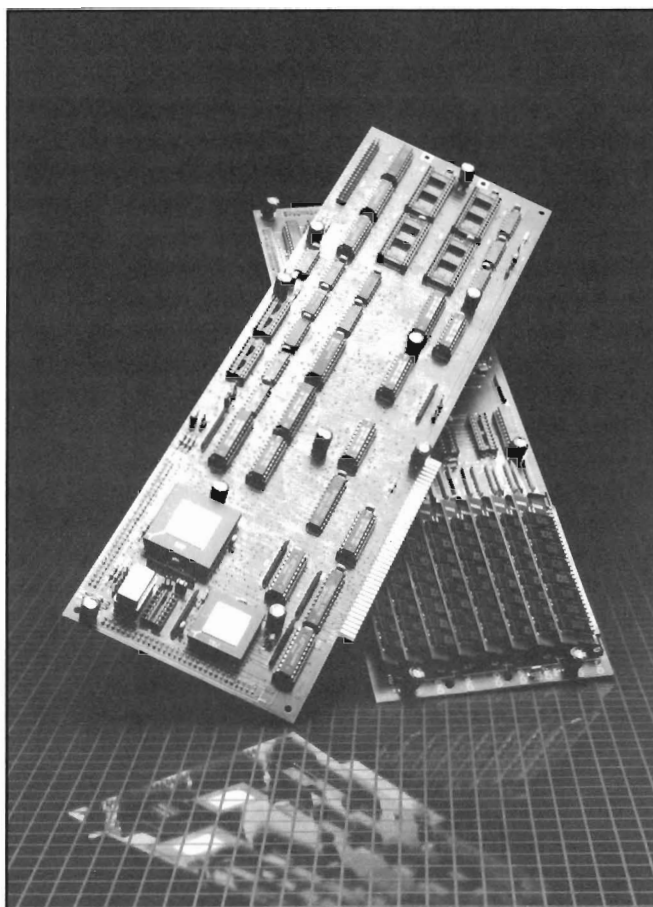
With the introduction of the new 68030 boards from GVP, the Amiga 2000 can now have the speed of a workstation, making it far more responsive than an ordinary personal computer. All it takes is to slip an IMPACT A2000-030/25 board into the co-processor slot.

When the first Amigas reached user desks, they were so beautifully fast and responsive that it was hard to think about future upgrades. However, during these past three years, new chips from Motorola and Intel have appeared and raised our expectations to a whole new level. Operating speeds never before thought possible are there for the taking.

The IMPACT upgrade consists of three distinct features on a single A2000 board. The first is a central processing unit (CPU) that takes over from the Amiga's regular 68000 processor. The IMPACT uses a Motorola 68030 CPU running at 16 (IMPACT A2000-030/16) or 25 MHz (IMPACT A2000-030/25). Since the Amiga normally runs at 7.14 MHz, the

higher CPU speed alone moves things along considerably faster. The 68030 will run programs pretty much the same way that the 68000 does when you use your existing RAM and your

high clock speed and is organized into 32-bit words. (There are also big gains to be had in redesigning the software, but that issue is totally beyond this assessment of the IMPACT board.)



old software. It is capable of much more efficient operation than the 68000, though, when it has access to memory that can keep up with the

The second feature of the GVP board is a 68882 math co-processor running at 25 MHz. This is a 68-pin chip that gets slipped into a socket on the board, making a huge difference in performance when the software is written to take advantage of it. Computation of transcendental functions (sine, log, sqrt, etc..) are enormously sped up, but integer arithmetic is unaffected. The 68882 math co-processor is an optional feature on the GVP board, although it can be purchased as a factory installed option at a very attractive price. It is interesting to note that GVP is offering only the 68882 which is the latest member of the Motorola math co-processor family. Motorola claims that the 68882 will generally perform at least twice as fast as the older 68881 math co-processor (which is used in the A2500 on the Commodore A2620 board) when both operate at the same clock speed. The 68882 is of course priced higher than the less effective 68881. The third speedup feature of the Impact 030 is a

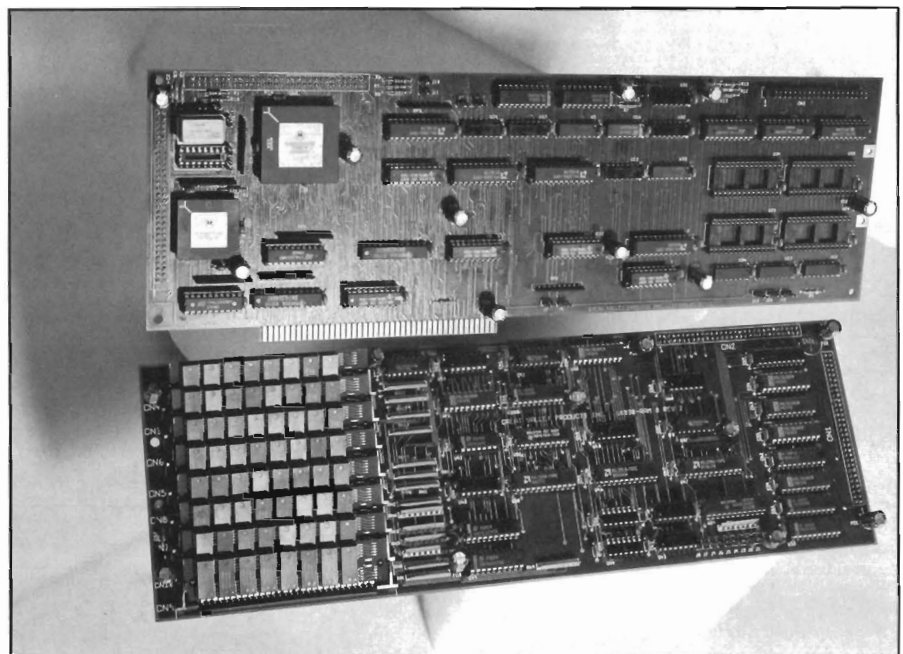
bank of memory that fits the needs of the 68030. This 80-nanosecond (nibble-mode) DRAM is stored on a daughter board that snaps onto the IMPACT board. The daughter board is an optional extra that can be populated with either 4 MBytes or 8 MBytes of 32-bit fast RAM. The use of state-of-the-art SIMM (Single In-line Memory Modules) DRAMs it is surprising how little space is taken up by this huge amount of memory.

We've looked at 68020 and 68030 boards from CSA and Ronin and the A2620 board from Commodore, so what's new about the Impact? In a word, ASYNCHRONOUS design. The previous boards were limited to running at twice the internal clock speed of the standard Amiga or 14.2 MHz. The Impact 030 design is the first available asynchronous processor board. This means that it can interact with the Amiga custom chips and bus at 7.14 MHz while running the 68030 CPU and 32-bit memory operations at whatever speed they are capable of. Note that both 16MHz and 25 MHz are not multiples of 7.14 MHz. While 20- and 25-MHz systems are common using Intel 80286 and 80386 chips, these machines use wait states to access memory. The Mac II runs only at 16 MHz with either 68020 or 68030. We have to go to Sun and Apollo workstations to find speeds approaching 25Mhz efficient operation.

There are other features included on the Impact board that didn't get used in our assessment are sockets for ROMs needed to run Commodore's version of Unix (when it becomes available) and the Autobooting ROM driver for the built-in harddrive controller. This built-in harddrive controller provides an interface for a hard disk with a so-called "AT" (as in IBM "AT") type interface. This is a special hard disk (also available from GVP) which is now be-

ing used in some new IBM "AT" clones by Compaq, Commodore (new PC40-III), etc. As these harddrives have some built-in intelligence, they will cost about the same as a SCSI harddrive. (This is an interesting feature which we will test at a later stage). However, if it works as advertised by GVP, it will provide a high-

fit into the Amiga system. The 68030 CPU automatically takes over control from the 68000 (although there is a jumper on the board (which can be connected to a switch) which allows the 68030 to be disabled so that the A2000's native 68000 CPU can take over). This is especially useful for running programs which are timing sensi-



The Impact A2000-030 mates with GVP's 32 bit RAM daughter board for increased performance

performance AUTOBOOTING hard disk controller which will eliminate the need for buying a separate hard disk controller (and frees up another expansion slot!). As this built-in controller sits directly on the 68030 32-bit bus, it promises to provide some interesting performance! Up to two harddrives can be daisy-chained off the single 40-pin ribbon cable connector. GVP will initially offer a 40 or 80MB Quantum harddrive with this special interface.

Installation of the Impact 030 requires no wiring or chip pulling because the board configures itself automatically to

fitive and will only run on a stock A2000 (i.e. some games). The only change you'll want to make is to your startup-sequence. The "SetCPU" program was written by Commodore's Dave Haynie to control various aspects of 68020 and 68030 processors. Include "SETCPU Cache Fastrom Burst" in your boot sequence to get the maximum from the new CPU and memory.

A fully configured Impact board gives the Amiga 2000 the same guts that mid-range workstations have. To show that high performance usually doesn't come cheap, some numbers were
(continued on next page)

Impact A2000-030 (continued from previous page)

Effect of Adding a High Performance Board Relative Speed				
	Base 2000 4MB 16-bit FastRAMHarddisk, A2090,slow	Impact 030/25 32bRAM	Impact 030/25 32bRAM	Impact 030/25 68882
I. Performance Tests				
RAM SPEED				
Chip	28.48	1.43	1.44	1.43
Fast	28.28	1.42	4.98	4.94
SIEVE	44.02	2.73	7.83	7.80
Dhrystones/sec	1147	1.18	6.34	6.34
SI	1	8.40	8.40	8.40
Savage.ffp	9.7	1.75	6.22	44.09
Savage.ieee	45.9	1.23	5.71	76.50
Render.ffp	1042	1.31	5.29	13.03
CPU_Speed	1	2.11	10.90	10.90
II. Real World Tests				
Sculpt 3D	572	1.24	4.09	16.82
Goldspell	52	1.27	2.89	2.95
Analyze!	48	1.37	6.00	6.00
Director	94.8	5.30	6.92	6.92
III. Effect on Harddisk				
Files created/sec	7		1.71	
Files deleted/sec	29		2.14	
Dir entries/sec	42		5.17	
Dir reads/sec	114		3.74	
Bytes/sec read	104857		6.25	
Bytes/sec write	12850		1.89	

Effect of CPU Clock Speed				
Impact 030 with 32-bit RAM and 68882				
	Base 2000 4MB 16-bit FastRAM	16 Mhz	25 MHz -----Impact-----	28 MH
I. Performance Tests				
RAM SPEED				
Chip	28.48	30.5	19.7	19.5
Fast	28.28	8.9	5.7	5.1
SIEVE	44.02	8.9	5.6	5
DHRYSStone (ms.) 871.9				
/sec	1147	4706	7273	8205
SI	1	5.4	8.4	9.2
Savage.ffp	9.7	2.4	1.6	1.4
Savage.ieee	45.9	12.4	8	7.2
Render.ffp	1042	308	197	175
CPU_Speed	1	6.7	10.9	11.4
II. Real World Tests				
Sculpt 3D	572	201	140	129
Goldspell	52	28	16.4	15.8
Analyze!	48	13	8	7.2
Director	94.8	18.7	13.7	13.2

culled from literature from Sun Microsystems and BYTE magazine. These prices include high-resolution monitors, graphics hardware to drive the monitors and big harddrives. Except for monitor quality, an Amiga upgraded with the 25Mhz Impact 030 board (and a harddrive), with its 7273 Dhrystones per second, is right in there with the big boys.

The main thing that influences this type of performance is seen to be the rate at which the clock runs. Due to its asynchronous design, this rate can be changed very easily on the IMPACT 030 board, without affecting the interaction with the rest of the Amiga system. All you do is switch to a different clock crystal, a small "chip" that costs only a couple of dollars. Motorola 68030 chips are hand-graded for how fast they will run, and are priced accordingly. GVP, the manufacturer of

Computer	Price \$	Dhrystones per sec	CPU/MHz	Math CoProc.	RAM Megs
Sun-3/80	12,595	5,154	68030/20	68882	4
Compaq 386/20	21,421	5,705	80386/20	80387	8
Apollo DN3500	19,750	7,075	68030/25	68882	8
Sun-3/470	40,900	11,748	68030/33	68882	8
Amiga 2000 with Impact A3001-4MB/40Q	5,600	7,273	68030/25	68882	5

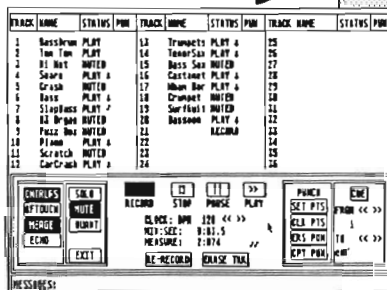
the IMPACT board, supplies chips that will reliably run at 25 MHz (on the 25Mhz version of the Impact 030 board), with some extra margin for error. Being bold testers, we used a 28-MHz crystal and improved perfor-

mance measurably. When we tested with a 32-Mhz crystal(!), the board ran fine and matched the Sun-3/470 Dhrystone rate, (over 11,000!) but the CPU chip kept getting warmer and warmer. (continued on next page)

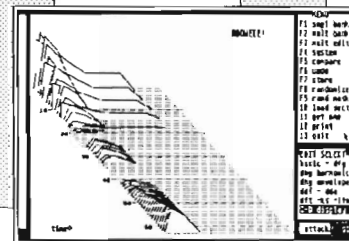
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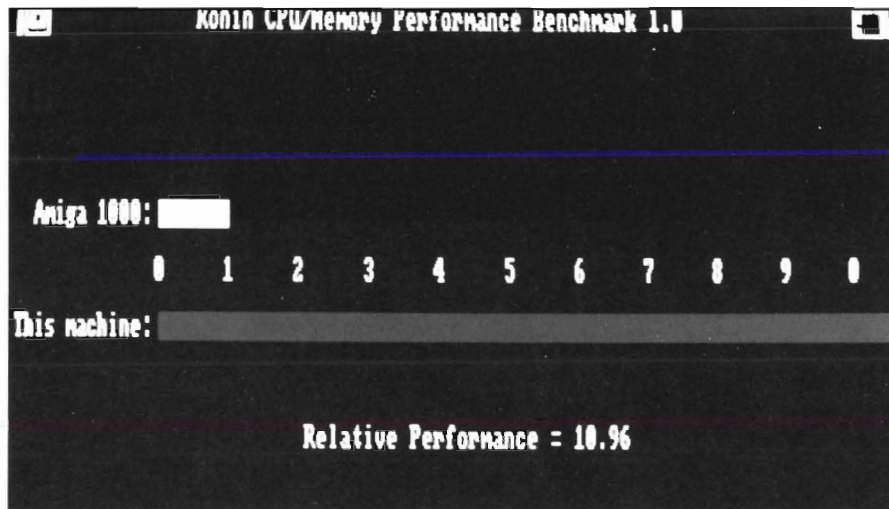
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Impact A2000-030 (continued from previous page)

After half an hour, it was so hot that we stopped and restored its regular 25-Mhz crystal. If we wanted to use the GVP board at 33 Mhz, faster DRAMs would be required, as well as a 68030 and 68882 rated at 33Mhz. In fact, even at 32Mhz, the worst case theoretical timings of the 80nsec DRAMs are completely exceeded, and it is surprising that the board actually ran as reliably as it did. We never found any problems at 28Mhz, although GVP does not guarantee that all boards would reliably run at that speed. Exactly how big an increase of performance you get when you install the Impact 030 board is difficult to state in quantitative terms. The Dhrystone test might be used. It runs the machine through a standardized set of instructions that are typical of normal computer operation. The IBM PC AT, for instance, can run through the Dhrystone cycle 1600 times per second and thereby sets a standard that other computers shoot at. (An unadorned Amiga is able to hit only around 1100.) Many other methods of assessing the performance of a computer are proposed and they often rank machines in a different order than the Dhrystone test. What's worse, everyday usage often does not show the improvement one would expect from these artificial tests. Consequently, the way we assessed the IMPACT board was to pick eight of the many "standard" performance tests and add in four familiar commercial programs. This process leads to a snowstorm of numbers, but the hope is that the variety of tests will give a better picture than possible with any one test. The Impact board was run in each of

three configurations that one might choose to buy. In the first configuration, the 030 CPU was run with the 16-bit memory that was already in the Amiga. In the second configuration,

Tests conducted for general comparisons show the Impact 030 running up to 10.9 times faster than an A1000



wide RAM) onto 32-bit RAM so that they appear to be in ROM as far as the software is concerned. The 68030 CPU chip also includes 512 bytes of on-chip memory organized into a data

and instruction cache. By using on-board caches, repetitive operations like loops can be executed without going to memory. One of the design problems that GVP had to solve was how to use this caching without running into conflicts with the Amiga custom chips which can change data already contained in the 68030 cache. Special log-

ic was included on the board to prevent caching of this data in the address ranges used by these chips.

Other circuitry was included to take advantage of the 030's burst mode. If you take the reciprocal of 25 Mhz to figure what speed memory a board requires, you'll find that 40 nsecs parts are required. These are very expensive and require use of bulky and expensive static RAM. The usual alternative is to create wait states which waste CPU time but allow use of affordable RAM. Motorola provides the 68030 with a special memory access, "Burst Mode" which sets up to fetch the first 32-bit word in the normal fashion, but then enables the fetching of the next three contiguous 32-bit words in just 1 clock cycle each. The net result is effective memory access at 25 Mhz with 0 wait states. GVP is implementing this feature in their Impact 030. Note, however, that to implement this burst mode RAM access, a special new type of DRAM chip is required. (Burst mode is

the 32-bit memory was installed on the Impact board. The third configuration added the 68882 math co-processor. One major advantage of using 32-bit ram not related to hardware is the ability to move the Kickstart routines that are normally run at 7.14 Mhz from system ROM into 32-bit RAM running at 25 Mhz. (There are many, many calls made to these system routines, so the time saving was very noticeable.) This switch-over was accomplished by the Fastrom option of SetCPU. SetCPU was also used to activate the 68030 CPU's CACHE and BURST mode.

The 68030 is, in of itself, an amazing piece of silicon and far superior to the Intel 80386 which gets so much press. It includes a built in Memory Management Unit which required a separate chip for use with the 68020 CPU. The MMU is used to map and protect memory addresses for high-end operating systems like Unix, but makes possible the mapping of the Kickstart routines (after they have been copied to 32-bit

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responsible for much of the incredible performance of the GVP board). DRAMs which support this serial accessing of 4 consecutive locations (as required by the 68030 burst mode) are known as "nibble-mode" DRAMs. These types of DRAMs are currently not used in any other low-end desktop computer. This includes the Mac II, which uses the more common "page-mode" DRAMs. It is interesting to note that Steve Jobs' new NEXT machine uses nibble-mode DRAMs, although it uses more memory waitstates (also a 68030 CPU running at 25Mhz) than the GVP design.

The data and instruction cache can each be turned on or off as can burst mode. This makes just too many combinations to look at separately, so all the performance tests were run with both instructions and data set to CACHE and BURST mode. The eight

performance tests themselves are pretty standard and have been described in many other places. Some emphasize floating point calculations. Some are restricted to integer calculations. One involves reading the hard disk. Some involve heavy transfer of values between memory locations. Others are justified only by having a long history of usage. For what they are worth, the tests were applied as equally as possible to the base Amiga and to the three configurations of the Impact board. With some tests, a lower number is better, but with other tests, better means higher. To put them all on the same basis, the results are tabulated as ratios with the base system. With each test, the higher the ratio, the faster the operation.

A common experience with these laboratory-like performance tests is to find they don't reliably predict how fast

a real-life program is going to run. Consequently, four proprietary programs, chosen both for their familiarity and for their diversity, were used to beef up the assessment of the Impact board: *Sculpt-3D* was used to compute a very small ray-traced picture. (We used the version of *Sculpt* written to take advantage of a math co-processor when one was present.) *GoldSpell* was used to check the spelling in a text file. *Analyze* was used to recalculate a very large spreadsheet with a complex formula in each cell, and *The Director* was used to copy pictures from fast memory into chip memory, something that does not involve math processing. All the tasks were made very big so they ran long enough to time easily. Beyond these specific tests, our Amiga was noticeably snappier in its actions when equipped with the fully loaded IMPACT board. It was very, very
(continued on next page)

Impact A2000-030 (continued from previous page)

pleasant the way material jumped onto the screen. In conjunction with SetCPU's ability to load your OS into the boards 32 bit ram, even floppy disk operations went somewhat faster, with a 17% speedup in formatting and a 12% speedup in diskcopy.

In the first configuration listed in the table, the one using existing 16-bit RAM, you can see the results were disappointing. The main reason for this is that without the 32-bit wide RAM option, the 68030 is forced to access the 16-bit wide Amiga RAM at exactly the same speed as the Amiga's 68000, i.e: through the Amiga's bus which was only designed to run at 7.14 Mhz. This means that the AMIGA system was not able to take advantage of the 3.5-fold increase in clock rate. One could reasonably expect to get up to a seven-fold improvement by making the memory fast enough to keep up with the clock and handling it in words that are twice as wide as the regular 16-bit memory. There was no disappointment in this expectation, as seen in the middle column. Performance was, by and large, about six times faster when the proper memory was supplied. A little slippage from the theoretical sevenfold, but pretty close. Note, too, that this enormous improvement in performance was with software that does not take advantage of the 68030 CPU's extra features. There is potential for still greater speeds when software gets re-designed.

The effect of adding a math co-processor is shown in the third column.

For it to be of any use, the task must be doing floating-point operations and the software must be written to use the co-processor. Director and GoldSpell were not doing anything with floating-point numbers, so that let them out. Analyze was working entirely with them, but evidently was not written to use the co-processor. (Analyze must

have its own special routines to do floating-point math, because it ran extremely fast.) Sculpt-3D, on the other hand, comes in two versions--one that specifically requires a co-processor and one that works without it. The Savage routine is specifically aimed at floating-point operations and it, too, has forms for use with and without the co-processor. The fully loaded IMPACT board gives an absolutely enormous increase in speed to those programs that are heavy in floating point math and are written specifically to use the co-processor. Many commercial programs have no need for a co-processor, however, because they limit themselves to integer arithmetic just to avoid this question. The effect of the IMPACT board on the operation of a harddisk is included in the table, since every harddrive runs software to access itself. It's reasonable to expect an improvement if the processor and memory are faster. Our test was with an A2090 controller, ST251 harddrive, BlitzDisk, and operating under the original file system (NOT the Fast File System). The IMPACT board perked up the performance of the drive very nicely, as you can see from the improvement factors.

Should you run out and buy an Impact A2000-030 board? That depends on what you use your Amiga for. If you spend considerable time ray tracing, then you can get up to 17 times the work done. If you mainly play games, but require the ultimate status symbol, you can disable the 68030 using either software or a jumper. For the software developer, you can plan on a six fold improvement in productivity. This level of performance will cost you almost \$3100 for the 25Mhz 68030, 68882 and 4 MB of 32-bit RAM but that's a lot cheaper than six new Amiga 2000's. GVP also offers some interesting "bundle" pricing on various factory configured packages. For example, when a

factory installed 68882 math co-processor is ordered, a saving of up to 33% can be achieved on the 25 Mhz 68882 chip alone, when compared to purchasing the chip at a later stage as an upgrade option. They are also offering some interesting "A2500" and "A3000" upgrade kits! Both the "A2500" and "A3000" upgrade kits include the Impact 030 board with factory installed math co-processor and 4MB 32-bit RAM daughter board. Available as options are a 40 or 80MB "AT" hard disk drive (19ms average access time) and/or an additional 4MB of 32-bit wide RAM. The "A2500" kit includes the 16Mhz 68030 and 68882 while the "A3000" kit includes the 25Mhz 68030 and 68882.

Our experience with this board was very positive. Removing the 32-bit RAM seven or eight times did finally cause some trouble, though. Compatibility with software is very good, but you can expect at least one of your favorite utilities which depends on system timing to crash. This board is something different. When we've tested other Amiga accelerator products, the improvements were limited to particular programs. However, the gratifying speed under the Impact 030 board made this configuration a winner!

Impact A2000-030/16	\$849
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A-MAX

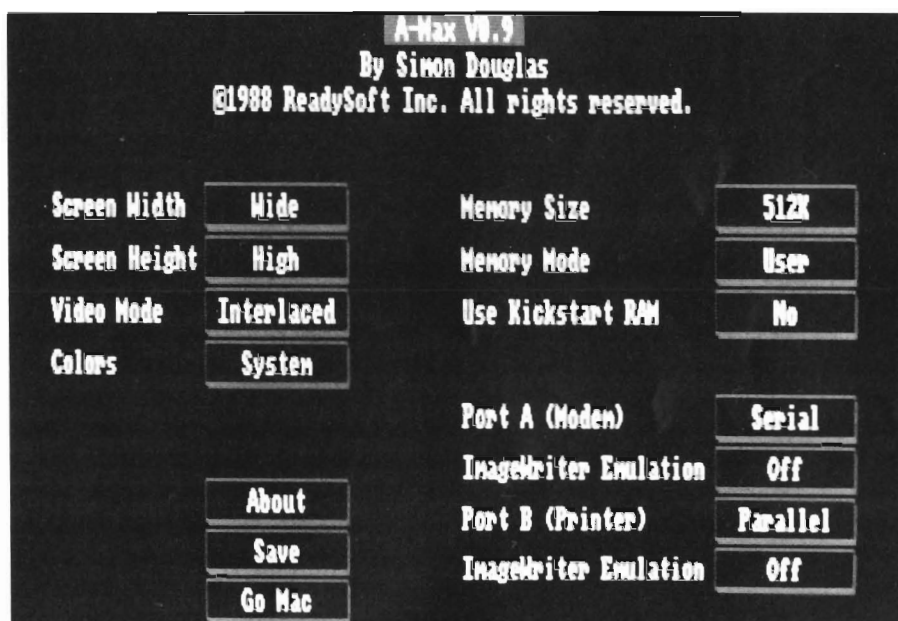
How Compatible will this Product be with your Mac-Applications?

by Gary L. Gehman

Curiously and curiously, said Alice when confounded in Wonderland one day. How much more so, then, might she feel if Alice were today's Amiga owner? Never before have Amiga users throughout the world had such a wide range of powerful and creative software available to them. You might expect that everyone had more than enough to keep them happy (or at least penniless). Nevertheless, there remain a few cynics who gripe and complain about how the Amiga, if it can't run PageMaker or HyperCard, just isn't a business-capable computer.

Well, gentle readers, guess what... There's a forthcoming new product in the emulator market that turns your Amiga into a functioning Macintosh! A-Max, by ReadySoft, Inc. of Ontario, Canada, is a hardware/software package that promises to open new avenues to an already thriving Amiga marketplace. Before I go any farther with the description of A-Max, let me detail the end-use considerations.

A-Max is produced and marketed as an enhancement option to registered Macintosh software users. In order to operate, it requires the user to provide two Apple Macintosh ROMS (The chips installed in Macs that contain

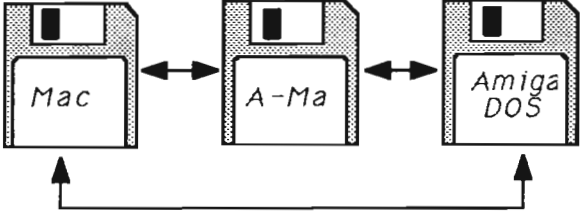


The A-Max Startup Screen contains a number of functions that you can configure for your particular system

the system software). A-Max also, optionally, will accept an Apple 800k floppy drive for the reading, writing and initialization of Macintosh format disks. A-Max allows the Mac ROMs to take over the Amiga and install the Mac Operating System. When this happens, there is no Amiga multitasking; no swapping screens; not even a friendly GURU to greet you when you do something wrong. Once the Mac ROMs take over, it's a plain vanilla Macintosh; good for just one thing: running Mac software. My initial reaction, when I heard about A-Max, was one of great skepticism. I had

spent countless hours and dollars trying to squeeze even a little bit of use out of the Mac emulator for the Atari ST. No matter how it's makers improved their product, I still found myself unable to conveniently get Macintosh format data into the ST and/or usable results out of the ST. I expected A-Max would share all of the same flaws that kept this other emulator from succeeding:

- Macintosh disk incompatibility. Macintosh disk drives are capable of running at five different speeds. By
- (continued on next page)



If an Apple drive is unavailable, A-Max includes utilities for the transfer of files across each of the disk formats.

Data can be imported from the Macintosh via a Null-Modem cable, or moved onto special A-Max Mini-Transfer Disks. This special format contains 272k of dataspace that is readable by both Mac and A-Max drives.

For moving files from AmigaDOS to A-Max, a special download program is provided that will copy AmigaDOS format files onto a preformatted A-Max Transfer Disk.

These files can then be moved onto Mac format disks while in A-Max Macintosh emulation.

speeding up or slowing down, the Mac is able to code its data more tightly and uniformly across the surface of the disk. Neither Amiga nor Atari floppy drives are able to handle this multi-speed format. Disks used on these systems will therefore be unreadable by the Macintosh.

- Printer incompatibility. The only printers that the Macintosh universe knows about are the Apple ImageWriter, ImageWriter LQ, and Apple LaserWriter. The Imagewriters are serial dot-matrix printers and the LaserWriter is a PostScript driven laser printer.

While both Amiga and Atari are capable of commanding dozens of printers, Macintosh software wants only to talk to serial devices.

- Screen incompatibility. Macin-

toches use a small screen composed of square pixels. There are 72 of these pixels per screen inch. (This decision was made to ease the development of publishing software on the Macintosh. The international typographic standard for measuring letterforms, the point, is 1/72 of an inch. By creating a screen of 72 pixels to the inch, Macintosh made it possible to set type in even multiples of screen pixels.) Amiga and Atari screens, by contrast, employ rectangular pixels of varying proportions. To complicate things further, many Macintosh applications place objects on the screen by positioning them relative to other objects (or an edge of the screen). In some applications on the Atari emulator, this resulted in scrambled and useless screen displays. What good was a CAD program that had 142 superimposed tickmarks on

the rulers and a letter-sized page with an aspect ratio four times longer than its width?

When I saw A-Max demonstrated last fall at the World of Commodore show in Philadelphia, I was encouraged, but still suspicious. You never know, at these trade shows. Sometimes they have secret boxes under the table; hamsters in cages running tiny dynamos.

But now that I have a version of A-Max plugged into the back of my machine, my skepticism has gone, replaced with a quiet relief and a certain sense of smugness. Does A-Max make my Amiga a hundred percent Mac? No, not nearly. But in a lot of ways that to me are most important, A-Max makes my Amiga better than a Macintosh!

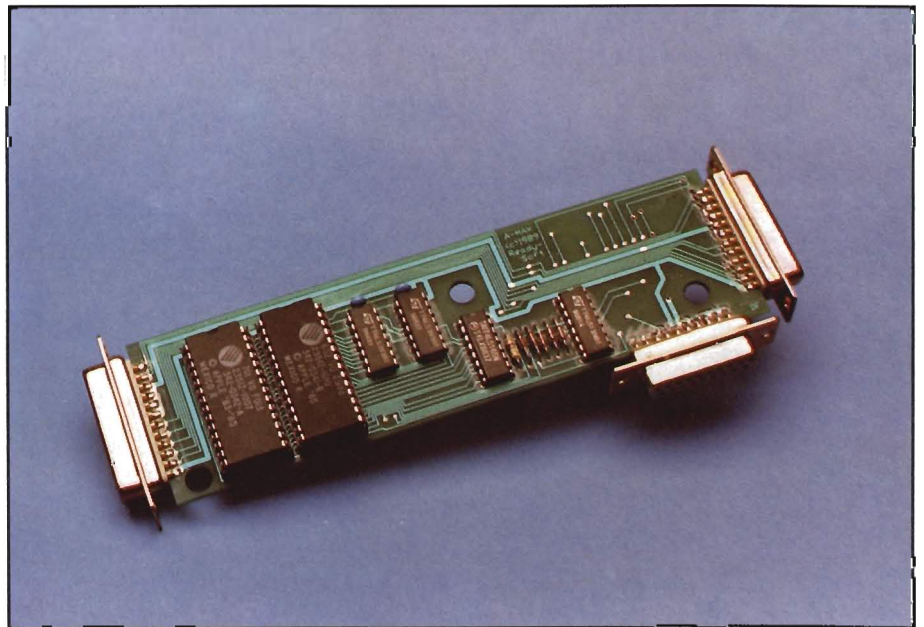
For those who have never spent much time in the Mac universe, there is one Cardinal Rule to MacDom: With Every Day that Passes, The Cost of Computing Goes Up. By cost, I don't necessarily mean dollars and cents (although those surely will buy you less Mac stuff than Amiga stuff). I mean the cost in resources. Apple's Mac stable once included 128k and 512k machines. While it is possible to find these smaller Macintoshes around today, it is considerably harder to find Mac software that will run on them. Even the average Mac Plus is stuck running last year's software because most of this year's software simply won't fit; on the disks or in the RAM space.

What makes matters worse for most Mac Plus users is that the Macintosh provides for exactly TWO disk drives. If you don't have a hard disk and you're using version 6.0.2 of the Mac system software, that means you have one floppy that's just system and one floppy that's just application. And when it

comes time to Save your document, you need to insert a documents disk.

Users of an Amiga with only one drive know what it's like to swap disks back and forth. The Macintosh makes this process even more tedious by reading and writing in tiny increments. The simple act of saving a document can sometimes involve 25 disk swaps at seven second intervals. RAM disks can help, if you have the RAM to spare.

A-Max uses a hardware software combination to take over the System. Shown here, the A-Max board plugs into an available floppy port.



What A-Max has done to address this situation is to treat every available Amiga device as a virtual disk. If you have two Amiga drives, then each is one of the two known Macintosh drives (internal and external). You can have up to the AmigaDOS limit of four disk drives connected (the Apple drive, if you have one, will count as one of

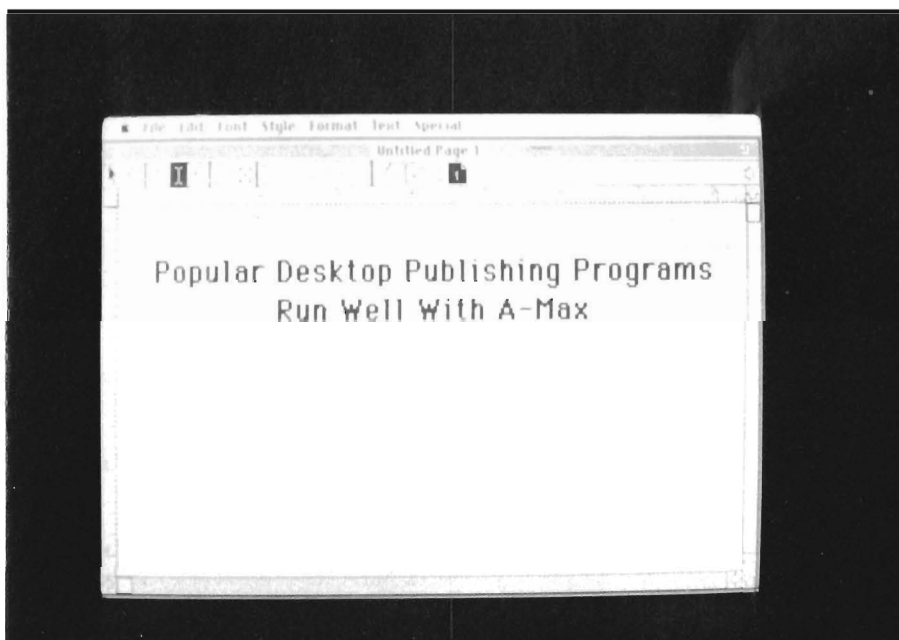
these). A-Max will also take any RAM that you haven't dedicated to the Mac system's use and build a recoverable RAM disk into it. If you copy your Mac system folder into this disk, you get something like RAD: A recoverable, bootable, RAM-based device. Suddenly, one of the most crippling facts of Macintosh computing on floppies is overcome. With A-Max, you can have

one disk for system, one disk for application and one disk for data; and have them all installed and accessible at all times!

If you have more drives, you can even have a graphics source disk and a text source disk that are different from your documents destination disk. If you use the RAM disk, you can even have a system folder that's bigger than the size of a single floppy (this situation can quickly arise if you are using more than the standard Mac screen fonts or any downloadable laser fonts).

With the A-Max system up and running you will be able to run many popular MacIntosh programs, including the variety of Mac DTP Programs

Furthermore, due to the sophistication of the driver that controls the low-level operations of the floppy drives, A-Max is able to control an external Apple drive. While it is necessary for disks used in the Amiga's internal drives to have a unique A- (continued on next page)



A-Max (continued from previous page)

Max format, disks used in an Apple external drive are fully readable and writable on a real Macintosh.

Both types of disk format (A-Max and Macintosh) are able to hold 800k and working with them is fully transparent to the user. If you put a blank disk in the Apple drive and select Initialize, you will get a Macintosh format disk. If you stick a blank disk in DF0:, you will get an A-Max format disk. If you drag a Macintosh format disk overtop of an A-Max format disk (the Macintosh convention for DiskCopy), the copy will proceed without a hitch. If you copy the other way around, you get the same result.

All of this floppy activity does result in a plethora of disks in incompatible formats. I quickly adopted a method of wrapping colored labels (write protect tabs from old 5 1/4" floppy disks) around the back edges of my disks (the edge that's visible when the disk is in the drive). All my A-Max format disks have silver tags. All my Mac format disks have gold tags. The AmigaDOS format A-Max boot disk has a black tag and the Transfer disks (a fourth format that's partially readable by both A-Max and Apple drives) have one gold and one red tag.

Because of the ready conversion to true Macintosh format disks, it is possible to accept A-Max's somewhat limit-

ed printing characteristics. A-Max can be configured to do automatic conversion of ImageWriter control codes into Epson compatible control codes. This allows the use of any Epson compatible (even parallel printers hooked up to the Amiga's parallel port) as an ImageWriter substitute. The programs

son printer. It is simply the fact that Macintosh programs do not go to great lengths to ensure high quality on the ImageWriter. If you take a 14 point text font and scale it up to 120 points for a Headline, you will not get the smooth, typeset results afforded by PageStream on the Amiga. Instead, you get the same jagged edges you might find in PageSetter or Deluxe Print. The Macintosh universe simply doesn't care about dot-matrix quality.

When it comes to LaserWriter support, A-Max is able to communicate meaningfully with the LaserWriter, but it cannot do it by way of Apple's preferred AppleTalk network protocol. This means that files must first be printed to disk, and then down-

loaded into a LaserWriter connected to the Amiga's serial port via a null modem cable.

think they are talking to a serial ImageWriter and A-max does the conversions. This is successful to a point.

While the ImageWriter emulation is complete and blisteringly fast (by comparison with Amiga graphic dumps), there is often a distortion of the printed page. ImageWriters produce different dot-densities than Epson printers. When the Macintosh tells A-Max to print, the dots come out more compacted than they would have on a real ImageWriter. The result is a page that is compressed by about 40% left-to-right.

A further limitation has nothing to do with either A-Max or with the Ep-

Since I have ready access to Macintoshes, I prefer simply to save my documents on Macintosh disks and print them out at work. Despite its drawbacks, the Epson conversion software is an invaluable tool for proofing a page, though. Nor do all dot-matrixed outputs come out distorted; structured drawings (as created with MacDraw or Aldus' Freehand) typically map out to their correct sizes when printed on an Epson in Imagewriter emulation. So, A-Max successfully thwarts the first two of my reasons for skepticism: disk

Preliminary Software Compatibility List	
Works	
Adobe Illustrator '88	MacAsm
Aldus Freehand	MacChallenger
Aldus PageMaker 2.0	MacPaint
Digital Darkroom	MacTools 6.3
Font/DA Mover	MacWrite 4.5
FullPaint	Manx Aztec C
HyperCard	Ready,Set,Go 4.5
Image Studio	ResEdit
Lightspeed C	VideoWorks
MicroSoft Word	WordPerfect 1.0.2
Mac 3D	WriteNow!
Works with limitations	
Copy II Mac — bit copy does not function	
Cricket Draw — runs extremely slowly.	
MacDraft 1.1 — has difficulty with text.	
Symantec Utilities — confused by number of drives.	
Doesn't Work (for some reason)	
ComicWorks	
Sanskrit Tutor	
Pixel Paint	

compatibility and printer compatibility.

How does it fare with respect to screen compatibility? In a word: stunningly! At startup, A-Max lets you choose whether to use the Mac's native resolution (512 x 342) or Amiga's maximum screen width and depth (640 x 400). You can opt for hi-res interlace (which yields the most Mac-like screen, but presents classic Amiga flicker characteristics), or remain in non-interlace mode and have the screen scroll to follow your mouse motions. A-Max alternately supports a paged display mode with part of the screen displayed and the other part a mere click of the right mouse button away.

Anticipating future technologies, ReadySoft has also included support for 640 x 480 non-interlace if your machine is equipped with Commodore's next generation chipset and a multi-sync monitor. If you have either the A2024 or Viking Moniterm A-Max will provide for displays up to 1008 x 800.

Since I don't have any of the new technologies, I prefer to use the 640 x 400 interlaced display mode. This affords me a 7 x 10 inch view as contrasted with the original Mac's 6 3/4" x 4 1/2" screen. That's more than twice the size. True, my A-Max screen does not bear a pixel-to-point relationship (the screen's scale is actually expanded by about 25%), but when I'm laying out a magazine page at full size, I can actually see three columns at full magnification!

Although the various display modes are all supported by A-Max, not all software will be able to use them. Some programs in fact, typically older releases, will fail to work at all unless the screen is set to Mac standard specifications. These are typically programs that do not conform to Apple's published software standards.

So now that we know A-Max works and a little bit about how it works, one thing remains: How well does it work. There are not a lot of Macintosh programs I know well. Publishing and Graphics applications are the ones I use most often. However, I have played with a pretty wide range of programs and was able to borrow even more to test. In many cases all I could do was to verify that the programs loaded and did things like open, close, save, print, and other relatively unsophisticated operations.

Of the 33 programs I tried, 4 failed, either through A-Max incompatibility or because I did something wrong (like mixing incompatible versions of system resources). A very few ran but suffered some sort of perceptible performance impairment. All the rest worked with a perfect or nearly perfect degree of compatibility.

Of the 29 programs that worked, five needed to have the Mac screen set to 512 x 342 or they would crash. As many as 60% were able to use windows that opened to my full A-Max screen size. Surprisingly, the programs that worked the best were some of the most recent and highly sophisticated programs.

Adobe Illustrator '88, Aldus' PageMaker 2.0 and FreeHand, Digital Darkroom and Ready,Set,Go!'s latest version 4.5 all worked just fine in A-Max. Old standards like Microsoft Word and MacWrite, MacPaint, FullPaint, MacDraw and MacDraft worked. WriteNow! by NeXT, Quark XPress, Cricket Draw and Cricket Graph worked. Macintosh's own utilities such as Font/DA mover, and ResEdit worked. Macintosh software development tools (Manx's Aztec C for Macintosh and Think's Lightspeed C) worked! Even copy protected Macintosh games worked!

What sorts of programs don't work? Anything that contains sound will not work with A-Max (rather, it will run, but no sound will issue from the Amiga's speakers). This is because the Macintosh has its own custom sound chip that the software accesses directly. Evidently, there is no way for ReadySoft to map these sound instructions into a form understandable by Amiga's sound chip.

Other Macintosh programs that bypass the system software and access hardware directly can be expected to fail. The Macintosh defines its memory map from location \$000000 and allocates memory in blocks that must be contiguous (that means all one piece). In the Amiga, only CHIP RAM is guaranteed to have these characteristics. Expansion RAM may be available in large contiguous blocks, but these are usually located far from the \$000000 location. For many Mac programs this doesn't seem to matter. The latest generation programs seem to do quite a bit of internal memory management for themselves. Other programs will crash if they call for a large block of contiguous RAM and don't find any.

Any programs that require 2 megabytes or the Mac SE/Mac II 256k ROMs will almost certainly not work. PixelPaint, a color painting program similar to Deluxe or DigiPaint would not even pretend to run under A-Max. On the other hand, other color capable (but not reliant) programs had no trouble. Adobe Illustrator '88 allows access to the full PMS book of colors and I was able to build complex drawings with color fills and gradients (I was, of course, unable to view these drawings in anything but grayscale representations).

Most of the programs that failed completely or in part were from the ed-

(continued on next page)

A-Max (continued from previous page)

educational courseware series published by Kinko's Copy Centers. These are typically programs written by educators to teach classes on the Mac. I can only guess that the reasons for failure had more to do with the programs (and programmers) themselves than with A-Max's emulation. It is also possible that these programs were relying on some bug or "feature" of an earlier ROM version.

Courseware that worked included MoEd, a molecule building package developed at Drexel University, Hands-On, a Binary Tree demonstrator, LogiMac and Digital Simulator. Sanskrit Tutor (yes, it really does exist) loaded and ran OK, but quickly became confused and crashed.

Of particular benefit to those who would program educational software on the Macintosh, but lack the programming techniques is HyperCard, Apple's presentation scripting utility. Users can compile "stacks" of HyperCard materials and leave the system programming to HyperCard's inbuilt routines. Fully aware of the value in HyperCard, ReadySoft has written A-Max to support this program as well (minus its sound capabilities, however). Despite the fact that HyperCard's animation and display quality is far less sophisticated than, say, the Director, on the Amiga, there is already an existing library of HyperCard stacks numbering into the thousands.

The Symantec Utilities for disk management loaded and ran well enough, but many of the floppy disk operations got confused by all the apparent disks that A-Max makes available and failed to find the corrupted files I wanted to recover. Copy II Mac, a bit-copy program for backing up protected software presented an interesting message when I tried it: "Bit copy is not currently supported on the Lisa."

So Copy II evidently realized that A-Max was something other than a true Macintosh. ReadySoft's development team is anxious to claim the greatest compatibility possible and sets immediately to work on bugs as they are reported by their testers. I have been pleased to have so little to report to them.

There are a few hardware considerations to point out, however. While A-Max is designed to accept either Mac 64k or 128k ROMs, I found the 64k chips to be virtually useless. They certainly worked, but the 64k Mac ROM was a stupid thing indeed. The problems of building a stable system disk and accessing present-day Mac software were just too great to make it worth messing with the 64k chips. On the other hand, when I installed the 128k parts, the wide world of Macintosh compatibility was opened to me.

My other suggestion is that an Apple external drive is essential. Yes, you can build all A-Max format disks and use the provided transfer utilities to move Macintosh data and applications from one format to the other, but the process is so much more clunky. The Apple drive connects so easily and performs so seamlessly with the A-Max unit that you really feel like your system is a Macintosh enhancement rather than a substitute.

Lest I be accused of being a devout ReadySoft partisan, there are a few items I would like to see addressed. First, I don't see why it isn't possible to change the width table of the Epson printer in ImageWriter emulation mode to compensate for the lateral compression. The lack of AppleTalk is a significant liability, but perhaps it isn't ReadySoft's place to correct this. After all, we'd all like to see PageStream or Professional Draw interjecting Amiga artworks amid the reams of Mac prod-

uct coming off the lasers at work. ReadySoft plans on pursuing these and other issues. Additional support for peripherals like hard drives should inevitably be forthcoming as well. As I mentioned, Macintosh system folders can easily be larger than a single floppy disk. In fact, I have one on a machine at work that's 8 Megabytes of hard disk space. All it takes is a couple of measly fonts. Version 3.0 of the PageMaker application comes on two disks and has to be assembled inside the computer. The resulting file is over 1 Megabyte large. You can't even use it without a hard disk drive. The simple addition of hard drive support will do as much to improve the quality of life as A-Max has already done.

In the meantime, I will continue to test and report incompatible programs to ReadySoft, but it's difficult for me to get too worried over those that don't work. Everything I am interested in running on A-Max works like a charm (better, in fact, due to the larger screen and additional disks).

I believe there are a lot of people like me who use the Amiga and the Macintosh as armaments in our daily battles to provide professional services. To people like us, the value of A-Max is instantly apparent. For me, it has been the single most useful Amiga product since vd0:

A-Max Macintosh emulator \$ 199.95 (less ROMS)

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

Design 3D

Gold Disk's New Entry into Object Creation

by Paul R. Miller

Just when you thought we have enough 3D modeling programs for the Amiga, along comes yet another in the form of Design-3D. Before you turn that page, you may want to read on, however, because this latest entry combines many of the features of previous programs and adds some new tools and an interface that is the most "user-friendly" yet.

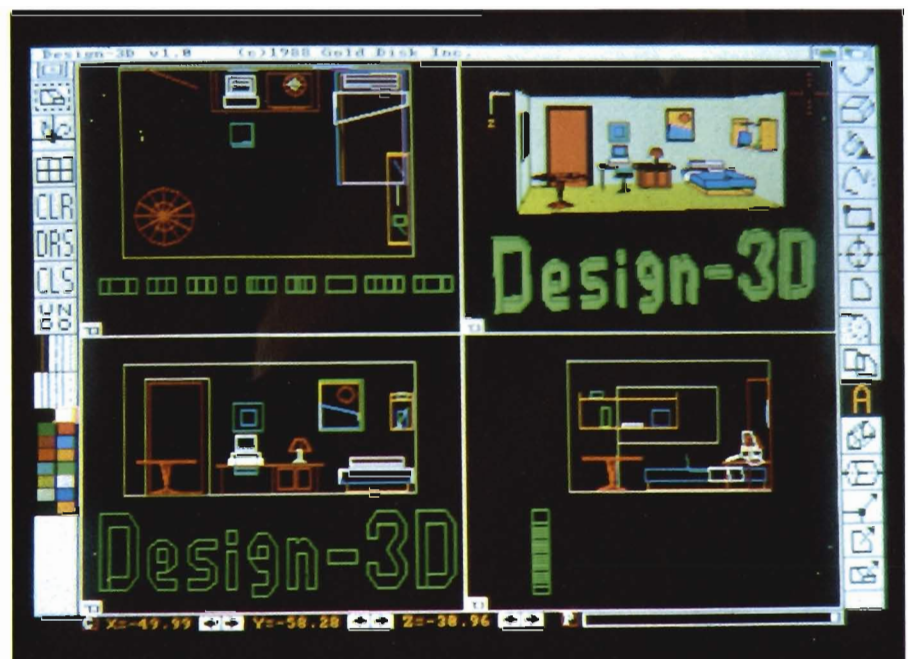
Design-3D comes with two disks and a 64 page booklet, and requires 1 meg of RAM to operate. Copy protection is in the form of key-word entry from the manual. At the startup screen you also select the number of colors -- either 2,4,8 or 16 prior to entry to the work screen. Design 3D's workscreen is the familiar "tri-view" environment, but with an additional window that offers orthogonal or perspective views that can be rotated, translated or zoomed in real-time wire-frame, or somewhat more slowly in solid shaded views.

Around the four borders are arrayed various tool gadgets, coordinate read-outs, and pull-down menus. Your cursor indicator takes the form of the familiar arrow when positioned over the menus or gadgets, a cross hair when in the work windows, or a clock shape

during calculations or screen updates. General work tools are located at the left of the screen and include: Close Gadget; New Object -- to create a new object separate from existing objects; Nodes -- to merge close points; Grid -- which can be defined as to units and scale; Clear -- erases and clears mem-

selection, you are granted up to 16 user-definable working colors (from your 4096 Amiga palette). Most handy is the menu of six different line styles (solid and various dashed lines). The three-dimensional tri-view environment can get very complicated in a hurry, and the provision of these line

Design 3D lets you create simple 3d objects with greater ease than some of its predecessors



ory; Draw Screen -- which refreshes the screen according to memory; Clear Screen -- which erases the screen but retains objects in memory; Undo -- which cancels the last entered polygon, and the Line and Color boxes. Depending on your initial working

styles goes a long way towards simplifying the mess that can appear in your windows.

The fact that Design-3D can make objects with many sided polygons
(continued on next page)

Design 3D (continued from previous page)

ygons like VideoScape 3D, rather than with only triangular facets, is also a great advantage when constructing your objects. In fact the program is quite compatible with VideoScape -- it can load and save objects, and works with a similar 4 light source environment.

The workscreen can be configured in either med-res (640 by 200) or hi-res (640 by 400), and presents a very pleasant combination of black background and white gadgets, and the grid, when activated, displays a subtle but still visible dot array that I prefer to solid lines.

Down the right side of your screen are 15 gadgets that you employ in object editing, grouped in 5 general categories.

3D Manipulation:

Rotate -- allows you to re-orient your object in the orthogonal view window. Click and drag with the left button and your object will rotate in the direction of your cursor. If your display is wireframe the response is instantaneous, with slower redraws in shaded mode. In the latter case you can utilize the right button instead, which yields a "bounding cube" wireframe outline responding to your mouse in real time, then re-rendering when you are done.

Solid Model -- a button that activates a solid display of your object in the perspective window according to your menu selections for rendering type.

2D Drawing Tools:

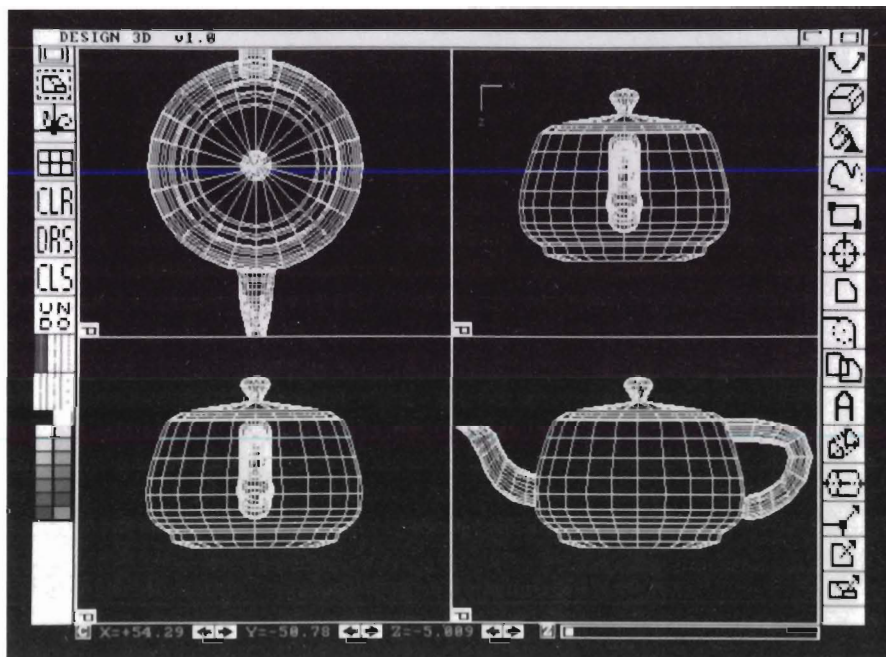
Draw and Fill area offered a means to enhance window representations without resort to IFF paint programs. These modifications are strictly screen

Manipulation Tools:

Icons permit selection of points, polygons or solids. When you activate any of these tools a menu bar appears at the top of your screen with choices for

Turn, Move, Copy, Delete, and Info.

First select your choice of action, then select the object to be acted upon. Click on your object with the right mouse button and it flashes to indicate your selection -- now either confirm the selection with a left button click or try another selection with the right. Info gives you a window readout of numerical values, and color and line data which can be directly edited by entering alternate values.



In the wire frame perspective mode, you can get a real feel for how an object is created ala computer

artifacts unrelated to the actual 3d files, but the screens can be saved as IFF files.

Polygon Creation Tools:

Rectangle and Ellipse are provided for symmetrical forms, and Polygon permits free form shapes (up to 100 points per polygon). Arc defines segments of circles within polygons, and Clone duplicates a shape.

Volume Creation Tools:

Text provides automatic 3D text generation; Connect functions as an extrusion tool to connect previously created polygons with the same number of points; and Spin sweeps points or polygons around a vertical axis.

Display tools are located along the bottom of your monitor: Three windows read out X, Y, and Z coordinates, and are supplemented with arrows for scrolling your viewpoint relative to the object (the increments of change are controlled by your grid, unit and scale settings). A small box to the left of these windows toggles between a "C" or "A" setting -- this was not documented in the manual but it toggles between X, Y, Z translations and X, Y, and Z axis rotations in the perspective window. It's very handy for fine increments in perspective view, and is more precise than the mouse rotation method. Another box presents a slider for Zooming in on your work. It affects all four windows at once and permits a zoom enlargement up to a factor of 10. Yet another toggle box switches from

non-foreshortened isometric view to perspective -- now the slider bar controls the amount of foreshortening and functions more or less to control the "focal length" of your viewpoint, from wide angle to telephoto. A menu option will permit "full screen displays" for a slightly bigger work area, but you sacrifice your tool icons. You can also select any of the four windows to be a full screen display at any time, and this is the preferred option for detail work.

Five pull down menus complete the array of commands. PROJECT includes the usual New, About, Quit, and Print (screen dumps to Preferences printers).

Load options include: Object, VSO (VideoScape object), or Part. Save divides into the same categories and also offers Wire drawing and Solid drawing (for export and use in Professional Page, Professional Draw, and Draw-Plus), as well as Screen (IFF bitmap).

Plot is supposed to send your drawing to an HPGL plotter, but the manual referred to "Appendix D" for instructions. No help here, as the appendix only gives a warning about pin-out voltages on the 1000 and refers you to Commodore's instructions for printer hookup.

PREFERENCES grants you choice of medium or hi-res screen environment, a palette requester (the familiar format with RGB sliders and a spread tool), choice of perspective view rotation axes (any combination of 2 of the 3 axes), a printing format scaling ratio sub-menu (with reference to the non-existent explanations in "Appendix D"). Most important are the Parameters and Font Editor selections. The former lets you select unit of measurement (mm, M, Inch, cm, Km, or Feet) and scale (default is mm with scale of 1 to 1 -- so a grid would appear in mm

at full size on your screen). Grid permits you to select the spacing of your reference grid -- with independent selections for each axis, and in terms of the unit of measurement previously selected. Points/Circle sets the number of segments in an ellipse; default is 24, but any number between 2 and 90 is permitted. Sectors/spin determines the number of segments when using the spin tool. You may also readout or enter rotation values for your perspective window viewpoint. Lightsource placement permits entry of X,Y,Z coordinates for each of 4 possible lamps, but no control over intensity is permitted. Surprising for an inexpensive package such as this, 3D includes a built-in set of 3-D fonts and a font editor that displays all the characters and permits you to alter the appearance of each. You can move points, add polygons, set the depth, and even change character

(continued on next page)

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"It was a dark day.

A day so dark, I needed a flashlight to put my socks on the right feet. My secretary Gladys had quit the day before, walking out with my heart and my Rolodex. I was lost. Then, a mysterious woman walked in...



She had a great software package, the kind of goods you want to take home to Mother. She whispered, **'Who!What!When!Where!'** then handed me the box and exited stage right. I never learned her name, but that woman changed my life.

Now, I use **Who!What!When!Where!** to schedule appointments, to remind me of upcoming events, to dial the phone, to print address labels, and as a calendar, alarm clock, and yes, as a Rolodex, too.

Of course, Gladys made better coffee, but then **Who!What!When!Where!** doesn't demand profit-sharing..."

**Who!
What!
When!
Where!**



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Design 3D (continued from previous page)

width! The OPTIONS menu offers toggling of X,Y,Z axis indicators in the perspective window, enlargement of cursor cross hair to full window width, full screen display (minus the tool icons), and coordinate "dimension" display relative to last entry point. You may also elect to copy the 3D perspective window to any of the other windows, and you have the option to activate Section, which makes the next polygon entered a section of an object.

solid views. Four methods are given to render polygons: Wire (displays polygon in base color); Color (polygons in chosen colors, but with no shading); Solid1 (shading shown and dependent on your palette mix); Solid2 (shading rendered with dot patterns, and preserving your chosen polygon colors). The rendering methods are not terribly sophisticated, but they are more than adequate for what is basically a 3-D object editing program. For more

can be in either wireframe or solid shaded mode. As you are required to make a text file script in order to produce an ANIM (a sequence of X,Y,Z angles and Z zoom and X,Y camera moves), most users will probably forego this feature, as much easier methods are offered by other programs.

Viewed as a rendering or animation program, Design 3D is certainly suffers from comparison to other products, but in terms of object creation I found it to be by far the easiest and most accessible package to date. It contains many features that are similar or functionally equivalent to the somewhat more versatile (but more difficult) Modeler 3D, and gives you realtime and intuitive wireframe rotations that are reminiscent of Caligari. If you've been put off solid modeling by either program price or degree of difficulty, Design 3D may be just the answer. My chief complaint is with the manual. It's too brief and sketchy compared to the power inherent in the program. Tutorials are also too brief, and many functions simply aren't explained. To their credit, Gold Disk includes a tutorial demo on the Tools disk that is quite fine, and amply illustrates the elegance of this interface. A readme file also is included for hard disk installation. All in all, a fine piece of software that is much better than the instructions. Fortunately it's easy enough to do without the words, but the program deserves better.

One not so apparent "feature" of Design 3D is the surprising inclusion of manual copy protection in a graphic program



Unfortunately, the manual offers no further explanation of this function.

The SOLID MODEL menu sets your options for volume representation. "Fast" or "Normal" determine the accuracy of rendering with respect to elimination of invisible faces, and have a direct bearing on rendering speed. Default is "Normal" and this seems a reasonable setting as rendering speed seems very quick (3D doesn't deal in smoothing, surface textures, etc. so everything happens pretty fast). Wireframes may be shown or eliminated in

spectacular rendering results you will want to transfer to something like VideoScape (just save your object as VSO) or into Sculpt or Silver via Interchange.

Finally, the ANIMATION menu permits you to perform some rudimentary "fly-by's" of your objects. You may elect to play your animations directly in "real time" (the speed of which will depend on the complexity of the objects), or record them to disk in ANIM format for playback with the utility that is included. Animation display

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Transcript

A New Word Processor from Gold Disk

by Gregg Illman

Transcript from GoldDisk is the latest in the plethora of Amiga word processing programs. Each of the word processors for the Amiga tries to offer the end user something new, unique, or more of whatever they think of. Transcript is no exception to this. Transcript's roots are in some public domain and shareware editors, the difference is in Transcript's subtitle, "The high-performance word processor."

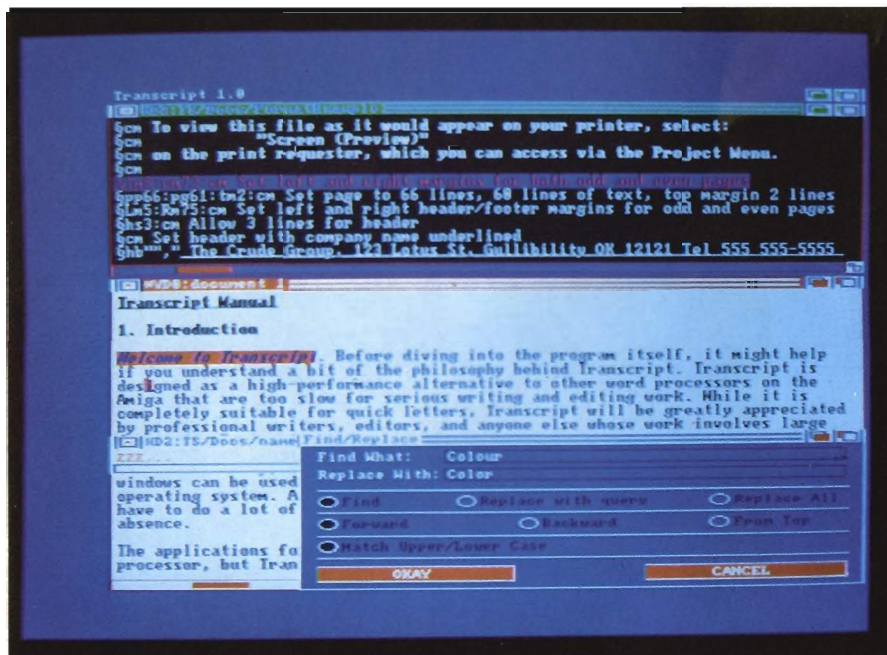
Transcript is aptly named in this respect. The program defaults to run under a Workbench screen using the four Workbench colors. The relatively few bit planes and some good program code enables Transcript to show some of the fastest text scrolling I have seen in a long time. Inserting text is also fast and painless, and cursor response is excellent. All of the menus are optimized for speed. At the top of the menus are the most common selections and the keyboard equivalents for all menu options. The menu layout is logical and follows the pattern of most Amiga programs with the Project

menu on the left and all the load save options in this menu. The next menu to the right is the Edit menu which supports all the Amiga clipboard, "cut and paste" operations, including by word, line, sentence, paragraph, or highlighted text.

The commands menu has most of the functions of a word processor listed for quick access. These include the commands to select the active editing window, search and spell check. Also in this menu are the toggles for insert and paragraph markers, place or remove index mark, and convert to upper and lower case commands. The case converter is very useful for programmers and makes Transcript a good programming tool.

The next menu is cryptically named special, and neatly hiding most of the power in Transcript. There are some basic functions like setting the window up and selecting color, and some niceties for magazine authors like word count, window resize and refresh, and clean up the RAM in use. Tucked away at the bottom of the list is the best part of Transcript and that is the option to show or hide Professional Page formatting codes. For Pro-Page users, Transcript allows for faster composition and basic formatting with less memory consumption and more speed. The last two menus are for style of print, like bold, italics or
(continued on next page)

Transcript is very fast, and keeps up with the most agile of typists



Transcript (continued from previous page)

underline, and the cursor control functions that are all duplicated on the keyboard and are much easier to use from there.

There are a few unusual characteristics in Transcript. Most noticeably is the horizontal scroll gadget to move vertically through the text. There is no provision for pages wider than the screen which is not a drawback in common use or as a front end for ProPage.

A spell checker is provided, but as a separate module like GoldSpell that should be loaded in before the spell checker will run from the Transcript menu. This does allow for several dictionaries to in use at once or any combination depending upon the tool types listed in the icon for the TranSpell program or from parameters when invoked from the command line. The standard dictionary when loaded into ram uses about 170K of memory which is still a small overall total for the program and dictionary. All editing functions are run from RAM for maximum speed, but the RAM usage is excellent and all the features of the program should run in less than 400K of RAM. Using Transcript from its own window instead of Workbench will use more memory.

Text highlighting is very quick and flows well. The only complaint I had was it required a mouse selection or Amiga-H key combination to unhighlight text. I am used to clicking elsewhere in the text to relocate the cursor and clear the highlighted text.

There are some thoughtful additions to the basic program that caught my attention. The mouse automatically blanks out once the keyboard is struck and there are provisions for recording macros and assigning them to the Amiga function keys. Two of these keys,

Although provisions for checking your spelling are provided, it is handled in the form of a separate program that must be called to work with your documents



F9 and F10 activate by a click of the left mouse button and holding the control key simultaneously. By timing the delay between the first and second mouse click, the F10 macro is invoked. The addendum to the manual indicates this is a great way of adding ProPage formatting codes to the text. I found the combination slightly awkward in use because of the number of times I had to go from the keyboard to the mouse and back. If you prefer to format and stylize text at the end of the composition phase, then this would be more useful.

The authors also deserve some credit for the simple way of recording a macro. The Ctrl-Shift key-Function key combination starts the record of up to 99 characters and ends with the Ctrl-Shift key combo again. Thought also went into the file requesters. The basic design is attractive and functional. Directories are automatically highlighted and .info files are not displayed. The requester automatically recognizes the devices present if they are of three

characters in length. I have a second hard drive with two partitions called DH10 and DH11 that did not show in the requester. I could access them by typing in the name in the requester. Occasionally, I was frustrated by the series of requesters that must be clicked away just to tell me I forgot to load in the TranSpell program. One to say that TranSpell is not loaded and do I want to load it now would have been simpler. Considering how little RAM Transcript uses, I would basically always want to use the dictionary, but not always load it to RAM.

Another area that took some getting used to is the highlighted text does not behave as a block. If you highlight a block of text, and type the delete or backspace key, the last character of the highlighted text is erased, and the highlight block shrinks accordingly. Typing Amiga-X will remove the whole block of text, but is counter intuitive to all but old WordStar users. The spell check function is amazingly fast at finding errors, but its algorithms lack

Transcript (continued from previous page)

some flexibility and often could not suggest alternatives. Kindwords from The Disc Company and WordPerfect do a much better job at suggesting corrections, at least to my mangled spellings. The spelling requester has a smooth bar graph display of how far the spell check has gone in the document. While location of the errors is quick, the display of guesses is a bit slow and misleading since you have to guess if it can not find a guess on the misspelling or if it is still searching. You can type the correction in the requester box as well and that correction is checked, but it gives an error message if two words make up the correct text.

Probably my favorite part of Transcript is the print option from the project menu and its features. It allows for a wide array of paper sizes, types and spacings. Even with all the choices, getting perfect hard copy is easy because you can redirect the output to the printer selected in preferences, a file on disk, or the screen. The screen is the

best of the group. The text display is fast and the scrolling of text which is mouse controlled is the fastest and clearest yet. I did have another small gripe with the warranty which if rephrased, mounts to none but the media for only 30 days. This seems out of place with the promise of strong technical support in the manual.

I am pretty happy with Transcript as a word processor with some basic text layout, simple but inadequately described mail merge and the ability to act as a front end for Professional Page. The list price is \$79.95 which makes it rather costly when compared to some of the cheaper word processors and the nicer text editors available.

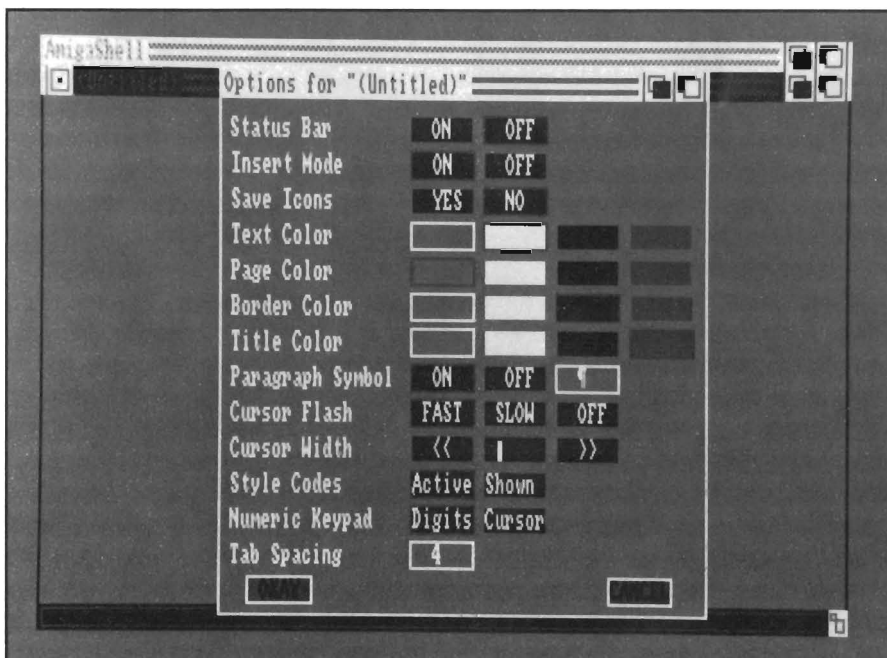
While using Transcript, I often thought about KindWords and Becker-Text and their features. Kindwords is not as responsive on the keyboard or mouse, but does import IFF files and has a spell checker that I like better and the superfonts output to make the

best of a dot matrix printer. Becker text has similar speed, IFF import through a separate utility and a few more page layout options from inside the package. Ideally, I would combine pieces of all of these programs. Transcript is a valuable addition to any ProPage owner and deserves some thought for people who want a good, quick program editor. I built "C" and assembly language dictionaries and found them and the upper/lower case functions a real plus in generating code.

I hope there will be an update soon to Transcript that will make the dictionary easier to use and at least a status message during the spell check "guess" phase. Some more text in the otherwise straight forward manual on the Mail Merge functions would be appreciated and some examples of the functions might be helpful as well. One feature that should be mentioned that I miss on other programs is a functional help key. The Help key in Transcript calls up a quick reference for the predefined function keys. I wish more programmers would take the time to make use of this key.

Transcript is certainly a strong start for Gold Disk, but I hope they continue to improve and expand some of the capabilities while price remains the same.

The "Options" quick menu is a handy way to set up your document parameters



Transcript \$79.95

Gold Disk
P.O. Box 789,
Streetsville, Mississauga,
Ontario, Canada L5M 2C2

(416)828-0913

KaraFonts Headlines

New Striking Colored Fonts for the Amiga

by Tom Reed

Three years ago Kara Blohm wanted to branch out from her graphics design work in the print field and apply her graphic arts skills to work in video. She started work in video on an Amiga computer because of its superior graphics capabilities. But, in working with video and the Amiga, she found a lack of high quality, high resolution graphics available for use in titling. Most of the fonts were just two colors.

This lack of high quality graphics caused her to begin designing her own fonts for use with video and other computer graphic work. Kara saw the potential for creative font renderings and their need in the fast developing desktop video and computer graphic markets. With this need in mind, she continued her graphics and fonts design for use with the Amiga. With repeated encouragement from friends, she released her first collection of fonts called HEADLINES.

The HEADLINES font set includes 10 hi-resolution dimensional color-

fonts. Each font comes in two large sizes suitable for titling work. Typically, one size will be in the 80 point size range and one just over the 100 point size. Two new editions of Kara Fonts are now available: SUBHEADS and HEADLINES 2. All three font sets contain a variety of high quality fonts that make impressive titles.

Kara fonts have descriptive titles for easy identification. The first set of fonts, HEADLINES, contains the following fonts: Granite, Marble, Chrome, Brick, Wood, Cast, Column, Chisel serif, Bevel, and Chisel. All letters are in uppercase. This was done because of the enormous amount of disk space that would be necessary to have high resolution fonts available in both upper and lower case letters. It was also deemed that larger and smaller caps in combination would give the impression of upper and lower case letters while maintaining the presence that all caps would bring to the work. The size of fonts on this first disk set range from a point size of 84 to the largest size of 114.

At the request of users of the first HEADLINES package, a set of these same style fonts was developed in smaller sizes. These two new sizes of the same ten original fonts has just been released as SUBHEADS. These fonts are also all caps but with smaller point sizes. The font sizes on SUBHEADS generally ranges from 55 to

A number of different varieties like the Script type shown below show off the Amiga's strength in video titling



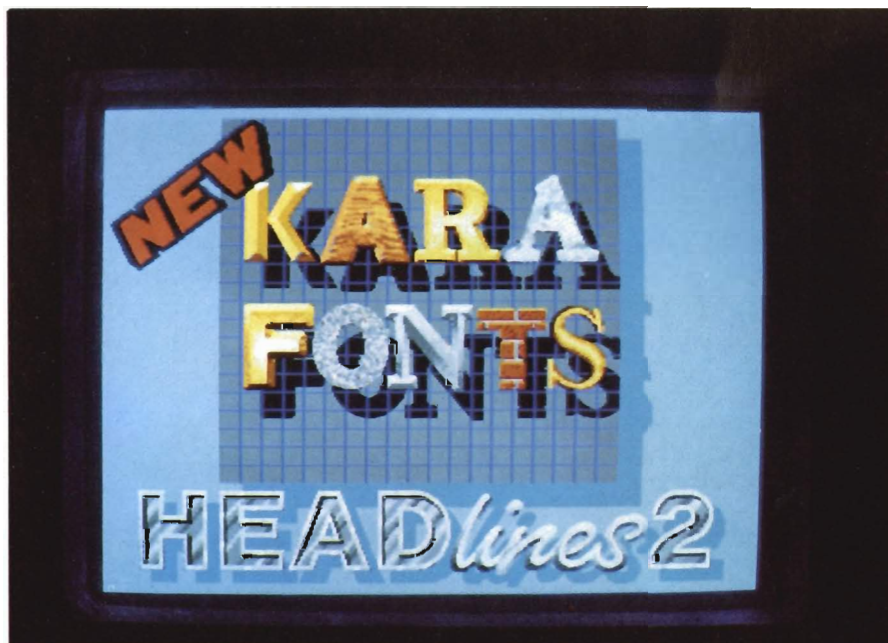
72 and comes in a two disk set. HEADLINES 2 has just been released with four entirely new and unique fonts. The new fonts are Embossed, Engraved, Glass and chiselScript. These hi-resolution dimensional color-fonts are composed of eight colors and come in uppercase characters, except for chiselScript which comes in both upper and lower case letters. This new collection of fonts contains the first font specifically designed for backgrounds - Embossed! Kara fonts are compatible with DeluxePaint I, II & III, Broadcast Titler, Director, Video Titler, Express Paint, Photon Paint ver. 2.0, T.V. Text ver. 2.0, and Shakespeare, to name a few of the application programs that can use Kara fonts.

Two basic styles of letters are represented in the collection. The ten can be divided into either a Gothic or a Roman style of letter. Gothic fonts are full faced with no thick and thin portions of the letter. The Roman style fonts have thick and thin portions of the individual letters. Two basic type faces, Helvetica and Caslon, form the basis for the HEADLINES and SUB-



HEADS font sets. Kara wanted to use fonts that have a simple outline because she knew the interior portions of the characters would have "a lot going on", usually some type of dimensionality and/or texture with highlights from a light source. Kara fonts are COLOR-FONTS and require the use of the program ColorText in order to use the

fonts. COLORFONT was developed by Interactive Softworks in Calligrapher. It has become an Amiga standard and allows a font to use up to 16 colors instead of the usual two colors (foreground and background) used by Amiga fonts. COLORTEXT is the application program which patches into the Amiga text font library, and intercepts the normal Amiga text routines, and replaces them with new font routines that allow fonts to use up to 16 colors. The ColorText program is included with all of the Kara font disks.



Probably the easiest program to use with Kara fonts is DPaint III. Kara Blohm created her fonts using DPaint and was a Beta tester for the recently released DPaint III. Suggestions to Dan Silva in the way font files should be handled resulted in a font interface that is greatly improved upon in DPaint III. KARA FONTS were created using DeluxePaint and put into the keyboard with Calligrapher. Kara Blohm explained that without Calligrapher you would have to pick up individual letters as brushes after creating them as an

(continued on next page)

Karafonts (continued from previous page)

IFF file and placing them, in this cumbersome way, into your titles or other graphic works as individual brushes. Ed Kilham, author of Calligrapher, explained that each letter of the KARA fonts is picked up as a brush and then saved as a COLORFONT using Calligrapher. The Kara font disks come with a small seven or eight page booklet of instructions. And, in the case of HEADLINES 2 and SUBHEADS, a one page insert of usage tips is included. Most of the information in the booklets deals with the loading of Kara fonts into specific application programs. The ASSIGN command must be in the "C" Directory of the Workbench disk or your application software. Many of the fonts which have a textured face but no dimensionality have a one pixel outline. These fonts can be "dragged" in any direction to give a 3-dimensional effect. Embossed in HEADLINES 2 is specifically to be used as a background font. The font is

very effective and convincing in its embossed effect. You may "deboss" the font by reversing the color palette. The Glass font in HEADLINES 2 needs to be treated like glass because of its properties which allows the background to show through. The bevel edges of the Glass font are made to appear semi-transparent with the use of a one pixel "checkerboard" pattern using color zero of the color palette.

When planning to work with KARA FONTS, it is important to plan your color palette carefully. KARA FONTS will occupy the first eight color slots of the palette. If you are combining other art work you will need to think through your color selections with care. Different color palettes are provided in the brush drawer to give the fonts different looks. Some palettes are also provided with white backgrounds for use in printing, there are palettes that will render the characters in black and

white, or palettes which use only four colors. A wide variety of different palettes are provided for different looks.

When using the fonts in video applications be sure to change the values of the colors so that they do not exceed 12. Kara fonts are a beautiful addition to the growing collection of graphic material available for Amiga users. The fonts are consistent in their rendering throughout the entire range of characters. Sophisticated detail and an eye for color are characteristic of the entire collection of fonts. These fonts are a must for people who do titling work, prepare business graphics, animations, slideshows or desktop publishing.

Kara Fonts Headlines2 / SubHeads
2 Disk Set Each \$69.95
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The Vault

A Hard Disk System for A-500 and A-1000 Owners

by Steve Dock

When the A500 and A2000 Amiga's were announced, owners of the original A1000 were concerned that hardware developers would ignore them and concentrate on producing for the new machines. Since the 2000 introduced a new "Zorro" specification for internal plug-in cards and the 500's 86-pin external edge connector bus was reversed and slightly revised, hardware developers were forced to devote much of their time and resources to new standards.

With only about 150,000 A1000's compared to almost 600,000 A500's, a manufacturer can be excused for concentrating on the larger market. In short, there has been a reduction in new products available for the A1000.

When the new machines were just "spec sheets," many asked if a 1000 bus expander could be connected to the 500. The answer was "Yes, but..." Physical connection would be difficult due to the recessed nature of the 500 edge connector, power was in short supply, and subtle changes were made in one or two signals. Still, the similarities of the 500 and 1000 bus connector are much greater than their dif-

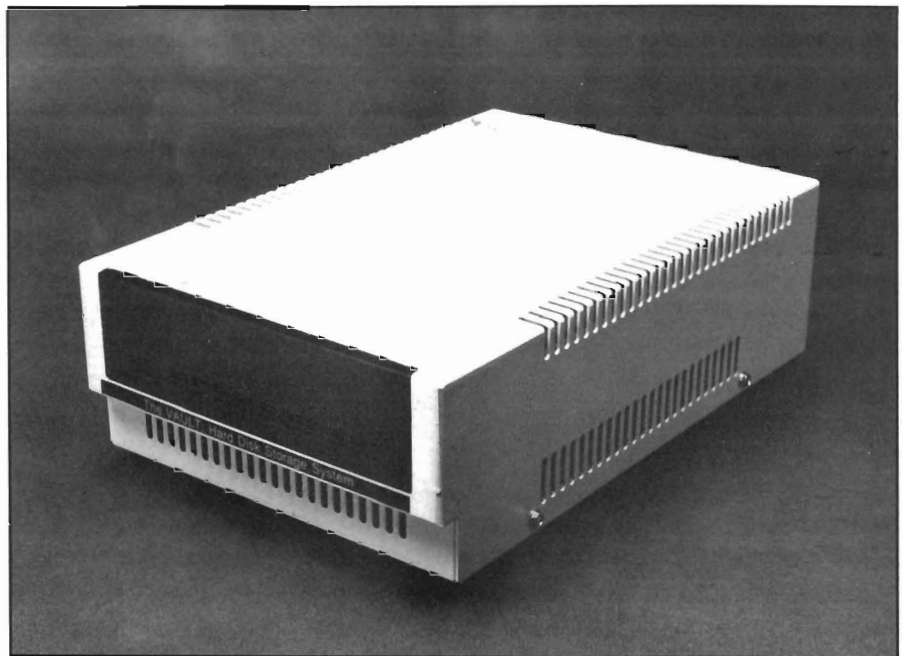
ferences. At last, Progressive Peripherals has taken advantage of this fact and introduced The Vault.

The Vault is a new hard drive system, which can be used on either a 500 or 1000! An "intelligent cable" contains a few PAL's to buffer the bus and compensate for the signal differences. This cable plugs onto either system

ware, CLIMate and a 20 or 40 Megabyte Segate hard drive

By using IBM style components rather than SCSI based ones, Progressive can keep the price of adding a hard drive lower. By choosing RRL track formatting rather than the more common MFM format, more data can be stored on each device. The unit we

The Vault - from Progressive Peripherals



and connects to an IBM style hard-drive which is housed in a sturdy metal box. The entire package consists of: the Interface cable, a 40 page booklet-style user manual, an RRL controller, installation and utility soft-

received included an ST250R drive which formatted to 42 MB.

Hardware installation is simple. With your 500 or 1000 powered off,
(*continued on next page*)

The Vault (continued from previous page)

remove the plastic bus-cover and slide the cable connector on. Be sure to pay attention to the "This Side UP" label. Now plug the other end of the "Intelligent Cable" into the back of the hard-drive enclosure. Plug the separate power cable into an appropriate socket and into the back of the harddrive unit. Power-up your Amiga and turn-on the hard drive (You can turn power on or off to the hard drive without affecting the Amiga)!

Since this is not an Autoboot or internal drive, your Amiga will know nothing about its existence until you proceed with software installation. Make a copy of The Vault boot disk and reboot the system with this copy. A Utility Manager screen should appear with lots of boxes and two pull-down menus. The Utility Manager will attempt to read the device type from your hard drive, but includes a menu of hard disk types which you can select from. Once this is complete, a default set of parameters for formatting will be set. UM will build one large partition, use fast file system, and verify each block twice when formatting. You can change any of these parameters by clicking in the appropriate boxes.

The five action boxes will be set to YES. All you have to do is click on "DO IT." Utility Manager will proceed to low level format, AmigaDOS format, build a mountlist, build a boot disk, and copy system files to the hard-disk. This process took about 30 minutes on my system and prompted for disk insertions for the final two steps. UM is also used to park the harddrive prior to moving it, and to perform a thorough set of media tests if needed.

I've had opportunity to use many different harddrive installation procedures now, and UM ranks among the best. The screen is cluttered with lots of

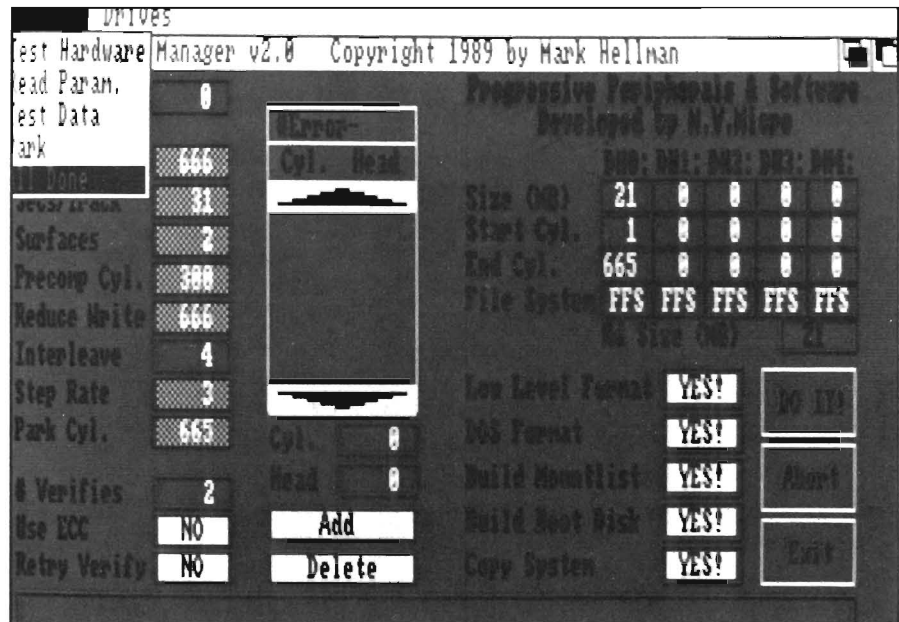
data, but the DO IT button stands out and the manual will get the first-time user successfully through the process

seconds, the bulk of the startup process will be transferred to the hard disk and soon a workbench screen will appear.



Inside of The Vault - a 5 1/4" hard Drive assembly

The Utility Manager software provides for a full range of configuration options.



most of the time. Once UM has produced a boot-disk, you should power-down and reboot using it. After a few

An icon which looks just like the Vault drive cabinet will be highly visible and ready for action. The Vault user manu-

al includes several pages devoted to hints and tips for hard drive use including how to load your favorite software, the need for backup, and use of directories. These are well written and will help the first-time hard disk owner considerably.

I used the Vault for about a week on my A1000 and another week on an A500. Switching between the systems was as simple as unplugging the cable. The same boot-disk worked, and since I remembered to park the drive all my programs and data were safe and usable. Progressive deserves special commendation for being the first to implement this dual-purpose peripheral.

The ST250R is well enclosed in its cabinet, and is much quieter than most SCSI external drives. Two status lights on the front of the box ensure that you are aware of power and activity. The cable between the bus and this cabinet is about 10 inches long which limits your positioning options a bit. The power switch is at the rear of the Vault, so either use a power-director or be

sure you can reach behind. There is no pass-thru of the bus, or provision for adding memory inside the Vault, so plan accordingly. You might want to expand the A500 memory internally, or add a memory box with bus pass-thru to your 1000.

On to performance. Although the Utility Manager formatted my unit using the FFS, I found the Vault seemed slower than other harddrives I have used. The standard mountlist created by UM provides 30 buffers and I experimented with increasing this, but performance did not improve. The table below tells the tale. When copying or loading large files, the Vault is only 3 or 4 times faster than an Amiga floppy drive. Directory and list speeds were faster by a 5 or 6 factor, but other drives recently tested averaged 8 to 10 times speed improvements.

Compatibility and reliability of the Vault are very good. Several days of continuous running caused no heat or media problems and all disk editing or backup utilities worked fine. Copying

from partition to partition neither caused confusion nor lock-ups.

Overall, I found the Vault to be solidly constructed, cleverly engineered and well documented. The access time of the ST250R is 60 MS, which is certainly not blazing but the driver software must be part of the slowness experienced. Progressive's price is attractive, but given the sluggish performance, even this attractiveness lessens. If you are ready for a harddrive for your A500 or A1000, and budget constraints are the determining factor, the Vault is a functional option.

The Vault
\$599.95 for 20 Megs

Progressive Peripherals & Software
 464 Kalamath Street
 Denver, CO 80204
 (303) 825-4144

The Vault Performance Tests (Single Task Running)		
	The Vault	Floppy Disk
Copies:		
100 K File to RAM:	4 sec.	10 sec.
10 9k files to RAM:	5 sec.	16 sec.
200 files, 4000k (partition to partition):	669 sec.	n/a
DIR:		
197 files:	19 sec.	73 sec.
LIST:		
197 files:	23 sec.	96 sec.
Load:		
Excellence! (350k):	21 sec.	28 sec.

Results of DiskPerf (Single Task Running)		
	The Vault	Floppy Disk
File Create:	4 files/sec.	0 files/sec.
File Delete:	20 files/sec.	1 file/sec.
Directory Scan:	48 entries/sec.	44 entries/sec.
Seek/Read Test:	66 seek/reads/sec.	19 seek/reads/sec.
8k buffer size:		
Read Speed:	47,662 bytes/sec.	12,249 bytes/sec.
Write Speed:	16,288 bytes/sec.	5,050 bytes/sec.
32k buffer size:		
Read Speed:	48,545 bytes/sec.	12,265 bytes/sec.
Write Speed:	16,282 bytes/sec.	5,060 bytes/sec.

Indiana Jones & The Temple of Doom

Look out Behind You, Indy!

by Steve Ushioda

Finding himself stranded in a remote part of India, Indiana Jones (famous archeologist/adventurer with extraordinary abilities) comes across a small village.

Unfortunately, the village lies in ruins, following the enslaving of all of its children and the theft of a sacred

stone. Always on the lookout for new artifacts, Indy decides to try to recover the stone and free the children from the Pankot Palace, where an evil priest has taken them...

This is the story of Indiana Jones and the Temple of Doom, a blockbuster movie about an archeologist's adventures in a forbidden city. Previously an action/adventure arcade game, it has just recently been written for home computers. Already, Temple of Doom has been a success for the Com-

modore 64/128 and others. Now it is available for the Amiga. The game consists of three parts, each loosely based on movie scenes. In the first section you must free a certain number of children prisoners while trying to find the mine tunnel entrance.

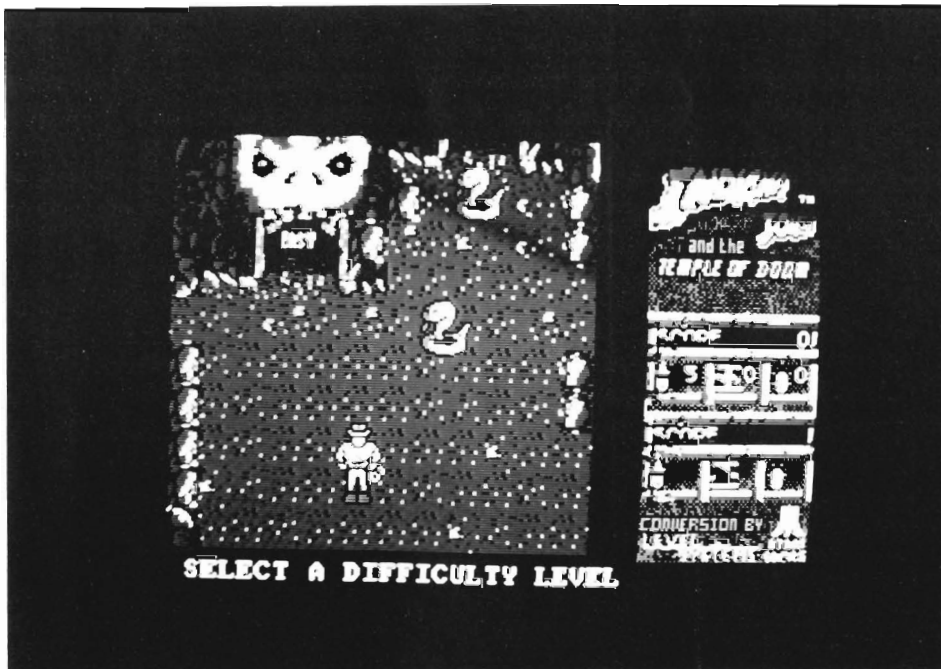
The real action, however, takes place in the maze-like caverns under the palace.

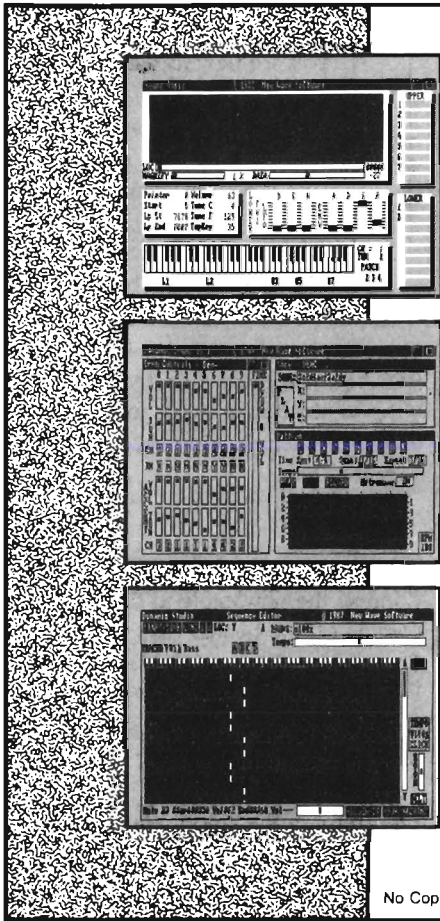
The screen shows a third person view of Indy with his whip at his side. You move Indy with the joystick and snap his whip with the trigger button. In addition to being a weapon, the whip can be used to grab a support and swing to another section of the caverns. As usual, there are some hazards to keep you from your mission. There are guards, bats, snakes, and other enemies at higher levels. Most adversaries can be destroyed with the whip, but others are only temporarily stunned.

After entering the mine tunnel, Indiana Jones moves to the second leg of his mission. This part takes place while riding in a rickety mine cart to the Temple of Doom. The hazards here include: broken tracks, guards in mine carts, burning oil drums, and finally, dead ends. The joystick enables you to switch tracks, lean the mine cart to one side or the other (to avoid obstacles), and to use your

(continued on next page)

As Indiana Jones, your whip is your main weapon





Sound Oasis

\$99⁹⁵

The internal sound capabilities of the Amiga are better than that of any other personal computer. These capabilities mean nothing though, without quality digital sounds, which up till now have been scarce. Sound Oasis gives Amiga owners access to a large library of studio-tested digital samples, by using the Amiga's built in disk drive to read disks made for the Mirage Digital Sampling Keyboard. Sounds can then be played from a MIDI keyboard, the computer keyboard, or saved as an IFF standard file. Mirage is a trademark of Ensoniq Inc.

dynamic drums

\$79⁹⁵

Transform your Amiga into a professional-quality drum machine with this software package. Easier to use than hardware-based drum machines because everything is displayed graphically on screen. Enter drum patterns quickly and easily in real time with visual feedback and editing. Create realistic drum tracks with any of the 100 drum and percussion samples that are included or use your own unique IFF one-shot samples. Dynamic Drums also has full MIDI implementation and even becomes velocity sensitive when triggered from a MIDI keyboard.

DYNAMIC STUDIO

\$199⁹⁵

A powerful MIDI sequencer that takes full advantage of the Amiga's sound, graphics, and sophisticated user-interface. Dynamic Studio is perfect for professional applications due to its sophisticated editing capabilities and SMPTE support. It is also ideal for home studios, because in addition to sequencing MIDI instruments, Dynamic Studio has a built-in drum machine, and the ability to playback instruments translated with Sound Oasis.

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whip. The cart's speed can also be controlled. When Indy makes it past the mine tunnels, another challenge awaits. He needs to make his way around the outside of a lava pit, use his whip to swing to the center "island," and retrieve the sacred stone. This section of the game operates much like the first. The joystick control as well as the adversaries are the same. The last obstacle keeping Indy from his goal is the trap door. The floor directly in front of the stone opens and closes to reveal the hot lava below. You must time Indy's movements so that he can get the stone without falling in.

All three of the sections in the game must be completed three times (there are three stones), and each time is more difficult than the previous. For example, conveyer belts and lava pits

are added to the first level, and the second level has a longer track. After the third time on the last level, comes the bridge scene. Here, Indy must cross a rickety suspension bridge while dodging fireballs created by the evil high priest. After completing the mission, the game moves to the bonus round, which continues until all of Indy's lives are used up. Bonus points are gained in the caverns by destroying a "golden statue" which moves from place to place.

The Temple of Doom has a few good points. The mine cart scene is quite enjoyable and challenging with a fair variety of paths and obstacles. It also has decent graphics which appear three dimensional. Unfortunately, the remaining portions of the game are not nearly as satisfying. The graphics and

sound are both below average for the Amiga. Animation as well as joystick response is slow and jerky. The game also becomes too repetitive after completing the relatively easy goal. Overall, I cannot recommend The Temple of Doom except to the most avid Indiana Jones fans.

Indiana Jones and the Temple of Doom

Mindscape
3444 Dundee Road
Northbrook, IL
60062

(800) 221-9884

Rising Sun of the Lords

12th Century Adventure from Cinemaware

by Tim Kahler

Welcome to twelfth century Japan! Your bitter rivals, the Taira clan, have murdered your father and subverted the emperor. In an epic quest to become SHOGUN, and thus redeem the family honor, you'll command vast armies of Samurai warriors; defend yourself against Ninja assassins; lay siege against mighty fortresses; negotiate alliances, and confront your enemies in personal

combat!" All this and more claims the package of Cinemaware's latest "interactive video" release, *Lords of the Rising Sun*. The game is set in 12th century Japan during the Gempei War. As one of Yoshitomo's sons, you set out to avenge your father, leader of the Minamoto clan's death. By forming alliances with neighboring clans, seeking aid from monasteries, and occupying friendly cities and castles, as well as battling with enemy troops and castles, your empire grows with every victory, and shrinks with every defeat. In *Lords of the Rising Sun* you start by picking one of two brothers; Yori-

tomo or Yoshitsune. Yoritomo is the politician and strategist, while Yoshitsune is the warrior and tactician. Those interested in a strategic game should choose Yoshitsune. Since his warrior skills are exceptional, you may choose not to participate in the arcade sequences.

To the left side of the screen is your banner, consisting of six symbols (Helmet, Clan, Sword, Royal Items, Archery, and Building). Each symbol serves a different function at different points in the game. The second symbol from the top is your army's color; white stripes on black for Yoritomo, black stripes on white for Yoshitsune, red for the Taira, and grey for Ronin (independent generals). Dots on the Ronin's banner indicate which armies they have an alliance with; black dots for Yoritomo, white dots for Yoshitsune, and red dots for Taira allegiance. A gold star at the top of the banner indicates that army's general is Yoritomo, Yoshitsune, or the Taira leader. The Ronin generals have no leader.

You start off at your home castle where you have a choice of reviewing your troops, continuing the march, or entering your castle. Within your council room, you can hire a ninja to assassinate an enemy general, by selecting the banner on the wall for that general. But if he fails, you are forced to commit seppuku (suicide), as the only way to save face. As your general

Surveying the current world status on the map screen



becomes more experienced, your ninjas have a greater chance of succeeding.

After selecting Review Troops, you are presented with your warriors in formation on an open field, with the archers on both sides, and their general at the front. Clicking the mouse button on the general reports the overall strength of the troop. If you have more than one army at a location, you may transfer sword, archery, and sieging skills between each general. Selecting this option displays both armies on the screen, with the generals' names at the top, and their banners on either side. By clicking either mouse button on the symbol of the skill you wish to transfer, one point will be moved to the opposite general. However, the level of skills is limited to the level of the highest skilled general involved. It is a good idea to review your troops before engaging in battle.

Selecting Continue March brings you to the Map screen. A three-screen-wide smoothly scrolling map of the Japan islands showing the nineteen cas-



There's a whole world out there to conquer

ties you must capture to win the game; ten monasteries you may receive aid from; twenty-one cities you can occupy, and the fourteen ports from which you can set sail to or from. Each army is depicted as one man holding a banner. Castles and cities that are under

your control have your colors on a flag atop their roof.

You scroll through the map by holding the mouse button on either of the crane's heads. You can use the up and down arrow keys to center the screen on your monitor. Hitting the ESC key brings you to the option screen, where you may select to save a game, restore a game, continue the game, restart the game, or end the game.

Weather plays a large part in this adventure, with the seasons being displayed across the countryside, and having their effect on the army's ability to travel and fight. Clouds rolling across the islands; waves breaking on the beaches; armies moving down a road; ships sailing at sea; all in real time.

Moving your army from point to point is easily accomplished with the mouse. To obtain detailed information on any building or army, move the pointer over top of the object, and click

(continued on next page)



Lords of the Rising Sun (continued from previous page)

the right mouse button. A window will appear with an image of the selected map area, number of men, image of item selected, its strength, and its name. Clicking on the name will change the display to the next object, if any, and clicking on the general's image will allow you to control that general's current activities.

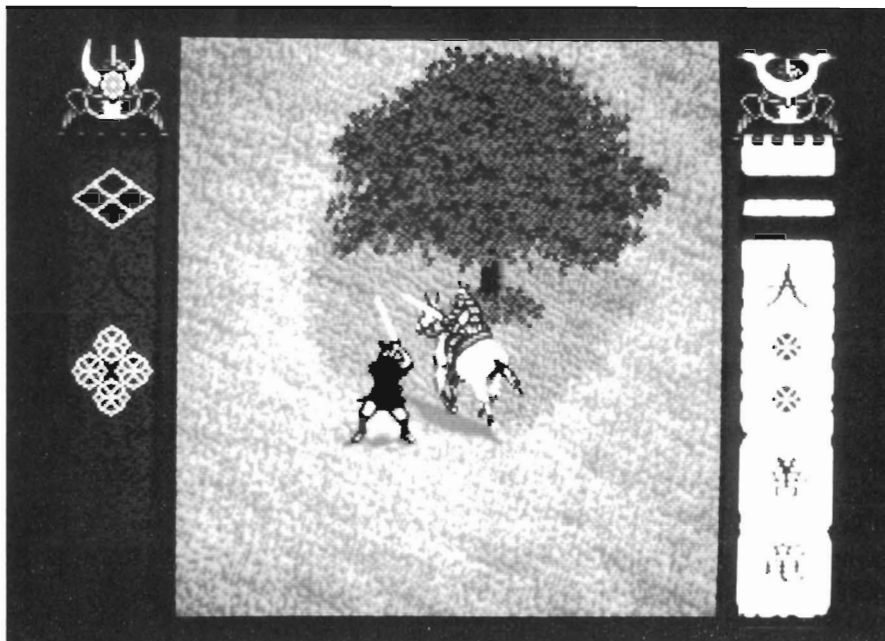
Text appears at the bottom of the map screen, which is used to bring certain things to your attention. The text color indicates what activity is taking place: white for arrivals; yellow for encounters; red for conflicts; orange for a victorious siege; blue for death or defeat; green for victories; and purple for actions of your generals outside of your control. With this color code scheme you can observe activity without

having to read the actual text. Sometimes, however, the text would disappear before I could finish reading it, causing me to spend time studying the map to discover what transpired.

Once an encounter occurs, select the area with the mouse; if more than one army is at the location, select the general you want in charge first. You will then see a screen with both armies at opposing angles, with their banners on either side. Sound the horn to charge into battle, using the mouse to position your warriors and archers for the best attack. If, however, you feel the tide turning, sound the horn again to select retreat. If the enemy general sounds retreat, clicking on him will allow you to

ride on horseback after him, cutting down the enemy soldiers that stand in your way. After killing enough of his warriors, you will catch up with the general himself, but be careful of the trees and rocks that block your path. After a long campaign, or a poor one, it is a good idea to resupply. Stop-

Battle is a way of life in this 12th century Japan



ping at friendly castles, cities, and monasteries replenishes strength. Stopping at castles under your control allows you to obtain more men.

During your campaign you are constantly in search of Imperial Regalia. Possessing any of the four items will increase your leadership skill. The Sacred Scroll; the Sacred Sword, the Shrine of Hachiman, and the Princess. Yoritomo begins with The Shrine of Hachiman in his possession.

During the game the enemy will attempt to siege your castle. At a window you stand ready with a bow, to shoot enemy attackers which attempt to scale the walls. The more you get,

the less your samurai will have to defeat in the courtyard below.

Always be alert for ninja attacks. Your enemy generals may attempt to defeat you by assassination rather than on the battle field. Standing in the hallway, you defend yourself by deflecting shirikens with your sword. If you can hold off the ninja long enough, one of your men will come to your rescue.

Winning the game takes time and strategy. Mastering the eight arcade sequences is not necessary, but won't hurt either. It may be easier for beginners to select Yoshitsune as their general, as you won't have to partake in the arcade sequences, and you can concentrate on just your strategy.

Remember that the Taira are always busy, and usually up to no good. Visit the emperor, he may give you aid if he feels you are worthy. When you encounter an army on the battle field, always attempt to form an alliance, you may just change their allegiance. Build up your army before attempting to battle the Taira in their own territory. When traveling long distances, remember to go by sea, as it will save you time and supplies.

It's obvious that the brainchilds at Cinemaware took a great deal of time, energy, and resources to develop this computer-movie. The graphics are above standard, as always with Cinemaware products. Music in the game was in the oriental fashion, and placed

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at points which helped emphasize the game's theme. The sound appeared to be digitized, being very clear and clean in quality, from the wind used at the map screen to the screams and cries heard during battles.

The game comes in a brightly colored box, with the cover artwork crafted in the traditional Japanese style. Inside you'll find two disks, accompanied by two manuals, and a registration card.

The (untitled?) manual contains a history of the events that led up to the Gempei War; tips on certain activities; a map of the Japan islands, listing each castle, city, monastery, and port by name. It goes into detail on "The Way of the Samurai", "The Soul of the Sword", "Heroes of the War", "Ninja Assassins", "Seppuku", and "The Shogun". The last page contains a list of

suggested books for those of you interested in learning more about Japan's history, culture, and customs.

The second book (Player's Guide) starts with instructions on making backups of the second diskette (the first one is copy protected) Floppy users should make extra backups of the second disk, as it is the game save disk. This game can be installed on a harddisk system. Finally!!). Also, the more memory you have, the more of the game it loads into it, reducing drive access time to a minimum. It explains each option in detail, giving graphic representations where necessary. Examples and tips are scattered through it's pages. Listing what mouse controls do what on the back page.

Something that I would like to see (in their next release maybe?) would be a preferences screen where you could adjust the use of sound, music,

and the delay of displayed text and "click to continue" messages. Also a reference card would have been extremely useful. Overall, I feel this is an excellent choice for those arcade and strategic game fans. I found myself ignoring the time of night, only wanting to keep playing. This is a top quality game that you could use to show what Amiga entertainment software can really do when friends come over.

Lords of the Rising Sun \$49.95

1 meg of RAM required

Cinemaware

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Test Drive II: The Duel

"Test Drive" returns with a new Collection of Cars and Action

by Mark Koci

Get out your Italian racing sneakers and driving gloves. Cinch down your seatbelt and get ready for high speed action on two-lane black-tops. Accolade has put together an impressive new driving simulation in The Duel. This follow-up to Test Drive goes one better by putting you in the driver seat of either a Porsche 959 or Ferrari F40 and a variety of highways with long straights and

winding curves. This combination is sure to unleash the teenager in anyone.

Once you've booted the disk sit back and let the demo take you for a ride that will quicken your pulse and set your adrenals pumping. Wow! You can't wait to get your hands on the controls of one of these beauties, but you'll have to cool your jets for just a few minutes. There are a few things that have to be done before you can take to the road. A set up screen appears with six choices, two of which are not used at this time. First choice is what car will you drive. Next

which car will compete against you. Finally, is it the computer or the clock that is the motivating factor. Once these selections are made a skill level screen appears with 12 levels of expertise. These range from "rookie" with auto shift to "pro" which unleashes the full fury locked within all the driving elements. When all selections are done it's time to burn rubber.

Joystick controls are the same as in Test Drive with the ability to accelerate, accelerate and turn, brake, and brake and turn. Press straight up for speed or straight down to brake. Push the stick straight left or right to turn in that direction. Press up and left to accelerate and turn left or down and left to brake while continuing to turn. Learning when to use the diagonals is the secret to the Duel. To shift, accelerate and press the fire button. Other controls include a pause control, toggle for music, toggle for sounds, and key combination to return to the set-up screen.

It will take several sessions to master these controls, so I recommend that you begin with the autoshift levels and time as your only opponent to gain confidence and comfort. This will give you a little less to think about until you get a handle on these high performance machines.

The designers of the Duel have programmed the Porsche and Ferrari with

This Corvette is boasting some impressive specs, but can it perform when it counts?

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Torque @ rpm, lb-ft:	370 @ 4800	1/4 mile:	12.8s
Transmission:	6-sp manual	@ 111mph	
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Tires:	Goodyear Eagle,	lb/Bhp:	9.1
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Graphs: SPEED (MPH) 0-5, 10-4, 20-3, 30-2, 40-1, 50-0; ACCELERATION; TIME (SECS) 0-5, 10-5, 15-5, 20-5, 25-5, 30-5, 35-5, 40-5, 45-5, 50-5

many of the same characteristics as their original engineers did. These vehicles stick to the road like their real-life namesakes. Handling is prototypical, recalcitrant at low speeds, but with increased speed there is just a touch of oversteer and only slight corrections are needed to change lanes or negotiate a tricky "S" curve. The gearboxes are close ratio and with the sure tires and braking make for interesting passing situations in traffic.

A great improvement over Test Drive is that the steering returns to center unless the stick is held over left or right. I also found that leaving the gear shift lever visible is very helpful during panic stops when multiple down shifts are needed to aid in slowing. This also lets the driver know how much top end is left and therefore how hard to push the throttle.

Cockpit layout is similar to Test Drive with full instrumentation including functional fuel and temperature gauges. The radar detector lives on the sunvisor and the rearview mirror lets you see where you've been. Two additions are a stopwatch and a countdown trip odometer.

Not actually part of the cockpit but part of the display are three dots moving across the top of the screen. Red is you, in the lead at the start. Blue, the computer opponent, if you have accepted its challenge. And the cops appear in yellow when provoked by your driving.

When the inevitable happens and the law is hot on your heels, there are three avenues of recourse: 1) be a good citizen, stop and get a ticket, (but the clock and your competition are still running); 2) downshift and punch it to make tracks; 3) run him over. Choosing the latter evokes justice however: the game ends.



Test Drive II now supports touring by way of the California scenery disk

The game length is determined by how good a driver you are. You get five lives to use and destroy as you see fit. One life is added each time you stop at

a gas station. Lives are lost for crashing, blowing an engine, or running out of gas. (When you crash, the front end of your car crumples, and the

With all this realism, you would expect that the highway patrol would not be far behind



(continued on next page)

Test Drive II (continued from previous page)

windshield cracks, but there are no gory sounds of effects). Along with the loss of life, twenty seconds are added to elapsed time. Use all your lives and the game is over. Take heart, however all you need to be reincarnated is the fire button.

At the end of each tour a score screen with vital statistics appears. Included are: your time, your average speed, your score, and the best of each category. Shown on the same screen are overall performance stats. Do well enough and you can add you name to the Top Gun list.

The experience of the Duel is substantially different from Test Drive. Head to head competition with another "hot car" combined with the incredible speeds possible on the highways make this one much more of a drivers challenge. As in Test Drive, realistic sound

is a major part of the experience. The scenery is detailed and colorful with a choice of mountain, desert and country. With so many skill levels to add to the challenge, it will take weeks to master the course unscathed.

Eventually though, you may have your name plastered all over the "Top Gun" screen. You're ready for new challenges or perhaps the scenery is just becoming boring. Acolade is ready for you; take the California Challenge. This additional scenery disk adds seven new roadscapes along 600 miles of California countryside from the Oregon border down to Mexico.

Maybe your cars are losing some of their excitement. Then, it's time for The Supercars. This additional disk gives you the choice of five of the best muscle cars of the Eighties. They are: the '88 Lotus Turbo Esprit, Ferrari

Testerossa, Porsche 911RUF, '88 Lamborghini Countach 5000S, and the '89 Corvette ZR1.

Selecting either of these add-on disks is controlled from the set-up screen. When using either of them you will experience a lot of disk swapping. This quickly gets annoying but fortunately there is an alternative that gives your eject button a rest; making a Play Disk. Making one or more of these allows you to put together your own racing dreams with two cars and one set of scenery per disk. Although a play disk will save you time and interruptions when it comes time to play, initial set up is a little taxing. For those of us that tend to be slightly computer illiterate, the instructions for these proceedings are ambiguous and will cause no little frustration and

(continued on page 63)

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Future Touch

Run an Amiga Without Mouse or Keyboard?

by Walter Steuber

Every Amiga offers two methods of interacting with the computer; the keyboard and the mouse. It usually takes a few hours to get the hang of making selections, operating programs, and copying disks with mouse movements, but once mastered we just hate to have to resort to our typing skills. A few lucky Amiga owners have added a graphic tablet as an alternative input medium which is particu-

larly suited to CAD and graphic applications, and of course many of us use a joystick for games. For the past few weeks I've had the pleasure of testing a very unusual input device—a touch sensitive monitor called FutureTouch.

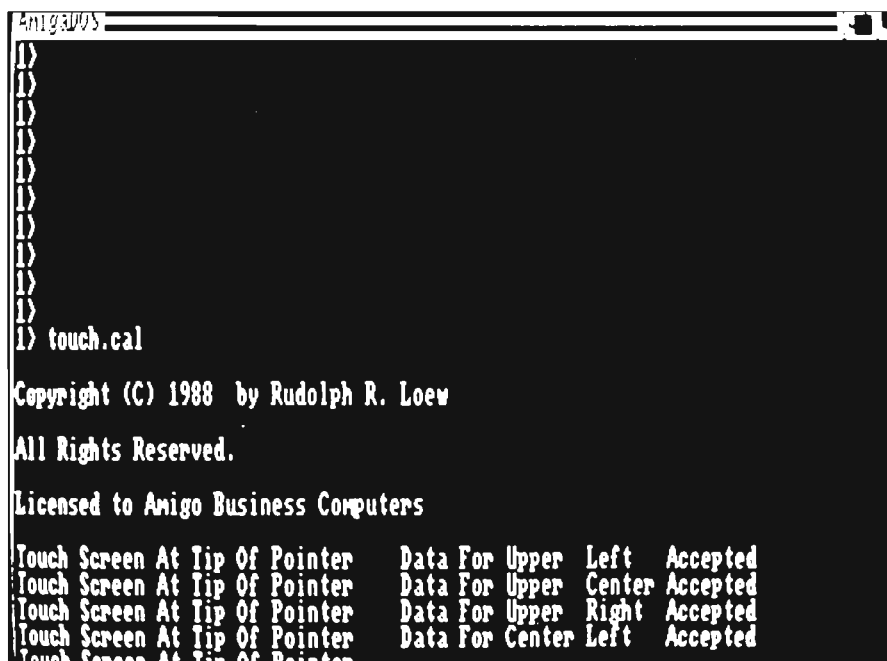
With a TouchScreen, you can start up a program by TOUCHING its icon instead of clicking on it. Then, while the program is running, you can interact with it by touching the screen any place the mouse would normally be clicked. This simple operation may not sound like much, but a touch-screen opens up an entirely new area

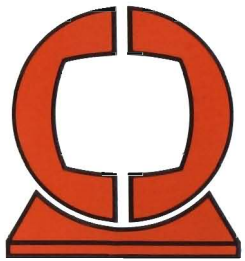
of use for the Amiga. It can now communicate with people who do not share our fascination with computers; people who fumble with a mouse and hate a keyboard. The wonderful graphics and sounds of the Amiga can be used to tell them things and to ask them things without those unnatural interfaces getting in the way.

TouchScreen for the Amiga is brought to us by FutureTouch. The device itself is a thin, curved, glassy surface that is installed directly over the regular monitor's screen. You will not see it while the monitor is running. The display and monitor housing look the same as ever. Only when the monitor is turned off can you notice a slightly different sheen on the surface. Look behind the back of the monitor and you can see how it works. An additional cable reaches out to take the TouchScreen's information to the serial port. A short command is placed in your startup-sequence to prepare the system to accept "mouse" input from the serial port. This activates a driver program which has been copied to your SYS: disk.

The touch screen sends signals when there is a change in capacitance on its surface. This change is caused by the touch and removal of a finger. The location of the touch is determined indirectly by "reading" the current position of the video beam from the
(continued on page 46)

You set up your screen by touching the various points as specified





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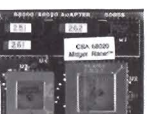
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Amiga's display circuitry (The same technique is used in light pens).

Touch screens are not new in the broad world of personal computers. Hewlett-Packard brought out a touch com-

puter a few years ago and the Plato system has used a touch screen for years.

There are several touch screen equipped monitors available for IBM PC's too. What Amiga brings to the

game is razzle-dazzle sound and graphics that raise interactive computing to a whole new level.

Once you connect a touch screen equipped monitor, your keyboard and mouse continue to work the same as before, so you can operate Amy and not even realize TouchScreen is there. As soon as you touch your monitor however, the mouse pointer jumps to that spot exactly as if you had moved the mouse there. Promptly lifting your finger off the screen has the effect of clicking the left button. A delayed removal of the finger leaves the pointer there, but does not act like a click. Double tapping on the screen has the same effect as double clicking the left button. If you touch the top of the screen, drop-down menus appear as though you had pressed the right button. A menu can be selected with your finger on the screen just as you would expect--slide down to your choice and then take your finger away. You can easily place the pointer, after a little practice, to within a couple of pixels on the screen. The driver software averages the area of your finger and the pointer goes to its center. (If you touch with two fingers, the pointer goes to a point somewhere between them.)

When you first set up the TouchScreen, you should run a calibration program that places the pointer at various places on the screen and prompts you to touch it. The screen then adjusts itself and defaults are set and saved so that future sessions will begin with your screen tuned to your touch!

It is child's play to call in DPaint, for instance, and do some fingerpainting without ever touching either keyboard or mouse. That is not, however, using the real power of TouchScreen. What we see in this new technology is a way to present information to the GENERAL PUBLIC using an Amiga. Shop-

Future Touch (continued from previous page)

pers or visitors to a museum would see just the monitor. On the monitor is an attractive array of icons, but it is apparently devoid of all peripherals. No keyboard in sight. No mouse, not even the computer itself. If anyone steps up and touches one of the icons, the display immediately changes to something appropriate. It might be a map of the local subway system with directions being spoken in French. A different icon might show where the restrooms are. The monitor station might be in a museum to relieve the demands upon guides. It might be in a supermarket to tell customers where the current specials are located. Disney's City of the Future, Epcot, already uses touchscreen computers in this way. Whatever the application, the sound and graphics capabilities of the Amiga can be used to make this a tremendous addition to modern, hi-tech living.

Although existing software can be run using TouchScreen, its special character will only be realized when specific programs are written for it. AmigaBASIC is well-suited to writing programs for TouchScreen; its mouse-oriented commands work fine when touch replaces mouse. (Statements asking for keyboard input, naturally, are inappropriate when there isn't a keyboard even connected to the machine. It takes a little writing-around when you want to ask the user to name a particular file or enter a special number, but that's the only limitation we can think of.

I have found that 'The Director' from the Right Answers Group is even better-suited than AmigaBASIC to writing these special programs. The Director is a dialect of BASIC that has added some commands to make it especially easy to manipulate soundtracks and graphics. Digitized voices and sound effects can be readily incorporated into the action. Images made

with DPaint or DigiView are just as readily incorporated. Animations made with VideoScape or DPaintIII likewise.

In writing a TouchScreen program that is to cycle forever, about the only restraints are one's imagination and the size of the computer's memory. The Director is set up to make economic use of memory but even so, sound and graphics files demand a lot of space. Writing for TouchScreen is a game of getting the maximum content into available memory.

A typical Director script using the TouchScreen might flow like so:

```
..Display an Introduction Screen
..Dissolve to a Picture with three colored areas.
..Speak "Touch the RED box to see ....."
..Speak "Touch the Blue box to see ..."
..Speak "Touch the Yellow box to hear ..."
..Wait for mouse input
..If mouse coordinates are X, Y then display Picture
..If mouse coordinates are P, Q then play Animation
..If mouse coordinates are A, B then play Music
..Else return to speak.
```

This crude example doesn't do justice to either the Director or the touchscreen's possibilities but shows the simplicity of the concept. I found working with the TouchScreen and the Director one of my most enjoyable Amiga experiences this year. The unit is simple to install and dependable in use. The only "tricky" aspect to touch control is not to press and leave your finger on the screen, just tap to provoke a response.

Although there aren't many individual computerists who will have an immediate need for a TouchScreen, this is a beautiful vehicle for reaching the rest of the world. The A500/TouchScreen

combination could offer schools, museums, and retailers four or five individual systems with stereo sound, extensive graphics and real computing power for less than they might spend for one PC similarly equipped. Future-Touch lets us look on the Amiga as a new means of general communication instead of as a complex tool for specialists.

Future Touch Systems

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Dynamic Studio v3.02

The Latest Incarnation of New Wave's MIDI Package

by Tom Bucklin

A little over a year ago I introduced you to a program called *Dynamic Studio*. It was unique in its approach to the handling of MIDI, and included features specific to Dynamic Studio

Well, I am happy to report that there is no need to replace my adjectives because New Wave has recently introduced Dynamic Studio v3.02 that goes far past their original effort. As a mat-

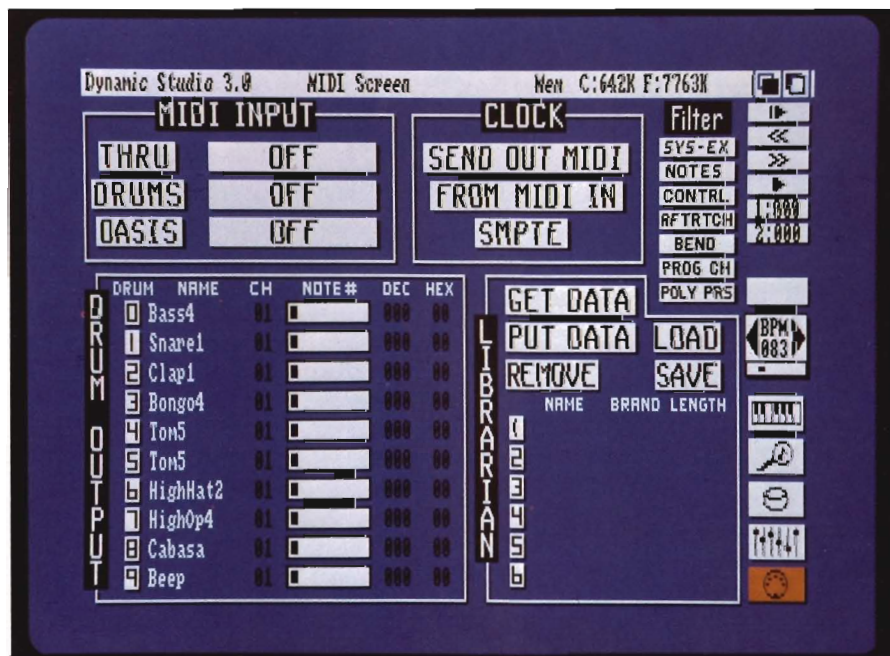
ter of fact, it has undergone what can only be described as a complete overhaul, yet maintains features that distinguish it from others in the same vain.

New Wave became well known for their Dynamic Drums program that arrived fairly early on the Amiga scene. By making the most out of the Amiga's internal sounds, they have gone on to create a sophisticated software-based drum machine with features like "human randomizing" of the Amiga drum samples' velocity for that "real drummer" sound. Dynamic Studio was obviously an extension of that

learning process. There are, however, several important features that stand out in the evolution of Dynamic Studio in versions 3.0+. Some of the more significant ones are:

- * A newly designed interface with 5 dedicated screens incorporating large icons for easy access
- * Fully responsive and tunable drums
- * A full screen editor window for creating drum patterns
- * Mapping out capabilities from the software drum machine allowing you to use the Amiga to create and store your drum patterns, then drive an external drum machine of sound module through an Amiga MIDI interface.
- * Assignable drum notes and channels so that compatibility with many different types of external modules can be achieved
- * Auto-quantizing in record mode
- * Regional editing allowing you to perform editing functions on a portion of a track

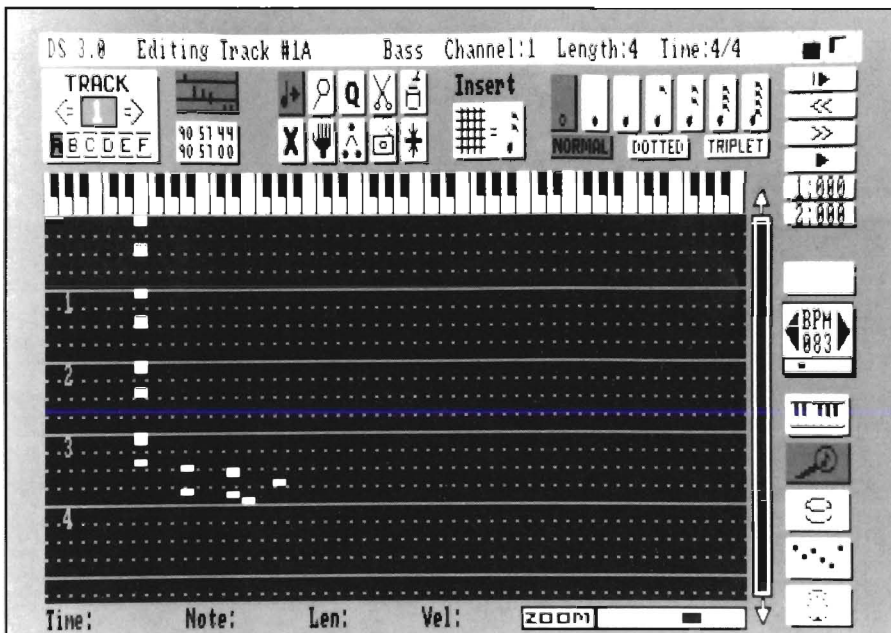
Dynamic Studio's new and improved MIDI screen



feel. The choice to go to dedicated screens for functions in version 3.0 was probably a wise one. This is because unlike some other programs that bring up screens that represent a slice of the greater picture, there is generally a lot of control capability contained within one of Dynamic Studios screens. For example, from within the MIDI screen alone, there are controls for some 40+ functions.

Of course, the most obvious feature that sets Dynamic Studio apart from other programs in this realm is the integral software based drum machine. Designed originally for exclusive output via Amiga IFF or SMUS compatible samples, the drum section has gone on in version 3.0 to provide support for MIDI output (in earlier versions, support was provided for the ability to trigger Amiga samples from an external drum machine). Also, the drum section has been split into two full screens for pattern editing and mixing. The pattern editing screen is where you do your drum song creation and editing, while the mixing section allows complete control over drum sample selection, volume and tuning, and randomizing. Also, over two hundred drum samples are included on the disk to get you started.

Dynamic Studio is also one of the few Amiga sequencer programs that gives you the choice of either graphic or event approaches to editing. This is important because there are those computer-shy musicians that find the whole concept of the event list a nuisance. From within the graphic edit mode, operations like insert, edit, quantize, and duplicate are easily accomplished by means of pointing and clicking. Graphic editing also establishes a musical view of the MIDI information which is a far less abstract arena than that of event list editing. However, even using the event list



Dynamic Studio is one of the few sequencer packages for the Amiga to offer graphic editing capabilities

form of editing has been optimized by utilizing a full size editing screen that allows for more complete text description of the events. Responding to a definite need, version 3.0+ now includes the ability to perform "regional" editing. With this feature, you can effectively define the range of a track that is to be affected by the editing operation.

One other unique and exclusive trait about Dynamic Studio is its built in support for New Wave's Sound Oasis. For those unfamiliar with this innovative product, it allows you to load sound files from Ensoniq mirage disks and convert them into a format usable within the Amiga as internal samples. By activating the Oasis option in the pull-downs, Dynamic Studio will automatically start the Oasis program (a separate product) in a multi-tasking environment.

The main sequencer in Dynamic Studio is capable of recording up to 16 distinct tracks divided into six "divi-

sions" each. In practical use, these divisions many times become the various sections of the song (i.e. chorus, bridge, etc...). Support for quantizing, controller scaling and time shift of your track data is available. The integral librarian included in Dynamic Studio is very basic, and only provides for storage and naming of Sys-Ex Data. Nevertheless, it is desirable to have a place to store and load your synth's patches without having to invest in an extraordinary supply of ROM and RAM cards.

All in all, Dynamic Studio easily qualifies as one of the most updated programs that I know of. Coupled with a reasonable, ongoing, upgrade policy, Dynamic Studio continues to evolve into a very useful MIDI tool.

Dynamic Studio v3.02 \$199.95
New Wave Software
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BAAL

Lead the Time Warriors to Destroy the Dreaded BAAL

by Anthony Bevivino

The stone was covered with strange evil looking hieroglyphics depicting horned monsters, massive toothed demons, mutants of all shapes and sizes. In the centre of the stone was a single word 'BAAL', it stood out from the surrounding filth like a pus filled sore. I thought it looked like a massive door, but to what chamber?"..... I watched in horror as the stone started to move. It began as a low rumble, and

then stale air erupted from the uncovered hole. The men died where they stood as BAAL rose through the mayhem firing at anything in his sight. As the dust settled he seemed to survey the area like an evil general after a battle pleased at the carnage before him.

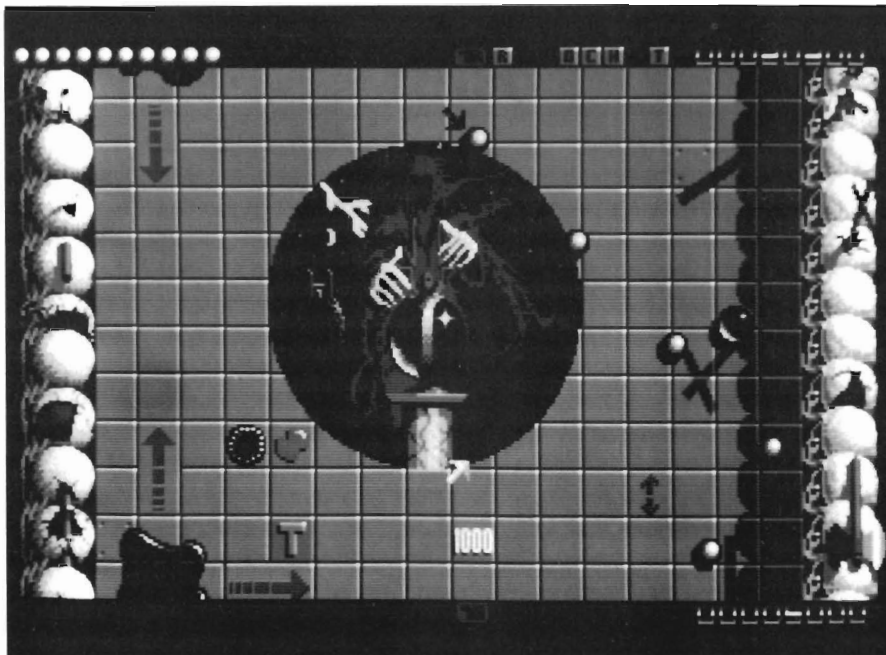
Even now, his army of undead were stealing the thing he'd come back for-- a top secret War Machine with which he could rule or destroy the world. He sneered, "When we meet again, I will be your master. At last the world will be mine. That all happened three days ago, events have moved fast since

then. A war council has been set up and an elite squadron of men, code named the Time Warriors, have been formed-- their mission to find and destroy BAAL and return with the War Machine."

In BAAL, a new game from Psygnosis, YOU are the commander of the Time Warriors. It is your mission to destroy BAAL and bring back the War Machine before it is too late. There are three realms in BAAL, and you must collect all of the pieces of the War Machine scattered in one realm before you move to the next. You are armed with a powerful laser with four modes, only one of which works until you find power cartridges. You must guide the Time Warriors through many perils such as monsters, demons, mines, and deadly falls, until you have completed your mission. Destroying BAAL will not be an easy task, but YOU are the only hope all of mankind has; you must not fail!!

BAAL is primarily a graphics action game and as such, the graphics are of utmost importance. In my opinion, this game has some of the best graphics of any Psygnosis game. BAAL is done in the same style as the other Psygnosis games, Barbarian, Terrorpods and Obliterator, but has much improved graphics. The detail in this game is astonishing, not only are the characters and monsters detailed, there is also an ever-changing intricate back-

A mysterious character watches over you from center screen

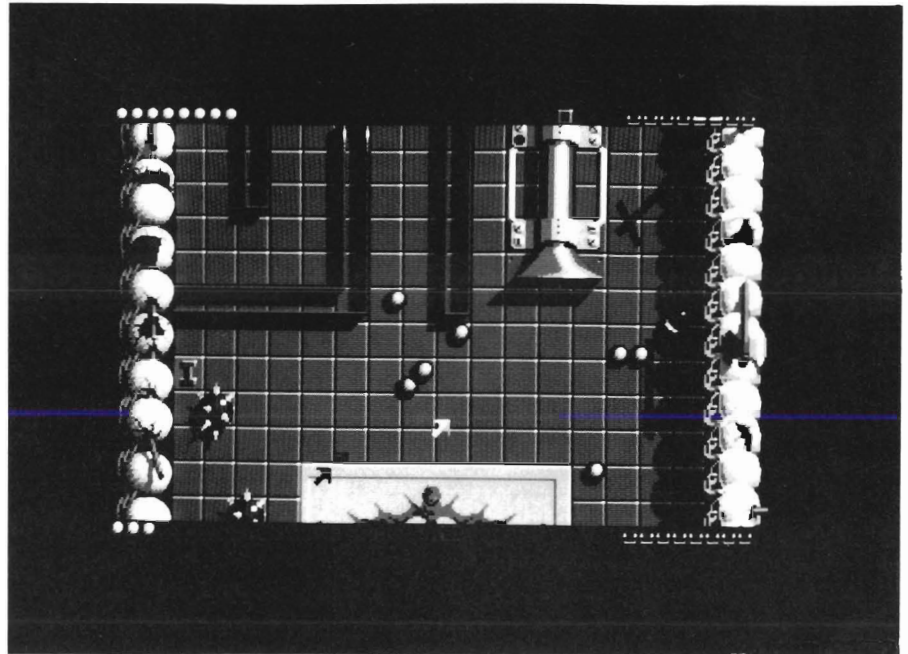


ground to the adventure. The style of graphics used is not standard, but those familiar with Obliterator will recognize it. The colors used are bright and crisp, and make it both interesting and pleasant to watch the screen for long hours of gameplay.

Complimenting the excellent graphics is a good animation system. While not perfect, the animation schemes used are a great improvement over older games by Psygnosis. Anyone who has played Obliterator or Barbarian is uncomfortably familiar with the slow-motion effect that results when too many objects are on the screen. While this problem has not been fully eliminated, it has been corrected to the point where it is acceptable and barely noticeable.

The sound in BAAL is somewhat scarce, but again, this is a trademark of Psygnosis games of this type. The sound effects, such as laser fire, explosions, and death screams, are very well done, but the game does not have continuous background music or even a great amount of special effects sounds. While some game players may feel this detracts from the game, it did not matter much to me. I was satisfied with what sound there was, probably because of the quality it had. I was also very impressed with the eleven minutes of music at the title screen, this is a nice piece of work!

The true test of any action game is its gameplay, and in this area BAAL is ahead of the pack in many ways. The first few screens are extremely effective in getting the player involved, and have some of the most enjoyable sequences. As the game progresses, level of difficulty increases, monsters become more frequent and more powerful, and the realm becomes more confusing. I enjoyed myself thoroughly in the first few hours of the game. My



only complaint is that the game becomes too difficult. Many may disagree, but I feel that mapping became necessary, and in an action game, who wants to stop and map? The realm became a confusing maze that soon had me frustrated and lost, and this element, which I enjoy in adventure games, has no place in BAAL. I also dislike the method of combat used in BAAL, it is the same method used in the other games previously mentioned. Monsters appear in select places, and combat is rather dull. While these criticisms may seem large, they are really just a small part of the game, and do not detract much. Overall, gameplay in BAAL is very good, and it is a fun game to play.

BAAL uses a standard, disk-based copy protection scheme, but I did not find it particularly offensive. I was extremely pleased when my disk drive was allowed to run smoothly and not make any noises it was not built to make. I was also surprised with the speed in which BAAL loads, and it seemed that the copy protection did not slow down the game in any significant

way. The documentation of BAAL is simple but well written. It contained a very interesting introductory story, and then went on to give clear instructions on how to play the game. On an interesting side note, the documentation of BAAL has a notice on the cover which guarantees that the disk is free from a virus. While I am glad to see this guarantee made, it does reflect the degree of seriousness that the virus issue has attained. Let's hope that virus' can be someday "cured" permanently.

All in all, BAAL is a very good game. It has great graphics, as well as good sound. It excels in gameplay, and these elements combine to give a top-notch game. If you enjoyed Obliterator or Barbarian, then it is almost a definite you will like BAAL. I highly recommend this game to those interested in a challenging, enjoyable and well-written graphics action challenge.

BAAL

Psygnosis Ltd
122 Century Bldg,
Tower St. Brunswick Business Park
Liverpool, England L3 4BJ

Who! What! When! Where!

Get Organized with this New Schedule/Planner Assistant

by Steve Dock

Any product with a title as catchy as Who! What! When! Where! (WWWW from now on) had better be a cut above average. WWWW is a new calendar/organizer from Blue Ribbon Bakery. (Another clever title). It promises to be a "simple yet powerful way to organize your life." Although it seems that I do spend at least half of my life in front of a computer, I doubt that any software can help or-

ganize someone who doesn't want to be organized. WWWW is the latest in a line of products which includes Gizmoz Calendar, Word Perfect Library's Calendar and NAGG.

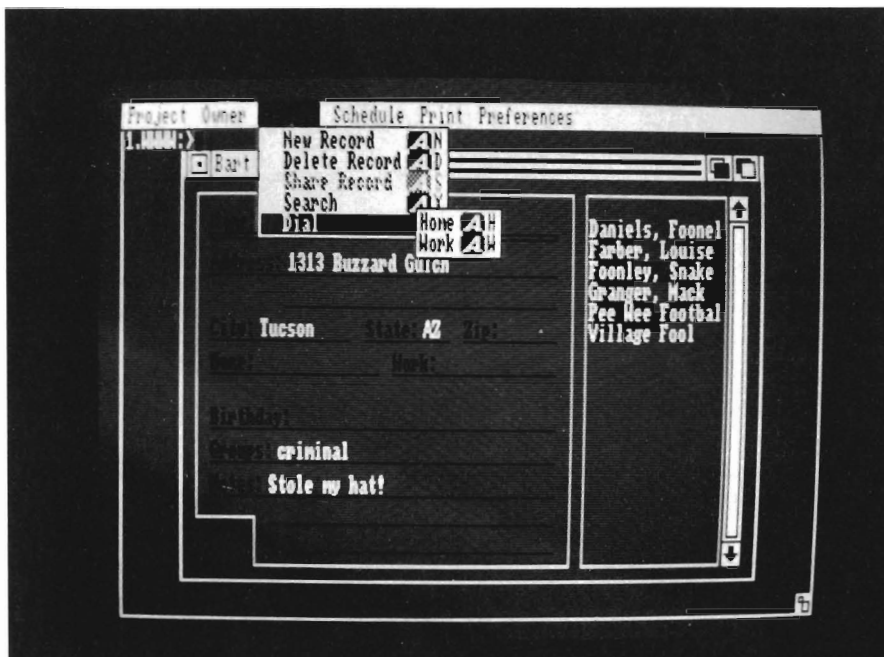
The idea is very popular in the MS DOS world as a part of Boreland's Sidekick... Your computer should be a ready repository of names, dates, appointments, and things to do. At the press of a key you should be able to search for a name, list today's appointments, or schedule a meeting. WWWW includes these functions and goes a step farther by reminding you

of appointments visually, or with sampled IFF sounds. The WWWW package consists of a sturdy plastic binder, one disk and a 53 page booklet-style manual. The manual is professionally printed, includes a table of contents, index, tutorial chapter and several attempts at humor. In short, the documentation is first class. The program is not copy protected and in fact must be copied to your everyday WorkBench in order to function.

The first time you activate WWWW either by clicking on its ICON or running WWWW from the CLI, an installation window will appear. To complete the installation process, you provide path and file names for WWWW to store its files and programs. As you finish each step, a large check mark shows that you are done. In a few minutes WWWW has created a file to store your addresses and appointments, a place to store the background timer data, and has installed itself into your startup-sequence. This last step is necessary since the timer portion of WWWW should be running whenever your system is active. If WWWW has to depend on you to start it, you're sure to miss some appointments.

WWWW consists of two executable programs, WWWWtimer and WWWW. At system boot-up, the timer program reads a datafile and searches for any appointments which occur

WWWW's Phone book system



in the current week. These are flagged and WWWtimer stays in the background until the appointed time. The main calendar program WWW, only runs when you execute it. However it too stays resident once started. A small WWW window is always around to help you find that missing phone number.

WWW is prepared to support multiple persons using the same computer. When you have finished installation, the next window asks for Owner information. Each person who uses WWW on an individual Amiga enters his/her name and, if desired, password. Your addresses and appointments won't be mixed with your partner's. The main window of WWW then appears. This is the Directory Window. Each person in your directory can have his/her name, address, phone numbers, birthday, groups, and a note stored. Of course you have to enter all this information initially. This window includes six pull-down menus used to manage the program.

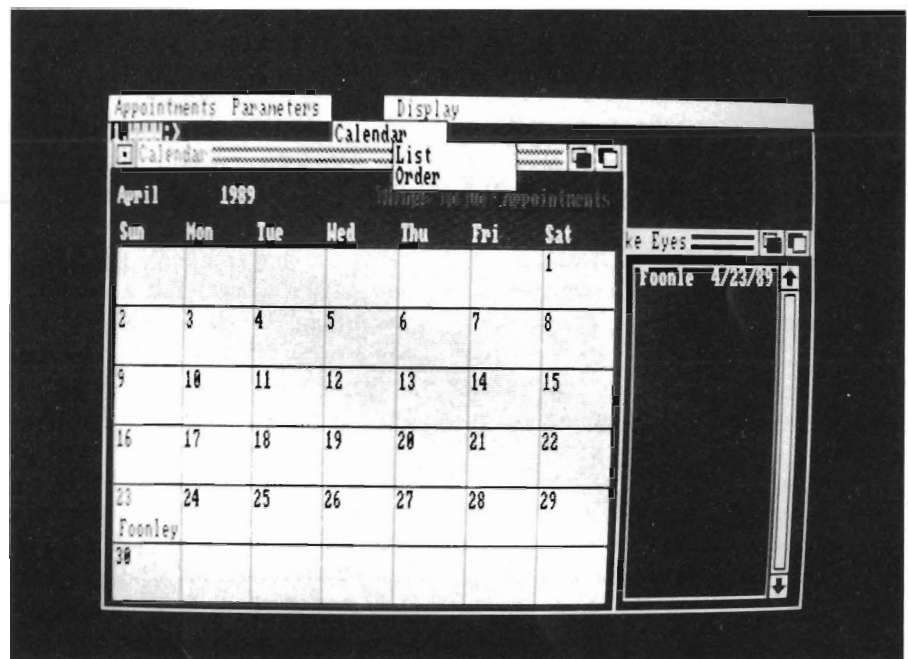
A Project menu lets you load and save directory sets. The Owner menu lets switch to another owner's directory or share data records between you and someone else. The People menu lets you add, delete, change or share an individual record. The Schedule menu controls other windows, eg.; Appointments, Things to do, Calendar and alarm clock. The Print menu lets you produce hardcopy of all or part of your directory, appointments, etc. Finally, the Preferences menu controls how you will be reminded of appointments and whether birthday's will be automatically scheduled.

There are keyboard equivalents for the most used menu functions, including all People and Schedule items. WWW includes a search function to

help you find a person whose name you forgot. Select search and a window will appear which includes the same fields as the directory entry. Type a full or partial name, city or group and WWW will search for a match. Once you find the specific person, you can dial someone's home phone number with a click or press of right-Amiga-H. To schedule an appointment with the currently selected person, press right-Amiga-P and the appointment window will appear with the proper name and

box. (You can select any other month using the menus). The calendar will switch between appointments or things you have to do with a single click. Click on today's date to review the current appointments and tasks, and repeat this for for tomorrow. Now push the calendar into the background. As your day progresses, WWW will alert you to each appointment.

If you are on the telephone and decide to schedule a meeting for next



With a single click on the date of your choice, WWW will display the days activities and appointments

telephone number already filled in. (You can schedule appointments with persons not in you directory by selecting Appointments with Unlisted.)

Once you have built your personal directory and scheduled a few appointments, you will want to begin using WWW on a daily basis. My approach would be to open the Calendar window at the start of each day. This consists of a visual display of the current month with the first appointment for each day shown in the appropriate

week, just bring the calendar to the front and click with the right mouse button on any day. The appointment window will appear and you can enter the name, date and time. The same technique lets you add to your list of things-to-do at any time. Things change, and WWW lets you move an appointment or task to another date with a few clicks. Many kinds of appointments are regular, that is they repeat each week. The calendar screen has a parameters menu which lets you

(continued on next page)

set options for this appointment, or all appointments. The parameter window has two sections. The first determines how far in advance you need to be reminded of an appointment. You can specify weeks, days, hours or minutes. The second section lets you schedule repeating appointments. You can click on weekly, monthly, daily, biweekly, or yearly to quickly set-up a repeating meeting.

The Print Menu is one which an organized person will use often. After all you can't stay in front of the Amiga all day, every day. After you've entered your personal directory and begin using WWWW for appointments and things-to-do, you'll want hard copy for travel or other out of office days. You can use the search command to limit any print request to a particular group or even state. Six different formats are available to assist you. You can print just names and phone numbers, or full directory information. An address labels format can be tuned to number of lines per label, labels per page, etc. with an easy to use window. The calendar options prints the current month with either things-to-do or appointments included. Appointments or things-to-do, print the appropriate list in chronological order. Each of these formats is useful and well designed.

WWWW offers the user quite a bit of flexibility in setting the type of reminder to be used. You can select one or more of Speech, Sound Effect, Bell, and Flash. If speech is chosen, the Amiga voice will be used to speak the appointment. You can select all the narrator parameters including male, female or robot voice. The bell option plays a pleasant bell tone three times to alert you. Of course, Flash brightens the screen to attract your attention. I found that combining bell and flash was effective for me. Using sound effects as reminders is similar to select-

ing speech. The sound must be in standard IFF format, and you identify it using the familiar WWWW file requestor. You can vary any sound's pitch and volume and preview it from the Sound Parameter window. When you are satisfied, WWWW will store the necessary file name along with the appointment. The program disk includes a number of sampled sounds that can be used as reminders including car-horns, breaking glass and explosions. Maybe I'm getting old, but the sound of breaking glass is not my idea of a useful reminder. For you younger folks, Blue Ribbon Software sells another disk of additional sounds with even more variety.

Overall I found the user interface for WWWW well designed and appropriate to the tasks. While I didn't enter hundreds of names and appointments for testing, WWWW seemed snappy and responsive and didn't interfere with other tasks that were running. The file requestors are excellent, menus are logical and keyboard commands are mostly mnemonic. The range of functions include almost everything needed to plan and organize via personal computer. The concept of sharing records and directories is a unique addition which would be very useful if there was such a thing as networked Amigas.

If you use your Amiga regularly and are looking for help organizing, Who! What! When! Where! might be the indispensable tool you've been looking for. Based on the high quality of WWWW, I'm looking forward to other products from the Blue Ribbon Bakery.

Who! What! When! Where! \$99.95
Blue Ribbon Bakery
1248 Clairmont Road- Suite 3D
Atlanta, GA 30030
(404) 377-1514

* Special Upgrade Notice *

We just received a copy of Blue Ribbon's version 1.1 of Who! What! When! Where!. The biggest news in this upgrade is the added support for AREXX. This new feature has been implemented in such a way that you can now have WWWW's timer trigger an automatic AREXX function. Operating this powerful addition has been kept simple, though,

In version 1.1, a new menu item has been added to the list of alarm types in the alarm submenu for the preferences. Selecting "AREXX" will bring up a requestor that allows you to type the name of the AREXX program that you wish to have started. It couldn't be simpler!

Of Course, all of this is contingent on the assumption that you have AREXX running. For the benefit of those of you who are unfamiliar with the AREXX concept, I should explain that simply put, it is a system that allows different programs to communicate and interact with one another. Without belaboring the point, you can quickly imagine the usefulness of such capabilities when used with a product like WWWW. No longer does the program serve as just a reminder of things, but it can, through AREXX, be executing them.

Printing files to disk is now also supported. Once activated, the program will send a formatted text file to the destination of your choice.

All in all, an extremely logical and useful upgrade to WWWW, all in an impressive turn around time for such a significant enhancement. There is \$3.00 charge for purchasers of version 1.0 to upgrade.

Project Master

Management Planning - The Amiga Way

by David Lawrence

The Amiga computer is a machine uniquely qualified for use as a platform for running project management software. Project Master (TM) is a new entry in this field. For those who need a definition, Project Management is the art or science of attempting to complete a specified task "on time" and "on budget." These goals are often mutually exclusive as schedules can be improved by throw-

ing more resources, i.e. money, manpower, etc., at a task. Or alternatively, budgets can be conserved by delaying resource intensive portions of the project until money is available. Project Management attempts to do both simultaneously.

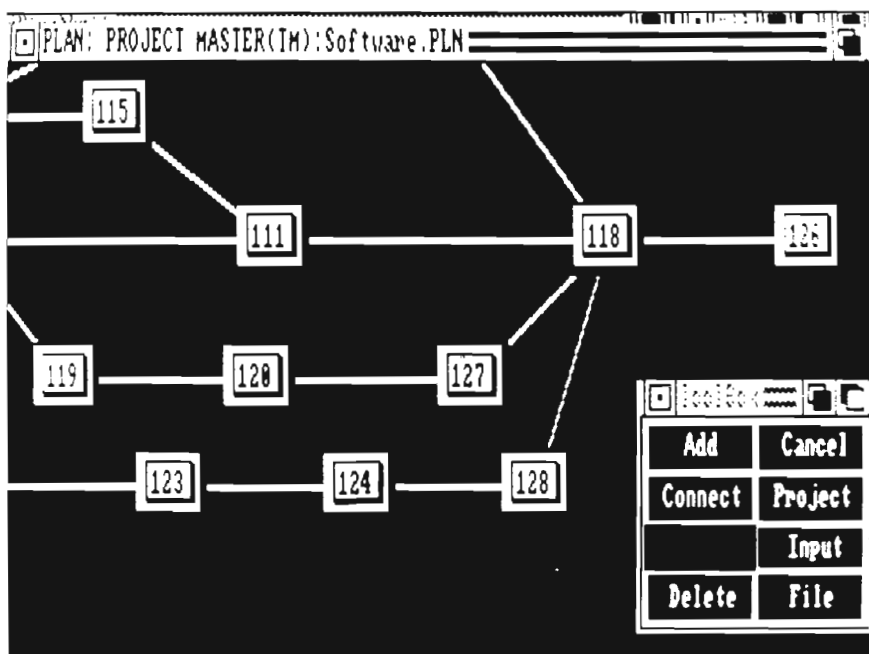
Our technological society has developed new tools to do what could not be done in the past. The construction of a space shuttle or major apartment complex could not be done today without some form of scientific project management. The first of the tools used is the Gantt chart. Invented

by Henry L. Gantt, the Gantt chart is a bar chart representation of a series of tasks and their duration. This is done by use of a time line with each event marked in a sequential manner. The Gantt chart was invented during the first World War and in wide use by the Second. The second tool for project management was developed in the late 50's. The Critical Path Method, CPM, was invented by Dr. John Mauchly, and further developed by Willard Frazer, a consultant for the U. S. Navy on the Polaris submarine project. Frazer's tool combined the concepts of a critical path with a way to estimate the effects of uncertain task durations on a project. His technique was called Program Evaluation and Review Technique, PERT for short. The main characteristic of the PERT program was a flow diagram which displayed the predecessor and successor relationships between the project tasks.

It is not surprising that the two main tools of project management are graphical in nature. Managers often need a way to quickly grasp the essentials of a project, and graphical tools, properly used accomplish this. How does this relate to the program at hand? The Amiga has several features in its basic design that make it especially good for this type of program. It is multitasking, it has extensive, fast graphic capabilities, and the operating

(continued on next page)

Project Management the Project Master way



Project Master (continued from previous page)

system makes this available for use without great pain to the programmer.

First Impressions

Project Master's documentation comes in a loose leaf three ring binder. The manual is about 220 pages, with black and white offset print. A table of contents and index are incorporated. Approximately 90 figures are listed consisting of screen displays, graphical output examples, and sample data tables. One immediate plus is an extensive discussion of the various file types created by the program, with the corresponding filename extensions. Eight types of data files are created during the full operation of the Project Master. Many of these are ASCII text and can be edited with available word processors or (possibly) imported from spreadsheet output.

The manual is logically organized going from an introduction, through a tutorial to details of each module in sequence. I liked the organization and completeness of the manual. It's not often that I see a "Table of Figures" listing in the beginning of computer software documentation. Other nice inclusions were sample worksheets, a complete listing of error messages and probable causes, appropriate responses for the error message in question (including a request to report certain situations as BUGS!). I was actually able to find most of the answers to my questions by reading the manual.

Program Design-Use Of The Amiga

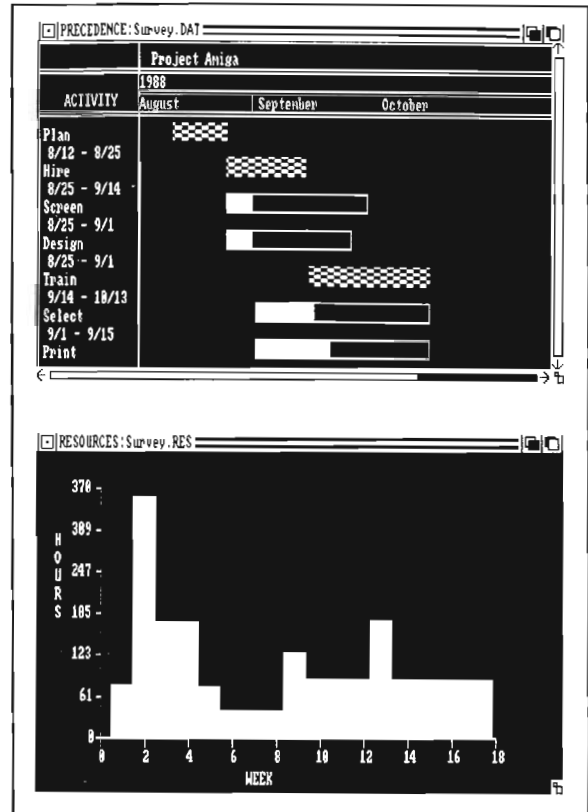
Project Master uses the Amiga system tools and multitasking features intrinsically. Multiple scenarios are examined by running multiple copies of the program. A new window is created for each new function of the program. The program is modular, i.e., different portions are run for different needs. This

helps the memory situation, but leads to a busy screen. The program supports interlace mode, but you have to start in that mode, or use an interlace toggle utility, as there is no option within the program for this. Interlace helps with the screen clutter, as this type of program displays a lot of information in graphic form.

The two main units of the program are the PLAN and INPUT modules. The plan module is used to arrange the nodes of the project flow in the network. The INPUT module is used to edit these nodes with the information concerning timing, node identity, and resource allocation. The program creates a number of data files which are required to run the remainder of the modules. The files must exist with the assigned file extensions to be loaded by the support modules.

PM uses the "arrow" diagram theory of organization: activities start and end at nodes, and contain a duration and description of the activity. The activity description includes the allocation of resources and costs to each activity. The arrow diagram is the source of the information to build the Gantt chart. All charts are saved in IFF format for editing with a paint program. In addition, the Gantt chart can be saved in SOF format (compatible with Aegis Draw, Drawplus, etc. for output to a plotter).

All program modules can be started from the Workbench or from the SHELL/CLI, but little can be gained as the program is so tied to the use of the



Workbench. The program supports up to ten sub-projects to a major project. Project size is limited by memory, primarily during the path calculation step of the statistics portion of the program. There is a 200 path limit of all possible paths to complete the project. For a large single project, this not a major restriction, although, for many sub-projects it could very well be.

What Will The Program Not Do:

Project master is not a general purpose project management program. It does not allow enough individual customization to be useful in the Construction Trades. It will not let you schedule an event that takes a set number of days to complete, weekends included, such as a concrete cure. The program tracks hours per an eight hour day, 5 days per week, 52 weeks per year schedule, so shutdown work, three shift manufacturing schedules, or any activi-

ty that needs closer time control than "per day" can not be handled with this product. The number of resources is limited to 20. The resource rates are editable, but are based upon an hourly schedule. They do not allow for one-time charges such as a minimum rental or a setup charge. The resources part of the program primarily tracks the amount of resources applied to a project, but does no automatic resource leveling. Resource hours are averaged over the duration of the task. This does not take into account the usual day to day variation in hours applied to a task.

What The Program Is Good For:

Project Master's strong suit is man-hour management of white collar work. Examples might be, small engineering firm task management, small accounting dept. schedules, etc. Small is emphasized as the 20 resource limit is restrictive. If I were to use the program for an engineering application, I would be concerned with the stability of the program, as the process of building and entering the information to set-up a small department is time intensive. A manager is usually looking for ways to reduce the time spent on resolving the kind of work crunches that often occur in this line of work and loss of data is doubly wasteful. Loss of data can be prevented by frequent saves, but the frustration factor is not trivial. The lack of resource leveling is not a killer, as most managers can make the judgments necessary to smooth out things once they see where the crunches are going to occur.

Project Master does permit the organization of work in an effective manner, and the use of the Sub-projects feature fits nicely with this type of work. In many offices, the fact that a schedule and a resource allocation has been made can often be a major improvement.

Suggestions For Improvement:

I found a repeatable bug in the program. When using the PROJECT option of the TOOLBOX, you are instructed to click on the two connected nodes you wish to convert to a sub-project. If you click on one node and then have to move the display to get to the other node, DO NOT click outside of the window that you are working in. The system will crash, you will lose work in progress, GOMF does not help, and a 3 finger reset is necessary to recover your computer. This is discouraging as the sub-project aspect of the program is a vital part of building nontrivial schedules. The sub-project portion did work, as long as you stayed in the correct window. I also managed to crash the system during a file load operation after a problem with file read errors.

The program uses an internally calculated schedule, not editable by the user. Therefore, if you want to control a 24 hour schedule or allow work on holidays and weekends, you have to trick the program and keep track of these items yourself. The program reads the system date as the current date, so doing "what ifs" gets complicated. A menu choice allows the resetting of the system date from within the time program, but if your word processor or other programs use that date as well, you must remember to reset to the correct date after your session is complete.

Project Manager needs an editable calendar to improve its usefulness to other types of project management. The smallest increment of time should be reduced to hours or tenths of hours, or should be definable by the user at his discretion. In addition, I would like to see more user customizable features, such as additional resources, different types of resources, different categories of task costs to track by. Budget, ex-

penses, supplies, capital, and miscellaneous do not cover all the categories that need to be tracked in a project large enough to benefit from a program such as Project Master. An improved interface for STATISTICS would be appreciated, especially if further manipulation of some of the resultant data files is to be done via spreadsheet programs or word processors. Additional editing tools should be added in the PLAN portion of the program. I missed a DUPLICATE or CUT AND PASTE facility to enter repeating portions of a project network.

Conclusion:

Would I buy this program to assist me in a project management application? Answer: a qualified yes, if I was committed to using only the Amiga for my business needs. The project would have to be one that fits this type of program, and I would have already made the decision to use an Amiga based on other considerations.

For some, a better alternative might be to use the Bridgeboard to utilize one of several IBM programs which have greater flexibility than Project Master. Of course, there is the matter of the cost of such an endeavor, both from the standpoint of hardware cost and the sometimes significant differential in price between Amiga and MS-Dos application software. While Project Master is the first dedicated Amiga project management program, it needs to be more flexible to have general appeal to the variety of applications for which it could be used.

Project Master 512K Required

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Los Gatos, CA 95030
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ChoroMap

Intelligent Mapping of Statistical Data

by Paul R. Miller

Although you may be unfamiliar with the parlance, you have been exposed to many a "choropleth" map - from your early years in school to present day inundations in publications like USA TODAY. A choropleth map is simply a graphic method of displaying distribution patterns of data (people, animals, plants, income, crimes, etc.) in relation to geographic areas. The classic example would be a

map of the US showing distribution of population densities by states, with sparsely populated states shaded with a light value or pattern, progressing through a range of darker values for greater densities. Of course, you could do this with any set of variables and for any "geographic" area, whether political or spatial.

Three elements are involved: a map, a set of data, and a method of assigning value ranges to the data and to the map. Sounds like a natural for computers and, of course, computers have been used extensively for this purpose.

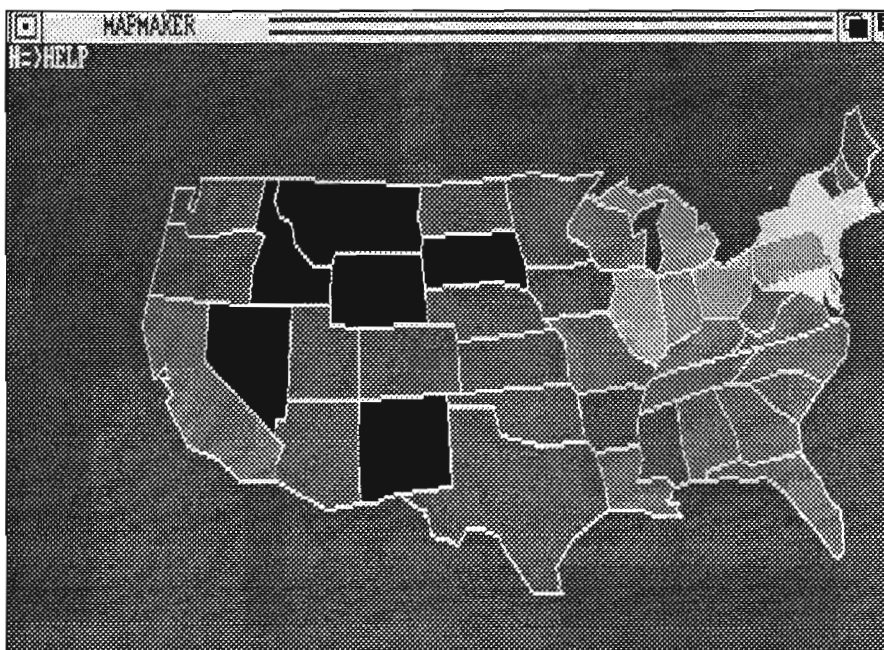
Choropleth software is available for IBM PC's to mainframes. A wide variety of organizations make use of choropleths from the simple variety in USA Today, to fancy systems used by Oil Companies for world wide mapping of exploration sites. The scant collection of business graphics software available for the Amiga has not included this application to date, but Bassett Geographic has provided a solution to fill this void.

ChoroMap is shipped in a slim but handsome hard vinyl case with disk pocket and a brief 14 page booklet of instructions. The software consists of three separate modules written and compiled with Absoft's Basic: DIGITIZER, DATAMAKER, and MAPMAKER. The first step in the process involves making a map outline with the Digitizer module and entering names for each of the map entities.

If you've become accustomed to the niceties of full Amiga intuition based structured drawing programs, this part of the program will probably put you off a bit. Remember that we are dealing here with an inexpensive package that was written in Basic.

Choromap opens a medium-res screen display onto which you enter points with mouse clicks, with limits on X and Y coordinates of 617 and 186 respectively, and total number of line segments not to exceed 1600.

An example map from ChoroMap.



The manual suggests that you make a transparent overlay to put on your screen, or you can use a tablet if you have one, or even try free-hand entry.

Successive clicks enter more points with line segments between. Each entry is displayed numerically with reference to line segment number, and X,Y coordinates for starting and ending points. Your mouse activity is limited strictly to placement of points and a minimum of editing options, which are available through keyboard commands:

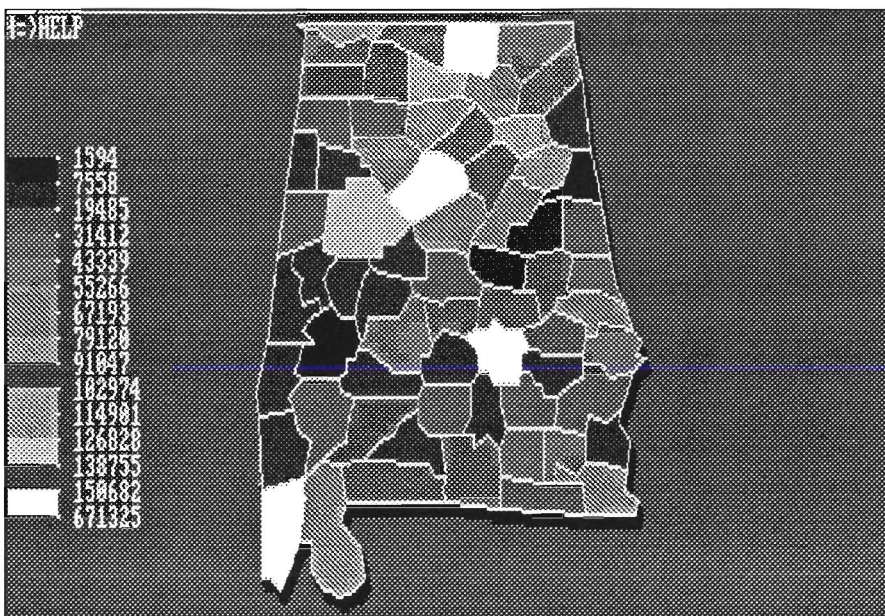
"H" for "Help" lists the keyboard commands.

"A" for "Area" permits the naming and location of center point of a map area by clicking a point, typing a name and hitting Return. "N" and "O" command options permit creation of new lists of points and names or the editing of old lists.

"L" for "Link" lets you link your current point with another vertex somewhere else on the map. A small box appears on screen which you move with the mouse to capture the desired point, then hit the Spacebar to effect the connection. Link is essential for closing your map areas, as the Map-maker module uses a floodfill routine to make the color gradations — any gap will cause a "leak".

"G" for "Grab" operates in a similar fashion to move your existing endpoint to another existing point, with options

*With
Choromap
you can
create maps
based on a
given set of
statistics as
they relate
to a specific
geographic
region*



to confirm (Spacebar), try another point ("B"), or abort (mouse pointer off screen).

"M" for "Move" shifts the line endpoint to another starting position.

"C" for "Continue" lets you resume your outlining.

"X" permits erasure of a point, again with the appearance of a box to position over your point, then a Spacebar command to confirm. Point and connected lines are highlighted in green awaiting a "Y" for yes command to erase.

"S" for save stores your map to a default directory on a volume which must be named "Choromap" — sorry, no intuition file requesters here!

"F" for files displays a list of mapfiles in that same default directory, and "R" for "Retrieve" will load a file, again from the default directory so only a filename is entered.

"D" for "Draw" redraws your map with all line segments and the endpoint; "K"

for "Kill" is the command to delete files; and "Q" quits the module.

"O" for "Outline" highlights and lists your area names in sequence activated by the Spacebar.

Finally, "Z" for "Zoom" permits a change in viewer scale. The manual cautions you to save your file first, and notes that significant reduction causes a loss of detail that is not recovered when you zoom in. A click of the mouse sets the center point for your zoom, then you must enter a numerical value from 0.2 (20%) to 8 (800%). A lateral pan can be accomplished with a mouse click and the entry of a value of 1 to retain the scale.

Obviously, it's not exactly an easy graphic interface, but a few minutes practice will solve that, as there aren't too many things to do. My major complaint is not being able to reposition a point with attached line segment. You have to resort to erasure if you make a mistake, and you cannot position with any degree of accuracy (point readouts are only available after you click — *(continued on next page)*)

ChoroMap (continued from previous page)

which is, of course, too late). If precision is your goal you will have to resort to editing the map files in their ASCII text form, but for most mapping purposes the tools are adequate, if not state of the art.

Serious choropleth mappers can also take advantage of existing libraries of map data, so long as they're in ASCII format, and use a standard text editor to convert to the ASCII sequence used by Choromap (for maps: a string that specifies number of line segments, number of area centers, starting and ending X and Y coordinates for line segments, coordinates for area centers, and area names; for data: number of area centers, name, and integer value).

Having saved your map file, the next step is to activate the DATAMAKER module and enter your values for each of the geographic centers. Datamaker involves simple commands only: "F" displays a listing of mapfiles in the "mapfile" directory and follows with a listing of datafiles from the "datafile" directory. The same "D," "K," "N," "S" and "Q" commands allow Draw, Kill, New, Save, and Quit options, and "E" for Edit allows data entry. From either values in memory or from disk file, you are presented with the sequence of your previously named map areas. As you may enter only positive integers, you will have to do a little math operation beforehand to convert fractions or decimals (eg. transform a series that contains say 1.56, 20, and 4.3 to 156, 2000, and 430).

The final module, MAPMAKER, combines the outline map you created with the set of values for the named areas.

Activating the module icon will yield a list of map files, then data files. Select a map, then pick a datafile and enter a title for the choropleth display.

Before you can display the result you must establish the value range intervals. At the prompt (or at any time with the "I" for "Interval" command)

“Aside from lacking the gadgets and intuition features to which Amiga users have grown accustomed, the program does the basic job”

you enter the number of classes (from 2 to 14) for the color values, and then are prompted to select from three different methods for setting the intervals.

Mapmaker includes two algorithms (A or B) which create intervals of equal range width except for the lowest and highest break points for the category boundaries, or a manual method.

If you select an automatic method, the screen will display minimum value, maximum value, data mean, data standard deviation, optimum expected number of observations per range interval, upper and lower break points for each range boundary, the interval, the selected color used for mapping, and the number of area units falling in the range of a particular color. You may confirm these settings, select the alternate automatic method, or use the manual method, wherein you will enter each break point. An "M" for "Map" command will produce the choropleth map by flood filling each map area with the appropriate color value.

Other keyboard commands will pro-

duce a drop shadow, draw the outline map, display files, list keyboard commands, toggle a legend displaying the values, access new datafiles, load a new map, change the color palette between values of red, green, or blue, or "outline" display the map area units and their associated data values.

Aside from lacking the gadgets and intuition features to which Amiga users have grown accustomed, the program does the basic job. For the finished product you'll have to resort to additional tools.

Choromap doesn't include a save or print feature! Fortunately Grabbit! includes both facilities and Workbench includes a utility used to print a screen. My other complaints relate to color and resolution. I like to work with a hi-res screen. My map displays also always contained at least one extraneous color -- a red range used some blues, green used purples, and blues used green. For final graphics you would most likely use a paint program to fine tune your palette to whatever you like.

If you have the need and are willing to adapt to a somewhat archaic interface, ChoroMap is the only program that makes it possible on the Amiga, and it is a modest investment.

ChoroMap
\$ 49.95 plus shipping

1 disk and manual
512K required

Basset Geographic
1103 Rudd Avenue
Auburn, AL 36830

More Tricks and Tips

The Latest Paperback Guide to the Amiga from Abacus

by Walter Steuber

The Abacus series of books teaching us how to use the Amiga is now up to twelve volumes! The newest member is a follow-up to "Tricks & Tips for the Amiga" (T&T — reviewed in the August 1988 SENTRY.) More Tricks & Tips (MT&T) brings the popular T&T into step with Version 1.3 and adds short discussions of dozens of unconnected topics.

Some of these topics are extensions of material in the original T&T, and some are loose ends that don't seem to fit into the other Abacus books. They are gems of information that are bound to be of interest to people who write fairly serious Amiga-BASIC programs.

If you program regularly, you will already know many of the methods and procedures presented in MT&T. Even so, be ready to experience the delight of learning some new ones. The book is over 200 pages of little nuggets put together by a trio of German programmers. They clearly love to hack around with the Amiga, and they use Amiga-BASIC to delve deep into the

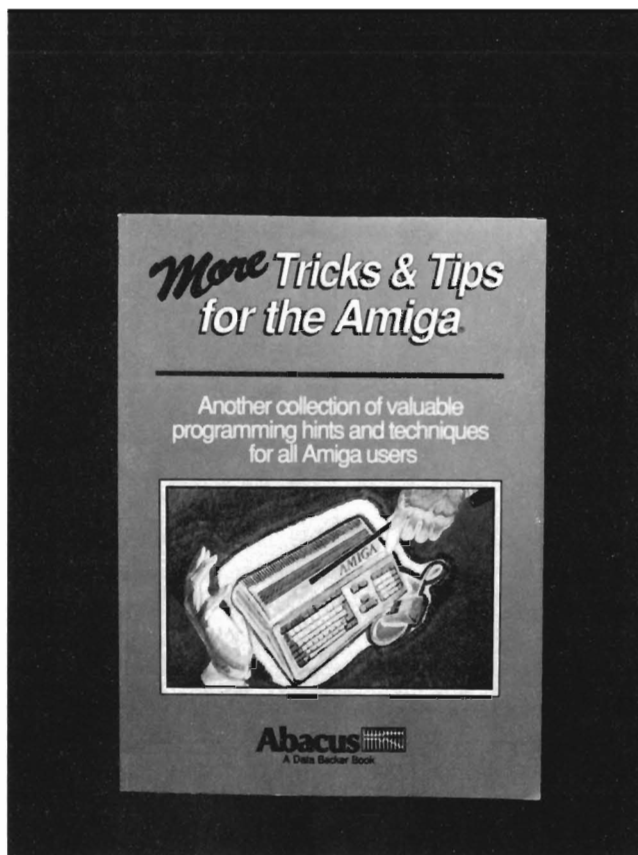
system. Sometimes they use simple, familiar commands and sometimes they mix a little assembler or C into their BASIC programs. They do it in a tutorial style, with lots of commentary, aimed at carrying the reader to ever deeper levels of understanding. To learn from MT&T, however, the reader must be pretty earnest, studying the sample programs line by line, since

they contain novel twists that take some time to digest.

One of the themes in MT&T is the great increase in speed and power that results from making use of routines that are built into the Amiga system. Many tasks that the uninitiated would carry out with some general BASIC lines can also be done by calling a system function. The Amiga has hundreds of efficient machine language routines ready to go but just about never used by beginning programmers. Amiga-BASIC has the commands needed to do it, but you won't get that idea from the Amiga-BASIC manual. It takes tutoring and practice to use system routines and this is MT&T's big mission. Graduation from novice-class programmer is marked when you start to use these powerful hidden functions in your own programs.

The first thing MT&T does in all its many illustrative programs is to open paths to system libraries. It concentrates on writing BASIC programs that are specific to the Amiga. Its examples involve things like windows, gadgets, color cycling, scrolling and they all use system routines that are built into the Amiga. Consequence—
(continued on next page)

More Tricks and Tips is the latest in Abacus' collection



More Tricks and Tips (continued from previous page)

quently, the coding is not portable to other machines and would not, in fact, even look like BASIC code to a C64 or IBM user.

MT&T pushes programming in BASIC about as far as it can go. For many applications this is plenty far enough, but the authors urge the reader to get away from BASIC: "The best language to program in," they say, "is machine language. ...instructions run a thousand times faster. Every feature of the computer can be accessed from machine language [and it] can be learned relatively quickly." Their tougher illustrations, as a matter of fact, look more like machine language than BASIC.

A major example in MT&T is a file monitor. This amounts to about 650 lines of AmigaBASIC code that make heavy use of Intuition routines. The object of the program is to display the contents of a file so that the user can examine and alter things -- a great tutorial on the use of system libraries. It also turns out to be a great tool when it is used in several other tutorials. Abacus offers an optional diskette containing this and all the other coding for those who are aghast at the thought of typing in 650 lines without an error. However, if you don't type the lines in yourself, I feel you will miss much of their tutorial value.

More Tips and Tricks justifies its name by starting out with 28 oddities of operating the Amiga. They occupy only a small part of the book, but they show that the authors are hackers at heart. Who else would think of issuing a CLI command like this:
newshell *

I don't mind admitting I was surprised at what this command does. It sets up a second shell in competition for the window being used by the current

shell. The two shells alternate in ascendancy, so that when you complete a command in one, the other becomes the current directory. Other tips include using some undocumented features of the echo command. In one of their tricky one-liners, echo is used to remove the borders from a CLI window! In others, they change the type style being displayed and change the color of the characters.

As indicated above, MT&T contains a variety of subjects that jump around from one feature of the Amiga to another without much organization. A chapter on machine language offers routines for division by zero, a virus checker, color cycling and mouse management. This chapter is too terse to learn much about machine programming from it, but it shows clearly how to incorporate such routines into an AmigaBASIC framework. The next chapter deals with hardware modifications such as installing an MC 68010 chip or diddling the fan so it will be quieter. This chapter also touches on the 68012, 68020, 68030, 68881 and 68882 chips, but too briefly to be of much use.

The book has to be viewed as part of the continuing Abacus series in which Amiga lore is presented as rapidly as they can assemble it and get it into print. This volume contains many bits of information that ideally should be in other volumes, but here they are. The Abacus authors apparently are working completely outside the Commodore circle, so they have to find out what they can by hacking around. They are bubbling over with new insights and discoveries which they pass on as fast as they find them.

The final quarter of MT&T is devoted to explaining and exploring some of the new features of Version 1.3 Workbench. With their outsiders' viewpoint,

the authors describe some of them quite differently than the Commodore manual does. That's all to the reader's advantage, of course, because getting two different slants makes it easier to understand some of these complex subjects.

MT&T does not cover all the new elements of Version 1.3, but there are informative treatments of Mount, Pipe, Speak, FastFileSystem, Math Libraries, Printer Device, and Preferences. Version 1.3 has so many features in it that I expect I won't have them anywhere near digested by the time Version 1.4 comes along. The Abacus series does its best, however, to make things reasonable and understandable.

Overall, I'd say MT&T is a candy store for the serious programmer but a dabbler will probably find it a terrible bore. Although it treats some of its topics far too superficially, with others it has solid material that is not available anywhere else that I know of. Its greatest usefulness will be to someone who is already familiar with the material in earlier Abacus volumes, especially AmigaBASIC--Inside and Out and Amiga Tricks & Tips.

More Tips & Tricks \$19.95

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5370 52nd Street S.E.
Grand Rapids, MI 49508

(800) 451-4319

Test Drive II (continued from page 42)

aborted attempts before completion. One thing that would greatly improve the situation is highlighting the instructions which state that blank disks must be formatted before starting the process. Once this hurdle is cleared the on screen instructions are relatively straightforward.

There are several major omissions from the entire Test Drive II package. (They are however forgivable since the designers have no way of including the items.) Items such as the smell of burning rubber when peeling out from a stop, or the lateral G forces when negotiating an "S" curve, even the feel of the road in the seat of your pants. Given these technical limita-

tions, Accolade has done an extensive job of translating the thrill of high-speed road racing to the Amiga.

The fuel tank is full. The door is open. The road is in front of you. So slide behind the wheel. Buckle up. Put your right foot to the floor and conquer the asphalt.

The Duel - Test Drive II \$44.95
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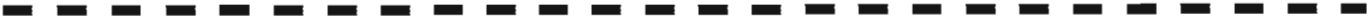
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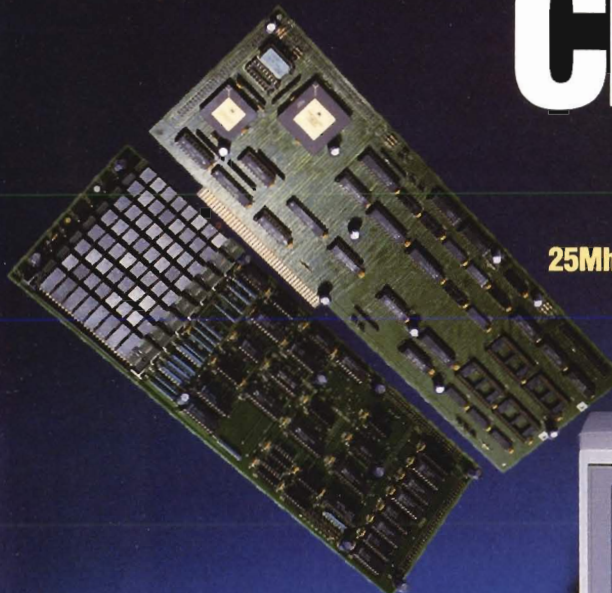
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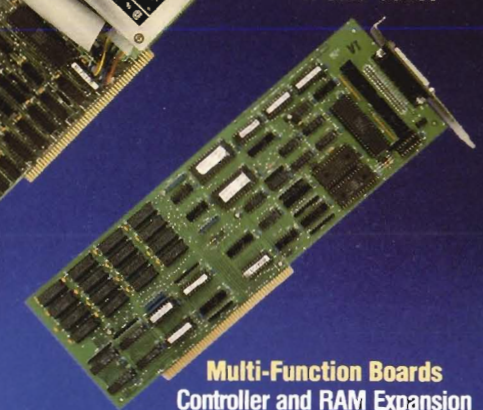
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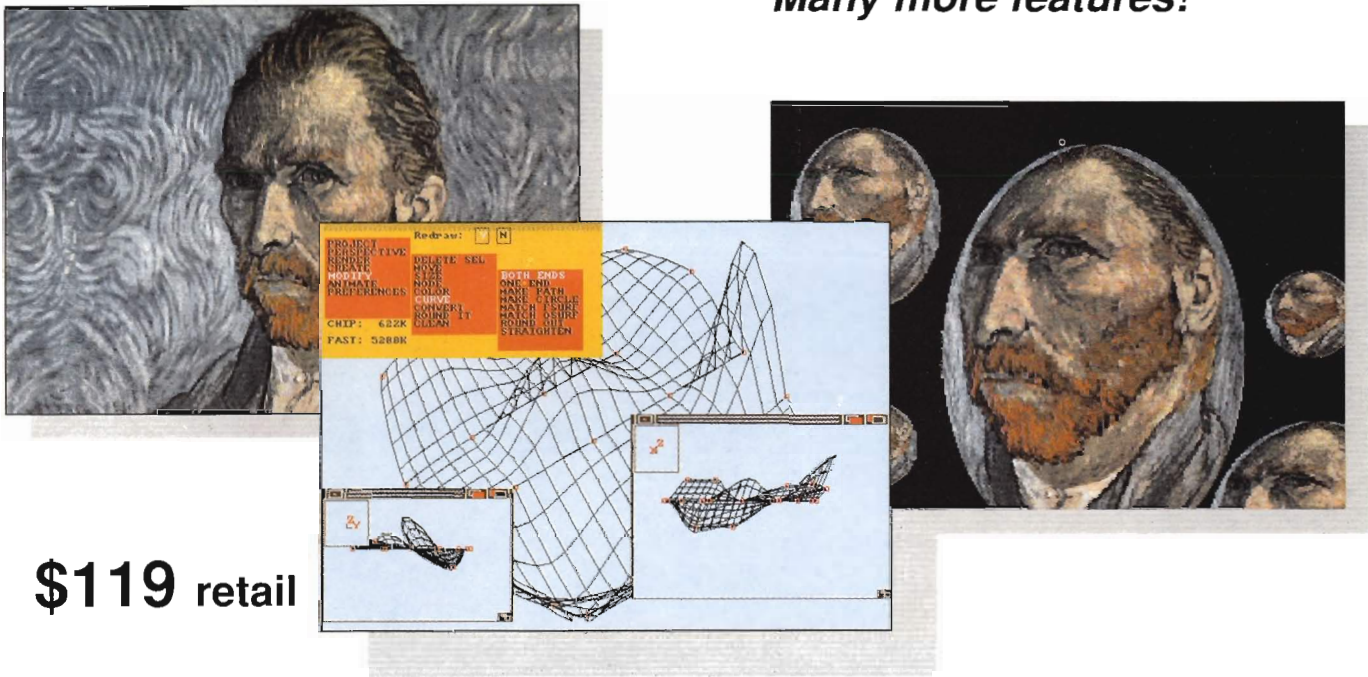
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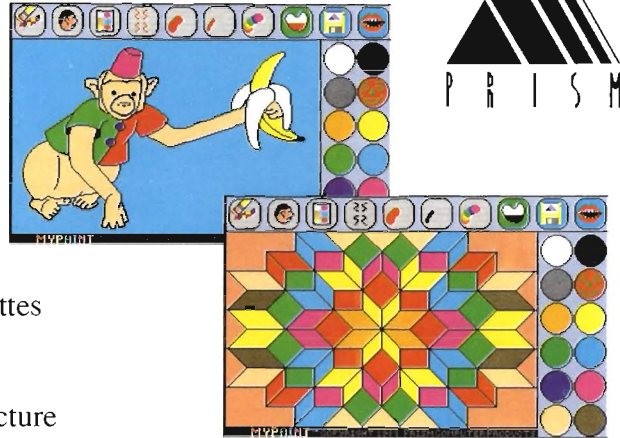
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