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Issue 1.10

AmigoTimes

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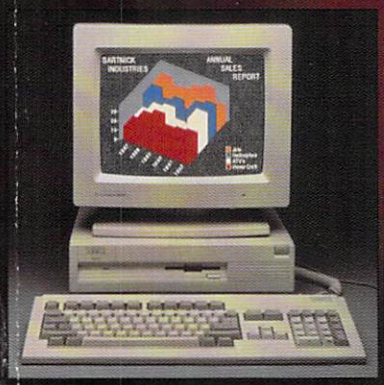

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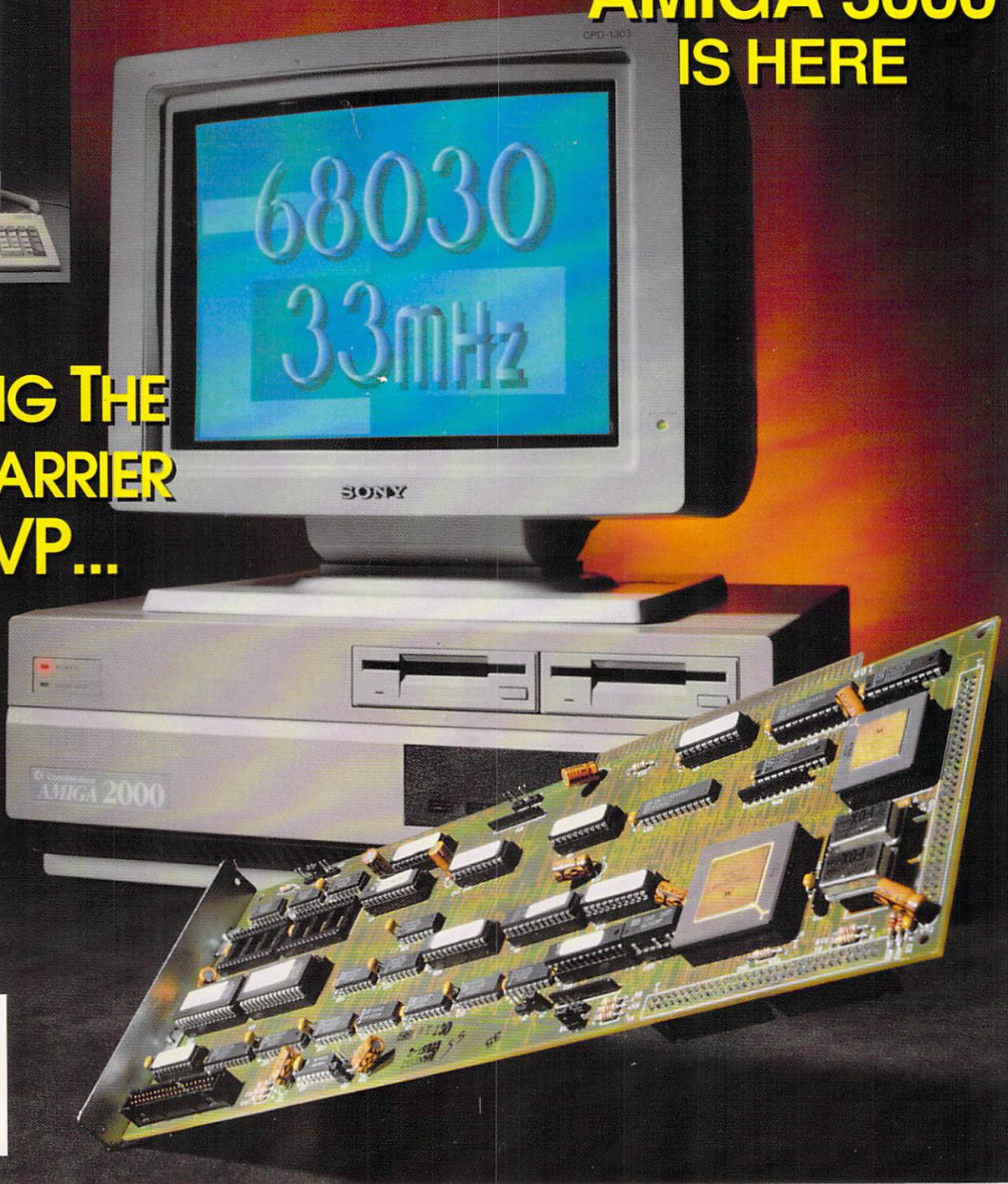

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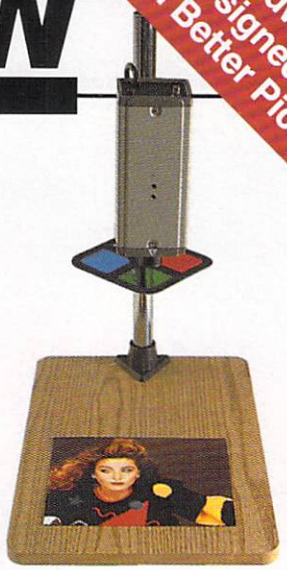

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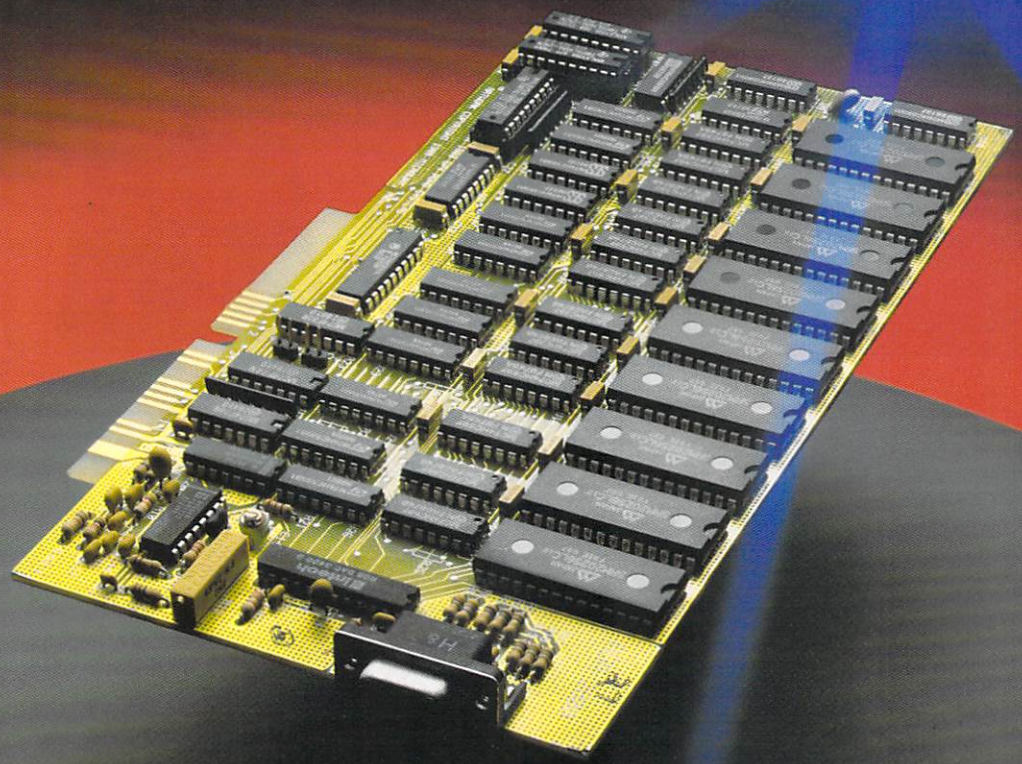
AGA 2000
The flickerFixer™



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AmigoTimes

Editor-in-Chief Eyo Sama

Marketing Director Lisa Sama

Art Director Olusegun A.Olaniyan

Data Manager Ernest N. Nagy

Senior Editor Michael Hermann

Music Editor Serge Boucher

Assistant Art Director Jacqui Summers

Assistant Editor Terry Nordoff-Perusse

Circulation Coordinator Ansa Sama

Advertising Coordinator Stephen Robitaille

Advertising Manager Steve Cariglia

Shipping Mike Fanelli

Office Manager Idem Sama

Photography Studio 5

Contributing Authors

Sue Albert
Serge Boucher
Rick Broida
George Broussard
Larry Clark
Joe DiCara
Thorwald Esbensen
John Flanagan
John Foust
Brad Fowles
Michael Hermann
Jeffrey Scott Hall
Mike Hubbartt
Richard L'Hommedieu
Curt Kass
Steve King
Harv Laser
Louis Markoya
R. Shamms Mortier
Ernest N. Nagy
Terry Nordoff-Perusse
Olusegun A.Olaniyan
Phil Osborn
Nick Poliwko
John Pustai
Alain Rheault
Eyo Sama
Paul Shecter
James W. Shields
Richard Smith
John Steiner
Fred Theilig

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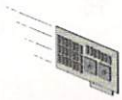
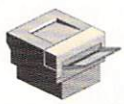
NEC MultiSync II
NEC MultiSync Plus
SONY CPD-1303

CBM 2090
CBM 2090A
GVP IMPACT HardCard80Q
GVP IMPACT SQ44
GVP A3001-AT



CBM A2620
GVP A3001-030/25mhz



Fujitsu DX2100
Linotronic L300R/RIP3
QMS PS 800 II

CBM A2052
GVP A3001-RAM/8
M.A.S.T. MiniMegs
Micron MB-25-D2
Progressive Peripherals EXP-1000

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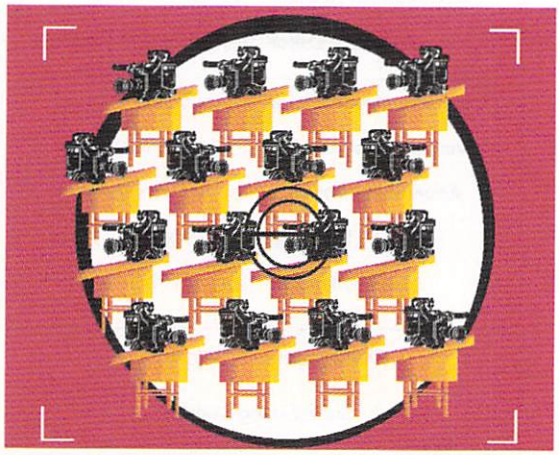
FEATURES



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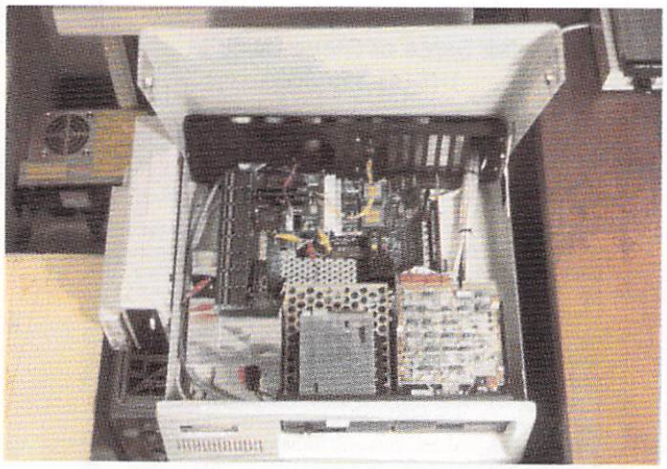

PROGRAMMING

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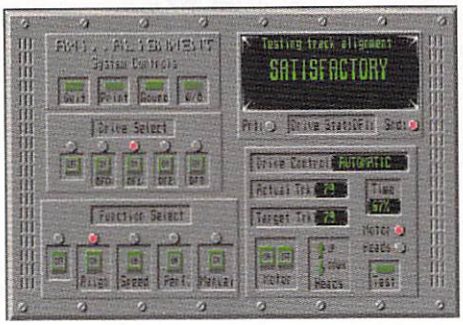
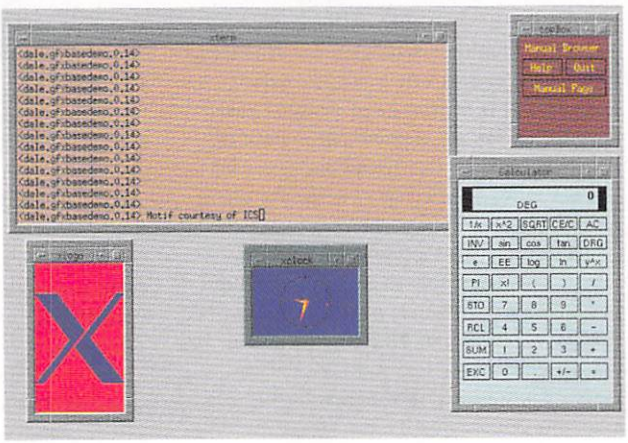
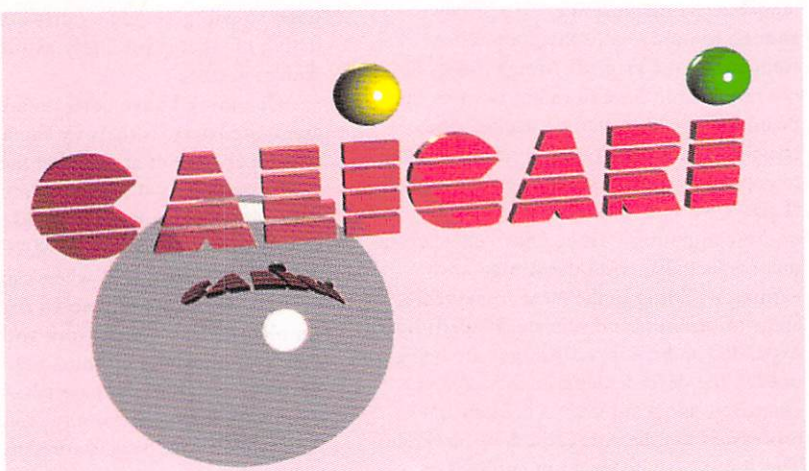
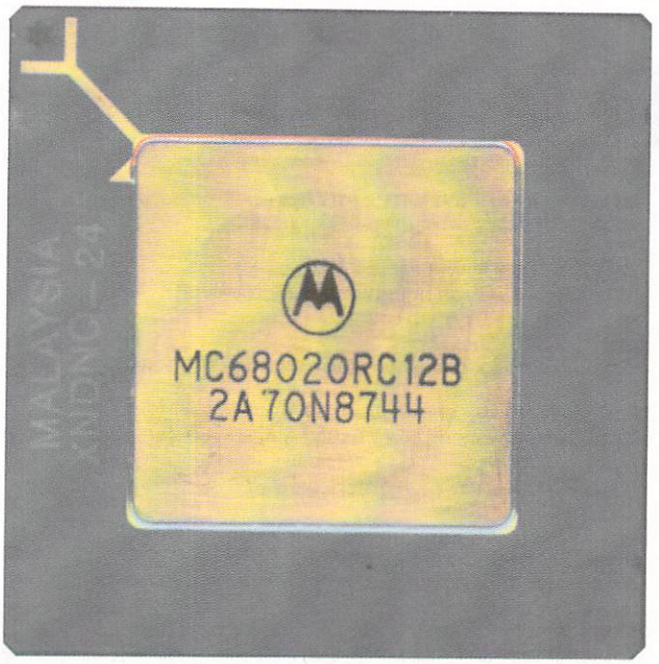




DEPARTMENTS



The Editor's Corner



"Thanks for waiting for us...."

As you may well have noticed, AmigoTimes has been missing from your local newsstand for a while now. We ran into some serious financial problems at the end of last year, there were circumstances which were beyond our control so we hope you will accept our apology and our thanks for all you readers who have patiently waited for this next issue of AmigoTimes. As you can see we are now pulling out of the slump that we had found ourselves in, and we're ready to bring you many more issues.

Hardware! Just a few years ago you would have been able to count the number of hardware peripherals available for the Amiga, on one hand. Things have changed dramatically in the last year; not only is there a multitude of new hardware available but the quality has seen a proportional increase as well. In those first few years of Amiga history, it was not unusual to pay over $2000 dollars for a very slow 40 or 20MB hard-disk drive, especially since there were only two shows in town. Accelerators were only available from CSA and although the quality was high, the prices were usually prohibitive to all but the richest Amiga users. An extra megabyte of memory was also pricey enough to send you to the poor house. Remember, the original Amiga owner did not buy his machine to run or work in his business, he was usually a hacker who bought the machine because he/she wanted to exploit the sheer power of this computer (I guess we were pioneers of micro-computing). Things have changed in that respect also; with the Amiga now earning its living in the most respectable areas of business and science. Powerfully expanded and equipped Amigas are being used in the defense departments of some countries, and a number of doctors and professors use the Amiga in their research. The Amiga can be found in publishing, video production, cloth pattern design, airline scheduling, and in a host of other areas.

Powerful and reliable hardware is finally available, the prices have dropped dramatically and there are a fair number of companies to choose from. There are a variety of accelerators available and they have become affordable, even CSA has prices within reach now. The accelerators range from supped-up 16 MHz 68000s to fully-blown 33 MHz 68030/68882 power boards. The article on accelerators starting on page 8, will give you an insight into what the whole range represents in terms of power and price, it will also show you just how vast a difference there is between a normal Amiga and one powered by a 68030 processor. The hardware product guide on page 75 will give you a fairly complete listing of what is presently available in the Amiga market.

One thing I have been finding very annoying lately, is the way some software developers do not ensure that their software works properly with accelerators and other hardware expansion. One well known flight simulator has you flying at MACH 10 instead of at MACH 2, when using an '020 or '030. Another well known flight simulator doesn't even work with an accelerator installed. I think software developers should increase beta-testing of their software with several variations of the Amiga platform, because they have to realize that the next generation of Amigas, such as the Amiga 3000, will be based on those more powerful 32-bit processors.

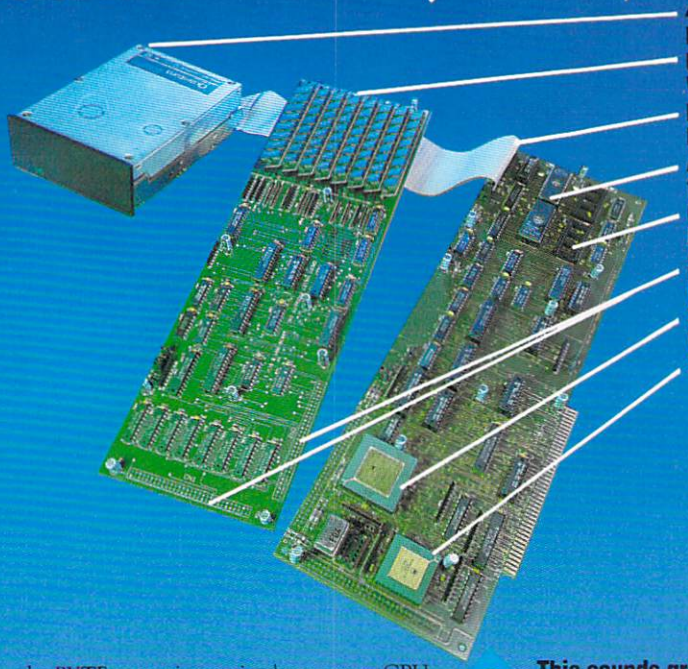
The other hardware device I have been anxiously awaiting is the release of a high resolution 24-bit framebuffer. The Amiga has been taking leaps in its use of faster and faster processors, auto-booting high-speed hard-disk drives, and other peripherals, but graphically the Amiga has been at a standstill since its introduction. I find this a great shame, especially since other computer manufacturers aren't exactly hanging around doing nothing (the Macintosh is already tinkering with 32-bit graphics and IBM has had 8-bit graphics for some time now). We keep hearing about Commodore's hi-res graphics board (created by the University of Lowell), they showed it at Comdex nearly two years ago and it seems that it has been ready for quite some time now, but we haven't even seen or heard of a product announcement from them. Where is this board? Will it ever be released? We desperately need better graphics output for the Amiga, I hope that either Commodore or a third party developer sees this wide gap in the Amiga's development and fills it. Soon. ❑

Eyo Sama
Publisher/Editor-In-Chief

Before you buy an A2500
READ THIS FIRST!
(or before you even add a hard drive to your A2000)

Christmas Special
Free copy of Turbo Silver 3.0 with purchase of A3001 upgrade kit

Upgrade your A2000 to an "A3000 (PLUS 1)" TODAY! With the 25Mhz 68030, A3001 Upgrade Kit from GVP



Q What is the A3001 Upgrade Kit from GVP?

A The A3001 Upgrade Kit includes the following:

- 25Mhz 68030 accelerator board for the A2000.
- Factory installed 25Mhz 68882 Floating Point Processor.
- 4 or 8MB of 32-bit wide high performance 80ns NIBBLE MODE DRAM.
- Built-in AUTOBOOTing HIGH PERFORMANCE hard disk controller.
- Quantum 40MB or 80MB hard disk drive with an average read access time of 11ms (19ms on write) and 64KB read-ahead cache. If you already own a hard disk, this item can be optional.

Q What does the A3001 really do for my A2000?

A The A3001 provides the following, UNBEATABLE and UNMATCHED features:

- The world's fastest (and shipping in volume!) accelerator board for the Amiga.® The 68030 CPU includes an on-chip MMU and separate data and instruction caches. According to a recent review in the German "Amiga Magazin," performance is between TWO AND THREE TIMES FASTER THAN THE A2500.
- One of (we are being modest!) the world's fastest hard disk controllers. Measured with "diskperf2," data transfer rates of well over 700KB/sec are achieved. Of course this is not surprising as the hard disk controller is built-in directly on the 32-bit bus of the 68030 accelerator board!
- The up to 8MB of 32-bit wide DRAM is fully DMA-able (can be directly accessed by any DMA device) and is automatically AUTOCONFIGured. The A2500 is limited to only 4MB of (slower) 32-bit wide DRAM.
- GVP's unique DRAM design uses state-of-the-art 80ns NIBBLE MODE DRAMs, which allows full support and advantage to be taken of the 68030's BURST mode. In fact during burst mode, this amazing design manages to achieve an average of ZERO WAITSTATES even at 25Mhz! This DRAM design is similar to that used in Steve Jobs' NeXT® machine, although that design (according to the BYTE magazine review) uses more CPU waitstates at 25Mhz!
- 68000 fallback mode allows the 68030 CPU to be disabled, to ensure full compatibility with timing sensitive applications (e.g.: some game programs).
- Sockets are included for 68030 BOOT EPROMs, allowing future flexibility for running other operating systems.
- GVP's unique ASYNCHRONOUS design means that the 68030 has its own dedicated oscillator and runs completely ASYNCRONOUS to the rest of the A2000. This means better GENLOCK compatibility (not as sensitive to motherboard clock source) as well as providing the ability to run at any clock speed completely independently of the A2000 motherboard, limited only by the access speed of the DRAMs being used.
- For the REAL, math intensive, number-crunching fanatics there is an optional oscillator socket, allowing the 68882 FPU to be independently clocked at even higher speeds (e.g.: 33Mhz).
- ZERO SLOT SOLUTION! With the full-blown configuration installed (25Mhz 68030 & 68882, 8MB of 32-bit wide RAM and one or two AUTOBOOTing 40MB or 80MB hard disks), the A3001 STILL LEAVES ALL THE A2000 EXPANSION SLOTS FREE FOR FUTURE EXPANSION! The only slot in the A2000 which is used is the Co-processor/CPU slot. An equivalently configured A2500 would use an additional TWO valuable expansion slots!

Q This sounds great, but what if I can't afford to buy the full A3001 kit now and all I need urgently is a hard disk drive for my A2000?

A GVP also offers an "a la carte" approach to purchasing the A3001 kit. For example if you are about to purchase a hard disk drive and controller for your A2000, for only a little more you could instead buy the GVP 25Mhz 68030 accelerator board with its built-in AUTOBOOTing hard disk controller and the 40MB hard disk (suggested list price for both is only $1495). You would obviously not get the full performance increase mentioned above, until you added our 32-bit wide RAM daughterboard and the 68882 FPU. However, in this case your initial hard disk outlay is not lost and it can be regarded as a "down payment" on your full-blown 32-bit workstation! If you are working on a REALLY tight budget, call us and ask about our "A2501" upgrade kit for the A2000, which outperforms the A2500 with its 16Mhz 68030! This is also available in "a la carte" form!

Q Why did GVP call this the A3001 upgrade kit?

A The A3001, stands for "A3000 PLUS 1"! Yes, we believe that this solution offers everything the "A3000" may offer PLUS...!

Why wait, upgrade your A2000 to an A3001 today!

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Consumers Circle 222 on reader service card.
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AmigoTimes LETTERS

WE AIM TO PLEASE

The first issue of AmigoTimes I saw was the issue where you incorporated the Sharp Color Scanner pictures. I was absolutely blown away by what you were doing. The outstanding quality you achieved made me proud to own and use an Amiga. I said to myself "Finally, here is a publication which speaks to the serious/professional Amiga user." For some time now I have been really discouraged with the quality of the Amiga magazine market. I use my machine for business and other professional endeavors. The last thing I need is another game review.

There is a real need for an Amiga publication which speaks to us serious users out here who are trying to make a living with this wonderful machine. I deeply hope AmigoTimes will fill this demand. Good luck and keep your vision alive! (Someone in the Amiga community has to have vision.)

Tom Hutchision
Pilot Rock, OR
USA

Thank you very much for your generous comments. You made our day.

CADVOCATE

I never make much effort to write to any computer software company or magazine, but you people deserve it.

What I'm writing about, mainly is that I'm mad at Commodore and all magazines regarding the lack of interest and support for the Amiga in CAD, software manufacturers are also at fault.

I have a small business that I run from my home here in Vallejo, Ca., doing mechanical drafting on my Amiga 2500 (I love this machine). This is my side job, my full one being at U.C. Berkeley's Electronics Engineering and Computer Science Dept., where I do mechanical design on equipment needed for the Micro Electronics Research Lab.

This small business had paid for my 2500, an HP Paintjet, a Flickerfixer, a Taxan 770 plus monitor, and the Cadillac of multiple pen plotters, a Schulberger 1835-SR sizes A > E paper, plus a lot of other software and hardware in just a little over a year and a half's time, and I'm thrilled about it! The drawings that I'm doing with AEGIS 2000Math., look absolutely beautiful after plotted.

Some are as large as 1.7 megs but I have to break them down into pages to be able to store them on a disk.

Please start supporting CAD. I'm sure that you would have no trouble getting support from people like me that could help you get started. Keep up the good work!

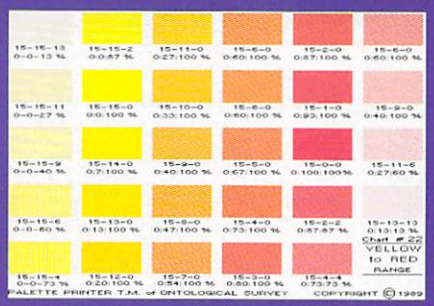
Jose Rivera
Vallejo, CA
USA

Congratulations on your continued success, Jose. But please don't get mad at us, there is so much that can be done with this terrific computer it isn't easy covering every area. You are correct that we haven't paid enough attention to CAD in the past. In the near future, we'll feature more reviews and articles on the subject. In fact, on this month's disk you find a terrific public domain CAD program that we hope you'll find useful.

Anyone with ideas and comments about AmigoTimes should let their opinions be known by writing to us. While we cannot answer every letter personally, we do read every *letter we receive.* ❑

CORRECTIONS!

MAGAZINE:
AmigoTimes v1.8:
p.49: Amiga Monitor:
The picture for the **Palette Printer** from **Ontological Survey** printed as black & white, not as color. As you can see below, this time we did it right.



p.78: Amiga Product Guide:
The company name & address for the **Scannery** software is incorrect. The actual company is called **Inset Systems**. You can reach them at 71 Commerce Dr., Brookfield, CT, 06804, USA, (203) 775-5866.

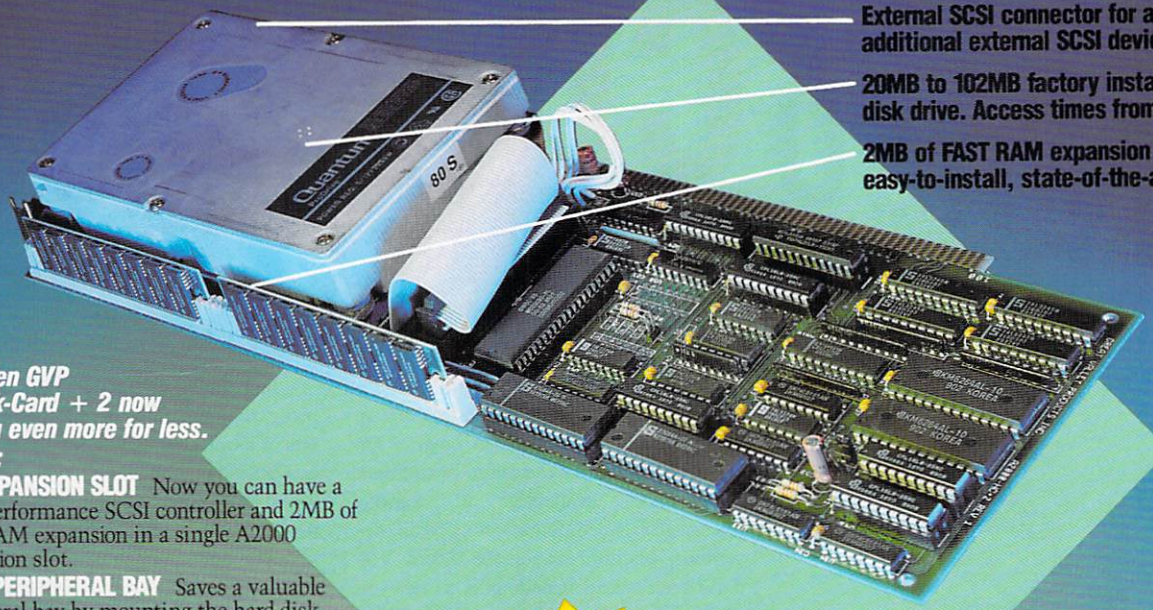
p.95: Art Gallery:
The picture **"GoldBug"** was actually drawn by **George Bailey**. The image was rendered using **Turbo Silver**.

DISK:
AmigoTimes DISK v1.8:
BusCardTemplate is a **PageStream** document file that was not included on the v1.8 disk. It can be found on this month's disk in the **OOPS!** drawer.

If you've had any difficulty using **T.A.S.S.**, included on v1.8 disk, please refer to the "ReadME 1st" file on this month's (v1.10) disk. ❑

Hard-Disk-On-A-Card
THE BEST JUST GOT BETTER

Now we have added 2MB of Zero-Waitstate FAST RAM Expansion to our best-selling Hard-Disk-On-A-Card!



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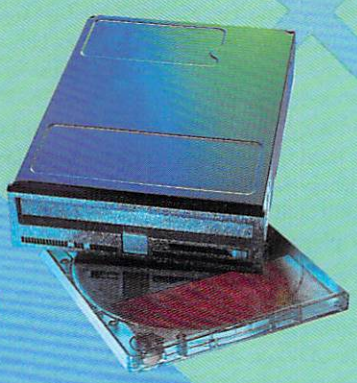

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TURBO CHARGE YOUR AMIGA

Find out how you can get your Amiga to compute at the speed of a mainframe....

Although some of the processor accelerators that I talk about in this article are in direct competition with each other, I am trying to emphasize the range of different accelerators available at various price/performance ratios rather than describing a battle between the racers. You don't really need benchmarks to tell you that a 33 MHz 68030 board with 32-bit memory will beat the pants off a 16 MHz 68000 board, but the difference in price between two such boards is usually as large as the difference in performance. So, although I will be showing you which accelerator is objectively the best, I will also show you which accelerators may best fit both your budget and particular applications.

The accelerators being reviewed here either replace or disable the 68000 chip in your Amiga. The Motorola MC68000 is a 32-bit processor with a 16-bit data bus, the MC68020 and MC68030 are both 32-bit processors with 32-bit data busses. The Amiga 2000 has a special CPU slot which is intended to be used to plug in replacement processors, while the Amiga 500 and 1000 both require that a piggy-back board be plugged into where the 68000 chip usually sits. Installation of such boards into Amiga 500 and 1000 machines, is usually cumbersome and sometimes frustrating. The 2000 on the other hand is fairly easy to expand, most of the time you simply slide an expansion board into one of the several slots.

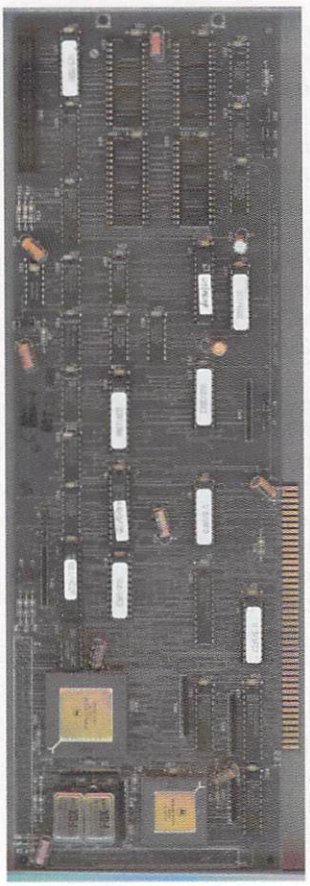
Just the fact that the '020 and '030 processors can fetch and manipulate 32-bits of memory at a time, makes them several times faster than the old 16-bit 68000. There are several other enhancements in these chips; the 68020 has a 64 byte instruction cache which allows the chip to retain 64 bytes of code within the chip itself, making programs which use tight loops much faster than would otherwise be possible. The 68030 goes several steps further; it has two 256 byte caches, one for instructions and the other for data. The 68030 is therefore able to not only retain code, but also data being manipulated by that code. This caching of data has some interesting side-effects which must be taken into consideration. The Amiga's custom chips can modify memory without telling the main processor about it, this would cause data corruption if the 68030 updates the data it is caching. Developers of 68030 boards therefore either disable the data cache or they ensure that the 68030 only caches memory which is not within the custom chips address range.

GVP Impact A4000

33 MHz 68030 CPU
33 MHz 68882 FPU
4-8 MB 32-bit RAM

GVP produces two different 68030 based accelerator boards, they are basically the same, the difference is that one is clocked at 25 MHz (the Impact A3001) while the other is clocked at 33 MHz (the Impact

By Eyo Sama



The GVP 68030 based accelerator board takes your Amiga to completely new levels of power computing.

A4000). Actually there is one other difference, the performance. After having used the 25 MHz board for a few weeks, I was convinced that my Amiga was possessed by some kind of speed demon making it capable of color-separating the pages of AmigoTimes at a fraction of the time it used to take. Then came the 33 MHz board, unbelievable, it was quite a bit faster than the 25 MHz board (about 35% faster). I was quite surprised at the large difference, I mean we are talking about a board which is 35% faster than a board which is already nearly 400% faster than an ordinary off-the-shelf Amiga. The differences between these boards and an ordinary Amiga are even greater when floating-point math is involved, this is mainly because of the 68882 floating-point co-processors they use.

Following GVP's tradition of producing multi-functional hardware, the '030 boards both have an on-board auto-booting AT hard-disk controller. The boards are usually shipped with or without either 40 or 80 MB Quantum drives which end up being extremely fast since they are directly accessible by the 68030 hardware. Up to two AT hard-disk drives can be attached to the 68030 board by using a daisy-chain cable similar to the ones used for SCSI devices. Installation of the hard-drives is fairly simple, except when you have other controllers attached to your system; you then have to invoke the installation process via the CLI. A daughter-board populated with either 4 or 8 MBs of 80 ns (nano-second) 32-bit RAM (essential to achieving maximum system performance) is usually attached to the backside of the '030 board. With the aid of the 68030's on-chip MMU (Memory Management Unit) the Amiga's entire operating system can be copied into 32-bit memory (using Dave Haynie's SetCPU program). The Impact A4000 system fits into the CPU slot of an Amiga 2000, so you can have a 9 MB accelerated Amiga with a fast hard-disk drive without using up any of the Amiga's 5 expansion slots. The board has sockets into which ROMs, such as CBMs UNIX operating system, can be installed (I guess GVP wants to be prepared for future expansion).

The A4000 board lets you make full use of the special features of the 68030 processor. Both the data and instruction caches can be enabled/disabled using SetCPU, and the BURST mode can also be set and used. Believe me, ray-tracing with this board actually becomes bearable. Ray-tracings which previously took me over a day to create on a stock Amiga, can be generated within a few minutes on the 68030 accelerator. I used to set my machine to render overnight, now I in the time it takes to grab coffee and a doughnut its done.

At over 10 MIPS (Million Instructions Per Second) processing power, the Impact A4000 is without a doubt the top accelerator board available to date. Until you actually see this board in action it is hard to imagine that an Amiga could actually compute with such power and speed.

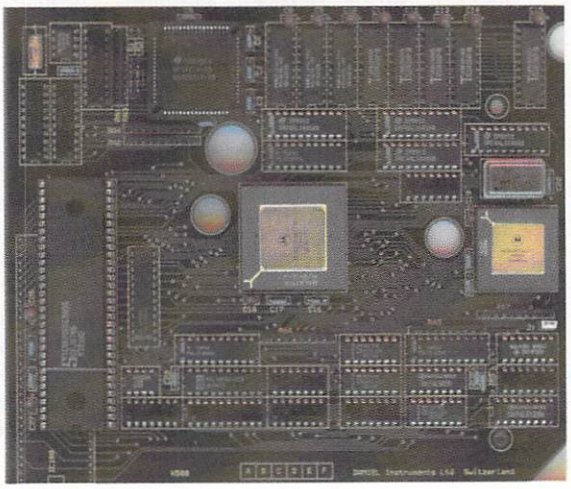
IMTRONICS Hurricane 500

16 MHz 68020 CPU
16 MHz 68882 FPU
1-4 MB 32-bit RAM

Even though the Hurricane 500 board uses a 68020 running at the same frequency (14.28 MHz) as Commodore's A2620, the Hurricane 500 consistently clocked better benchmark times than CBM's board. The difference in time is not enormous (about 5%) but still significant when you consider that they are using CPUs running at the same frequency. The floating point benchmarks were about 50% faster on the Hurricane, but this was because it had a 68882 installed while the A2620 was using the slower 68881.

Unlike GVP's A4000 and CBM's A2620, the Hurricane 500 requires you to remove your 68000 chip so that the Hurricane board can be plugged into the 68000's socket. This makes installation quite a bit more difficult and cumbersome since installing it into an Amiga 2000 means you have to remove the power supply and disk cage to get at the 68000 which is directly below. The advantage of course is that the board will also fit into an Amiga 500, which is not the case with the GVP and CBM accelerators.

The one disappointing thing about the Hurricane board was its lack of a Memory Management Unit; a MMU can be used to



The Hurricane 500 is a surprisingly fast board, it also allows you to have 1 - 4 MBs of 32-bit memory for your 68020 processor.

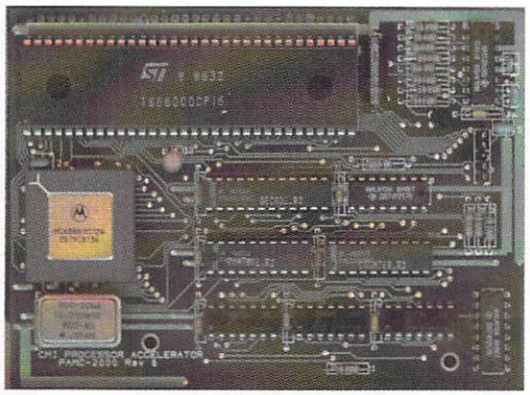
remap the Amiga's operating system into the much faster 32-bit memory. Apart from that fact though, I was very impressed by the performance of this board, it came second only to the GVP '030 boards.

COMMODORE A2620

16 MHz 68020 CPU
16 MHz 68881 FPU
16 MHz 68851 MMU
2-4 MB 32-bit RAM

Like the GVP accelerators, Commodore's A2620 board plugs into the CPU slot of an Amiga 2000. The A2620 is also the board which magically turns an Amiga 2000 into an Amiga 2500. The A2620 plugs into the Amiga 2000's CPU slot and is therefore very easy to install.

The 68881 FPU on the A2620 board can be replaced by the faster 68882, and can be clocked at a higher frequency by adding an appropriate crystal oscillator; unfortunately you also have to install a socket for the crystal. The 68851 MMU lets you use SetCPU to map the Amigas ROM calls to 32-bit memory.



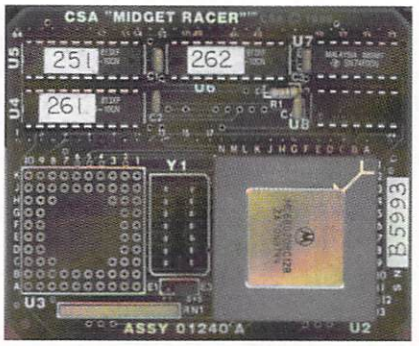
The CMI Processor Accelerator gets good performance out of a low-cost 16 MHz 68000 system coupled with a 68881 FPU.

One exemplary feature about the A2620 is that you can boot-up into either 68020, 68000, or UNIX mode, just by pressing both mouse-buttons when you reboot.

CSA MIDGET RACER

12 MHz 68020 CPU
12 MHz 68881 FPU

Size wise the Midget Racer is the smallest of the accelerators tested, and only measures 3.5" x 2.75". Although the 68020 used in the Midget Racer has a frequency of 12 MHz, the processor operates at the Amiga's current system frequency of 7.16 MHz. The Midget Racer we tested was outfitted with a 12 MHz 68881, but faster



This unique design which fits into all Amigas, incorporates a 68020 and either a 68881 or 68882 , all on a tiny PC board barely measuring 3.5" x 2.75".

FPUs such as a 33 MHz 68882 can easily be installed.

The Midget Racer is the only accelerator which will mount in all three Amiga types: Amiga 500, 1000, and 2000. This makes a lot of Amiga 1000 users very happy. I have an Amiga 1000 for home use and get quite annoyed at the lack of product support from both Commodore and third-party hardware developers.

Unfortunately, the Midget Racer does not come with any 32-bit memory, which I think is the cause of its poor benchmark results in the last benchmark category. It was the slowest at color-separating a Professional Page document, even slightly slower than an ordinary Amiga. This slowdown could also be because of the overhead which occurs when a 32-bit processor has to access 16-bit memory.

The Midget Racer is a good, low-cost option to speed up your Amiga, I think its performance could be greatly enhanced by adding 32-bit memory.

CMI PA2000

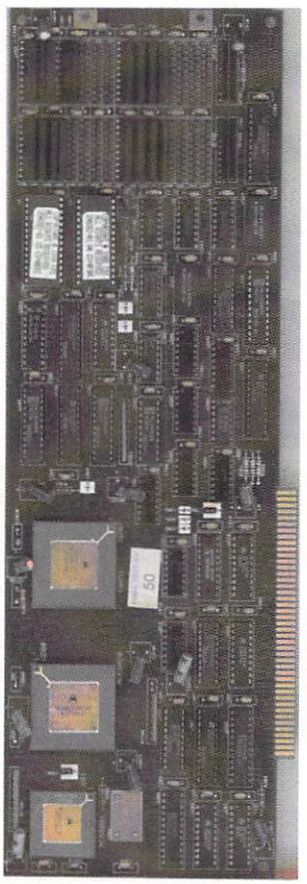
16 MHz 68000 CPU
12 MHz 68881 FPU

The PA2000 is the only accelerator of those reviewed here that does not use a 68020 or 68030 to accelerate the Amiga, it uses a 16 MHz 68000 instead. This accelerator follows a very interesting concept whereby it uses a low-cost 68000 clocked at a higher frequency and coupled with a 68881 or '882 which works with software using the IEEE libraries which recognize the '881 as a peripheral device. This accelerator is probably the most software compatible of all those tested; the 68000 can be toggled between operation at 7.16 MHz and 14.32 MHz, and the FPU can also be toggled on or off.

CMI's Processor Accelerator is relatively low-priced at US$199.95 (does not include FPU), the performance increase over an ordinary Amiga is significant in some instances, therefore making it a good buy for those without the funds to buy a 68020 or 68030 based accelerator.

THE BENCHMARKS

The benchmarks are divided into three different categories: floating-point math, integer math, and application software performance. For the accelerators with Motorola 68881 and 68882 floating-point



The A2620 68020 accelerator from Commodore was the first serious board to be available at a fairly reasonable price, recently it has been outperformed by newer third-party accelerators.

THE BENCHMARKS:

ACCELERATOR	(normal Amiga)	Processor Accelerator	Midget Racer	A2620	Hurricane 500	Impact A3001	Impact A4000
COMPANY		CMI	CSA	CBM	IMTRONICS	GVP	GVP
COMPUTER TESTED	A2000	A2000	A1000	A2000	A500	A2000	A2000
COMPATIBILITY		A2000 only*	ALL Amigas	A2000 only	A500/A2000	A2000 only	A2000 only
CPU	7 MHz 68000	14 MHz 68000	12 MHz 68020	14 MHz 68020	16 MHz 68020	25 MHz 68030	33 MHz 68030
FPU	(none)	12 MHz 68881	12 MHz 68881	14 MHz 68881	16 MHz 68882	25 MHz 68882	33 MHz 68882
MMU	(none)	(none)	(none)	MC 68851	(none)	ON-CHIP MMU	ON-CHIP MMU
CACHE	(none)	(none)	INST	INST	INST	INST/DATA	INST/DATA
BURST MODE	(none)	(none)	(none)	(none)	(none)	YES	YES
MEMORY TYPE	16-bit	16-bit	16-bit	32-bit	32-bit	32-bit	32-bit
FLOAT (seconds)	44.56	16.38	4.74	3.04	2.06	1.18	0.90
FLT (seconds)	278.1	154.8	44.0	28.3	18.9	10.4	8.1
WHETSTONE (seconds)	396.2	105.1	33.1	18.5	12.4	7.1	5.4
(KWhets/sec)	25	95	301	538	805	1412	1858
CALCPI (seconds)	254.2	147.3	28.5	18.7	11.0	6.3	4.8
(Kflops/sec)	5.0	9.3	57.8	85.9	151.1	261.8	342.5
SAVAGE (seconds)	464.32	17.74	5.50	4.26	3.64	2.22	1.66
MIPS (Million Instr Per Sec)	0.84	1.00	1.95	4.02	4.22	7.69	10.34
SIEVE (seconds)	2.48	2.44	1.28	0.620	0.617	0.320	0.258
DHRYSTONES	769	862	1041	2380	3125	6250	7142
RONIN PERF. TEST	1.02	1.13	1.57	4.09	5.02	10.54	13.70
RAMSPEED (MHz)	6.903	7.043	10.575	10.893	16.369	19.831	22.916
CRAZY (seconds)	80.70	12.38	12.61	5.68	5.15	2.78	2.20
Spreadsheet Recalc (secs.)	9.5	8.1	8.8	4.2	3.4	2.0	1.8
PPage color-separation (minutes:seconds)	12:46	11:17	12:53	5:35	4:42	2:51	2:26
PRICE US Dollars		$199.95	$249.00	$1699.00	$549.99	$2999.00	$3999.00
32-BIT MEMORY INCL.		(none)	(none)	2MB RAM	(none)	4MB RAM	4MB RAM
READER SERVICE NUMBER		306	295		310	222	222

math co-processors (FPUs), the benchmarks were compiled using the 68881 option with the Manx Aztec C v3.6a compiler. The 68020 option was also used to compile some of the benchmarks (by the way, you should see the compilation times on a 68030 based Amiga, very very fast).

The Spreadsheet recalc test involved recalculating a 100x10 sheet whose cells where packed full of floating-point functions such as sin(), cos(), tan(), sqrt(), etc. Each cell's value was dependent on two other cells. The Crazy spreadsheet is a graphical benchmark which comes with the CMI accelerator. The Professional Page color-separation consisted of a page which featured a box of text and a box containing a 640x400 16 color image. The page was separated to RAM: so that the results would not be dependent on hard-disk speeds.

The MIPS test is one of the most meaningful ones in the computer industry, the realization that you are working on a computer that is executing 10,000,000 instructions every second is quite exhilirating.

CONCLUSION

If you don't have much experience with hardware, I would seriously recommend that you do not install the CMI Processor Accelerator , the Hurricane 500, or the CSA Midget Racer yourself since they require both the disassembly of your Amiga and the prying out of your 68000 CPU. It would be better to let your dealer or an experienced friend do the installation. If you decide to do the installation yourself, make sure that you are not loaded with a static charge, ground yourself because STATIC KILLS CHIPS.

I hope I have given you an insight into the various types of accelerators that are now available for the Amiga. As you can see, there can be a significant difference between product performance levels, but there can be an equal difference in cost. It is not really possible to state absolutely that one accelerator is better for a particular application - the rule of thumb here is the fastest accelerator will be do a better job in all applications - the deciding factors seem to be money and system compatibility. The best accelerator tested is undoubtedly the GVP Impact A4000 68030 board, not only does it outperform all the other boards by a wide margin, but it also doubles as a very high speed hard-disk controller. The Impact A4000 board is not exactly cheap at US$3999, but if speed and power is what you need or crave then this board is definitely worth it. ❑

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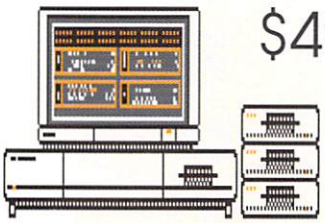

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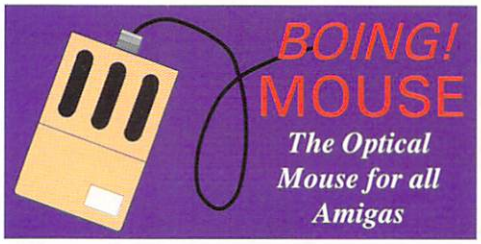

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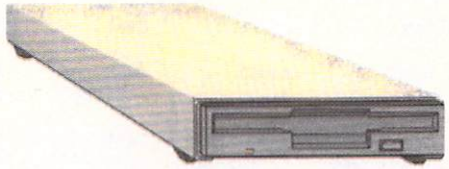

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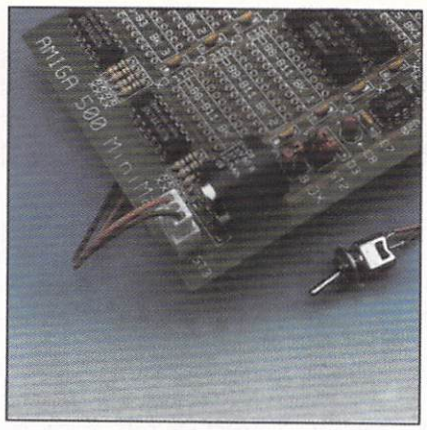

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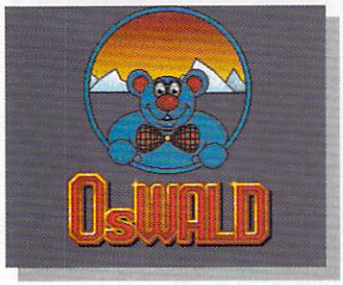

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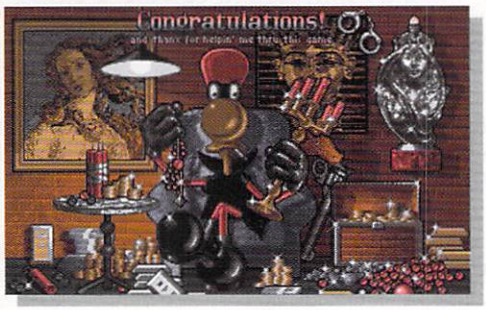

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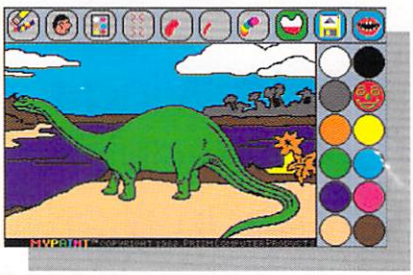

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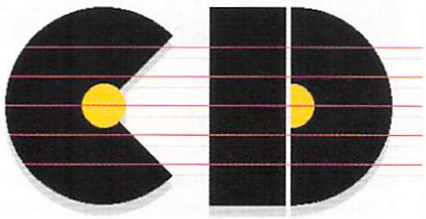
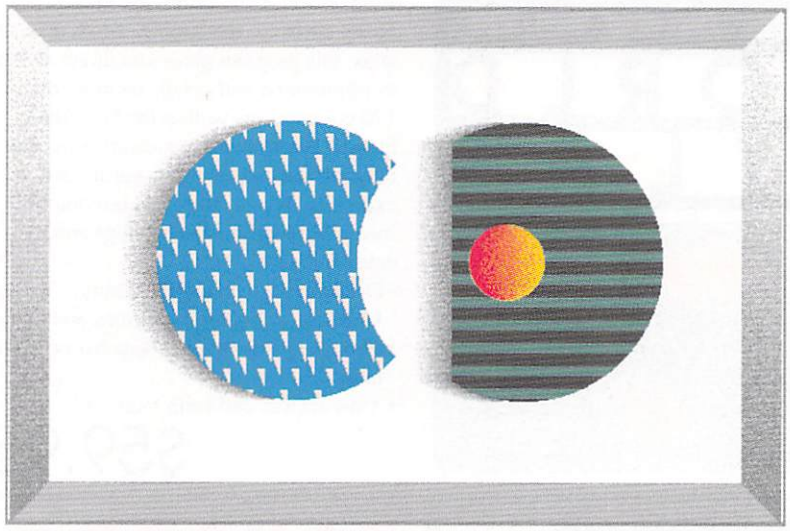
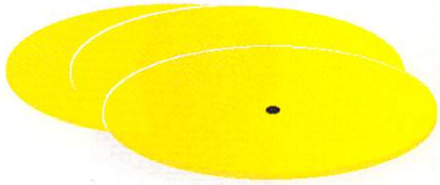




The added system power of having the CD would mean more buyers, better user productivity...



Recent flyers from a major local vendor carried an entire section devoted to CD-ROMs. According to the ad, there are over two thousand commercial titles now available. Meanwhile, CD-ROM drive prices have fallen steadily, to the point that older models of SCSI CD-ROM drives have been showing up at swap meets and discounters in the $200-$300 range, often bundled with CDs like the Groliers Electronic Encyclopedia. Although the cost of burning an original CD is usually quoted above a thousand dollars, once that has been done, the copies are only about $2 a piece to manufacture. Many computer clubs have put CDs with the equivalent of a thousand disks of Public Domain software on line on their club BBS.

So does this mean that you too can run out and put graphic, data or sound libraries running to hundreds of megabytes on your Amiga? Sorry.

To the best of my knowledge, no one has gotten around to writing a CD driver for the Amiga. The CD-ROM drive manufacturers don't see a big enough market, which is probably a mistake, as the Amiga burns disk storage, especially when we're talking stuff like 3-D animation. Extensive parts libraries for animation, graphics and MIDI would be much hotter products in the Amiga market percentage-wise than in the DOS or Mac worlds. The lack of a driver is essentially the only thing barring us from using the available libraries. The reason Commodore hasn't done it is not because it isn't on their list - it is! Their manpower resources have been stretched so thin, however, that they just never have been able to get to it.

I'd like to suggest a reason to increment that task priority. Steve Job's NeXT machine is taking the logical step of putting commercial software on a laser drive, bundled with the machine. The NeXT drive is not a CD-ROM, rather it's a full-fledged optical hard disk that allows you to read, write, erase and rewrite to it - which costs substantially less in storage and considerably more money. The NeXT scheme of marketing the software, as I understand it, is that a kinky form of copy protection is included with the bundled software that allows you to run it once, after which you have to enter a code that you get from the manufacturer if you decide to buy it.

This sounds like a workable plan that avoids a lot of the problems of marketing software, and, more importantly, grasps the essential fact that people do not buy computers, they buy information processing systems. The computer buyer should not have to separately deal with the problem of choosing - often wrongly and at great expense - the software that allows them to do the things that they bought the ma-

By Phil Osborn

chine to do. That task itself requires a tedious and expensive process of bootstrapping oneself to a level of expertise in software evaluation that has little to do with the real reasons for having the system to begin with. As such it acts as a barrier to the customer, a barrier that favors established brands over upstart unknowns like our Amy. We may have the best software in the world, but the customer has to add the time and effort necessary to make that sophisticated evaluation to the total investment he's making in his system. Thus, most Amiga owners bought Amiga because they knew someone else who had one - a typical Amiga fanatic who dragged them kicking and screaming over that barrier.

Why not take the hint from NeXT and smash that barrier, or at least cut it down to size? CD-ROM drives are cheap. Mass-produced CDs are cheap. A single CD-ROM could easily hold the following:

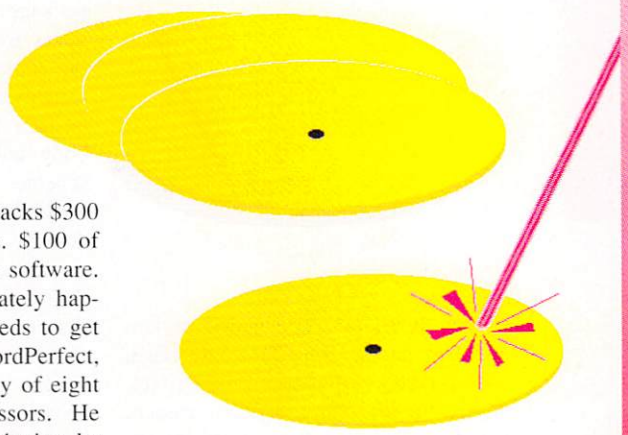
1) The ten top commercial programs in every area. 2) Fifty MB of the best Public Domain stuff. 3) A complete encyclopedia and dictionary. 4) Big parts libraries for animation, graphics & sound. 5) An enormous collection of custom programming libraries. 6) A keyworded index for everything on the disk. 7) A comprehensive list of Amiga dealers, manufacturers, products (along with reviews), BBS's, and clubs. 8) Tutorials for everything.

What more could one desire? Well, actually, I could think of some things... If I were primarily interested in desktop publishing, then I might find most of the disk useless, and I might prefer having a lot more graphic parts. If I were an elementary educator, then my interests would be very different than if I were an engineer or musician. Even a single CD-ROM has its limits. But when you're talking hundreds of thousands or millions (why not?) of units, then you can publish custom system disks for a reasonably wide range of interests, and publish updates every six months.

Let's just consider the minimal case first, however, and look for a moment at how it might work including the advantages and the problems for all the parties involved. Assume that we're going to use a standard SCSI drive and build it into every Amiga bundled with the system disk as described above. The drive probably costs Commodore less than $100 and gives the owner a SCSI port to boot, so Commodore tacks $300 on the price of the machine. $100 of that goes to pay for all that software. The typical buyer is inordinately happy. He has everything he needs to get started. If he doesn't like WordPerfect, he can run Excellence, or any of eight other top-rated word-processors. He rarely has to worry about whether he bought the right software - everything is there from the start the way it should be. He has a system, not a piece of a system that he has to complete by hook or crook.

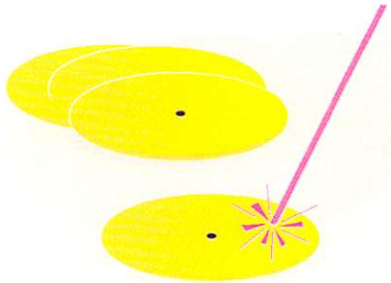
Why not take the hint from NeXT and smash that barrier, or at least cut it down to size? CD-ROM drives are cheap. Mass-produced CDs are cheap.

What about the developer? Most of the development costs today are wrapped up in marketing. He has to run ads, go to shows, convince dealers to carry his product and beat out the competition, which may actually have a much superior product, but may not have as good a marketing firm. Also, he generally has to cover all bases within his product definition. His word-processor has to do everything the others do and some more besides. He has to "reinvent the wheel", instead of concentrating on doing something new or one or two things better than they've ever been done. Then there are the pirates. Finally, and with few exceptions, only a small percent of the market will ultimately buy his product.



What if it were possible to eliminate 90% of the effort or cost involved in the process? What if he simply had to convince a crew of experts, and/or a random selection of users, that he had a product worth putting on the CD? Once its on there, his costs are nothing, and he gets a fixed royalty per copy, just like some of the authors of today's WorkBench/Extras package. (What kind of software would we see if developers were free to devote their energy to developing the best possible specialized modules, that were never intended to do everything, but were designed to work together with other modules in the ICP/AREXX environment the Amiga is moving towards?) The developers who didn't make it on the official CD would still be free to market through the traditional channels. The CD's are not as quick as hard drives, and you can't write to them, so specialized products that only a small fraction of our community wanted or needed would still have a ready market, and the users would have more money to spend on them because they wouldn't have wasted it on all the stuff on the CD. Someone who came out with the modern equivalent of a Deluxe Paint - i.e., a product so good and so essential when it first appeared that there is no competition and everyone wants it - might even decide that they could make more money marketing independently.

What about the dealers? My suspicion is that they would simply shift to other products. With plenty of software on-board, users will have money to burn on RAM, custom boards, accelerators, hard drives, more CDs to hang

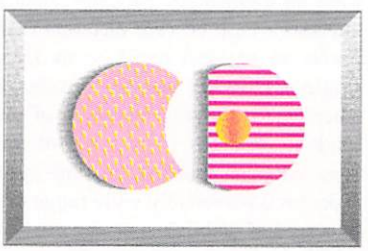


off the SCSI, etc. The added system power of having the CD would mean more buyers, better user productivity, etc. A bigger, more affluent market would mean more sales and service opportunities. Same thing for the Amiga magazines. With all that software, there will be plenty of room for commentary, hints, tricks and tips, patches and hardware reviews.

What about Commodore? Obviously, they would benefit from increased sales. The hardware is no problem for them, I'm sure. The real hurdle would be generating the imagination and initiative at the corporate level to put the package together, contacting the developers, evaluating the software, or finding some crew to do that job in a reasonably objective way, etc. But, sooner or later IBM, Apple, Atari, or somebody will hit upon this or a similar scheme. There's no reason why we couldn't do it first, and every reason to do it.

Consider the future of the Amy. With products like AREXX, TASS, Scripit, Ultracard, VIVA, Thinker, and the other hypermedia products in the works, we're looking at an Amiga, starting especially with the 1.4 DOS, that will demand rethinking a lot of things. When we can tie the output of one program intelligently to the input of one or more other programs and, in essence, put them together like tinkertoys, then we won't necessarily want the huge, do-everything packages. We'll call up the environment macro to do what the job demands as we need it. (How much better if everything we needed were always available, and we had a huge library of environment macros to choose from? We wouldn't even need to have any idea how they worked. Just find the macro with the Thinker 'Find' utility - or let it generate one - and click on the icon....) Similarly in graphics, we're moving toward object orientation on every level, from desktop publishing's structured graphics to 3D formula generated objects and complex motions, with interactive motion on the near horizon. There is also the potential to push this a lot further using techniques such as fractal compression for storage of objects in the commercial library (the compression is the hard part - decompression is easy).

Doing these kinds of things and doing them well, fluidly, transparently for the user, almost demands something like the system CD I've described, with its standardized, all-encompassing libraries. I'm sure that the first iteration system CD will be little more than what I described originally, but its very existence will create pressure for evolution in the directions I've outlined - and in which we're already moving. My suggestion is that somebody ought to write a CD driver - *now*. I would do it if I could do that level of programming. Having Amiga access to the available CD-ROM libraries would doubtless result in a lot of CD-ROM users in our community, which would lead to publication of specifically Amiga oriented CDs. This in turn would put more and more pressure on Commodore to move in the direction I've suggested - of selling complete systems instead of hardware. ❑



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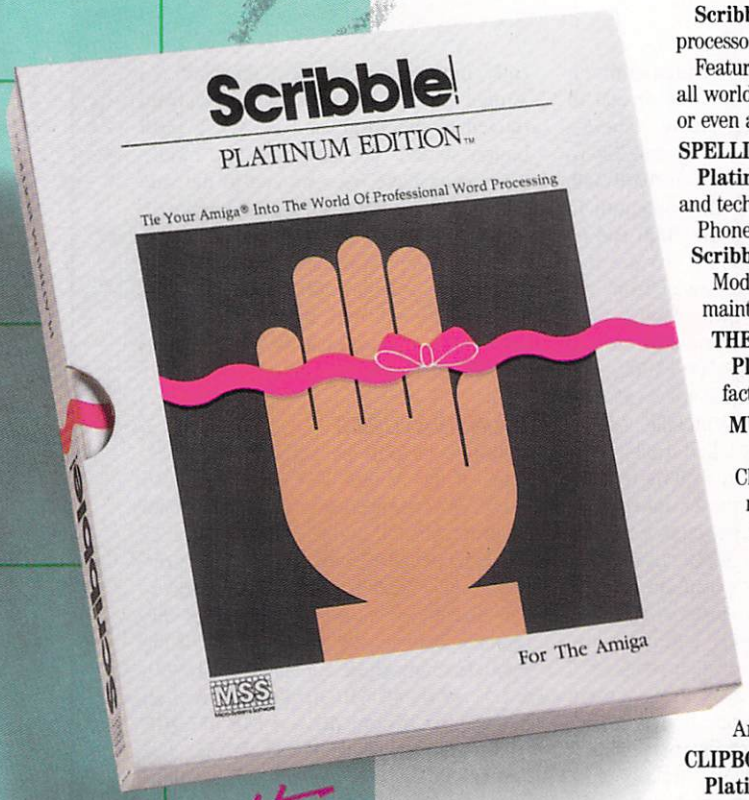

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AMIGOTIMES
FEATURE

at last... AMIGA 3000

The Amiga family comes of age...

Finally, what the entire Amiga community has been waiting for, the arrival of the Amiga 3000. After many rumours, much speculation, and a long wait, Commodore debuted the A3000 on April 24th at a gala affair held at the Paladium in New York. One look at the 3000 and its specification sheet, makes it obvious that Commodore has broken away from the molds of the previous three Amiga computers. Besides the differences in expandability, the Amiga 500, 1000, and 2000, were virtually equal to each other in use and features. With the Amiga 3000, Commodore has taken the big step into the true 32-bit world with more technical innovation and professional style than we have previously seen or expected of them. The Amiga 3000 clearly displays a professional evolution of the Amiga line itself, and reflects the new approach Commodore is taking in the promotion and support of their products.

When first setting eyes on the Amiga 3000, its new appearance and well designed form are immediately apparent and impressive. It's sleek attractive casing is barely taller than an Amiga 1000 and only slightly wider than a regular Amiga monitor. Commodore has finally realized that you can't shove a great computer, like the Amiga, into the first box you find in the basement, as must have been done with the Amiga 2000. The new external features on the 3000 are more practical as well as being cosmetically more appealing than those of the Amiga 2000. The power switch has been moved to the front, and is now a push button switch. The keyboard and mouse connectors have been moved to the side where they do not obstruct the keyboard, as they did on the 2000. Instead of having crooked floppy-disk shields as with the 2000, the Amiga 3000 has the disk shields molded into the casing. Drive bays not being used can be easily closed off with their new clip-on covers.

MAIN FEATURES

Commodore will be shipping two versions of the Amiga 3000, one uses a 16 MHz 68030 processor with a 68881 math co-processor, while the other sports a 25 MHz 68030 CPU with a 68882 math co-processor. Apart from the main processors and the price, there are no other differences between the two versions of the 3000. Each machine comes standard with a 3.5" 19ms 40 MB hard-disk drive, an 880 KB 3.5" floppy drive, 1 MB of CHIP RAM and 1 MB of FAST RAM. The Amiga 3000 now has a built-in high-speed (and I mean high-speed) 32-bit DMA SCSI controller.

Whereas the Amiga 2000 was entirely 16-bit based, the Amiga 3000 has a 32-bit motherboard thereby giving it 32-bit access to memory, the DMA SCSI chip, the expansion bus, etc. The 68030 CPU can even access CHIP memory in 32-bit chunks, this means that you will be able to

By Eyo Sama

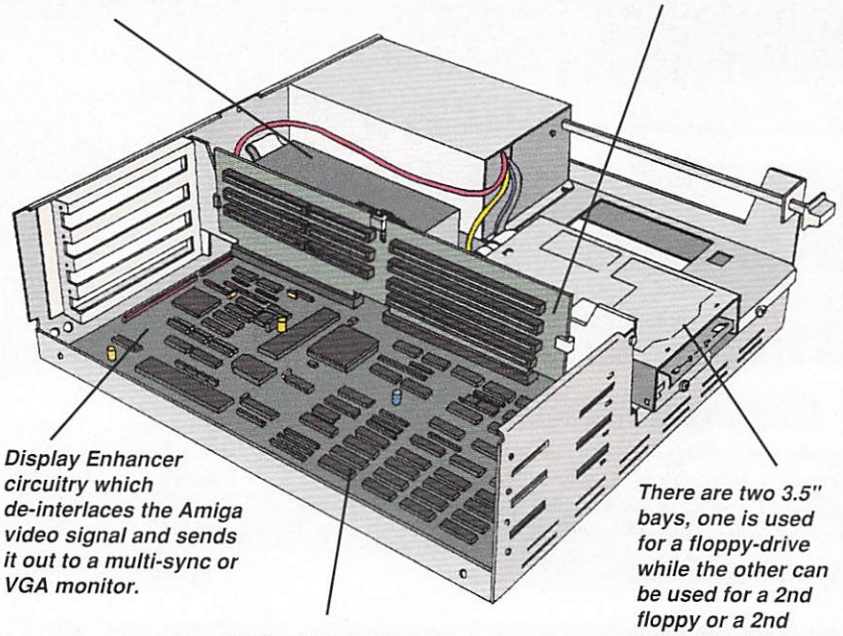

Amiga Mail
MARKET
Volume 16, Published Somewhere in Southeastern Pennsylvania, March 1990
Dealing with Capitalists
Money For Nothing?
The rule is: don't deal with venture capitalists if can avoid it," David E. Gold told an audience at Comdex last November.
While that thought would not seem strange coming from most experienced businessmen, it does make you stop and think when a leading venture capitalist stands up in front of hundreds of people and makes
expect to see a return on their investment within a one to two year time frame but are also looking for longer
CONTENTS
6 Battling the Fancy Blues at Home and Abroad
10 Making the most of Models XXVII
12 Defeating the Giant
14 Fourteen Ways To Make Animation Faster
Commodore 1950
AMIGA
3000
AMIGA

do non-blitter screen manipulations with the 68030 twice as fast as would be possible with a 68030 equipped 2000. Even the system ROMs are 32-bit in nature.

Although I said that Commodore had broken away from the molds of the previous Amigas, I in no way meant that they did not retain compatibility with the earlier machines. Frankly speaking, I am very impressed at how highly compatible the Amiga 3000 is with the 2000 while still being significantly more powerful and different from the latter. With the 3000 you can use the same 16-bit boards designed to work in the 2000, as well as any 32-bit hardware that will be developed specifically for the Amiga 3000. Software-wise the only difference is that the 3000 comes standard with the new Kickstart and Workbench 2.0. Commodore has also devised a very elegant way of dealing with the changeover from Workbench 1.3 to 2.0. For the first few months the Amiga 3000 will have both Kickstart 1.3 and 2.0 resident on the hard-disk drive, by default it will boot into revision 2 of the operating system, but by holding down both Amiga buttons during boot-up you will faced with a menu from which you can decide whether you want to boot from either 1.3 or 2.0. At a later date when more Amiga 2000 users switch over to using Kickstart/Workbench 2.0 and more developers upgrade their software to run under 2.0, there will be ROM chips to replace the disk-based Kickstart. This delay in putting actual ROMs into the 3000, will also allow Commodore to easily send out user-installable upgrades should there be any enhancements or bugs.

BREAKING THE RAM BARRIER

The Amiga 3000 comes standard with 1 MB of CHIP RAM that is easily expandable to 2 MB. There is also 1 MB of FAST RAM on a standard 3000. Using 1 mega-bit chips, you can fit 4 MB of FAST RAM on to your motherboard. With 4 mega-bit chips, you can fit a 16 MB of FAST RAM on to your motherboard, and when 16 mega-bit chips become available, you will be able to fit up to 128 MB on it. The 8 MB expansion limit has been broken, the Amiga 3000 is expandable to 1 GB (Giga-Byte) of RAM via the new 32-bit slots, that's one thousand mega-bytes.



AMIGA 3000

WE NOW HAVE 8 CUSTOM CHIPS

The only one of the custom chips that is the same as it previously was in the stock Amiga 2000, is the Paula chip. The Denise and Agnus chips have been enhanced, the Amiga 3000 Agnus is now able to address up to 2 MB of CHIP RAM. There are a few more display modes which are the same as those generated by the standard ECS (Enhanced Chip Set). In addition to the three custom chips, there are also five custom gate arrays. There is Fat Gary who provides address decoding and general "glue" for the system. Fat Buster provides DMA arbitration and also manages and extends the expansion bus to the Zorro III standard. Super DMAC acts as the DMA controller for the SCSI bus interface. Ramsey controls FAST RAM and allows 16-bit and 32-bit boards to co-exist. Last but not least, Amber controls the display enhancer (de-interlacer).

THE END OF SCREEN FLICKER

Amiga users who do not own a Flicker Fixer, can now take off their polarizing sun glasses because the Amiga 3000 has a de-interlacer built into the main motherboard. The 'display enhancer', as it is called, produces a non-interlaced 31.5 KHz display which can be used with any VGA or multi-scanning monitor. The display enhancer does not interfere with any genlocking devices, but it will not de-interlaced the genlocked image. The regular RGB video connector still exists at the back of the machine for those who do not want an excellent display.

THE ZORRO III EXPANSION SLOTS

The new Zorro III expansion standard is one of the most innovate in the whole computer industry. The standard allows 32-bit and 16-bit boards to co-exist with each other, this means that you can still plug in your old Amiga 2000 boards as well as any new 32-bit hardware that will be developed in the future. With the Zorro III standard you can attach memory boards with capacities up to 1 giga-byte.

The Amiga 3000 has four expansion slots. When I first discovered this, I was taken aback at the fact that this meant less slots than there are on the 2000, but when I thought about it I realized that you actually have more. The 3000 already has a SCSI controller built-in which means you never have to buy a separate hard-disk controller, also, using 4 mega-bit chips you can expand the machine to 16 MB before you have to add any memory via slots. There are also two IBM AT-style expansion slots in-line with two of the Amiga slots, allowing for the insertion of

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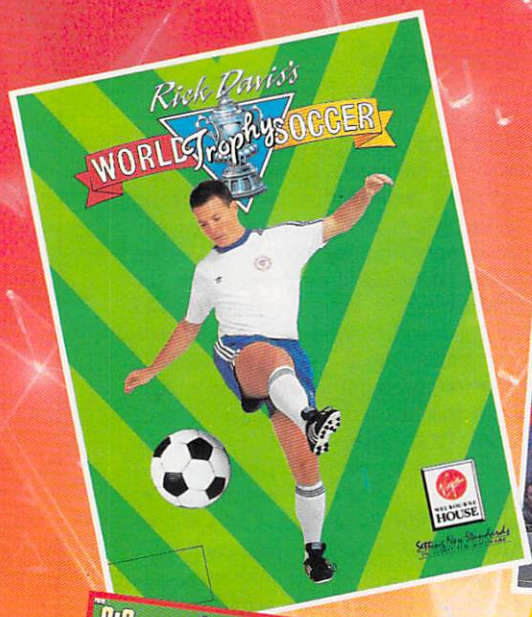

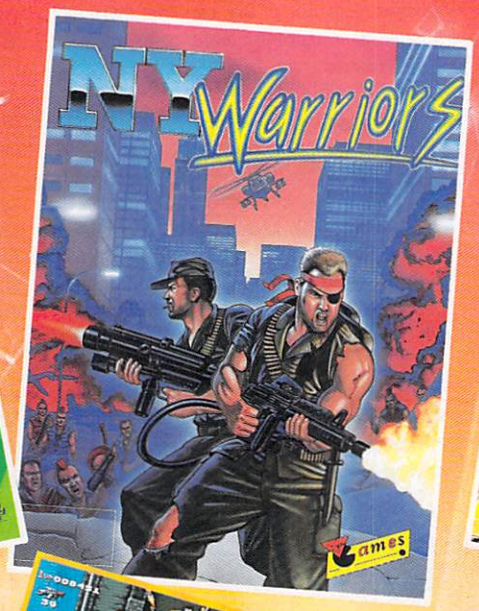

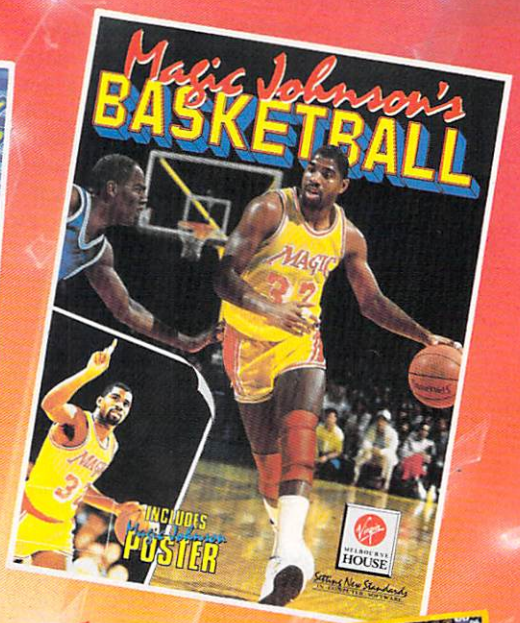

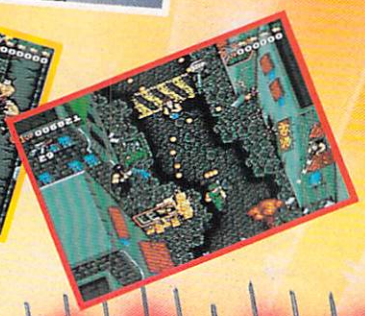

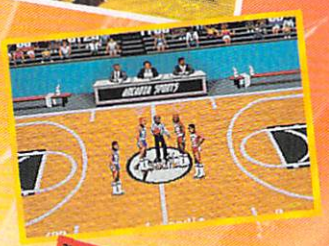

All screens from Amiga 1-Megabyte versions, which are the same versions running in Arcades.

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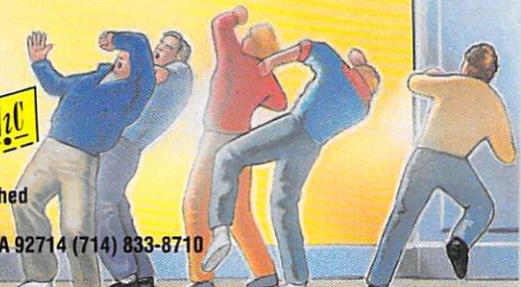


a BridgeBoard and IBM hardware. Another one of the Amiga slots has the Video slot across from it, this I find very interesting because it means that developers can create very powerful graphics boards which plug into both the video slot and the 32-bit expansion bus.

68040 or RISC?

The old 86-pin CPU slot is gone, instead the 3000 has a 200-pin CPU slot which allows boards to be placed parallel on top of the motherboard. This slot is still meant for CPU expansion and acceleration, judging from the specs and certain rumours, this slot is perfect for the attachment of a Motorola 68040 processor, CACHE cards, and even RISC chips. If you have read about the new Motorola 68040 CPU, you will understand my excitement about this prospect. (there are already two companies working on producing such a board for the Amiga).

KICKSTART/WORKBENCH 2.0

Not only did Commodore hire a decent designer for the Amiga 3000 casing, but they also hired a team of graphic artists to re-design the Workbench interface. The Workbench 2.0 interface looks very impressive indeed (see screen shots) but the upgrade is not only cosmetic. The difference between the 1.3 operating system and the 2.0 operating system, is like day and night. I will leave the full details of Workbench 2.0 for future articles because it is beyond the scope of this one, but I will tell you about some of the features now:

Windows can display either icons or just give you a textual listing. Icons can be permanently placed on to the Workbench. The disk icons can be placed into a depth-arrangeable and moveable window. There are keyboard equivalents for Workbench menuitems. You can change the pattern of the Workbench windows as well as the fonts being used. Remember VScreen, the program that allows you to define a Workbench page resolution of up to 1008x800? Well, WB 2.0 allows you to set that as well as number of Workbench colors and resolution via a preferences program. Preferences are now set via several smaller programs instead of through one large one. You can even set the overscan for your screen, and all these alterations are immediately.

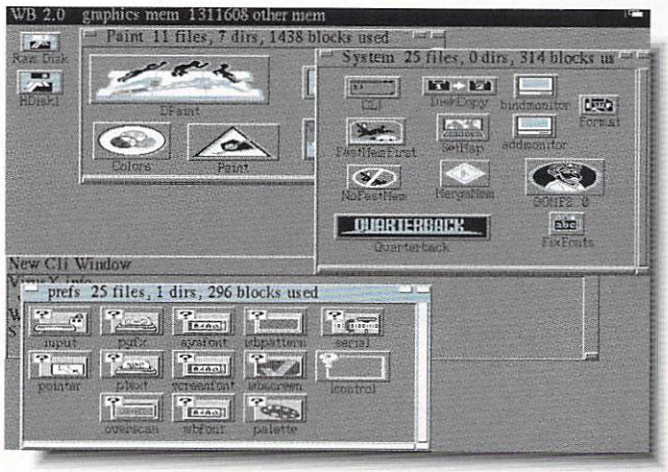
I haven't even covered the changes in the libraries or the enhanced CLI shell, the inclusion of AREXX, and several other enhancements. I would have to run on for at least another 10 pages so I will leave it for next issue.

CONCLUSION

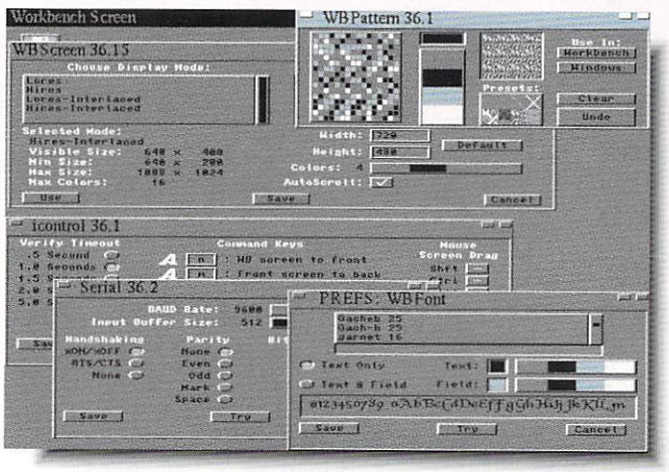
There is something I have not mentioned, and that is the fact that the Amiga 3000 is going to be bundled with some very powerful and innovate software, called AmigaVision. AmigaVision is an authoring system which allows you to graphically create programs using icons. The icons are placed on to a grid on the screen in the shape of a flow chart, you don't need to create any scripts and you don't need to be a programmer to use it. AmigaVision allows you to control images, speech, digitized sounds, music, animations, text, Video Disk players etc. I will not say much about it now since I have not had the chance to thoroughly test and use it, but suffice it to say that I believe the Amiga could be sold to some consumers on just the merit of this software. AmigaVision will do ten times as much for the Amiga as HyperCard did for the Mac.

I guess if there is any disappointment in the features of the Amiga 3000 then it is the fact that there has been no increase in the number of displayable colors or in the maximum screen resolution. This may seem trivial considering all the other advancements, but Commodore has to realize that the Amiga is seriously lagging behind in this regard, and something has to be done about it very soon. There is a new SuperHires mode which gives you a resolution of 1280x480, this resolution doesn't really make much sense since you end up with very tall pixels (1280x960 would make more sense). Even more critical than resolution is having more colors, 8-bit color should be standard on Amigas and 24-bit boards should be directly supported by the operating system.

Putting aside what I said about the color and resolution, I think the Commodore hardware and software engineers have done one hell of a job at creating the Amiga 3000 and the new 2.0 operating system. In many of the features they have surpassed even my greatest expectations and wishes for the machine. I also have more faith in Commodore's present management and marketing team, so I have great hopes for the success of this new computer and any others that will follow in it's footsteps. ❑

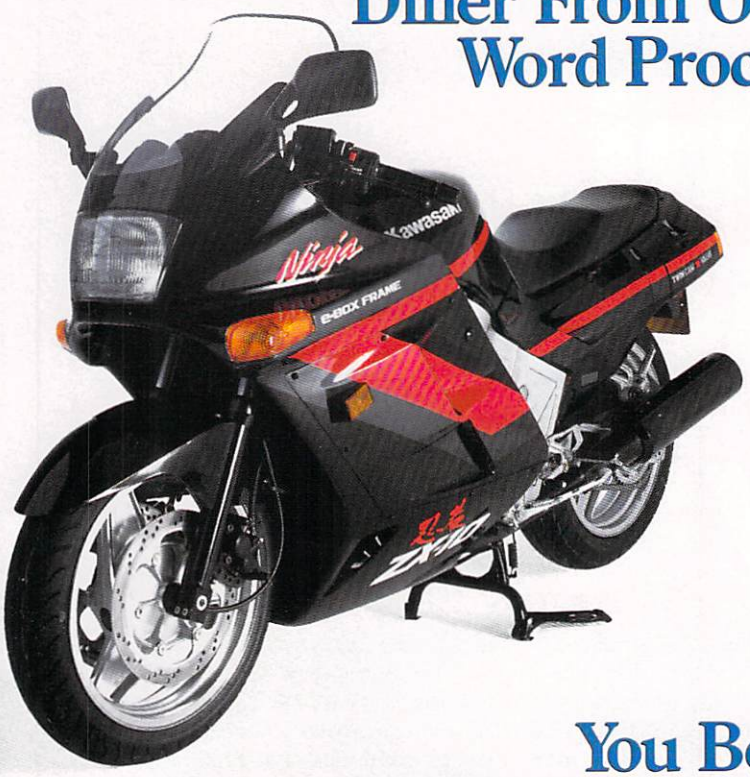


The Workbench 2.0 interface is very professional in appearance and is much more capable than its predecessor.



Instead of a large Preferences program, Workbench 2.0 uses several smaller preferences modules.

How Does New ProWrite 3.0 Differ From Other Amiga Word Processors?



You Begin To Get The Picture.

Beneath Its Elegant Design Lies A Word Processing Powerhouse.

Ease into the solid comfort of the ProWrite environment. Zip in your text and briskly format with intuitive menu and ruler controls. Now slip into high gear using the power of keyboard commands. Deftly cut, copy and paste on the fly, knowing the formidable 100,000-word spelling checker is checking as you type, and the vast thesaurus is standing by with over 300,000 cross references to fine-tune your ideas. Graceful multiple columns are at your fingertips with choice of snaking or parallel text flow. If you're really into performance, you can tackle tedious tasks with the touch of an F-key using macros. For you power users, the AREXX port awaits you. And ProWrite's print merge feature eagerly churns out those form letters.

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Your thoughts pour effortlessly onto the screen, then just as fluidly out to your printer, virtually unaware of anything between you and the printed page. (After all, what good are all those features if they're a distraction to use?) Even your swiftest typing can't outrun it. Wrap your text around a graphic and you're ready for the home stretch. Now it's time to print and you've got control over your printer's dot density, aspect ratio, and paper size. And ProWrite can print your printer-resident fonts with graphics in Pica, Elite, Condensed, and Wide—all on the same page. With ProWrite's flexibility, you can smooth out any rough spots—no matter what kind of printer you have.

With all these performance features and more, ProWrite stands in a class by itself as your power performer. And best of all, it stands on the shelf now at your favorite store.

Features

- Spelling checker with 100,000 word dictionary
- Spell check all at once or as you type
- Multiple columns with snaking or parallel text flow
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- Print merge
- Import any IFF or HAM pictures
- Wrap text around pictures
- Multiple line headers and footers with Title Page option
- Macros, when used with AREXX
- AREXX port
- Hyphenate words with soft hyphens
- Tabs with left, center, right, or decimal alignment
- Defineable decimal tab alignment character
- Prints color or black and white printer-resident fonts and pictures at the same time
- Prints printer-resident fonts with any variety of Pica, Elite, Condensed, and Wide fonts at the same time
- Prints on any Preferences-based printer
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- User-definable dictionary
- Up to ten documents can be open at once
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Ami... alignment System

SAMPLE REVIEW

An extensive disk drive diagnostic system that will analyze every aspect of your drive's performance

Are your disk drives giving you problems? Are you about to buy a new drive to replace the old one? Hold on a minute, the AMI...ALIGNMENT SYSTEM from Free Spirit Software may be able to solve your problem.

The program is an extensive disk drive diagnostic system that will analyze every aspect of your drive's performance. When the program is loaded, from Intuition to booting, you are presented with a graphic screen that serves as your control panel. All the program's options are toggled on the panel by using the mouse or by using the keyboard shortcuts. There are many tests that can be performed to test the integrity of your drive; a short explanation of each follows.

The AUTO ALIGNMENT TEST will test your drive's alignment on three important tracks: the middle one and the two on the outer edges of a disk. The DRIVE MOTOR SPEED test will test how fast your drive motor spins around. The PERFORMANCE OVERVIEW will perform 3 tests on your drive. First, the program will test to see if new tracks can be created succesfully, then it will test to see if data can be written and read from the drive without errors. Finally, the MANUAL TEST allows you to manually select different tracks to test for alignment.

Testing the track alignment of disk drive DF1 with the Ami ... Alignment System

The program provides the user with full status and error messages during testing and comes with a manual that gives you an explanation of each message and information on how to interpret the test results. There are also sound effects that accompany the testing process as well as an option of sending the test results to a printer for later analysis. The program can be placed on a hard drive, using an included program, is multi-tasking and runs on a 512K one-drive system (the program supports multiple drives and other hardware configurations).

There is one step in the alignment process that is probably not for the novice user. Once you determine that your drive is out of alignment, the only way to fix it is to open your computer, disassemble the failing drive and adjust its stepper motor (this motor moves the read/write heads to specific tracks on the disk). This maneuver is detailed in the manual carefully, but should probably not be attempted unless you are comfortable inside the computer and don't mind the possibility of voiding your warranty.

Aside from this minor difficulty the program is very succesful in what it attempts to do. You align your drives yourself and avoid the cost of a repairman or buying a new drive. If you are having drive problems, I would recommend that you consider the AMI...ALIGNMENT SYSTEM before investing in a more costly alternative. ❑

(See PRODUCT INDEX on page 109 for more contact information)

By Georges Broussard

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Professional Publishing Results

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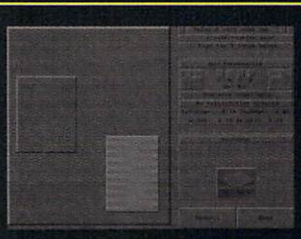

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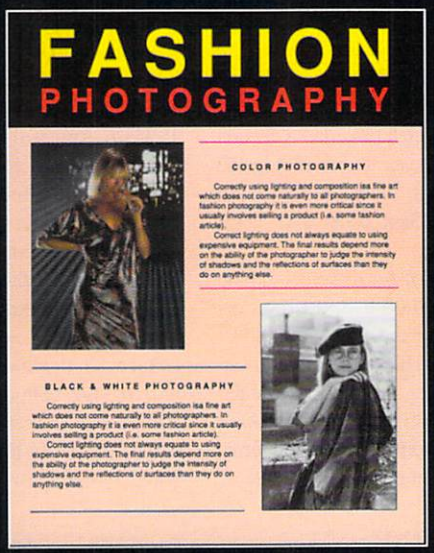

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ACCELERATING YOUR AMIGA 500

...or How to Void your Warranty with Class

By John Flanagan and Brad Fowles

(At this time the management of AmigoTimes would like to warn its readers that the following article contains information and situations which some members of our audience may consider too frightening to contemplate. Those readers who are faint of heart or delicate of constitution are asked to kindly proceed to the next article)

In August of 1988 I released a public domain hardware project for the Amiga 1000 called the LUCAS project. Consisting of a bare board, 4 pals and documentation, it allowed you to put a 68020 and 68881 into your 1000 for as cheaply as you could get the parts. As one of the first designs which would allow the '020 to run asynchronously to the Amiga clock at speeds up to 20 megahertz, it provided a substantial increase in performance for applications like ray tracing and the calculation of Mandelbrot sets, but only about a 1.4 times increase in general performance. In July of 1989 it was followed by a 4 megabyte 32-bit wide memory board called FRANCES which provided a generic 2.3 times speed increase by extending the 32-bit wide data path to the memory and remapping the KickStart code into 32-bit wide memory space.

There were two major reasons I did the project. First, the A1000 had just been orphaned by the A500 and the A2000 and I wanted to provide A1000 owners with an inexpensive upgrade. Secondly, I wanted to help revive the art of hardware hacking so folks could save some cash and hopefully learn a little along the way.

The project was fairly well received, and my faith in the ingenuity of other hackers out there was demonstrated by the number who solved some of the design flaws, fixed some interface problems, and a neat hack to allow the 68000 to remain resident so it, rather than the '020, could be selected at boot time. As of the end of October I have shipped slightly over 1000 LUCAS boards.

In the last few months the orders for the LUCAS board have increased substantially due to the fact that 68020's and 68881's have become available on the surplus market for $35.00-$50.00 each. Some of the original builders of the LUCAS board paid as much as $300.00 for the 68020 alone. There is information on the documentation disk as to where these cheaper parts may be obtained.

I might as well go on record at this time and tell you that, in response to many requests, I am designing a 68030 daughter board for the LUCAS project. The running joke around here is that if I keep this up, by 1994 my Amiga 1000 will be 4 feet tall.

It will be a pretty, plain vanilla design, but I intend to do a little work latching the data bus to achieve speeds over 20 megahertz. We still won't be as fast as those other boards because the FRANCES memory doesn't support DMA. There is no special hard disk interface so the hard disk's performance will be far below theirs. Still, for raw computing power, we should be their equal. (68030's have also started to become available on the surplus market).

LUCAS and the A500

I get a great deal of mail asking me if the LUCAS board will work in the 500 or the 2000. The simple reply used to be, no, I don't recommend it. The power supply for the 500 can't handle the load and there are much better though more expensive solutions for the 2000, besides, the form factor is all wrong. The time and money required to redo the layout of the board just wasn't available. It wasn't long before I started hearing about successful installations into A500's and a few into the A2000. The last thing I want to do is to discourage hackers, so I relented a bit to say yes, it's possible for the A500, but say goodbye to the case. It still defeats the economics of it to try it in a A2000.

So, if folks were going to try hacking it into an A500 anyway, maybe I could get one of them to document how they went about it succesfully for inclusion on the docs disk. It was at this point that AmigoTimes asked me to do an article and John Flanagan sent me a UseNet message describing how he had put the LUCAS and FRANCES boards into his 500, with an offer to write it up for me.

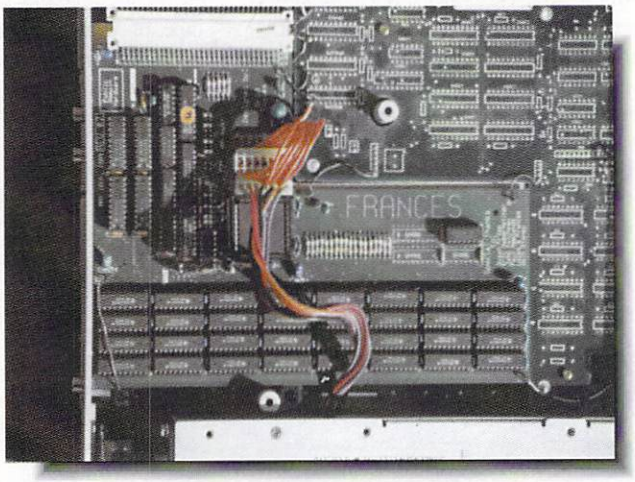
There is one very positive advantage of mounting LUCAS and FRANCES in an A500 versus an A1000, and that, of course, is that with the A500 you can have access to 1 megabyte of chip ram. Greg Tibbs will, hopefully, be releasing his Rejuvenator board for the A1000 soon so that those with the original AMY can have access to 1 meg. of chip ram.

Over the next few weeks, John and I will be working up a more detailed account of how to do this hack for inclusion on the Documentation disk for the project. For those of you who would like to know what you're getting yourself into, John has written an overview of his method. Personally, I love the concept, and I intend on buying one of the used 500's I see in the newspaper and trying it myself, (I can always use another rendering engine) but I warn you, this is a REAL hack.

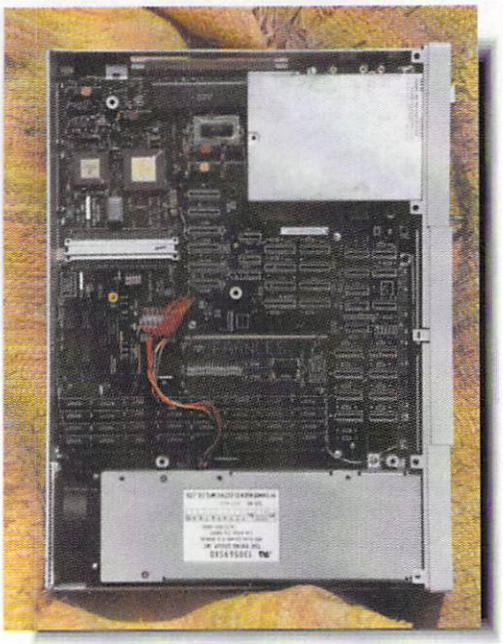
Brad Fowles

MOUNTING LUCAS AND FRANCES IN THE A500

When I first heard about the LUCAS board, I knew that I wanted to build one. I was working on an animation program that didn't produce enough speed to suit me. Code optimization was only getting me modest improvements in speed, so I figured it was time to try brute force. The LUCAS board sounded like a good design, which would provide an upgrade path to 32-bit wide memory at an affordable cost, and which would also be fun to put together. The only catch was that Brad had designed LUCAS for the A1000, while I had an A500. Nevertheless, there did not seem to be any fundamental reason why I couldn't use LUCAS, so I decided to give it a shot.



Close-up of the Frances board and its placement in the A1000



The Frances board installed in the Amiga 1000

The principal difficulty, of course, was the form factor; there was no way to fit LUCAS inside the A500 case. This didn't bother me, since I had never liked the A500 case style anyway. To tell the truth, I much prefer the A1000 case style to that of either the A500 or the A2000. I particularly disliked the attached keyboard on the A500, but since I wanted compatibility with future chip-sets and couldn't afford the A2000, I bought the A500.

I decided to remount the A500 motherboard in a PC XT clone case, which would give me plenty of room to hold LUCAS, and would also provide the opportunity to detach the keyboard.

I already had an XT clone case (available from Jameco for about $US 35.00) containing some PC-compatible floppy drives, hooked up to my Amiga with a home-made interface circuit. The case has a flip top for easy access while working inside it; I recommend purchasing a fairly large case for this sort of project. The motherboard is a good size and, since the expansion bus ends up inside the case, any expansion devices need to be able to fit inside as well.

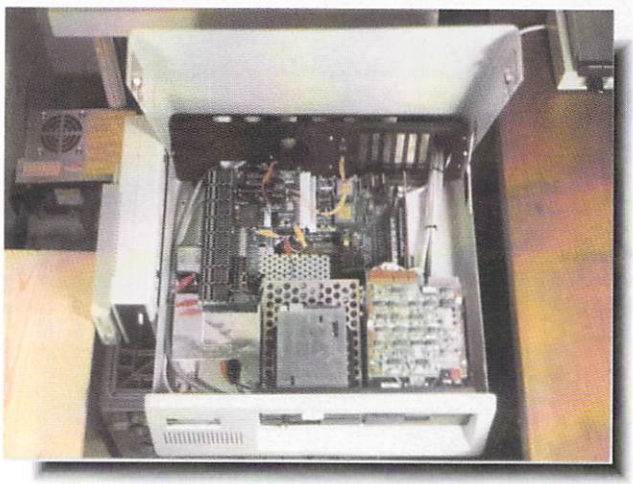
Now, by remounting the system in another case I had undone all the work put in by Commodore's mechanical design crew, and a couple of packaging issues arose. For one thing, the keyboard needed to be detached and an extender cable made for it, here I extended the 8-wire cable which attaches the keyboard to the motherboard by 3 feet or so.

I also added some rubber feet to the bottom of the keyboard in order to prop it up at a comfortable angle. Since I did not

build a case for my keyboard, its exposed circuitry lends a bit of Max Headroom atmosphere to my desk top. It would be possible to attach an A2000 keyboard to the motherboard if a suitable adaptor were made for its cord, but it is not quite compatible with the A500 keyboard: the Control-Amiga-Amiga reset signal is handled differently, and the power and disk-drive L.E.D.'s are missing from the A2000 keyboard.

Another issue to be dealt with was the internal floppy drive -- it had to come out. I made a pair of two-foot extension cables for the drive. One cable was a 34-lead ribbon cable with female headers on the end of it, identical to the one which comes with the machine except for the length.

The other cable was a 2-wire power cable with headers to match the original ones.



The Lucas and Frances boards installed with the A500 motherboard in a PC XT clone case

I remounted the drive in a spare drive case I happened to have, outside the main system box. I could have mounted it in one of the internal drive bays of the XT case, but they were already filled by other floppy drives. The most difficult aspect of extending DF0: was finding a suitable face-plate for it. I eventually made my own by cutting slots in a blank disk-drive face-plate, but I would still like to find a "real" face-plate.

Finally, with my A500 reduced to a bare motherboard connected to its peripherals by extender cables, I mounted the motherboard backwards in the bottom of the XT case, with the rear connectors facing the front.

A support leg for the disk-drive rack at the front of the case had to be bent up to allow the motherboard to fit underneath. Also, extender cables for the mouse, monitor and external disk drives proved convenient.

My Amiga was now repackaged and ready for turbocharging. I put the LUCAS board together according to Brad's instructions, and plugged it into the 68000 socket. In order to accomadate LUCAS, part of the RF shielding had to be removed. There is a panel of the shielding over the 68000 socket which is removable and, with a long enough socket adaptor on the LUCAS board, it should be possible to sit it on top of the shielding. I actually just cut some of the shielding away from that end of the motherboard, but this could affect the resale value of the machine, so I would not recommend it.

There is one problem I found with LUCAS on the A500. When powering up the machine, there is about a 50/50 chance that the LUCAS clock will start up in the wrong phase to sync with the rest of the Amiga. When this happens, the machine fails to start (you'll see a green or grey screen) and the only cure is to turn the power back off and then on again. There is a fix for this problem on A1000's, but I have not tried it on the A500, so I can't say whether it will work.

(Note from Brad; The best fix for this is to use a 74F32 OR gate and 74F04 Inverter and invert the *C1 clock (pin 16 on the expansion connector) and run it and the *C3 clock (pin 14 exp. conn.) into the OR gate, and run the output to PAL U6, pin 7 (7MB2) on the LUCAS board disconnecting the signal which goes there now.)

Adding FRANCES really made my machine a joy to use. Again, it went together according to the directions, and installed without much trouble.

There are a couple of hacks described in the FRANCES documentation which I had to perform. One was the CAS* hack, which is needed to reduce bus noise, and the other was the construction of an expansion bus terminator, which also reduces bus noise. The bus terminator had not been necessary when I just had a LUCAS board. I also added an "A-Max switch," which is needed in order to be able to use the FRANCES memory with the Mac emulator from ReadySoft.

One last change needed to be made to acommodate FRANCES: the power supply. The original power supply had been sufficient to drive the LUCAS board (I had one of the 65 Watt supplies), but for FRANCES I made an adaptor to a PC power supply. FRANCES only needs +5V and Ground, so the adaptor is fairly simple to make. I also cut the power connector off of the Commodore power supply, and attached it to the PC supply, so that everything in my machine was running off the same supply. Thankfully, Commodore provides pinouts in the back of their A500 manual, so it isn't difficult to figure out how to make the power cable. The drawback to using the PC supply is that there is no room inside the case once the Amiga is in there, so it has to sit behind. Fortunately, A500 owners are already conditioned to put up with external power supplies, so this is not too jarring. It might be possible to find a smaller supply which would fit inside the case -- an A1000 supply, for instance, or perhaps a Baby AT supply.

In the end, I have a machine which looks nothing like an Amiga on the outside, but behaves on the inside like an A2500. It is more than just a personal computer. It is a personalized computer. Not too bad for less than the price of a stock A2000 with some added elbow grease.

John Flanagan

The original article describing the LUCAS board appeared in Amiga TRANSACTOR Volume 1 issue 3, December 1988 and the FRANCES board in Volume 2 issue 5, August, 1989.

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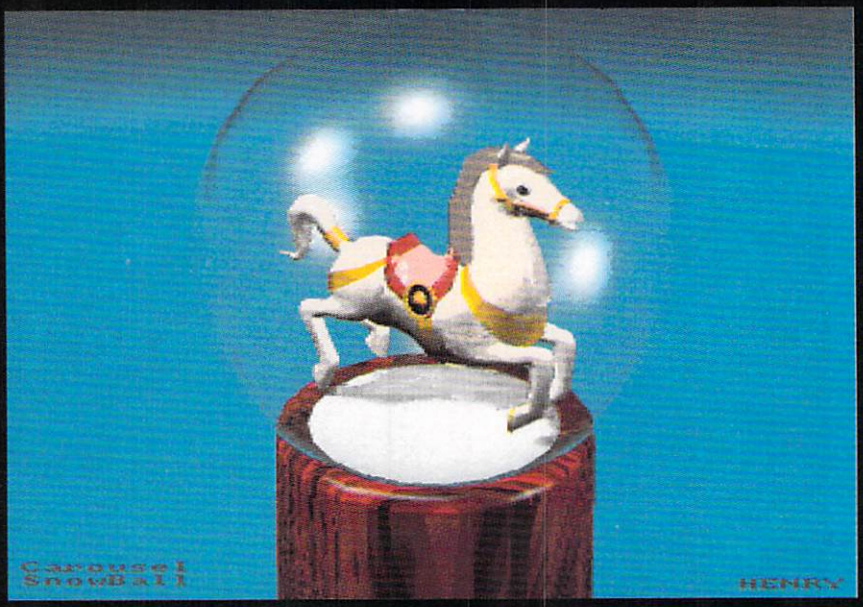

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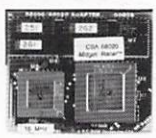

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AMIGOTIMES
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PRINTER REVIEW:

HEWLETT-PACKARD PAINTJET

Welcome to the new Printer Test Page produced by the Ontological Survey Lab and AmigoTimes. Each month we will provide a technical review and most importantly, a standard graphic test page layout for definitive printer output comparison.

REVIEW

Hewlett-Packard has been marketing their PaintJet since August 1987, and the PaintJet has established itself as the most popular Amiga color ink jet purchase to date. Relatively high dot-per-inch resolution combined with the growing success of ink jet technology has made this a successful model for HP.

Hewlett-Packard began formulating their art of ink jet technology with the marketing of their black and white ThinkJet ink jet printer over half a decade ago. The evolution of various models led them to today's color PaintJet and its cousin, the black and white 300 dpi DeskJet Plus. These printers share a basic technology un-paralleled in their simplicity and user friendliness. This simplicity of product design is not without its faults, so let's examine the details of the PaintJet and paint some conclusions.

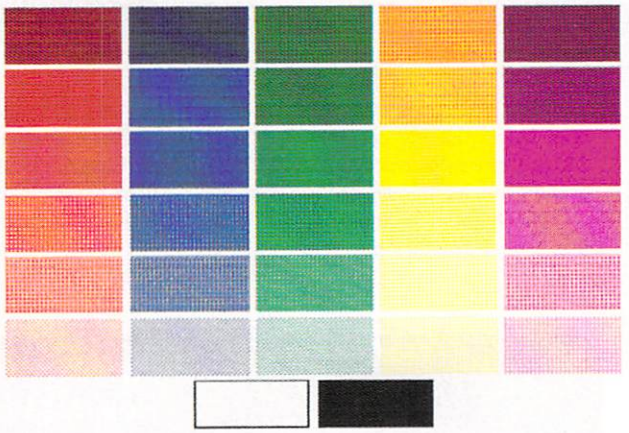
PaintJet, a catchy name combining paint and jet used as transitive verbs; to cover or smear over with paint, and to spout. It's all in the name, but HP calls its PaintJet print method, thermal ink jet drop-on-demand. Most importantly to the user, the paint is contained within two disposable ink cartridges (black and three color) which also house the ink jet nozzles. Dissecting a cartridge will reveal a hollow plastic housing filled with porous foam rubber which contains the ink, and a filter. The exterior of the cartridge is featureless except for a section of polished gold plated nickel that has tiny holes perforating the ejector nozzle plate and separated sections which correspond to gold plated aluminum that leads in the printers cartridge housing. A low voltage, low current short lived electrical pulse uses a resistor and hi-tech thin film technology to create an intense heat of 300 C. This causes the ink to vaporize under the designated one of thirty nozzles, expanding in a vapor bubble which collapses and ejects a drop of ink from the ejector plate onto the page. Sounds simple enough, but does it work?

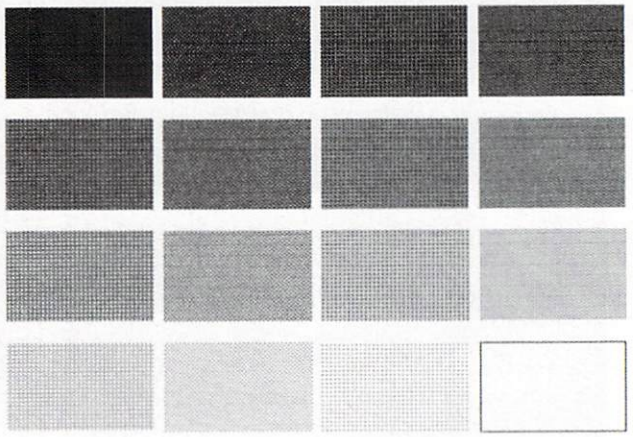
Considering that this is a mid-ranged price printer, I think the PaintJet operationally performs elegantly. The employment of new or replacement print cartridges is simple, and a priming and wipe operation will free them of air bubbles or paper dust which can clog the ink jet nozzles. You cannot hear this printer operate from across a room and its graphics dump speed printing is akin to a jet plane compared with many impact printers. Its ink prints on specially formulated paper which captures the ink well, drying immediately, and with a surface retention allowing vibrant colors. Ink jet printing is similar to 4 color process printing, and the 180 dpi capabilities of the PaintJet combining its yellow, magenta, cyan, and black inks can reproduce an impressive array of shades and values of color. Unfortunately, one drawback of the simple elegance of design is that the ink nozzles do clog with varying frequency or develop excess ink buildup which can cause the ejected ink to fly in the wrong direction. I have received feedback from several PaintJetter's about inconsistent print quality and color from cartridge to cartridge. The upside is that the worst visual results simply create more visible print head pass lines on graphics. Frequent cartridge priming and wiping solves some of this, but at the expense of higher ink usage. ASCII near letter quality is not usually affected by this problem. (PaintJet owners take note; HP now recommends you not prime a new cartridge before its first use as they have modified the ink to improve its shipping characteristics.) One other negative of the ink quality is extreme ink fade associated with exposure to sunlight (UV-ultra violet). For pre-press color proof usage the ink fade is not a problem, but Amiga artists have expressed disappointment with the non-permanent output.

The PaintJet is a lightweight, easily portable, user friendly, medium resolution color output device. Its simple design lends itself well to home and business Amiga output. Its business strength is in printing graphics, not its near letter quality. But designers and artist are restricted to its 8 1/2" x 11" page output. Home users will find its ASCII print quality useful, es-

By Curt Kass

PRINTER TEST PAGE





TEXT

8 pt.

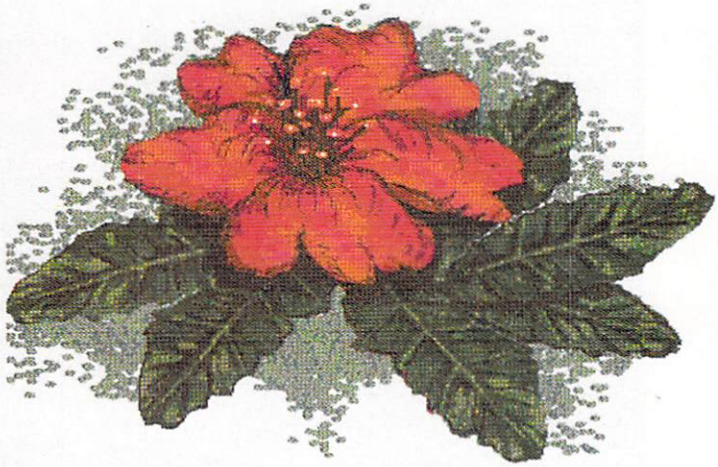
The quick BROWN fox jumps over a lazy dog.
The quick brown FOX JUMPS OVER A LAZY dog.
The quick brown FOX JUMPS OVER A LAZY dog.

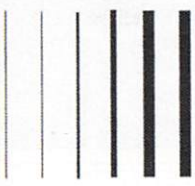
12 pt.

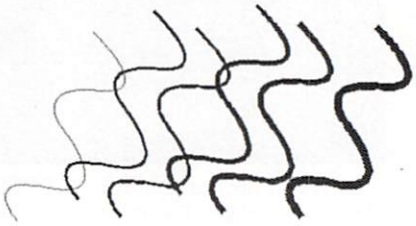
The quick brown fox jumps over a lazy dog.
THE QUICK BROWN FOX JUMPS OVER A
The quick brown FOX JUMPS OVER A LAZY
The quick brown FOX JUMPS OVER A

24 pt.

The QUICK brown fox
The QUICK brown fox
The QUICK brown fox
1234567890ABCDEFG







pecially considering its nearly silent and fast printing. The PaintJet is not a plain paper printer, therefore add this expense to the disposable ink cartridges when considering operating costs.

I do not think you can favorably compare dot impact ribbon technology to ink jet for graphics output, and only the vanishing Xerox 4020 ink jet is marketed in a similar price range with 120 dpi, simulated 120 x 240 over-strike dpi, twice as heavy, 1/3 bigger footprint, self-priming and wide carriage.

The PaintJet is appealing for printing Amiga graphics due to its 180 dpi resolution, its relatively bright color output, and that for its price, there is no other printer quite like it.

ABOUT THE AUTHOR

Curt Kass is a 3-dimensional artist and designer, teaching art and design at the elementary and college levels. He studies the nature of things under the aspect of ONTOLOGICAL SURVEY which has additionally provided educational consulting in personal computer graphics since 1986. His most recent product, "PALETTE PRINTER" a software utility, is designed to aid the Amiga artist and graphic designer pre-select and color match the output of any color computer printer.

Printer review research is conducted by ONTOLOGICAL SURVEY, an educationally oriented independent computer graphics R & D lab and consultant. UV testing results are provided by Positive Negative's, Amiga Fine Art and Research, Miami, Florida.

PRINTER SPECIFICATIONS
Hewlett-Packard PaintJet

Print Method: Thermal ink jet drop-on-demand **Ink Method:** Two disposable ink cartridges: one black, one color
Print Ink Life: Black ink: 1100 text pages, Color ink: 50 pages solid color fills
Colors Available: Black, yellow, magenta, cyan, green, blue, and red. Hundreds of color shades will dither mix from these seven, many with good saturation.
Resolution: 180 x180 dpi
Resident Fonts: 10-pitch Courier, 12 and 18 pitch Letter Gothic, bold, underline, superscript, and subscript
Characters: 12 sets including Roman*, PC-8, US ASCII, Spanish, French, PC-8 (Danish/Norwegian), German, Italian, United Kingdom, Norwegian I, Swedish Names, and ECMA-94.
Paper Type: PaintJet, ink jet paper suggested, will work to a lesser degree with a variety of paper. Cut sheets, or Z fold. Transparency film
Paper size: 8 1/2" x 11" **Paper feed method:** Friction and sprocket
Paper Weights: NA
Print Speed: 167 NLQ characters per second at 10 characters per inch
30-40 seconds for a typical page of text
4 minutes for a full page of color graphics
Noise level: 50 db(A) **Interface options:** RS-232-C/CCITT V.24 serial
Emulation Modes: NA HP-IB (IEEE 488-1978)
Data Buffer: 8K bytes Centronics Parallel
Dimensions: 17.40" wide, 3.86" high, 11.89" deep
Weight: 11 pounds **Suggested Retail:** $1,395.00

Test Page Driver: Preferences 1.3 HP PaintJet **Test Page dpi:** Density #1, 180 dpi
Test Page Paper: Hewlett-Packard PaintJet Z-Fold
Test Print Times: Test page (Ordered, no Color Correct) = 5 min, 33 sec.
(Note: Test print times are calculated from active printer time only, actual computer processing and print time for this printer was 1 hour, 15 min. This will vary depending on speed of computer.)

ONTOLOGICAL SURVEY, INDEPENDENT COMPUTER GRAPHICS TEST LAB RATING

Printer Suggested Retail Price Range:
Low - up to $500
Medium - $500 - $1000
* **Medium/High** - $1000 - $2500
High - $2500 and up

PRINTER RATING: 8
PRINTER DOCUMENTATION: excellent

Rating is based on printer features and assessed value for the price. Rating number is based on 1 (lowest) to 10 (highest). Printer specifications, subject to change without notice, are provided by the printer manufacturer. Author is not responsible for inaccurate information.

ASCII test output for Hewlett-Packard PaintJet

```
1234567890-=\qwertyuiop[]asdfghjkl;'zxcvbnm,./
!@#$%^&*()_+|QWERTYUIOP{}ASDFGHJKL:"ZXCVBNM<>?
1234567890-=\qwertyuiop[]asdfghjkl;'zxcvbnm,./
```

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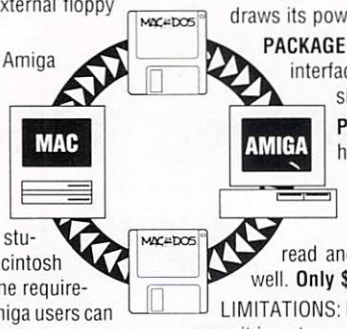

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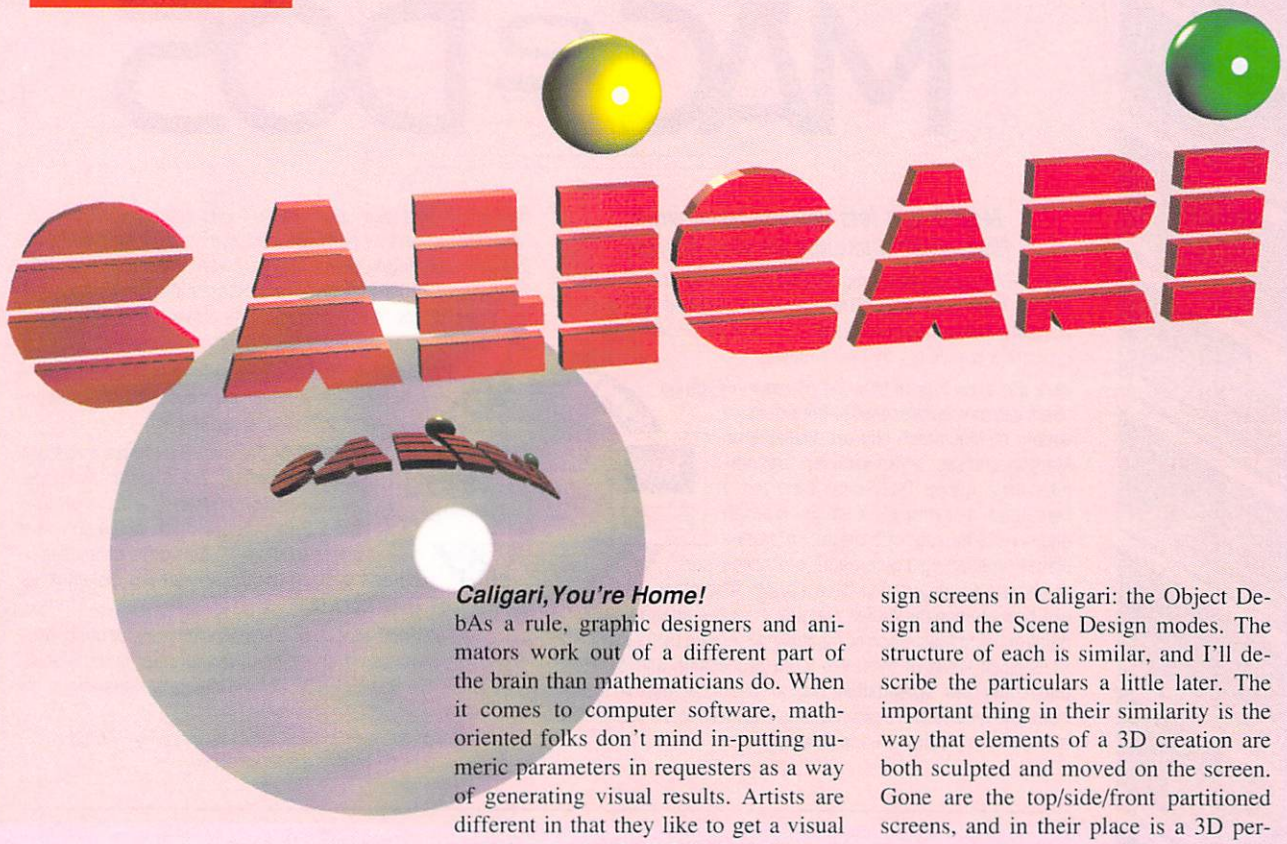


A LOOK AT A DIFFERENT 3D DESIGN SYSTEM...

Caligari, You're Home!

bAs a rule, graphic designers and animators work out of a different part of the brain than mathematicians do. When it comes to computer software, math-oriented folks don't mind in-putting numeric parameters in requesters as a way of generating visual results. Artists are different in that they like to get a visual and kinesthetic 'feel' for what they create. The closer graphic software design emulates the look and feel of the 'real' world, the better artists will like it. Caligari is an Amiga software tool for visually oriented users, from beginners to professionals.

Actually, Caligari is not a new product. It's been on the market for a year now in its pre-release professional form. The professional version offers scripted animation - for a price - which the 'home' version does not. The professional version costs $2000, while the newly released home version sells for $250. As an experienced user of the professional version, I can report to you that the sculpting interface of the home version has all of the same tools and processes except for animation.

Caligari, like the story of "Caligari's Cabinet", presents you with a magic box. Forget all of the customary ways that 3D sculpting has been presented to you in other Amiga 3D packages. Caligari offers you a true 3D window to a digital world. There are two basic design screens in Caligari: the Object Design and the Scene Design modes. The structure of each is similar, and I'll describe the particulars a little later. The important thing in their similarity is the way that elements of a 3D creation are both sculpted and moved on the screen. Gone are the top/side/front partitioned screens, and in their place is a 3D perspective grid, around which you can intuitively ride on your mouse. Interactive menus are placed at the bottom of the screen, and are not movable, but that doesn't interfere with anything, because the whole 3D environment can easily be moved up and down, rotated, and zoomed in and out at your leisure.

Let's look at the Object Design mode first. This is where you design, mold, and piece together the elements of a creation. Parts can be worked on one at a time, and then glued together. Memory is, naturally, very important since Caligari will allow you to work with one meg of expansion RAM, but the more you have the more complicated your creations can become. There are several ways that elements can be designed, and all of these methods can be combined on any one object.

Primitives: Caligari's 'Primitives' are often-used 3D objects (spheres, cubes, cones, tetrahedrons, etc.) that are stored in a "Primitive Library" on the program disk. They are accessed by clicking the 'Prim' button on the prima-

By Dr. R. Shamms Mortier

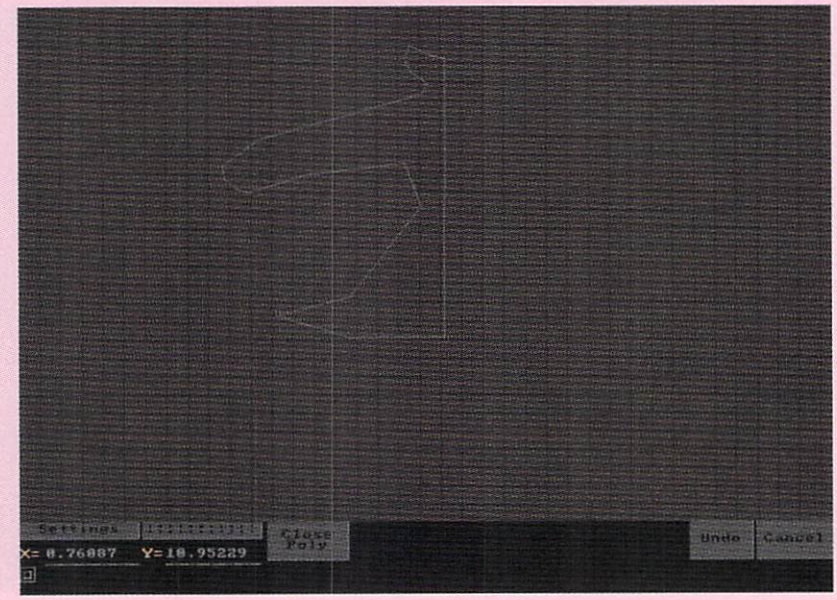
ry Object screen menu. When you open this library, twenty-seven primitives are there for the choosing. Clicking on any one, or several, places them instantly in the center (0, 0, 0) of the 3D grid, with the last one chosen highlighted for further manipulation. It's interesting that the entire library of spaces is filled with primitives in the home version whereas the last update of the professional version (that I have) has only fourteen primitives objects to choose from. Once on the screen, the primitive can be stretched and squashed in any or all of the XYZ directions, and then moved into place as an element of a 3D object.

EXTRUDE GRID SCREEN

There are really three main and separate capabilities here: flat, lathe, and extrude. Both modes have other sub-options, and a full list of settings possible. Let me review some of Caligari's syntax connected to both the lathe and extrude regimes.

FLAT: This is the simplest kind of object. When presented with the extrude screens 2D grid, you just point and click, drawing an enclosed object (much like the polygon modes in several Amiga drawing programs). When complete, you hit "close poly" and the figure is complete. Holes can also be drawn inside the enclosed area. When you have what you want, hit 'Flat', and you and your new 2D object plane are sent back to the 3D world. This is a nice way to design flat planes (walls) that can easily be rotated and glued together in any fashion; an excellent tool for architectural and other applications.

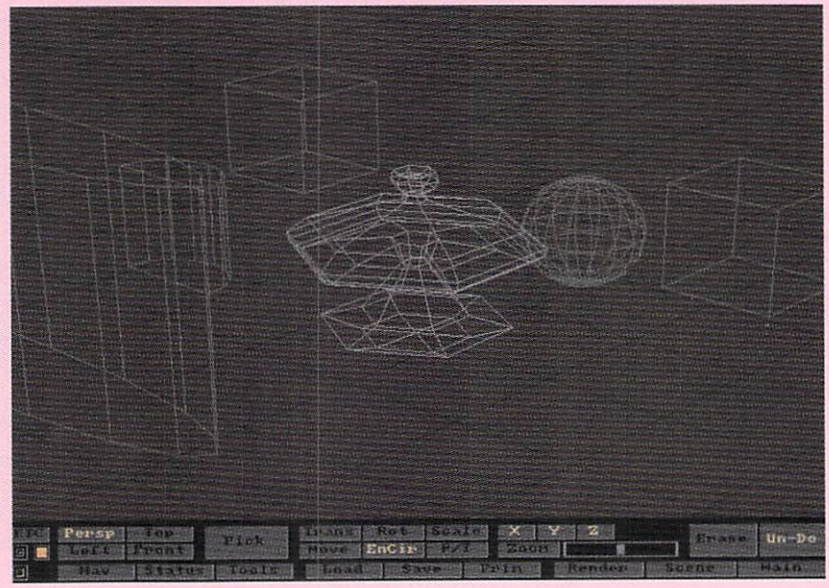
EXTRUDE: It might be nice if Octree renamed the extrude screen something else, since the extrude screen holds more than just the extrude function. Here, I am speaking of the extrude function. In computer graphics terms, 'extruding' an object means to stretch it out along a plane (either in the X, Y, or Z direction). Think of it as pulling digital taffy. With extrusion, flat designs are given depth. The most common use of extrusion is to give 2D letters and numbers depth, so that when they're spun in 3D space, they maintain visual interest. I have also used this extrusion function to elongate rectangles to very specific increments, using the objects in the creation of 3D bar graphs in perspective.



Virtually any polygon shape can be designed and then extruded with the 'extruder'.

There are several pre-extrusion settings that allow you to fine tune your final object: 'Orientation' places the object on the 3D grid in either an X, Y, or Z axis and 'Depth' specifies the thickness of an extruded shape (default is a numerical value of 10). "Cone Scale", however, takes a bit of getting used to. If you draw a circle with a default value of 1, you get a cylinder. A value of 2 gives you a cut cone, while 0 gives you a cone. You extruded object may also be 'sheared' in either a horizontal or vertical direction, making it lean to one side. All objects drawn on the grid may be saved and loaded from a library of shapes.

LATHE: The lathing of an object involves spinning it around an axis after determining the amount of points on a circumference of a circle of spin the object is to possess. Spinning something around a four-pointed circle places that



The completed extruded shape can now be placed with all the other objects.

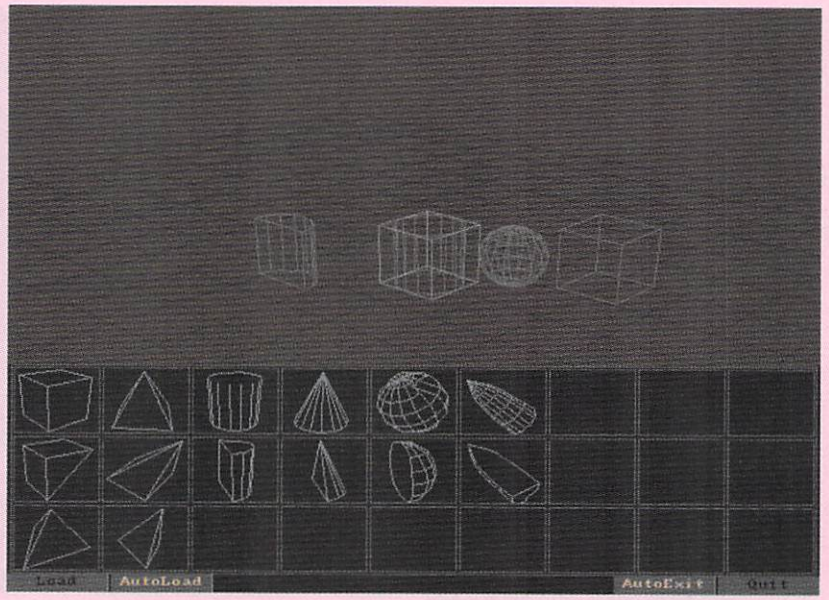
shape on a rectangular surface. Spinning it around a twenty-four pointed circumference allows the sides of the object to become nearly circular. The more points, however, the more time it will take to render the object and to compute its response to light sources. Lathing also answers to 'Orientation'. 'Segments' divides the lathe circle, while "Total Angle" allows you to designate what degree of revolution is to occur. For example, setting Total Angle at 180 degrees will give you a 3D object that is shaped on one side and flat on the other, like an apple cut in half. Before lathing, the objects axis is drawn. The axis line may be either an edge of the 2D grid drawing, or may be a line not associated with that drawing. It takes just seconds to see the 3D result.

All of the processes that are embedded in the extruder screen have an associated configuration setting that can be saved as a default, or used until changed or until you quit your project. You can also change the increments of the reference grid and the coarse/fine movements of the mouse. There is a multiple undo function when drawing the 2D shapes, so that you could erase each step all the way back to the beginning and start over again. This is handy, because lining up a figure on the grid can be a very painstaking process. Saving your 2D figures in a library of shapes can shorten future projects by hours.

The extruder screen is at the service of the Object Design Screen. After generating 3D shapes by any method chosen, the next step is to place the objects (or object elements) in relation to other elements involved (A robot's head has to be placed on its neck, for instance).

MOVEMENT & BUILDING BLOCKS

Throughout the Caligari home version's manual there are clear tutorials - a vast improvement over the initial professional version. If that isn't enough, the package comes with a videotape that illustrates many of the possibilities and all of the processes. This is especially helpful when you become involved in moving both the plane of action and the characters that you have sculpted upon it. Not only are movements possible, but objects that are 'glued' together can be temporarily taken apart so that separate elements can be moved independently. This is great for moving sections of an object and, because Caligari screens can be saved in IFF format, separate movements within complex structures can lead to very complex and intricate animations. Elements can be rotated on any axis, and reduced/enlarged in an infinite series of zooming and object alterations. The whole plane can be zoomed, spun around (even upside down!), and moved for clearer views. Most of the manipulations are easier to work out in one of three additional views: Top, Front, and Side.



"Primitive" objects that can be used as building blocks for more complex objects.

Working in perspective is much harder, especially when placing objects in specific relationships to one another. Zooming in on lines that are just a hairs width out of alignment makes it easy to adjust them perfectly. When you move objects about the screen, it is possible to address only one coordinate axis (XYZ) so that placement is quickened. All of these movements are called up in the "Navigation Menu", which also contains an erase and an undo function (only a "last time" undo here). Objects can be Transported (moved in any XYZ combination), Rotated, and Scaled (reduced or enlarged on any or all axis). The plane itself can be Moved (good for re-centering your work area), EnCircled (orbiting the entire plane with the mouse in real-time increments, where the left/right mouse movement controls the XY axis and the up/down movement controls the Z axis), and Panned/Tilted (moves the viewing angle relative to the ground plane without disturbing the viewpoint).

The number of commands in Caligari are very limited, but their actions are almost infinite. This is great for the first-time user, because after a few hours of practice, the manual can be put on a shelf for good. This is one of the most flattering statements one can make about the user- friendliness of a software package.

After your objects are sculpted and saved, you enter the Scene Design mode. Here, you load objects stored in your library of 3D images, and set out to compose them in an environment. There are no drawing tools here, so the functions involved have to do with placement only (and motions in each frame). Probably the next most important feature in the Scene mode is that of placing lights for both ambient characteristics and highlights on objects. This has a serious effect on color variations. Lights are placed mathematically, which is not at all in keeping with the overall feel of the program. Roman has stated that some form of graphic placement will be added in a future upgrade, and it will be most welcome. Each of the objects in the scene can be cloned, so one robot becomes an army, and architectural elements can become palaces. Each time

The color menu allows you to alter background and foreground colors.

you alter a scene, it must be saved to disk before you quit or return to the object design screen. When Caligari is opened, naming the scene on a data storage disk is always the first step. You can, of course, just go directly to the object design mode and create a large library of objects. But in my experience, I have found that at least configuring a scene on the same disk makes life in the Caligari environment much easier. Disk access is greatly improved over the pre-release professional version and some of the example scenes are truly astounding, although they have a rather chunky appearance.

RENDERING

Roman has just introduced a professional rendering module for the parent program which addresses the AT&T Targa board in sixteen million colors, and other fancy reflectance/refractance attributes. But this doesn't help the IFF situation, nor is it available to the home version's user. The rendering that Caligari uses stretches out the colors in the standard Hi-Res and Video-Res palettes by dithering the colors with embedded patterns, though is by no means as sophisticated as that same process used in PageRender-3D from Mindware International. In Caligari, rendered objects have that polygonal look, even when rendered with all lights in place, so I've been dumping my work into DPaintIII, PhotonPaint 2.0, and DigiPaint 3.0 in order to color items more effectively. This is not a great situation, however, because it adds tremendously to the time invested. Since it is doubtful that Octree will address the IFF user more extensively any time soon, the best alternative to achieving more rendering variance is to petition Syndesis to create a translation module. That way, Caligari objects could be colorized in Forms-In-Flight, Sculpt 3D/4D, or in Turbo Silver. The thought of a Caligari object rendered as transparent glass or specular steel gives me creative chills. Supposedly, Syndesis is working on a Caligari module, but I hear that the task is anything but simple. Don't expect results too soon.

If you have a 68020 Amiga, watch Caligari fly. I've clocked the speedup at about 450%, especially in the render mode. Not that the regular version is a slouch. Images rendered usually appear in no more then about a minute, although massively complex items can tie up your machine. Best to render complex scenes in the 'Scene' mode, and just render the individual objects on the Object Design Screen. Another neat aspect of Caligari that radically effects the speed (in both the home and professional versions) is its ability to re-render objects already rendered almost instantaneously. This holds unless you stretch or squash the object, in which case it really is seen as a new object requiring a first-time extension of the rendering time. After rendering is complete, Caligari objects can be re-colorized quite easily. An extended dithered palette can be addressed by HSV (Hue-Saturation-Value) sliders, and the object is re-colorized before your eyes. It is best to use a limited palette in this process, which will assure you that unused color pots will be reserved when (or if) you dump the saved IFFs into a paint program. Obviously, if you're going to dump, Caligari saves into a HAM paint program, you won't have to worry about saving color pots. With 4096 colors, there's more then enough to go around.

Images rendered and saved do not address overscan, which needs to be altered as soon as possible. Other then that, and the other conditions I've already alluded to, there isn't much negative to say about this miraculous product. Roman once said that "a good product will find its market", and I think that Caligari (the inexpensive home version) will find its way into many Amiga hands. Octree is also not protecting this software, and is depending upon the honesty of the Amiga community instead. I hope that trust is not misplaced. You will have a hard time returning to most any other Amiga 3D sculpting package after manipulating this environment. It's too real, too comfortable and much too much fun to allow you much sleep. The professional version moves along, adding exquisite modules at every turn. This home version needs some accessories, especially the Syndesis transformation tools. When this happens, just watch the quality and complexity of the artwork produced on the Amiga take a giant leap forward, especially that created in the small home studio. ❑

For further information on
CALIGARI contact:
Mr. Roman Ormand
Octree Software
311 West 43rd St., Suite 904
N.Y., N.Y. 10036
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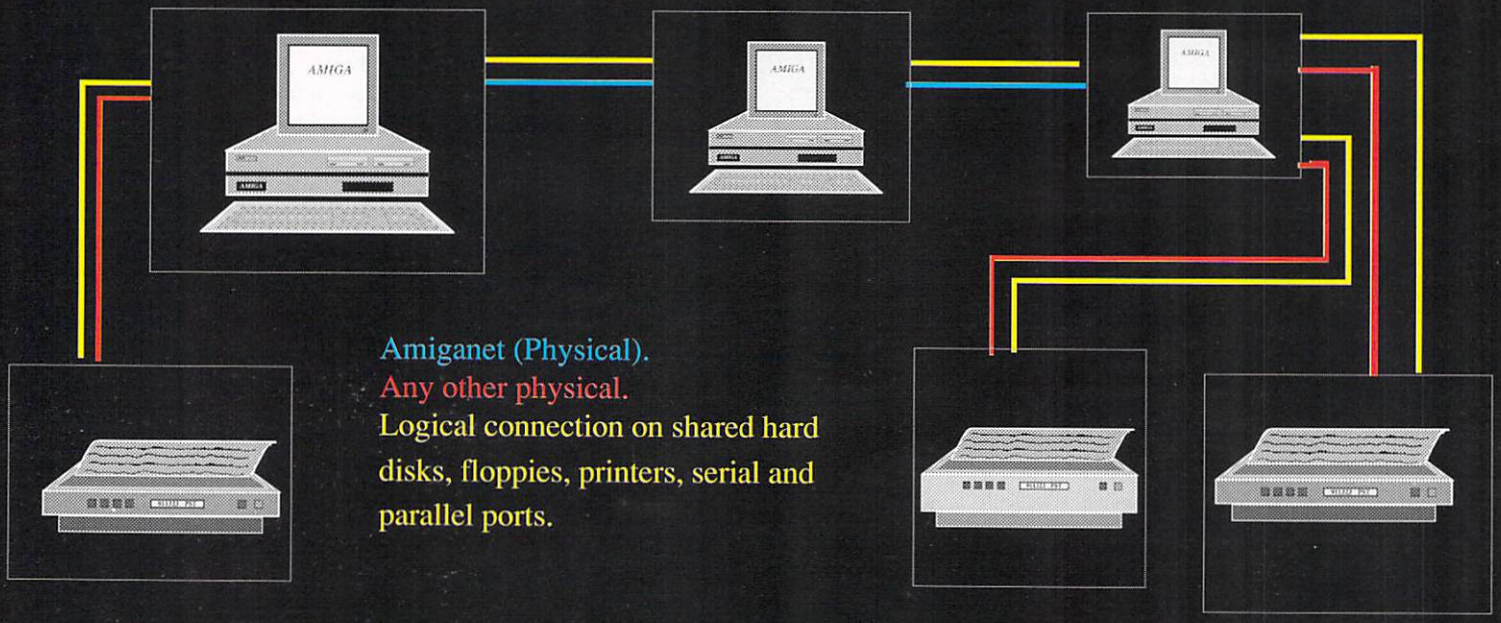

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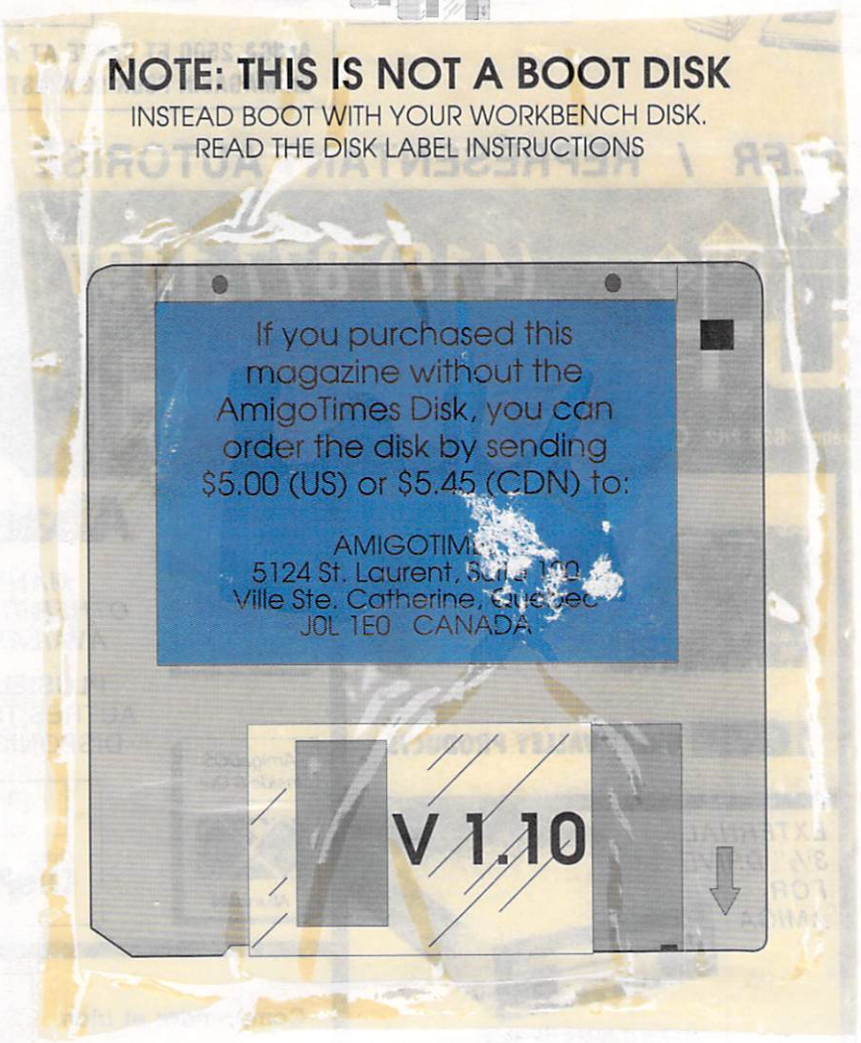
AMIGOTIMES V 1.10 DISK PAGE

Why include a disk with a magazine?
It allows AmigoTimes to provide the reader with some of the latest and best commercial demos, shareware, and public domain software available. Making demos of commercial programs available on the disk allows you to have hands on experience with the program before actually going out and buying the original package. How about public domain software and shareware? You now have access to a vast, continuously changing library.

As a programmer you will have available to you pretested source code that does not have to be typed into the computer; most of the source code and running programs that are referred to in AmigoTimes articles can be found on the disk.



All material on the enclosed disk has been made available by third party individuals releasing them as public domain software or shareware. Some of the programs were specifically written for AmigoTimes. All DEMOS provided on the disk are made available both with the consent of the Companies, and agreement to their distribution as PUBLIC DOMAIN material. The AmigoTimes Disk is freely distributable and belongs in the PUBLIC DOMAIN. We fully support the shareware concept and suggest you contribute the amounts requested by shareware authors if you find their programs useful.

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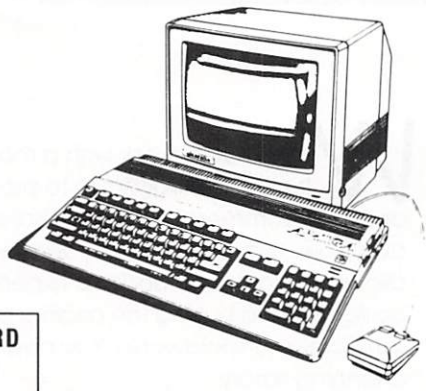

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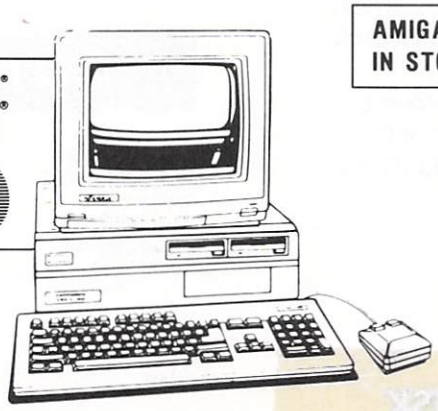

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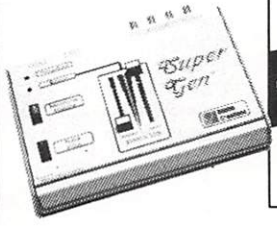

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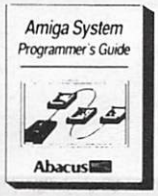

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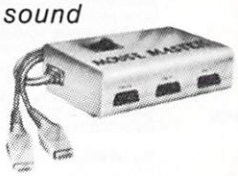
- *Joysticks*/manettes



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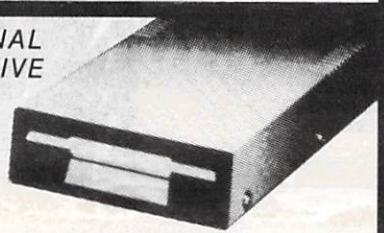

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The Amiga monitor
Vol. X

X-11 RELEASE 3 AVAILABLE FOR THE AMIGA
COLOR VERSION OF X-WINDOWS TO FOLLOW

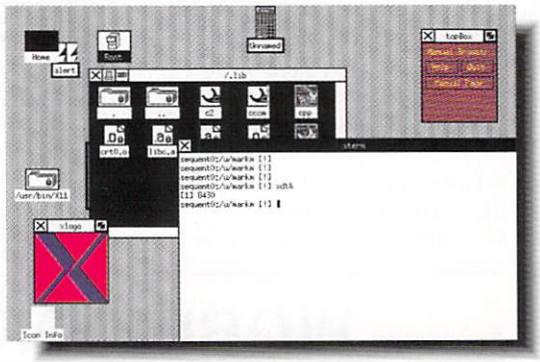
GfxBase has announced the release of the *X Window System 3.0* for the Amiga, which brings the Amiga up to the latest release of the X Window from the MIT X Consortium. The 3.0 server is faster and also contains support for backing-store and save-unders. This release is also a first for world-wide users since it now supports the international keyboards available for the Amiga.

The Display sizes supported on Release 3 vary from 640 x 200 up to 1008 x 1024, encompassing the European PAL 50hz displays, yielding for that system a displayed resolution on the standard Amiga monitor of 704 x 568.

Raster size can be independent of display sizes, but by using Viking Monitor Software or AmigaDOS 1.4 (the PD program V-Screen may work) you can pan around a 1008 x 1024 bitmap with a standard 704 x 470 (60 khz) hardware window.

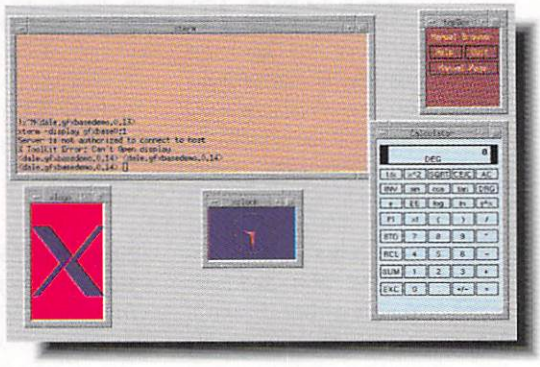
Graphics performance using the Amiga blitter chip compares favorably with processors running at clock rate/bus sizes of up to four times that of a the standard 7.2 Mhz 68000 on the Amiga. An Amiga, when equipped with a 68020/68030 accelerator card, makes a very high performance X workstation. For connections to other machines, the Amiga X11 uses tcp/ip over ethernet and has a highly efficient shared memory message passing scheme for local connections.

With the X11, network bandwidth requirements are lessened compared to a simple X terminal. Uwm, twm, xcalc and xclock, to name just a few, are some of the clients provided with the standard release. The Amiga xpr supports up to fifty different printers (both black and white and color) including the HP PaintJet, Howtek PixelMaster and Calcomp Colormaster.



The X-Windows System 3.0 desktop for the Amiga

X-Windows



Motif from ICS

This X Window system coexists successfully with the native windowing operating system of the Amiga. By using the Amiga's multiscreen capabilities, one can be using uwm in one X screen, twm in another screen, Intuition in the standard Amiga Workbench screen, and any number of paint and animation programs in another screen.

It is for reasons such as these that the X Window system for the Amiga is in use in labs such as NASA/Langley, EURATOM, CalTech and the University of Nottingham.

PRICE: X11 for the Amiga $395 (US)
X11 plus Optical 3 button Mouse $475 (US)
X11,mouse,and ethernet board $1299 (US)
Upgrade price from Release 2 to Release 3 is $35 (US)
Reader Service # 239

TURBO SILVER TEXTURES GUIDE

Impulse Incorporated is issuing *Turbo Silver Texture Guides*, written by Bradley Schenck, winner of the 1988 BADGE Killer Demo Contest and creator of the graphics for the Epyx game Mindroll.

The Textures are a feature of *Turbo Silver* and are different from the IFF mapping that the program performs on 3D objects. The Textures are pre-figured program modules (eight so far) which can be modified by the user through up to 16 numerical parameters which control various attributes of the individual textures.

This tutorial, prepared with the Director of the Right Answers Group, illustrates how each of these parameters affects the texture in question. This series of tutorials, featuring a common point and click interface that allows users to page through the examples both forward and in reverse.

Available by mail order from Impulse.

Price: $19.95 (US) plus $5.00 S&H
Reader Service # 192

For more information on any or all of these products circle the appropriate Reader Service Number on the Reader Service Card in this magazine or see the Product Index on page 109.

M.A.S.T. PRODUCES TINY TIGER II

M.A.S.T. (Memory and Storage Technology Inc.) have announced that their original Tiny Tiger Hard Drive system has been phased out of existence to make way for *TINY TIGER II*. This new edition consists of a SCSI Hard Drive, low profile case and power supply and offers the customer a chance to choose between M.A.S.T.'s new proprietary parallel port SCSI adaptor-in-a-cable or any other SCSI adaptor on the market.

The Tiny Tiger II has other new features that are user-controlled: a hard drive that powers on automatically on boot-up (which can also be switch selected), easily enabled/disabled resistor terminators and switch selectable parity and source of termination resistor power. Tiny Tiger II's front panel has a host of features that make for easier usage including displays for parity on/off, write protect on/off and numeric display of the current SCSI ID address.

SUGGESTED LIST PRICE:
Budget 30 MB $599 (US)
45 MB $799 (US)
90 MB $1199 (US)
136 MB $1499 (US)
182 MB $1749 (US)
SCSI Adaptor in a cable $129 (US)

Reader Service # 276

WORDSYNC
MAKES IT LOOK EASY

The *Supra Corporation* has come up with two new releases for the Amiga 2000 - the *WordSync Hard Disk Interface* and the *WordSync-Based Supradrive Hard Card*. According to Supra's product information, the *WordSync Interface* provides a totally new approach to hard disk interfaces which makes it as fast as Direct Memory Access while eliminating that system's conflicts with sound, video and serial I/O operations. This new Interface achieves such impressive speed by transferring two bytes of data on each transfer cycle - a 2X improvement over normal 1 byte transfers.

The *SupraDrives* and *WordSync Interface* kits come with the unique *SupraBoot* and *SupraTools* disks providing state-of-the-art hard disk formatting. The Hard Cards are shipped formatted and ready to use and installation is simple.

Suggested Retail: 30 MB SupraDrive with WordSync Interface: $649 (US)
45 MB SupraDrive with WordSync Interface: $749 (US)
80 MB SupraDrive with WordSync Interface: $1299 (US)
WordSync Interface Kit: $199.95
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TWO APPOINTMENTS MADE IN AMIGA COMMUNITY

Two new appointments were made in the worlds of Amiga hardware and software in the last month or so.

Ingrid Wallace was appointed manager of the kindergarten through Grade 12 educational markets by *Commodore Business Machines*. We hope that this vital market will be well served by Ms. Wallace, who comes to the position with experience gained at Broderbund Software and Davidson Associates.

New Horizons, makers of ProWrite and ProFonts, have a new president of the organization. *Kenneth V. Rousseau* comes to New Horizons after earning a Ph.D. in Solid State Electronics from U.C.L.A., and several years work experience with Giga Bit Logic, Inc.

NES OFFERS 8 PORT SERIAL BOARD
SERIOUS SERIALS

NES have developed two 8 Port RS-232 Serial Boards, the *AM201P8R* and *AM201P8M*, that allow a single system Amiga 2000 to support up to three combinations of of these boards, giving the user up to 25 on-line serial ports. The software, which is compatible with Commodore's multiport serial standard for 1.4, gives support for all standard modem lines on all channels.

The extras offered by the NES boards also include the ability to operate 8 RS-232 channels at up to 38.4 baud simultaneously.

Suggested List Price:
AM201P8R 8 RS-232 port board $895 (US)
AM201P8M AMIDI PORT board $945

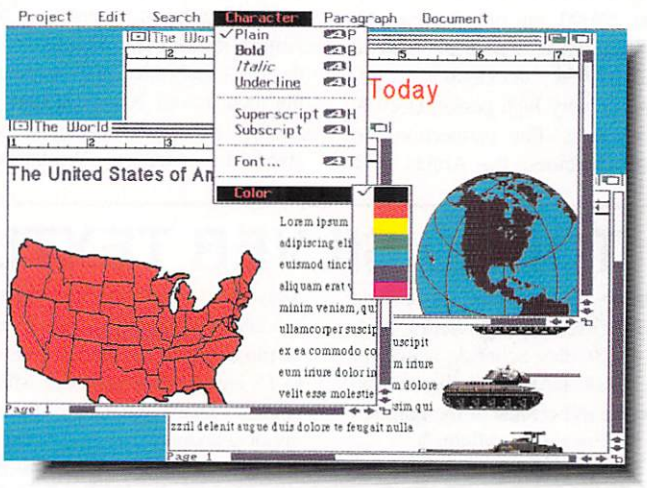
Reader Service # 284 (US)

NEW HORIZON'S
PRO-WRITE V2.5
GUARANTEED BUG FREE

New Horizons Software has guaranteed that *Pro-Write*, one of the top-selling Amiga word processing programs, will be bug-free from the release of version 2.5. The program, which requires Kickstart 1.2, includes a 105,000 word spell checker with batch or check-as-you-type options, print merge, adjustable page sizes and more, now comes with a guarantee. This guarantee states that New Horizons will correct any verified discrepancy between the *ProWrite* Manual and the program within 30 days or your money back. If the reported discrepancy has already been noticed, a corrected version of the program will be sent free of charge.

NOTE:Before jumping on the bandwagon, please be aware that a number of conditions apply to the guarantee for both the program replacement and refund policies. Further information will be sent upon request from New Horizons.

Suggested Retail Price: $124.95
Reader Service # 111



ProWrite V2.5 complete with error free guarantee

INDIANA JONES IS JUST IN TIME FOR CHRISTMAS

THREE SUREFIRE HITS HEAD HOME FOR THE HOLIDAYS

Electronic Arts Distribution announces the release of two new games from *Lucasfilm Games*: *Indiana Jones and the Last Crusade - The Graphic Adventure* and *Indiana Jones and the Last Crusade - Action Game*.

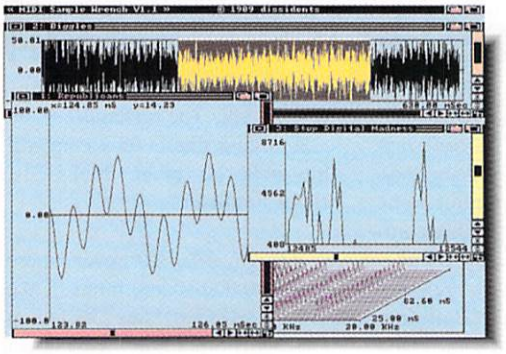
Based on the blockbuster film series, starring Harrison Ford as Indiana Jones, these games follow the action-packed theme set up in the most recent release, Indiana Jones and the Last Crusade.

With The Graphic Adventure, the player takes on the persona of the legendary Indy, earning "IQ" points by variously fighting, reasoning, charming and bamboozling his way out of a myriad of situations.

The Action Game is a free-wheeling and breathless extravaganza of high energy mayhem, in which Indy faces three trials while seeking the mythical Holy Grail. With death-defying stunts and riveting chase scenes throughout, this is one game that really deserves to be called "Action".

Both releases have that distinctive Lucasfilm Games cinematic look and feel, and are a result not only of the original designs and scripts from the film, but of brainstorming sessions between the game's designers and Steven Spielberg and George Lucas.

Suggested List: The Graphic Adventure
$49.95 (US)
The Action Game
$39.95 (US)
Reader Service # 179



The MIDI Sample Wrench offers CD quality sound sample editing

NO WRENCH IN THESE WORKS

Those enigmatic folks at *dissidents* have announced the release of *MIDI Sample Wrench Version 1.1*. The *MIDI Sample Wrench* is a 16-bit, CD quality sound sample editor; new features and capabilities have been added to make the updated version even more valuable to the Amiga musician. This update has added support for the Akai S900 and S950 samplers to the other Sample Dump Standard devices such as the Prophet 2000 and Yamaha TX16W. There is no change to the retail price of $279 (US) and a demo is available for $12 (US). Registered Users of MIDI Sample Wrench Version 1 may receive a non-copy protected version by sending in their original disk and a check or money order for $30 (US).

Suggested List: Midi Sample Wrench 1.1 $279 (US)
Demo Disk $12 (US)
Update $30 (US)
Reader Service # 283

SubLOGIC FLIES HIGH WITH THREE NEW PRODUCTS

Bruce Artwick and Stu Moment's *SubLOGIC Corporation* has, in its brief ten-year history, established itself as a force to be reckoned with in the highly competitive world of flight simulation. Their three new releases *Flight Controls I, "Hawaiian Odyssey" Scenery Adventure* and *Scenery Disk #9* provide both hardware and software technology for every level of flyer from the amateur/beginner to the professional/expert.

Flight Trainer I starts us off with a realistic set of flight controls featuring exceptional yoke stability, full t-handle throttle, and accurate gear and flap switches. The system is compatible with all SubLOGIC flight simulation programs and any other analog joystick-driven aircraft flight simulator. Also available, optional rudder pedals for a further realistic touch.

A further new release from SubLOGIC is a new step forward in the company's scenery disk series'. *"Hawaiian Odyssey" Scenery Adventure* offers the beauty of the Hawaiian landscape combined with an aviation adventure that features missing gems, volcanoes and tremendous flying skill. The adventure is an add-on disk that is fully compatible with all other SubLOGIC flight simulators.

Scenery Disk #9 covers more than 300,000 square miles of the midwest United States including Chicago, St. Louis, Cincinnati and over 150 airports in total. This sophisticated three-dimensional simulator is appropriate for both visual flight (sight-seeing) and VFR or IFR cross-country navigation. This disk requires that you already own Flight Simulator, Jet, UFO or ThunderChopper in order to make use of it.

Prices: Flight Controls I ($179.95 US)
Optional Rudder Pedals ($59.95 US)

"Hawaiian Odyssey" Scenery Adventure ($29.95 + $2.50 S&H US)

Scenery Disk #9 ($29.95 + $2.50 S&H US)
Reader Service # 277

Hawaiian Odyssey a SubLOGIC adventure

Scenery Disk #9 the latest addition to SubLOGIC's collection

The FSII flight yoke, he latest addition to SubLOGIC's collection

Where in the USA is Carmen Sandiego

DASTARDLY DEEDS FROM CARMEN AND COHORTS

Do you know *WHERE IN THE U.S.A. IS CARMEN SANDIAGO?Broderbund Software does* and they want you to figure it out for yourself in this, the second release in their *CARMEN SANDIEGO* educational game series. Aimed at kids (and others) age 8 and up, this adventure/detective series teaches an amazing number of facts from geography to history to current events while the player is hot on the trail of infamous thief Carmen Sandiago, her gang of cohorts and their cache of priceless objets d'arts.

Compatible with the Amiga 500/1000/2000, *WHERE IN THE U.S.A. IS CARMEN SANDIAGO* comes with such support materials as Fodor's USA travel guide, user's manual and Carmen scrapbook.

Suggested Retail: $39.95 to 49.95 (US)
School Edition: $49.95 to 54.95 (US)
Reader Service # 255

CLIP ART FROM SLIDE CITY

TV GRAPHICS is a two-disk set of video clipart for desktop video and presentations on the Amiga 500, 1000, 2000, 2000 HD and 2500. With graphic screens that include marble, wood, fibre, graduated tones and more, *TV GRAPHICS* can be used in animation, ray tracings, paint and video programs.

The art created is for direct video use, but may also be converted to other resolutions and formats.

Suggested Retail: $49.95 (US)
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READER SURVEY:

1. What type of machine do you own?
○ Amiga 500 ○ Amiga 2000
○ Amiga 1000 ○ Amiga 2500
○ IBM PC ○ Macintosh
○ Other _____

2. Where do you use your Amiga?
○ At Work ○ At Home for business
○ At School ○ At home for recreation

3. What peripherals do you own?
○ Printer ○ Sidecar
○ Laser Printer ○ Genlock
○ Second disk drive ○ Musical Equipment
○ Hard disk drive ○ Accelerator Board
○ Modem ○ Other _____
○ Expansion Memory

4. Which do you plan to purchase within the next 6 months?
○ Printer ○ Sidecar
○ Laser Printer ○ Genlock
○ Second disk drive ○ Musical Equipment
○ Hard disk drive ○ Accelerator Board
○ Modem ○ Other _____
○ Expansion Memory

5. What are your interests?
○ CAD ○ Graphics
○ Music ○ Games
○ Desktop Publishing ○ Animations
○ Desktop Video ○ Other _____

6. Which other computer magazines do you read?
○ Amazing Computing ○ Byte
○ Amiga Sentry ○ Compute!
○ Amiga Transactor ○ Robo City News
○ AmigaWorld ○ Info
○ Antic's Amiga Plus ○ Other _____

7. What topics would you like to see in future issues?
○ More Programming ○ Hardware Projects
○ More Reviews ○ More Columns
○ More Features ○ Other _____
○ Applications for the Amiga

8. What are your favorite parts of AmigoTimes?
○ Tricks 'n Tips ○ Programming
○ The Amiga Monitor ○ Reviews and Features
○ Art Gallery ○ Video Production
○ Telecom ○ DTP Column
○ Midi ○ WOMAN by WOMAN

9. How would you rate this issue:

Magazine	Disk
○ Terrible	○ Terrible
○ Poor	○ Poor
○ Fair	○ Fair
○ Good	○ Good
○ Very Good	○ Very Good
○ Excellent	○ Excellent

10. Where do you purchase your Computer Products?
○ Dealer ○ Department Store
○ Mail Order ○ Other _____
○ Direct from Manufacturer

11. From which of these categories do you plan to purchase software?
○ Financial ○ Word Processing
○ Desktop Publishing ○ Communications
○ Desktop Video ○ Painting
○ Programming Tools ○ Database
○ Entertainment ○ Spreadsheet
○ Music ○ Productivity
○ Education ○ Other _____

12. Do you use any of the following BBS's?
○ Plink ○ BIX
○ Compuserve ○ Local
○ GEnie ○ Other _____

13. What age group do you fall into?
○ Below 18 ○ 36 - 45
○ 18 - 25 ○ 46 and above
○ 26 - 35

14. What is your sex?
○ Female
○ Male

15. What is your annual income in dollars?
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○ 1,000+

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○ 1,000+

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MATCHING WITS WITH A DIMWIT

FACE TO FACE WITH A DIMWIT

Infocom, a leading publisher of story-telling and fantasy role-playing software, has released *Zork Zero*, an interactive adventure that is prequel to Infocom's popular Zork Trilogy.

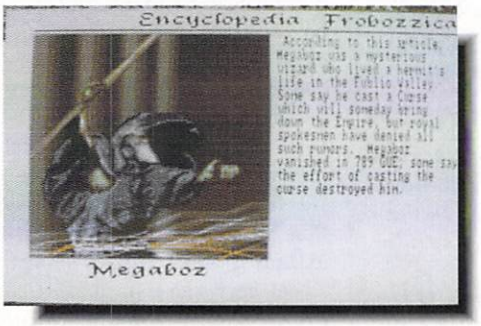
Steve Meretzky, author of the utterly ridiculous Leather Goddesses of Phobos, takes the player back to before the beginning and tells all in uproarious Meretzkian style, with several new twists. Epic in both size and scope, this prequel explores the collapse of the Great Underground Empire. Subtitled "The Revenge of MegaBoz", *Zork Zero* takes players back to the last days of the empire, when Megaboz, an evil wizard, cast a spell that destroyed the ruling Flathead family and threatened the kingdom itself. The players challenge is to save the rest of the kingdom from the fated curse that Megaboz has cast.

By combining the best of the legendary Zorkian universe with the latest technology in interactive story-telling, *Zork Zero* takes players through an exciting prologue - where they come face to face with the aptly named Lord Dimwit Flathead the Excessive - to the climactic epilogue - where they'll meet the most powerful wizard ever to set foot on the soil of Quendor.

Zork Zero provides the answers to many of the questions that have tormented Zorkers for ages: What was Dimwit Flathead's castle like? What is it like to play Double Fanucci? How did the Great Underground Empire collapse? Where did grues come from? And, most compelling of all, what is the origin of the White House where Zork I begins?

The program features more than 200 locations and as many puzzles as all three of the Zork Trilogy games combined. Players will also experience "games within games," as they try their hand at brain teasers such as Peggleboz, Snarfem, the Tower of Bozbar and Double Fanucci. In addition, *Zork Zero* marks the introduction of Infocom newest generation parser, a mouse interface, on-screen hints and on-screen map.

Suggested retail $59.95
Reader Service # 237



A screen shot of Zork Zero

X-CAD NOW AVAILABLE IN NORTH AMERICA

X-CAD AVAILABLE FROM AMERICAN DISTRIBUTOR

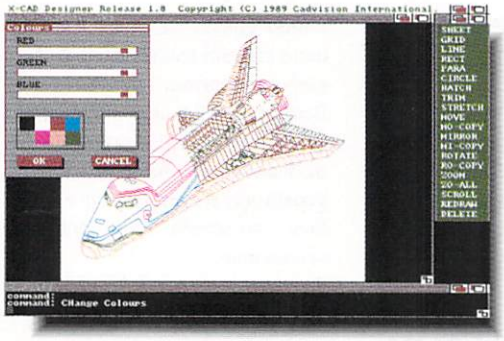
England's *CAD Vision International* have awarded the distribution rights to their *X-Cad Designer CAD Software* to *American Software*.

X-Cad Designer is the fastest Amiga CAD program , performing Zoom and Redraw operations on a standard Amiga configuration at least 4x faster than AutoCad running on a Compaq Deskpro 386. This two-dimensional computer-aided design and drafting system features an impressive list of over 1500 command combinations.

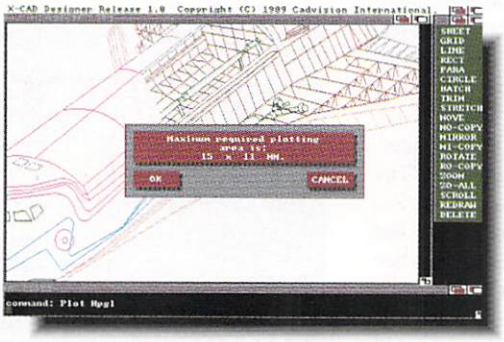
Other features built into this remarkable system include: user definable screen menus, comprehensive dimensioning facilities, isometric grids, multiple viewports and access to standard symbol librairies for architecture, electronic, electrical and mechanical applications. In terms of support for external file formats, *X-CAD Designer* has optional read/write of AutoCad DXF files, IFF files (write) and Aegis Draw Plus files (read). Its compatibility extends to Gold Disks's Professional Page and with the *X-Cad Professional*, a powerful update due in the next few months.

Requiring 1 MB or more of RAM, the *X-CAD Designer* may be used successfully on the Amiga 500, 1000, 2000 or 2500. The well-thought out tutorial in the package combined with the ease of operation of the Amiga interface makes this a solid choice for both beginner and experienced CAD user.

Suggested Retail: $149.95 (US)
Reader Service # 239



X-CAD Designer from CAD Vision International



X-CAD Designer from CAD Vision International offers plotter support for many popular plotters

DELUXE PRINT II
UPDATE OF POPULAR PRINT PROGRAM

DELUXE PRINT II NOW HERE FOR WORKBENCH 1.3

More news from *Electronic Arts* as they release their update to the *Deluxe Print II* - now available in Version 1.1. This new version supports Workbench 1.3.

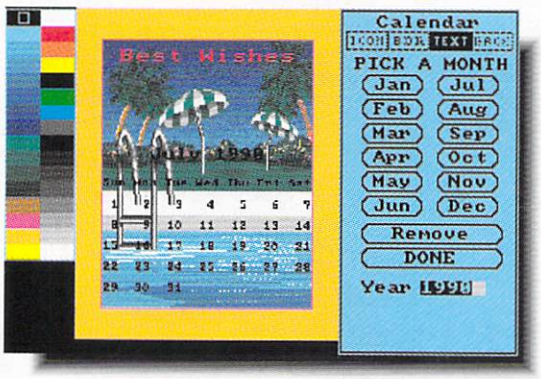
Deluxe Print II allows you to create practical printouts quickly and easily. Anything from calenders and greeting cards to banners and letterhead is available within *Deluxe Print II*'s seven predesigned formats. Allowing the user full control over every design by giving you the power to replicate, move, resize, flip and rotate text and graphics, *Deluxe Print II*'s 150 multi-colored graphics and borders and a multitude of fonts is truly a design house in a box.

The straightforward design of *Deluxe Print II*'s interface make it one of the most accessible programs of its power level. Novices will be turning out letterhead in hours.

Deluxe Print II can import DeluxePaint II or other or other compatible programs to be used as background images.

Owners of *Deluxe Print II* may receive the 1.1. upgrade for the program free of charge by returning their art and program disks to the company.

Suggested Retail: $79.95 (US)
Reader Service # 179



Deluxe Print II from Electronic Arts

PRICE INCREASE FROM THE BLUE RIBBON BAKERY

BARS AND PIPES MARCHES UPSCALE

The Blue Ribbon Bakery, those wacky folks who invented *Bars and Pipes*, are announcing a new program to give a home to all those lonely dollar bills floating out there with nowhere to go.

Actually, they have announced a price increase for *Bars and Pipes*, the Amiga's first object-oriented music environment package. Apparently, extended costs of research and development are the villains behind this increase.

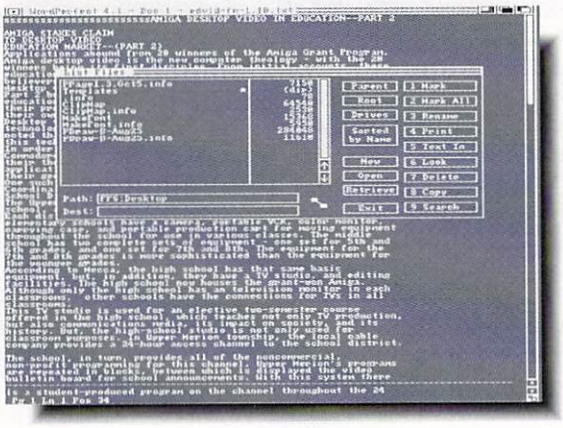
New Price: $299 (US)
Reader Service # 122

WORDPERFECT MAINTENANCE UPDATES

The *WordPerfect Corporation* began shipping maintenance updates for *WordPerfect for the Amiga* on October 2 of this year, allowing greater access to to the program for all Amiga users. The update offers two major advantages to Amiga owners, it allows *WordPerfect* users to access files through a standard Amiga file requester system and also allows the import of *WordPerfect 4.2 files* from a PC directly into *WordPerfect for the Amiga*. New features include a re-designed system of requesters, often with one requester replacing an entire series in the previous version, as well as improved speed and command set-ups.

The purpose of the update is, according to the WordPerfect Corporation's manager of Amiga Products Marketing, to make WordPerfect more 'Amiga-like' in its file-importation systems.

The 9/29/89 update of WordPerfect is available on three disks at a cost of $12.50 (US)
Reader Service # 166



WordPerfect 4.1 with updates

LATTICE EXPANDS TECHNICAL SUPPORT

Lattice Incorporated, manufacturers of the *Lattice C++ Compiler*, have announced extensions to their technical support. Lattice has, in the past, provided free support to customers through telephone hotlines, mail, fax and newsletter services as well as through the BIX network. Now the company's Level 1 free support has extended to the PeopleLink network and Lattices's Electronic Bulletin Board and two new levels of subscription support have been opened up.

Level 2 support includes all of the above as well as 24-hour response to all technical questions, access to a telephone hotline, special BIX and CompuServe conferences, software maintenance reports and free patch disks available the month the fix becomes available.

Level 3 technical support provides the same support found in Levels 1 and 2 along with a guaranteed 4-hour response, library source updates mailed monthly, patch disks available immediate upon availability and direct access to product development engineers.

LEVEL 2 Price: $100 (US) per product per year. Minimum charge $450 - Maximum charge $7500
LEVEL 3 Price: $200 (US) per product. Minimum charge $900 per year - Maximum $9,000 per year)
Reader Service # 135

MICROWAY JOINS BIX NETWORK

MicroWay, maker of *FlickerFixer* and many other items of hardware for the Amiga, is now providing more extensive technical support to its customers through the BIX (Byte Information Exchange) Network. MicroWay will endeavour to use BIX to its fullest potential by, for example, posting answers to commonly asked questions. Information on BIX is available to Canadian and U.S. customers by telephone at 1-800-336-0149. Information on accessing BIX from a foreign country is available by mail from BIX.

Reader Service # 110

PowerDrome from Electronic Arts

DARE TO ENTER THE POWERDROME

POWERDROME POWERS INTO THE 25th CENTURY

Designer *Michael Powell* takes the world of computer games one step closer to the future with the release of *POWERDROME* from *Electronic Arts Inc.* This fast-paced simulation provides players with the opportunity to pit their driving and engineering skills against the computer or each other while behind the wheel of a Typhoon-class jet hovercraft. The game allows you to make crucial choices in the pits - fine tuning your machine to perfection - before heading out into a treacherous race course to compete for the coveted Cyberneufe Trophy against alien rivals. A futuristic thrills and spills game, *POWERDROME* features state of the art graphics and the added feature of dual machine interlink allowing for a head to head racing simulation.

SUGGESTED RETAIL $39.95 (US)
reader Service # 179

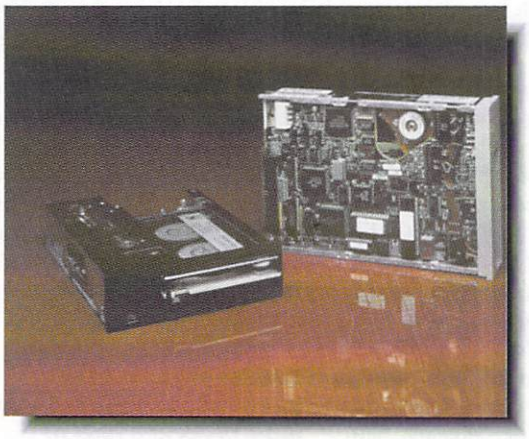
GVP STREAMING TAPE DRIVE

Did you realize that it requires over 45 880 K floppy disks to backup a typical 40 MB hard disk? With the size and availability of 40 and 80 MB hard disk systems increasingly available, the task of backing up your systems is a daunting one indeed.

Great Valley Products has a new *GVP Impact WT-150 Streaming Tape Backup* that offers high-speed, streaming tape drive bundled with high quality software called *TapeStore*. Capable of storing 150 MB on a single, standard one-quarter inch DC600 tape, the GVP system offers more than adequate storage for the average Amiga user.

Since the Amiga DOS does not have a built-in facility for controlling a tape drive the GVP TapeStore program, which fits into a standard 5.25 drive, is designed to provide all the features essential to high-volume backup applications. This new Tape Drive requires a GVP SCSI controller.

Suggested List:
$999.00 (US)
reader Service # 222



The GVP WT-150 tape drive

NEW FLAT-BED SCANNER

SLEEK AS A PANTHER

Panther Peripherals, the Amiga specialist house in London, England, presents its newest peripheral for the Amiga: the *Datacopy 730GS*.

The *Datacopy* 730GS is an A4 Flatbed SCSI scanner, small and light, that can scan a full A4 sheet at resolutions from 60 up to 300 d.p.i. in 15 d.p.i. steps. Scan images in in B & W with halftone dithering patterns or in up to 64 grey scales or use the standard function edge detection on black and white images.

The software has been written in assembly language that takes full advantage of the Amiga's Intuition environment whilst providing full control over the scanning modes and resolutions. A preview mode is provided that allows the user to make a rough scan of the image and then to select the exact part of the image for a full scan. The final scan can be set to produce a mirrored image, either left-to-right or top-to-bottom, as well as allowing the original to be scanned in negative form. Once scanned into memory, the image can be saved as a Virtual Page, for use with Express Paint or C Ltd's LazerXpress printer, or as a standard IFF file.

Full Optical Character Recognition will also be available, allowing documents to be scanned and converted to standard ASCII text for use with word processors, DTP packages. The OCR comes with three standard font dictionaries, but almost any typeface can be taught to the OCR and saved as a dictionary file for use at a later date.

Suggested List Price:
£1495 (UK)
Reader Service # 287

VIVID EFFECTS BRINGS SPECIAL EFFECTS TO LIFE

The Very Vivid/Vivid Effects group of Canada are thrilled to announce their *MANDALA SYSTEM*; a multi-purpose instrument for live interactive video games. Nothing new, you say? Well, the *Mandala System* allows you to control computer technology without physically touching anything!

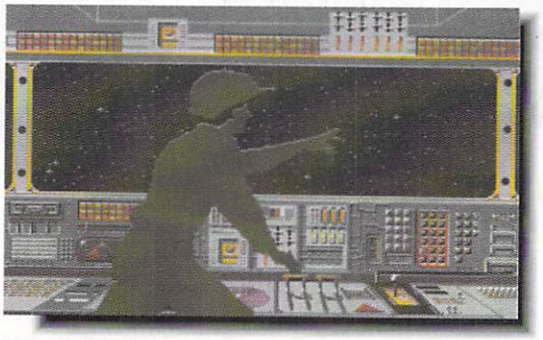
A video camera picks up the user's movements in an open space. The video signal is then passed through a matrix of software which instantly transposes the user's real time image into the world of computer animation and interactive video, visible on the surrounding monitors. Specific graphics function as triggers for the creation of animation and music - allowing the user to manipulate visuals, sound and external devices in real time.

Imagine - create your own rock video, with you as the star; play Dungeons and Dragons, from the inside, - the possibilities are endless. The Vivid Effects group have used the method in countless ways, from corporate tele-conferencing and presentations to advertising and promotional tools including interactive video walls in shopping malls.

Two recent locations of the system were in the National Hockey League Hall of Fame at the Canadian National Exhibition and the Capital Children's Museum in Washington D.C.

A further application in the process of being explored, and one which should be lauded, includes Mandala Applications for the physically challenged.

Price: variable depending on installation
Reader Service # 286



Very Vivids Mandala system

APROTEK IS ON THE MOVE

CHANGE OF ADDRESS

Aprtotek, manufacturers of the *MiniModem-AM* have announced a change of address, their new address and telephone numbers are listed below.

Aprotek
9323 W. Evans Cr. Road
Rogue River, Oregon 97537
Orders: (503) 582-2118
Technical: (513) 582-2120
Fax: (503) 582-2149
Toll-Free: (800) 962-5800

INNERPRISE UNLEASHES BATTLE SQUADRON

Innerprise Software of Maryland is boasting of some astonishing new twists to the classic arcade "shoot 'em up" with the release of their new game *Battle Squadron: The Destruction of the Barrax Empire*.

With one and two player modes, vertical and horizontal scrolling, and chameleon-like enemies who change appearance to mimic the terrain, *Battle Squadron* delivers a unique, 3D game experience. Designed and produced by *Torben Larsen and Martin Pedersen*, the authors of the hit game Hybris, *Battle Squadron* features more than 30 continuous minutes of different background graphics.

Here's the story in brief: Earth forces in 2400 AD have travelled through space to retaliate against a devastating Barrax Empire attack. You're in command of an Earth space cruiser, dodging and darting across alien terrain, facing dozens of whirling air enemies and challenging immense fire from ground emplacements. With up to 70 different animated objects on the screen at one time (including 20 different ground opponents), 60 frames per second of animation and 25 different weapons to earn and upgrade, *Battle Squadron* is a joystick-melting extravaganza of action.

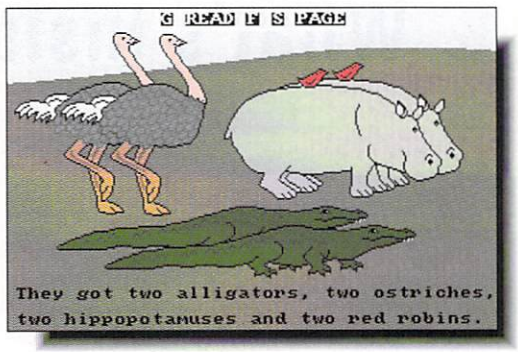
Battle Squadron is available for the Amiga 500, 1000 and 2000

Suggested Retail:
$39.95 (US)
Reader Service # 161

BIBLE STORIES FOR CHILDREN IN TIME FOR CHRISTMAS

NOAH'S ARK will join *Chicken Little, Aesop's Fables, Little Red Hen* and other classic fairy tales in*Hilton Android*'s talking *Robot Reader* series for children. Planned for Christmas release, this popular Bible story was added to the Robot reader series after overwhelming customer demand for childrens' games and reading exercises with a religious theme. The entire series is aimed at the pre-school through primary age groups, and includes such advanced mouse-driven features as reading words aloud, word colour changes after reading, adjustable reading speed, point and click for letters and words and audio-visual identification of the characters and words in the illustrations.

Suggested Retail:
$29.95 (US)
Reader Service # 260



The animals came in two's on Noahs Ark.

SHADOW OF THE BEAST

TWO YEARS IN THE MAKING

Psygnosis is set to make a leap forward in computer games with the release of a new title called *Shadow of the Beast*.

The game, a project that has taken two years, is viewed by the leading 16-bit entertainment software house as the culmination of everything the Psygnosis team has worked for since the company was founded.

Shadow of the Beast from Psygnosis

Many years ago, on a moonless night, a small child was stolen from its unsuspecting parents. Its mysterious abductors carried it far across the land to the mighty temple of the Necropolis. There the child was accepted by the Mages of Darkness, warrior priests of the Beast Lord.

Deep below the temple, in the Chambers of Creation, the evil Mages worked their dark arts creating strange creatures, deadly plant life and vicious traps to guard the Beast's stronghold. For the child they had a special purpose, but first came the preparation. Secret potions concocted from the blood of rare creatures slowly transformed the youngster into a bizarre man-monster of incredible agility and strength. Deep hypnosis erased memories of past life in readiness for his metamorphosis into the warrior messenger of the Beast.

Several years passed as he paid lip service to evil but then he discovered an awful secret-the horrible truth about his past, a truth that now leads him on a trail of total and bloody revenge against his masters.

You were that child. Now the time has come to enter the Shadow of the Beast.

Your task is to fight your way through hostile country to the heart of the enemy's stronghold where you will face your ultimate adversary. Prepare to live by your wits, relying on split second timing and ingenuity to overcome the horrific dangers in your path - horrors that include moral dilemmas - which of your parents will you sacrifice?

This new release from the British whiz kids who call their team *Psygnosis* will be hard to resist for all fantasy/adventure addicts.

Price $49.95
Reader service # 233

DR. T'S IN CLASS OF THE 90'S

Commodore U.K has chosen the U.S.-based software company *Dr. T*'s to provide a vital part of the educational software bundle to be offered to schools in Great Britain at a reasonable price.

The *"Midi Recording Studio"* is part of the "Class of the 90's" program that has been a solid hit since its release. In fact, the volume of the original bundle had to be increased from 1,500 to 5,000.

This is the first time that an American software house has collaborated with *Commodore U.K.* in this manner and, according to Al Hospers, CEO of *Dr. T's*, it will not be the last. *Dr. T's*, Hospers says, plans to be "working closely with Commodore in both Europe and the U.S. to expand computer sales... Commodore has a strong chance to leap ahead of Apple in the educational computer field right now...We feel that the Amiga is the computer best positioned to take advantage of the new surge in multi-media, and we plan to be a part of it."

Reader Service # 116

DTP

THE AMIGOTIMES DESKTOP PUBLISHING COLUMN

By Eyo Sama

What's inside the Publisher's Amiga?

Since this is the Hardware issue, I decided to write about the hardware that I personally use when I am typesetting the pages of AmigoTimes. First of all, I want to mention that this is not necessarily an endorsement of the products I use; there are some other products out there that can do the same job, these are just the tools that I have decided work best for me.

From the outside, my Amiga looks just about the same as any other A-2000; it's when you look under the hood or through the windscreen that you realize that this machine is not the same as what comes straight out of the box.

DISPLAY

For myself, the most important feature of my Amiga is the quality of its display. When you often spend 10 to 16 hours a day in front of your computer, you can't live with your screen suddenly de-interlacing as it does with the useless 2080 CBM monitor, you can't stand the way many of the 1084 CBM monitors flash every few minutes, and your eyes don't last very long glaring at a flickering screen for hours on end. Of all the Commodore monitors, the original 1080 is the best (although it does flicker when interlaced) but unfortunately it's not available any more. In its place Commodore is selling the lesser quality 1084 and 2080 monitors. Anyway, the monitor I use is the NEC MultiSync II driven by Microway's Flicker Fixer (a de-interlacing video board). With the MultiSync and the Flicker Fixer the Amiga's display is crisp, clear, and rock solid at any resolution. Another benefit is the increased screen resolution you can get by using MoreRows (a public domain program, included with the Flicker Fixer) to extend the size of your display area. My Workbench screen is set to a resolution of 704x480. This increased resolution is supported by most well-written software; for example, in Professional Page I am able to view the full width of an 8.5" x 11.0" page when at the 100% magnification.

AT THE SPEED OF LIGHT, OR TURNING '030 SOMETHING

The main drive of this machine is a 33 MHz Motorola 68030 processor coupled with a 33 MHz Motorola 68882 floating-point co-processor. These chips are mounted on GVP's A4000 board (see Accelerators on page 10), which is a combination accelerator card, high-speed AT hard drive controller, and 32-bit memory board. Using this board changes your whole perspective of the Amiga. With this screamer you are computing at speeds that leave all IBM and Macintosh personal computers sitting in the dust; even mainframe computers like the VAX 780 and most SUN workstations can barely keep up. The GVP board is installed into the CPU slot of the Amiga 2000, and there is a piggy-back board which is populated with either 4 or 8 MB of 32-bit RAM. Like many of GVP's boards, this board is multi-functional. You can plug an AT hard-drive directly to the accelerator card because it has a built-in hard-drive controller. The board I have, connects to an 11ms (millisecond) 80MB Quantum hard-disk drive.

To really speed things up, I use Dave Haynie's SetCPU program. SetCPU uses the Motorola 68851 to map the Amiga's ROM into 32-bit memory. SetCPU gives a tremendous increase in the speed of just about anything the Amiga does: sorting is faster, menus pop up faster, programs run faster etc. SetCPU also lets you enable/disable the 68030 BURST mode as well as the DATA and CODE caches. Dave Haynie from Commodore also wrote a program called CacheCard, this program lets you map the caches of your expansion cards into 32-bit memory thereby greatly increasing communications with those cards.

MASS STORAGE

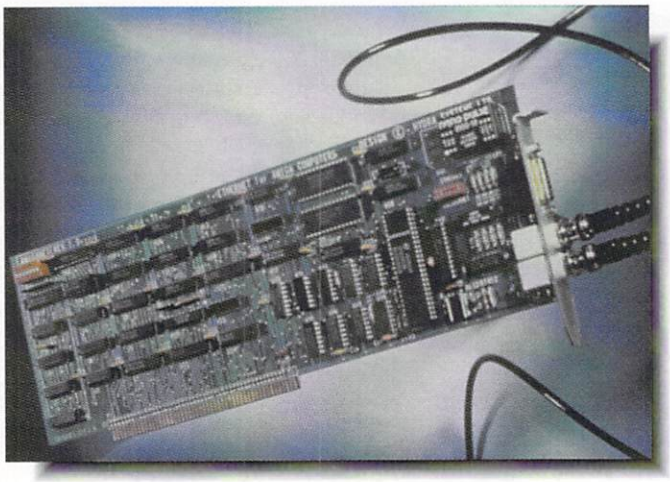
That brings us to the mass storage devices that I use. My main hard-disk drive (the one I autoboot from) is a GVP hardcard containing a 3.5" 80MB 11ms SCSI Quantum hard-disk drive which is mounted directly on the hardcard. I also have a second 80MB Quantum hard-disk drive which is connected directly to the AT controller on the GVP 68030 accelerator. This second Quantum is mounted in one of the 3.5" floppy bays; I wish Commodore would make more internal mounts for hard drives (maybe they could remove those inactive space-consuming IBM slots which clutter-up the 2000). One annoyance is the impossibility of plugging the hardcard into the first Amiga slot (because the memory board of the accelerator takes up so much space); instead, I had to move it inwards making some Amiga slots inaccessible. It would be nice to be able to mount the hard drive on the back of the card, that way it could be placed into the last Amiga slot without obscuring any

others.

The beauty of the GVP controllers, compared to controllers like CBM's 2090A, is that you can autoboot directly from a Fast File partition. As well, the drives show up even when you boot from a floppy disk; you do not need to mount the drives through the startup-sequence and they are even available when you boot with a game disk.

In addition to the two Quantum drives, I also use a 44MB Syquest removable cartridge drive. The Syquest drive is basically a hard-disk drive which can be removed from its housing, the cartridges are inexpensive and are as fast as many hard-disk drives (40ms). These drives are much faster than Bernoulli drives but are easier to damage since they have metal surfaces (I've never had one die on me but I wouldn't want to chance anything - like dropping it from a great height). The syquest drive is an excellent addition to a publisher's Amiga, not only is it able to hold our 5 - 20 MB postscript files but it is also one of the fastest ways of backing-up any other hard-disk drives you may have on your system. Although I don't do it, you can autoboot from a syquest drive if you so desire. The drives can be formated under the FastFile system and just like all the other storage devices from GVP, you do not have to mount the drive through the startup-sequence because they always show-up on your system, even if you boot with a game disk.

Using GVP's 44MB Syquest removable cartridge drives, we have been able to color-separate huge postscript files directly to the cartridges which are then sent to an output center.



The AmigaNET networking system from Hydra Systems Ltd. is the first working Amiga-only network we have seen for the Amiga.

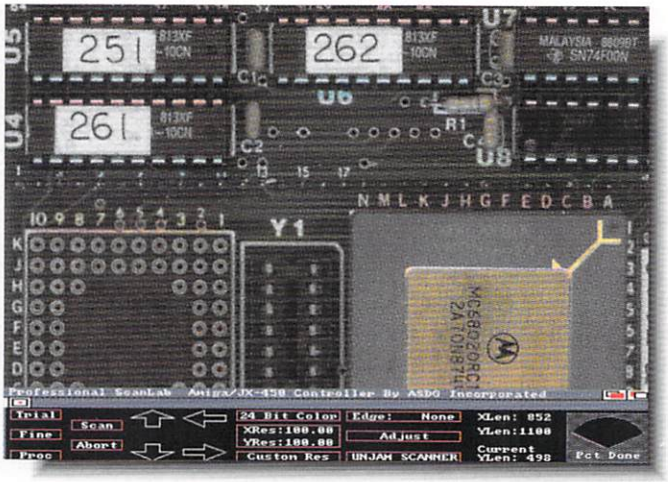
AN ELEPHANT'S MIND

A daughter board populated with 8 mega-bytes of 32-bit RAM plugs directly into my GVP accelerator board. The 32-bit memory greatly increases the speed and effectiveness of a 68020 or 68030 accelerator; both of these chips have a 32-bit data path as opposed to the 16-bit data path of the 68000 which comes with a stock Amiga.

By installing the new Agnus chip from the ECS set (Enhanced Chip Set) the entire 1MB of memory which comes on the mother board of the Amiga 2000 is accessible as CHIP RAM. Without this 1MB of CHIP RAM in most of the Amigas at AmigoTimes, we would not be able to create many of the bitmapped images we create. It is also the only way you can run ECA's DPaint III, Gold Disk's Professional Page, and Professional Draw, all at the same time. 9MB of memory may seem like a lot, but that's how much you need to effectively use ASDG's Professional ScanLab with the SHARP color scanner. For example, if you want to scan an 8.5" x 11.0" photograph at 300 dpi (dots-per-inch) you would require more than 25 mega-bytes of memory. Needless to say, you can't really do that. As you can see, the more memory you have the higher resolution scans you can achieve. Now, I'm sure you also understand why I have over 200MB of mass storage space.

NETWORKING

There is finally some networking software and hardware available - and shipping - for the Amiga. We recently installed Ethernet networking boards from Hydra Systems Ltd. in England into some of the Amigas here at AmigoTimes. The boards come complete with software and instructions and are easy to install: you simply plug the a board into an Amiga slot and plug the cables into the back of your and any other similarly equipped Amigas. The software lets you mount any of the devices which are existent on any other Amiga hooked up to



To effectively run programs like ASDG's Professional ScanLab, 8 MB's of memory is required.

the network. The other system's device (hard-disk, floppy-drive, ram disk etc.) shows up as a normal disk icon on your Workbench, and can be used as if it where connected directly to your own machine. You can even print to a laser printer which is connected to the serial port of another Amiga on the network. Although the software does not have any advanced features such as file-locking, security protection, and electronic mail, I am very impressed with the speed and capabilities of this board. For a business like ours (magazine publishing on an Amiga) it was a great relief to get rid of our SAFD network (Sneaker-And-Floppy-Disk network).

SCANNING

For the scanning of photographs and other artwork, I use ASDG's Professional ScanLab and the SHARP JX-450 color scanner. ASDG's Twin-X board plugs into an Amiga slot and has two connectors for the addition of various modules (a high-speed serial module is apparently available). The module I use is a GPIB interface which plugs directly into the SHARP scanner. The board, unfortunately, takes up the space of two Amiga slots because of the daughter-board modules; but the whole system works very fast and very well. All the photographs inside AmigoTimes are scanned using this set up and then color-separated directly to a Linotronic Imagesetter using Professional Page and Professional ScanLab.

A BETTER MOUSE

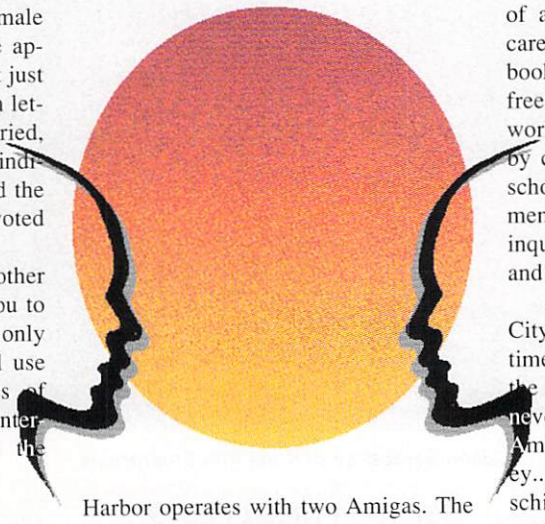
For smooth, responsive, and uninterrupted mouse movement, you just can't beat the Boing optical three-button mouse from GfxBase Inc. Sounds like a commercial doesn't it? Commercial or not, the Boing mouse is the best you can get for the Amiga. Using the PD program 'MiddleButton' by Michael Sinz, I have the third mouse button assigned to the shift key therefore allowing me to do extended selections without having to use the keyboard; this comes in very handy with programs like Professional Page who make extensive use of the extended select feature. Being optical, the Boing mouse has no mechanical parts (except the buttons) and therefore needs no internal cleaning. There is a special mouse pad that comes with the mouse, that has a reflective grid which is used by the mouse to determine motion.

Using the Boing mouse takes a few days to get used to because you have to keep the mouse at a right-angle to the pad otherwise your mouse pointer only moves in one direction. I adjusted to that after a day's use and wouldn't trade this mouse for any other input device (except maybe a direct mind link if they ever invent that). ❑

(See PRODUCT INDEX for more contact information on page 109)

WOMAN by WOMAN

THE DISTAFF SPEAKS



By Sue Albert

To be honest, when I started this column I had no accurate idea how many women were using the Amiga or if their stories could sustain a monthly column. Working from a small list, I began interviewing and talking to women working in software development and graphic arts . Before the first column even appeared in print the list was growing. Almost every woman I contacted referred me to another female user. When the introductory piece appeared I began to receive mail. Not just notes, but long, detailed, and warm letters from all over the map. Ages varied, interests were divergent, opinions individual, but draw a big heart around the Boing Ball, for these are devoted Amiga users.

Now it appears I have another problem, how am I to introduce you to all these fascinating women in only twelve issues a year? To start I'll use this issue for thumbnail sketches of correspondents. Expect in-depth interviews with some individuals in the coming months.

BAH HUMBUG TO BUSINESS BIAS

Despite the persistent notion that the Amiga is not a business machine, several women reported happily running complex business ventures, most from their homes.

Mary Hoffman of Waukesha, Wisconsin and her husband incorporated Safe Harbor Computer Supplies, a small mail order company in 1987. "My husband is President of the corporation, but it is I who handles the day-to-day operation of the business". Safe Harbor operates with two Amigas. The A2000 handles all the business and accounting software and was used for the original business plan requested by the bank. "A500 runs our 24-hour BBS (414-544-6567). I'm co-sysop which involves daily maintenance of files, order processing, and responses to messages". Prior to Safe Harbor, Mary taught school and used the Amiga to prepare all her lesson plans, tests, and records. Her computer experience goes back to '75 when her husband built their first computer and they've worked their way up to three Amigas. With two children, their personal goal is "to have an Amiga for every member of our family".

From the Sun Belt, *Tamara Moore* of Pensacola, Florida tells a similar story. In order to remain at home with her child, Tamara took over all the office work connected with the business she runs jointly with her husband servicing hospitals in the Southeast. With the aid of an Amiga 2000 and part-time day care, she is office manager, secretary, bookkeeper, and office errand person, freeing her husband for the outside work. "I have never been intimidated by computers. I grew up with them in school. The idea that they are only for men is pure fiction. It just takes some inquiry and the ambition to go out there and learn".

Marion Deland lives in New York City where she divides her computing time between the Amiga and, through the bridgeboard, the IBM PC, but she never divides her affections. "The Amiga is love; the IBM is money...more of them out there". With her schizoid computer she does business applications, consulting, computer tutoring, and writes for computer publications. Her self-published book "The Shopper's Guide to Computers-How to Get the Right System at the Right Price" was recently given a favorable review in the N.Y. Times. Marion, an active member of AMUSE, has lots of pithy things to say about women and computers. "A friend once said that there are tool-users and tool-makers. I think many women are tool users, they don't have time to be tool-makers (programmers). Women must be infinitely

more practical because they don't have wives to bring dinner and wash dishes while they play with the computer!"

In Atlanta, Georgia, *Melissa Grey* is the president of Blue Ribbon Bakery, an Amiga software development company. In their personal database Who? What? Where? When?, she has taken particular care to design the product so that it is logical, pleasingly aesthetic, and that the documentation is non-sexist. At the same time "...I am always conscious of the fact I am addressing a male consumer audience". Melissa thinks the manufacturers need to direct marketing of computers and software toward women's interests and needs, then "...they would find not only an increased customer base, but a greater variety of options and directions in which to grow".

MUSIC TO THEIR EYES

It's proved difficult to squeeze the interests of respondents into to categories, but two of the writers seem to have built their use of the Amiga around a musical core before spinning off into other explorations.

d to a Tandy Color Computer (she loved the color and graphics). Becky learned to hack in Basic on the COCO preparing real-time graphic animations for their original songs presented in live music shows. "Cocos that David had programmed in Forth controlled our light show, smoke machine, a 'robot' face that talked and sang backup, all synchronized to our pre-MIDI drum machine". The Matthews saw their first Amiga and bought one that same day. They are now heavily engaged as co-sysops of The Amiga Advocate BBS (615-776-5438). They are jointly developing program management software on the Amiga for the local Community Access Television station using AbSoft's AC Basic. They plan to eventually market the product. Becky's experience introducing kids to computers and programming at the local Science Museum leads her to the conclusion "...graphics provide an immediate reward and seem to be a good way to get folks and computers friendly".

A professional singer for eleven years and now a registered piano turner and technician, *Leila Joiner* of Tucson, Arizona appears to have directly plugged her unlimited energies into the Amiga. She is editor of an impressive newsletter for the large and active Catalina Commodore Computer Club in Tucson. Her ambitious plans for her Amiga 1000 include; running her business, creating animations synched to original music, and publishing her own books. Leila feels lucky to live with another computer person. "I sympathize with those whose family, friends and spouses do not share their excitement. Computer enthusiasm leads to sharing. I have seen people of both sexes and all ages and backgrounds coming together in an atmosphere where the most important thing is learning and understanding".

Jane Baracskay of Kona Kini Enterprises

I SEE YOUR TRUE COLORS SHINING THROUGH

As you would expect I heard from that wave of the future, the videophiles and multi-media presenters.

Kona-Kina Enterprises in Brunswick Hills, Ohio is a video production studio which grew out of *Jane Barackay's* Amiga 2000 right in her own home office. She works totally with the business sector preparing sales presentations, training sessions, plant tours, fund raisers, and sales meetings. Jane is rapidly upgrading her equipment with an eye on commercials and professional TV. "The Amiga has dramatically changed my life. It was the ultimate 'high' seeing the amazed expression the first time someone viewed one of our videos with all the special effects: the tumbles, turns, mosaics, the whole video hoop-la".

Digi-View was the creative trigger for *Joyce Burec* of Houston Texas. A medical researcher studying (human) viruses, she and her husband are avid skin divers and nature photographers. Their slide shows were formerly presented on two projectors synced to music. In June at the Seaspace '89 Exhibition, Joyce used a 5 MB Amiga to present two shows of digitized underwater images in HAM with music and animations. She also is president of the Club Amiga users group in Houston and editor of the newsletter, another impressive publication. Her opinion on the shortage of women in computing : "Women spend all their time on their looks and clothes trying to find a mate. They don't work on developing their minds". Joyce thinks it's the responsibility of the schools to train girls to develop technological skills.

WITH A CAPITAL A

I expected to hear from women artists, but again none seemed to fit conveniently into a pat category. Have a listen!

Joanne Ashton from Downers Grove Illinois has gone full circle. An art major in college she became a school psychologist taking one short break to create and produce a series of award winning commercial film strips. When her son was born she retired from the field of psychology and is once again producing art work at home. This time there is a twist. She is doing freelance computer art and animation for software developers Free Spirit Software and Image Tech. She works with both the Commodore 64, whose graphics first lured her into computer use, and the Amiga. You can see her graphics on "The Number Show" educational disk for the C128 and on "Christmas Classics" a sing along music disk for the C64 and Amiga. Both are distributed by Free Spirit Software.

Joanne says of the Amiga, "If they don't have them in heaven, I'm not going".

Bonnie Dalzell lives near Baltimore and has had a dual career as a biologist and an artist. She holds a BA and MA in Paleontology from U.C. Berkeley and has freelanced as a natural history and science fiction illustrator. Presently she is programming the Amiga in Basic to do the data analysis for a locomotion study she is preparing for her Phd at the University of Pennsylvania graduate school. She is using a genlock and video tapes of dogs in motion, recording the animals body motion frame by frame in a study called Kinesiology. Bonnie raises Borzois (Russian Wolfhounds) which provide her with her own elegant crew of study subjects. "One of the things that's impressed me about the Amiga is its ability to operate in a dog hair filled environment".

NAME ONE!

Three letters contained lists of women the writers felt would interest other female Amiga users or they themselves would like to see interviewed.

Marianne Gillis who hails from Winnipeg, Manitoba, takes particular notice of women programmers as she writes software for her two young Amiga proficient daughters and has recently sold several programs to Amiga publications. She also writes and reviews software. Aware of the unbalanced 10:1 ratio of men to women, Marianne feels "Every woman who is interested in any aspect of programming or development is extra special and should be completely supported by all other women in the field". She requested and received helpful advice from software developer Harriet Maybeck Tolley in the past and would like to learn more about her. Harriet was on the interview suggestion list of my only male respondent, *Gary Fishman* of New York City. (Note: Marianne! Gary! Watch this space.)

Another list arrived via Canada from *Noreen Lenihan*, Regional Education Manager at Commodore Business Machines, Limited in Ontario. "I have worked in education for eight years and find the mystique of computers being something of interest only to the male still abides despite ardent attempts of both male and female teachers to get girls interested. Perhaps it has something to do with the way computer studies are taught. However, with the successful introduction of the Amiga into Canadian schools, there is a trend away from the, in my opinion, boring side of computers, such as programming, and a movement towards applications".

SUMMING UP

Since I began my quest it's been a series of surprises. Many of the women who have come to the Amiga are mature women who have had experience with programming on mini or main frame computers. The Amiga was the first personal computer to attract them. They feel right at home in its multitasking environment, but they were drawn to the color and graphics. Most are professionals or have experience in their fields and have well defined projects. The Amiga supplies the tool that meets their needs, at a price they can afford. Price is a primary concern since they have often given up second or higher incomes to stay at home. The Amiga is creating an alternative. Many women are reviving abandoned crafts and skills, generating income, and even developing new careers. It appears that the Electronic Cottage predicted in Alvin Toffler's "The Third Wave" (Morrow) in 1980, is now an actuality.

If you are a woman using the Amiga in a unique or interesting manner and would like to share your experiences or if you have any comments please write to:

Sue Albert
P.O. Box 410852
San Francisco, CA 94141-0852
U.S.A. ❑

Music-X

In the beginning of 1987, MicroIllusions announced the imminent release of what they promised to be the most powerful music program available: Music-X. We all waited and waited and waited some more, but as the months (and years) passed, all but the devout believers gave up any hope of ever seeing the product. Behind the scenes, however, MicroIllusions was quite busy revising and beta-testing the program. Finally, some two and one-half years later, they have in fact released Music-X for the Amiga.

CAPABILITIES

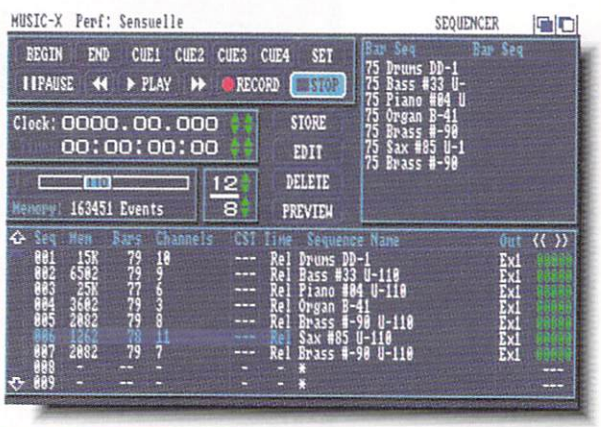
In essence, Music-X is a full-featured music sequencer package which makes full use of the graphic, audio, intuition and multitasking capabilities of the Amiga. It has an abundance of bells and whistles (which themselves have bells and whistles) and in my opinion is probably the best sequencer package available. Music-X 'records' MIDI events from a synthesizer keyboard and places them in any of up to 250 sequences and each sequence can have up to 4096 measures. Any number of song-length sequences can be merged into a single sequence, memory permitting. Short sequences can be chained to produce a complete musical composition.

SEQUENCER PAGE

The heart of the program is the Sequencer Page. From here you control the overall operation of the program using pull-down menus as well as sliders and buttons on the screen itself. Once your MIDI keyboard is attached properly, recording is as simple as clicking on the 'Record' button. You capture your performance in an edit buffer and then store it to one of the unused sequences. You can synchronize the program to an external clocking source, or use the internal Amiga clock. Music-X has a resolution of 1/192 quarter note; eight times that of a MIDI clock. Your position in a sequence is displayed on two digital read-outs in measure/beat/clock form, as well as in hour/minute/second/frame form for film and video synchronization (both NTSC and PAL). Music-X can even interface with SMPTE readers and MIDI time clocks. The program supports both manual and automatic punch in/out, and provides four cue markers for automatically locating user designated points in a sequence. The clock tempo which ranges from 10 to 300 beats per minute is controlled by a slider bar, and the time signature is adjusted by clicking on arrows adjacent to the signature.

The Sequence List Window is located at the bottom of the Sequencer Page and displays information about each of the sequences. The sequences can contain three types of events. The first, Channel Events, are the standard MIDI messages such as note on/off, program changes, pitch bend and aftertouch. The second, System Exclusive Events, are messages which are only understood by the particular synthesizer you are using. The third, Music-X Events, are commands which control the operation of the sequencer itself, and it is those events which help make Music-X the powerful program that it is. By inserting these events in a particular sequence, you can change the tempo and signature at any time, mute or solo a sequence or track, set repeats, and even trigger other sequences. Thus, you can create a pure control sequence which does nothing but play other musical sequences at designated times and in a particular order. This is how various recorded sequences are put together to form a song. For each sequence, the Sequence List Window displays the amount of memory used, its length in bars, the MIDI channel to which it is assigned, the user name and whether it is to be played externally by a synthesizer or internally using the built-in Amiga voices.

Finally, the upper right hand portion of the Sequencer Page contains the Track Window. Each of the twenty available



The Sequencer Page, which is the heart of Music-X and from where you control the overall operation using pull-down menus as well as sliders and buttons on the screen itself

By Steve King

tracks plays an active sequence so only twenty sequences can be played simultaneously (which is sufficient to control the sixteen MIDI channels and the four Amiga voices). During playback, a click of the mouse will mute any of the tracks.

SEQUENCER PAGE'S EXTRAS

There are several other options available on the Sequencer Page which can be found in the pull-down menus. A Channelizer Window re-routes MIDI data (which was recorded on one channel) to another during playback. Sequences can be copied to empty sequences for modification as well as merged into other existing sequences. If you copy a sequence to itself, all note events are doubled which produces a 'thicker' sound when played back through a synthesizer. Another option allows you to extract certain designated events from a sequence (such as all notes assigned to a particular MIDI channel) and copy them to another sequence.

The second important part of Music-X is the Filters Page which processes the incoming MIDI messages prior to storage in the edit buffer. Each MIDI channel has its own filter. When set, it eliminates designated events (such as aftertouch, velocity, etc.) which consume large amounts of memory and may not be required. This page also contains a MIDI message panel which sends specific messages to your synthesizer. Through this panel you can select or deselect portamento and vibrato, control certain internal aspects of the synthesizer (such as local on/off, mono/poly mode and omni on/off) and also set data echo.

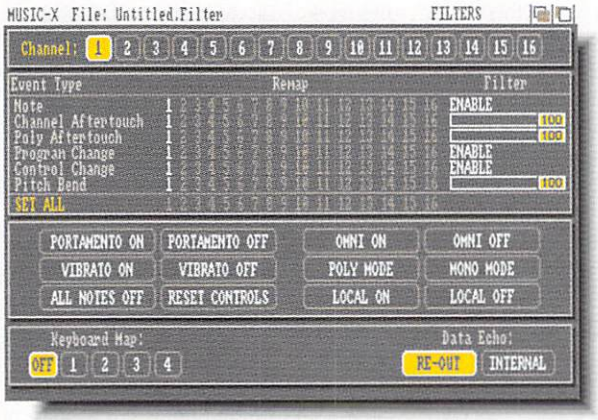
From the Filters Page, you can access the Keymap Editor Page. Music-X supports four programmable synthesizer keyboard maps which let you re-arrange the notes of your synthesizer and assign certain events to specific keys. The latter feature permits you to press a key and trigger a Music-X command (such as start playing sequence number 10) rather than play a musical note. Keyboard mapping is most commonly used to split the keyboard into sections so that the lower octaves will record on one MIDI channel and the upper octaves on another. You can also program a keymap to send program change messages to a synthesizer while other musical sequences are playing, resulting in a change of musical instrument or voice at the touch of a key.

PLAY BACK

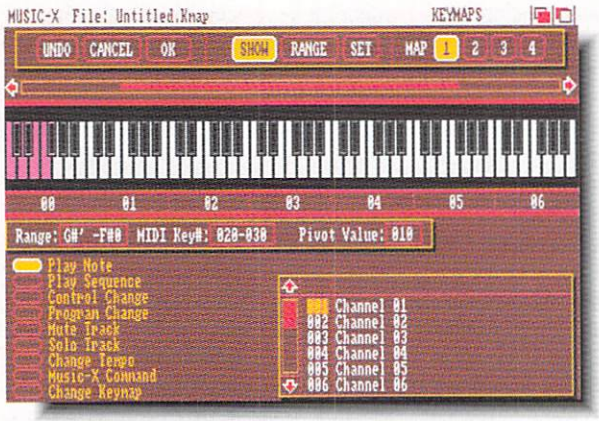
Once you have actually recorded a sequence, you will want to play it back to hear how great it sounds. Music-X supports the playback of any sequence through the Amiga voices as well as through your synthesizer. The Amiga Samples Page is used to manage the available sounds. You can load up to sixteen different digitized sound samples (in either IFF or Sonix format) although the Amiga limits the number that can be played at any one time to four. Each sample corresponds to a particular sequence output channel and the sample list provides useful information for each sound.

One unique feature of the program is your ability to shape and re-tune each of the samples. At the bottom of the screen is a box containing a line graph with sixteen different points. This line represents the sound envelope of the selected sample. By manipulating this line with the mouse pointer, you can change the entire sample and save it to disk, thus creating your own custom instruments! One obvious use for the Amiga's internal sounds is to load a number of drum samples and use the Amiga as a programmable drum machine. Another would be to play sound effects in place of instruments.

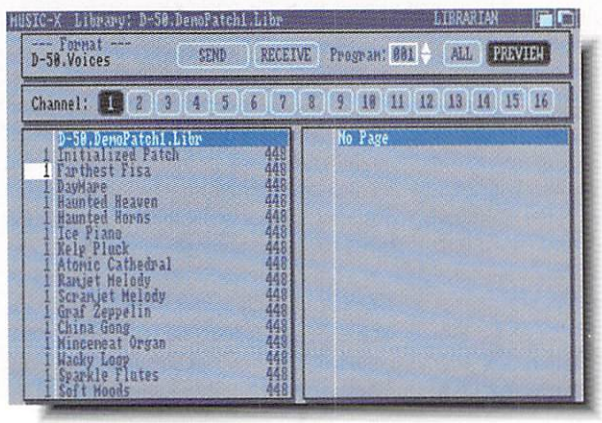
Now, having listened to your sequence the odds are you will be dissatisfied and want to perform either major or minor surgery on it. The editing features



The Filters Page where incoming MIDI messages on each MIDI channel are filtered, prior to storage in the edit buffer, by eliminating designated events which consume large amounts of memory and may not be required



The Keymap Editor Page, accessed from the Filters Page, which lets you rearrange the notes of your synthesizer and assign certain events to specific keys, and which is most commonly used to split the keyboard into sections so that the lower octaves will record on one MIDI channel and the upper octaves on another

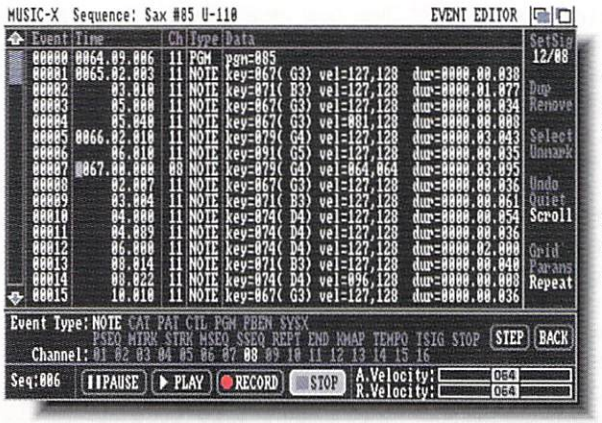


The Librarian, used to transmit programs (usually packages of data which produce the different musical instrument sounds), bundled in lots of 16, to and from synthesizers using a MIDI bulk dump

of Music-X are truly outstanding and should satisfy every musician's needs. Music-X contains not one, but two different sequence editors. While each displays all the various events in a sequence, each displays them in a different manner and provides both similar and different tools and features. Both however can be used with the mouse and computer keyboard commands. The Bar Editor displays events graphically with time running along the horizontal axis and event numbers running vertically. Every event in the sequence is displayed in some manner: Notes by rectangular blocks, velocity by histogram type bars and program changes by colored text. Individual musical notes can be moved by clicking on them and dragging them with the pointer to the new location, and duration can be changed by stretching them. Multiple events can be transposed, copied, inserted and deleted by rubber-banding them with the mouse pointer. One nice feature lets you zoom in and out for a detailed or overall view of the sequence.

With the Grid option, you can specify standard timing points, and all notes will 'snap' to those imaginary points. You can also call up the Quantize Module where you can change the timing of events in a sequence. This feature is most often used to round off all notes to a specific value, both in beat placement and duration. Music-X is quite versatile in this respect as it provides six different modes of quantization as well as sliders that 'randomize' the process to produce a less mechanical sounding rendition. Other modules let you change the attack and release velocities as well as the pressure values of the notes in a sequence. Finally, you have the ability to record your music in step mode where, in essence, you play a single note, advance the clock, and then play another. In auto-step mode, the clock is advanced automatically as soon as you press a key on your synthesizer. This feature makes it easy to record complicated passages which may be too difficult to actually play in real time.

The second and more traditional method of editing is through the use of the Event Editor. This is a window which lists in tabular form each event in a sequence, displaying the event number, start time, MIDI channel, and event type as well as all the other data associated with that event. In this mode, you change the events by highlighting the target value with the pointer and typing the new data from the computer keyboard. Unfortunately, not all of the global editing features (such as transposition) are available in this mode. You can record and playback in both editor modes and as you do, the events move by and change in real time!



The Event Editor, which displays in tabular form such data associated with each event as event number, start time, MIDI channel, and event type

As if all of these features weren't enough, Music-X also includes a full-featured Librarian which is used to transmit programs to and receive them from synthesizers using a MIDI bulk dump. These programs, bundled in lots of sixteen, are usually packages of data which produce the different musical instrument sounds. Since most synthesizers communicate with their own unique language, protocols for a number of the most popular synthesizers are included, and Music-X provides a protocol editor for those courageous souls who may want to attempt to create their own protocol for a MIDI device that Music-X doesn't support directly. Using the Librarian is as easy as loading a particular library from disk and clicking on a few buttons.

Music-X can save not only the musical performance itself, but also all of its internal parameters, such as keymaps, filter settings and Amiga sampled sounds. While the music file is unique to Music-X and cannot be imported into other music programs, MicroIllusions does provide a separate program that converts its files to and from standard MIDI format which is acceptable to other programs (such as Dr. T's Copyist). Music-X also has a SMUS to Music-X converter, but doesn't convert Music-X files to SMUS. Looking to the future, MicroIllusions provides an install module utility which makes it easy to add features to the program when they become available. This installs them right into the menu bar of the appropriate screens.

CONCLUSION

Music-X undoubtedly has one of the most complete manuals published for any Amiga program. Weighing almost two and one-half pounds, it spans 500 pages and is printed in large, easy to read type. Each menu item and command is discussed thoroughly, has short tutorial type examples, and references other pertinent sections of the manual. The only negative point is that you really must wade through the entire manual before you can really use the program as the various functions (and thus their placement in the manual) are interrelated. The manual is also a bit short on practical how-to's, although everything you do need to know is in there somewhere. Music-X comes with three diskettes. None are copy-protected and hard disk installation is possible although you must do it manually since MicroIllusions didn't provide an automated HDInstall file (don't forget to move those special fonts to your hard drive).

There is no doubt that Music-X is probably the most powerful music program on the market for personal computer users. Despite its complexity, it is easy to use, particularly since it was designed specifically for the Amiga. While it is unfortunate it took so long to bring Music-X to market, it was well worth the wait considering the number of features and its apparent flawless performance (no GURU errors or system freezes so far). Based on its price and scope, Music-X is obviously targeted at the serious musician, but then again, what musician isn't serious. Considering what you get for your money, it's a bargain. Let's hope that MicroIllusions and third party developers will now act quickly to market additional, useful and unique modules to further enhance the usefulness of Music-X. ❑

(See PRODUCT INDEX on page 109 for more contact information)

AniMotions

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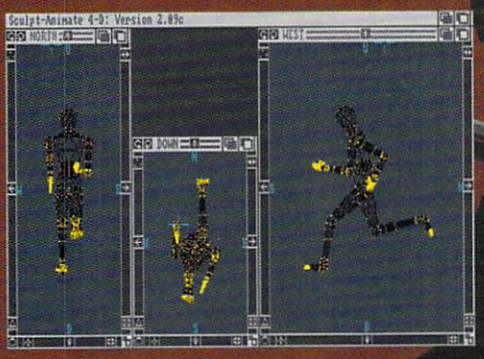
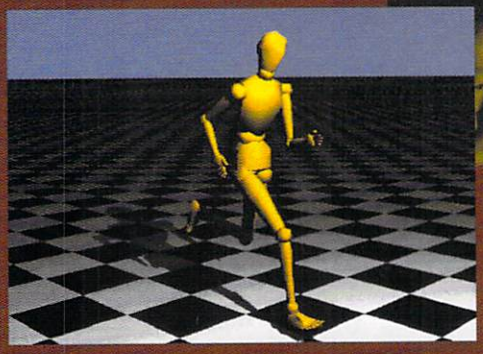
AniMotions is a collection of accurate human movements (walking, running, sitting down, climbing stairs, and many more) which can be applied to several included mannequins or to humanoid characters you have designed yourself. Using the included scripts and Sculpt-Animate 4D™ you can automatically create realistic animations of humanoids going through several of the motions. The mannequins are accurately sculpted and range from a matchstick figure to a complete mannequin with all the body's joints and limbs. Each joint and limb is named in an hierarchical manner and can easily be manipulated either manually or automatically through the scripts. AniMotions is a must for any serious animator and is also a great learning tool for the beginner.





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A.L.F. Amiga Loads Faster

Product Review: ALF AG5 MFM
reviewed by: Lawrence Kolberg
Computer: Amiga 500

The ALF2 System allows any track oriented device to be controlled by the Commodore Amiga computer. Such devices include Hard Drives, CD Rom, Changeable Disks or other storage units.

The Hardware interface is a beautifully designed and built, low profile package. It measures 6 3/4" x 2 1/2" x 1" and slides smoothly onto the Amiga bus. The small footprint allows for movement of the computer, without fear of stressing the bus connection. A bus thru allows for future expansion.

A 26" cable at the rear of the interface is of sufficient length to make positioning of the controller card an easy task. I have my hard drive, power supply, and controller card housed together in a readily available utility box which sits well off to the side of the computer.

My ALF2 Autoboot Interface came ready to run with an OMTI 5520 controller card and version 2.0 Software. The ALF2 software is the most user-friendly of any hard drive installation packages I have seen. The Auto Install module does all of the work for you. Simply follow through the mouse driven screens, and in no time you are up and running. The Install Module will even copy the workbench to your new drive and create a boot disk for those without a 1.3 Kickstart ROM chip. The 1.3 ROM chip is necessary for Autoboot, but the system works just fine without it.

The ALF2 hardware and software are very well behaved. I have been running the system daily for two months and have not once experienced a system failure. All programs tested performed as expected.

As an added bonus, Version 2.0 ALF comes with a free EXTRAS disk. This disk is packed with useful utilities that make managing your drive a snap! Included is a hard drive backup

utility that is very fast and very easy to use. It is a graphically oriented mouse driven program which supports multiple drives and partial backups. It is quite simply POWERFUL!

It is the first backup which runs with any good SCSI Streamer drive. This backup software is also sold individually. It also runs well with an A 590 or an A 2091.

Other utilities include checkdrive, install PC, drive diagnostics, park, password protection and, a favorite of mine, speedtest. Speedtest will give you a quick indication of average drive performance in KB/sec. My 40 meg ATASI, ST506 type drive came in at a 351 KB/sec average data transfer rate. Faster rates have been reported with other drives.

Installation and use of the system would not have been quite so easy without the excellent manual. Good manuals are hard to find on many products, but not so here! Early chapters guide you through hardware and software installation, while later chapters offer hints on usage and how to best set up your system. The manual also offers the curious minded a more detailed look at the way ALF2 works.

My overall impression of the ALF2 system is a positive one. It is a well made and dependable unit, designed by ElaborateBytes, Munich, West Germany. ALF2 is distributed in North America by Pre´spect Technics Inc., Montreal, Canada, from whom I have received excellent telephone support and prompt curtious service. I highly recommend the ALF2 system to anyone looking to add a hard drive or other track disk device to their Amiga system.

ALF2 makes perfect sense for anyone who has access to cheap ST 506 hard disks, as ALF2 MFM and RLL controllers are still faster than any SCSI controllers I have run accross.

SCANNERS

INTRODUCTION

When you wanted to add graphics to your documents using traditional methods all of your artwork had to be 'stripped' into your document. This system is still in existence, but it is no longer the only route available to the editor or designer.

In the world of electronic or desktop publishing, some sort of imaging system is required to bring images into the computer. These input devices are more commonly referred to as scanners or digitizers.

A scanner may be used for one or a combination of the following reasons:

- *To scan images for use as drawing templates in a program such as Professional Draw*
- *To scan photographs for black and white or color publications*
- *To scan line art for importing into paint programs for enhancements*
- *In certain cases to scan text for use with OCR (Optical Character Recognition) software.*

It has been less than a year since the first scanner arrived in the Amiga forum, and users are only now beginning to have a reasonable number of scanners to choose from. The varieties include black and white 1-bit scanners (16 to 256 levels of gray) to the full 16.7 million color professional quality scanners. Since digitizers are also included in this category, they must also be looked at as low cost alternatives.

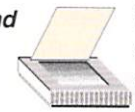
Scanners and digitizers come in different formats, in this review we will attempt to cover those that are available for the Amiga user.

a) *Sheet-fed Scanners: Canon IX12, PC Scans*
b) *Hand-held Scanners: Han-D-Scan, Sharp JX 100*
c) *Flat-bed Scanners: HP-Scanjet, Sharp JX 300/450*
d) *Real-time Digitizers: FrameGrabber, FrameGrabber 256*
e) *Still Image Digitizers: Digi-View / Digi-View Gold*

Some of these scanners (i.e. ProScan from Gold Disk Inc.) are sold in a bundled configuration. Bundled refers to the Scanners being sold in an all-inclusive package consisting of all relevant hardware and software. A set-up like this has both a plus and minus side. On the plus side the user does not have to go around shopping for extra hardware because everything is included. On the minus side though, one is not given the opportunity to search for a bargain price on a scanner or even have the option of purchasing one second-hand, a common route for the budget minded.

SHARP JX-450 Scanner and Professional ScanLab

by Eyo Sama

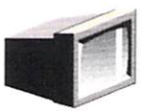


The SHARP JX-450 color scanner is definitely the heavyweight in this group of scanners/digitizers. The JX-450 is a flatbed scanner which allows you to scan artwork or photographs up to a size of 11" x 17" , at resolutions ranging from 30 dpi (dots-per-inch) to 300 dpi.

Using ASDG's Twin-X board as a GPIB interface to the scanner, and their Professional ScanLab as the software interface, you are set to exploit the JX-450's excellent scanning features. The scanning resolution is fully software selectable as is the scanning area you are interested in. What this means is you don't have to scan the full 11" x 17" flatbed just to scan a 4" x 5" print, you can select a sub-rectangle of your entire scanning area and the scanner will move to that area and scan it at whatever resolution you specify.

The Professional Scanlab software is very mouse-oriented, so you rarely have to touch the keyboard except to type the name of a file. On the other hand, should you want to, you can control just about everything via keyboard shortcuts. There are several scanning modes available in Professional ScanLab ranging from a monochrome mode (1-bit) and a 256 grey level mode (8-bit), to a 16 million color mode (24-bit). Since the Amiga cannot directly display images in either 256 grey or 16 million color, it displays them on the screen in HAM for the 24-bit images and in hi-res 16 grey for the 8-bit images. The actual 8 and 24-bit files are still resident in memory and can be saved and modified as such.

Unlike Digi-View and the FrameGrabber, your scan size is not limited to the screen resolution, it is only limited by available memory which with 8 MB of expansion RAM is about 1200 x 1500 pixels. By scrolling around you can use

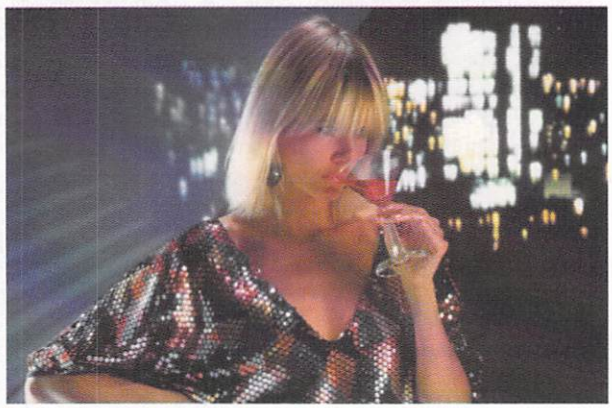


your screen as a window into this larger bitmap area (scaling also lets you view the entire image should you so desire). What I am waiting for ASDG to do, though, is allow Professional ScanLab to scan directly to a hard-disk drive which would allow you to use the JX-450 to its full potential. Right now I am only able to use the scanner at half its maximum resolution on an 8.5" x 11.0" page; for an 11" x 17" page I am reduced to 75 dpi which is a quarter of the maximum available. I hope ASDG will address this problem soon because it would allow high resolution scanning of much larger artwork as well as allowing such artwork to be output at a much larger scale.

There are controls within Professional ScanLab which allow you to adjust the color balance, contrast, and brightness of your scanned images. Once you have adjusted a scan to your liking, you can then perform a high-quality color-separation (includes color-correction and Under Color Removal) of your image, the separation will be done on the actual 16 million color 24-bit file. The separations can then be combined with color-separations from Gold Disk's Professional Page using ASDG's ReSEP and output to any PostScript compatible ImageSetter as final films ready for offset printing.

SHARP also sells a mirror unit for the JX-450, which allows you to scan negatives and transparencies. Don't count on scanning regular size slides, however; even at 300 dpi you only end up with a 300 x 200 bitmap which just isn't good enough for reproduction.

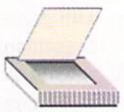
The JX-450 has the best scanning quality, resolution, and features, but all this comes at a price. At about $6,995 (US) plus $995 (US) for Professional ScanLab, it certainly isn't the scanner for the hobbyist desktop publisher. Still, if it is high quality you need and the ability to create high resolution color-separations encompassing a 16 million color range, then the SHARP JX-450 and ASDG's Professional ScanLab is the only way for a serious publisher to go. Remember, the next step up from here is in the $70,000+ range.



The results of the Sharp JX-450 Scanner, with Professional ScanLab from ASDG; an unbeatable combination for the Amiga

Han-D-Scan

by Stephen King



Han-D-Scan is a small black and white image digitizer which captures a printed image and converts it to a format which can be both displayed on the Amiga monitor and imported into all desktop publishing and paint programs that recognize the standard Amiga IFF/ILBM format.

Installation of this hand-held device is quite simple and quick. Plug one connector into the serial port of the Amiga, another into the parallel port and the last into joystick port 2. The serial port connection supplies the power to the device on all but the A500 (which requires an optional power supply) while the image data is transferred to the Amiga through both the parallel and joystick ports. Although the device could have been designed to transfer data through the parallel port alone, but that would have increased its cost considerably. As the internal light source is turned on immediately upon your booting up your Amiga, you must always run a small program called "scanoff" in your startup-sequence to avoid premature failure of the source from heat build up.

The method of operation is also relatively simple. The guts of Han-D-Scan is a strip comprised of 1632 individual sensors laying horizontally across the device's 4.1" scanning window. As you roll the device over a printed image, the individual sensors determine whether a particular spot is dark (black) or light (white). Han-D-Scan uses yellow LEDs as a light source that is superior to red for picking up skin tones. The scanned image will be quite sharp, as Han-D-Scan is capable of sensing 400 different points for each linear inch of surface area (1632 sensing points/4.1" width). The data for each scan line is sent to the computer and, once Han-D-Scan has determined it has moved down the page 1/400th of an inch, it takes another reading, and so on.

At its maximum resolution of 400 DPI (dots per inch), every scanned vertical inch will consume over 100,000 bytes of memory, and a postage stamp size image will fill the screen. You do have the option, however, of changing the resolution to 300, 200 or even 100 DPI using a selector switch on the right side of the device. While a typical laser printer has a resolution of 360 DPI, a dot-matrix printer is 180 DPI and the maximum Amiga screen resolution is about 64 DPI horizontally and 54 DPI vertically.

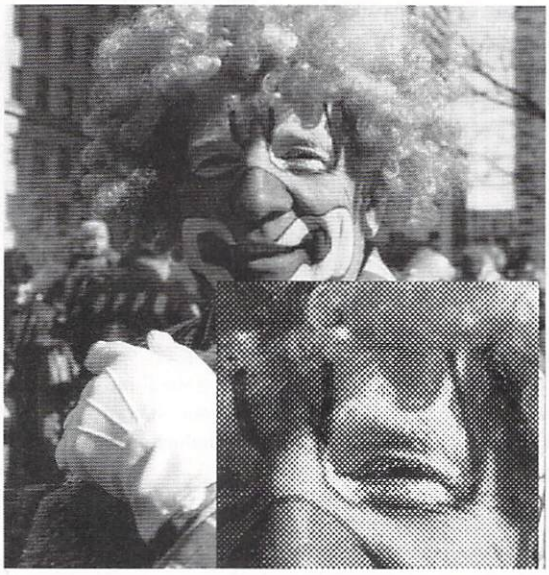
The Han-D-Scan hardware contains its own dithering routines which will convert gray-scale or color images into groupings of discrete black and white dots which, when printed, give the appearance of different shades of gray. There are three separate dithering routines available, as well as a small potentiometer which you can adjust to lighten or darken the scanned image.

The software that comes with Han-D-Scan is a full fledged HAM drawing program called Diamond (also sold separately by Impulse) which is capable of handling the twelve bit-plane images which are generated by several popular ray-tracing programs. To capture a Han-D-Scan image, you simply select "SCAN/B&W"

from the pull down menu, place the scanner over the area you want to capture, press the button on the side of the device and run it over the image. While moving the device too slowly poses no problems, moving it to quickly will result in some scan lines being missed. A green overspeed light on top of the scanner will blink and go out if you are moving too quickly, so with a little practice you will encounter few difficulties in capturing your image. What does take time, however, is determining the combination of resolution and dithering modes and this can only be accomplished through trial and error. If you want a true gray scale image, once you have scanned your original (using the four bitplane, sixteen color mode), you must select the "gray scale" option from the menu. After a minute or so (depending on size) you will have a recognizable screen image 1/4 the size of the image originally displayed on your monitor, and the original 400 DPI resolution is reduced to 100 DPI. All images can be saved to disk in standard IFF format for later use in other programs. Finally, you should scan and save your image in the size you will eventually use as re-sizing at a later time has a tendency to render the image completely unrecognizable.

As scanned images consume tremendous amounts of memory and are often larger than the screen size available in most other programs, C Ltd. has devised a method whereby different programs can address and use these images in a consistent manner. It has developed what is known as the "virtual page" - a graphic clipboard of user-defined height, width and depth that can exist in memory independently of any program and that can be accessed by one or more programs simultaneously. The virtual page is made possible by the VirtualPage.Library of standard routines which C Ltd. has dedicated to the public domain. Once a virtual page has been defined and set aside in memory (either by a program such as Diamond or a user through a virtual page utility program) large images from any running program can store or retrieve images from it and even attach itself directly to the page, as well as store any virtual page as an IFF image. Han-D-Scan comes with several virtual page utility programs that allow you to create, manipulate and save virtual pages.

Having spent a number of hours scanning almost everything imaginable, I found that Han-D-Scan does an excellent job of digitizing line art - images composed of a single dark color on a white background. Graphics such a logos, cartoons, graphs and clip-art sketches came out perfectly on the first try with very little 'fiddling' required. Compared to video digitizing, the resolution and clarity was far superior. I was disappointed in the near impossibility of digitizing graphics from newspapers, the fault not of Han-D-Scan's but of the ink on the back side of a page showing through on the side I wanted to scan. I also had little success in obtaining quality images scanned from photographs. It took a considerable amount of time to find the right lightness/darkness, dithering mode and resolution settings, and the final gray scale image was always somewhat grainy and uneven. For this latter application, I found video digitizing to be superior. Scanned photographic images furnished by C Ltd, however, came out quite nicely so I can only assume that practise makes for improvements..

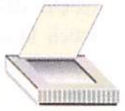


To simulate gray-scales, the CanonIX12 / ProScan from GoldDisk uses "Halftones".

While it is not really within the scope of this review to evaluate Diamond, the software package that is supplied with Han-D-Scan, it seems anomalous to furnish a full-fledged HAM paint program with hardware that supports only sixteen levels of gray. While the program is quite powerful, it might have been more useful for C Ltd. to have combined a simpler capture/paint program with a black and white image processing program.

While the price of the unit is somewhat high (similar PC hardware sells for about half), the cost is basically driven by the quantity sold; increased sales and competition will likely bring the price down. If you are primarily interested in digitizing photographs for video display, you would probably be better off purchasing a video digitizer. However, if you are a desktop publisher who wants to capture, re-size and reproduce black and white line art, then Han-D-Scan is the ideal tool.

PROSCAN AND THE CANON IX-12 SCANNER



by Olusegun Olaniyan

The Sharp JX series are available as top-of-the-line color scanners , but at the introductory level the selections are few. For capturing images that are to be used on the computer Digi-View Gold from NewTek or the FrameGrabber from Progressive Peripherals are excellent choices. But many will soon find that these digitizers are somewhat limited in that they will only digitize to a maximum resolution of 704x480 or extreme overscan. This resolution may not be enough to get the full detailing of some pictures.

As stated earlier the ProScan software is sold bundled with the Canon IX12 Scanner, and is one of the two sheet-fed scanners in this review. The software and interface is also designed to be compatible with the Canon IX12F flat-bed scanner, the higher priced version of the IX12. Sheet-fed scanners are, as a rule, relatively fast and usually fairly inexpensive; probably the reason that Gold Disk opted for the sheet-fed instead of the flat-bed version. The IX12 is a 1-bit or monochrome (black and white) scanner this means that scanning line art that is not perfectly aligned in the black and white mode will almost always result in the staircase effect that is common with bitmaps. Grey Scale scanners usually overcome this problem by anti-aliasing or dithering with greys. Since the IX12 is incapable of scanning greys the ProScan software overcomes the problem by doing the next best thing, scanning images as half-tones. To get an idea of what a halftone image looks like, just pick up a copy of the daily newspaper. A halftone

consists of a series of dots that when clumped together will form the dark area of a scanned photograph; when the dots are spaced farther apart, they can simulate the gray scaled areas of the photograph.

The IX-12 scanner will accept pages up to 11.5" x 17" inches, but the actual imaging or scan area at that page size is 8.5" x 16". The interface unit can be connected with the A500, A1000, or A2000 Amiga.

The ProScan/IX-12 package consists of the scanner, the scanner interface with parallel pass-thru, the ProScan software, and two manuals: one for the interface and software, and one for the IX-12 scanner. The parallel pass-thru is a nice touch, allowing the scanner and whatever peripheral (ie. a printer) that may occupy the parallel port can still be connected to the computer. You can then toggle between the printer and the scanner.

The features of the ProScan software include user definable resolutions (75, 150, 200, and 300 dpi's). The save feature also includes a 'zone' feature that allows you to select a specific area of the scanned image that you want saved. Also included in the software are 'enhancing' features that allow the user to make the best of a low contrast image. What all this amounts to is that the IX12 may be a 1-bit scanner, no pun intended, but it works to earn its keep.

Unfortunately, the disadvantages of sheet-fed scanners are as numerous as the advantages. The first problem lies in the area of aligning paper; this can be quite a chore, requiring you to scan an image several times before getting the right alignment. Another problem with sheet-fed scanners is that they are quite finicky about having only one sheet of paper at a time fed into them. Should you decide to fold your sheet in half, expect to get a marred and creased document when it exits from the scanner. As well, all scanning material must be flat, so you can forget about trying to scan a page from a book. To scan anything that is not flat art, you must photocopy the page you need or be prepared to cut the pages of that book or manual out.

It may seem that I'm painting a very grim picture of sheet-fed scanners, but their flaws must be mentioned. In spite of these drawbacks, Canon IX12 Scanner is still a very handy little device to have. When it comes to digitizing documents, photographs, or 'flat' art, there's just no beating a scanner with a resolution of up to 300 dpi. as you will soon see.

The IX-12 scanner is intended to be a low cost alternative for those that want a scanner but don't have a budget for the more expensive gray-scale or color versions. This is all well and good, but at a price of $999.95 it just may be a little too expensive.

DIGI-VIEW GOLD

by Olusegun Olaniyan

Digi-View Gold (Digi-View as it was known in the old days) was one of the first digitizers for the Amiga, and to this day still ranks as one of the best image-capturing bargains on the market. As a low cost alternative to a sheet-fed or flat-bed scanner, it can fill the needs of most desktop publishers. Digi-View is perfect for digitizing line art, flat pictures, and irregularly shaped objects. In essence, anything that can remain immobile for up to 2 minutes is a candidate for Digi-View capture, depending on what mode one is digitizing in. One disadvantage with Digi-View is that, unlike a scanner, an image must be previewed and brought into focus before it is digitized. This problem can be overcome by simply using your standard Amiga monitor as a preview monitor.

The advantage that Digi-View has over a flat-bed or sheet-fed scanner is the fact that you can capture the image of anything with it. The Digi-View package includes a digitizing unit (which connects to the parallel port on the back of the Amiga 500/2000/2500) the manual, and the color wheel. The only other requirement of this imaging system is a black and white camera. The most popular choice currently is the Panasonic WV 1410. Digi-View, unfortunately, is unable to digitize the color images produced by a Camcorder. In order to capture color images, Digi-View employs the famous "color wheel"; a three-stage capture which involves capturing a red, a green, and then a blue file. These three files are then combined to form the color hi-res, lo-res, or HAM image. To take the chore out of rotating the color wheel manually, a motorized 'Digi-Droid' is also available from NewTek; this will allow the software to automatically rotate the color wheel as needed. With proper fluorescent lighting, and the help of a quality digitizing stand, Digi-View can hold its own against most color scanners. I have seen some stunning color results from video cameras with higher resolutions than the WV 1410.

FrameGrabber 256 is capable of producing 8-bit 256 Grays and 24-bit "true color files".

Digi-View also offers an option to save 21-bit files. The file format called DV21 is a variant of the IFF format that is used to store RGB image data. Driving the Digi-View is software with fairly sophisticated image-manipulation features. The software allow you to enhance your digitized images in a manner that resembles a program such as PIXmate from Progressive Peripherals.

As far as image capture systems are concerned, Digi-View was the first and is still by far the lowest priced. We are talking about a system that is capable of capturing images in all of the Amiga's display modes as well as a 21-bit (2.1 million color) file format. The resolution may not be the same as that of a 300 dpi scanner, but for all intents and purposes it is still king in its price range, and is comparable to the performance of other higher priced products. A Digi-View system including camera will cost roughly $650 (CDN).

FRAMEGRABBER 256

By Olusegun Olaniyan

The most recent version of the FrameGrabber sees some major changes in the hardware. The FrameGrabber 256, as it is known, is virtually identical to the

Digi-View Gold from NewTek. Digi-View is capable of saving 21-bit files; the first digitizer for the Amiga and still the best low cost alternative to a scanner.

normal Framegrabber with one major enhancement, it is capable of digitizing and saving images in 256 shades of grey, or 24-bit "True Color".

Before going into the new features let us look, first of all, at what makes the FrameGrabber different not only from scanners, but also other digitizers. The FrameGrabber is a realtime digitizer; i.e. it is capable of digitizing static images from any source that has a video output. These sources include: camcorders, televisions's and video-cassette recorders (VCR's). If a black and white camera is being used, FrameGrabber 256 can digitize static images like Digi-View, using the color wheel that is included with the package.

The FrameGrabber 256 can be looked at as a low cost alternative to a 24 bit scanner. FrameGrabber can grab black and white images in 8-bit gray-scales. To digitize a 24-bit image, three separate 8 bit images are captured using the Red, Green, and Blue filters of the color filter wheel. To obtain the 24-bit image, the three 8 bit images that are captured with the colour wheel are combined in memory to create one 24 bit color image.

The software that drives the FrameGrabber allows it to be more than just a run of the mill digitizer. The FrameGrabber 256 software has been enhanced; upon startup it does a system hardware check including an acknowledgement of the CPU that your machine is using. The software also supports nine different file formats in order to provide compatibility with a variety of software packages. The file formats that are supported are IFF, brush, Palette, LUT, DV21, IFF24, RAW, RGB, and IMG8. For most applications IFF and IFF24 are pretty much the standard. The software also has an arsenal of Animation and Image Enhancement tools at the user's disposal. As is now usual, you are able to adjust the contrast, brightness, saturation, hue, and amounts of red, green, and blue in the image. Also available is a histogram read-out of the image which displays a graphic representation of the gray level intensities or RGB intensities found in the current image, and how these intensities are distributed throughout the image. The histogram control window may also be used to manually adjust image contrast, and from here more image processing tools are accessed. When digitizing you also have the option of simply locking one or all of the color registers in your palette, this can be very useful when working with a GenLock. For straight digitizing the FrameGrabber is essentially the fastest digitizer on the market. Images are digitized anywhere from 1/60th to 1/30th of a second depending upon the screen format being used.

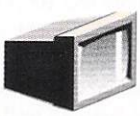
It should be noted that the Framegrabber 256 does not work in the hi-res 16 color mode, this is due to the hardware/price constraints and considerations of the unit. In order to add the 16 color hi-res mode, extra video RAM would have had to be installed into the FrameGrabber unit, effectively almost doubling the price of the product. As a note should you not require the 256 grays/24-bit option, the Color FrameGrabber is still available from Progressive Peripherals, and this unit has access to the 16 color hi-res mode.

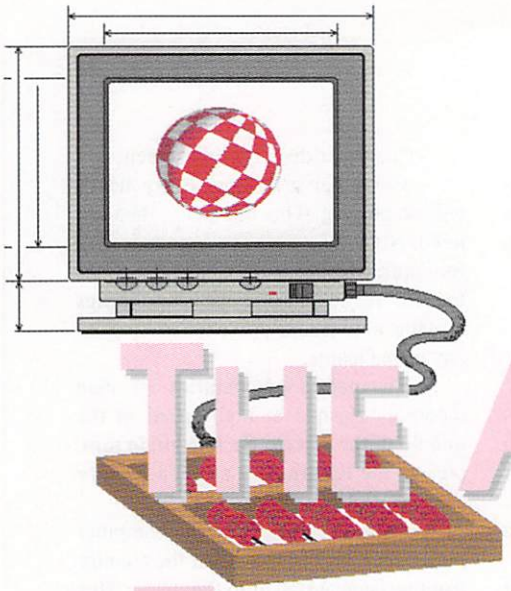
As with Digi-View, FrameGrabber 256 accepts video input from virtually and video source, but other means of inputting video signals are available. FrameGrabber 256 has four RCA input jacks on its front panel that are capable of accepting B&W video input from any of the four. Making the right connection, one can then use the software to indicate which jack will be used for your input. Another feature : FrameGrabber will accept video sync from any one of the four jacks, but you can configure to accept its sync exclusively from the fourth jack.

Clearly the FrameGrabber 256 is intended mainly for use in the video industry, but quite a few of its features also make it quite suitable for the DTP market, including its price.

CONCLUSION

It should be quite obvious by now that there are many alternatives available to the Amiga user. Unfortunately we were not able to cover all of the products that are on the market. Some of these other products include *IMG Scan* from SunRize Industries; we recieved *Scannery* from MicroTech Solutions Inc., but unfortunately we were not able to obtain a Hewlett Packard *Scanjet* scanner. These products will be reviewed in later issues of AmigoTimes. ❑





THE AMIGA IN EDUCATION...

This column about the Amiga in the education market will give you a monthly insight on what's going on.

"Mr. Zbasnik believes that the efficiency of computers would be multiplied if the classroom teacher could use a single computer with an entire group of students at one time!"

As this column is being written, Commodore has begun its new advertising campaign designed to bring the Amiga to the attention of the American public. U.S. Commodore's new president, Harold Copperman, is the man responsible for this marketing thrust. Let us wish him well.

He has a tough job to do, whether he will succeed or not is an open question. If he does succeed, it will be on the basis of forward-looking ideas that have, until now, been absent from Commodore's strategic plans.

Commodore has made some very questionable marketing decisions throughout the years. A prime example of how the company should not continue to proceed is an unfortunate business-as-usual decision that was made by Commodore earlier this year: to re-bundle the old C64 in some kind of cost-saving package that might appeal to educators. What a feeble idea! One of the basic facts of life is that schools - no matter how strapped for funds they may be - do not want to be seen as "going back" to a micro that is being widely replaced by Apple computers.

At the present time, Commodore's school marketing efforts on behalf of the Amiga seem largely dedicated to attracting art departments and other A-V facilities where the Amiga's awesome graphics and desktop publishing capabilities can be displayed to best advantage.

I have no quarrel with this approach - provided that there is more to come. Eventually, Commodore needs to take on its competitors across a wider range of educational settings.

For openers, Commodore should identify all those places where a school or even a single educator has had the vision to buck the fashionable parade to Apple in favor of the Amiga. The company's effort and its support of these educators may, in turn, help define the shape of schooling as it could develop in everyday classrooms over the next few years.

Let me give you an example of what I mean:

Robert Zbasnik is a middle school mathematics teacher in Tallahassee, Florida. He believes that in spite of the impressive number of computers now in schools, much of this equipment is under-utilized. For most teachers, the computer is not a regular tool of instruction.

Mr. Zbasnik believes that the efficiency of computers would be multiplied if the classroom teacher could use a single computer with an entire group of students at one time!

How might this be done?

Mr. Zbasnik has an Amiga in his classroom. He is currently developing an arrangement that features a large wall screen in conjunction with his computer on which he employs simulation techniques.

By Thorwald Esbensen

Students, grouped as teams, respond to ever-changing data on the screen, make decisions, and interact with each other in order to improve their problem-solving skills.

The computer serves as a storehouse of data and information reporting, and delivers results (calculated via spreadsheets) based on student performance.

Mr. Zbasnik calls his instructional design *Math Incorporated*. Its main features may be listed briefly, as follows:

Unit: Two weeks, including warm-up exercises and a test for each of the eight objectives.

Class: Divided into teams comprised four or five students each.

Team Goal: Use successful solutions of math problems to accrue profits, the most profitable team wins.

Units Produced: Based on correct solutions to the twenty problems assigned to each student.

Expenses: Initially, the same for all. Additional expenses are incurred if extra help is needed on an assignment [Education], students are unruly [Labor Unrest], or students maintain a messy area in the room [Environmental Cleanup].

Unit Sales: Based on the relationship of post-test success to units produced. This is converted to a dollar figure.

Profit: Total sales minus expenses.

Yield: Profit divided by expenses.

Evaluation: Based on the performance of each team and each student.

Computer: Stores data and furnishes daily feedback (via a printer) to each team. It also provides additional instruction (for a price), and will present special problems to teams wishing to earn bonus promotions for 'new' products.

Regarding the instructional value of this approach, Mr. Zbasnik says, "This generation of students is, most assuredly, visually oriented, and the single classroom computer is the vehicle to reach these students in a more effective manner."

This point of view is applicable to a variety of curricular areas. Inspired by Mr. Zbasnik's vision, I tried my hand at dreaming up a similar scenario for a social studies class: *International Information Game*

- Computer displays title screen.

- Computer asks how many teams will be playing. This number is then entered. Note: Any time the computer asks for input, it allows only thirty seconds for this to be done. This keeps things moving along, and prevents stalling by any of the teams.

- The names of countries are then randomly flashed at high speed in the middle of the screen. Each team, in turn, presses the Return Key to get a country assigned to that team.

- Then, for each team, the computer prints out a set of facts about the country that has been assigned to that team. This is privileged information, and the team that is entitled to receive it should guard it from the other teams.

- Each fact falls into one or more of the following categories:

[A] Physical Location and Features
[B] Historical Background
[C] Government
[D] Language
[E] Agriculture
[F] Trade and Industry
[G] Cultural Elements
[H] International Relations
[I] National Problems and Prospects
[J] Miscellaneous

- Each team starts out with 100 game points. There are ten rounds of play. Each team has one turn in each round. At the end of the ten rounds, the winning team is the one with the most game points.

- During its turn for each round, each team makes a choice from an Options Screen presented by the computer:

[1] Purchase five pieces of information about another country randomly selected by the computer. This privileged information is printed by the computer for the team that requests it and should not be shared by that team with the others. [costs up to 10 points]

[2] Purchase five pieces of information about another country specified by the team. This privileged information is printed by the computer for the team that requests it and should not be shared by that team with the others. [costs up to 20 points]

[3] Answer a computer-generated question about a country that the team specifies (excluding the team's own country). [worth up to 10 points] Successfully answering this question qualifies the team to play one round of *Tar-*

get, an eye-hand coordination game. Success at playing Target can earn the team as much as an additional 10 points.

[4] Answer a computer-generated question about a country that the computer randomly selects (excluding the team's own country). [worth up to 20 points] Successfully answering this question qualifies the team to play one round of Target. Success at playing Target can earn the team as much as an additional 10 points.

[5] Have the computer oversee, assist in, and record the cutting of a deal between two teams. Specifically, the following deal options can be undertaken:

A. Trade a certain number of pieces of information. The number is specified for each such deal. The computer prints out the appropriate information for each team in keeping with the deal.

B. Sell or buy a certain number of pieces of information. The price is specified for the deal. The computer prints out the appropriate information for the designated team in keeping with the deal.

[6] Challenge another team to a test fight. For this test fight, the computer randomly generates five questions for each team. This test requires each team to answer questions about the other team's country. The team that answers the most test questions correctly wins the challenge which is worth 50 game points. These 50 points are subtracted from the losing team's point total and added to the winning team's point total. If the challenge test fight score is tied after the five test questions for each team have been given, then the challenge goes into overtime and continues until one team answers a test question correctly while the other team misses its corresponding test question. [plus or minus 50 points]

- NOTE: Whenever either the cost or the worth of an option is said to be up to a certain number of points, that number will be determined by a random number box which will reveal the number when the Return Key is pressed.

- NOTE: The target game round is played as follows: At the top of the screen, a Target moves across the sky at a certain rate of speed. This rate of speed may change from one round to the next, but will not change during that round. The player has a Target Blaster positioned at the bottom of the screen. Whenever the Space Bar is pressed, the Target Blaster fires at the Target. The player wins by hitting the Target. If the Target Ray hits the Target on the first shot, this is worth 10 points. Hitting the Target on the second shot is worth 9 points. The third shot is worth 8 points, and so on down to 0. The round ends when a hit has been made, OR when the next shot has no value. The overall Information Game then continues.

The point is this: The Amiga can become successful in the education market. In order for this to come about, those of us who are devoted to this micro must help. We must show what the Amiga can do for the classroom of the future as that gradually comes into being. This column will lend assistance in that effort. Let's get on with the job! ❑

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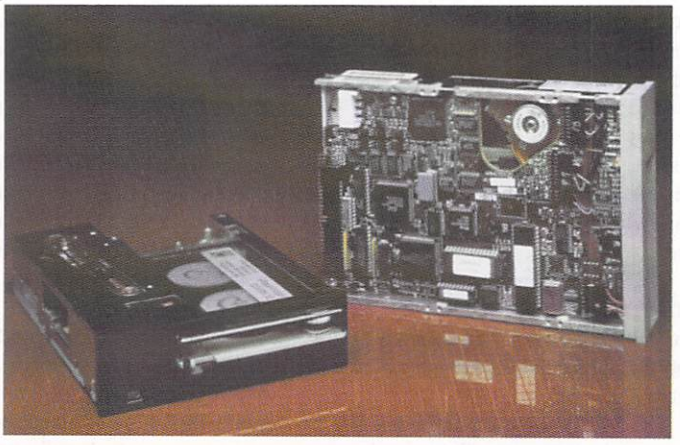

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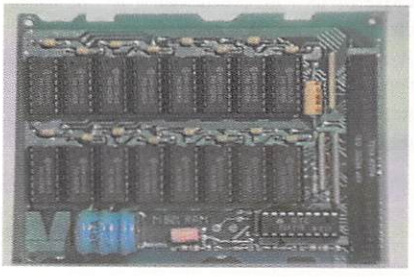

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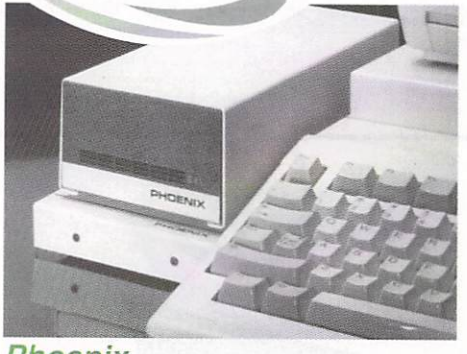

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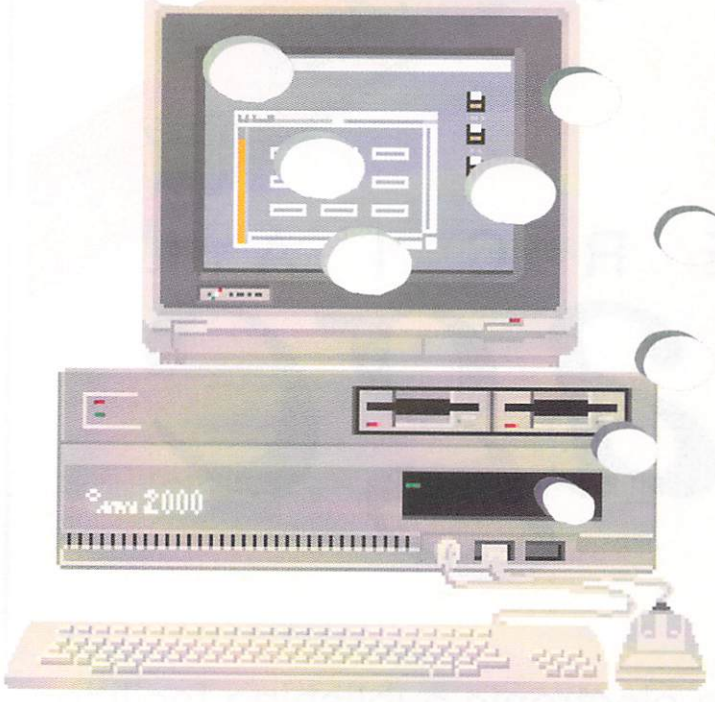

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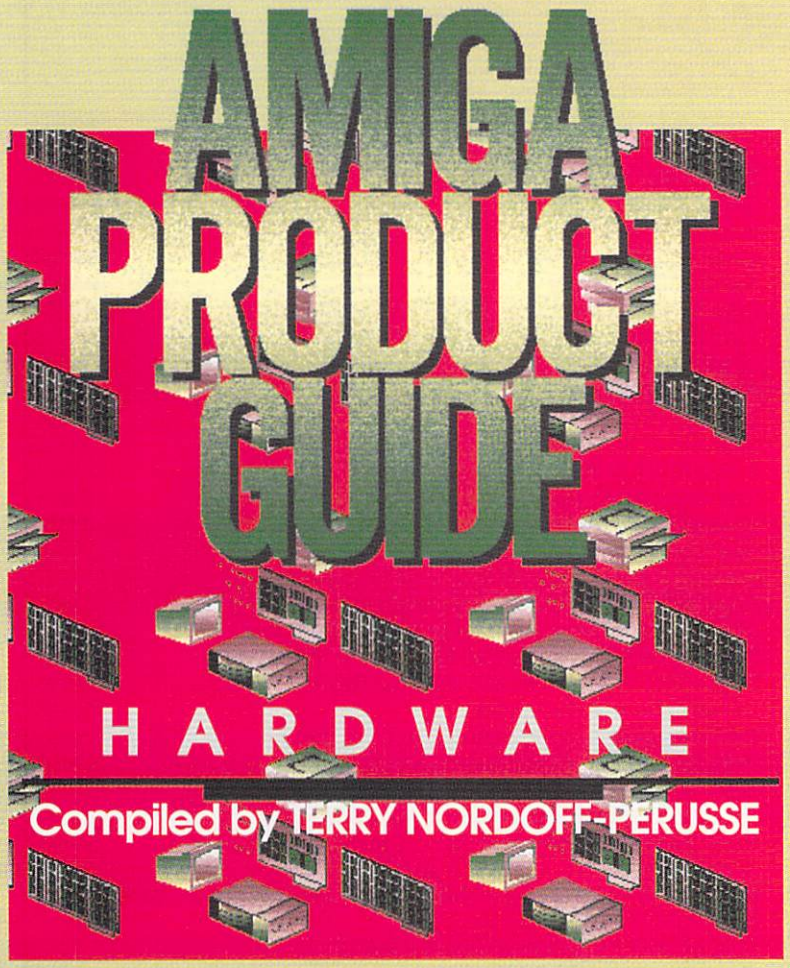

INTRODUCTION

I arrived among this gang of Amiga devotees just in time to do the toughest product guide they had yet attempted. I have been learning a new language - computerese - and reaching hitherto unheard-of levels of frustration trying to assemble this list. I have discovered that requests (even multiple ones) for up to date catalogues go unanswered, along with telephone calls and faxes. I also discovered that companies move - leaving no forwarding number or address, or that the manufacturer of an unusual type of expansion chassis has his phone answered by his Mom - he's out of business until finals are over. We do our best to help consumers become aware of all products available on the market. Please let us know of products we have missed, especially those made by small companies that may not have much of a chance to do extensive marketing. My special thanks to Jacqui Summers for her tremendous efforts to bring order out of chaos.

FLOPPY DISK DRIVES

All prices are in US dollars unless otherwise indicated

PRODUCT	COMPANY	MACHINE	DESCRIPTION	PRICE
2010 3.5 Internal Drive	Commodore Inc.	A2000	3.5 Horizontal, 250 KB transfer rate, 880 K storage capacity, DSDD	$199.95
Amiga 1010 Ext. 3.5 Drive	Commodore Inc.	All	external 3.5 drive	$299.95
Amiga 1020 Ext. 5.25 Drive	Commodore Inc.	All	5.25 external drive with 360 KB formatted capacity	$399.95
Dual 3.5 Drive	Comp-U-Save	All	Includes power, light, circuit breaker and optional internal power supply	$345/$395 w/i.p.s.
Single Drive	Comp-U-Save	---	compact, low power external drive with pass through	$190.00
ECE Alignment Kit	ECE Research and Development	---	Aligns 3.5 Amiga Drives, board, cable, program disk incl.	$175.00
Escort System 1000 FDD	Expansion Technologies	---	Includes controller card, 23 pin connector on rear, 3.5 floppy	$239.00
Impact A2000-FD2010	Great Valley Products Inc.	A2000	3.5 floppy disk drive with dust door, includes mounting hardware	$99.00
Master 3-A	Konyo International	All	3.5 DSDD drive	N/A
CA-880-3.5 Floppy Disk Drive	Logical Design Works Inc.	All	Formats 3.5 DSDD, compatible w/A1010 drives, small, quiet, low power consumption	$229.95
UniDrive	M.A.S.T. Inc.	All	Ext. 3.5 drive, ext. power supply (NB: can be combined with twin and tridrives)	$159.00
TwinDrive	M.A.S.T. Inc.	All	3.5 external Duo Drive, slimline, low pwr, switch deselectable, ext. pwr supply	$299.00
Enhanced Unidrive	M.A.S.T.	All	LED track display, read/write indicator, passthru	$179.00
AMIG-a-TOSH Plus	M.A.S.T.	All	includes Macintosh-compatible floppy drive, room for A-Max hardware	$249.00 (US)
Master 3A Amiga Compatible	Ocean America	All	Floppy drive, smaller than 1010, DSDD, 880KB formatted capacity	$189.95
PFD 135E	Phoenix Electronics Inc.	All	3.5 880 K external floppy drive	$229.00
PFD 135i	Phoenix Electronics Inc.	A2000	3.5 880 K internal floppy drive	$149.95
Dual Drive External 3.5 FDD	Pioneer Computing	All	w / 18 cable, enclosed metal case, pass through for additional drives	$329.95
Single Drive Ext. 3.5 FDD	Pioneer Computing	---	with 18" cable, enclosed metal case, pass-through	$159.95
ProDrive	Progressive Peripherals	All	3.5 external disk drive	$239.95
ProDrive 2000	Progressive Peripherals	A2000	3.5 internal disk drive	$189.95
Internal 3.5 Disk Drive	Studio 7	A2000	faster internal 3.5 drive, dealer installation recommended	$149.95
The Master-3A Disk Drive	Surfside Components	All	3.5 drive w/ 27" cable, pass through for daisy chaining , small, quiet, low power, 1 yr.warr.	$159.00

MASS STORAGE

PRODUCT	COMPANY	PORT	MACHINE	DESCRIPTION	PRICE
30 MB Kronos 500/1000	C Ltd	bus	A500/1000	Seagate ST-138N-40 msec.	$799.95/849.95
48 MB Kronos 500/1000	C Ltd	bus	A500/1000	Seagate ST-157N 28 msec	$899.95/949.95
65 MB Kronos 500/1000	C Ltd	bus	A500/1000	Seagate ST-277N-1 28 msec	$999.95/1049.95
80 MB Kronos 500/1000	C Ltd	bus	A500/1000	Seagate ST-296N 28 msec	$1099.95/1149.95
90 MB Kronos 500/1000	C Ltd	bus	A500/1000	Fujitsu 2641S 28 msec	$1399.95/1449.95
130 MB Kronos 500/1000	C Ltd	bus	A500/1000	Fujitsu 2642S 25 msec	$1599.95/1649.95
180 MB Kronos 500/1000	C Ltd	bus	A500/1000	Fujitsu 2643S 21 msec	$1799.95/1849.95
30 MB SCSI 500/1000	C Ltd	bus	A500/1000	Seagate ST-138N 40 msec.	$699.95
48 MB SCSI 500/1000	C Ltd	bus	A500/1000	Seagate ST-157N 28 msec	$799.95
65 MB SCSI 500/1000	C Ltd	bus	A500/1000	Seagate ST-277N-1 28 msec	$999.95
80 MB SCSI 500/1000	C Ltd	bus	A500/1000	Seagate ST-296 28 msec	$1099.95
30 MB Kronos Hardcard	C Ltd	slot	A2000	Seagate ST-138N 40 msec, non-DMA design controller, incl. SCSInet	$599.95
48 MB Kronos HardCard	C Ltd	slot	A2000	Seagate ST-157N 28 msec, non-DMA design controller, incl. SCSInet	$699.95
90 MB Kronos Hardcard	C Ltd	slot	A2000	Fujitsu 2641S 28 msec, non-DMA design controller, incl. SCSInet	$1199.95
130 MB Kronos HardCard	C Ltd	slot	A2000	Fujitsu 2642S 25 msec, non-DMA design controller, incl. SCSInet	$1399.95
180 MB Kronos HardCard	C Ltd	slot	A2000	Fujitsu 2643S 21 msec, non-DMA design controller, incl. SCSInet	$1599.95
360 MB Kronos HardCard	C Ltd	slot	A2000	2-Fujitsu 2643S 21 msec, non-DMA design controller, incl. SCSInet	$2999.96
30 MB SCSI HardCard	C Ltd	slot	A2000	Seagate ST-138N 40 msec, non-DMA design controller, incl. SCSInet	$499.95
48 MB SCSI HardCard	C Ltd	slot	A2000	Seagate ST-157N 28 msec, non-DMA design controller, incl. SCSInet	$599.95
SCSI/2000	C Ltd	slot	A2000	Auto-boot series 2000 host-controller	$139.95
SCSI/500	C Ltd	bus	A500	Auto-boot series 500 host-controller	$249.95
SCSI/1000	C Ltd	bus	A1000	Auto-boot series 1000 host-controller	$299.95
AM800W/500	C. Ltd.	bus	A1000	Remvbl media WORM, SCSI host/cntriler, 801.36 opt. DD, uses 400.81 MB p/ side opt. disks	$5949.95
32 MB, 48 MB, 64 MB,	Cache Systems Ltd.	bus/slot	All	includes ext. SCSI Port, 1-yr warr., price is for bare ext. sub-system, C.Ltd. Interfaceoptional	$669/$779/$869
84.9 MB,152 MB,				Access times are 40ms, 40ms, 28ms, 28ms, 16ms, 18ms, 16ms respectively	/$999/$1999
332 MB, 668 MB					/$3299/$4899
A590 Hard Drive	Commodore	bus	A500	Autoboot 20 MB hard drive with own power supply and sockets for 2 MB of RAM exp	$n/a
A2090A HD/SCSI Controller	Commodore	slot	A2000	Autoboot ST506, SCSI DMA controller	$n/a
B20I/CART, B44I/CART	Comspec	SCSI	A2000	20 mb and 44MB internal Bernoulli hard drives with cartridge	$1765 / $2362
B20I TRI/B44I TRI	Comspec	---	A2000	3 pack of 20MB/44MB cartridges	$332.00/$507.00
RMD45E/RMD45I	Comspec	SCSI	All/A2000	External / Internal SyQuest 43 MB drives (external comes with chassis)	$2050/$1663
RMD4545	Comspec	SCSI	A2000	Dual SyQuest 43 MB drives c/w chassis	$3982
45 MB CART	Comspec	---	A2000	SyQuest 43 MB cartridges	$198.00
Impact 2/0	GVP	slot	A2000	Autobooting SCSI hard disk controller, sockets for 2MB of RAM	$325.00
Impact 2/2	GVP	slot	A2000	Autobooting SCSI hard disk controller, 2 MB of fast RAM installed	$699.00
Impact HC/30	GVP	slot	A2000	Autobooting SCSI hard disk controller, w/ Seagate ST138N-1 Hard Drive	$699.00
Impact HC/40Q	GVP	slot	A2000	w/ Quantam ProDrive 40S Hard Drive; 40 MB fast access SCSI, autoboot, DMA	$799.00
Impact HC/45	GVP	slot	A2000	Autobooting SCSI hard disk controller, w/ Seagate ST-157N-1 Hard Drive	$849.00
Impact HC/80Q	GVP	slot	A2000	Autobooting SCSI hard disk controller, w/ Quantam Prodrive 80S Hard Drive	$1299.00
Impact HC/100Q	GVP	slot	A2000	Autobooting SCSI hard disk controller, w/Quantam ProDrive 105S Hard Drive	$1399.00
Impact HC + 0/30	GVP	slot	A2000	Autobooting SCSI hard disk controller, w/ Seagate ST138N-1, slots for 2 MB of fast RAM	$789.00
Impact HC + 2/30	GVP	slot	A2000	Autobooting SCSI hard disk controller, w/Seagate ST138N-1 and 2 MB of fast RAM	TBA
Impact HC + 0/45	GVP	slot	A2000	Autobooting SCSI hard disk controller, w/Seagate ST157N-1, slots for 2 MB of fast RAM	$889.00
Impact HC + 2/45	GVP	slot	A2000	Autobooting SCSI hard disk controller, w/Seagate ST157N-1 and 2 MB of fast RAM	TBA
Impact HC+0/40Q	GVP	slot	A2000	Autobooting SCSI hard disk controller, w/Quantum Prodrive 40S, slots for 2 MB of fast RAM	$939.00
Impact HC+2/40Q	GVP	slot	A2000	Autobooting SCSI hard disk controller, w/Quantam ProDrive 40S and 2 MB of fast RAM	TBA
Impact HC+0/80Q	GVP	slot	A2000	Autobooting SCSI hard disk controller, w/Quantum Prodrive 80S, slots for 2 MB of fast RAM	$1389.00
Impact HC+2/80Q	GVP	slot	A2000	Autobooting SCSI hard disk controller, w/Quantum Prodrive 80S and 2 MB of fast RAM	TBA
Impact HC+0/100Q	GVP	slot	A2000	Autobooting SCSI hard disk controller, w/ Quantum Prodrive 105S, slots for 2 MB of fast RAM	$1489.00
Impact HC+2/100Q	GVP	slot	A2000	Autobooting SCSI hard disk controller, w/Quantum Prodrive 105S and 2 MB of fast RAM	TBA
Impact HD/20	GVP	bus	A500	Autobooting SCSI hard disk controller,w/ Seagate ST-125N (40 MS)	$650.00
Impact HD/30	GVP	bus	A500	Autobooting SCSI hard disk controller,w/ Seagate ST138N-1 (28 MS)	$799.00
Impact HD/45	GVP	bus	A500	Autobooting SCSI hard disk controller,w/ Seagate ST157N-1 (28 MS)	$899.00
Impact HD/40Q	GVP	bus	A500	Autobooting SCSI hard disk controller,w/Quantum ProDrive 40S (11/19 MS)	$999.00
Impact HD/80Q	GVP	bus	A500	Autobooting SCSI hard disk controller,w/Quantum Prodrive 80S (11/19 MS)	$1425.00
Impact HD/100Q	GVP	bus	A500	Autobooting SCSI hard disk controller,w/Quantum Prodrive 105S (11/19 MS)	$n/a
Impact SQ44-RHD	GVP	SCSI	A2000	5.25 half-height removable cartridge disk drive, requires GVP SCSI controller	$999.00
Impact SQ400	GVP	---	---	42 MB removable hard disk cartridge for Impact SQ-44-RHD	$95.00
Impact WT-150 Streaming Tape Backup	GVP	---	All	5.25 half-height, backup streaming tape drive w/ 150 MB cart., incl. GVP TapeStore software	$999.00
Trumpcard	IVS	slot	A2000	SCSI hard disk controller, supports hdrives on AMAX as well as SyQuest cart. drives	$199.95
Trumpcard500	IVS	bus	A500	inc exp chassis, Trumpcard SCSI disk controller, cable, TCUTILS config. software	$269.95
IVS Infinit40/i	IVS	SCSI	A2000	int rmvble media subsys; Trumpcard SCSI disk ctrller, SyQuest d rv, 2 40 MB cart., sftw, cables	$1249.95
IVS Infinit40S	IVS	bus	A500	ext rmvble media subsys; low profile alum housing, SyQuest drive, 2 40 MB cart., sftw, cables	$1549.95
IVS Infinit40D	IVS	bus	A500	double height version of 40S with increased power supply and room for 2nd drive	$1749.95

MASS STORAGE - *(continued)*

PRODUCT	COMPANY	PORT	MACHINE	DESCRIPTION	PRICE
Fireball 30, 90,136,183 MB SCSI Intrfc	M.A.S.T.	slot	A2000	autoboot; incl. drive mounted on controller card	$609 / $1209 / $1509 / $1759
Tiny Tiger II 30, 45, 90,136,182 MB	M.A.S.T.	bus/slot	All	SCSI Hard drive, low profile case, power supply	$599/$799/$1199/$1499/$1749
SC-500/1000/2000	Micro R & D	bus/slot	All	Drive controllers for Amiga includes 1.3 Workbench/Kickstart	$179.95-$199.95
Vault 20, 30, 40, 65	Progressive Peripherals	bus	A500, A1000	20 MB, 30 MB, 40 MB, 65 MB Hard drives	$599.95/724.95/849.95/1099.95
SupraDrive Hard Disk System	Supra	bus(PT)	A500, A1000	20 MB, 30 MB, 40 MB Quantum, 60 MB, 80 MB (all include Interface)	$499/599, $749/849, $849/949 $995/1095, $1149/1249
SupraDrive Hard Disk System	Supra	slot	A2000	30 MB; 40, 80, 105 MB Quantum with WordSync Interface	$649 / $799 / $1099 / $1249
SupraDrive 44R	Supra	bus/slot	All	44MB Syquest Removable Media Drive, internal with interface or external	$1199.00
Hard Disk Plus 20	Synergy Peripheral Systems	bus	A500	SCSI host/controller, supports up to 14 drives, optional 2 MB RAM expansion	$749.95
FastCard Jr.	Xetec Inc.	slot	A2000	features DMax software, autoboot ROM, Macintosh compatible, 68 ms access	$599.95
FastCard	Xetec Inc.	slot	A2000	same as FastCard Jr., no hard drive included	$199.95
Fastcard Q40	Xetec Inc.	slot	A2000	same as FastCard Jr. with Quantum ProDrive 40 S (42 MB formatted capacity)	$999.95
FastCard Q80	Xetec Inc.	slot	A2000	same as FastCard Q40 but w./Quantum ProDrive 80S (19 ms access, 84 MB frmttd cap.)	$1399.95
FastCard M150	Xetec Inc.	slot	A2000	same as FastCard Q40 but drive is 5.25 Micropolis 1674-7 (16 ms access, 154 MB cap.)	$1999.95
SA-5/SA-10 Host Adaptor	Xetec Inc.	bus	A500/A1000	includes DMax hardware, autoboot ROM, Macintosh compatible, autoconfig. circuitry	$249.95
FastTrak Jr.	Xetec Inc.	bus	A500/A1000	includes SA-5/SA-10 SCSI host adaptor, autoboot ROM, SH-220 enclosure	$699.95
FastTrak Q40	Xetec Inc.	bus	A500/A1000	includes SA-5/SA-10 host adaptor, Quantum ProDrive 40S (19 ms access, 64k cache buffer)	$1099.95
FastTrak Q80	Xetec Inc.	bus	A500/A1000	same as Q40 but w./Quantum ProDrive 80S	$1499.95
FastTrak M150	Xetec Inc.	bus	A500/A1000	same as Q40 but drive is Micropolis 1674-7	$2099.95
FastTape 60E	Xetec	bus/slot	All	60 MB external tape system in ST-60 enclosure, incl. utility disk and manual	$699.95
FastTape 150E	Xetec	bus/slot	All	features TEAC MT2ST/N50 150 MB Streamer and 160 MB digital cassette	$849.95
FastTape 601	Xetec	slot	A2000/2500	internal tape system includes a TEAC MT2ST/45S MB Streamer, Ct-600H cassette	$599.95
FastTape 1501	Xetec	slot	A2000/2500	Same as FastTape 601 except drive is TEAC MT2ST/N50 150 MB Streamer	$749.95

VIDEO / GRAPHICS DEVICES

PRODUCT	COMPANY	PORT	MACHINE	DESCRIPTION	PRICE
Easyl	Anakin Research	slot	All	pressure sensitive graphics tablet to draw or trace directly into the computer	$539.00 (CDN)
A2350 Professional Video Adaptor	Commodore	RGB/RCA	A2000	Genlock, real time freeze frame, dig of video images, all res inc HAM, analog - dig signal conv.	$n/a
A2300 Internal Genlock	Commodore	video slot	A2000	Non-broadcast quality mixing of video sources and Amiga graphics and text on screen or on tape	$n/a
C-View I/NTSC, C-View I/PAL	C Ltd.	RGB	A500/2000	RGB video adaptor, hooks Amiga to compositeNTSC or PAL monitors	$39.95
C-View II/NTSC, C-View II/PAL	C Ltd.	RGB	A500/2000	RGB video adaptor, hooks Amiga to Chroma/Luma PAL and NTSC monitors	$39.95
Gen/One	Communications Specialties	RGB	All	genlocking encoder w/ computer or video sync	$895.00
SuperGen 2000	Digital Creations	RGB(PT)	All	S-VHS, ED-Beta, Hi8 compatible, built-in sync generator	$1595.00
X-Specs 3D	Haitex	mouse	All	three-dimensional glasses	$124.95
Amiga Light Pen and Driver	Inkwell	Mouse	All	incl. 184A tri-lobular light pen w/ 2 touch switches for L, R mouse emul., comp. w/ DPaint III	$129.95
4010/4004	Magni Systems Inc.	RGB	A2000/2500	NTSC/PAL video graphics sync pulse generator, optional remote control	$1695/1995 wrc
Flick-Off	M.A.S.T.	Denise	All	eliminates interlace flicker in all modes including HAM, requires multisync monitor	$399.00
flickerFixer	MicroWay	Video slot	A2000	eliminatesall interlace flicker, fills in scan lines, requires multisync monitor	$595.00
Amigen	Mimetics	RGB	All	NTSC genlock	$199.95
Digi-View Gold	NewTek	Parallel	A500/2000	Video digitize, digitizes in modes 320x200 up to 768x480	$199.95
Omni-Gen 701	Omicron Video	RGB	All	Amiga Gen-Lock system, converts image data to NTSC broadcast-quality	$1595.00
MiniGen	Progressive Peripherals	RGB(PT)	All	Video genlock	$224.95
ProGen	Progressive Peripherals	RGB(PT)	All	Professional video genlock with broadcast quality RS 170A	$449.95
FrameGrabber	Progressive Peripherals	Parallel	All	Real time color video digitizer	$699.95
FrameGrabber 256	Progressive Peripherals	Parallel	All	Real time video digitizer that captures 256 shades of grey and 24-bit color	$724.95
INTERLOK	Spirit Technology	RGB(PT)	All	video genlock includes advanced, reliable circuitry that locks Amiga scan rate to NTSC or PAL	$499.00
INTERLOK 2	Spirit Technology	RGB(PT)	All	Professional video genlock, same as Interlok 1 except with filtered RGB out and key out	$599.00
Perfect Vision	Sunrize Industries	Parallel	All	real-time black and white digitizer w/own power supply	$249.95
Neriki Image Master	Telmak	RGB	All	Produces 500-line res (NTSC standard), locks to any suitable video source, own power	$2200/1050(dskt)

ACCELERATORS

PRODUCT	COMPANY	PORT	MACHINE	DESCRIPTION	PRICE
PC-Elevator-386.2	Applied Reasoning	CPU slot	A2000	16 MHz accelerator board, with daughter card up to 13 MB of RAM	$1795.00
Processor Accelerator	Creative Microsystems	Motherbrd	All	16 MHz 68000 processor, incl. math FPU socket; completely software compatible	$199.95
A2620 68020 Card	Commodore	slot	A2000	Alternate processor board with 68020 CPU 14 MHz chip, 68881, 2 or 4 MB 32-bit RAM	$ n/a
Midget Racer	C.S.A.	CPU	All	accelerator board without 68020/68881	$249.00
Midget racer with 020	C.S.A.	CPU	All	accelerator board with12 MHz 68020 processor	$399.00
Midget Racer with 020/881	C.S.A.	CPU	All	accelerator board with 68881 math coprocessor, 16 MHz	$544.00
MC68020 12 MHz	C.S.A.	CPU	All	12 MHz 68020 processor for C.S.A. accel. boards	$249.99
MC68881 12 MHz	C.S.A.	CPU	All	12 MHz math co-processor for CSA accel. boards	$135.00
MC68881 16 MHz	C.S.A.	CPU	All	16 MHz math co-processor for CSA accel. boards	$145.00
MC68882 20 MHz	C.S.A.	CPU	All	20 MHz math co-processor for C.S.A. accel. boards	$335.00
MC68882 25 MHz	C.S.A.	CPU	All	25 MHz math co-processor for C.S.A. accel. boards	$525.00
MC68882 33 MHz	C.S.A.	CPU	All	33 MHz math co-processor for C.S.A. accel. boards	$775.00
CPU 68020 without coprocessor	C.S.A.	CPU	A2000	Bare accelerator board without 68020 co-processor	$995.00
Dragstrip DRAM Accelerator	C.S.A.	CPU	A2000	Fast RAM expansion board	$795.00
CPU/Dragstrip Combination	C.S.A.	CPU	A2000	incl. 68020 processor, Kickstart 1.3 14 MHz ROM set	$1495.00
CPU/Dragstrip/881 Combination	C.S.A.	CPU	A2000	incl. 68020 processor, Kickstart 1.3 14 MHz ROM set, and 6888114 MHz co-processor	$1595.00
Impact-030/16	GVP	CPU	A2000	16 MHZ processor accelerator board w/ socket for math co-processor	$849.00
Impact-030/25	GVP	CPU	A2000	25 MHZ 68030 processor accelerator board w socket for math co-processor	$999.00
Impact-030/882/16	GVP	CPU	A2000	16 MHZ 68030 co-processor accelerator board w/ 16 MHZ 68882 math co-processor	$1049.00
Impact -030/882/25	GVP	CPU	A2000	28 MHZ 68030 processor accelerator board with 28 MHZ 68882 math co-processor	$1425.00
Impact -030/882/33	GVP	CPU	A2000	33 MHZ 68030 processor accelerator board with 33 MHZ 68882 math co-processor	$n/a
Impact-030RAM/4	GVP	CPU	A2000	32-BIT Wide RAM Exp. Dghtrboard w./sockets for 8 MB nibble RAM, pop. w/ 4 MB RAM	$1999.00
Impact-030RAM/8	GVP	CPU	A2000	32-BIT Wide RAM Exp. Dghtrboard w./sockets for 8 MB nibble RAM, pop. w/ 8 MB RAM	$n/a
Impact A2501-4MB/0	GVP	CPU	A2000	16 MHZ 68030/68882 board with 4 MB 32-bit RAM daughterboard (no hard disk)	$2699.00
Impact A2501-4MB/40Q	GVP	CPU	A2000	16 MHZ 68030/68882 board w/ 4 MB 32-bit daughter board and 40 MB Quantum hard disk	$3299.00
Impact A2501-4 MB/80Q	GVP	CPU	A2000	16 MHZ 68030/68882 board w/ 4 MB 32-bit RAM daughter board/ 80 MB Quantum hard disk	$3695.00
Impact A3001-4 MB/0	GVP	CPU	A2000	28/33 MHZ 68030/68882 board with 4 MB 32-bit RAM daughter board (no hard disk)	$2999.00/$n/a
Impact A3001-4MB/40Q	GVP	CPU	A2000	28 /33 MHZ 68030/68882 board w 4 MB 32-bit daughter board and 40 MB Quantum hard disk	$3599.00/$n/a
Impact A3001-4MB/80Q/28 or 33	GVP	CPU	A2000	28 /33 MHZ 68030/68882 board w 4 MB 32-bit daughter board and 80 MB Quantum hard disk	$3995.00/$n/a
Hurricane 500/68020	Imtronics Inc.	CPU	A500/A2000	68020 16MHz accelerator board - switchable between 68020 and 68000, 1 to 4 MB RAM exp	$549.99
Hurricane 2800/68030	Imtronics Inc.	CPU	A2000	68030 28 MHz accelerator board/ autoboot SCSI ctriler with slots for up to 16 Mb RAM exp	$1195.00

MEMORY EXPANSION

PRODUCT	COMPANY	PORT	MACHINE	DESCRIPTION	PRICE
A2052 2MB RAM Expansion	Commodore	Slot	A2000	Available with 1/2, 1, or 2 MB	$549.95
A2058 8 MB RAM Expansion	Commodore	Slot	A2000	Available with 4, 6, or 8 MB	$799.00
A501 Memory Extension	Commodore	Internal	A500	512K RAM with clock/calendar	$199.95
AX 1000	Comspec	bus	A1000	One MB RAM for A1000	$633.00
AX 2000	Comspec	bus	A1000	Two MB RAM for A1000	$1021.00
RE 2000-0/1/2	Comspec	slot	A2000	0K/ 1MB/ 2M on 2 MB RAM board for A2000	$236/$594/$954
Pro Ram 1.8	Imtronics	A-501	A500	user upgradable to 1.8 MB, A501 compatible	$149.00 and up
Meta4 - w 512K, 1M B 2MB, 4MB	IVS	slot/TC500	A2000/500	0 wait state memory exp. card using SIMM modules, 1/2 the length of standard card	$329.95/$479.95 /$579.95/$949.95
Micromegs	M.A.S.T	internal	A500	512K Chip memory, 1 meg DRAMs, half the size of A501	$169.00
Maximegs	M.A.S.T	internal	A500	1.8 MB Chip RAM exp, 512K can be used as display RAM with new Agnes chip, clock	$n/a
Minimegs	M.A.S.T	bus	A500/1000	1 to 2 MB external RAM, pocket-sized, low-power	$399.00- $624.00
Starboard2/SB2-500/SB2 + SB2000 adptr	MicroBotics	bus/slot	All	FASTRAM exp board socketed for a MB of memory (0K inst)	$339.00
Starboard2 Multi-function Module	MicroBotics	SB2 dbrd	All	Starboard2 daughterboard provides clock/cal, parity check,68881 socket, StickyDisk software	$90.00
Starboard2/SB2000	MicroBotics	slot	A2000	Conversion card which allows Starboard2 to fit in 100 pin slots of A2000	$69.95
M501 Memory/Clock Expansion	MicroBotics	internal	A500	512K internal memory/clock exp, plug compatible, functionally identical to Commodore unit	$59.95/129.95 pop
8-UP! (DIP) FastRAM	MicroBotics	slot	A2000	Unpopulated 8 MB user-installable RAM memory expansion card	$239.00
8-UP! (SIMM) FastRAM	MicroBotics	slot	A2000	Unpopulated 8 MB RAM exp card with RAM mounting of 256k SIMMs or 1MB PopSIMMs	$239.00
PopSIMMs for 8-UP!	MicroBotics	8-UP!	A2000	User populatable SIMM boards, can accept 8 standard RAM chips, sold in set of 4	$89.95
EXP-512	Progressive Peripherals	Internal	A500	512 K expansion board	$169.95
EXP-1000-OK	Progressive Peripherals	Mthrbrd	A500	expansion board	$299.95
EXP 1000-1MEG	Progressive Peripherals	Mthrbrd	A500	expansion board	$429.95
EXP-8000+OK	Progressive Peripherals	Mthrbrd	A500	expansion board	$429.95
EXP-8000 - 2 Meg	Progressive Peripherals	Mthrbrd	A500	2 MB expansion board	$629.95
MEGA 2000-OK	Progressive Peripherals	slot	A2000	expansion board	$224.95
MEGA 2000 - 2 Meg	Progressive Peripherals	slot	A2000	2 MB expansion board	$349.95

MEMORY EXPANSION - *(continued)*

PRODUCT	COMPANY	PORT	MACHINE	DESCRIPTION	PRICE
P.R. 2000-0K	Progressive Peripherals	slot	A2000	expansion board	$299.95
P.R. 2000 - 2 Meg	Progressive Peripherals	slot	A2000	2 MB expansion board	$429.95
512-K MemoryClock/Calendar	Skyles Electric Works	Internal	A500	512K Internal memor expander with clock/calendar; 0 or 1/2 MB population	$59.95/$99.95
2 MB Internal Memory Board	Skyles Electric Words	Mthrbrd	A500	can multiply internal memory from 2x up to 6x	$249.95/$299.95
with 0, 1/2, 1, 2 MB installed					/$349.95/$449.95
8 MB Memory Board	Skyles Electric Works	Slot	A2000	memory expansion by 2 MB increments	$199.95/$379.95
with 0, 2, 4, 6, 8 MB installed					/$559.95/$729.95/$899.95
1.5 MB Memory Board	Skyles Electric Works	Mthrbrd	A1000	can expand internal memory up to 6x	$249.95/$299.95
with 0, 1/2, 1, 1.5 MB installed					/$349.95/$399.95
256 Board	Skyles Electric Works	Front Panel	A1000	256K chip RAM upgrade	$169.95
Octabyte	Spirit Technology	Zorro	A2000	8 MB memory expansion, full Autoconfig with RAM on/off	$289.00
X-RAM	Spirit Technology	bus	A500/1000	8 MB memory expansion, plugs into 86-pin exp port, full autoconfig with RAM on/off	$319.00
Inboard (IN500,IN1000)	Spirit Technology	Mthrbrd	A500/1000	1.5 MB int memory exp, plugs into 68000 socket, full autoconfig with RAM on/off	$289.00
Sinboard	Spirit Technology	Mthrbrd	A500	2 MB int memory exp, plugs into 68000 socket, full autoconfig with RAM on/off, opt ext ps	$289.00
Trapper	Spirit Technology	Mthrbrd	A500	512K internal plug-in (to A-501) memory, socketed for 256Kx1 DRAMS	$69.00
Trapper	Spirit Technology	Mthrbrd	A500	512K internal plug-in (to A-501) memory, socketed for 256Kx1 DRAMS	$69.00
A-Max RAM	Spirit Technology	slot	All	Adds 1MB contig memory to chip memory, incl. software switch to reg. exp RAM	n/a
SupraRAM 500	Supra	A-501	A500	1/2 Memory Expansion w. clock and calendar	$129.00
SupraRAM 2000	Supra	slot	A2000	memory expansion boards	$449.00/$649.00
2, 4, 6, 8 MB RAM inst.					/$849.00/$1049.00
FastRam	Xetec	SA-5	A500/1000	for use with SA-5 Host Adaptor, allows memory exp. to 8MB using FastSimm Modules	$99.95
FastSimm	Xetec	FastRAM	A500/1000	1 Mg Simm Memory with 0-wait state 100 ns access speed	n/a

INTERFACE, NETWORK, AND EMULATOR DEVICES

PRODUCT	COMPANY	PORT	MACHINE	DESCRIPTION	PRICE
Amigo Comports	Amigo Business Computers	slot	A2000	Multi-channel srl comm enables 2000 to function as workstation, up to 8 channels p/brd	$379 8ch/299 4ch
Dual Serial Board	ASDG Inc.	Zorro	A2000/2500	Zorro II expansion board provides 2 high-speed IBM PC AT-style RS-232C serial ports	$299.95
Twin-X General Purpose I/O Board	ASDG Inc.	slot	A2000	A2000 style host board for 2-ISBX modules	$329.95
SBX-Serial/2 Module for Twin-X	ASDG Inc.	Twin-X	A2000/2500	2-channel full-duplex asynchronous serial communications controller	$199.95
SBX-GPIB Module (IEEE-488 for Twin-X)	ASDG Inc.	Twin-X	A2000/2500	complete General Purpose Interface Bus	$199.95
Mac-2-Dos	Central Coast Software	disk drive	All	allows full transfer of files to/from Mac/Amiga	$99.95
A2286 IBM AT Bridgeboard	CBM	BBslot	A2000	makes the A2000 IBM AT compatible	$1595.00
A2088 IBM XT Bridgeboard	CBM	BBslot	A2000	makes the A2000 IBM XT compatible	$n/a
SA500/SA1000/SA2000	Comspec	bus/slot	All	SCSI Host Adaptors	$336/$364/$246
MCS 8008/MCS 8004	Comspec	parallel	All	8 / 4 Channel parallel printer network	$821/$637
X-Windows/Ethernet/Mouse combo	GfxBase	slot	A2000	X workstation interface incl. Ethernet networking board, optl 3 button mouse, software	$1299
Amiganet	Hydra Systems	slot/bus	A2000/A500	Ethernet networking brd; cabling, sftwre incl.(EMAIL, high spd data ex, AFS, date, time server)	350£
PrInterface	IVS	slot	All	Adds second centronics compatible port for printer, multitasking	$99.95
The Infinity Machine	M.A.S.T.	bus	A500/1000	autobooting, DMA, SCSI interface	$299.00 and up
SCSI Adaptor In A Cable	M.A.S.T.	Parallel	All	SCSI adaptor cable	$129.00
A-Max	Ready-Soft	drive(pt)	All	Mcintosh emulator	$249.95 Cdn
HDA-506-1(A1000)-5(A500)	Spirit Technology Inc.	bus(PT)	A500/1000	Supports 2 ST-506 hard drives MFM or RLL	$156.00
Slot Machine	Spirit Technology Inc.	Zorro	A2000	Supports 2 ST-506 hard drives MFM or RLL, autoboot	$202.00
AX-S	Spirit Technology Inc.	bus	A500/1000	provides access to XT/AT expansion boards (not designed for bridgeboard use)	$995.00
Supra SCSI Interface	Supra	bus	A500/1000	SCSI hard drive interface	$199.95/249.95

EXPANSION CHASSIS

PRODUCT	COMPANY	MACHINE	DESCRIPTION	PRICE
Hard Drive Enclosure:Single	C Ltd	All	incl. fan, 45/65 watt power, face plates, wiring for either 3.5 or 5.25 drives	$149.95
Hard Drive Enclosure:Double	C Ltd	All	incl. fan, 45/65 watt power, face plates, wiring for either 3.5 or 5.25 drives	$249.95
Zorro 3/500 Expansion Box	C Ltd	A500	w/3 A2000 compatible-slots, 2 IBM slots, co-processor slot, auto ON/OFF	$399.95
Zorro 3/1000 Expansion Box	C Ltd	A1000	w/3 A2000 compatible-slots, 2 IBM slots, auto ON/OFF, no co-processor slot	$399.95
SD Chassis	Comspec	All	Chassis holds two 5.25" devices	$339.00
SSD Chassis	Comspec	All	Chassis holds one 5.25 or 3.5 SCSI device	$269.00
Escort System 500	Expansion Technologies	A500	includes chassis, 2 Zorro expansion slots, 2 MB RAM card, more	$849.00
PEC-2120	Micro R & D	A1000	includes 2 100-pin Zorro 2 expansion slots	$269.95
PEC-2520	Micro R & D	A500	includes 2 100-pin Zorro 2 expansion slots	$269.95
Subsystem 500	Pacific Peripherals	A500	2 slot expansion with optional 3.5 floppy drive, only 1.5" high	$249/$399 w/drive
Subsystem 1000	Pacific Peripherals	A1000	3 slot expansion box with pass through, uses A2000 form factor card	$249.99

COMPANY LISTING

Reader Service Number

304 **AMIGO BUSINESS COMPUTERS**
192 Laurel Road
East Northport, NY 11731
(516) 757-7334

291 **ANAKIN RESEARCH INC.**
100 Westmore Drive, 11C
Rexdale, Ontario M9V 5C3
(416) 744-4246

305 **APPLIED REASONING CORP**
86 Sherman Street, Cambridge, MA 02140
(617) 492-7908

182 **ASDG INC.**
925 Stewart Street, Madison, WI
(608) 273-6585

184 **C LTD**
723 East Skinner
Wichita, Kansas 67211
(316) 267-3807

292 **CACHE SYSTEMS**
917-A Disc Drive, Scotts Valley, CA 95066
(408) 438-7595

307 **CALIFORNIA ACCESS**
780 Montague Expressway, Suite 403
San Jose, CA 95131
(408) 435-1445

293 **CELESTIAL SYSTEMS**
2178 Agate Court
Simi Valley, CA 93065-1839
(805) 582-0729

226 **CENTRAL COAST SOFTWARE**
424 Vista Ave., Golden, CO 80401
(303)526-1030

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(215) 431-9100

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6090 Jericho Turnpike
Commack, NY 11725
(516) 499-0907

294 **COMP-U-SAVE**
414 Maple Avenue
Westbury, NY 11590
(800) 356-9997, (516) 997-6707

295 **COMPUTER SYSTEMS ASSOC.**
7654 Trade Street, San Diego, CA 92121
(619) 566-3911

309 **COMSPEC COMMUNICATIONS**
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Toronto, Ont., M6B 1P5
(416) 785-3553

306 **CREATIVE MICROSYSTEMS LTD.**
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Portland, OR 97223
(503) 620-3821

307 **DIGITAL CREATIONS**
2865 Sunrize Blvd., Suite 103
Rancho Cordova, CA 95742
(916) 344-4825

308 **ECE RESEARCH AND DEVELOPMENT**
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Talahassee, FL 32303
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296 **EXPANSION TECHNOLOGIES**
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Fremont, CA 94538 (415) 656-2890

282 **Gfx BASE**
1881 Elwell Drive, Milpitas, CA 95035
(408) 262-1469

222 **GREAT VALLEY PRODUCTS INC.**
Lancaster Ave. and Plank Road
Paoli, PA 19301, (215) 889-9411

131 **HAITEX RESOURCES**
208 Carollton Park, Suite 1207
Carollton, TX, (214)241-8030

290 **HYDRA SYSTEMS**
Red Lane, Kenilworth, England
(44)(203)471111

159 **INKWELL SYSTEMS**
5710 Ruffin Road
San Diego, CA 92123-0400
(619)268-8792

310 **IMTRONICS**
12301 South West - 132 Court
Miami, FLA 33186
(315)255-9302

297 **INTERACTIVE VIDEO SYSTEMS**
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La Miranda, CA 90638
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1073 N. Batavia Street, # 8
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(800) 356-1026, (714) 633-1026

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(408) 435-1445

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(503)626-8400

276 **M.A.S.T.**
3881 Benetar Way, Suite E
Chico, CA 95928
(916) 342-MAST

313 **MICROBOTICS INC.**
811 Alpha Drive, Suite 335
Richardson, Texas 75081
(214) 437-5330

299 **MICRO R & D**
3107 West Hampden Avenue
Sheridan, CO 80110

110 **MICROWAY**
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(508) 746-7341

314 **MIMETICS**
P.O. BOX 1560, Cupertino, CA 95015
(408)741-0117

104 **NEW TEK Inc.**
115 Crane Street
Topeka, Kansas, 66603
(800) 843-8934, (913) 354-1146

315 **OCEAN AMERICA**
5892 Main Street
Springfield, OR 97478
(503) 741-2396

316 **OMICRON VIDEO**
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Chatsworth, CA 91311-3680
(818) 700-0742

300 **PACIFIC PERIPHERALS**
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Fremont, CA 94539
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2469 East 7000, Suite 200
Salt Lake City, Utah 84121
(801) 942-1174

113 **PROGRESSIVE PERIPHERALS**
464 Kalamath Street
Denver, CO 80204
(303) 825-4144

154 **READY SOFT INC.**
P.O. Box 1222
Lewiston, NY 14092
or 30 Wertheim Court, Unit 2
Richmond Hill, Ontario
(416) 731-4175

301 **SKYLES ELECTRIC WORKS**
231E South Whisman Road
Mountain View, CA 94041
(415) 965-1735

111 **SPIRIT TECHNOLOGY CORP.**
220 West 2950 South
Salt Lake City, Utah 84115
(800) 433-7572, (801) 485-4233

318 **STUDIO 7**
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Overland Park, KS 66204
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205 **SUNRIZE INDUSTRIES LTD.**
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PAGESTREAM

How to make the best use of PageStream's special features...

Disk Caches

As with all professional tools, the performance of a desktop publishing program like PageStream is of major concern to serious users - the faster the program runs, the better. One major source of program slowdown occurs when something needs to be loaded from disk, especially for floppy drive users. It's a real bummer to have your creative flow disrupted while you wait for the program to load the directory of your clip art drawer.

One thing you can do to speed up PageStream's disk performance is to use a disk cache system. A disk cache system monitors disk accesses and stores the most recently used disk sectors in memory. Each time a disk request comes across, the cache program looks in its list of sectors, and if the sector is already loaded into memory, the data is loaded out of the memory cache without going to the disk drives. For tasks like loading directories, disk caching can save you a great deal of time - without disk caching, my clip art directory takes about 15 seconds to load; with caching, it loads in less than a second.

AmigaDOS does provide disk caching via the AddBuffers command, but there is a distict disadvantage to AddBuffers. It allocates CHIP RAM (memory that is used by the Amiga custom chips, the lowest 512K in most systems) and for graphics-intensive applications like DTP, CHIP RAM is usually in short supply. It would be best to allocate disk caches from FAST RAM (memory above the lowest 512K).

Commercially available disk cache programs like ASDG's FACCII do allocate their caches from FAST RAM, and are thus more desirable than AddBuffers. I use FACCII with PageStream, and have encountered no problems. I have 2 MB of memory, and find adding 256 buffers (FACCII's default) significantly speeds up PageStream. (In fact, 256 buffers may be kind of overkill in this case -- 100 would probably work fine, too).

Disk caching may not be for everyone; I don't recommend it if you have one megabyte or less of memory. In addition, 512K Amiga owners won't gain any advantage buying a commercial caching program that uses FAST RAM - 512K Amigas don't have any FAST RAM! But if you have more than a megabyte of memory, a disk cache can be a real blessing.

MACROS

The mouse is a wonderful device, but let's face it - it can really get to be a drag, having to take your hands off the keyboard, grab the mouse, pull down a menu, select an option, and then put your hands back on the keyboard to finish the operation. This is especially frustrating when you are repeating the same command over and over again. Luckily, PageStream's macro facility allows you to define some keyboard shortcuts that will help speed up your more common

By Jim Shields

procedures.

PageStream macros allow you to define a series of keystrokes and attach them to your keyboard's 10 function keys (F1 through F10). When you define a macro, you tell the computer what sequence of keystrokes are to be entered when that function key is pressed. The macro definition can be used to select menu functions, enter commonly used text, or perform editing functions.

There is a kind of shorthand that is used in defining macros. Most of the keys on the keyboard can be entered directly, but some of them have special codes that must be used (See Table 1).

If you want to enter a control sequence (like Ctrl-C), you must precede the key with a circumflex (^). Thus Ctrl-C would be entered in a macro as ^C.

If you want to enter an alternate sequence (like Alt-X), you must precede the key with an alt sign (@). Thus Alt-X would be entered in a macro as @X.

Appendix 1 of the PageStream manual describes the keyboard equivalents for the various menu selections and toolbox icons. (Note: the sequence for selecting a tool from the toolbox is escape-T, not escape-J like the PageStream v.1.5 manual shows). You can use this information to define macros. Some of the macros I find useful are listed in Table 2. These are just a few of the combinations that I find useful; this is by no means a comprehensive list of functions.

In addition to using the macro keys to perform menu or toolbox functions, they can be used to perform common editing tasks. For example, I imported a document that was ported from an IBM PC, using WordStar. The file had five spaces before each line of text and a hard carriage return at the end of each line. The document was 35 pages long, and as I had no way of changing the paragraph formatting from within the file, I needed to change the format within PageStream in order to delete the carriage returns and spaces, and then move to the end of the line. The macro I used was dddddd^6 - six deletes and a CTRL-right arrow. This macro allowed me to quickly convert the file into paragraphs that could be manipulated within PageStream.

TAGS & STYLE SHEETS

Tags and style sheets allow you to define and save the characteristics of a document, so those characteristics can be re-used at a later time. They are of particular use when you have to produce periodical documents like newsletters or newspapers. They can also be used when developing advertisements, to achieve consistency among layouts.

Tags allow you to describe the attributes of a piece of text. You can build tags from the tag requester; most of the possible attributes of a piece of text can be assigned from this requester. The tag requester presents you with a list of attributes like font, size, line and character spacing and color. When you click on a particular attribute, another requester will appear that will allow you to change that attribute. Some of these requesters, like the "select font" requester, are familiar, but others, like the "select attributes" requester, are unique to the tag requester. After you have defined all attributes of the tag, you can give it a name, and press the Add button on the tag requester. All tags are saved with the document when it is saved.

There are several ways to activate a tag. Before entering text, you can select a tag by pulling up the tag requester and clicking on a particular tag's name. All text you enter will have the attributes as defined in the tag. If you already have text entered, you can add attributes with a tag in one of two ways:

1) You can highlight the column in which the text appears, and then select a tag from the requester. This will add the tag's attributes to all the text in the column.

2) You can use the Text tool to highlight a particular piece of text, and

TABLE 1

KEY	MACRO CODE
Left arrow:	\4
Right arrow:	\6
Up arrow:	\8
Down arrow:	\2
Escape key:	\e
(not /e as the manual states)	
Return key:	\n
Tab key:	\t
Backspace key:	\b
Delete key:	\d
Backslash (\)	\\
At sign (@)	\@
Circumflex (^)	\^

TABLE 2

DESCRIPTION	MACRO SEQUENCE
Save document	\efs
Import graphic image	\efg
Import text	\eft
Undo	\eeu
Toggle snap-to-guides	\elb
Toggle snap-to-grid	\elg
Toggle column outline	\evo
Select font	\e1f
Toggle bold	\e1b
Toggle italic	\e1k
Toggle outline	\e1o
Toggle underline	\e1u
Select superscript	\e21
Select baseline script	\e22
Select subscript	\e23
Select line/character spacing	\e2s
Tag requester	\e3t
Rotate object	\eor
Select text tool	\ett
Select object pointer tool	\eto

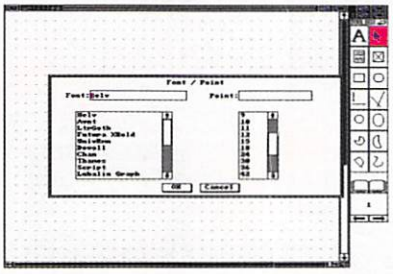
then select the tag from the tag requester. This will add the attributes as defined in the tag to the highlighted text.

Just as tags allow you to define the attributes of blocks of text, style sheets allow you to define the attributes of an entire document. Style sheets, also referred to as templates, usually contain tags that define the text that will be found in the document along with contain the definitions for the pages - page size, margins, column layout, etc. Finally, style sheets often contain any titles, graphics, or other elements that do not change from one document to another.

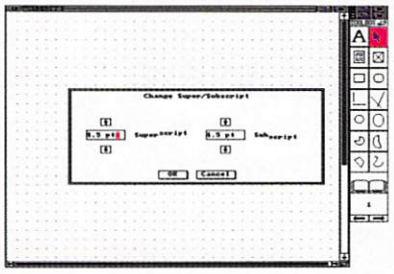
For example, a publisher of a newsletter might develop a style sheet to make the work of putting that newsletter together easier. Individual tags for headlines, subheads, and body text would be defined as well as the format of the pages. On the front page, for example, the title of the publication and the graphic symbol of the publication would be laid out, as would the columns on that page. All these elements would be unchanged from issue to issue - they would be saved as a template, and called up when a new issue was being assembled.

Once a style sheet has been developed and saved, it can be used over and over again. First, you must load the style sheet and then immediately save the document under a different name - the name of the final publication. Then you can create the publication by making changes to this new document. When you are finished, you will have two documents - the original style sheet (which can still be used again) and the new, completed publication. ❑

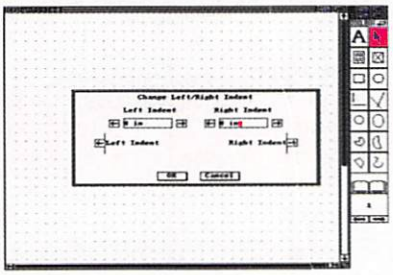
(See PRODUCT INDEX for more contact information on page 109)



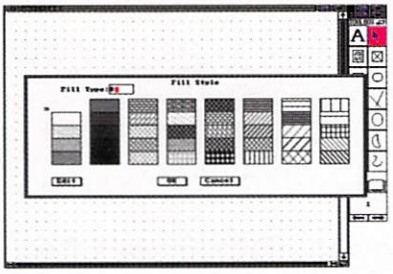
The PageStream font requester, accesible via the tag requester.



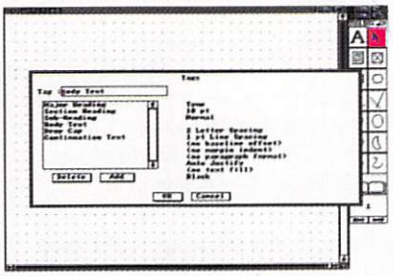
The superscript/subscript requester.



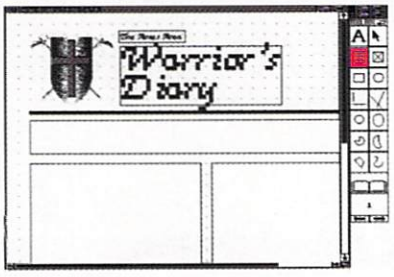
Here you can select the right and left indent levels of your text.



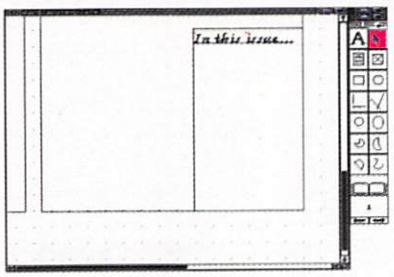
Within this requester you can determine the fill style of either your text or any graphic object.



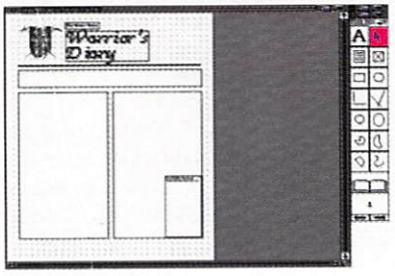
The main tag requester from which several of the other reqesters are available.



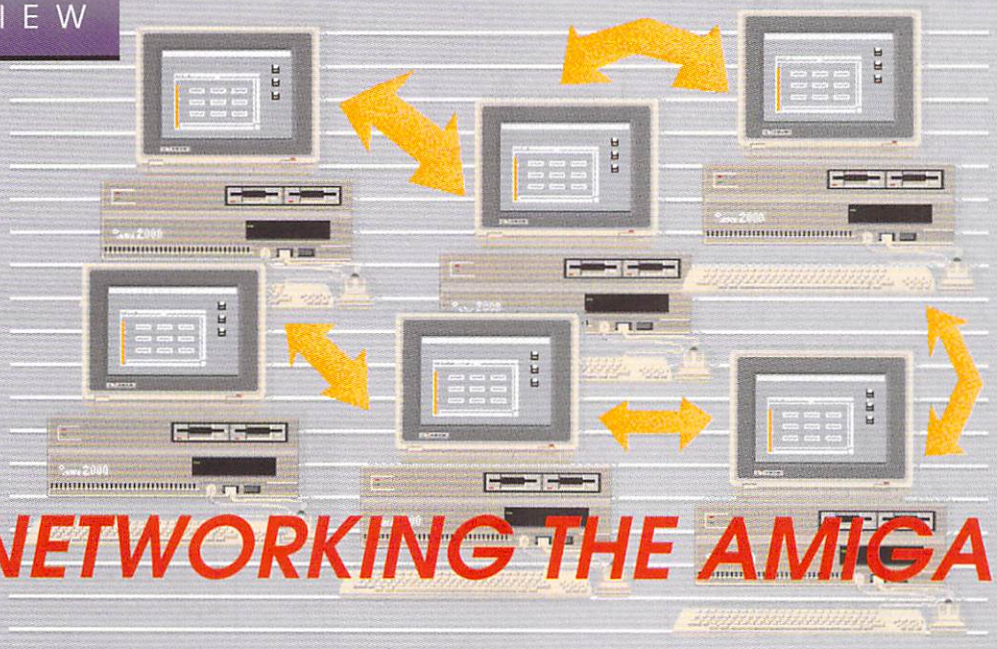
Defining the nameplate of a newsletter in a style sheet.



Defining a graphic element in a style sheet.



The completed style sheet.



NETWORKING THE AMIGA

AMIGANET uses the Ethernet architecture that is the standard of the PC dominated business market

One of the major factors that had prevented the Amiga from entering the business market was its lack of a true networking system. A network, as the name implies, is a system that allows several users to be connected together in such a way that they will all be able to access each others computer, disk drives, or any one or more peripheral devices connected to any computer in the network. This means that programs could be run, files could be exchanged, copied or deleted remotely; and messages could also be sent between networked computers. Networking is far from a new idea, and it is - finally - entering the Amiga market place. Just recently a range of Ethernet boards - designed and manufactured by Hydra Systems of the U.K.- were released for the Amiga.

Developers have been working with beta versions of these boards since the beginning of this year and have come up with popular products such as TCP/IP (Transmission Control Protocol/Internet Protocol), a program that is well known among ethernet users. To say that a networking system was not available for the Amiga is not completely correct; the Ameristar Networking System had been available for quite a while, but this was a product that was aimed more at a high-end market. This network had to be run on a SUN Workstation running the SUN Network File Server (NFS). This was all well and good, assuming you could afford to buy a SUN workstation to use as a file server for your Amiga.

Hydra Systems, the makers of AMIGANET saw the need in the industry for an Amiga to Amiga Ethernet system; a system that would allow the Amiga to function as the file server. Also looked at was a low-cost version for the A500 that can be directly aimed at the educational market. By all standards AMIGANET is relatively low-priced, and Hydra Systems intends to maintain this low price despite pressure from dealers. The makers of AMIGANET believe that the Amiga has its roots as a low-priced computer with high powered capabilities. With this as their premise, they concluded that the Amiga has no business having over-priced peripherals. This should also be an example to designers of certain Amiga peripherals that insist upon creating add-ons whose prices far exceed the cost of the base system.

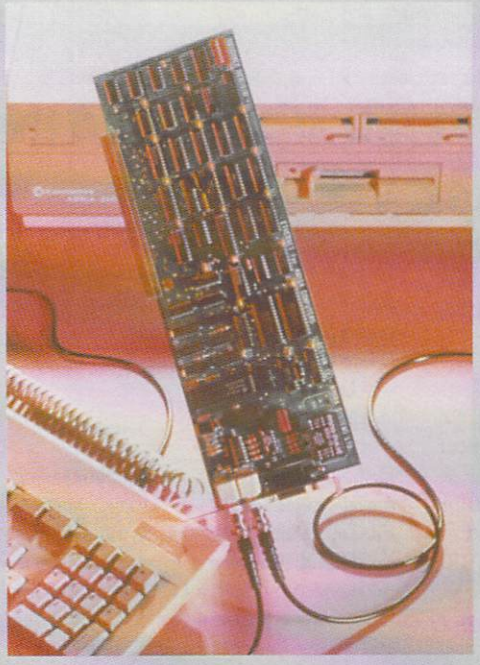
OVERVIEW OF AMIGANET

AMIGANET uses the Ethernet architecture that is the standard of the PC dominated business market; meaning that AMIGANET is compatible with Version 2 of the ethernet system, and fully complies with IEEE Standards 802.3 Types A and B. The 803.2 Type B refers to "Cheapernet", a much cheaper version of Ethernet, where a simple BNC coaxial cable is used instead of the Ethernet 15-pin standard. The BNC co-axial cable is one way of reducing AMIGANET's installation cost. AMIGANET is sold bundled with the BNC co-axial cables that are required for "Cheapernet" use, so in essence this network is ready to run straight out of the box. Note that if you use cheapernet, you must plug in a 50 ohm terminator at each end of the cable system, a total of two per system.

AMIGANET was designed to enable the rapid transfer of any type of data between any of the Amiga's. Also included with AMIGANET are AFS, and the "TUBE", a high speed data exchange interface, along with a list of other network services.

The setup, as is the whole idea behind a network, is one in which any Amiga on the network can share files, and subject to

By Olusegun A. Olaniyan



The AMIGANET Ethernet board from Hydra Systems

access permission, access any other screen, storage device, or peripheral on the network. This of course means that several Amigas can now share the same laser printer in an office environment. To access another computer on the network, the mountlist in the user installed ANET directory must be modified. Each device that is remotely accessed must have its own mountlist. To mount the device, simply double click on the "rh0" icon, or whatever name you have given the device, and an icon for that "remote" device appears on your screen. This device is now accessible like any other drawer or drive. Access to the serial and parallel ports are also as simple. With a network of more that two Amigas, it is recommended that you label each device accordingly in order to avoid any confusion. All functions of the network are accessible from the Workbench or through the CLI.

AMIGANET HARDWARE

AMIGANET consists of one network board, the instruction manual, a BNC coaxial cable, a 3.5" and 5.25" diskettes with the AMIGANET software. Please remember that one board is required for each Amiga computer that is to be networked. Installation is very simple; the board theoretically installs into any one of the Amigas expansion slots but, for fastest access, it should be installed in the first expansion slot. The reason for installing in the first slot is that this slot has the highest direct memory access (DMA) request priority. The fact that the board occupies a position that has the highest DMA priority means that the board will not have a problem with other devices that require DMA such as the hard disk controller. Although problems were encountered with the A2090 hard disk controller, they were due to design flaws in the A2090. Apparently that controller board does not like to be put behind the AMIGANET network board in the expansion slots. The designers also indicated that other problems may occur with some GVP and ASDG boards, but it can be said with certainty that the problems that have arisen are already being addressed. These problems did not arise from the designers of the network boards, but rather because the design specifications that Commodore had laid out are not always being followed.

The AMIGANET hardware can be customized according to the users needs, but for serious work the fully loaded version is recommended. This version has a 64K buffer, a 16-bit data path, assisted by a DMA (Direct Memory Access) sequencer with a full 16 MB address range. As a result of direct memory access you are able to move data directly to or from any memory location, including directly into Video RAM.

The base AMIGANET board is the low cost education special. The mid-range board has a 16K buffer, a 16-bit data path, and DMA. All configurations are also available in an optional ABS injection moulded casing so that they can be used with the A500 Amiga.

THE AMIGANET OPERATING SYSTEM

The installation of the AMIGANET operating system is very straight forward. There is an "install" icon that installs the support files onto your system disk, and creates a drawer called ANET. This drawer contains all of the network services (presently seven standard services) they include: Date and Time server, a screen communication service, dialogue based communication, the Amiganet File System (AFS), a remote printer handler, and the "TUBE" high speed data exchange interface. Other optional services include a Print Spooler, or TCP/IP, both of these will be accompanied with their own documentation.

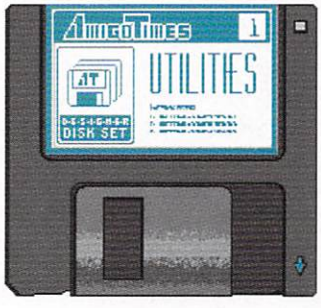
DRAWBACKS OF AMIGANET

One of the major drawbacks of AMIGANET is the lack of real privacy with the system. The present version of the AMIGANET operating system does not have a means by which any member on the network could prevent or have the option to deny access to any of the other computers on the network. This unfortunately can be a major drawback in a corporate environment which, without a doubt, is where AMIGANET will be used the most.

As to whether AMIGANET and other networking products will catapult the Amiga into that long sought-after business market, at this stage of the game it is hard to say. In fact, it may even be too late. It would appear that the problems still lie in Commodore's self-imposed image of the Amiga as nothing more than a glorified game machine, an image that must cease or the computer will fade into oblivion. A viable network board was not a difficult peripheral to design, so what took so long? All that can be said is, ask Commodore. Hopefully with a new CEO at the helm of Commodore, major, positive changes will be seen.

AMIGANET has been long-awaited in the North American market. The product is presently unavailable in North America but dealer enquiries are being invited by *Hydra Systems*. The AMIGANET system adheres to the original Amiga design philosophy, it offers a powerful product with a simple user interface, and all at low price. It is safe to say that this is one networking system that will be seen very soon on this side of the ocean. ❑

DATA: MANAGER'S PUBLIC DOMAIN REVIEWS



AmyCRC

by David Czaya

AmigoTimes_v1.8

Worried about Trojan Horse viruses? Do the three words Cyclic Redundancy Checks (CRC) mean anything to you? A CRC value is simply a mathematically computed number that is unique to a character, block of data or an entire file. Once the CRC value of a file is known, any changes (intentional or otherwise) can be detected by observing changes in the CRC value and/or the file size. AmyCRC catalogs the file sizes and CRC values of individual files, directories or entire devices in ascending alphabetical order.

InstallBeep_v1.1

by Tim Friest & Don Withey

AmigoTimes_v1.8

Finally, Amiga users can substitute the DisplayBeep (screen flash) with any IFF 8SVX sound file. When InstallBeep is activated it will load PlayBeep, the function that allows you to load any sound sample (maximum of 64k long), and play it in place of the default screen flash. Once activated the PlayBeep function runs as a task in the background asynchronously, and won't slow down your system, even if sound files are large.

TTT

by Ron Charlton

AmigoTimes_v1.9

This is a neat version of 3D Tic Tac Toe with a game board that consists of four levels. Each level has 16 squares arranged in a 4x4 matrix and displayed in perspective. The object of the game is to get four marks in a row ahead of the computer. Moves are made by pointing to a square and clicking the left mouse button which marks the block in green. The computer then responds by flashing its move in red. You continue to alternate moves until a win occurs.

Arp_v1.3

by A Large Co-operative Group

AmigoTimes_v1.9

This is the third major release of AmigaDOS Resource Projects by a large group of dedicated Amiga developers.

ARP commands are 100% compatible with AmigaDOS v1.3 commands, and are faster and smaller. For example the ARP Search command is 3x faster than the AmigaDOS Search, and ARP's Sort is about 5x faster than the AmigaDOS Sort. Most ARP commands have pushed capabilities even further by providing an extended help template that goes beyond the AmigaDOS help command.

Also included with ARP is a shell replacement for Shell-Seg that is both compatible and provides significant enhancements over the Commodore supplied shell. A strong feature of ASH is the way it uses all arp.library process functions and resident features. Not only are Arp functions smaller and faster, but the ASH shell also has other superior features including command substitution and piping, built-in batch language, and more!

Arp_v1.3, with its easy to use mouse-driven interface, can be installed automagically on to your system by just double clicking on the ArpInstall icon.

CPU_Speed

by John Hinckly and Jay Kubena

AmigoTimes_v1.9

This test program can graphically illustrate the overall CPU speed of your system as well as seeing how much your system is slowed down by a particular task.

For example, a stock Amiga will show the CPU speed at 1. An installed '020 changes that value to 1.8-1.9 and a plain '030 boosts the speed up to about 2.01. If you now add a math chip your CPU speed surges; add a 32-bit memory and you zoom to the edge of the scale!

The bottom line - system performance improves by increasing the clock speed of your processor, the type of math chip added, and the type/amount of RAM (16 or 32 bit). An '030 requires at least two megs of 32-bit RAM, as the KickStart routines are remapped to 32-bit ram, which immediately boosts the speed of the entire system.

DiskX_v2.0

by Steve Tibbett

AmigoTimes_v1.9

DiskX is a sector-based disk editor (as opposed to a file-based editor, such as FileZap) which can double as a file editor.

DiskX allows you to view any device (recognized by Amiga DOS) in a block-by-block format. You will be able to search/find text strings, find the first block of any file or view blocks in Hex mode (what actually exists in the block, 256 bytes at a time) or in Interpret mode (tries to make sense out of the block, showing you only the contents relevant to that block type). Editing blocks in hex mode is as simple as hitting the return key and entering the new text starting at the current cursor position (or move it) and hitting Return when you're done.

DISK_UTILITIES_II_V1.0

by Mike Hansell

AmigoTimes_v1.9

This utility allows you to back up and restore the virus-vulnerable boot blocks of your games disks. The interface resembles a Directory Utility-type program and has most of the functionality of these programs and then some. On the bottom of its intuition screen are four rows of gadgets including a virus detect & kill function, sector editor, file editor, diskcopy, format, disk error check.

Fragit 2.0

by Justin V. McCormick

AmigoTimes_v1.9

Software programs running on any computer will inevitably allocate and deallocate memory from your system. Thousands of memory fragments are created and destroyed continuously and, in just a matter of moments, you could fragment free memory so badly that re-sizing a window would be a major task.

Fragit allocates memory blocks generated as pseudo-random size values, ranging from 16 to 50000 bytes in length (and rounds up to the next 8 byte size boundary). These are then linked together into a dy-

By Ernest Nagy

namically allocated linked-list of Exec style MinNodes with new nodes inserted at the head of the list.

HamBench_v1.0

by David M. Pochron

AmigoTimes_v1.9

How would you like to be able to change the # of bitplanes, resolutions and display modes (from HAM to HalfBrights) on the fly for the top window of any program screen. It's possible with HamBench.

You may select a regular lo-res screen with any number of bitplanes, even choosing between several types of display modes including HAM and Extra_Halfbright (and even toggle between them). You can even load your own color palette from a data file each time you invoke the HamBench program. While using Hambench you will notice that window and screen gadgets don't change size to fit the new resolution (larger or smaller than normal or being rendered over by other gadgets when the screen is set to an alternate resolution)

SHERLOCK Linguistic Analysis Program

by Michael Cox

AmigoTimes_v1.9

Takes textfiles and computes the probability of their being by the same author. For example, you could compare a newly discovered, seventeenth-century play with samples of known works of, say, William Shakespeare and Christopher Marlowe, and conclude with some degree of certainty which of them was the unknown work's author.

SHERLOCK will produce a number based on differences in letter-pair distribution frequencies between two files. The larger the files (>10K) and the closer they are in size, the more dependable the results.

Dpref2

by Chris Green

AmigoTimes_v1.9

This program attempts to measure the multi-tasking efficiency of a disk controller by timing a computation-intensive task, with and without disk I/O going on simultaneously. Once the computation is completed, an efficiency percentage is calculated and reflects the percentage slowdown. A completely CPU driven device (RAM:) should measure around 50%

Speed_v1.0

by Jez San

AmigoTimes_v1.9

A performance benchmark program useful for comparing Amiga processing speeds. Speed performs 10,000 iterations of some selected groups of 68000 instructions whilst using the AmigaDOS's DateStamp time function to record how many ticks it took to complete. The Timed Duration is then compared against two known pre-stored times, one for a plain A2000 and one for an A2620 equipped A2000.

This benchmark used by this program was written to try and test memory performance as well as processor performance. It does this by having loops slightly bigger than the '020 or '030 cache (but not a 68040) making it necessary for the processor to fetch instructions from RAM instead of the cache. The end result will highlight deficiencies in some manufacturers' 68020 boards relying on benchmarks optimized to fit into their '020 cache.

MemWatchII

by John Toebes

AmigoTimes_v1.9

MemWatch sits in the background and watches for random trashing of low memory. If it detects a write to low memory, it repairs it to what used to be there, then puts up a requester in the form of:

Someone stomped on low memory $aaaaaaaa with $dddddddd cccc!

Press either mouse button to continue.

Where $aaaaaaaa is the address that got trashed and $dddddddd is the value that someone tried to sneak into there and cccc are the ASCII characters corresponding to that data. There is no guarantee, however, that this program will catch all memory trashes or that it will always be able to repair the trash in time.

MemWatch Library!

by John Toebes and Doug Walker

The MemWatch library allows you to add lots of memory-debugging features that you can link into your programs. MemWatch III (under development) will communicate with these routines to provide asynchronous memory checking. The MemWatch library compiles under Lattice C 5.02 and may work under previous versions. Manx users may link the routines in with their code by linking in the .o files.

QuickPref_v1.01

by David N. Junod

AmigoTimes_v1.9

Using this program with PopCLI IV (and NOWB option), allows you to alter your printer setup easily and swiftly. QuickPref pops up a small gadget interface on to your active screen (top screen) and allows you to quickly control the output to your printer. Some of the controls include: Aspect, Image, Shade, Correct smoothing, Dithering, Text placement on page, Density, Thresh, Page width and height controls.

Xspell

by Hayes Haugen

AmigoTimes_v1.9

As the name implies, this is a spell checker that can proofread text files created with most popular word processors and text editors. Unlike most other spelling checkers, X-Spell proofreads the entire document and then allows you to move through it, deciding how to deal with misspelt words. The dictionary file that comes with the Shareware version is only 1000 words, but all contributors will receive a disk containing the latest revision of X-Spell with a working alternates, an UNDO function (undoes last replace), a 40000+ word dictionary, complete documentation and notice of all major updates and future products.

Atree v1.4

by Don Schmidt

This Issue!

Atree is an Amiga disk utility program imitating similar utilities widely available on IBM compatibles (PC Tools, XTree, and QuickDos). One of the major advantages these programs offer is a graphic representation (in a tree-like form) of any disk devices structure; showing parent, child and sibling relationships between directories.

Selecting directories and files is as easy as moving the mouse to any part of the tree (thereby highlighting the file or directory) and it becomes the "argument" or "object" of the various menu and keyboard commands. Atree even allows you to mark your place in the tree (up to three directories at a time) and return to the marked place/s from any tree.

Vibra_v1.0

by Fred Mitchell

This Issue!

An interesting little program that simulates vibrating lines and planes. Initially designed to provide a visual approach (in real time) to the dynamics of rising/falling waves.

Vibra sets up a number of 'knots' linked by 'rubber bands' and assumes zero gravity. The knots are spaced evenly, given a certain mass, and restricted in their movement to vertical motion. The rubber bands are given a certain 'springiness' factor which acts as the medium to join adjacent knots.

At the beginning of a simulation all knots are in their 'rest' positions (zero velocity) and can be set in motion by picking them up with the mouse and moving them along a path of motion. In the case of the Line simulation, the rightmost knot is anchored by a spring. In Plane Simulations, the knots at the edges are anchored (like a trampoline). Once your line or plane is set in motion, you can release it and watch its motion in free space.

TELECOMM

MORE SERIAL PORTS

One of the Amiga's great advantages over some of the more mundane personal computers to which it's often compared is that every Amiga comes right out of its carton "fully endowed". By this I mean that each model Amiga is equipped with two mouse/joystick ports, a parallel/printer port, a serial port, stereo audio jacks, video ports, external disk drive connector; basically everything you need to start computing as soon as you bring it home and set it up.

Ask any of your friends who own PCs or MS-DOS clones what kind of gymnastics they had to go through to see color on their monitors or to hook up a mouse or a modem. Chances are if your IBM-owning pals wanted to telecommunicate they had to go out and buy a serial card for their computers, while all your Amiga needed was a modem and a cable because your computer already had the serial hardware built in.

The problem, up until recently, was that an Amiga could only *have* one serial port since there wasn't any reasonable or relatively inexpensive way to add more. This put artificial limits on folks who wanted to hook up and use a serial-port printer, MIDI instrument(s), plotters, drawing tablets, or more than one modem at the same time. Sure, you can hook up multiple serial peripherals through an octopus of cables and 'A/B/C' switchboxes, but only one device can talk to the Amiga's single serial port at a time.

Why more than one modem? Well, running a multi-line Bulletin Board System (BBS) is a good example. If you've got a few telecomm hours under your belt by now you've probably seen multi-line systems which run on MS-DOS or UNIX-based computers, where more than one person can use the system at a time. Those machines have had multiple-serial port add-on boards for a long time. Now it's the Amiga's turn to join that crowd.

DUAL SERIAL BOARD

ASDG Inc. of Madison, Wisconsin, U.S.A. is now shipping their "Dual Serial Board" or DSB. Packaged in an unassuming carton that looks like it could belong in a supermarket's "Generic products" aisle next to plain white cans of string beans and boxes of detergent, the DSB is a high-quality piece of hardware which, for around $300 (US), adds two more RS-232 serial ports to the Amiga 2000, 2000HD, or 2500.

The DSB takes the form of a full-length card which easily installs into one of the 2000 series machine's Zorro II (Amiga) slots or a Bridge slot. All you need is a screwdriver and about ten minutes of time. When finished you'll see two new ports sticking out the back of your Amiga - the DSB's serial ports terminate in a 'DB9' connector, similar to your mouse/joystick ports. This is the standard 'PC-AT' style fitting, and is used because two regular full-sized DB25 connectors, like Amiga's standard serial port, wouldn't fit end to end on the DSB's edge. (Using DB9s also cuts down on manufacturing costs).

To connect your modems (or other serial devices) to either of the DSB's ports you'll need a new cable: if you're not a hardware hacker who can make up his own, just visit your nearest IBM-supporting computer shop and tell them you want an "AT style modem cable". They'll know what you're talking about. Expect to pay up to $20 for one of these cables.

The DSB requires some special software so your modem or other serial peripheral can talk to it. This is found on a disk of "Multi-Serial Port Software" packaged with each DSB. Your Amiga's built in serial port only talks to the 'serial.device' that lives in the DEVS drawer on your WorkBench disk. ASDG has cooked up their own special flavor device for the DSB called the 'siosbx.device' which can talk to either or both of the DSB's ports, or to ports on additional DSBs as well (you could install more than one DSB into your 2000 if you have slots available - each DSB adds two more serial ports).

The DSB's software disk includes a very intelligent program that makes software installation a snap. Click the little 'install' icon and the program will put a copy of 'siosbx.device' into your assigned DEVS: directory, it will rename your old Commodore-supplied serial.device to 'cbmser.device' and it will copy a new file to that directory called 'serial.device' but which is something else altogether.

FOOL YOUR SOFTWARE

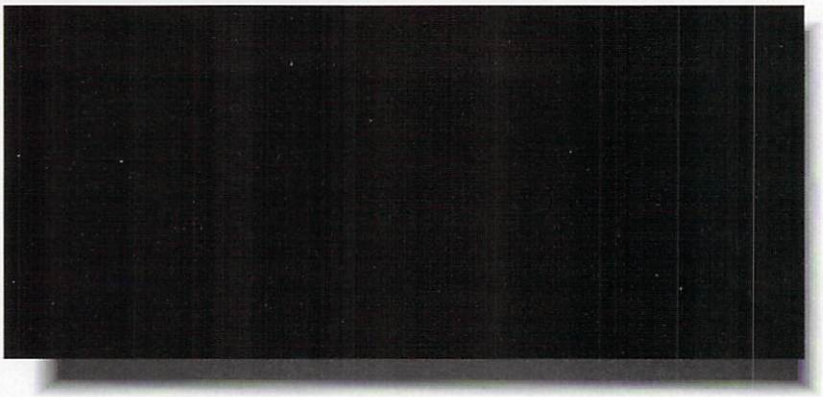
ASDG's new 'serial.device' file is actually a program called the "Serial Dispatcher". All of your Amiga terminal programs automatically open 'serial.device' when you run them. This is usually transparent to you, the user. You don't know it's happening. Well, in order for your terminal software to be able to talk to the DSB it has to be told to use the new 'siosbx.device' instead. There are two ways to do this: modify your terminal software, or intercept its calls

By Harv Laser

to 'serial.device' and divert/dispatch it to the new ASDG device instead.

With ASDG's Serial Dispatcher installed, run your terminal program. The Dispatcher, now disguised under the name of 'serial.device' will pop a requester up onto your screen and ask you if you want to use one of the DSB's ports or your built-in Amiga serial port, you then make your choice. The requester will close, and if you chose one of the DSB's ports your terminal program will never be the wiser; it will simply talk to the DSB's ports instead of the Amiga's. This software is very slick.

One small problem crops up when you opt to use the Serial Dispatcher method of talking to your DSB - most Amiga terminal programs open the serial port more than once when they run. Baud Bandit does it three times. So does COMM 1.34 and all its derivatives. Handshake 2.12a opens the serial port *many* times when run. (JR-COMM is one of the few current programs I found that opens the serial device only once



when first run). The Serial Dispatcher's requester pops up to ask you its questions each time your terminal software opens the device, forcing you to click on its 'yes/no' gadgets multiple times before it will go away. If you find this annoying there are two alternatives:

1) Some recent terminal programs such as Baud Bandit and JR-COMM have their own requesters which let you specify which device you wish to open each time the program is run. (Check your software's documentation to see if it has this capability and where to find the requester). Simply replace 'serial' with 'siosbx' and the Dispatcher's requester won't bother you anymore. This will also let you customize multiple copies of such programs so that each copy will talk to a different device. Then, with one DSB installed you have three serial ports, so you can actually run *three* Baud Bandits or *three* JR-COMMs simultaneously, or mix and match them, memory permitting, each talking to its own port and modem!

2) For programs which lack such requesters, you can use a binary file editor like 'NewZap' - search for all occurances of 'serial.device' and replace it with 'siosbx.device' - note that both names are the same number of characters in length. This is known as 'patching' a piece of software. If you go this route, be sure you work only on a backup copy of your software and do not insert any extra character spaces. Remember, Amiga is very sensitive to the length of executable programs. Do something wrong using an editor like NewZap and if you add even one extra byte to a program it may crash or refuse to run at all.

It stands to reason that once you've hot-patched a program in this way you'll have to patch it again to make it look for a different serial port, so consider using a program which lets you easily reset the device name. Also remember you can't have two programs or files in the same directory with the same filename. For example, if you have one copy of Baud Bandit which talks to 'serial.device' and another which talks to 'siosbx.device' you'll have to give them slightly different names or keep them in different directories.

MORE FEATURES

Besides giving you two more serial ports, the Dual Serial Board offers more. The bundled disk, besides carrying those new devices explained above also contains two 'Handlers' - SERX-Handler and SERXI-Handler (which the installer program will copy to your assigned L: directory).

Without getting too technical here, the '.device' files provide "Exec level software support" while the '-handler' files provide "DOS level software support". 'SERX-Handler' is similar to the standard AmigaDOS handler 'Ser:' (buffered input/output) and SERXI-Handler to 'Aux:' (unbuffered or interactive input/output). Since for a device to talk to a handler, an entry in DEVS:Mountlist must exist, ASDG also provides example mountlist entries for their handlers and explains all the parameters required to get the job done.

What all of this complicated gibberish means is that ASDG has done their job well and provided both the software developer and the "just plain user" with all the software bits and pieces to access the DSB in all the same ways that the built in Amiga serial port can be accessed. The dozen stapled pages of documentation that accompany the DSB, while far from glamorous or glossy, do a completely adequate job in telling you everything you need to know to use this new hardware and software and get you up to speed quickly.

The DSB's use of 'Zilog' chip technology allows the board to out-perform by far the speed of the standard Amiga serial port. If you've bought and are using a high-speed modem and you are seeing more errors during file transfers than you like, the DSB might just be the cure for those ills since, due to its special hardware, you can simply push more data through it at faster speeds than the standard serial port can handle.

But most "average users" will simply be interested in the DSB for the two more serial ports it adds. Consider the possibilities. Run a Bulletin Board on your Amiga and allow two callers to log in at the same time while you can dial out to your favorite boards or networks using the third port. Run multiple terminal programs at once: log into a BBS and download while you're logged into another host and chatting in a live conference or uploading! Download while composing on your MIDI synth. Lots of possibilities here and for a couple hundred bucks the DSB makes it all possible. ❑

(See PRODUCT INDEX on page 109 for more contact information)

ALIEN SYNDROME

Blasting the evil worm-like aliens , while saving trapped hostages in Alien Syndrome

Have you ever wanted to save captive hostages, run through outer space colonies, blast more aliens than you can fire a laser gun at, and escape just seconds before a time bomb destroys the whole planet? If so, then get ready for an all out shoot'em up game from Sega called Alien Syndrome. After the game has loaded, you must choose between either a male or female character for game play. Once your selection has been made, a screen will be displayed showing you the four different planets which have been taken over by evil alien creatures. You will start out your mission beginning on the first planet working your way to fourth and final mission. As you advance your way through other planets, you will notice that each one becomes progressively more difficult to conquer. Now, let's power up those lasers and go alien bashing!

BLASTING ALIEN SOUP?

Don't expect to find this special recipe anywhere except on an alien ship. If you don't shoot first, you will be the one to end up as the main course of the day! As you begin each mission, you will materialize inside one of the planets' out colonies. From here on in, it will be a non-stop race against time and aliens with your overall objective to save all the hostages and escape safely before the planet explodes.

On the screen you will find indicators showing your current score, top score, the amount of time you have remaining before the time bomb explodes, and small pictures representing the number of hostages yet to be saved. Each of the planets' out colonies will remind you of an outer space station maze, because you will not know their layout until you have played the game many times before. Inside them you will find electric doors, hidden passages, traps (such as holes in floors), and many more dangerous obstacles to overcome.

You may want to collect each of the different aliens in the game to be animated, including some of the bonus items. As you move your character around the screen, it will scroll in the direction you are moving. However, be prepared in the event that an alien might be waiting for you. When your mission first starts out, you will only be armed with a machine gun with high explosive shells. To update your gun and obtain other equipment, you must find them scattered throughout the out colony. Also, to help you find the exact location of hostages, maps can be found along the walls of the out colonies. However, each time you use a map, valuable time will be taken up.

BONUS BUDDIES

If you wish to increase your fire power and your chances of survival, then you will need to obtain the different equipment available inside the out colonies. You will find these weapons located inside marked panels hanging on the walls. To obtain an extra piece of equipment, simply walk over to the panel you wish to open and that particular object will automatically be placed in your possession. You may update your weapon as many times as you like, however, the previous weapon you were carrying will be lost. Guns come in five different versions which are: shoot (the standard gun you were given to start the game), flame thrower, fireball, bomb launcher, and laser. Also, you will find a friendly robot inside some of the bonus panels. This robot will follow in any direction you go, providing cover fire from the back. If time permits it, you may wish to choose bonus point panels which are marked with a '?'. The amount of points you will obtain is unknown.

IT'S TIME TO FACE A SUPER CHALLENGE!

Once all the hostages have been saved, you must rush towards the exit. However, leaving the out colony will not be as simple as you might have thought. Waiting for you in the corridor to the escape hatch is your last and final encounter you will face on that out colony, and that is the "Super Alien". These creatures are very powerful, and will require a great deal of fire power to destroy.

SUMMARY

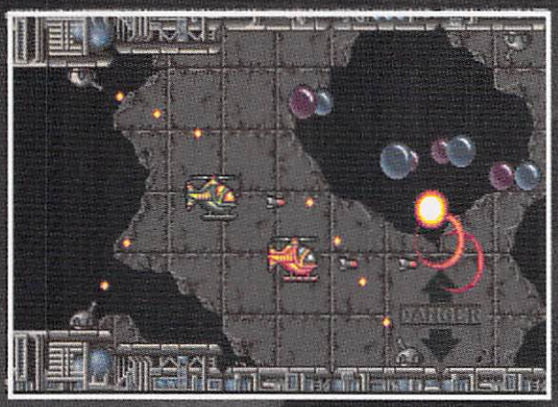
Alien Syndrome is a very fast paced shoot'em up that is sure to please everyone who likes heavy joystick trigger fire. The graphics are good, but they definitely need to improve the difference of the characters' appearance when you choose to be either male or female. The only noticeable difference between them is the color of their uniforms. Besides this one minor complaint, I've found the game play to be very fast paced and exciting combining good sound effects for enhanced play. If you enjoy a good shoot'em up, this is one syndrome that you will definitely want to catch! ❑

(See PRODUCT INDEX on page 109 for more contact information)

By Jeffery Scott Hall

Blood Money

By Rick Broida



THIS BLOOD'S FOR YOU

Don't even think of buying Blood Money unless you have the utmost confidence in these three things:

1) Your joystick: It must be able to withstand a brutal beating, particularly the fire button.
2) Your spare time: It should be plentiful. Unless you give up easily, you'll be so rooted to your Amiga that friends and relatives may have to water you once a day.
3) Your sanity.

Blood Money will wreak havoc with all these things, because Psygnosis and game designer David Jones have this awful, wonderful habit of creating addictive games. Their first joint venture was Menace, hailed by many (including myself) as the best arcade game ever created for the Amiga. Now, with the arrival of Blood Money, a lot more pressure is going to be put on game designers to match the new standard of quality set by the team.

ALIEN SAFARI

As Spondulix, swashbuckling galactic adventurer (vacationing student, actually), you have decided to take the ultimate risk and enter the Alien Safari. This tremendously popular 'holiday sport' has only one drawback: losing costs you your life. Ah, well, no matter, the rewards for winning are enough to entice any foolish young Venutian.

To win the Safari you must survive the perils of four deadly planets, switching from helicopter to submarine to space suit to rocket ship. Each comes equipped with a minimal armament of short-range warheads, not nearly enough to survive the dangers of these savage worlds. Help is at hand, however. The pulsating, gyrating, jumping aliens who serve only to end your existence are also the means for your survival. That is, blasting certain critters reveals credit coins which must be caught before they plummet out of reach. These 'earned' funds go into your account for use at the nearest equipment depot, where you may purchase the power you need to survive the quest. Among the add-ons available are multiple warheads, bombs, rear missiles, and extra lives.

MONEY IS NECESSARY

At the end of each planet looms a hideous guardian which must be dispatched in order to move on. This is the least of your worries; getting there is the trick.

The essence of the game is money. You need it to enter the Safari, and you need it to survive. It takes 100 credits to enter on the first planet, 200 to enter on the next, and so on. Since you have 200 credits when the game begins, you can start with the first or second planet. Starting on the first leaves you with 100 credits towards ship enhancements, which you will find crucial to your success, so that's the best place to begin.

As your ship glides over/under/through the terrain of each planet, remember one simple idea and you'll be fine: kill everything. Although the aliens you encounter are pretty to look at, they're deadly to the touch. Beware of the ones that gobble up your money! Blast, collect, arm, survive!

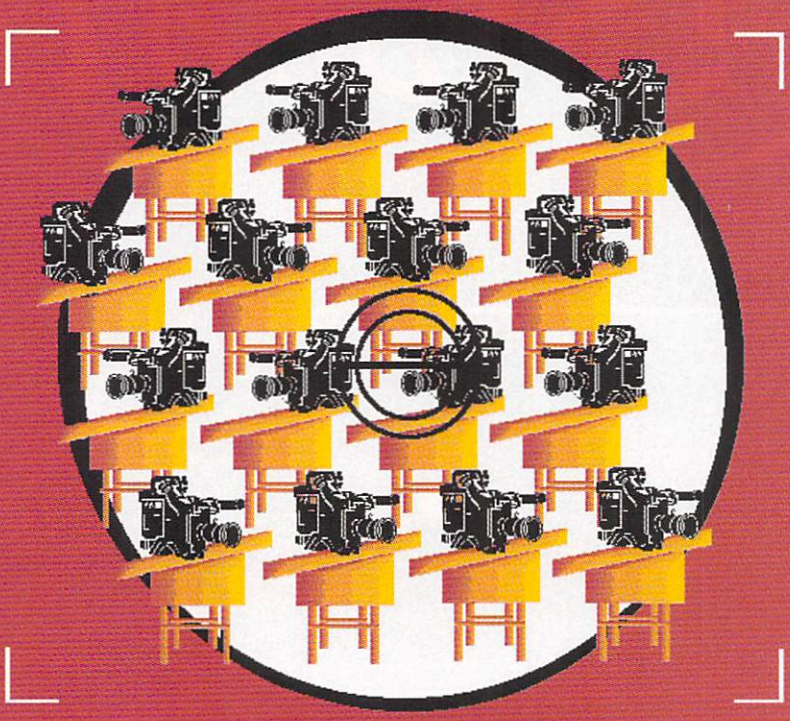
Everything costs money, some things more than others, but you should never be stingy when outfitting yourself. Buy everything you can afford. Experimentation is a key to your success, since certain weapons are more helpful in certain areas.

Blood Money's graphics and sound are stunning. It has become easy to take Amiga graphics for granted, but Blood Money is a great example of Amiga's unlocked potential. The independently animated sprites are a true achievement. You'll fall in love with your Amiga all over again. As for sound, you can choose between an upbeat musical accompaniment or gripping sound effects while you play. Unfortunately, they are mutually exclusive. While the musical score is compelling, the sound effects are less overbearing during gameplay.

Speaking of gameplay, your first attempt will probably last about 15 seconds. A two-player-at-the-same-time option makes for easier going, but it still requires a rapid-fire thumb and an iron will to succeed.

Perhaps there is a fourth factor to consider before purchasing Blood Money: your ability. Blood Money is by no means for arcade novices, and even so-called experts will have their hands full. To say that Blood Money is fast and furious is understating the matter. Playing is like an aerobic exercise: your heart will pound like mad and you'll be exhausted when you're through. Nevertheless, the game is so much fun that it overwhelms the frustration. Blood Money is infuriatingly difficult, but it'll keep you coming back. Maybe forever. ❑

(See PRODUCT INDEX on page 109 for more contact information)



AMIGA DESKTOP VIDEO IN EDUCATION PART 2

ONE OF A SERIES OF INTERVIEWS WITH THE AMIGA EDUCATIONAL GRANT WINNERS

Applications abound from the many aspirants to the Amiga Grant Program. Amiga desktop video is the new computer theology - with the 20 grant winners being among its first disciples. From initial accounts, these education professionals are fervent and innovative true believers. If the trend continues, all schools will be doing desktop video with an Amiga.

Part 2 begins with one of a series of interviews with the Amiga Educational Grant winners. Readers will be able to understand their projects in more detail, and get suggestions to give to their own school systems or for their own use.

Desktop video on the Amiga has been heralded as a "creation technology". Experts in the field of video and education have noted that today's young generation must learn the grammar of this technology, partly to assure truth in a democratic society. In order to foster literacy in this rapidly emerging technology, Commodore Business Machines has recently announced 20 winners in their the educational Amiga Grant Program. Desktop video applications from these twenty national winners are as diverse as their geographical distribution.

One winning application was developed by Raymond G. Mecca, Coordinator of Instructional and Cable TV at Upper Merion Area School District (King of Prussia, Pa), a K-through-12 district. The Upper Merion district is made of six schools--an area high school, a middle school, and four elementary schools.

Each district school has its own production equipment. The elementary schools have a camera, portable VCR, color monitor, carrying case, and portable production cart for moving equipment throughout the school for use in various classes. The middle school has two complete sets of equipment - one set for 5th and 6th grades, and one set for 7th and 8th. The equipment for the 7th and 8th grades is more sophisticated than the equipment for the younger grades.

According to Mecca, the high school has that same basic equipment but, in addition, they have a TV studio, and editing facilities. The high school now houses the grant-won Amiga. Although only the high school has a television monitor in each classroom, other schools have the connections for TVs in all classrooms.

This TV studio is used for an elective two-semester course offered in the high school, which teaches not only TV production, but also communication media, its impact on society, and its history. But, the high-school studio is not only used for classroom purposes. In Upper Merion township, the local cable company provides a 24-hour access channel to the school district.

The school, in turn, provides all of the noncommercial, non-profit programming for this channel. Upper Merion's programs are repeated in blocks, between which is displayed the video bulletin board for school announcements. With this system there is a student-produced program on the channel throughout the 24-hour broadcast day. Upper Merion produces a variety of programs from sports events and news information programs, to concerts, and plays. Basically, the progams are used to inform the public about what is going on in the schools.

One program is called "School Sportlight" - a news magazine program which shows the community what is going on in each school. Mecca notes that, "Each school shoots its own video tape, and provides the TV facility at the high school with information about the tape." A high school reporter takes that video, selects the scenes, does a voice over, and puts together a news magazine program that runs on the cable."

By John Pustai

When Mecca became aware of the Amiga Grant Program, he applied because he had an interest in the graphic capability of the Amiga. Also, his school television was limited to basic title graphics, and had little capability in terms of art and animation. "The only overlaying capability that Upper Merion had was the ability to do titling," noted Mecca.

Mecca comments that, "The overlaying of artwork, with the ability to paint, was a capability beyond our financial means. The graphics systems we were looking at were used in broadcast facilities. When we saw the Amiga grant program, we thought about ways that the Amiga could immediately benefit our studio. In fact, we thought of three proposals."

Prior to obtaining the Amiga, Upper Merion had a Chyron character generator, and did *not* have graphics overlay machines. "Did the Amiga add something to our facility? Oh, my yes!" exclaims Mecca. "Although I have never worked with graphic programs that cost $50,000, I have seen them in operation. They are impressive. However, I am equally impressed with the Amiga's capability."

"In fact," continues Mecca, "in terms of its flexibility in producing both characters and graphics, the Amiga is superior to the Chyron VB2. The Chyron lists for $7500 and produces clean, dressy text and graphics, but it doesn't have the range and flexibility of the Amiga. I am very excited about the Amiga, the more I work with it the more excited I get."

Upper Merion's first Amiga proposal was actually in the planning stages prior to the Amiga Grant Program, but was enhanced by the winning of the Amiga. There were already a number of ways that students were easily demonstrating their athletic and musical proficiency to the community - concerts and sporting events. However, the demonstration to the community of academic proficiency needed to be improved. Mecca realized that TV/video would be that way. Mecca didn't just want to explain the curriculum. He wanted to show what goes on in the classroom. "Until the Amiga program, we really didn't have a chance to show on the cable TV what students learned academically", notes Mecca.

NOVA

As a result of his vision, Mecca developed his proposal. Students would create a documentary on a subject which they had studied. In essence, it was a sort of student version of 'NOVA' (the acclaimed Public Broadcasting Service science show) for local television. With this learning technique, students would *show* what they learned, rather than *tell* what they learned.

The students did the entire project - built the demonstration models, did the narration, wrote the script and, using the Amiga, also created all of the necessary graphics

The first project for the documentary dealt with alternate energy sources. It was the fourth-grade students - 9 and 10-year olds - who developed the documentary, with the guidance of fourth-grade teacher, Richard Ryan. Mecca worked with Ryan and the students as a technical adviser.

The students did the entire project - built the demonstration models, did the narration, wrote the script and, using the Amiga, also created all of the necessary graphics. The final documentary consists of segments that are graphics only, as well as segments that are a mix of graphics and video.

Producing the video was an extremely educational process. The students initially studied alternate energy sources. Then, they built a hot air collector, a water wheel and various other energy-related items. After writing a script for their video, they conceived the graphics needed to best explain the technology.

All of the students in Ryan's class participated in creating the complete documentary. However, because of classroom logistics, only three students were chosen to actually do the final work on the Amiga. Those chosen students used the "Deluxe Paint II" (Electronic Arts) software for their graphics. All of the graphics needed for the documentary were completed in one school day. On their first day using the Amiga to create graphics, the students adapted quickly. Mecca noted that the students learned the various tools in Deluxe Paint II, how to use the mouse, and did extremely well even after only an hour of instruction. After only 10 minutes each for practice, they plunged right into the project, did their 'rough' pages once, had lunch, and did their 'final' pages. Mecca noted that the work was excellent, even after such a short learning period.

Mecca limited the software to Deluxe Paint II because of the age of the students, noting that "Deluxe Paint II" was very user friendly for the nine and ten year olds. In addition, Deluxe Paint II offered both artwork and text, so the students didn't have to switch to another program. Mecca plans to upgrade to "Deluxe Paint III" to add animation to future videos.

The actual graphics were extremely well designed by the students. In the final video, there is a diagram of a hot air collector, of electrical connections of solar cells, and other graphics related to alternate energy sources. All the students from the class designed and incorporated a graphic showing the word pollution appearing in the middle of the screen, with a variety of pollution sources appearing around the edges. In addition, all students in the class helped design the opening and transition titles, many of which were superimposed over video scenes.

The students initially estimated a final video of about 45 minutes. However, the actual video footage shot for editing was about three hours in length. The students shot video in the class while conducting experiments, and at local nature sites. Also, outdoor footage was taken to demonstrate temperature rise as the sun hit a solar collector.

For audio background, the students used musical pieces from the school's production music library in order to avoid problems with copyright - problems that are associated with commercially published music. Production music is created by companies that have original music composed for them and then recorded by orchestras or instrumental groups.

Companies put the music on disk or tape, and offer these for one time purchase with the license to use them for an indefinite time, or as a yearly lease where schools use certain records for a period of time. There is also a "needle-drop" system, where money is charged each time the school "puts the needle" on the record. That last method is complicated, however, and is seldom used.

When asked about the educational value of the Amiga-based project, Mecca noted that the final produced video was obviously beneficial to everybody. "The entire class learned," said Mecca, "simply because all the students participated in the total project. Although only three students did the actual graphics, it was the entire class that decided what the graphics should look like." Mecca also believes that student creativity was enhanced. "The students had to understand the material. The Amiga was the tool to allow them to present what they learned."

al benefits of desk top video. He believes that, "Desk top video projects like the alternate energy resources project reinforce students' learning. The education results because the student approaches a subject in many different ways, and attacks it in many ways. The more ways he looks at it, the better he understands it."

INTANGIBLE LESSONS LEARNED

From Mecca's viewpoint, there were many intangible lessons learned in the process of producing the TV program. All of these intangibles are part of TV production. "This is the reason," Mecca notes, "that we have such an expensive instructional TV production program in the school district."

For instance, all of the students learned team work and responsibility. Some students found ways of expressing themselves that they might not have otherwise. These students achieved something in visual terms - the stimulation of the creative spirit. For students who were not comfortable writing or speaking in front of a class, the production of a video allowed them an opportunity to be creative in different ways. The student had a choice of creating on-screen graphics, or running a camera showing a certain angle that is better than some other angle, or writing the script.

When asked if the project could have been done without the Amiga, Mecca replied, "Yes, using posters which were photographed with a video camera, and the Chyron for titles. The posters would not have looked as attractive. That technique, however, would have had a serious drawback. I couldn't possibly have trained the students on the Chyron in the time I trained them on the Amiga."

WORK WITH HANDICAPPED

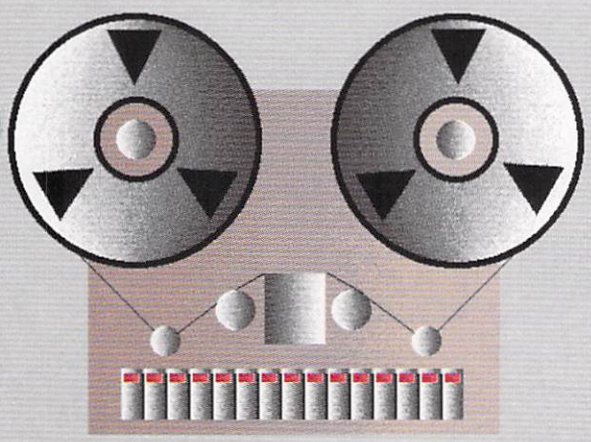
Upper Merion is also planning to do a video produced by Special Education classes. Mecca states that students with learning or physical disabilities not only can produce video programs, but also can benefit from the experience, gaining personal confidence, heightened self-esteem and even develop and improve verbal and written skills.

Special education students will be provided with in-school video production equipment appropriate for their use. And, they will also be given access to the Amiga computer with applicable software to produce the programs with as much staff assistance as is deemed necessary. Mecca believes that the Amiga computer with the appropriate software will add a professional touch to the programs, and significantly enhance the student's pride in his project.

Raymond G. Mecca and the Upper Merion School District are just one of many Amiga Grant winners that have been creative with their system. In Part 3 of this series, we will deal with more applications from the Amiga Desk-Top Video Grant winners.

In particular, you'll learn what happened when one school made a video for Chicago Bears' Coach Mike Ditka. You'll learn about "video term papers", and why one school has used them to replace conventionally written term papers. And, you'll find out why the "Julia Child Chemistry in the Kitchen" video improved the tests grades of almost every student in the chemistry class. Don't miss it!!!

(Anyone interested in sharing their Amiga Desktop Video applications may contact John Pustai at 3 Hillside Road, Hackettstown, New Jersey 07840, 201-852-7198; CompuServe ID is 75506,1372. Send a self-addressed stamped envelope for a personal reply.)



Home Studio

SMPTE

An easier way to synchronize tape and sequencer.

From: Roland Steele
To : Alain Rheault
Subj: Syncing
"Hey, Alain.

Sounds to me like you've got things well in hand, but that's all the more reason SMPTE would be good for you. With what you know about the basic 'Time base', you could apply the energy you save to be manually accurate in other areas."

Roland Steele is from Carrollton, Texas, and sent that note to me on an IEMUG BBS. I went shopping for a SMPTE kind of box, but came back instead with an FSK kind of a box.

FSK, like SMPTE, is a way to write synching information with song position pointers on a track of a multitrack tape machine. The big difference between these two modes is that contrary to SMPTE time code, FSK code is not standardized. The way the code is actually written on the tape differs from one manufacturer to another. I finally decided on a Tascam MTS-30 that I am using with a Tascam 234 Syncasset 4 track cassette deck.

With the MTS-30 MIDI Tape Synchronizer it's possible to locate the tape to any location within a song and have my MIDI keyboards, sound modules, drum machine and sequencer sync-up when I start the tape recorder. It is no longer necessary to rewind to the beginning of the tape (and of the song) every time I have to work on the middle of it.

When shopping for an FSK synchronizer it is important you take a good look at the Midi Implementation Chart that comes with the unit. AS with any type of Midi equipment, this chart will tell you what type of Midi messages the unit can generate and recognize. Some cannot transmit Midi Song Position Pointers, while others can use this very useful type of data.

Using a FSK synch box is very easy. The first thing you have to do is record the

By Alain Rheault

timing information on one of the tracks of your multi-track tape machine. At this time you must decide the tempo, as it cannot be changed after the sync track is recorded. The reason for this is that later during tape sync the FSK on the tape will clock the sequencer; the internal clocks and the tempo knobs of the sequencer will be ignored.

Suppose there is a sequence 45 measures long containing the drum, bass and piano parts, and that we want to add an acoustic guitar, sax and vocal track. If you look at Fig.1, you will notice that track 4 was used to record the sync signal; you should always use the last track to record it, either track 8, 12, 16 or even 24 if you are lucky enough to have that many tracks. With a good quality recorder, there should be no need to leave an empty (guard) track between the sync and the first track containing audio. Some people do so to eliminate the possibility of cross-talk interference but I've never had this problem on my Tascam machine.

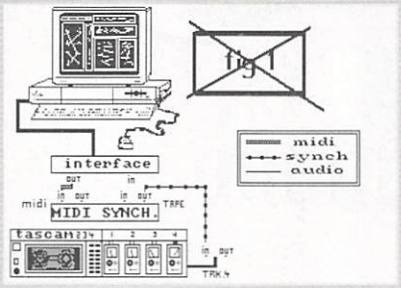


Figure 1

At this point, connect the Midi OUT of the Amiga Midi interface to the Midi IN of the synchronizer, and the audio OUT of the synch box to the audio IN of the track dedicated for the sync signal. Then, start the tape after putting track four (on a four track machine) to record and all others to play. Allow a lead-in section on tape (pre roll) by letting the tape roll 2 or 3 seconds after starting it. Only then do we start our sequencer (be sure to send MIDI clock out and Song Position pointers). The tape should now start recording the sync signal as well as the information on the number of bars. This, based time signature originally selected on our synchronizer. Stop the tape after a few measures more than needed (in this case 50 measures should do).

Now that we have a good Sync Track we hook-up (see figure 2) and we are ready to record the guitar, saxophone and vocals: one by one, all at once or even portion by portion. We can now - thanks to the song position pointer - go to any measure and change things on the tape as we wish. Remember, you must set your sequencer to receive external midi clock and song position pointers. When every thing is to our liking, we send all the tracks (except your sync track... hue!) and all the audio from the MIDI modules (don't forget our sampled sounds from the Amiga) through the mixer to another tape deck (or tracks for the lucky 24 tracks owners).

Like you can see, this is a lot easier than having to remove a shoe in order to use a foot as a third hand, as we saw in the last issue. The only problem I've run to date is that I would like to be able to add Midi tracks while the tape and the sequencer are playing the music. But, because the Midi IN of the Amiga's interface is connected to the synchronizer, I can't send Midi data to the sequencer.

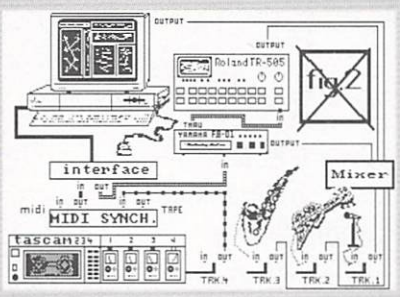
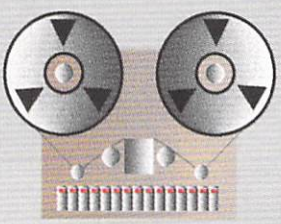


Figure 2

Perhaps Midi merger could solve the problem - is this something easily built? If anyone out there has a positive answer I'd love to hear from you and will happily share the solution with others through this column. Any suggestions can be sent to me care of AmigoTimes or on the following BBS:

Compuserve 71550,1265
GENIE A.RHEAULT2
IEMUG node 167/11
L'echangeur 1-514-471-2828 or 3535

Next week I'm taking the Amiga out of the basement to a Saturday night gig. Stay tuned to see how it comes out. Until then, happy sequencing. ❑



Who! What! When! Where!

Organize your appointments, phone numbers and things to do with this powerful utility from the 'chefs' at Blue Ribbon Bakery

Who! What! When! Where! (WWWW) is a utility that could very well help your schedule become more organized. It is a telephone/ address/ appointment book, things to do list, calender, and alarm clock. An interesting feature of WWWW is that several people can manage their own directory (password protection available) on a single WWWW database. These people are known as owners. Each owner can share his/her appointments and directories with the other owners.

WWWW consists of two programs. One is called 'WWWWtimer'. You do not run this program because it runs automatically from your startup-sequence. It runs in the background and keeps track of when to remind you of your appointments. The other program is the main WWWW program and is the only program that you will use.

HARD DRIVE INSTALLATION

While the overall program is wonderful, there is some room for improvement. For example, installation to a hard drive can be a frustrating and complex process, as we at AmigoTimes discovered (solution to follow). After following the installation instructions in the WWWW manual, it is possible to receive a "Please Insert WWWW1.3" requestor, when you begin the program. The reason this occurs is because, during installation, WWWW inserts the line 'run-WWWWtimer' into your hard drive's startup-sequence. WWWW only searches for a script named 'startup-sequence'. If your script is named otherwise, you will have to insert the line into the correct script yourself. To do this, use any text editor and type the command, 'RunWWWW-timer', anywhere near the end of your startup-sequence script. Don't forget to remove the line from the script, 'startup-sequence'.

After extensive use, I found that WWWW's windows are too small. In order to store a lot of information about a person, it is usually necessary to type the info past the space allotted for the text. For example, if you type in a person's work and extension number, you won't see the extension number unless you click on the text and scroll the information out from the shadows.

The directory display is good but not perfect. Many fields (name, address, telephone) are included but some are missing. WWWW limits the fields to home use. For business purposes, it can be necessary to include the country, and a place to include a fax number (instead of placing it in the Home field).

At the bottom of the directory display are some lines for notes. Unfortunately, the lines are too few and too short to be practical. A more useful setup would include a 'Notes' button that when clicked on, would expand to a large size window where notes could be written and displayed in their entirety. While all other information can be searched through, only the Notes section is inexplicably exempt from this feature.

On a minor point, WWWW iconifies itself when not in use. This is fine. However, the icon that it uses is large and, most importantly, stays in only one place. It would be more practical if you could 'snapshot' the icon to the place of your choice.

By Michael Hermann

AUTODIAL

In both the People and Appointments menus, there is a handy autodial feature that works with any Hayes compatible modem. It is a terrific feature that allows you to click on the person's name and select dial from the menu or keyboard. WWWW will accept dashes, spaces, and parentheses, however, any number displayed with a '1-' (long-distance) and an area code will trail off the space provided. Each time you want to see that person's full number you will have to scroll it out. Again, a larger space should be provided especially when the phone number is for an overseas country.

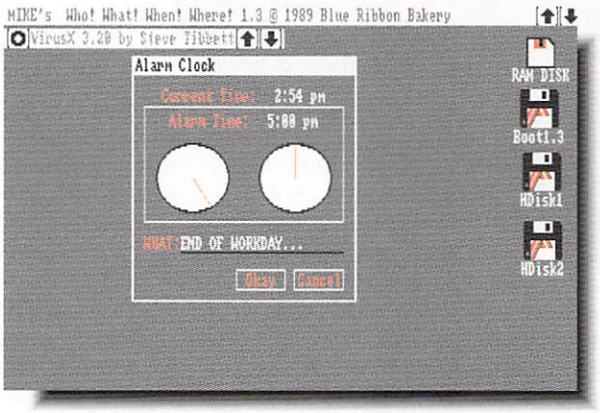
APPOINTMENTS

WWWW is simple to use, and everything is fast in this program. The Appointments feature is very useful for keeping track of appointments. An appointment can be scheduled with either someone on or off the People Directory. Scheduling an appointment with someone listed in the directory is very simple. You only need to select the person's name in the list, select "Appointments With ..." in the menu, click on 'NEW', and set the date and time. The appointment reminder defaults to a one-time reminder, but you can specify whether you want the appointment reminder to repeat daily, weekly, biweekly, monthly, or yearly. WWWW can also remind you in advance of your appointments.

In the Calender window, appointments can be selected with the mouse and copied or moved to other days in that month. All appointments and things to do can be manipulated through the calendar window.

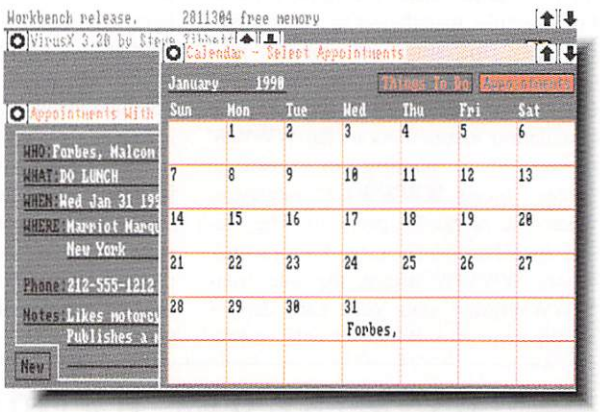
For those who need to be reminded of a special time, there is an alarm clock that will speak, beep, play a sound effect, flash, and/or run an ARexx script.

When you have many "Things To Do", list them with WWWW and check them off when they're done. If you don't complete the task that day, WWWW will transfer the uncompleted tasks to the next day.



An easy to use alarm clock will display a message and can beep, flash, or run an ARexx script

The WWWW main window displays entries available, and the info of the person selected



The Calendar window is where you can edit, copy, and/or move any appointment

HARDCOPY

All information from any section can be printed to a dot-matrix printer, or to disk as a standard ASCII file. Mailing labels can be printed all at once or individually. If you need only to print specific entries, you can type special text in the Groups field, such as 'Comp.' for company. Then use the Search function to select only those entries with 'Comp' included. WWWW will then display and print only those entries.

COPY-PROTECTION!

Yet another "Look- It- Up- In- The-Manual" protection scheme. It is easily the most annoying form of protection available for computer software. However, for a nominal fee, Blue Ribbon Bakery will provide registered owners of WWWW with a custom version of WWWW that does not include the manual protection scheme. This new version includes a clever copy-protection scheme that should be implemented in other software as well.

WWWW has some minor quirks, but it is far from a disappointment. In fact, it is one of the most useful day-to-day utilities available right now. ❑

AREXX

The Scripting 'Language' For The Amiga

The addition of AREXX to the Amiga community is quite possibly the biggest single advancement since the machine's introduction, adding numerous possibilities that may not be fully evident for years to come.

Still, many Amiga users don't really know what AREXX is all about or what it can do for them. This article will introduce you to AREXX as well as enlighten you as to its possibilities.

First of all, what is a scripting language? The term language here is probably deceiving; those who want to write fancy graphic games or killer demos, stop reading. Go out and pick yourself up a nice C or Modula-2 compiler. A script is better defined as a list of commands that affect the rest of the computer environment: two good examples would be the Startup-Sequence on the Amiga and Autoexec.bat files on MS-DOS computers. They are DOS scripts, and therefore much less powerful, but this is the general idea.

Script languages were originally developed to make better use of CPU time on main frame computers. People would write a script that would, in colloquial terms, tell the computer to take this data and use this program to do these functions to it then tell me later what happened. CPU time was much too precious to waste while the user was online trying to figure out what they want to do. Rather than being online 'interactively', they would write a script on a much smaller computer, or possibly a punch card machine, and send the information to the mainframe. This is called 'Batch'; not to be confused with batch files on the IBM PC. When you run a batch file on a PC, you are running it interactively.

As CPU time became less expensive, people were allowed to use the machine interactively. People began to write scripts as utilities, much like the commands in the C directory, and as scripting languages became more powerful, the scripts became more elaborate.

Among the more powerful and popular of these is REXX, which has the abilities of the older generation languages, like JCL, but with added structure and power.

Obviously, people aren't going to run batch jobs on their Amiga, although that option does exist. The application of AREXX is somewhat different. I'm sure that many people are familiar with scripts on terminal programs allowing users to, for example: write a script to wait until midnight, call a local BBS, download some files, open the capture buffer and capture some messages, then log out. All of these applications exist within AREXX. This is a big advantage because the user doesn't have to learn a different script language for every program, making it easier for a programmer to add AREXX support to their program rather than implementing their own script language.

Another bonus to AREXX is that the script doesn't have to stop there, the user can then have a different program act on the same data. For instance, once you have downloaded a program, you could de-Zoo it; files could be copied to other directories, and personal messages could be printed. As more and more programs support AREXX, the possibilities will mushroom. Perhaps your downloaded messages could, instead of being printed, be sent through the PD program Speech Toy. Then you could hear them, rather than read them.

If you need to do some tedious task (like look through a text file and capitalize the first word in every sentence, or delete all the carriage returns), writing a script and letting MicroEmacs or some other text editor do all the dirty work can sound appealing - this too is part of AREXX's capability. I found a script a little while back called ZooAll. This ZOOd all the files in a directory together. This is much easier than ZOOing each file individually.

The REXX language is perfect for "banging out quick and dirty" scripts for quick applications; it is much better than C or BASIC. It is faster and much more powerful than BASIC, cheaper than C, and much easier and quicker to program

By Fred Theilig

in. More than this, applications don't have to be either quick or dirty. Due to its structure, REXX scripts could be as elaborate as the need demands.

Another dimension of AREXX lies in program communication. If you have two or more programs running, and need to transfer data between them, AREXX could serve as a translator and communicator.

Script support is available under AmigaDOS 1.3, and Commodore has been slowly adding more and more power to AmigaDOS scripts. It would seem that AREXX is in competition with the AmigaDOS scripts, but when people realize the difference between the two, the ease of use, power, speed, and flexibility, the competition will be short-lived indeed. Needless to say, the superiority of AREXX has not gone unnoticed at the head offices of Commodore.

There is really no limit to the potential of AREXX. Many small tasks can be eliminated with AREXX scripts, and its power will become more obvious as more people understand it and recognize its potential. Something like the Amiga.

GETTING STARTED:

AREXX does not come with an editor, but can use any standard text editor, even many word processors. Anything that can save the text as standard ASCII files.

The first topic I will cover on AREXX programming is the comment. Comments start with '/*' and terminate with '*/', just like in C. The reason I mention this first is because all REXX scripts must start with a comment. This is so the computer running the script can tell the difference between a REXX script and a regular OS script.

REXX is referred to as having 'typeless data'. This means that the variables are not declared as a certain type, as in C or Pascal. If you want to make a variable a certain type, either floating point or string, you merely use it as such. Numeric variables are initialized to 0, and string variables are initialized to a null string. If you use a variable as one type, then use it as another, you will get an error.

The first command I will cover is SAY. This is REXX's basic command to get text or variables displayed on the screen. Say corresponds to C's printf, and more closely to BASIC's print. To display string literals (that is, non-variable text), the format is SAY Text. Here is a simple example:

```
/* A REXX Example! */
say "Hello World!"
```

Now, realize also that we could have enclosed the text in single quotes, or used no quotes at all. If we don't use the quotes, then the text will be displayed in upper case. Now, if the say line read:

```
say "Hello
                    World!"
```

With twelve spaces before the word 'World', and none after 'Hello', then the text "Hello World!" will be displayed with twelve spaces between the two words. No carriage return will be printed. When Say finds an open quote (single or double), it will continue to display all the text until it finds the closing quote. Say with an open quote must have a closing quote. The advantage of being able to use either single or double quotes is that if you need one type in your output, then the other can be used to enclose the text.

In AREXX, Echo can be used instead of Say. They both do exactly the same thing. Since standard REXX uses Say, that is what I will use throughout the tutorial.

VARIABLES AND MATHEMATICS

Let's make a few variables! Consider this example:

```
/* A REXX Example! #2 */
one = 1
say "Your score is: " one
```

This, as you probably guessed, displayed:

```
Your score is: 1
```

Now, if we hadn't included the quotes, we would have had the same results except all in capital letters. There is one other side effect of not using the quotes. If our Say line read:

```
say Which one are you?
```

It would display:

```
WHICH 1 ARE YOU?
```

Noticing the 1 instead of the text ONE. REXX interpreted the one as the variable and not as literal text to be printed. This is not a problem, but it is something to watch out for. Now we are ready for example number three.

```
/* A REXX Example #3! */
Four = 4
Six = 6
Ten = Four + Six

say "Six plus Four equals" Ten
```

I imagine that this example is not too hard to figure out. The answer, of course, is ten. All mathematical operations (addition, subtraction, division, and multiplication) can be done like this. Four to the fifth power is noted like this:

```
X = 4**5
```

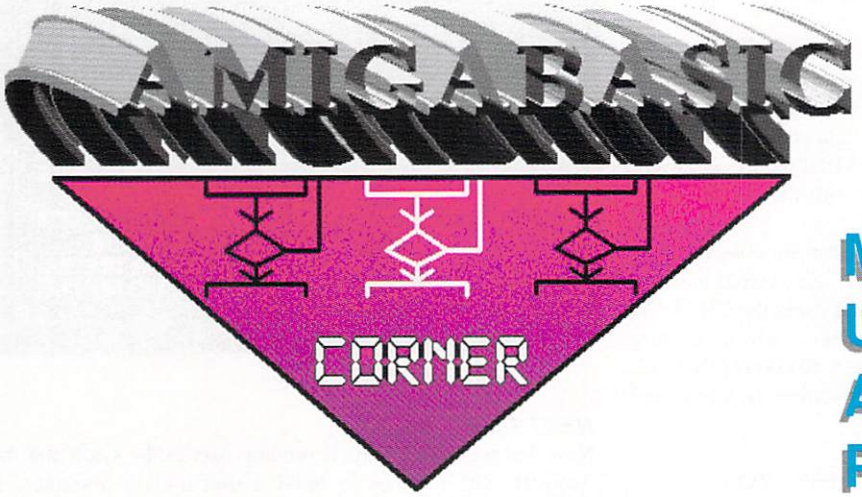
If you want the remainder from a division operation (modulo for people familiar with C, and mod for pascal fans), this is done with two divided by's. For example:

```
X = Y//2
```

The variable X will be equal to the remainder to Y/2. The actual value of Y/2 is not used here whatsoever. If you wanted the integer division of Y/2, then the equation should read:

```
X = Y%2
```

As you can see, REXX has very robust mathematical facilities. It also has exceptional string support. Strings are one of REXX's strong points. We will go over many of the string functions next month, as well as input into REXX and some simple logic and loops. I will also have some small, but useful REXX scripts for you to try out. That's all for this month. See you next time. ❑



MIDI USING AmigaBASIC, Part II

This month there are several related files on the AmigoTimes disk. Amigo5 is this month's example program in AmigaBASIC that can be used with the interpretor.

Under the subdirectory Voices are a set of data files that can be used with the program by slightly modifying the code to point to the file name and removing the REM from some of the lines that have been commented out.

We should note that both programs require the graphics.bmap in your SYS:LIBS directory. If you want to try the program with the YAMAHA TX81Z or the DX 11, you must also set Preferences to the settings listed in last month's article. You can try the program without changing these settings; but if you do, make sure your modem is off.

The overall flow of the program is similar to last month's but has several new features:

1) Our library is opened and tables initialized
2) A prompt is drawn to remind you to setup the synth
3) A parameter is set in the synth to allow its memory to be modified
4) A stream of parameters are then sent to the synth so that the settings in the synth match those in the program. Getting both in sync at the start of the edit ensures that each parameter changed on screen is reflected in the synth.
5) The mouse clicks are processed until the DONE button is clicked on the primary edit window. After the ready button is clicked by the prompt button, there will be some hesitation. If you have your synth on and are watching the LED display you will see that the program is sending voice data to the synth and the settings will be reflected in the LED as they are sent. Since there are some 100 parameters to set at the start of the edit this will be some seconds. When completed the program will draw the primary edit window.

To the left of the window are a set of values all controlled by the slider below. You change any of these values by:

- first clicking on the box of the value you want to change
- then clicking in the slider to activate it
- then clicking and holding down the left mouse button within the slider and moving your mouse left/right to set the value you want, or clicking the left/right arrows to increment/decrement the slider value by one. The final value will then be printed by the parameter box. If you have your synth on you will also see the value updated in the LED.

At the lower right are the buttons for setting a note value and playing it that you saw last month. These may be used anytime during the edit to hear the result of changing a voice value.

Above this area are other voice values that are set by just clicking on the buttons. Since the voices include operators that may be either on or off, these buttons are independent of each other and may all be selected. To edit the parameters for any of the operators you click on the EDIT OPS: button. This will draw the edit window for one operator; the parameters for each operator are the same. To edit a parameter for another operator you select the EDIT OP # button and the window will be refreshed with the current values for that operator. Note: the operator must be active for the values to influence the voice.

There is a DONE button on the operator edit window to return to the primary edit window. The DONE button on the primary edit window quits the program.

SYSTEM EXCLUSIVE DATA

Each time a value is changed in the edit window a stream of data is sent thru the serial port at MIDI speed. Except for when the PLAY NOTE button is selected, the data sent is System Exclusive (parameter). The format of System Exclusive format is:

1. manufacturer I.D. (hex F043 for Yamaha)
- this value is unique to each manufacturer
2. edit I.D. to identify the type of edit
- this value is unique to each MIDI device/ edit feature
3. parameter I.D. to identify which value in a table to change
- when sending a table of data (bulk data) this byte would not be included in the format

By Larry Clark

4. data the new value
- if bulk data format this may be many hundreds of bytes
5. end of data I.D. (hex F7)

It is the System Exclusive format that allows each manufacturer to implement unique programmable features for their devices and remain within a common data standard. The particular parameters for a programmable MIDI device are usually included in the manual that comes with the device or are available by writing the manufacturer.

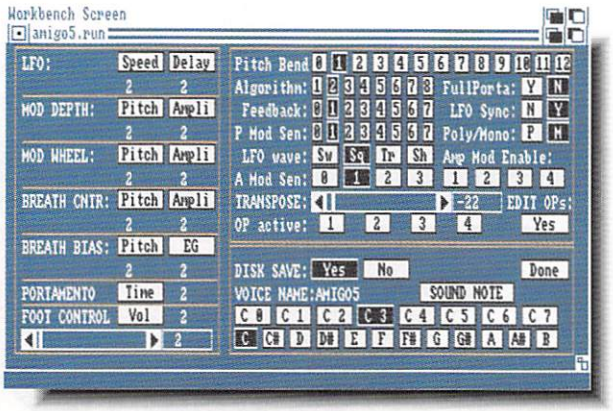
In AmigaBASIC these data strings can be assembled by concatenating them in string varables ($). Hex values are converted to decimals and added to the string using the CHR$ and the + operator. For example, the numeric stream to turn memory protect off in the TX81Z is hex f043+f+f+7b+0+f7. The binary equivalent is created by converting each byte and joining them together as so:

f0 = 240: 43 = 67: f = 16: 7b = 123: 0 = 0: f7 = 247

becomes:

chr$(240)+chr$(67)+chr$(16) +chr$(16)+chr$(123)+chr$(0) +chr$(247)

By using strings we can join the pieces easily. To the receiving device they are simply a stream of bits.



NEXT TIME

Now that we have a way of sending data to the synth and the AmigaBASIC routines to build a user-friendly interface, it would be useful to have a way of receiving bulk data dumps. Next month, we'll look at a small program that will read in some data from a bulk dump of a TX81Z/ DX 11 single voice dump, convert it into a format that can be used by this month's program, and write that data to disk. We will also be taking a closer look at AmigaBasic windows. In the meantime, try adding in the code to go after the voice data files provided this month with the program. ❑

An Introduction To MODULA-2

Part Six: MEMORY ALLOCATION, SETS, AND LARGESETS

In this, the final installment of the series, we'll look at memory allocation. In the discussion, some of the special problems encountered when allocating memory on the Amiga will be included, and we'll finish up with a more detailed explanation of Modula-2 Sets.

As we discussed in the last issue, Modula-2 provides the MODULE Storage, which contains routines for managing the allocation of memory. Storage contains the routine ALLOCATE, which allocates a block of available memory, and DEALLOCATE, which deallocates a previously allocated block of memory. Storage also contains the routine AVAILABLE, which returns the number of available bytes of memory.

Blocks of memory are referenced via either a variable of type ADDRESS, or a POINTER variable. ADDRESS variables are more generic; they point to blocks of memory and are used when you either don't know or don't care what is in the block. POINTER variables point to a specific type of variable.

ADDRESS and POINTER variables contain the machine address, in memory, of some other variable. This other variable is called the 'object' of the ADDRESS or POINTER variable. The object of the variable can be referred to by appending a circumflex (^) to the variable name, i.e. the ADDRESS variable MyPointer has the object MyPointer^. MyPointer (the ADDRESS variable) contains the address of the variable MyPointer^ (a block of memory). You can only perform a limited number of operations on the object of an ADDRESS variable because you don't know what type of variable that object is. If you are using POINTER variables, which point to a variable of a specific type, you can perform operations on the object of that variable as you would any other variable of the same type.

MEMORY ALLOCATION

All this talk about addresses and pointers is an explanation of the mechanism for dynamic memory allocation - these routines and constructs allow a programmer to control the amount of memory a program uses. On the Amiga, the ability to dynamically allocate memory is important, perhaps more important than on other personal computers. There are two basic reasons for this: the Amiga multitasking operating system, and the Amiga special circuitry.

The Amiga operating system is multitasking; this means that you can run more than one program at a time. But all computer programs use memory, which is a limited resource. In fact, memory is often a constraining factor in a multitasking system - you can run as many programs as you want, as long as you have enough memory.

Dynamic memory allocation techniques help reduce the total amount of memory that is used by a program. There are two major ways this is done: at startup time and when data structures are being allocated.

When a program starts up it often does a bunch of things (such as opening windows) that are never done again. If the programmer dynamically allocates the memory for data used in the startup procedures, that memory could be returned to the system once the program has started.

Many programs operate on groups of data - a common grouping method is to use an ARRAY. But static data structures (data structures that have a fixed size) like ARRAYs allocate blocks of memory that do not change throughout the life of the program. This means that a 100 element ARRAY OF CARDINAL allocates 200 bytes of storage (100 elements X 2 bytes per element) whether the program uses 10 elements or 100 elements. Thus the allocation of static data structures may lead to memory waste; in large programs this waste can be significant.

Dynamically allocated data structures, like linked lists, can reduce this waste by only using as much memory as is needed at any given time. Dynamic data structures have the additional advantage of being open-ended; as long as there is memory, these structures can grow to accomodate any amount of data. Thus, while a 100 element ARRAY could not accept 101 elements, a linked list could, provided there was enough available memory.

If programs allocate static variables, they may waste memory that could be used by other processes. The memory savings afforded by dynamic data structures may help keep enough memory free so that more programs could be run in the multitasking environment.

The second major reason dynamic memory allocation is important has to do with the custom chips in the Amiga. As

By Jim Shields

any Amiga owner knows, the Amiga has graphic and sound capabilities that surpass other computers costing many times what an Amiga costs. These advanced capabilities are present because the Amiga has several coprocessor chips that handle tasks that would normally be handled by the main processor. This is a more efficient way of gaining advanced functions in an inexpensive computer.

There's a catch, though - the custom chips can only work with a certain area of memory. This area of memory is called CHIP RAM and in most Amigas it is 512K bytes long (some new machines may have 1 megabyte of CHIP RAM. Any memory outside this 512K is called FAST RAM.

Any variable or data structure that is to be accessed by the custom chips *must* be allocated out of CHIP RAM. The most important examples of this kind of data is graphics data (bitmaps, sprites, blitter objects, etc.), and sound samples.

If you want to specify the kind of memory that is to be allocated, you must use the AllocMem function, which is found in the Memory support module. AllocMem accepts two parameters: the number of bytes you want to allocate and a set of flags describing the kind of memory you need. The number of bytes you want must be a LONGCARD, and the flags parameter is a MemReqSet (memory request set). AllocMem returns the address of the block of memory that was allocated, or NIL if the allocation was unsuccessful.

For example, let's say we wanted to allocate 250 bytes of CHIP RAM. We'll need an ADDRESS variable to point to the block of memory - in the following example we'll call it MemBlock. In addition, let's indicate that the block of memory is to be cleared (set to all zeroes) when it is allocated. The call to AllocMem would be:

```
MemBlock := AllocMem(250,MemReqSet{MemChip,
MemClear});
```

As you can see, the MemReqSet is used to indicate what kind of memory we need to allocate. For simple memory allocation, a MemReqSet can contain the following values:

MemChip - This tells the system to allocate CHIP memory, memory that can be accessed by the Amiga custom chips.

MemFast - This tells the system to allocate FAST memory, memory that cannot be accessed by the Amiga custom chips.

MemPublic - This tells the Amiga to allocate memory that can be accessed by different tasks or interrupts. This option is to be used when allocating memory for ports, task control blocks, messages, and other "system" data structures.

If neither MemChip, MemFast, or MemPublic is specified, AllocMem will try to allocate memory from FAST RAM first, and then CHIP RAM. This is what the Modula-2 function ALLOCATE does.

When AllocMem is called, it grabs the first available chunk of memory - but that memory may have been used before, and may have some data values in it. Your code can overwrite the block, of course, but sometimes it would be good if the block was zeroed out before you use it. To instruct AllocMem to clear the memory before returning it, include the MemClear flag in the MemReqSet.

SETs

The AllocMem function as discussed in the last section had, as one of its parameters, a SET variable. SETs were discussed briefly at the beginning of this series, but it might be a good idea to take a look at some of the more important points and limitations of sets in Modula-2.

SETs are used to simulate groups of things in the real world. Often, a SET will be defined in terms of an enumeration. An example of this type of definition would be:

```
TYPE
WorkDay = (Monday, Tuesday, Wednesday, Thursday,
  Friday);
BusyDay = SET OF Workday;
```

This definition might be found in a scheduling program. It defines the workdays, and then defines a SET that might contain values in the enumeration. If you had the following variables:

```
VAR
Appointment : WorkDay;
ThisWeek    : BusyDay;
```

You might check to see if you were busy on that day with this statement:

```
IF Appointment IN ThisWeek
THEN DeclineAppointment(Appointment)
ELSE AddAppointment(Appointment)END;
```

The IN operator checks to see if a particular value is in a given set. You can also do set addition, subtraction, and intersection. For example, let's say we had the sets A and B, which were defined as SET OF (1..10);

Assuming A = {2,3,6,7,9} and B = {1,4,5,6,7}
Then:
A + B = {1,2,3,4,5,6,7} (Set addition, or the union of A and B)
A - B = {2,3,9} (Set subtraction, or the difference of A and B)
B - A = {1,4,5} (Set subtraction, or the difference of B and A)
A * B = {6,7} (Elements common to both sets; set intersection)

By definition, Modula-2 SETs can have no more elements than there are bits in a machine word. This means that on the Amiga, SETs can have no more than 32 elements - the Amiga machine word is 32 bits wide.

This restriction on SET size is due to the way the SET is implemented. Each element in the SET is (internally) assigned a number. Then a variable is created to hold the SET - in the case of the Amiga, this variable is a 32-bit longword. Each element in the set is assigned a certain bit in this longword variable. Each SET operation (assigning a SET, the IN operation, etc.) either toggles bits in the SET variable, or checks the status of the bits.

For example, let's say we had the following definition:

```
TYPE
Days = (Monday, Tuesday, Wednesday, Thursday,
  Friday, Saturday, Sunday);
BusyDays = SET OF Days;
```

Internally, Monday would be given a value of 1, Tuesday would be given a value of 2, etc., on up through Sunday, which would have a value of 7. The SET type BusyDays would allocate a longword, but only 7 bits of that longword would be used. Each bit of that longword would correspond to one of the elements in the Days type - bit 1 would correspond to Monday, bit 2 would correspond to Tuesday, etc.

If we had a variable WorkWeek, which was of type BusyDays, the assignment:

```
WorkWeek : = {Monday, Tuesday, Wednesday, Thurs-
  day, Friday};
```

Would change the longword associated with the variable WorkWeek by setting bits 1,2,3,4, and 5 on (give them a value of 1), and bits 6 and 7 off (give them a value of 0). The boolean expression:

```
Monday IN WorkWeek
```

would check bit 1 of the longword associated with the variable

WorkWeek. If bit 1 is on (value=1) then the expression is TRUE; if the bit is off (value=0) then the expression is FALSE.

By now you can probably see why a SET's size is limited to 32 elements (the size of a machine word). It isn't that important to remember the internal mechanics of SET operations, unless the 32 element size becomes a problem for you. If you do want to write a program that has SETs with more than 32 elements, you will need to have a pretty firm grasp of how members of a SET are assigned to individual bits within the SET's internal representation.

The Benchmark system does include a mechanism for defining SETs with more than 32 elements: the LargeSet. A LargeSet can contain up to 65536 elements. All the functions for dealing with LargeSets are contained in the support MODULE LargeSets. I won't repeat all of the information in the Benchmark manual concerning LargeSets; rather I will try to touch upon the important points. If you need to use LargeSets, you can refer to Chapter 20 of the Benchmark SCS Manual.

Before you can use a LargeSet in a program, space for it must be allocated with a call to the CreateSet function - merely declaring the LargeSet is not enough. You must supply CreateSet with a LargeSet variable and the number of elements that the LargeSet is to contain. CreateSet will return TRUE if the allocation was successful, and FALSE if it was not.

Members of a LargeSet are referred to by CARDINAL numbers. This means that members cannot be part of an enumeration (this is allowed with a Modula-2 SET). If you need to refer to members of a LargeSet by symbolic names, I suggest you define that name in a CONST statement. For example, if you had an appointment calendar that was one year long, you might use a 366 element LargeSet to help you determine whether you had an appointment on a given day. This program might contain the following declarations:

```
CONST
  NewYears = 1;  (* first day of the year*)
  Valentines = 45;  (* 45th day of the year*)
  MyBirthday = 61;  (* 61st day of the year, 62nd day on a
    leap year*)
```

and so on. To include a particular member in a LargeSet, you must use the InclElement function. To include a range of members in a LargeSet, you can use the InclRange function. Conversely, to exclude a member from a LargeSet, you would use the ExclElement function; to exclude a range, you would use the ExclRange function.

To test to see if a LargeSet has a particular member, you would use the In function (the corresponding SET function is called IN). You supply the LargeSet variable and the member to check. The union, intersection, difference and symmetric difference operations are accomplished with the Union, Intersection, Diff, and SymmetricDiff functions, respectively. LargeSets may by copied with the CopySet function.

CONCLUSION

In the last several months, we've covered most of the components of the Modula-2 language. If you've never seen Modula-2, or if you were curious about it, I hope I've given you enough of a taste of it to help you make a decision about whether or not Modula-2 is for you. For those of you who have decided to start writing your programs in Modula-2, good luck - I'm sure you'll enjoy it. ❑

Workbench 1.3 CLI TUTORIAL

PART 3

In our last article, we covered twenty-two C directory commands. This time we'll also go over another seventeen commands in the same format. So without further ado, let's dig into 17 important CLI commands.

LAB
Usage: lab
Options : none
Example 1: lab Michael

Lab is used to define a label for the SKIP command to search.

Example 1 will give Michael as the label. Lab is unchanged from AmigaDOS version 1.2.

LIST
Usage: list directory options
Options : P, Keys, Dates, Nodates, To, Sub, Since, Upto, Quick, Block, Nohead, Files, Dirs, Lformat
Example 1: List df1:
Example 2: List df1:c1 p=timer.#?
Example 3: List keys
Example 4: List Dates
Example 5: List Nodates
Example 6: List To ram:checkit
Example 7: List S .doc
Example 8: List Since 12-Jan-89
Example 9: List Upto 12-Jan-89
Example 10: List df1: Quick
Example 11: List df1: Block
Example 12: List df1: Nohead
Example 13: List df1: Files
Example 14: List df1: Dirs
Example 15: List df1: Lformat

This command will list the information from a disk or directory, while allowing the user to specify the format or specific type to display. The first example will display: header information - which contains the current directory and current date/time, the file/directory name, size of the file (but *not* for a directory) in bytes, the applicable file protection flags, date the file last saved, and time-of-day the file was saved. The second example will search, from the current directory, and display all files in the df1:c1 directory starting with timer and ending with different extensions. The third example displays the file name, key, size in bytes, protection flags, date, and time for files in the current directory. The fourth example displays all files in the current directory, displaying dates instead of days (like Thursday) or Today in the date field. The fifth example displays file information for the current directory, but without the dates field. The sixth example will generate an ASCII file containing a listing for the current directory, saving it to RAM, with the file name as checkit.

To view this file, load in your favorite text editor, and it is saved in the same format normally used to display to the screen. This option is quite useful; save all the separate directory files for a disk, then use the JOIN command to append them together, saving either as a disk file or dump them to the printer for a hard copy. The seventh example will display all files in the current directory containing the substring .doc. The eighth example selectively displays files from the current directory, with file dates from 12-Jan-89 up through files created/modified today. The ninth example displays any files from the current directory not shown by the eighth example, which are all files with a creation/modification date equal or older than 12-Jan-89. The tenth example lists df1: file/sub-directory names only, suppressing the rest of the information. The eleventh example lists current directory file/sub-directory names with the same format as the first example, except for using blocks for file size instead of bytes. The twelfth example will list all of the same information as in the first example, except for the header information. The thirteenth example lists the same information as the first example, except that it only deals with files and will not display directory information. The fourteenth example is similar to the thirteenth example, except that it will only display the information for directories while ignoring files. The fifteenth example:

LOADWB
Usage: loadwb
Options : Delay, Debug
Example 1: Loadwb
Example 2: Loadwb delay
Example 3: Loadwb debug

This command loads the Workbench environment. This command is normally used in the startup sequence (although it is used from the CLI) as shown by the first example. The second example causes a 3 second delay before exiting. The third example brings up the Debug menu, which contains Debug and FlushLibs menu items. The Debug menu item provides access into the ROM resident debugging program called ROMWACK - which requires a 9600 baud serial terminal connected to work. The FlushLibs menu item removes unused libraries, devices, and fonts - the purpose is freeing memory for other applications.

LOCK
Usage: lock options password
Options : On, Off
Example 1: lock on
Example 2: lock off
Example 3: lock on migo

By Mike Hubbartt

This command turns on or off the write status for a hard drive that utilizes the FastFileSystem. When turned on, the lock remains in effect until either using lock off or until a system re-boot. If an optional password is specified with lock on, it must be used when using lock off. The first example will turn off write enable, while the second example will turn it back on. The third example uses a password (migo) when setting on a lock.

MAKEDIR
Usage: makedir directory-name
Options : none
Example 1: makedir df1:amigo

This is the command that you use to create a new directory to hold files on a disk. Example one will create a new directory on the disk in drive df1:, named amigo. This command is unchanged from Workbench 1.2.

MOUNT
Usage: mount options
Options : Device, From
Example 1: mount from df1:devs/mountlist vd0:
Example 2: mount rad:

This command tells the Amiga that an extra device is available to the system. The values for any device to mount are stored in the devs:mountlist file, which can be edited for any additions with any text editor. The first example mounts vd0, the recoverable RAM disk from ASDG, using the specifications from devs:mountlist found in drive df1:. The second example mounts the recoverable ram disk rad, from the information found in df0:devs/mountlist.

NEWCLI
Usage: newcli options
Options : Window, From
Example 1: newcli
Example 2: newcli con:0/0/640/100/CLI1
Example 3: newcli from s:secondarystart

This is a command that starts another CLI, as shown in the first example. In the second example, a new CLI is opened using the values in the argument for window size. The first 0 is the starting point of the leftmost corner. The second 0 is the number of pixels for the rightmost starting point of the window. 640 is the window width in pixels, and 100 is the window height in pixels. CLI1 is the name of this new CLI window. In the third example, the s:secondarystart file contains the window size, location, and name.

NEWSHELL
Usage: newshell options
Options : Window, From
Example 1: newshell
Example 2: newshell new-con:0/0/640/200/Shell1
Example 3: newshell from s:secondshell

This command starts a new shell window, as shown by the first example. In the second example, a new shell opened has the window parameters specified as the argument to newshell. The new shell's size is 640x200; it starts at the upper right corner of the screen (same as the second example for newcli); this new shell's name is Shell1 window. The third example, the file's second shell contains the file size, location, and name for the new shell window.

PATH
Usage: path
Options : Show, Add, Reset, Quiet
Example 1: path show
Example 2: path add df0:rexx df0:s
Example 3: path reset
Example 4: path quiet

This command displays or changes the command search path. The first example displays the current search path - the SHOW keyword can be left off and still show the same information. In the second example, the directories rexx and s are added to the search path. There is a limit of ten directories that may be added at one time with path add. Please note that the complete path name MUST be specified to add these directories to the search list. The third example will remove any new path additions from the search list. In the fourth example, unmounted volumes have volume name and not directories displayed when searching.

PROMPT
Usage: prompt options
Options : %N, %S
Example 1: prompt %N >
Example 2: prompt %S->
Example 3: prompt %N %S>

This command gives the user control over what additional information is displayed beside the cursor of the Shell, without requiring additional commands entered. In the first example, the prompt is shown as 3 >, if the CLI process number is number 3. In the second example, the prompt will appear as c:->, if the current directory is c. In the third example, the prompt will appear as 3 c> if the current CLI process is 3 and the current directory is c.

PROTECT
Usage: protect filename options
Options : Add, Sub
Example 1: protect c:mac +rwe-d
Example 2: protect max +s
Example 3: protect max add a
Example 4: protect max sub d

Protect is a new command that sets a file's protection bits of (r)ead, (w)rite, (e)dit, (d)elete, (a)rchive, (s)cript, (p)ure, and (h)idden. These flags are seen when using the LIST command to view the files within a directory. Without the write flag, a file cannot be written to. Without the delete flag, a file cannot be removed from a disk using AmigaDOS commands, without adding it back to the file. The archive flag is meant for use by backup programs, and indicates if a file has been backed up. The script flag, when set, will allow the user to type only the file name to execute the file - it is not necessary to type "execute filename". The pure bit is only used when making a program memory resident - see the resident command. The hidden bit is not implimented in AmigaDOS 1.3, and should not be used by anyone yet! Only use the AmigaDOS 1.3 COPY command to carry over these protection bits, as the 1.2 version of copy will not carry over the asph flags. Both add and + represent the addition of a file's protection bit(s), while sub and - both mean the removal of a file's protection bit(s). In the first example, read, write, and edit protection bits are added to the file mac (in the c directory), while removing the delete protection bit. In the second example,the script protection bit is added to the file max's list of protection bits. In the third example, the archive protection bit is added to the file max - which is in the current directory. The fourth example will remove the delete protection bit from the file max. In other words, c:mac (in the first example) will only have the protection bits

rwe while max (in the second, third, and fourth examples) will either add or subtract a new protection bit from those the file max already contains (i.e. if max has rwed:after example 2, max will have srwed; after example 3, max will have asrwed; and after example 4, max will have asrwe).

QUIT
Usage: quit
Options : none
Example 1: quit

Example 1 calls for termination of a batch file, as in example 1. This command is unchanged from AmigaDOS version 1.2.

RELABEL
Usage: relabel disk-drive new-name
Options : none
Example 1: relabel df1: amigo

This command changes the volume name of an entire disk. Example 1 changes the name of the disk in drive df1: to amigo. This command is unchanged from Workbench 1.2.

REMRAD
Usage: remrad
Options : none
Example 1: remrad

This command will terminate the recoverable RAM disk RAD, as shown by example one. Remrad is REMove RAD-disk.

RENAME
Usage: rename filename options
Options : From, To/As
Example 1: rename df0:a/migatext df0:a/amigatext
Example 2: rename df0:a/migatext as df0:a/amigatext
Example 3: rename from df0:a/miga to df0:a/amiga

Rename is the command that changes the name of a file or directory. This is often confused with the re-label command, which changes the name of the disk itself. In the first example, the full path name is specified when changing the file's name from migatext into amigatext. The second example is similar to the first example, except it has the AS option included for clarity. In the third example both FROM and TO options are included for clarity. This command is unchanged from AmigaDOS version 1.2.

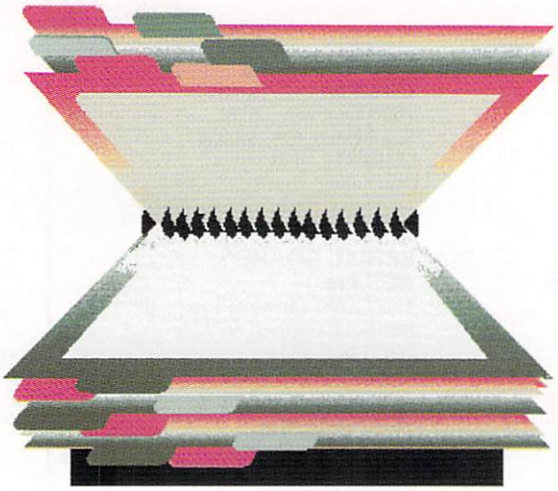
RESIDENT
Usage: resident options command-name
Options : Remove, Add, Replace, Pure, System
Example 1: resident makedir remove
Example 2: resident makedir add
Example 3: resident makedir pure
Example 4: resident replace
Example 5: resident makedir system
Example 6: resident
Example 7: resident system

This command makes AmigaDOS commands memory resident for faster access than provided by the normally disk-based Amiga operating system. To make a command resident, the command must be both re-entrant and re-executable. In the first example, the command makedir is removed from the resident list. In the second example, makedir is added to the resident commands list. In the third example makedir is added, while using the pure protection bit to force loading if it's own pure bit is not set. The fourth example is the same as the sixth example. In the fifth example, makedir is added to the system resident list, and it cannot be removed from this list without re-booting the system. In the sixth example, a list of all memory resident commands, excluding system-resident, is displayed to the screen. The seventh example shows all resident commands, including system-resident commands. Any system-resident command has SYSTEM displayed under the UseCount column beside the Name column, instead of the number times that command is accessed as a memory resident command.

RUN
Usage: run command-name
Options : none
Example 1: run df1:transcript

This command will execute a background process, while allowing the starting CLI to close. Example one will run the program called transcript as a background task, from drive df1: .

Next time, we'll look at the last fourteen c directory commands, and the AmigaDOS 1.3 Shell. ❑



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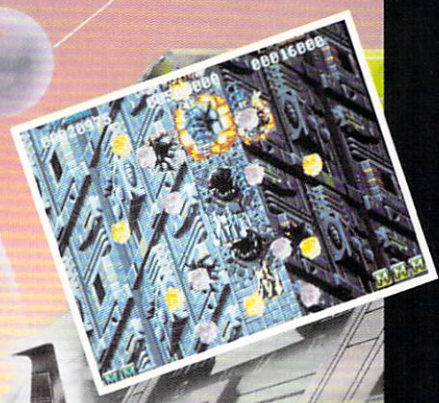

Whirling Barrax ships dart out from the dark spiral caves and attack from the right. You bank hard left, launching "smart" bombs. Look out! One of those darn "chameleons" is dead ahead — they're tough to spot and even tougher to stop!

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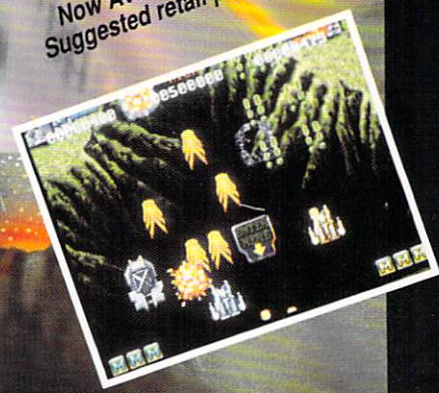

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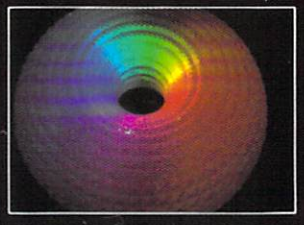
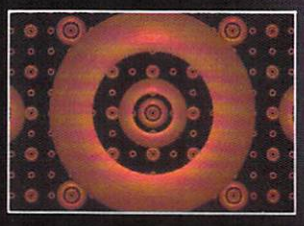
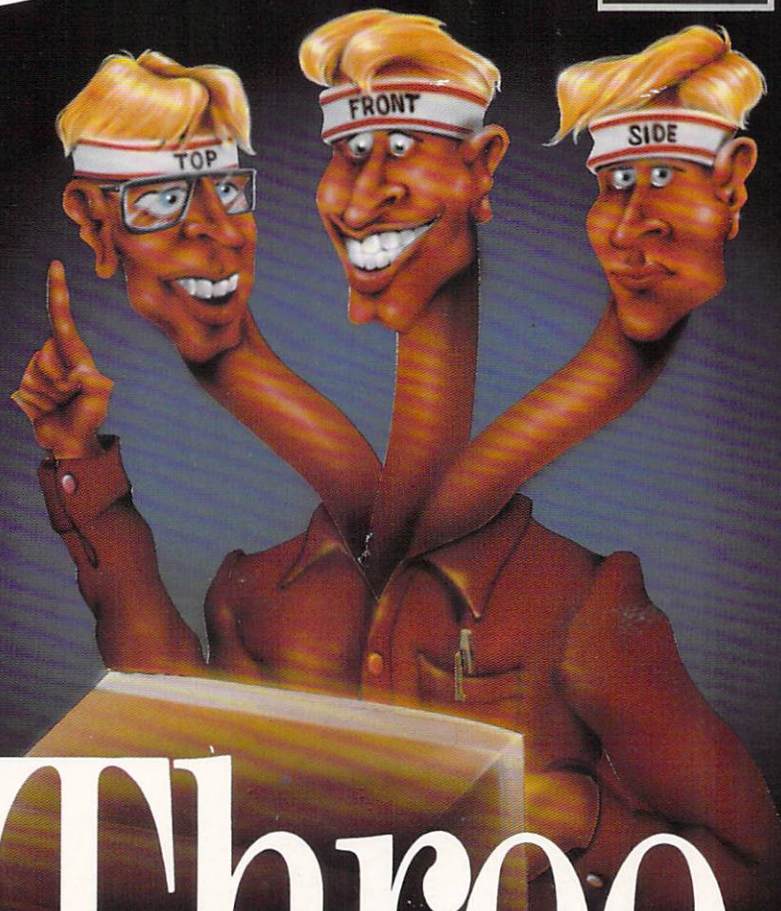
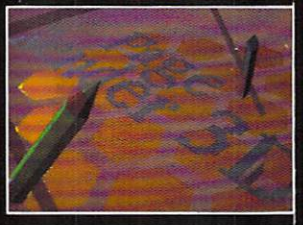
STILL IMAGES







ANIMATION



or Three-D!

* What You See Is What You Get