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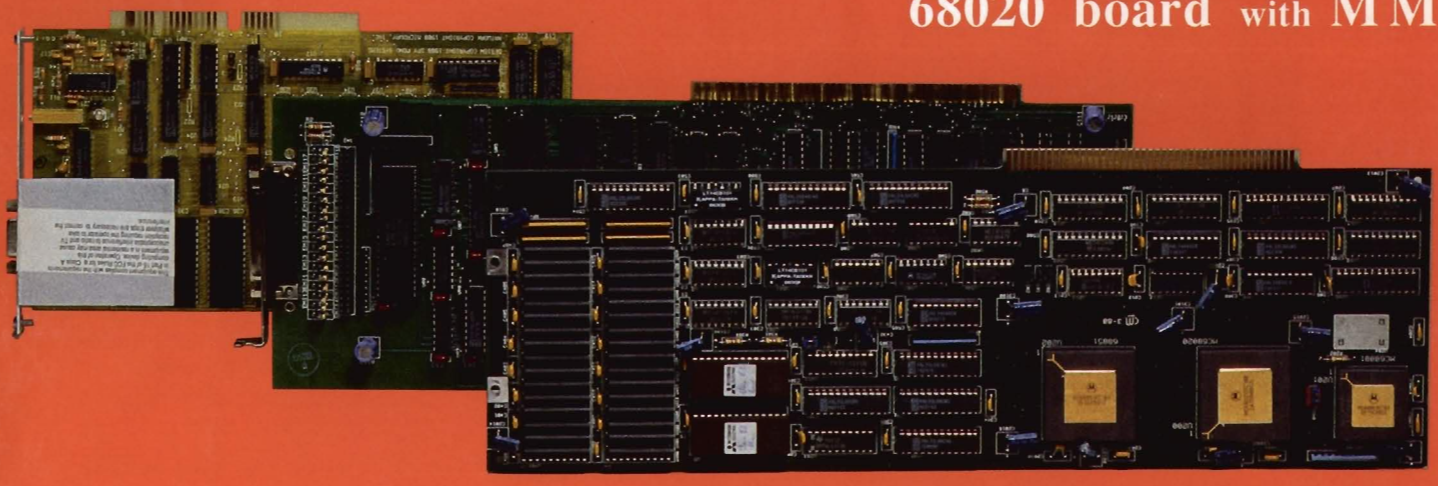
Autoboot controller

68020 board with MMU



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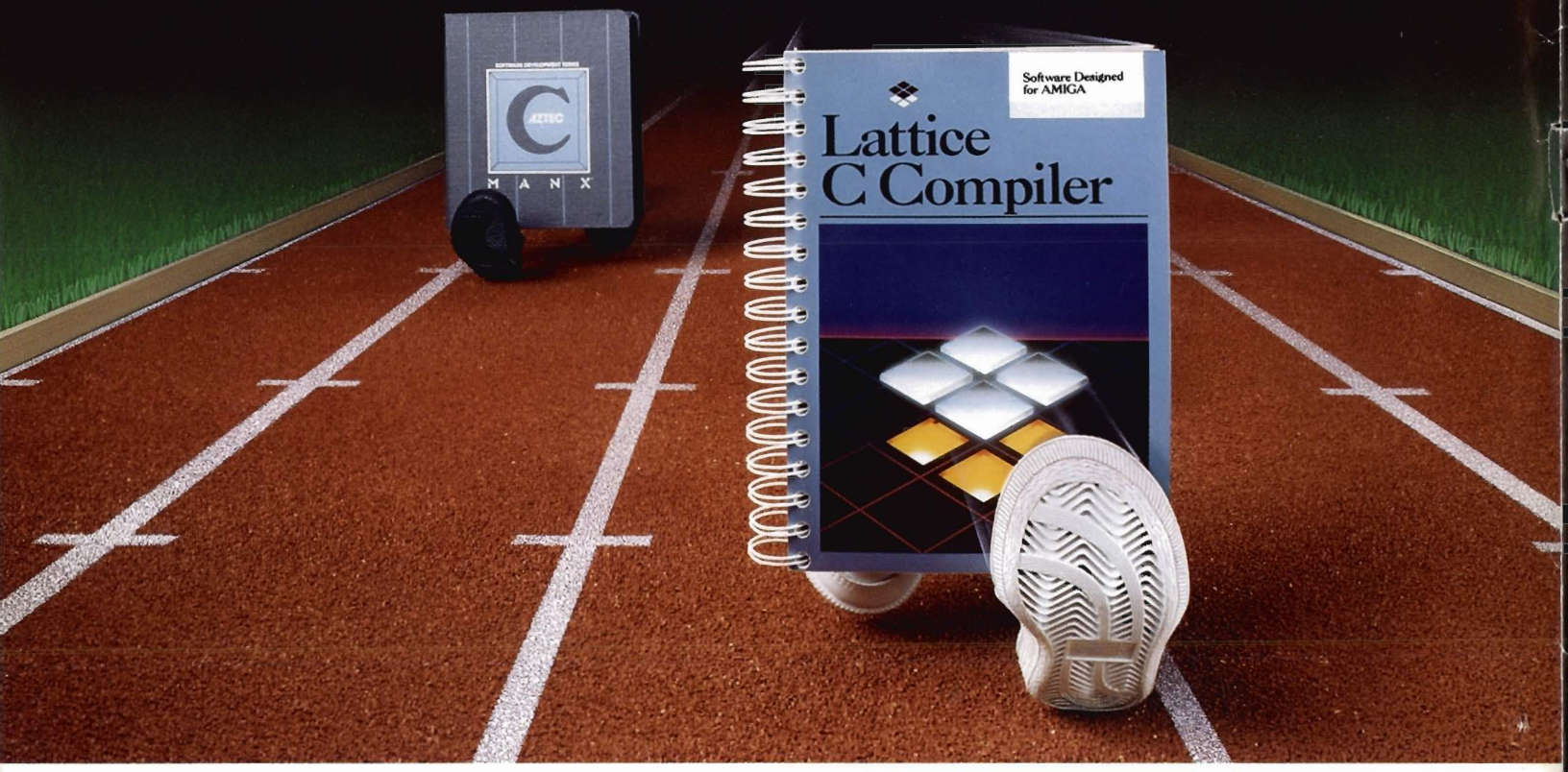

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On Point

Notes from editor Tom Bucklin

Our cover this month just about says it all...*"Hardware Attack."* Like the rest of us, you have probably been hearing rumors about new hardware products springing out of every nook and cranny there is.

Now, we're not very big on printing rumors in The Sentry. We decided from the beginning, instead of rumors, we would get (and print) the facts about Amiga products and news. But certainly, one could not help wondering what magnitude of an effect the introduction of the A2000 would have in terms of third party hardware support and development.

Would the A2000 become the ultimate affordable video workstation? Would add-in board maufacturers well established in the MsDos world create specialized products for the Amiga as well? Indeed, all of these questions have not been answered as of yet. However, the recent support of companies like Micron Technology and Applied Reasoning would indicate that the rest of the micro-computer world has, at a minimum, recognized the marketing potential of the Amiga, and perhaps, its uniqness as well.

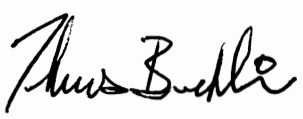
In any case, the user is the winner as more exciting and useful products become available. Last month, we showed you how you could upgrade your A2000 to a 386 based machine that can rival the likes of a Compaq 386 dedicated computer. This month, we'll introduce you to three new hardware products that will, once again, change the way people look at the Amiga line.

Starting way back in the days of the Amiga introduction, the 640 x 400 interlaced mode has been a mixed blessing at best. Although grateful to have a high-resolution mode at all, most users feel that hi-res is a viewing mode reserved for things like showing high-resolution pictures to your friends.

Now MicroWay, a manufacturer of accelerator cards, has released *FlickerFixer* for the Amiga. In this months review of the product, you will see how to get a rock solid 640 x 400 display for all your applications. We also take a first hand look at the forthcoming A2620 board from Commodore. Dave Haynie explains the inner workings of this super-charged plug in, as well as the ramifications of 32 bit computing in general.

With our report on Work-Bench 1.3 last month, a lot of enthusiasm has built up for autobooting capabilities. In our review this month, we take a look at Great Valley Products' SCSI controller card for the A2000, which has been designed to take advantage of this capability.

As Commodore strives to gain recognition for the business potential of the Amiga, capabilities like autobooting and networking will weigh heavy on the ultimate success of the machine in this arena. By the looks of things, it's on the right track....



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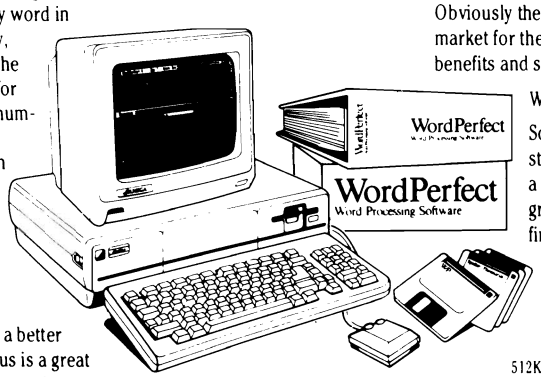

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The Hanover Show

Two new Amiga configurations announced at Hanover, Germany

Sentry staff

The annual Computer Exposition held in Hanover, Germany is the largest of its kind in the world. Every vendor of computer hardware and software puts its best foot forward for this event. Commodore has traditionally introduced new products at Hannover and this year was no exception. On March 16, 1988, the first day of the show, Irving Gould, Chairman of Commodore International, held a news conference with over 500 members of the press in attendance.

Along with the usual financial reports, (33% increase in profits over '87), Mr. Gould surprised everyone by introducing the A2500 AT and A2500 UX Amigas! Both systems are members of the A2000 family and Mr. Gould stressed that the Amiga family will retain a high degree of compatibility. That these systems were introduced in Germany is more than coincidence. Commodore claims to be the number one personal computer in Germany, and the entire product line is highly successful. In Germany, Commodore is a vendor of business systems, as well as personal computers, and the Amiga 2000 is accepted as a professional business system.

Both 2500 systems were actually shown in the Commodore exhibit at Hanover. They were even operating with the new A2090-A autoboot harddrive controller and Kickstart 1.3. Mr. Gould also introduced the A2300 Genlock for the 2000 and the A2024 High-Res 1008 by 800, Monochrome Monitor (see April Sentry for details on the A2024).

During the news conference, Mr. Gould announced that Commodore has no plans to raise computer prices due to rising costs for DRAM, and that a chip set for the A2000 and A500, with a high res non-interlace mode, will be available in calendar 1988.

I've kept you in suspense long enough. Here are the specifications of the A2500 AT. Start with an A2000 system and add the brand new A2620 68020 coprocessor board with 2 meg of 32 bit memory. Now add a 40 megabyte autoboot harddrive. Finally, add the new A2286, 80286 based BridgeBoard, and you have it. Yes, there are three 32 bit CPU's on the system, the 7.14 MHZ 68000, the 14.2 68020, and the 80286. Lets add up the memory in this configuration: 1 meg on the 68000 board, 2 meg on the 68020, at least 512K on the 80286 board gives us 3.5 megabytes standard! Obviously, were not talking about a home system here.

Who, then, is this powerhouse intended for? Remembering Commodore's position in the German marketplace, I suspect that the 2500 AT is destined to be a top-end business system. The 80286 Bridgeboard gives the power needed to run high end MsDos applications like Ventura Publisher, AutoCad, etc. Unfortunately, Commodore has not released full specifications as of yet. As is common with these development programs, there is always a certain amount of the details that remain in kind of a "loose" state, and this usually means that development will be continuing in most cases right up to just before pro-

duction. Therefore, answers to questions concerning the inclusion of an 80287 math coprocessor on the 2286 Bridgboard, or how much 32 bit RAM will be included on the 802 board will be forthcoming.

We do have more information on the A2620 card. This board sits in the coprocessor slot of the A2000, not a Zorro expansion slot. A Motorola 68881 math coprocessor chip running at a speed of 14.2 Mhz is standard with this board. The Motorola 68851 Memory Management Chip is also included (see 68020 article in this issue for more information). This fast 68020, 68881, and standard harddrive will make desktop presentations, scientific programming, and other Amiga applications blaze. In combination with 80286 based access to MsDos applications, this configuration should find its way to many power user's desks.

The A2500 UX is a similar package. Start with the A2000, add the A2620 coprocessor, this time with 4 megabytes of 32 bit RAM; include a 100 Megabyte autoboot harddrive, and your ready for - UNIX. Yes, the Amiga will soon be a platform for Unix, ATT Unix 5.3 to be exact. Commodore has developed a proprietary windowing shell to add glamor, but underneath is the vanilla standard Unix. For those not versed in Unix, it is a true multiuser, multitasking operating system much loved by hackers and widely used for scientific, educational, and research computing. Unix is the reason the 68851 MMU has been included on the A2620 board. It is a virtual memory system, which means that it uses the harddisk as an extension of main memory. The MMU is needed to translate addresses and move blocks of memory back and forth from the harddisk. (Unix also requires 30 megabytes of disk space for its own system files). Commodore also announced a streaming tape drive as a backup option for the 2500 UX.

This is obviously Commodore's entry into the scientific workstation marketplace. This market is a rapidly growing one and just about requires a 68020 based machine with single user Unix and windowing software. (We have it on good authority that the 2500 UX performs better than the low end Sun workstations.) The 2500 UX meets these requirements, but success depends on marketing and pricing.

What about pricing and availability? At this time there is no official word about US pricing or availability. We did have a report about German pricing for the 2500 UX which translates from DM into $9000.00 US. That sounds high and probably reflects the particular market in Germany. We do know that the A2620 will be sold in the US in 2 or 4 meg configurations, and with UNIX as an option. The A2620 should be available this summer. The A2286 Bridgeboard will be marketed in the US with availability expected by summer as well. Commodore USA will determine pricing for our market. Speculations based on components suggest that it would not be unreasonable to expect the A2620 to range from $1000 to 2000, and the A2286 about $1000 (if memory prices stop skyrocketing).

The final Amiga news concerns the A3000. Mr. Gould confirmed that work is continuing on this project with product introduction planned for 1989. The A3000 will be based on Motorola's 68030 processor, include networking capabilites and support storage devices up to 2.2 gigabytes. (A gigabyte is 1000 megabytes). These ambitious Amiga announcements were matched by a series of MsDos introductions. Commodore has left the former MsDos designs in favor of the newer, faster, 80286 machines. This is certain evidence of the influence of CEO Max Toy on the marketing direction of the company. A former high level MsDos exec, it is apparent that he believes Commodore can capture a respectable share of the MsDos market with these offerings.

We're excited by these introductions. Commodore really seems to be keeping its development axe to the grindstone. Based on the time frames given, many of these products could be dominating the peripheral purchase list this summer.

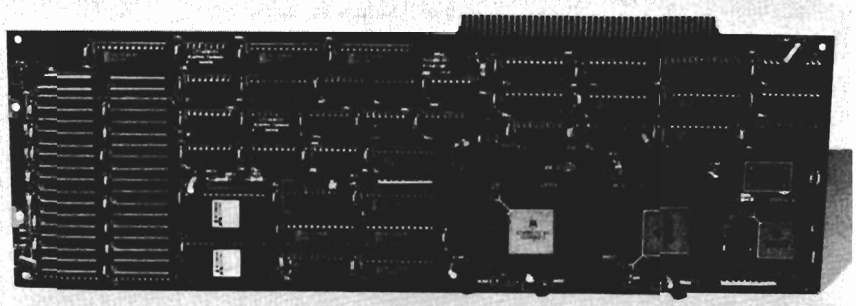
Commodore's A2620

A Preview of the Commodore-Amiga 68020 Accelerator Card

by Dave Haynie

The best microcomputers today are based on 32 bit CPUs, which rival the processors used in much more expensive minicomputers, both in design and performance. While Commodore-Amiga has yet to release a full 32 bit computer, the Amiga system as designed is ideally suited to 32 bit operation, much more so than other microcomputer systems. Upward compatibility between Motorola chips has always been simpler than in the Intel family of chips, mainly due to the 32 bit programming model that's used in all 680xx CPUs. This means that a program written for even the 8 bit 68008 will run perfectly on the 32 bit 68020 without any special tricks. In order to run a program written for the 8 bit Intel 8088 on the 32 bit Intel 80386, one must put the 80386 into a special 8088 emulation mode. Basing the Amiga on the 68000 gave the system an automatic head start.

The A2620 shown with a 68020, 68881, and a 68851 MMU chip - plus on-board Unix ROMs



The other half of the picture is the operating system. While it's not difficult to support all of the 680xx processors in an operating system, some of the other 680xx operating systems on the market have some design problems that make them break on the 68020.

The Amiga Operating System was designed from the start to be used on all of the 680xx family CPUs, and in fact it has several operating system features to make user programs equally transportable between host processors. This built-in software compatibility has made it quite reasonable to offer add-ons for the current systems that exploit the full power of the 32 bit 68020. The 32 bit chips can run several times faster than the plain 68000, they can read or write data in 32 bit chunks instead of the 68000's 16 bits, and they have on-chip cache memories that allow faster performance even with slower memory systems. They can also directly use the 68881 Floating Point Unit

for very fast math calculations or the 68851 Memory Management Unit which allows translated, virtual, and protected memory.

Even though the Amiga system was designed for upgrade capability, there are various non-trivial concerns to address when using a 68020 CPU in an Amiga system. From a hardware point of view, the 68020, unlike the 68010, is not a drop-in replacement for the 68000. In fact, there is a reasonable amount of circuitry required to let the 68020 address a 68000 based system, and there is no one correct solution to this issue.

In software, certain precautions must be made in order to address the very slight software differences between the various Motorola CPUs. Many of these software issues are addressed by the Amiga's system software. Some new ones aren't completely, at least not yet. All of these concerns should be considered now by anyone writing application software for Amiga systems.

The latest offering

The latest entry in the world of Amiga 32 bit add-ons is the A2620 board from Commodore-Amiga. This board contains a 68020 running at twice the normal clock speed (approximately 14.3 MHz), a 68851 Memory Management Unit, and a 68881 Floating Point Unit. In the standard configuration, the FPU is clocked with the same 14.3 MHz clock as the 68020. The 68881 may, however, be clocked independently, with the addition of a clock module on board. We've successfully run it with Motorola's fastest 68881 to date, the 25 MHz version, and expect it may work at even faster speeds if Motorola ever produces a faster math chip. A math chip such as the 68881 may speed up floating point operations 2500%-10000% or more, depending on the application.

Along with the 32 bit Motorola chips, the A2620 also contains fast, 32 bit wide memory. It can support either 2 or 4 megabytes of this 32 bitwide memory. A 68020 system works best only when 32 bit memory is present. Without such memory, the A2620 may deliver a 20% speedup in most integer based operations. With the fast memory installed, the speedup is more in the 250%-400% range. The board also has 64K of ROM (expandable to 128K), which is used for diagnostics, controlling boot-up options, and a few things I'll get to in a bit.

Just plug and chug

The A2620 simply plugs into the Coprocessor Slot of an Amiga 2000. If you have an A1000 or A500, you may be able to use it with a suitably designed expansion backplane (you'll need one with a Coprocessor Slot; most expansion backplanes only contain the standard 100 pin Expansion Slots). In most cases, you simply plug it in and go. If you're using the older, 4-layer A2000 board, it will be necessary to remove the 68000 from the motherboard and change 3 configuration jumpers on the A2620 board.

Ordinarily, once installed, the user will simply switch on their A2000 as usual and go. As soon as the Amiga comes out of reset, the A2620 will take over from the 68000. Any 32 bit memory installed will show up as normally auto-configured memory, and it will always be the first memory to be auto-configured by the operating system.

About the only thing that might change in normal operation is that it's a good idea to run the "FastMemFirst" program as one of the first things in the the Start-up-Sequence. This will insure that the 32 bit memory is the first FAST memory that will get used by any application.

On rare occasions, there may be a program or two that has trouble with the 68020 processor. There's a special reset operation available to handle this case. You reboot the machine, holding down the proper button (the software designers, as of this date, haven't selected which button will do this) and the 68000 will come up in charge, instead of the 68020. The 32 bit memory won't be accessible to the 68000 at this point either. As I'll explain shortly, this feature is also very important for developers using the A2620 in their development machine.

What's that MMU doing there?

The 68851 PMMU (Memory Management Unit) may look like an unusual feature of the A2620. None of the other 68020 boards on the market are currently using

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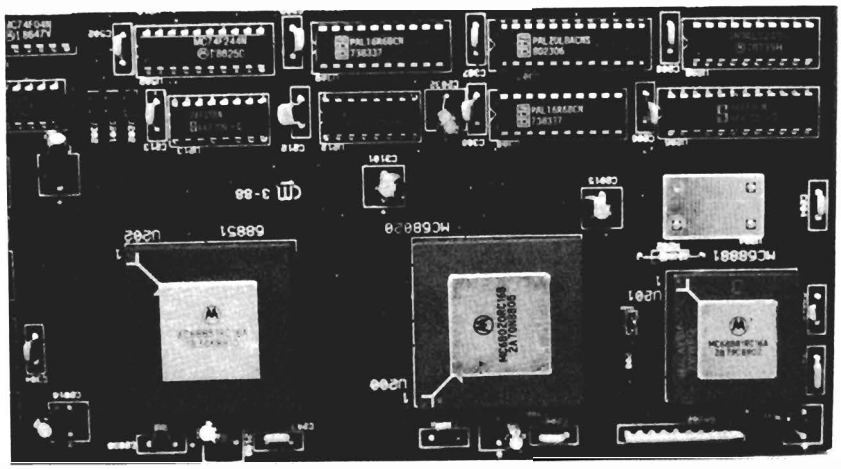

This particular board was configured with 4 Megs of 32 bit RAM, as well as the Unix operating system in ROM

an MMU. The Amiga operating system doesn't know what to do with an MMU. At least not yet. The MMU can perform several types of operations. It can translate between physical addresses, what's really out there in the system, and logical addresses, which are what the 68020 thinks is really out there in the system. While physical and logical mappings are normally the same, making them different may buy something. For instance, since we're on a 32 bit system, it sure would be nice if the operating system ROM could be 32 bits wide, and fast, instead of being out there as slower 16 bit memory. Using the MMU, a program could copy the ROM contents into 256K of 32 bit wide memory, then define a translation such that this ROM image now appears, from the CPU's point of view, right where the real ROM was.

Another capability of the MMU is memory protection. So, once you've got that ROM image there, it can be made read-only memory, so that no errant program can write over it. This protection could eventually be incorporated into parts of the Amiga OS itself to offer better system reliability. MMUs can also be used for virtual memory systems. Such a system could probably be added to the Amiga OS without too much trouble. In a virtual memory system, there's more memory, from the CPU's point of view, than actually exists physically. And there's a fast mass storage device, such as a hard disk, that essentially backs up physical memory. In such a system, you'd start allocating memory just as usual. However, once real memory is exhausted, instead of returning with an "Out of memory" error, the allocation would ask for memory that's not really there. The MMU would try to get that memory, and fail. That failure would cause a jump to a section of code that knows about the backup hard disk. Using some kind of intelligent method, it would select areas of memory that are in use and write them out to disk. Then it would take this newly freed memory, translate it to a yet-to-be-used address range (since all Amiga OS addresses are unique), and then recover back to the allocation function. The end result is more apparent memory than actual memory, with a performance hit taken once the amount of virtual memory exceeds that of physical memory.Although the A2620 works great running the Amiga operating system, the 68851 MMU allows it to run other operating systems that couldn't run on the 68000 based Amiga. One of these operating systems is the UNIX operating system from AT&T. Commodore-Amiga is currently planning to offer as an option AT&T's UNIX System V, Release 3 for use with the A2620 card. Part of the function of the A2620 ROMs is to recognize if there's a UNIX system installed on a hard disk, and start it up if there is one. UNIX is more complicated to manage than the Amiga OS, but it's very popular in scientific environments, and it's becoming more and more popular in business these days too.

(continued on page 10)

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So what's it good for?

Obviously, the A2620 or any other 32 bit plug-in isn't going to be cheap. So asking "What's it good for" is a valid question. The immediate answer is, "Well, it's N times faster", and that may be all you need. Certainly, program developers would appreciate compiles or assembles that happen several times faster. Anyone doing scientific or image rendering work that involves floating point math will get a tremendous boost in performance.

Even not-so-obvious things get speed improvements. While display memory isn't running any faster, any program generating a display will reside in 32 bit memory and go quite a bit faster. So you'll even see a speed increase with your favorite word processor. For that matter, some games even run better, as the faster CPU lets the game monitor the mouse or joystick more often, so play may get smoother.

The real question is whether the price is worth the speed increase you get. The A2620 can make your programming go several times faster, so maybe you get two programs finished in the time it would have taken for one. Any developer can see that advantage. Or maybe you can render an entire short film instead of just a repeating sequence, if you're doing video.

Software Compatibility

As I mentioned before, nearly every Amiga program will run with no problem on the 68020. This is mainly because the Amiga OS has always supported the 68020, and developers had guidelines very early on that told them the few simple rules they should follow to insure compatibility. Also, it's much harder to break these rules if you're using a compiler to develop your code (providing the compiler is well behaved), and a good portion of developers use C or Modula 2 instead of Assembly to write their code.

The first incompatibility is the one instruction that's valid in user mode on the 68000 but only in supervisor mode on the 68020. That's the move from status register instruction, MOVE SR, <ea>. If you run this instruction in a normal program on a 68020, you'll guru. Fortunately, there are two ways around this.

There's a public domain program called DeciGEL, available on the Fish Disks and most Amiga BBSs, that sets up an exception handler to allow programs that use this instruction to still work. The better solution is for programmers to use the Amiga Exec library GetCC(), which returns the condition codes for any 680xx family CPU. Programmers working on the 68020 should also make sure they don't put any 68020-specific instructions in their code unless they fully intend to make a 68020-specific version of a program. (Trying to run a 68020 instruction on a 68000 will result in another guru). Well behaved programs that contain 68020 or 68881 instructions will check to make sure these are present, and terminate gracefully if they're not. The Amiga OS sets an ExecBase flag on system startup that can identify the type of CPU and math chip, if present. Programmers should use this if it matters to their code.

Another compatibility issue, which again affects mainly assembly programmers, are Exception Stacks. When an exception occurs for some reason, information dependent on the CPU and the type of exception is placed on the stack. Any program that needs to look at this stack information MUST know which CPU it's running on before it can properly examine many possible stacks. Different CPUs may generate different stacks for the same exception, so it's not sufficient just to know the type of exception involved.

One problem that some programs run into is the extra speed of the 68020. This is especially a problem for video games. In many cases, a video game will look great on a 68000 based Amiga, but be totally unplayable on a 68020 machine. The problem is that things can be written to be dependent on CPU speed, and that's a very big mistake. All programs should be synchronized to something that doesn't change. Games are probably best synchronized to the video display. There are also CIA chip timers available, via the timer.device, as alternate time bases. Today's A2620 is only a few times faster than the 68000, but there's no reason to assume that's where speedups end. This is only the beginning. Also realize that 68881/68882 speed is of-

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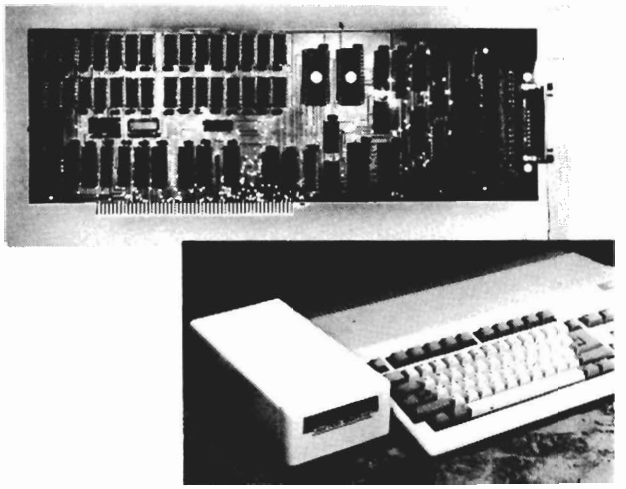

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ten independent of CPU speed, so you really don't have much of an idea how fast your math is necessarily going to be. Along with more speed, the 32 bit systems have more addresses. To be exact, 32 bits worth, versus the 68000's 24 bits of address. This one change is something to be careful about for all code.

Some 68000 programmers have a habit of using the upper 8 bits of 68000 addresses as tags of some kind. This is expressly forbidden on the Amiga. I guarantee that any code using this technique will eventually break on 32 bit systems. In fact, it does on some existing 32 bit add-ons already. A similar law is that you should never use signed math on addresses, and never do 24 bit address arithmetic. Everything must be a full 32 bits wide, when you speak of addressing. This will prevent things like sign extensions from creeping in and changing your address in strange ways.

Finally, there's the issue of the 68020's instruction cache. The Amiga OS automatically enables this cache, and that's a good idea, since a good part of the 68020's extra speed is due to this cache. In some cases, entire subroutines will fit into the cache at once. There are a few rules, however, that must be followed to insure that programs work properly with the cache. First of all, don't write self-modifying code. If you execute some code, modify it, then try to execute the modified code, you may be in for a big surprise when it turns out that the original, unmodified code is in the cache, and that's what gets executed the second time.

Downward Compatibility

Even if 68020-specific code isn't written, it's still quite possible to write code on the 68020 that won't work on the 68000. If you're a developer using a 68020-based Amiga system as your development system, this can be a special concern. The main issue here is word alignment. While it's always more efficient for the 68020 to deal with longword-aligned instructions and data, it's only necessary to have instructions word aligned. On the other hand, the 68000 requires word/longword data and the stack to be word aligned. So

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it's possible to write code with non-aligned stack and data that runs a bit slow (but otherwise just fine on the 68020) that will die with an alignment error guru on the 68000.

One ramification of this is that it's unwise to run code on the CPU's stack. The fact that this can be unaligned freely on the 68020, while instructions must be aligned, is reason enough to avoid it. And it can also cause problems with caching.

Hardware Compatibility

While software in the system has to be written with a bit of concern for 68020 compatibility, the 68020 hardware is responsible for being compatible with the A2000 hardware and expansion devices. The design must cover several issues.

First of all, the 68020 is normally running quite a bit faster than the 68000 normally would. But the A2000 memory, I/O, custom chips, etc. can't go any faster. Neither can expansion devices. So the 68020 must slow down when addressing anything that's not specifically designed for it.

Slowing down, however, isn't really enough. There are numerous timing specifications that describe how the 68000 looks to add-on devices. Simply slowing down the 68020 won't necessarily give you a 68000. So some additional hardware must be part of any design to give you a complete 68000 look-alike for running the normal A2000 bus cycles. On the A2620, we start cycles just when the 68000 would, sample data just when the 68000 would, etc. We also hide any faster 68020 cycles from the rest of the system, just in case they might confuse a peripheral device card.

Another consideration of the hardware is the bus size. The 68020 would like to run with a 32 bit bus, but the A2000 system is only 16 bits wide. Fortunately, the 68020 has a mechanism that makes it pretty simple to vary the size of the bus it considers. So the on-board RAM is driven 32 bits wide, while everything off-board is driven 16 bits wide. The A2620 presents the other side of this problem, too. Since we allow 16 bit DMA devices to access the 32 bit memory on-board, there is a mechanism that lets 16 bit devices write to either word of the 32 bit bus.

The 68020 is also missing a few signals that are present on the 68000. It doesn't have built-in support for 6502 family chips like the 68000 does, so extra logic must be added for this. It addresses bytes-in-words differently than the 68000 does. It may arbitrate the bus too fast for the A2000 system. The best method I've found for designing something like this is to start with the 68000 specification and work backwards. It's like carving a wooden duck -- start with a block of wood, and cut away anything that doesn't look like a duck. Here, you start with a 68020, and cut away anything that doesn't look like a 68000.

Conclusions

The A2620 is Commodore-Amiga's first entry into the 32 bit microcomputer market, but certainly not it's last. It can deliver significantly higher performance without changing anything else in your Amiga system, especially for math intensive applications. Most Amiga software supports the 68020 already, and it's simple enough to ensure things run on the 68020 that I expect most Amiga authors will take it seriously. Though, if you're interested in using a 68020 system, either now or in the future, it couldn't hurt to verify that a particular program runs on it before you purchase that program.

The design of 68020 add-ons for Amiga systems is considerably more complicated than ensuring software compatibility. If you're designing such a system, you can't be too careful. You should test it with any piece of add-on hardware you can get your hands on, just to make sure. If you're buying a 68020 add-on for your system, make sure you can test it with whatever other equipment you've got.

Take the same kind of precautions that you'd take when buying software, only more so, because you'll be spending more money in one shot than you'd normally spend on any single piece of software for the Amiga.

ProWrite v 2.0.1

Preferences 1.3 enhance the capabilities of this new version

by Gary L. Gehman

My purpose in this review, if I may be so bold as to quote from the UNIX system programmers credo, is to build on the work of others, or, at least on the work of one other.

In The Sentry Volume 1, Issue 2, Sal Conde wrote a capable, thorough assessment of ProWrite 1.1. In it, he fully described the program's functionality, ease-of-use, menu structure and apparent drawbacks. He left us with an overall favorable impression, but a list of enhancements that should accompany any future release.

Well, here we are with New Horizons Software's latest release of ProWrite (version 2.0.1) and, before I go into any great detail, I think it's worth restating Mr. Conde's previous concerns:

* In cases where the user opts to print using DRAFT and NLQ printer modes instead of the graphics oriented STANDARD, which requires use of Topaz 11 font ONLY- ProWrite should automatically select Topaz 11 in these modes.
* Prowrite is always in insert mode. It would be useful at times to have an overtype mode.
* If ProWrite is a full-featured word processor, where is the spell-checker? Similarly, where is the mail-merge function?
* Finally, ProWrite should be able to create a print format file, thus allowing printing as a background process. First, to briefly review for those who might not have been so fortunate to have read Sentry Volume 1, Issue 2: ProWrite is a WYSIWYG word processor for the Amiga that resembles Apple Macintosh's MacWrite in functionality and approach. Text editing is accomplished using a graphic interface and a variety of distinctly different typefaces called fonts. Like MacWrite, a ProWrite user employs the mouse to: select options from menus, effect format-

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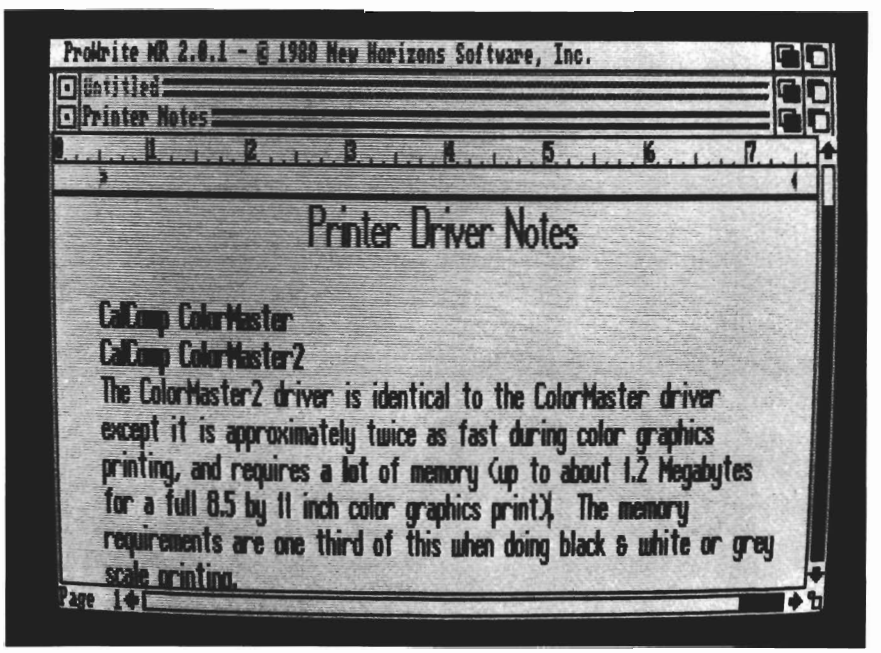
Prowrite's default font makes for easy on screen reading, both in high and medium resolution modes



Prowrite 2.0.1

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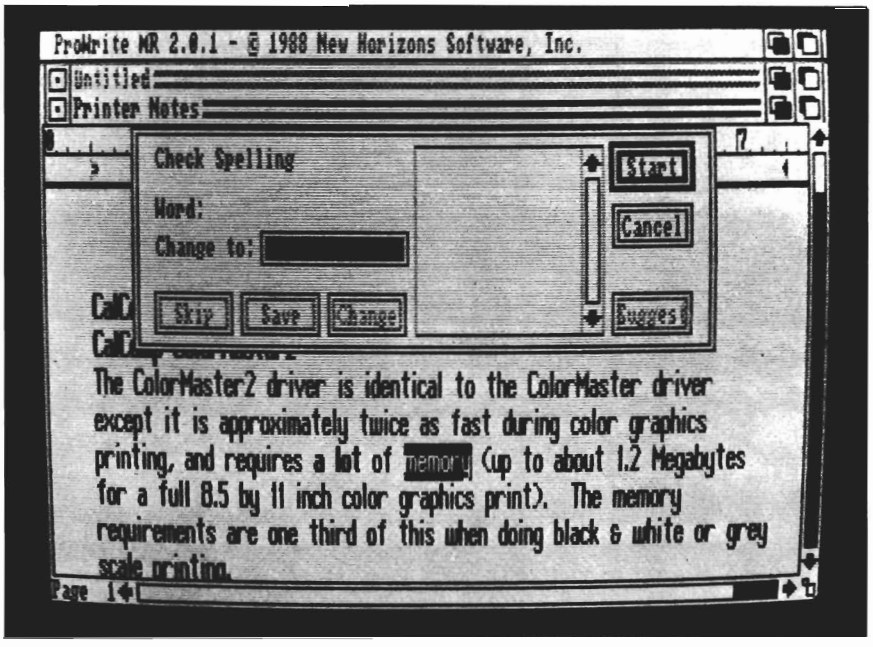
ting instructions from a graphic representation of a ruler, and to "scroll" up, down and across one or more pages. Unlike MacWrite, virtually everything that is accessible from the mouse/menus is also executable from keyboard commands.

A basic tenet of Macintosh design philosophy has always been to keep things very simple. ProWrite seems also to have adopted this approach as well. For example, let's take a look at the *Open file* requester. When attempting to open, or recall a previously written document, ProWrite puts up a standard Amiga file requester. It then scans whichever directory it is presently logged onto and displays all available documents in the logical place.

To put ProWrite through its paces, I thought I might bring in a piece of C language source code I had been working on and put a pretty typeface on it. Surprise, ProWrite will only recognize a document file that has an icon attached! If you run all of your programs from the Workbench and don't use programs like the CLI's ED, or any other programmer's tool, this may not be much of a problem. Everything that's created on the Workbench has an .info file (the icon) associated with it. But any file that doesn't have an .info file will be invisible to ProWrite.



When activated, the Spell Checker window appears, allowing you to choose from amongst several suggested words.

Since ProWrite's file requester lacks any string gadget where you could type in the name if you know it, these files are invisible to ProWrite.

Some positive things that have been emulated include the gracious and satisfying fonts. ProWrite's Marble, Granite and Serpentine are spare, exquisitely proportioned screen fonts that compare very favorably with MacWrite's New York, Geneva and Los Angeles. In fact, with such a large library of fonts, each available in a number of point sizes, ProWrite is better suited for the dot-matrixed variety of Desktop Publishing than most other Amiga packages available. But these are all features that we had on the earlier release of ProWrite.

What about Mr. Conde's criticisms and what, in fact, is new or improved about ProWrite 2.0.1?

Well, with respect to his question about NLQ mode and whether a future release of the program would automatically reformat text into Topaz 11; no, it doesn't. There is a stored preferences setting that you could double-click on that will open ProWrite pre-set to Topaz, but it doesn't automatically reformat any document that already exists. Does ProWrite offer overstrike as an alternative to always being in Insert mode? No, but I don't think this is quite the problem that some people do. After all, when you can delete entire passages with a sweep of the mouse (or a deft application of the Ctrl, Shift and cursor keys, where's the advantage in overstrike? Still, it is an important option to some people.

The new version of ProWrite does have a spell-checker dictionary that consists of 95,000 words. A simple menu selection is all that's necessary to set off a global examination of your document, but be sure and provide plenty of time. ProWrite's spell-checker will pace through the text, comparing each word

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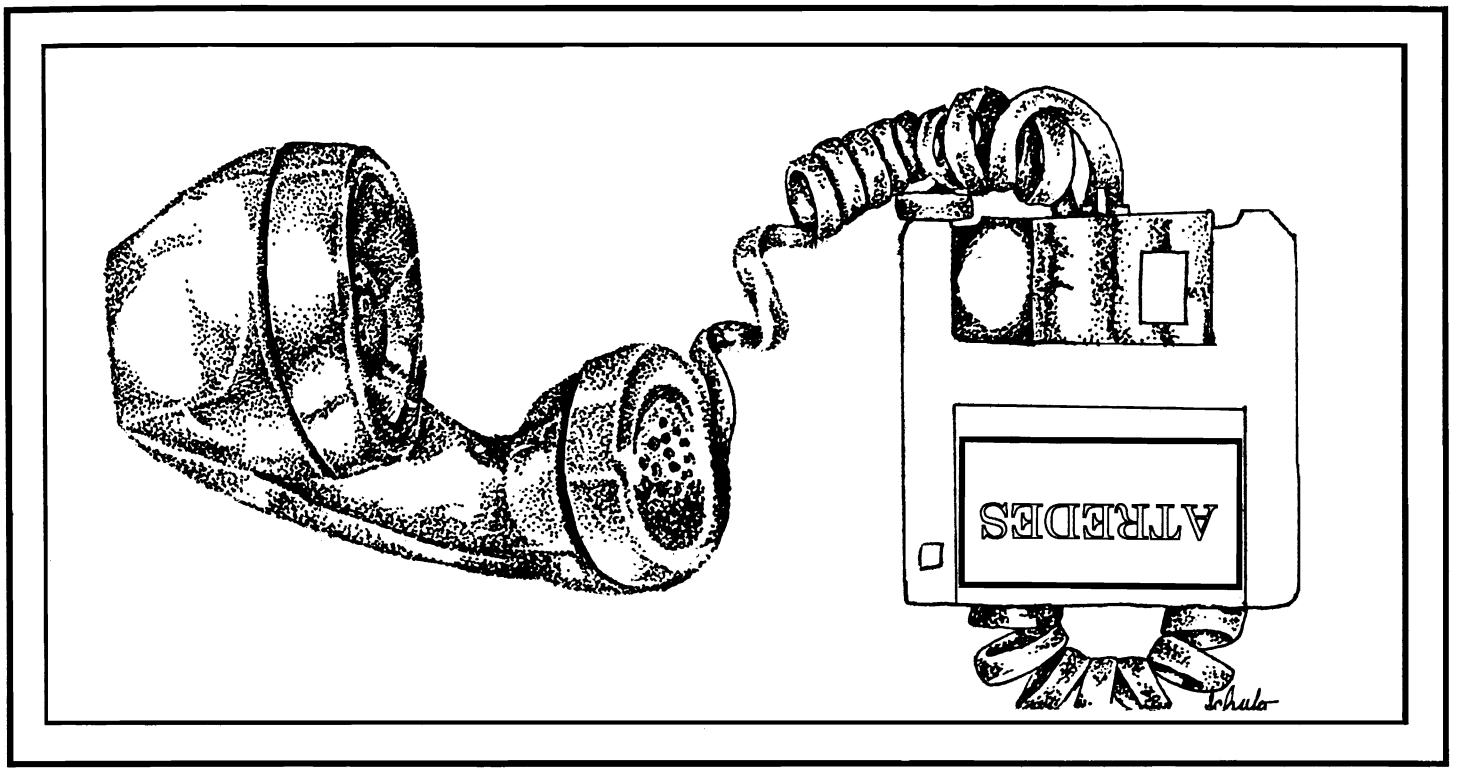

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The Atredes Terminal package will of course feature an Intuition type phone directory, which will include signon scripts and terminal descriptions. Atredes will support all popular upload/download protocols such as X,Y,Z modem, Kermit, Sealink and windowed protocols as well. Atredes will also feature a "Multi-Link" protocol to allow parallel transfers and access to the host system. This Incognito developed protocol will be released into the public domain. As per the wishes of the authors and Publisher, our Atredes products will be accessible to the public for customization as desired. We at Incognito feel that our products are only made better by user interaction and modification. That is why the Atredes system is modifiable by our users.

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

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Prowrite 2.0.1

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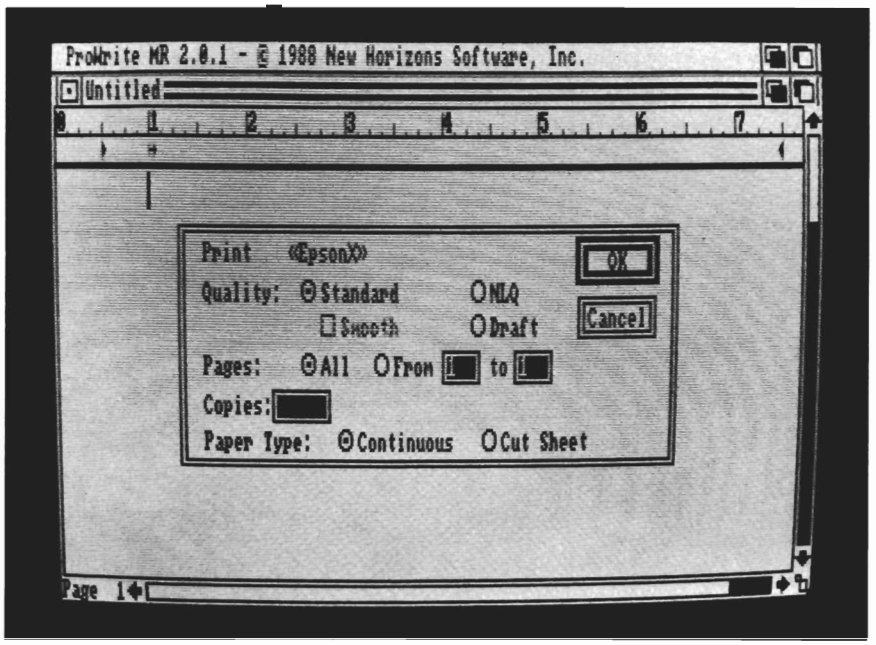

The print requestor allows you to alter the output quality of the print from within the Program

against words it knows in its dictionary. It accesses the dictionary on disk throughout the entire search. What normally happens is that the program searches its disk-based dictionary for each word. As it finds one that's used, it adds this to a running cache in memory. New words are first compared to the RAM list and, if they're not found, it then resorts to the disk again. Simply copying the full dictionary into memory at startup (on systems where there is sufficient room) speeds this process by magnitudes.

Another way to speed things up is to use a smaller version of the dictionary. ProWrite comes with a 21,000 word Small Dictionary that you can force the program to reference simply by deleting or renaming the Main Dictionary. Since it has much fewer words to search through, using the Small Dictionary speeds things up markedly.

While the spell-checking of this review had no problem with the word "spec," it took exception to "typefaces", "opts", "overtype", and "drawbacks." At each unknown word, the user has the option of updating the dictionary to include these new words. Simply by clicking on the save button, the dictionary will "learn" things it never knew before. Moreover, the additions can be saved as a new User Dictionary, so writers who use a highly specialized, technical reportoire, or those with massive memory and hard-disk systems can build custom dictionaries of jargon or even words in several languages.

ProWrite's Find & Replace functions are particularly nice. The only trick is to remember to relocate the cursor at the top of a piece, since searches are only performed from the cursor's present location onward. If you select Find, ProWrite puts up a requester asking you to type in the word to be found. Press the Find button and it will skip you to the first occurrence of the word in your text. You can then select the Find Next menu option or use a combination of the right-Amiga and N keys. If you're interested in changing a word to an alternate word, select Change instead of Find. This will provide a requester that has two string gadgets. Type the word to search for in the top one, and the word to change it to in the bottom. You can then choose to change one case, or all cases of the word.

As for Mail Merge capabilities, ProWrite 2.0 has got them. Merging is a handy utility that allows you to make a single "vanilla" document (a business letter, for instance) that can then have particular details (like a customer's name, address, or particular item purchased) slotted into spaces you provide. It's a simple matter to make up a merge file, although entries are limited to a single line. A sample merge file might be something like this:

Name, Date, Item, Purchased, Salutation
Betty, April 12, Hay, Bailer, yours,
Sven, March 22, Pipe Threader, Sincerely,
Curtis, Jan 6, Teddy Bear, infinitely sorry for the delay

This merge listing is saved as a text-only file for later reference. In the meantime, you would structure your form-letter around these items in the following way:

Dear <<Name>>:
On <<Date>> 1988 you came into our Hardware Store to purchase a <<Item Purchased>>. As we were temporarily out of stock, we had to place your request on Back Order. We're happy to inform you that the merchandise has been received and we are shipping it out to you this afternoon.
<<Salutation>>,
Trent-Huston Hardware, Inc.

You may then select "Print Merge" from the project menu and ProWrite will then proceed to print out as many copies of the letter as there are entries in the merge list. Each copy will have the appropriate information slotted into the space prepared for it.

Because it's a word processor, and that's its major task, it's hard to find a convenient place to interject a description of ProWrite's color image capabilities. Nevertheless, the program excels at importing IFF color and black and white pictures. These can be nicely converted into dot-dithered forms or used as-is. One wrinkle involves the importation of images created in screen resolutions other than the standard lo-med- hi-res. Pictures that began life as 320 x 400 interlaced HAMs, for instance, come into ProWrite twice as tall as they ought to be. They can be scaled down, but if you selected any form of shading option for the import, the resulting image will be severely degraded.

Mr. Conde's final objection to ProWrite is also my strongest one. When you want to print a file, ProWrite suspends all other activity while it sends your file to the printer. I understand that what is being printed is a graphic "dump" of the screen (or, rather, several successive screens) and that this information is pixel/dot related instead of text related. However, there should still be some way of writing a temporary bitmap file to either RAM or a section of blank, reusable disk space from which background

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Amiga memory designed with some thought ...

If you're an Amiga 2000 owner, you'd undoubtedly like to add more memory to your system. After all, the reason you chose the A2000 was for the expandability. The question now is "What's the best path for upgrading?". A 2 meg memory expansion card may seem the cheapest way, but it's too easily maxed out. You'd like to be able to expand beyond 2 megs, but the sticker shock of an 8 meg board populated with its minimum configuration of 2 megs makes this route unappealing as well. The Digitronics RC4 Ramcard was designed to solve these problems. The RC4 is auto-configurable as low as 1/2 megabyte, but as your memory requirements gradually grow, so can your memory, in steps of 1/2 meg, all the way up to 4 full megabytes of no wait-state fast memory!

If you're an Amiga 500 owner, adding memory to your system may seem a bit more difficult than simply plugging in an expansion card. Some vendors seem to think it's a good idea to tear open your machine and solder in printed circuit boards, voiding your warranty, overheating the inside of the case, and bringing an already overtaxed A500 power supply to its knees. Digitronics offers a much better solution. The same RC4 Ramcard designed to plug into the A2000 can be plugged into the expansion slot on the side of the A500 when installed in our adapter box. This adapter is a completely enclosed low-profile metal case with its own power supply, which can fit neatly under your external A1010. This allows for a quick and easy way to add up to 4 megabytes of fast memory to your A500. Best of all, if you should ever decide to move up to an A2000, the RC4 ramcard you've been using in your A500 can go along as well.

The RC4 comes completely assembled and tested, and is fully socketed for 4 megs of 256k x 4 DIP DRAMS (0k installed). Also included is a disk containing memory test software, our own version of a recoverable RAM Disk, and other useful utilities.

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Prowrite 2.0.1

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printing could occur.

Fortunately, though, the new release makes the printing process much more tolerable. With the previous version of ProWrite, a single page would take anywhere from 8 to 11 minutes on an Epson X printer, making multiple page documents impractical. A major improvement in ProWrite 2.0 is use of the new 1.3 printer.device and printer drivers to speed up printing. While this is Commodore's doing, we must applaud the inclusion of the 1.3 printer programs on a separate disk in the ProWrite package.

If you choose to use ProWrite from a harddisk, be sure to copy the DEVS directory from floppy to your DEVS. The time to print a full page is reduced to about 3 minutes when using preferences 1.3. Besides vastly increased speed, another benefit of 1.3 is improved print quality. When you select the print option, ProWrite will show the printer driver which you selected with preferences, and will offer a "smoothing" option if your printer is capable of more than one graphic resolution. Smoothing uses the new "antialiasing" capability of Preferences 1.3 to reduce jaggies on the printed page.

What other changes would I make? I think a menu option that would allow you to load the dictionary directly into RAM at the start of a session would be very nice. Certainly, there should be more fonts of the same quality as marble and granite, and at least three sizes of each. Some might ask for footnote capabilities or other advanced features, but I think that would be needlessly complicating an already enviable product.

The speed with which the program executes a non-disk dependent operation is noticably faster and cleaner than many other word processors for the Amiga, obviously the result of tight coding. If ProWrite 2.0.1 could be bundled with every Amiga 500 sold, there might be no reason for many users to ever look at another word processor. It provides a very easy, very flexible text editing function in an attractive, intuitive interface. It allows the user some measure of creativity through the use of fonts, some of which are downright pretty, as well as making a lowly Epson 'X' class printer look as good as the coveted Apple ImageWriter. It will check up on your spelling, and to top it all off, it has color image handling capabilities. Although I have my reservations about the user interface, New Horizons has implemented some very nice features within ProWrite 2.0 as well.

ProWrite 2.0.1 $125.00

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Dr.Term

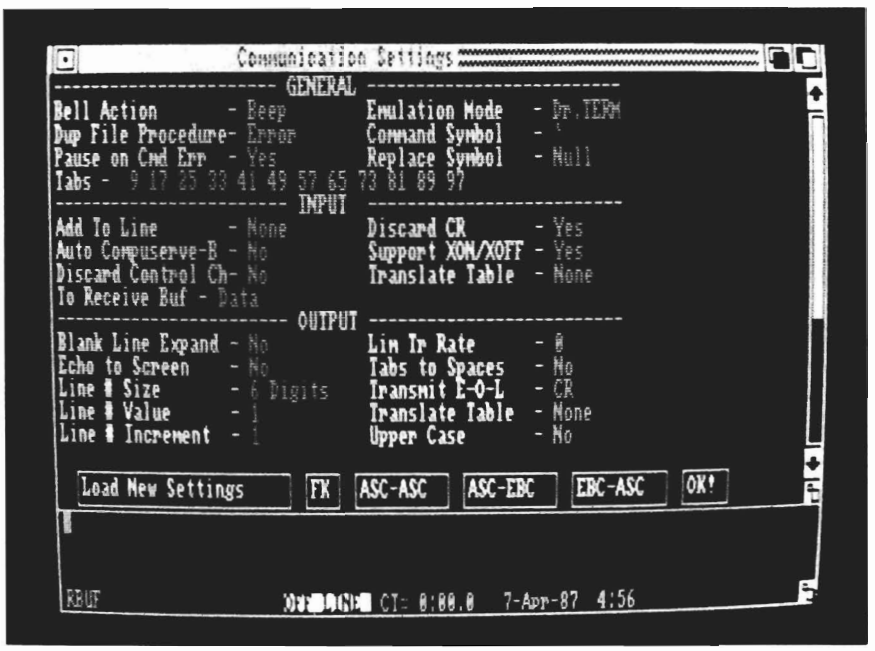
New fun with telecommunications from Progressive Peripherals

by George Rapp

Telecommunications is one area of computing that does have some standards. As a result, there are only a limited number of things you can do with file transfers or terminal emulations. For a telecommunications program to be good, it must offer something unique. Dr. Term tries, with the addition of a Windowed Xmodem protocol (WXmodem), and a remote terminal operations mode.

Dr. Term, like many telecommunication packages, offers terminal emulations for TTY, VT52, and VT100. One conspicuous omission is the ANSI terminal that will support ANSI graphics. The VT100 mode does offer some support of ANSI, but is limited to three colors. The protocols for file transfer include the standard X and Ymodem with checksum or CRC. Dr. Term also offers Kermit, which is supposed to support mainframe to micro transfers, Compuserve B for use of online services like Compuserve or PeopleLink, ASCII for simple text transfers, and Binary modes for two-way file transfer over clean phone lines. This selection seems geared to the business user more than the home user.

Dr. Term allows you to perform extensive telecommunication setup procedures



One feature of Dr. Term that could be of use to both home and business is the remote mode. This turns Dr. Term into a mini-BBS package. It will display a short welcome file and offers two levels of passwords for access. One level allows file transfer, while the higher level allows access to some of Dr. Terms and AmigaDos functions. The remote mode is easy to set up and operate. It is designed to be a simple way to use the computer away from work or home, and it does do this. It is enough for business use, but may disappoint some home users who would expect more based on the sketchy outline on the box. To

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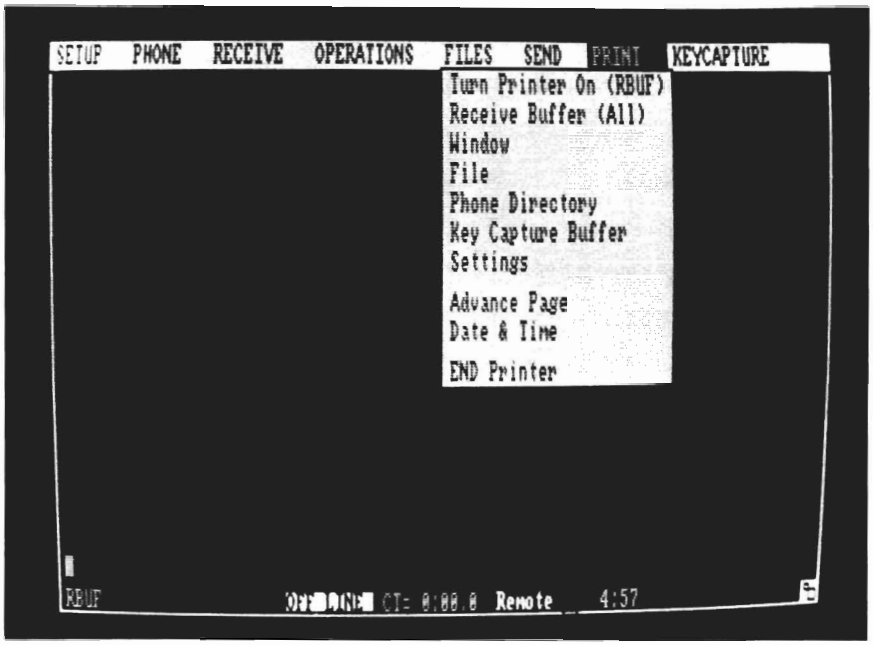
Dr.Term

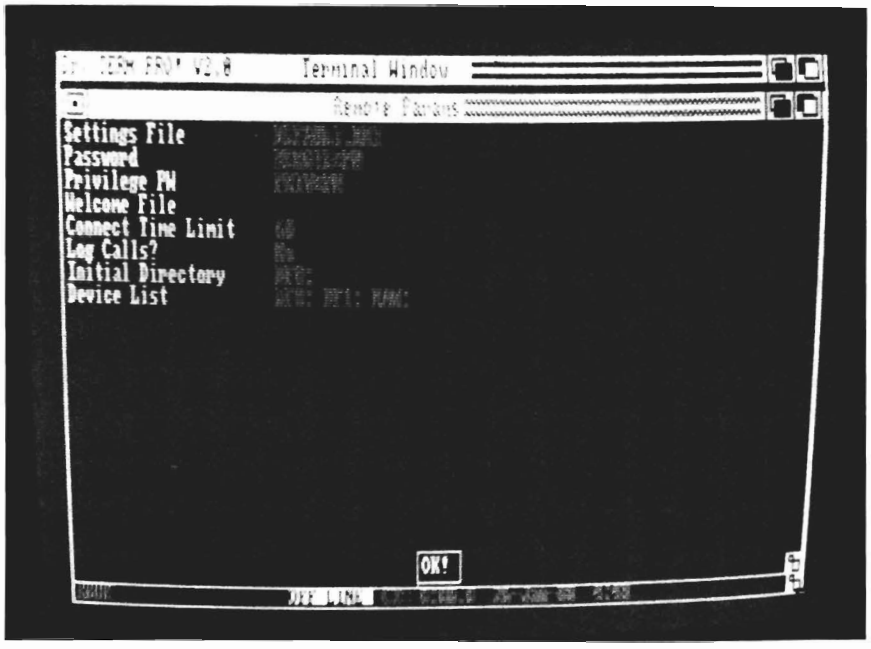
(continued from previous page)

add to the usefulness of Dr. Term as a business package, Software 66 included a small script language that allows automated logon to a remote computer and even automated file transfers. Another feature of Dr. Term is the status line at the bottom of the screen which helps the user keep track of an automated process. Dr. Term uses the ` key as a hot key to call up a command window. With this window active, it is possible to modify parameters while online or during file transfer. One thing that you may wish to do while online is review previous messages or lists. Dr. Term lets you capture the time online to memory or disk. The buffer or file can then be reviewed or scrolled through as a separate window in the Dr. Term mode. The buffer is switchable and variable in size from the same hot key choices. The hot key can duplicate any command on the menu bar (as well as some that do not appear on the menu bar). The list in the manual is very extensive, but the key combinations vary in length from two characters to 7 character strings, more if combined. This makes for a long list to remember and a difficult set of mnemonics.



A variety of printing options are available with Dr. Term

When used in remote mode, the program can serve as a "mini" BBS



The limitations of the terminal modes was my biggest complaint. The default Dr. Term mode allows most Amiga functions but does not support the ANSI graphics. The VT100 mode does support ANSI graphics but does not allow the window to be resized. I also had a terrible time trying to get Dr. Term to use a pulse dial instead of a touch tone dial. I do miss the ability to use full ANSI graphics, since many of the popular BBS systems support it and are enhanced by it. One thing that is missing in the area of file transfer is a high speed protocol like Software Enhancement Associates SEALink or omen technologies

Zmodem protocol. These two can save a great deal of time in file transfers and often prove to be more tolerant of poor phone line conditions.

Dr. Term is a good step for Progressive Peripherals into the world of Telecommunications. It is not enough to replace Diga! and Online 2.0 as my favorite telecommunications programs. Diga! offers their own doubletalk chat and transfer protocol, while Online 2.0 has full ANSI graphics support and Zmodem transfers. The phone directory of Dr. Term is limited to 300 entries, which is enough for me, but not everyone. It would also be nice to include a dial mode for it to act as an automatic phone dialer for voice numbers. Although you can create logon scripts, I do not use them because of the frequency with which I change my password and boards commonly called. If you are familiar with Dr. Term from an MS-DOS machine, then it is worth consideration. The biggest improvements would be the support of ANSI graphics, and the addition of Zmodem, SEALink, or both. With those inclusions, I could heartily recommend Dr. Term.

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A Mega-what?

Just after press time last month, we received word that Ebonstar had been enhanced to work on a 512K machine, rather than requiring 1meg as in the version we received. Now there's no need to pay an astronomical cost to get into space.

As all this news about the first 1Meg game for the Amiga circulated, it also found its way into our coverage of Ports of Call. POC has been designed to work on any 512K Amiga, and has no special memory requirements.

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Close
Load
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CLI
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WBEXTRAS
by Peter Dunlap

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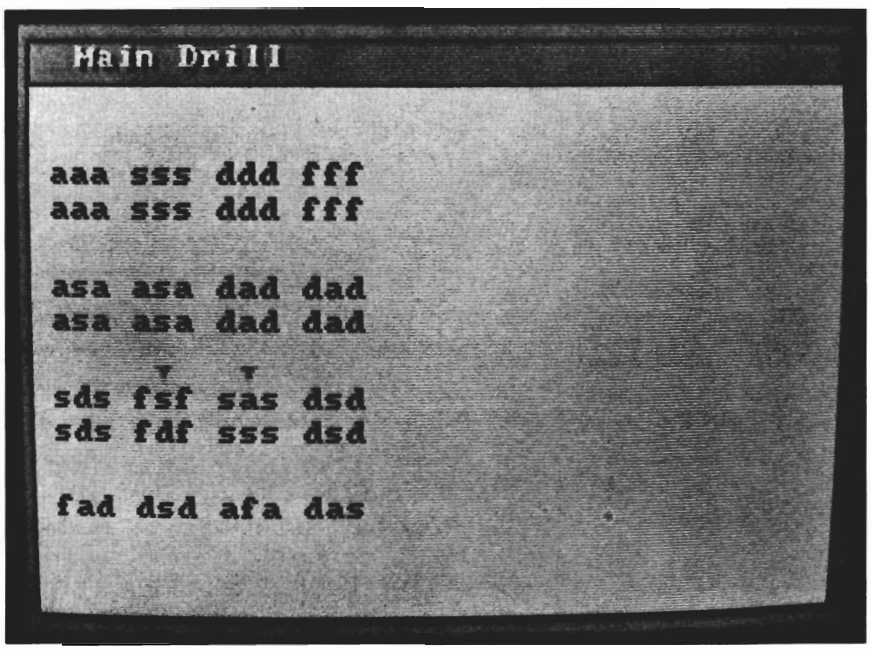
Intellitype

Sharpen your typing skills with this instruction course from EA

by Ken McNeill

Let's get something straight right off the bat- I never learned to type the right way. Through the years, as others took typing courses at school, I was at home on the computer telling myself, "I know where all the keys are." As a result, my typing technique is erratic and without method to accompany its madness. So when I sat down with Electronic Art's Intellitype, I saw myself as the perfect subject to test this program's capabilities. Intellitype calls itself "The First Typing Tutorial For Adults" despite its comic book packaging. Inside the packaging however, is a powerful, innovative typing program with many features. The program's strengths can be boiled down to three major areas: customized instruction, sophisticated error analysis and recognition, and a fresh way to keep the user interested-an ongoing adventure story.

Intellitype's approach to tutoring typists



First you'll need to format a blank disk with the name "Student". This is used to store data pertaining to your personal progress and status as you proceed with Intellitype. After doing so, double-click the Intellitype icon and class begins. The first choice that you make is whether to "browse" or to begin a lesson. Browsing is nice if you wish to sample a lesson or explore the program without formally "enrolling".

Before beginning the course, the user must first answer a few questions. The program asks for your name, age, and preferred length of course (30 or 60 days). I chose the more leisurely 60 day plan rather than the "accelerated" 30 day plan. You must also choose whether to emphasize speed, accuracy, or both by clicking the appropriate box. Finally, the program asks for the present date, and will ask for the date before each following session so that it knows when you began, and can keep track of your pace throughout your se-

lected time period. Next, it's time for the "Get Acquainted Drill" which is a warm-up exercise for the Diagnostic Test that follows. Intellitype displays a screen which resembles an average word processing screen with large letters and lines that are double spaced. You type what you see on the screen, and your position is indicated in red. As you type, your keystrokes appear right below the line you're copying. A short beep and a purple arrow accompany every incorrect keystroke, and you may backspace to correct these mistakes. Intellitype automatically "turns the page" when you reach the bottom of the screen. Luckily for me, this exercise is not evaluated; it is solely to get comfortable with the program's setup. The next item of business is the diagnostic test. This works exactly like the previous drill, except it's a little longer and the results are analyzed and evaluated. After completion of the test, Intellitype displays your typing speed in words per minute, and your accuracy percentage. You may now elect to examine a more detailed analysis of your performance, which supplies a set of bar charts, or you may begin your first lesson. For right now, we will save the indepth error analysis for later, and explore the main body of the program.

If your performance in the diagnostic evaluation was especially good, Intellitype may suggest that you begin your course with a lesson beyond lesson one. In my case, I was not at all surprised when the program did not suggest this for me, and instead went on to save my enrollment and test data to my blank "student" disk. Now that all of the "paperwork" is out of the way, you can begin your first lesson of the course. There are 30 lessons all together, each teaching and emphasizing different aspects and techniques of typing. Each lesson is a little different in format, but most of the lessons have the following elements: Introduction and warm-up, Keyboard Drill, Common Letter Combination Drills, Special Topics, Main Drill, Analysis, Prescription, Final Test, Test Analysis, and Overall Analysis.

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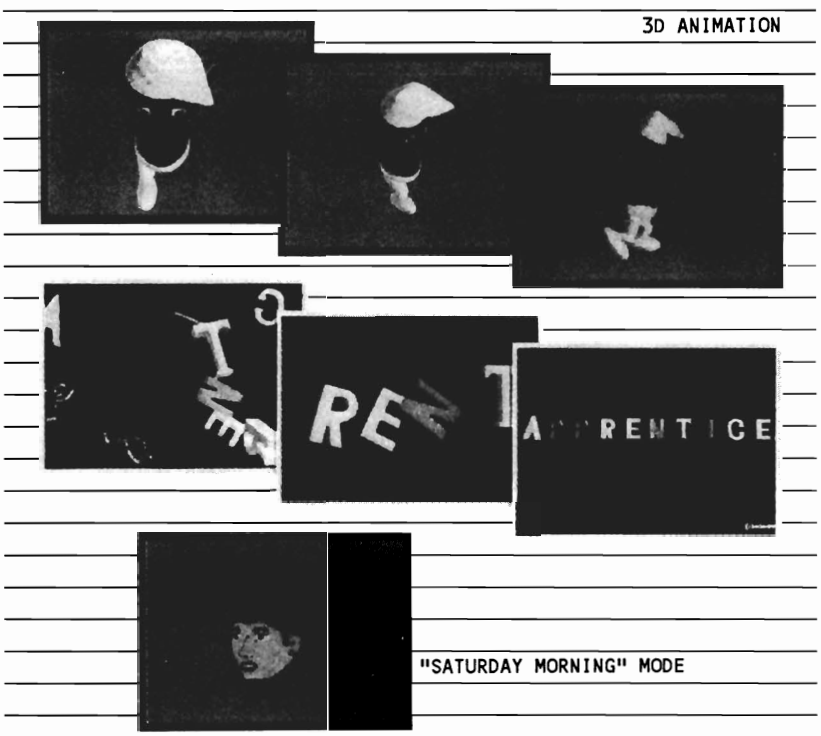

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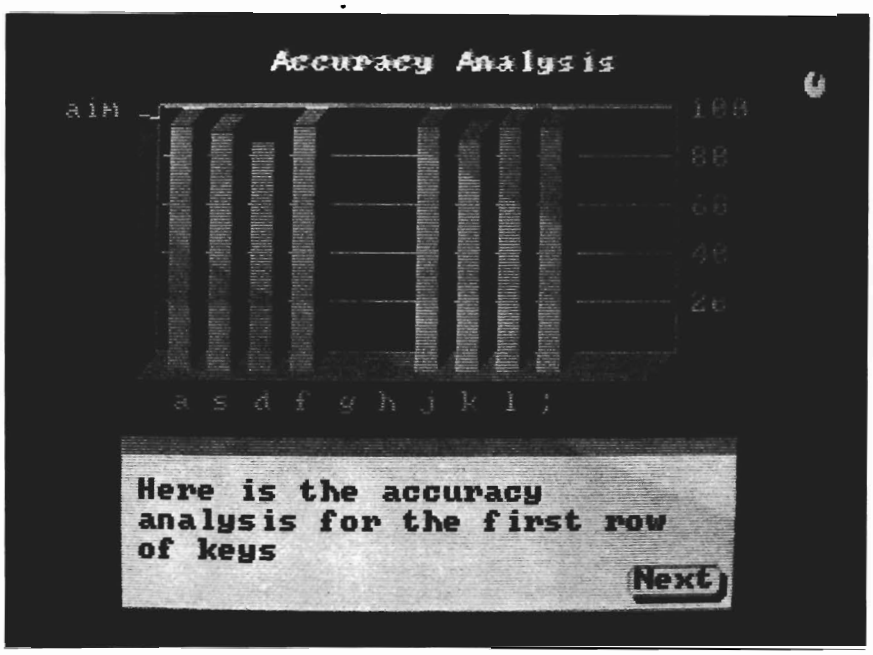
Intellitype *(continued from previous page)*

While this may sound like a long and complicated list, the lessons actually flow quickly and smoothly, and before I knew it, I had completed my first lesson with ease. Though it is not recommended by the manual, you can freeze the program at any time during the session to take a break and resume later, or you can skip any part of the lesson you want. Let's take a look at the first lesson to see how each element fits together.



After viewing the Stats of your typing speed, it's time to let the program create a complete analysis of your keystroke accuracy

The Introductory text gives the content of the lesson, some hints, and a warmup drill. Lesson one's objective is to familiarize the student with the key positions at the "home" row. Intellitype gave me the correct fingering for each key, and indicated that correct finger posture greatly helps. They were right. In no time, I was breezing through the warmup exercises that limbered my fingers with simple key combinations.

After this I chose to do the Keyboard drill entitled the "Tightrope Typist" game. As letters appear on the sample keyboard on the bottom of the screen, you type that letter, and in doing so a small figure of a female tightrope walker gradually progresses across the rope with her balance bar in hand. One false keystroke, and our poor girl falls with a scream and hits the bottom of the screen with a "thud". After every fall, the tightrope walker is returned to the start, and you must try again to get her safely across. She must have been pretty bruised by the time I got her successfully to the other side, but this little game is fun and I quite forgot that I was learning in the process. The Special Topics and Common Letter Combinations Drills work on noteworthy letter combinations or special considerations like reaching for the "y", or hitting the "e" and "d" keys in succession.

The Main drill is the crux of Intellitype's purpose. It tells a cliffhanging story to keep you interested while you work to improve your abilities. The story line follows the two main characters, Ted and Laura, in their mysterious adventures. The story is told in the third person with lots of dialogue. I would describe the style as "old-fashioned detective soap opera". After you finish this drill, which is like a chapter in the ongoing story, Intellitype takes about ten seconds to analyze the drill's results. Then, like the diagnostic, you will be told your wpm rating (words per minute), and your percentage of accuracy. You may again elect to see a series of bar graphs that track your errors. This is where Intellitype stands out from other typing tutorials. You are shown graphs which give a complete picture of your performance in the areas of speed, accuracy, and special problems. On a sample graph, ten letters are shown on the horizontal axis, and each key's accuracy percentage is graphed vertically. There is an average trend line drawn as well as an "aim" line showing your goal. You can easily look at your progress by comparing these two lines.

Speed is also analyzed for each key so that you can see where

(continued on page 26)

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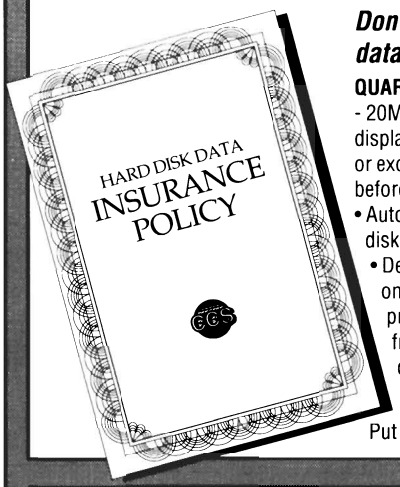

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Intellitype (*continued from page 24*)

you're sluggish. Another graph called "Advanced Errors" gives percentages in seven areas of common typing mistakes. Here, Intellitype really gets down and dirty. It tells you about reversed letters (rvevrsed), doubled letters (doublled), Capitalization MIS-Takes, transposition errors, omissions, added letters, and dyslexic mistakes. What a list! Most graphs have an aim line and an average line, as well as an expanded explanation on your performance for any key. For example, click the bar for the "a" key and Intellitype explains a little more about why you may make a lot of mistakes when reaching for the "a".

After Intellitype processes the results of the improvement drills, you will either be congratulated and told to move on to the final exam, or you will receive a "learning prescription". The prescription might be a short remark and a special exercise to help you in a particular trouble area. A summary for each lesson is contained in the Final Test, which is also accompanied by a detailed analysis if you care to view it.

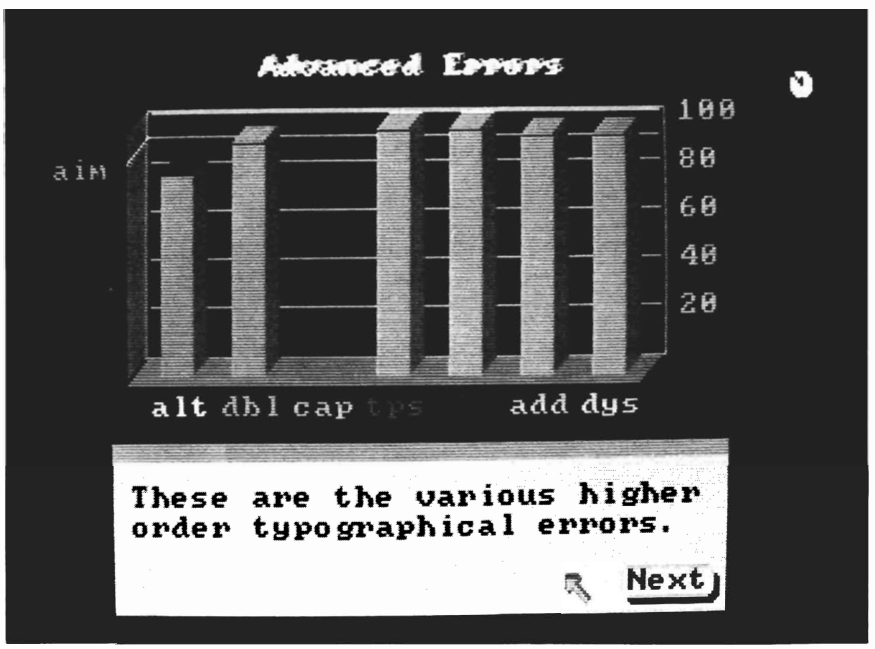
After an evaluation of overall progress from beginning to end, the day's results will be recorded on the data disk, and you are returned to the main menu. From here you could immediately move on to another lesson, re-do an exercise from a previous lesson, or quit for the day. Also from the main menu, you can change certain options such as emphasis on speed or accuracy, and course length. The "help" option provides brief assistance and explanations.

I found Intellitype to be very powerful, effective, and fun. The program is sensibly structured and easy to use. Intellitype claims to use "artificial intelligence". That is, its customized setup and error recognition/analysis are extremely sophisticated and comprehensive.

My only complaint is that the program does not have an on-screen diagram of where the hands and fingers should be. The diagram for Intellitype is in the manual, and the program tells you where you should be placing your fingers, but there are no helpful "ghost-hands" like those in some other tutorials that I have seen.

Even without "ghost-hands" however, I can say without a doubt that Intellitype is one of the best typing programs I have ever used. Its success lies in the fact that it is not centered around a video game. Intellitype is a serious typing teacher for adults, yet in its power and effectiveness, it also manages to be fun and flexible. In fact, after using intellitype, I typed this entire article in only thirty seconds. Well, not really, but I have improved greatly. So if you've been meaning to learn to type, or if you are not satisfied with your present speed, you would most certainly benefit by the Intellitype approach to teaching.

The graphs become your report card of typing strengths and weaknesses



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Impact A2000

The new autoboot SCSI board from Great Valley Products

by George Rapp

While there are many companies producing software for the Amiga product line, there are only a few hardware manufactures in our market. So we were pleased to learn of a new entrant, Great Valley Products in Malvern, Pa. GVP may be new to the Amiga, but they have been designing and manufacturing hi-tech products, including expansion RAM for Ensoniq synthesizers, for some time. The GVP product line consists of SCSI hard drive controllers and expansion memory for the A500 and A2000. We received the first product that GVP is shipping for review, the Impact DMA SCSI controller for the Amiga 2000, complete with 512K of RAM and a 40 Meg hard disk. You might think that there are many harddisk controller cards for the A2000. Well, think again. The only other controllers specifically designed for the A2000 that are shipping as I write, are Commodore's A2090 and possibly the Microbotics Starboard with an adapter.

The Impact is special in several other ways. Open the package and these become obvious. First, there are the rows of RAM. This is the first Multi-Function board for the A2000. Combining expansion RAM and the SCSI controller on one card is designed to save expansion slots and meet two requirements with one purchase. This is common practice in the IBM PC market and will be especially useful to those 2000 owners who plan to fill up their systems with Video goodies, etc. Second, are the two sockets for AutoBoot ROMS. These were not provided to us, since GVP, along with the rest of us, must wait for Commodore to release the 1.3 Kickstart ROM for Autoboot to function.

What's the big deal about AutoBoot you ask? Well, before the 2000 can compete in the business market with IBM and Apple, it must be able to offer the same functionality as its competitors. The one function missing

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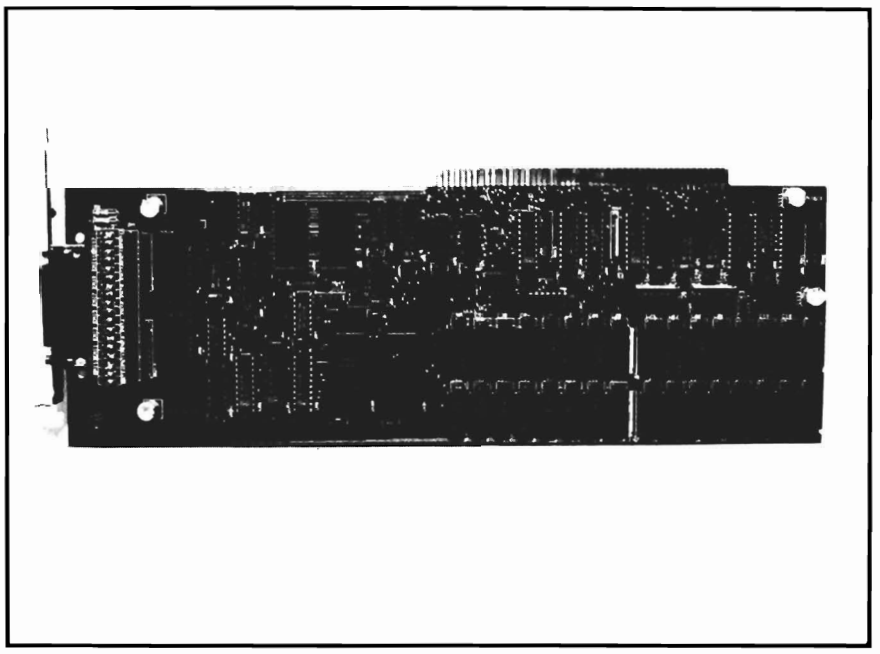

Impact A2000

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is the ability to start the system from the harddrive. Commodore is well aware of this, and has developed the necessary operating system software, KickStart 1.3. This will be placed on ROM and made available to existing 2000 owners in the near future. Once your 2000 has the required 1.3 ROMS, you can boot your system from many devices, including a harddrive. Each harddrive manufacturer must include software in ROM on their device to complete this process. GVP's Impact is the first board we know of to include the needed ROM sockets. Their engineers assure us that they have Impact controllers autobooting with the Gamma 1.3 software. We'll have to wait for Commodore to report on this. (Commodore's A2090 is being revised to include the necessary ROM and will be released as the A2090A).

On to installation

The 2000 design makes expansion simple and straightforward. The hardest part is undoing the screws on the Amiga cover and sliding it off. All that remains is removal of the slot-blank at the back of the computer, and inserting the card into place. The Impact has an internal 50 pin SCSI connector which should allow connection to almost any SCSI hard disk. The card also has a 25 pin external connector which is a "standard" and can be used for MacIntosh style drives including CD-ROM, etc. Using this connector up to 7 other drives can be daisy-chained using the same SCSI controller.

The installation software is one of the easiest to use I've seen. The manual doesn't go into any detail on how to use the software. Instead, it just lists which icon handles the formatting and partitioning of the hard drive, and which creates a boot disk. Using this point and click approach, the format process is simple to follow. The software also includes extensive help facilities. The manual suggests using multiple partitions on hard disks, especially larger ones. This is excellent advice since AmigaDos then handles and validates each partition separately. Should a surface defect develop that invalidates the drive, only that one partition will show as bad, and not the whole disk. In addition, most types of file functions are faster with smaller partitions, because the file allocation table is smaller and takes less time to read and sort.

Once the drive is formatted, you must create a boot disk (at least until 1.3 is released). A boot disk is simply a standard Amiga 3.5 inch disk, which assigns the system files to the hard disk from the floppy disk. You create your boot disk by clicking on the create bdisk icon and following the directions. All that remains is to load up your harddrive with software.

The Impact board is a DMA board, which means that data can be transferred from the hard disk to the memory of the computer without the 68000 CPU doing the work. In a multitasking system, this is a very important consideration. I have a non DMA hard disk on my Amiga 1000, and I cannot download a file at 2400 baud and do any type of extensive disk access without the download slowing. With the DMA drive on the 2000, I am able to download and access the disk without any noticeable slowing. The Impact controller also has 4K of onboard cache to further speed up its operation. The combination of DMA channel and 4K buffer make for a very fast transfer rate (GVP claims a rate of four megabytes per second).

The impact controller is a real first in the Amiga market in several respects. It is the first board that we have received that will autoboot under AmigaDos 1.3, and it is one of the first boards for the 2000 that combines the functions of a hard disk controller and a RAM expansion board. The particular configuration we received came with 512K RAM installed. The Impact can also support 1 Megabyte of RAM by adding 16 DRAMS. Both the expansion memory and the harddrive will autoconfigure using 1.2 or later kickstart. There is an interesting tale in the 256K DRAMs used by GVP. These are common 256K by 1, 150 nanosecond RAM chips. Until recently these chips sold for $2 each and were provided by Asian companies. Legal action by American chip manufacturers forced the Asian companies to either raise their price or withdraw from the US market. They

(continued on page 62)

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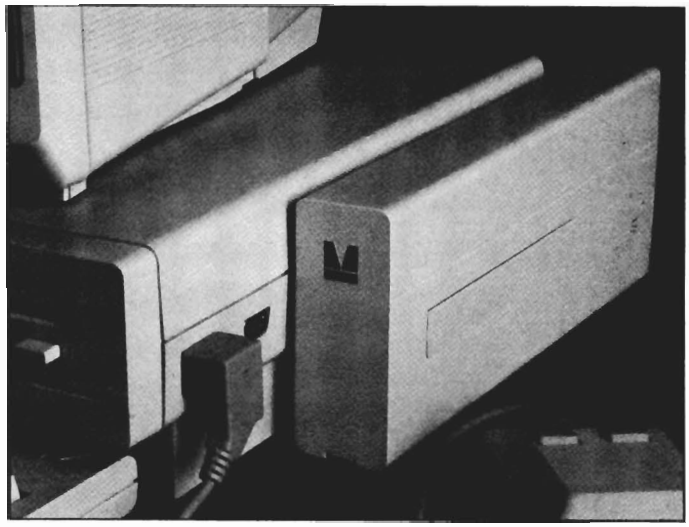

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This card has decks!

The basic **StarBoard2** starts out as a one megabyte memory space with 0k, 512k, or one megabyte installed. If you add in an optional **Upper Deck** (which plugs onto the Main Board inside the case) you bring **StarBoard2** up to its full two megabyte potential. You can buy your **StarBoard2** with the Upper Deck (populated or unpopulated) or buy the Upper Deck later as your need for memory grows.

And you can add other functions to **StarBoard2** by plugging in its second optional deck –the Multifunction Module!

StarBoard2: functions five!

If we count Fast Memory as one function, the addition of the **MultiFunction Module** brings the total up to five!

THE CLOCK FUNCTION:

Whenever you boot your Amiga you have to tell it what time it is! Add a MultiFunction Module to your **StarBoard2** and you can hand that tedious task to the battery-backed, real-time clock/calendar. A small piece of MicroBotics software in your WorkBench Startup-Sequence reads the clock and automatically sets the time and date in your Amiga. And the battery *is* included (we designed it to use an inexpensive, standard AAA battery which will last at least two years before needing replacement).

THE FLOATING POINT FUNCTION:

If any one aspect most characterizes the Amiga it's *fast* graphics! Most graphic routines make heavy use of the Amiga Floating Point Library. Replacing this library with the one we give you with your MultiFunction Module and installing a separately purchased Motorola 68881 FPU chip in the socket provided by the Module will speed up these math operations from 5 to 40 times! And if you write your own software, you can directly address this chip for increased speed in integer arithmetic operations in addition to floating point math.

THE PARITY CHECKING FUNCTION:

If you install an additional ninth RAM chip for every eight in your **StarBoard2**, then you can enable *parity checking*. Parity checking will alert you (with a bus-error message) in the event of any data corruption in **StarBoard2**'s memory space. So what good is it to know that your data's messed up if the hardware can't fix it for you? It will warn you against saving that data to disk and possibly destroying your database or your massive spreadsheet. The more memory you have in your system the more likely it is, statistically, that random errors will occur. Parity checking gives you some protection from this threat to your data residing in Fast RAM. Note that the Amiga's "chip" RAM cannot be parity checked.

THE IMMORTAL MEMORY DISK FUNCTION (STICKY-DISK):

When you've got a lot of RAM, you can make nice big RAM-Disks and speed up your Amiga's operations a lot! But there's one bad thing about RAM-Disks: they go away when you re-boot your machine. Sticky-Disk solves that problem for you. It turns all of the memory space inside a single **StarBoard2** into a Memory Disk that will survive a warm-reboot! When your Amiga attempts to grab a **StarBoard2** in Sticky-Disk mode, a hardware signal prevents the system from acquiring the **StarBoard2** as FastRAM (and thereby erasing your files) –instead it is re-recognized as a Memory Disk and its contents are preserved intact. If you want to work rapidly with large files of data that are being constantly updated (such as when developing software) you can appreciate the Sticky-Disk!

Fast RAM –no waiting!

StarBoard2 is a *totally* engineered product. It is a ZERO WAIT-STATE design, auto-configuring under AmigaDOS 1.2 as Fast RAM. Since AmigaDOS 1.1 doesn't support autoconfiguration, we also give you the software to configure memory in 1.1.

Any applications software which "looks" for Fast RAM will "find" **StarBoard2.** And you'll find that your applications run more efficiently due to **StarBoard2** on the bus.

A passing bus? Indeed!

What good is an Expansion Bus if it hits a dead end, as with some memory cards? Not much, we think –that's why we carefully and compatibly passed through the bus so you could attach other devices onto your Amiga (including another **StarBoard2**, of course!).

The sum of the parts...

A really nice feature of the **StarBoard2** system is that you can buy exactly what you need now without closing off your options for future exapansion. You can even buy a 0k **StarBoard2** (with a one megabyte capacity) and populate it with your own RAM (commonly available 256k by 1 by 150ns memory chips). When you add **StarBoard2** to your Amiga you have a powerful hardware combination, superior to any single-user micro on the market. See your Authorized Amiga Dealer today and ask for **StarBoard2**

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StarBoard2, 2 megs installed:	$879
StarBoard2, 2 megs & MultiFunction:	$959
Upper Deck, 0k (1 meg space):	$ 99
MultiFunction Module:	$ 99
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Standard 256k memory card:	$129
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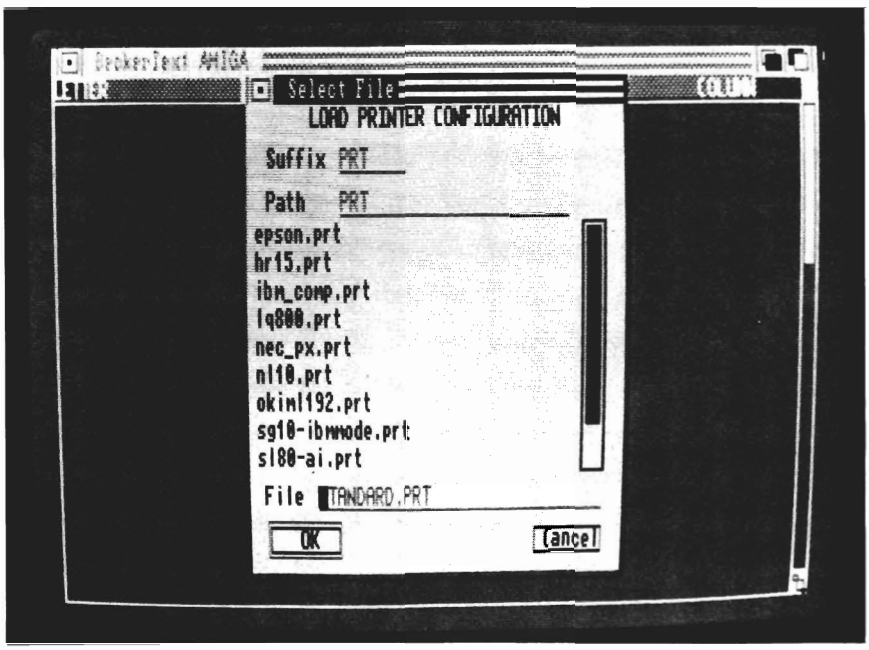
BeckerText

Textpro's big brother

by George Rapp

A few months ago, we reviewed TextPro from Abacus Software. It was very good as a text editor, but lacked capabilities necessary for a full featured word processor. BECKERText is a new offering from Abacus that aims at the high end of the market with features like: spell-checker, multiple columns, auto-hyphenation, math capabilities, index generation, table of contents generation, fast operations, and a high degree of customizing. In addition to being feature-rich, the authors chose to make a fast and customizable program. The program disk also includes BTSnap, a screen capture routine that is used to prepare graphics for import. *"BT"* is a WYSIWYG word processor with respect to font styles, that is bold, italic, underline, superscript, subscript. However it is a single font system which does not have access to Amiga bit mapped fonts.

Upon first booting BeckerText, you are asked to choose your correct printer configuration



When you first start the program, you will be presented with a file requestor which is used to select the printer driver you will be using (more on this later). Next, a clean uncluttered display will appear. A status line at the top of the display gives vital information and scroll bars appear along the side and bottom. Control of all functions is handled through dialog boxes, requesters and pull down menus. The most common requesters, are for selecting the printer type and allocating memory for the document.

The pull down menus are arranged under five headings: File, Edit, Style, Formatting, and Calculate. The File menu has the basic commands for loading and saving a document, loading and saving Macrokey definitions, opening new windows if memory allows, selecting output modes (the serial port or disk), screen font, text or C source code entry. I am puzzled as to why the screen font selection is

on the long list of file options, as it seems better suited for the Style menu. The Style menu contains options for changing the printer font, print style, character and line spacing. There is also an option for converting to all upper or lower case text.

The Edit menu is similar to the the edit menu of Notepad, with a few additions. BT has added a search and replace function, as well as date and time stamps from the menu or Amiga "d" and "t" hot keys. One of the most powerful features is the index option of the Edit menu. This option allows you to select key words that will be used to build an index while printing out the document. The resulting index is stored separately under the same file name except for the suffix .IND appended to the name. Similarily, the Contents menu option helps build a table of contents for you which is saved with the suffix .TOC.

Surprisingly, these options are barely touched upon by the manual. The ability to create a Table of Contents and Index can be very valuable to many students, and even to programmers. There is another option for inserting place holders for use as data entry templates like a mail merge function.

The Formatting menu contains another list of functions. These include justification, tabs, and indentation controls. More powerful features are the auto hyphenation function that works better than the standard word wrap with text justification. Two options, Insert and Num Lock, act as toggles, turning the character insert on or off and the numeric key pad as numbers or as cursor controls like on an IBM PC. Those of you with the Amiga 2000 have the labels on the keypad for these cursor functions. The last option on the Formatting option is the Format requester. This requester allows you to set the paper length, line spacing, number of columns, column width, margins, header and footer spacing, and the number of lines per page. Very few word processors have these column functions, but the others are fairly standard. By combining the graphics import and column

(continued on next page)

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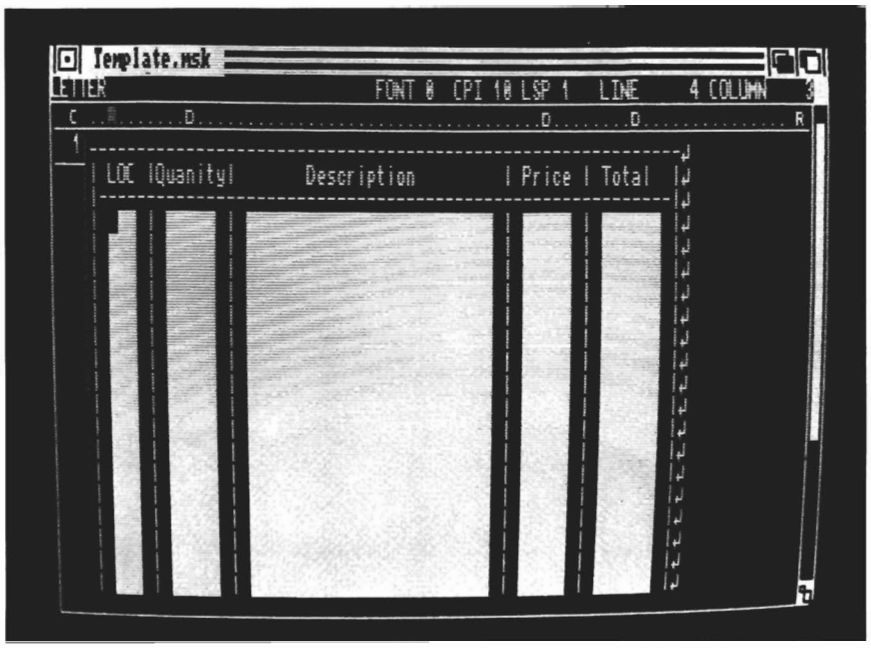

The program supports the use of templates, which you can set up for automatic calculations accross rows and columns

widths, it is possible to put text and graphics on the same line. How this prints out may depend upon the capabilities of your printer.

To set up for multiple columns, you select the format option from the format menu. Here you will find two gadgets for setting column specifications. First, type in the number of columns you need, then the width for each column. BT will check to be sure that the specifications fit the page size. Click on OK, and the editing screen appears. Now as you type, you'll find that your text is restricted to the column width you specified, but that the second, or third column doesn't appear on the same screen. Instead, BT stacks the columns on top of one another so that a page of three columns appears on many screens. The auto-hypenation feature works very well in this mode, and produces the desirable "newsletter-look" on the printed page. I find that the lack of side-by side columns on the display limits the usefulness of this feature.

The Calculate menu lets you set up the numbers in your document for calculations. You can have math formulas occur within a line or as a column of figures. The basic functions include addition, subtraction, multiplication, division, and percentage calculations. The functions are done by register math which should be familiar to assembly language programmers or HP calculator owners. The column math works very well with the clipboard device and a spreadsheet that also supports the clipboard. The row math tends to read better in text and is a little easier since it does not need to be justified into columns. Decimal math is supported up to six places, with two being the default. Again, these math capabilities are only available in Word Perfect and Becker Text.

BT includes a spell-checker, which TextPro lacked. The dictionary is unusual in that it can be made RAM resident. To do so, you must reduce the number of allowable pages of text to make room for it. This allows the choice of online spell-checking as you type. This was an interesting feature, but I quickly abandonded it since it puts up a requester when a word is typed in incorrectly. This is not a problem for everyone, but since I tend to write from notes and do not look up at the screen often enough, I wind up typing over the incorrect word. I feel that this configuration of spell-checker is not very memory efficient compared to a very fast look up system. As part of the effort to speed up the dictionary, you have to type in the breaks for the syllables of words that BT does not have in its rather small dictionary. It takes more time initially, but it does make for a fast spell checker once it is built up. In the quest for speed, BT dropped the use of the Amiga print drivers in favor of their own. These did not work in our early version of the TextPro release, but BT has fixed most of them. I still had problems printing text and graphics at the same time on my almost Epson compatible printer. Given enough time, it should be possible to correct this since BT uses a simple

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text file for generating the print driver. The appendix of the manual gives an adequate description of the procedure and a pledge of support if problems persist. In my case, the printer manual was less helpful. I suspect that more experimentation with the printer will produce satisfactory results. The emphasis on speed did produce some of my complaints with BT. It is very customizable, with options for editing C source, as well as text, the ability to load a variety of dictionaries, customizable function keys, etc., but there is little provision for saving different startup configurations. It is possible through creating templates and using the function keys to get around this, but I would like a group of storage files to choose from. To maximize speed, much of BT was written in assembly, with some taken directly from TextPro. There is nothing wrong with this method of programming, but it does give a slightly disjointed feel in running, as different features were added at later dates. It would be nicer if all the requesters popped up at the same place and in the same way. I would also like a beep or flash with the online spell checker to alert me to look at the screen. For now, the offline dictionary works like most others I have used and it is no great problem. I do not like having to reserve memory for my document and have to guess how much is left over. A system status gadget as in Write & File would be very helpful especially since BECKERText does not tell you that you are out of memory, it just stops working. The program requires 512k of ram, but in common use, 1 meg is a more realistic minimum.

BT is like the other Abacus products we have reviewed. It uses a one time installation procedure as its form of copy protection. You must boot with BT the first time and enter your name, address and serial number. The disk spins and installation is complete. You can now make backup copies, or install BT on a harddisk. BT also includes a script for harddisk installation. This is a practice which more productivity software should include.

BeckerText is not my favorite word processor, but it does have

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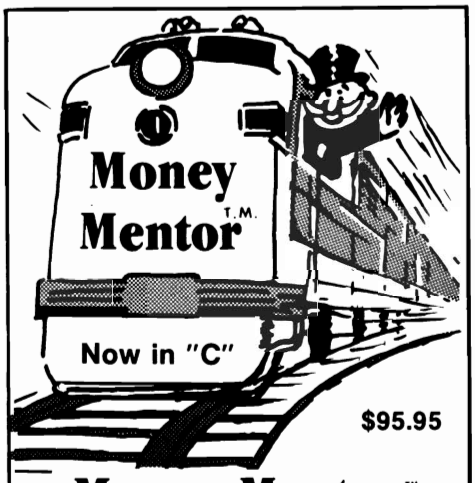

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BeckerText

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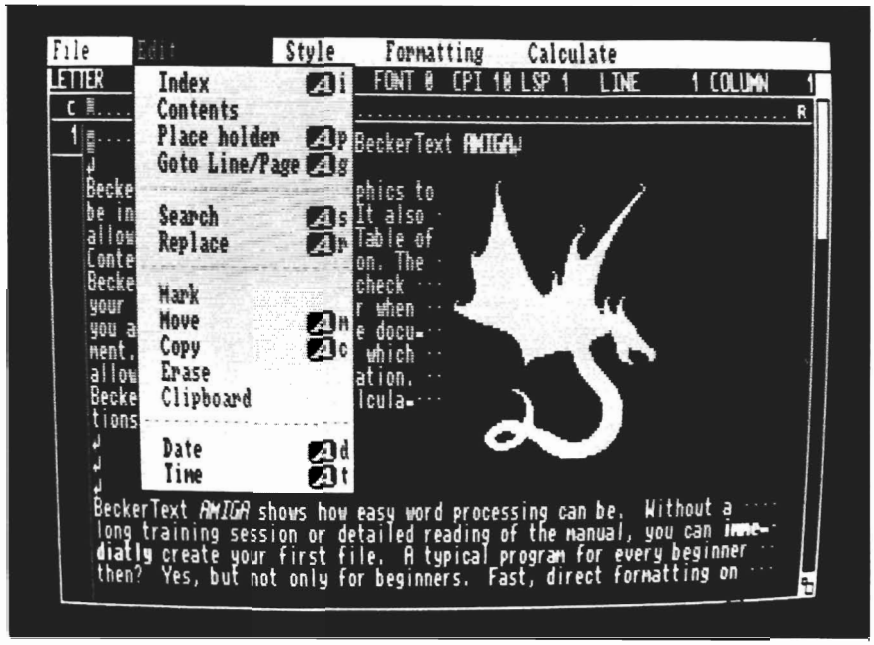

BeckerText has a number of powerful features, such as Index and Contents generation

a wide set of features that make it a valuable piece of software to have. I got used to the sharp, fast cursor response very quickly. It is very fast in scrolling through the document and handles selecting of text quickly. The graphics import is fast, but does not handle color images well. I doubt that BECKERText's print drivers will keep their great advantage in printing speed once Workbench 1.3 is released, but with a printer not listed in preferences, it may be ideal. The Table of Contents and Index generation are fantastic features for long reports or books. The multiple columns and graphics make it possible for BT to turn out a sharp looking newsletter without additional page setting software.

BECKERText is the word processor that TextPro should have been, but is it a competitor for WordPerfect? Not quite. Yet, BT packs almost the same range of features into a much smaller package. There is no question about a choice between TextPro and BeckerText. Considering the small difference in price between the two, BT represents a much better value.

BeckerText $150.00

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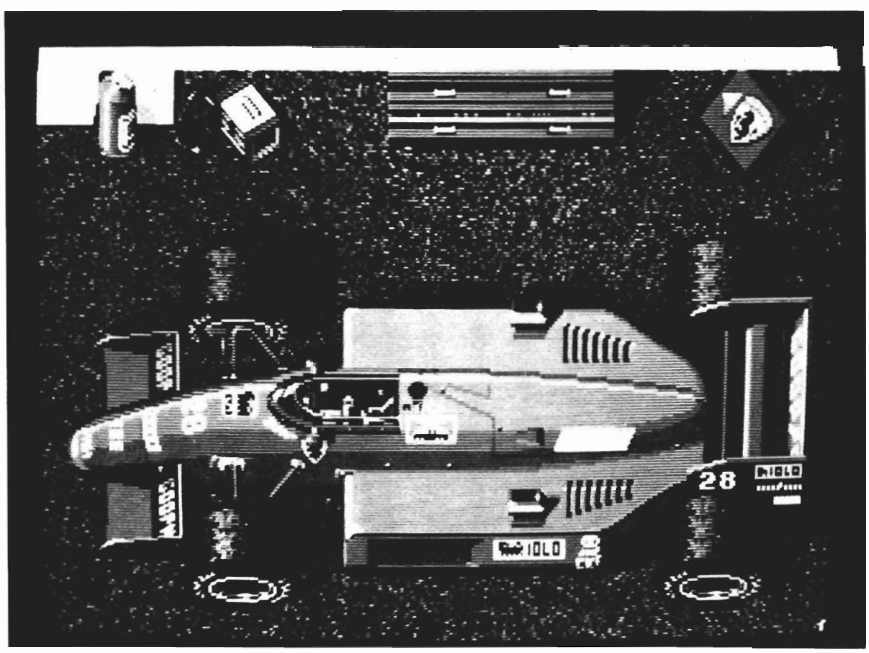
Ferrari Formula One

The realistic racing simulation from Electronic Arts

by Carl Bennett

Of course, you enjoy Paul Newman on the silver screen. He's a superstar whose success has lasted for decades. Some of us may even envy him for his eyes, or money, or fame. Not me, the only thing I envy Paul for is his racing. In addition to the movies, Mr. Newman finds the time for professional Formula race car driving. I'll admit to more than one rush hour fantasy involving me speeding past Paul on a treacherous curve at 160 MPH. Fortunately for Paul and my family, these fantasies have stayed in my imagination, at least until now. Ferrari Formula One, from Electronic Arts, offers me the chance to enjoy the high speed, and driving challenge of Formula 1, racing in the safety of my own computer room. Settle into your 1100 horsepower turbocharged Ferrari, press both mouse buttons to rev the engine, and release the left button as the green flag drops. The satisfying illusion of acceleration created by the rapidly refreshing screen images will be heightened by the roar of many engines. Glide your mouse gently from left to right while keeping the right button pressed to accelerate, and concentrate on the white line in front of you. Move gently, or you'll spin off to the red and white warning bricks. Be sure to take a glance at the mirrors on either side, both to watch your competition, and to check on your rear tires. Your instruments are color coded lights, so let up on the gas if yellow turns to red. The digital tachometer tells you what your ears already know, don't rev past 9000 RPM.

Within your garage area, you can perform a variety of maintenence operations simply by clicking on the designated icon



The first track is Jacarepagua in Rio de Janeiro. Its long straight away lets you get up to 170 MPH, but the majority of the 3 mile track is made up of sharp turns. Press the left button to brake prior to a turn, and accelerate as you reach the apex. Your competition knows that daring in the turns must be

matched by consistency. You have to finish in order to win. The race consists of 200 miles, or two hours, whichever comes first. That means you have 65 laps to master the skills needed to win.

Ferrari Formula One works well on this level, as a classic computer racing game like Pole Position. Not just any race game mind you, one worthy of the Amiga. Here you can choose from sixteen realistic tracks from around the world. Each has very different turns and straightaways. Each has its own scenery (if you find time to notice), and each has weather appropriate to the time of year when your visit. Your race car is subject to varying wear, depending in large part on your driving skill. If you keep just a fraction from the redline, you're sure to experience more engine failures. You can choose to compete in Formula One, Two, or Three, with one being the toughest. At this level you must master shifting through the gears in addition to steering, acceleration, and breaking (Press left Amiga to upshift, right Alt to downshift). You will start from the traditional Formula grid, and must find a way to advance through those who qualified with faster times. You will be competing against determined drivers who will force you wide in the turns, or slip behind and past you on the straightaways. If it's action you want, Ferrari Formula One will provide it for hours and hours.

Rick Koening, the author of Formula One, must be a very generous person. Not only has he given us a state-of-the art action game, but he included a complex and realistic racing simulation too. If you like to pour over the charts in Road and Track or Car and Driver, studying those torque vs power curves, or if you follow the point standings during the Grand Prix season, this single disk will open a world of participation to you. In truth, the racing action is one small part of the total program. Mr. Koening offers you a dynometer, wind tunnel, 6 tire compounds for each wheel, suspension control, wing adjustments, 6 gear ratios, and different ROM's to control the engine mixture. You even have the option of changing an engine and running it in until it reaches peak performance. Fortunately, the documentation provided with Formula One is equal to the options provided. The Ferrari red package includes seven Amiga screen shots with captions which will help orient you once your boot up. Inside, you will find a fold-up Driver's Reference Card and an Owners Manual. The reference card gives the information needed to start a race quickly, or begin the process of competing in a Grand Prix season. The card includes three black and white screen illustrations (with rather tiny type) indicating the locations of controls. If you keep your hands off the controls and let the game boot, you will be given a three lap demo. Press any key to take control. The K key is used to kill the engine and return to the pits during any race, including the demo. Other useful keys are ESC, which acts a pause toggle,

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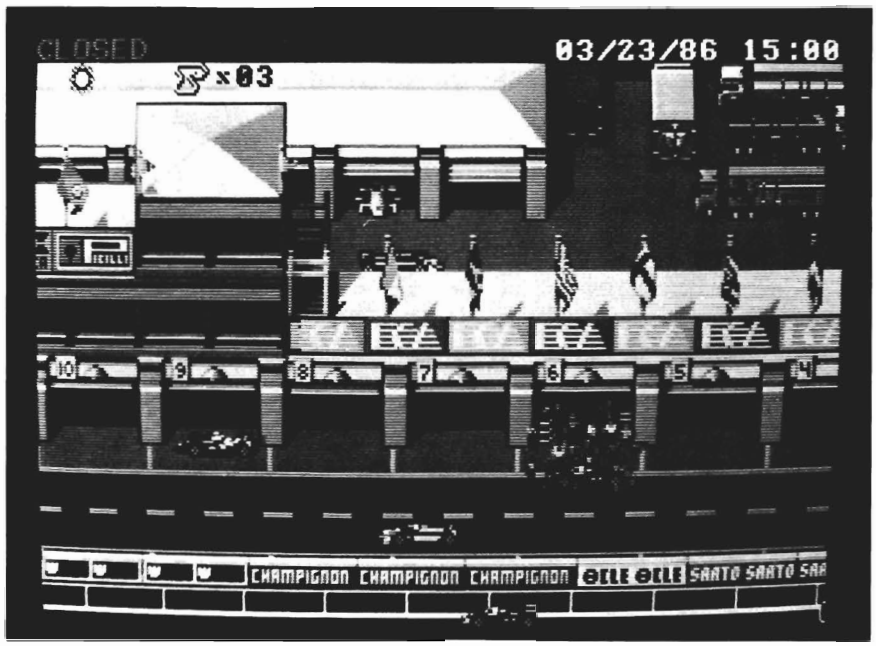


Just like in the garage, the track area is pocketed with icons to click on to perform a specific action

Flicker Fixer

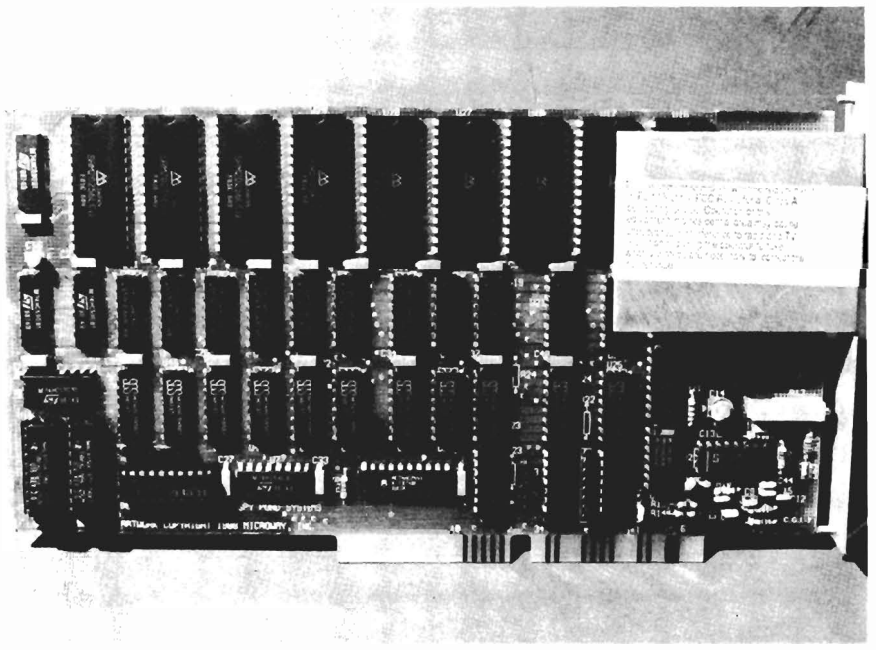
Micro Way's answer to the interlace blues

by Phil Becker

The Amiga is well known for its amazing graphics. Every 500, 2000 and 1000 is capable of displaying 320 horizontal by 200 vertical pixels with 4096 simultaneous colors. Of course we also have a 640 by 400, 16 color mode which is among the highest display resolutions available in the personal computer industry. Yet, how many of us use this HiRes mode? Need I say the dreaded word- flicker. Yes, we're all familiar with this drawback to HiRes mode. The desire to keep NTSC compatible while providing high resolution is the root of this annoying visual effect.

High resolution is very useful for CAD, desktop publishing, and Paint applications, so there have been several attempts to find a "fix" for flicker. A variety of products have claimed that they "virtually eliminate" flicker. I've tried each product and have found that the non-hardware methods are not without sacrifice of color or clarity. Well at last a product is available which can deliver on the promise. "Flicker Fixer", from MicroWay is a frame buffer board that fits into your 2000 Video bus Slot and converts interlaced video into non-interlaced video. This board is transparent to all Amiga software, and makes every hires display clean and sharp. In addition to the FlickerFixer, you must use a MultiSync monitor.

MicroWay's de-interlacer board for the Amiga



I couldn't wait to open the package, but couldn't help reading the box. MicroWay makes PC accelerator boards. That's encouraging, since they have experience with board design and production in a very competitive market. Inside the box is a TV alignment tool, a disk, the Flicker Fixer board, and the Owner's Manual. The board itself is a multilayer board with some pals, and lots of memory. It is very clean with no jumpers. After reading the owner's manual, installing the card was a breeze. I

took out the five screws that hold the 2000 cover on, then the two screws which hold the cover of the video port near the power switch. FlickerFixer can only fit one way, so I installed the card and tightened the back cover to the Amiga with the screws supplied. Fortunately, I have an NEC Multisync II monitor available which came with the proper cable to connect to the Flicker Fixer. *"FF"* uses a nine pin DIN plug with Red, Green and Blue signals on pins 1,2 and 3. Some Multisync monitors come with this cable, but it's best to check the spec book.

With five or six technical types hovering around anxious to see the resolution of this board, I powered up. The first thing we noticed is that a normal non-interlaced picture had no black lines, but the text was 'pixelized', making the characters blocky. This is because Flicker Fixer takes one frame of video and stores that data until the next frame comes in, then outputs both frames to the monitor in the time it normally takes to display one frame. So when in non-interlace mode, the board is displaying each line twice. Since FF uses the 2000 video slot for its display without interfering with the normal Amiga RGB out, I left my 1080 connected for side by side comparisons.

I clicked on the test disk that comes with the board, and found four test pictures mandril, color fonts, pclo1, and ff test. With both monitors side-by-side, I went down the list. Each picture looked much better on the Flicker Fixer monitor. By the time I showed the "pclo" picture, all of our jaws were on the desk. One bystander was heard to say "This is the best piece of hardware for the Amiga. I'd give up my hard drive to work with a picture of that quality." I don't know about giving up a hard drive, but FF sure makes hires programs look *ooh* so good. Every program I tried looked much better including, DrawPlus, ProWrite, ProNet, Proboard, Dpaint II, and-PageSetter. FlickerFixer makes use of HiRes a reality.

The difference between the two hi-res displays was incredible. After a long look, even my boss thought that the Flicker Fixer should be purchased for all of our CAD stations. Several days of continuous use confirmed this recommendation.

The standard Amiga video display uses an interlace mode to produce its high resolution. In this mode, the video screen is updated 30 times a second, which is the upper limit your eye can detect. First, the odd lines of a screen are displayed, then the even lines. At this display rate, the odd lines of pixels on the screen start to decay by the time the even lines of pixels are being displayed.

The condition of pixels decaying before the adjacent line is displayed is what causes flicker. Flicker is enhanced by contrasting colors. You can get maximum flicker with an image of horizontal black and white lines. This is the nature of the NTSC, television standard and can be seen on broadcast TV. You may have noticed a striped shirt on an actor that exhibits flicker or a screen of large text which shimmers. One of the reasons you don't notice as much flickering on your TV is due to the amount of colors that a TV can display.There can be literally thousands of shades to a color, which gives less flicker, since the color of adjacent pixels will have less contrast.

Now that we know what causes flicker, we can understand the methods which attempt to reduce it on the Amiga. One method is to pick low contrasting colors, and to wear sunglasses. Yes, I said *sunglasses*. Wearing sunglasses helps because the persistance of your vision effectively goes up. Your pupils get bigger and absorb more light. This works, but the colors on the screen don't appear true anymore. Placing a Glare Shield on the monitor helps by cutting the contrast, and if you turn off the lights, apparent flicker is cut even more. Both of these methods help, but you lose true colors, and they only reduce, not eliminate the flicker.

Another approach to reducing flicker is using a long persistance monitor. This gives true colors and no flicker, but long persistance monitors have a few drawbacks. They have a shorter tube life and are susceptible to screen burn, meaning, after hours of using your favorite CAD package, the rulers and menus will start to burn into the picture tube. Another problem with the long persistance monitor is that any animation will leave "trails". This way

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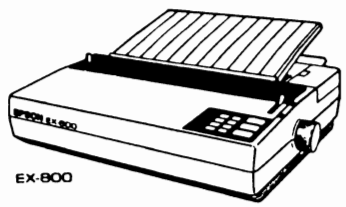

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Flicker Fixer

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of reducing flicker is good, but you will need two monitors, one for animations, and one for hi-res applications. Long persistance monitors are expensive and rare. That leaves us with Flicker Fixer. As with all good things in life, there are a couple of drawbacks. One of the most noticable is ghosting of moving objects. The board is fine for slow animations like Kahnankas, but when playing a game like Arkanoids, the output is moving so fast there will be two balls on the screen at a time. Since you still have access to the standard Amiga output, you can use it for fast animations and recreational uses. With a monitor like the NEC multisync II, you can connect either the Amiga or FlickerFixer. It just requires two cables. Another problem is that FF doesn't work with genlocking devices, so you'll have to use standard Amiga video out, and if you buy a Commodore Genlock for the 2000, you'll be swapping boards, because there is only one video slot. Finally, we noticed that 13 inch monitors only give you about 12 inches of viewing space with overscan. (Overscan mode uses the area at the edges of the monitor to increase resolution). At the present time this product is only a FCC "CLASS A" computing device, meaning that it can only be sold to commercial, business and/or industrial users. Until the time that the FCC gives MicroWay a Class B certification, the home user can only dream of displays of this quality (a class B rating will probably be in effect by the time you read this review). If you must work for hours every day using the HiRes display of your Amiga, there is only one way to completly eliminate flicker at the present time: Flicker Fixer. Which brings us to the cost considerations. FF is not inexpensive. At $595, plus a Multisync monitor, the average Amiga owner will not be tempted. However, the benefits are very real. A rock steady, 640 by 400 color display is worth something. Consider the IBM market, where it is common to pay extra for better graphics. An EGA or VGA board cost, $300-$600 and also requires a MultiSync monitor. I guess we've been spoiled by all the built-in functionality of our Amigas. For the first time purchaser of an Amiga, the incremental cost is not too great. A MultiSync monitor will cost about $150 more than the 1084 monitor and the $600 for Flicker Fixer totals $750.

All and all, I'd have to say that the Flicker Fixer is worth every penny for Professional users who need a clean stable picture in interlaced video modes. Anybody that uses their Amiga for Desktop Publishing, CAD, Painting or PC board design needs a Flicker Fixer.

Flicker Fixer $ 599
Requirements:
A2000 &
MultiSync Monitor

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Romantic Encounters

Microillusions' new adult role playing game

by Eric Hunt

Romantic Encounters at the Dome (RED) is a new interactive adventure game for *ADULTS*, soon to be released by the folks at Microillusions. After logging about six hours, I can tell you that the game is designed to function perfectly on any AMIGA system with 512k. If you're accustomed to instant response, use a two drive system because the A disk and B disk are each accessed frequently. Mildly patient gamers won't be upset by disk swapping (handled smoothly) when prompted.

Object of the game

The simply stated objective of *"RED"* is to search for and establish rewarding relationships - mostly sexual. In your love life, there are times when you're abounding in glory, as well as aggravating times when nothing goes your way Here, Romantic Encounters is similar to real life. The authors accomplish randomizing play with a flair, inviting you to participate in determining the outcome for a variety of challenging encounters. This is a one player game which has group involvement potential for parties and other fun places (slow times at the office). Otherwise, how many relationships you get involved in, and to what degree, are matters of concern to you alone.

Have you ever been to a posh club? If not, here is a quiet and safe way to involve yourself in the kind of entertainment that you've deprived yourself of. Do you long to evolve your social skills and fill in the blank pages of your little black book? Well, even if that isn't the case, take a plunge into the Dome with me, and I'll try to describe the fasinating world of romantic encounters awaiting you there.

Structure of Play

As you begin the game, you'll be asked to identify your gender, password, and name. Note that your password is an attempt to keep unwanted intruders (little people and prudes) out of the

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RED *(continued from previous page)*

Dome. Next, notice that the randomizer is ready to be called to attention. Hitting enter or CTRL/G will determine a host of sequences and variables which will be in effect throughout your session. Proceed to the reception area by typing something like "walk to the reception area". There is a lot going on in the reception area, but nothing really exciting. You will be made welcome and shown to the directory and elevator area. In due course, you may proceed to the elevator for encounters at the mezzanine bar where pleasant conversation may prove interesting. Or, proceed to the third floor to measure your love potential. The penthouse is the place for formal introductions and live entertainment. In any case, a real live scenario will begin almost before you've realized it. Be calm! Remember, this is only a game. Results may seem unpredictable, but your overall tone really sets the course while events unfurl. WARNING! Your mood is being monitored along with the content of your responses. Feeling at a loss for words, are you? Well, try anything that comes to mind just to develop a taste for the flavor of Romantic Encounters.

Scenarios

Each scenario is a linked set of scenes in which you are presented with a certain reality. If a relationship develops, your duty is to bring it to a determination. Since each scene has two or several possibilities and there are 117 scenes, you'll need to apply logic and a good deal of patient practice to become adept at building mostly satisfying associations.

Is that an attractive aspect of the game? Yes, in fact I found that after four hours invested in the discovery of content necessary to write this article, I was still intrigued with Romantic Encounters because much fun was yet to be had.

One other necessary tool is the ability to apply an active imagination. "Romantic Encounters at the Dome" is not a highly evolved graphics adventure. In fact, graphics at the Dome amount to little more than art deco borders surrounding descriptive text.

Moving about - the language interpreter

You'll soon be an expert at movement. You need only type key phrases like "look around", "kiss her", "hit on her", or "meet women". If your preference is complete sentences, then use them. The language and mood interpreter is sophisticated enough to handle either case. I am extremely comfortable with language as a means to enter all of my commands. There is a nice feature invoked by the "backup" command which will restore a scene to the latest descriptive text immediately following a screen clear.

I made extensive use of "backup" to recover from inappropriate responses. Thus, I discovered that RED possesses a feature more valuable than the standard adventure game save function. In addition, you may select CTRL/G at the beginnig of the game allowing you to participate in encounters as a time traveler. (Now there is a truly heavy concept).

An encounter

I first met Tanya and Art at the elevators on the mezzanine. She simply caught my eye and telegraphed a burning desire to ignite my jets. I gravitated toward her as if possessed by demon of lust. I don't remember what I almost said because it was apparent that she was not alone. The captivating lady was gaga over me, but Boss Hijac was projecting daggers at me, and worse - bellowing thick clouds of rancid cigar smoke. Was that the natural bulge of his chest? Or, is he packing more punch than I'd care

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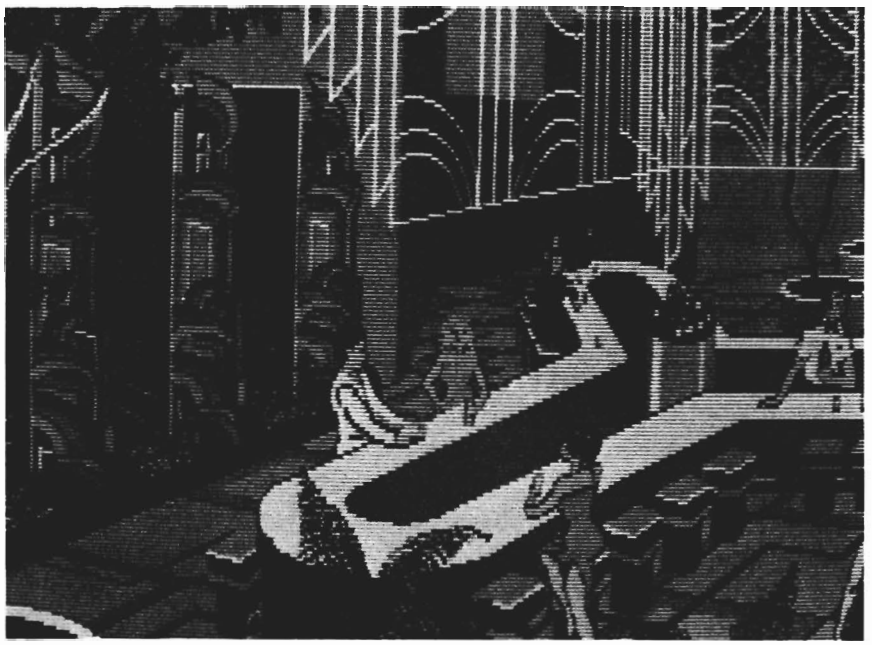

Looks like a slow night at the Dome

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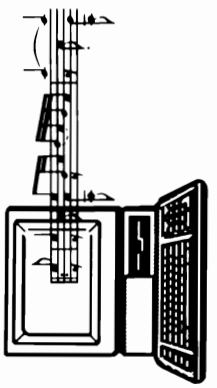

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to experience? My response was bold considering the circumstances. "Would you folks care to join me for a cocktail?" The monkey muttered unpleasantries and forcefully suggested that "Tanya" and he leave for parts unmentioned. I smartly observed them enter the elevator and it ascended to the penthouse.

The elevator seemed to be running on marginal power. When I arrived at the penthouse, Tanya was no where to be seen. I sat at the bar and ordered, when a few moments later, Art emerged from a small office. Tanya was there. I could sense her, more beautiful and sensual than my wildest dreams. Art seemed attentive to other business now, grabbing the next elevator. Tanya emerged from the office. I nearly broke into a cold sweat as I realized her availability. Quickly, I made my way toward the voluptuous Tanya. She warmly smiled while greeting me. With a hurried "follow me", she grasped my sweaty palm and led me into the service elevator. On the way to her suite, Tanya explained that Art was a former lover and that he now guarded her with a jealous fervour (possessive is given new meaning). She nestled her head in my joyous chest. God, I'm in heaven! Tanya was acting as though she'd been in love with me for an eternity. We emerged from the elevator, and Tanya led me into a hallway where she paused and again leaned her body against mine as if to attain some of my inner strength. I hugged her affectionately and she returned my warmth generously. She paused and awaited my next move. Tanya wanted something now and I hadn't a clue....

Documentation

The package contains two diskettes and a brief user guide which adequately explains start-up procedures and moving around in the Dome. Several example encounters are presented from both male and female perspectives. Additionally, there is a full page about the Dome and authors.

Other documentation is provided within the software. There are floor plans (maps), and on occassion, a help facility is available. Another help feature may be engaged in the reception area (impulse) to get you started on the right track. Other hints can be obtained from a directory near the elevators. The Dome staff might provide some useful assistance - but then again.... You will find that everything necessary to play the game well has been provided except for an active mind and drive to accomplish sucess.

Romantic Encounters at the Dome would be improved with addition of the following features:

1. More graphics. Show the woman to me. Show me what I've most recently wandered into. My imagination is good, but I'd like to see more graphics anyway. Include a feature so that I can turn graphics on and off at will. This would be nice when using the menu or "backup" features.
2. Sound. There isn't any. How about some mood music.
3. An ability to gather useful objects. I would like to have had one of these little babies when Art intruded during a love connection. This is the only adventure game I've played that didn't have an "inventory" command.
4. More information from the "love test" results. You can get involved with these on the third floor (hardly worth mentioning).

What is well done

The game is fun and will appeal to a variety of adults - especially young adults. The "backup" feature and CTRL/G function key are welcome additions to this adventurer's gaming. I'd like to copy these features into my favorite adventure games of the past. Too bad this is beyond my abilities. I enjoyed revisiting and eventually mastering many of the 117 available scenes.

I'd rate this game an eight on the old one to ten scale. Compare Romantic Encounters to any infocom game - this is better. However, it lacks some of the pizazz of a game like Leisure Suit Larry.

Romantic Encounters at the Dome $39.95

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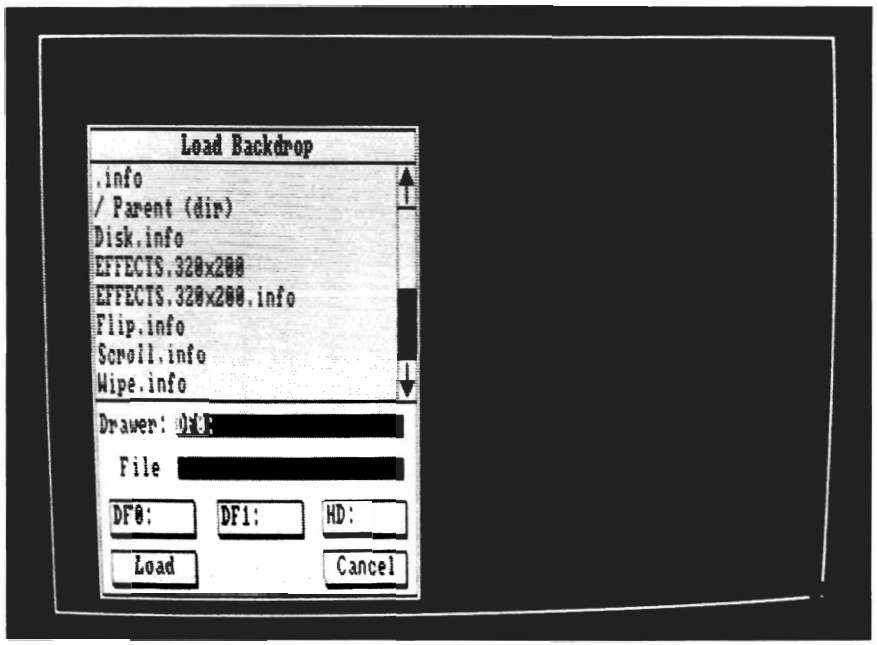
Animation:Stand/Effects

New animation utilities from Hash Enterprises

by Tom Reed

Animation: Stand and *Animation: Effects* from Hash Enterprises are two products that get your Amiga graphics moving.

Watch you favorite cartoon closely sometime soon. You'll notice that much of the "movement" consists of Pans and Zooms. The "camera" moves relative to the background. Professional animators use a special device, an animation stand, to hold the camera steady and move across a painted frame.



Using a simple file requestor, you load your pre-created picture into the Animation work screen

Animation:Stand acts just like a computerized animation camera stand. This program will allow you to "pan" across one of your IFF pictures, zoom in on a portion of the picture or start from a detail of your picture and zoom out to reveal your entire work of art. This means that you can take any of your IFF graphics in any resolution (including overscan) and easily create motion by adding zooms and pans. The final result of Animation:Stand is an overscanned, 4096 color playback disk file.

Imagine that you are standing in front of a scene that you wish to capture with a video camera. You want to show the overall landscape, zoom in to show an island and then pan across to a sailboat at anchor. Holding a camera in your hand, these are very natural ways of looking at a scene that you wish to record on video tape. However, until now it has not been such a natural way to view a picture that you have just created with a paint program on the Amiga. Animation:Stand puts a camera in your hand in addition to a paint brush.

Using Animation:Stand is as simple as this:

1. Open your Animation:Stand disk
2. Select the Stand icon - the

(continued on next page)

program to create your animation, or Choose the Display icon - the program to show your animations
3. Load in an IFF picture file (any resolution)
4.a) Create Keyframes - they describe to the program the type of pan or zoom you wish to create
b)View the rendered keyframes using the display option
5. Choose the Options you wish for your animation a. Screen size - 1/4, 1/2, 3/4, full
b) Number of colors - 2, 4, 8, 16, 32, HAM
c) Render style - pixelation or interpolation
6. Record your animation and exit the Stand program.
7. Open the Display program and view your animation

When the Animation:Stand disk is opened, you are presented with two program choices: stand or display. You begin your session by double clicking on the stand icon. A load background requester is then presented. Load in the IFF picture file in any resolution that you wish. Your picture will appear on the screen with the default setting being Add. Add is the mode for entering new keyframes. Keyframe one is the beginning of your animation.

You create this keyframe by centering the cursor over the center pixel of the area you wish to feature. Then depress the left mouse button and as you move the pointer, a box will stretch to accommodate the new area you wish displayed. You add key frames over your picture to indicate the motion you want to create, i.e. large keyframe then a small keyframe to create a zoom-in.

You can view the keyframes by going to the menu bar and selecting display. You can toggle back and forth between your original picture and the keyframes you have just created. This will show you exactly what each keyframe will look like in your finished animation. What the program does for you is to automatically create the "between" frames needed to create the illusion of motion. This process takes a lot of computation and may require several tries before you get the result you desire. Unfortunately, the betweens cannot be viewed in the Stand mode. The best that can be done is to choose "Between" from the Option menu. Ghosted outlines are superimposed over the picture to indicate their position and the area of the picture that will be shown in that frame of the animation.

Playback speeds, with the frames "packed" by Stand, range from 4 frames/second to 60 frames/second. The two things which affect the playback speed the most are screen size (1/4 - to full) and the render style. The output of Animation:Stand is lores, overscanned, (with PAL support), and interlace turned on. When the keyframes have been designated, and the options of screen size, number of colors, and render style have been set, it is time to record your efforts. The animation is recorded to a disk you must name "frames". Once the record menu item has been selected, sit back and let the program do the work of calculating and rendering the animation. Here, disk space can be a problem. One animation that I did had ten keyframes. The program calculates nine between frames, the default setting, for each keyframe. This made my animation with ten keyframes a total of 82 frames long. With the screen size at 1/4, in lo-res HAM mode all 82 frames saved easily, with plenty of room to spare. Set at the 1/2 frame size in HAM mode, 75 of the 82 frames saved before a disk full message appeared. In the full frame mode, only 18 individual frames were saved before the disk was full. One solution to saving larger animations is to use the ASSIGN command and create a FRAMES directory on a hard disk. Even here, you'll be amazed at the amount of space a 100 frame animation will use up.

The manual for Animation:Stand is only 13 pages long. This is short but it contains the information needed to work the program. However, the point size of the type used should be larger. With such small type it makes finding your place in the manual difficult when looking from the screen to the instructions. While looking the manual over at a coffee shop, a waitress went into mild hysterics and wonderment that I could make anything out in the book I was reading. Aside

from the manual, I found the program easy to use and fun to play with. In the 1/4 frame screen format, the rendering of the individual frames was fast and enjoyable to watch.

ANIMATION:STAND GLOSSARY:

KEYFRAME - Specific frames you create which control the movement of your animation. An activated keyframe has a cross drawn in it.

CHOREOGRAPHY- The on screen movements of your animation.

BETWEENS- The frames which the program creates between one keyframe and the next keyframe.

EASE- Controls the acceleration of movement from one keyframe to the next. No Ease-frames evenly spaced. Ease In - starts the betweens closer together and slowly spreads them out as the next keyframe approaches.

RENDER STYLE Pixelation - produces pictures that maintain the "jagged" look of the original.

INTERPOLATION- attempts to maintain the integrity of the picture by mixing colors and blurring outlines.

ANIMATION:EFFECTS

Another common tool of the professional animator is a special effects machine. Almost every TV commercial uses animated text, with a variety of wipes and scrolls. Animation:Effects was designed to provide the user with a series of special effect transitions and movements in the form of wipes, scrolls and flips. When you open the Animation:Effects disk you are given three program options - wipe, scroll, and flip.The wipe program is designed to provide transitions from IFF graphics to live video via a genlock system. You can also go from your graphic to a solid background color.

After loading your picture file into memory, you can begin your effects rendering

The different wipes provided in the wipe module are all keyboard defined:

<F1> - square wipe
<left arrow> - right-to-left wipe
<right arrow> - left-to-right wipe
<up arrow> - bottom-to-top wipe
<down arrow> - top-to-bottom wipe
<F8> - new backdrop IFF picture
<F10> - change backdrop color
<space bar> - reload backdrop picture after wipe
<return> - fade-in/out toggle
<Esc> - exit program.

The scroll module makes Scrolling titles very easy and smooth. Pages prepared with a paint program or a titling program can be loaded into the Scroll module. By using keyboard commands you can scroll through the pages in either direction or pause the scrolling. All of the IFF pictures used in a scroll must be the same resolution, number of colors, and use the same palette. Scroll does not work with HAM backdrops. I find that PixMate is very useful for converting IFF pictures of different resolutions, number of colors and palettes to matching resolutions, etc. I was disap-

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pointed to find that the scroll module does not have a way to adjust the speed of your presentation. You cannot build in pauses between the pictures or graphics you are scrolling, but you can manually advance the pictures through the IFF files.

The Flip module allows you to spin, tumble and move IFF pictures or parts of them, across the screen against a genlocked or IFF picture background. Mattes as used in this module, are IFF pictures or parts of IFF pictures. They are created almost exactly as you would create a brush in DPaint. Once a matte is defined, you are presented with a layout screen. A highlighted circle with an arrow overlaying it appears when you access the layout screen. The circle is used to describe the path your matte will take and the rotations it will make as it proceeds across your animation. The circle, representing your matte (logo, picture, or title) is positioned on the layout screen by "dragging" it with the mouse.

To save your work, insert a data disk to record the choreography and a frames disk to save the rendered images. If you do not have a two drive system, you will have to swap the disks. This can take a long while and many swaps depending on the length of your animation. When the process of saving your work is complete, exit the program and enter the display module to load and play the completed frames.

While creating the animation, it is difficult to get an exact idea of how the finished product will look. The program does not have a preview mode to view your work in progress. Also, connecting the various vignettes which you create is not possible with this program but can be accomplished with other products from Hash Enterprises.

Animation:Effects comes with a 21 page manual. It contains one tutorial for the flip program. None are needed for the scroll and wipe modules, as they are easy to use and virtually self explanatory. Again, the point size of the type should be larger in the manual. While the author has aimed these products at the"serious animator", a glossary of terms which are used in the program manual would be helpful.

Both programs were generally easy to use but seemed limited in their applications. The quality of the resulting animation is very high. I was particulary impressed with the smoothness of the scrolls. The wipes were also good but limited to use with genlock. Wipes from one IFF picture to another would be a much more broadly useful application.

I also liked the way the programs rendered images, named them, and saved them to disk without input from me once the process was started. This is a particularly useful feature when you are saving 80 or more images. The difficulty of previewing the work in progress is one serious limitation. Another is that the programs work well on an individual basis, but do not easily interrelate. Overall, the programs contained in Animation:Effects and Animation:Stand live up to the claims made by the authors. You can produce high quality zooms, pans, flips and wipes easily and from any IFF picture. I think that the authors have identified a large market segment. It is quite true that many Amiga owners would like to add motion to their IFF pictures without going all the way to 3D ray tracing.

Hash Enterprises lets you buy one or more modules to fit specific situations. However, there are many general purpose programs like The Director, Deluxe Productions, or PageFlipper, which give you a combination of these capabilities. The user must make the ultimate decision according to their specific needs; simple programs for discrete tasks, or comprehensive programs for a wide variety of effects.

Animation:Stand $49.95

Animation:Effects $49.95

Hash Enterprises
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Vancouver, WA 98661

1-206-693-7443

Vampire's Empire

"You will learn to be afraid...very afraid"

by Glenn Heck, Jr.

The deep rumble of organ music fills the room. Minor chords reach deeply into the dark recesses of your mind. Vampires don't really exist...or do they? According to the mad programmers at Digitek, Inc., they do. Vampire's Empire is a fantastic glimpse into the dark world of Count Dracula himself, and an equally fascinating look at the graphic power of the Amiga. The folks at Digitek have really made the machine shine!

Insert the disk at the Workbench prompt, and the first thing that you'll notice is the incredible speed with which the program is loaded. In a matter of 30 seconds, 240 screens of color and animation are loaded, you flash through the title screen and music, and are dropped into the upper reaches of the Dark Count's underground lair. Along with the fast loader comes two drawbacks: heavy copy protection, and "Not A Dos Disk". Take good care of this disk. You will not be able to back it up, nor will you be able to load Vampire from Workbench.

Your character throughout the game is a cute little fellow named Dr. Van Helsing, the scourge of all vampires. Dr. Van Helsing's task is to direct a single ray of sunlight deep into the caverns of Dracula's dark kingdom, eventually penetrating to the Count himself, thus freeing mankind from horrible slaughter. To aid you in your task, a supply of mirrors, garlic, and a magical ball are provided. You are able to hang mirrors and garlic from the ceiling of the dungeon, as well as throw cloves of garlic at attacking monsters. Mirrors are used to aim the light in one of four directions. With the magic ball, the light ray can be captured and released in any chosen direction.

"Just another find your way through the underground dun-

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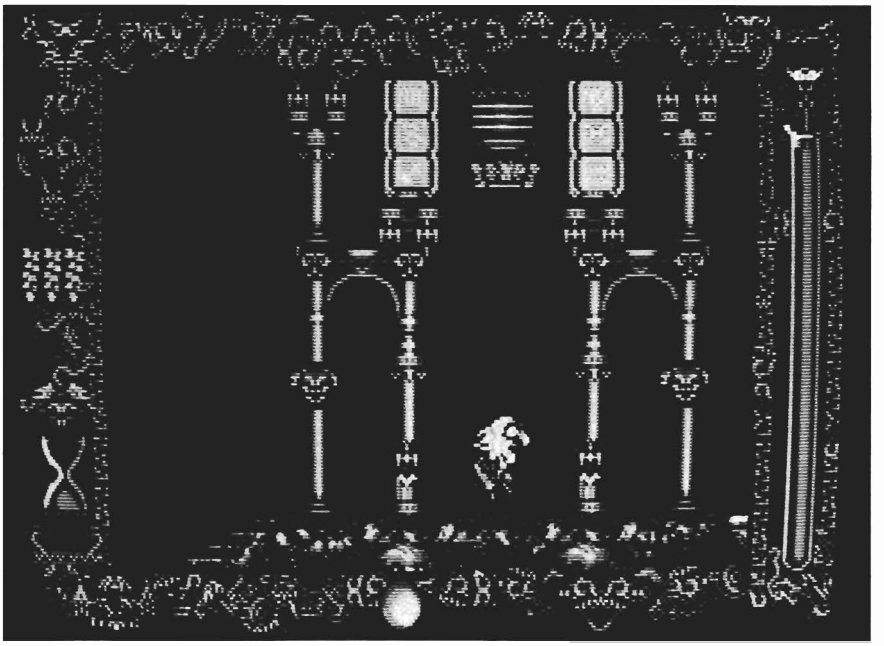
Dr. Van Helsing, as he starts out on his mission to rid the catacombs of Count Dracula



Vampire's Empire

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geon maze", you say. Sounds easy, right? Wrong! This has got to be one of the most frustrating games I have played on my Amiga. That darned single ray of light has a nasty habit of getting away from you and never reappearing. As you direct the good doctor on his quest, various evil beings hinder your progress.

Lesser vampires, Sirens, and soul-sucking hags open their coffin lids, climb out and chase you in an effort to steal your life force. A scale at the right side of the screen gives you a visual display of your waning life, and laughs at you whenever you're injured. Pillars dance with glowing colors, and gargoyles spit, vomit, and chew at your body from all directions. You slip on glassy surfaces, fall through trap doors, and slide down chutes, all the while having to keep track of that %$*#!! light ray! As you wander through the lower depths, you will be able to steal magic lamps, which add to your life force and somewhat counteract the soul-suckers.

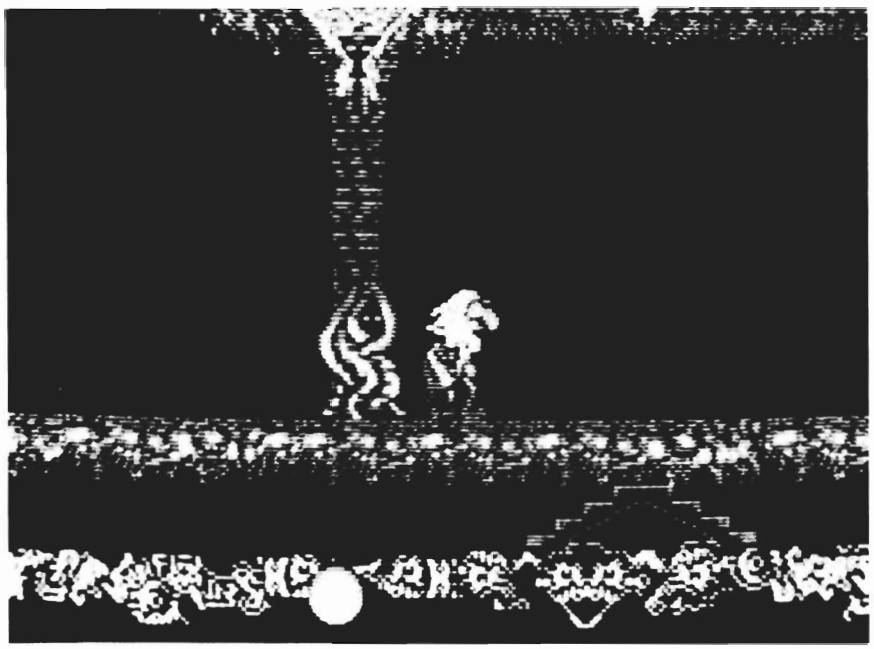
All action in the game is controlled with the joystick. Various combinations of joystick direction and button pushes control movement of Dr. Van Helsing, placement of objects, and the actions of the magic ball. It will take you a little time to build the combination movements into the reflexes necessary to succeed, since this is a fast paced game with a wide variety of actions to respond to. Graphically, the game is a gem. The animation is slick and full of unexpected detail. Dr. Van Helsing and all of the characters in the game are rendered in a style unusual for a computer game, and reminiscent of film animation. The sounds used in the game are excellent (digitized), but I wish there was background music or a little more variety in the sounds.

The documentation is very limited, but it does include an interesting poem by the real Dr. Van Helsing, circa 1753, and a few paragraphs explaining the object of the game, placement of garlic and mirrors, and the use of the magic ball.

Vampire's Empire requires a unique combination of strategy and fast action, and is one of the most graphically creative games I have seen. I expect this game will become a classic of sorts for dedicated gamesters.

Now where did that ray of light go?

You can't even turn your back on the wall without some ghastly apparition taunting you



Vampire's Empire $44.95

DigiTek
104 W, Seneca, Suite 4
Tampa, Fl 33612

(813) 933-8023

Digitek produces a variety of entertainment titles for the Amiga, including Strip Poker, Drum Studio, and Amegas.

Express Paint 2.0

Postscript support hightlights PAR's latest version

by Paul R. Miller

Express Paint 2.0 is a substantial upgrade to its predecessor first reviewed by The Sentry in September of 1987. In its original version, Express Paint was unique in combining the features of a full fledged paint program with some of the features of desktop publishing (most specifically the ability to "fill" user defined areas with text), along with flexible printer support and access (via scrolling) to a large canvas. To a previously impressive list of features, PAR Software, Inc. has added: PostScript laser printer support, ColorFont support, 64 color palettes (in lo-res modes), canvas size up to 8192 pixels wide (and as high as your memory will support), and "smudge" and smear modes. The full list of features now includes:

* Line, arrowhead, box, circle, ellipse, arc curve and grid tools with various line patterns and thicknesses.
* Multiple brushes with rotation, mirror, stretch, and color replacement.
* Palettes from 2 to 64 colors.
* "Zoom lens" window for coordinates.
* Magnify mode for pixel editing
* Multiple "undo" levels by locking picture areas.
* Solid, pattern and distortion fills.
* Airbrush control of spray shape, density, mixing, along with smudge, smear, brighten and darken.
* Scrollable canvas to 8192 pixels wide, with height limited by available memory.
* Hi, Medium, Interlace, and Lo-res modes, with overscan.
* Merging of separate IFF files into one image.
* Printing or saving of user defined image areas.
* PostScript laser printer support.
* Flexible printer control, including poster size and multipl page printing.

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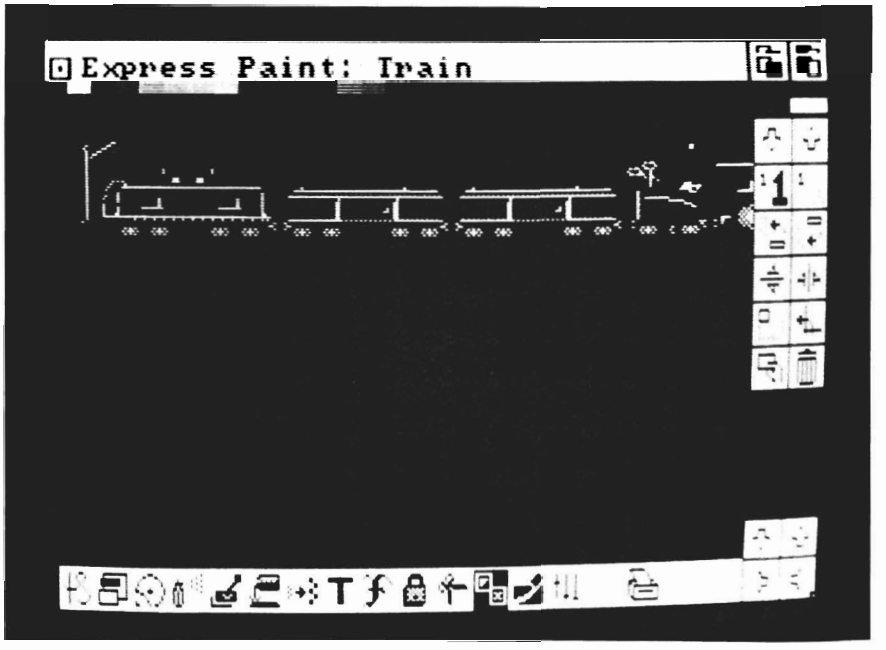
Express Paint's work screen. Clicking on a general icon along the bottom will bring up a specific set of tools along the right



Express 2.0 *(continued from previous page)*

* Direct loading of ColorFonts and ColorFont palettes.
* Text formatting in a region of any shape.
* "Overlay" program mode for memory conservation.
* Fully multitasking, not copy protected.

The manual is a nice spiral bound volume, with writing and organization as clear as I've ever encountered. Each tool and feature is covered in what seems an almost effortless progression that is further aided by screen and menu illustrations. You even get a handy reference card illustrating all the tools and their submenus (other software publishers would do well to emulate this style of documentation). Additional reference sections cover hard disk installation, RAM management, customized default configurations, a chart relating various canvas and palette sizes to available memory, and chapters on ColorFonts, Postscript, font management, and troubleshooting. PAR promises low cost upgrades to registered users, along with an extended warranty option for telephone support.

The author of the program stresses that the icon interface system of operation was a major emphasis in the development of this program and he has taken pains to provide access to nearly every function by way of on-screen icon, rather than pull-down menus. In fact there are only two pull-downs, one for Project (open and save options) and one for Modes which offers: "disk" options for saving packed or unpacked files with or without palette information; "graphics" parameters for grids, text rendering (margins and interline gaps), arrowhead shapes, and aspect ratios (for fine printer control) and "postscript" (parallel or serial, or to disk). All other tools and options are selected with mouse clicks from on-screen icons, first by selecting a tool (there are 15 possible--sketch, box, arc and circle, spray, brush, fill, magnify, text, font, lock, cut, special effects, erase, and print, with spaces for 3 more in upgrades), then selecting options from a control panel associated with each tool (up to 28 options in the case of boxes). As these tools and options were described in depth in The Sentry's previous review, I'll limit my observations to the additional features of 2.0.

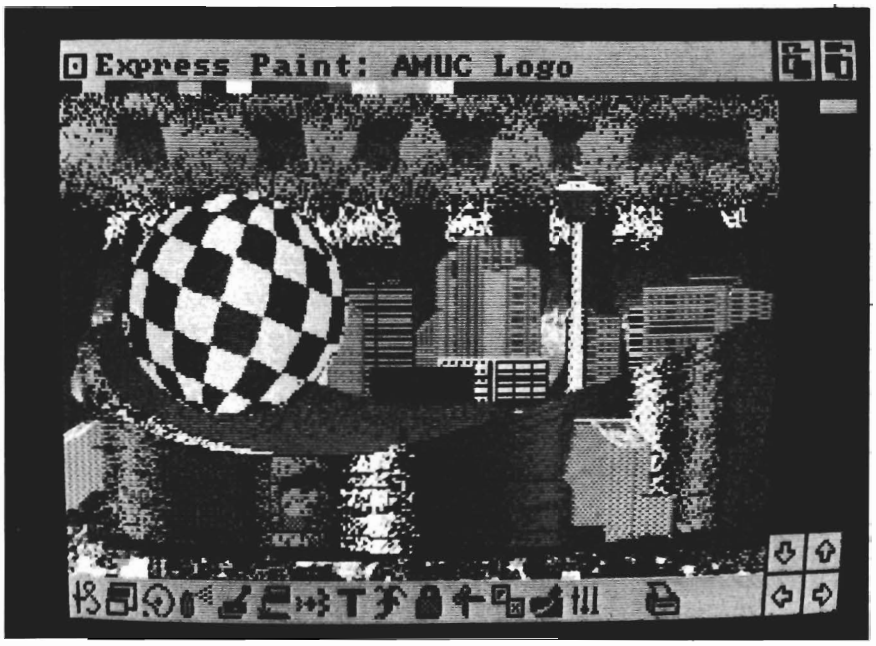
Express Paint now supports the Extra-Half Brite mode in lo-res and interlace, granting owners of 500's, 2000's and later 1000's with a usable palette of 64 colors. Palette control is a little tricky, but easily learned. The color array is two rows of 32, with the lower row being half the brightness of the upper. As long as you remember to set a range of brighter values (above 8) in the upper row, you will automatically get the lower value range below. If you've ever been amazed at the effects that Jim Sachs achieves with judicious use of 32 colors in lo-res, imagine the possibilities with 64! Unfortunately, Express Paint only indicates the current brush color selection in a separate window apart from the palette bar. When you've got a lot of subtle shades, it's nearly impossible to pick the next level with any certainty. Hopefully the next upgrade will fix this (a "pick color" from the screen option would also help).

The Spray Paint tool has been improved with the addition of an elliptical spray pattern (adjustable along the x and y axes, for density of spray, and "mixing" with the background). Spray also offers tinting modes, with automatic addition or subtraction of RGB values of selected color to what's already on the canvas (this takes practice, experimentation, and a carefully composed palette). Or, use the brighten and darken modes (like the shade mode in dPaint); or "smudge" to break up hard outlines (like dPaint's smear); or "smear" to average color differences (like dPaint's blend).

All these features require care in construction of the palette, of course, but unlike dPaint, the colors do not have to be arranged in adjacent ranges -- Express Paint will pick from randomly scattered colors for the "best mix". For all the flexibility and power in this tool, I still find that Amiga paint program airbrushes don't approach the real thing in their shading. Far better are the blended fill modes of Digi-Paint and the spectacular blended fills of Photon Paint. Fortunately, we can pick and choose the best fea-

tures of all the paint programs and, thanks to programs like PixMate, combine them in whatever format we like.

Express Paint now supports the use of ColorFonts, and can load them directly. They can be used either in the direct text entry mode or in the powerful text fill mode. Express Paint also gives the user greater flexibility in fonts because it has no built-in limits for size tables or font names. If you've ever been frustrated by dPaint's font window, you'll be pleased by the scrollable requester and the ability to load up a RAM disk or your hard drive with every font you've ever collected.



An example included on the disk of creating with Express Paint 2.0

Page sizes can now be as wide as 8192 pixels (that's 25 screen widths in lo-res) by as high as memory (read CHIP ram) allows. Until Commodore upgrades the graphics chip, the longest 8192 wide page is 200 high and in 2 colors on a 320 by 200 screen. Don't give up yet though, other useful possibilities include 2528 wide by 400 high on a hi-res screen with 4 colors (enough for a nice letterhead output to a 300 dpi printer like the HP Deskjet, with a one-to-one correspondence of pixel to dot!). More down to earth, and probably more useful to most of us with dot matrix printers, are page sizes of 960 by 720 -- the full 8 by 10 inch resolution of an Epson compatible, and available in 8 colors. Best of all, you can set up a page size of 480 by 360 with 64 colors and use the printer option to double the size to fill the entire page. With some experimentation on the part of the user, Express Paint could well be the most cost effective way to achieve full pages (or posters) of graphics and text on the kinds of printers most of us own, and with a very easy learning curve. PAR has included their own HP laser driver (that supposedly fixes some problems with full page graphics) along with other drivers for CalComp, Epson Q and X, HP Deskjet and Paintjet, and Imagewriter II. PAR has also anticipated 1.3 upgrades with the inclusion of integer scaling to maintain the quality of fonts in printouts. Finally, Express Paint contains built in support for PostScript printers (either direct, serial or parallel, or to disk file). Controls are included for margins, scaling, and multiple page printing. Better yet, the PostScript overlay mode allows the combination of several images on one page of a laser printer, and is the key to overcoming the CHIP ram limitations of the Amiga for composing a whole page (2400 by 3150 pixels) of laser graphics.

The artful Amiga user can compose four separate projects, each 1200 by 1575 pixels (possible in Express Paint with 2 colors on a 640 by 400 screen), and place these four tiles on the same page, using a different corner alignment for each project! PAR points out that the desktop publishing potential for the Amiga is great (with overscan the Amiga can display twice as many pixels as a Macintosh), and urges further promulgation of PostScript support. In addition, PAR has pro-

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Express 2.0 *(continued from previous page)*

vided a version of a public domain utility (FredFish #54, "MoreRows") called "Overscan On" to allow the mouse to work in the overscan zone. This and other tools (brushes, cuts, icons, pictures, erasers, patterns...) are contained on an extra disk included with the program.

All in all, an impressive package of features at a very reasonable price, except for the fact that I don't like using it. The problem I have is with the whole icon-for-tool interface. Granted, this is probably the easiest full-featured paint program to learn, but once you've learned it, you wish you could use it in a different way. First, there are no keyboard equivalents, so everything requires two mouse clicks (one for the main menu tool, another--across the screen--for the method of that tool). Is this really an improvement over pull-down nested menus? I think not. To their credit, PAR recognizes this problem and will offer keyboard shortcuts in the next update.

What I miss most is an undo button. While Express Paint allows you to "lock" and restore multiple areas of your canvas, this involves a kind of foresight and preplanning that is contrary to the whole notion of easy experimentation. As it stands, you must either preplan your locks (more mouse clicks) or erase.

Erasing is not much fun either; your choices are: all, segments within rubber-banded rectangles, or preplanned "eraser brushes." One yearns for the right button background color brush of DPaint or, better yet, stencil locks. Express Paint has a background color selector, but it's only used for remapping within brushes and for creating ranges in the palette. When queried about an undo feature, PAR indicated that it would be difficult to implement in this program, but would appear in successors to Express Paint. I'd also like a spare page. This seems more likely as PAR is working on an upgrade that will employ fast ram and also free page size from the constraints of CHIP ram.
While I'm on the subject (and since I don't have to figure out how to write the code), I'd like to see some other improvements:

* color mode for custom brushes, along with line, curve and box modes for their use
* a few more built-in brushes (only square brushes are available now) with soft edges
* full time coordinate display (now you can only get coordinates with the Zoom button)
* the equivalent of the "s" dotted draw mode (presently you can only position a point in the line mode) This could also fix a problem in freehand draw that results in jagged and flawed beginnings of lines.
* provide full brush editing in magnify mode (presently only one pixel at a time)
* fix a little flaw with the box tool with bigger brushes--namely that the corners don't fill in with the full brush thickness. That fix would give users the full advantage of the wonderful menu of line weights and patterns usually only available in CAD programs.
* provide a "non-fastfeedback" mode with larger brushes for easy alignment.

As it stands, Express Paint is somewhere between a paint program and a desktop publishing program, with particular features that can be found nowhere else PAR has indicated their commitment to upgrade, to provide real user support, and to push the limits of Amiga applications in print oriented graphics.

For those whose applications involve the integration of text and graphics, this is a valuable addition to the fold. As a paint program, I find it lacking the features and ease of use that I have come to appreciate in DPaint, and am therefore critical in that regard. But then, after all, PAR did call it Express *Paint*. .

EXPRESS PAINT 2.0
$99.95

Requires Amiga with 512K

PAR Software, Inc.
P.O. Box 1089
Vancover, WA. 98666

(206)694-1539

Math-a-mation

Math utilities from Progressive Peripherals

by Bill Barker

Math-Amation by P.S. Squared, Ltd. and published by Progressive Peripherals & Software, Inc. has recently arrived on the scene. The program is described as a "mathematical quantity processor" and provides the user with some extremely useful tools for handling matrices, plotting polynomials and functions, statistical analysis, business graphics, conversion of units, and solution of selected geometry problems, among others. The program is supplied on a standard 3.5" diskette in a convenient box along with a 103 page spiral bound manual. The minimum system requirements are:

512K of ram:
Kickstart 1.2
(1) 3 1/2" disk drive.

However, I would recommend expansion memory and a second drive to fully utilize the program. I would also recommend making a formatted data disk to save Snapshots, memories, IFF pictures etc. from within the program.

The manual is well written and is provided with both an index and a table of contents. The text is divided into four sections. Section 1- deals with getting started, and details how to copy the disk, load the program, make a backup copy of the program and manage windows in the program. Section 2- deals with the global features of the program, covering working with numbers, expressions, manipulating data, and the management of windows. Section 3- describes the features of all the menus or "modules" in the program and is actually the reference section of the text. Section 4- provides the user with examples for each of the modules in the program, which should be of considerable help in acquiring skill in using the program. There is also an excellent readme file on the disk which details how to set up preferences for correct printouts of graphs or other IFF images

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saved in the program.

3-D co-ordinate calculations

Math-a-mation

(continued from previous page)

The powerful Scientific calculator

The program starts by opening a "Results window", which stores the last fifty results of your calculations. There are eight menus or "modules" available for your use from this screen. These are Project, Extras, Calculator, Units, Geometry, Algebra, Stats., and Modules.

The first two windows, the Project and Extras menus handle the setting of precision and rounding of calculations within the program as well as the loading and saving of the various data memories. Normally the program is left in its default settings of 15 digits of precision and rounding turned off. There is also a window management tool which allows the orderly placement of the various windows which may be opened at the same time. The program handles numbers in the range of -10 E+308 TO +10 E+308 excluding -10 E-307 to +10 E -307 and uses IEEE double precision numbers.

When a module is selected a new window is opened on the main program window occupying the lower two-thirds of the screen, in what is known as the primary slot (position on the screen). Each module window contains two gadgets in the right hand of the title bar, one known as the "expander" while the other is called the "promoter". The expander button causes the module window to open to full display, while the promoter button causes the window to resume its position on the lower two-thirds of the screen and makes that window the active one. A maximum of four modules can be opened at once and by using the promoter button you can select which module you want to be the active module. Lastly, selecting the Arrange command from the Extras menu causes all screens to be placed in an orderly fashion on the screen. The demoted windows are arranged neatly above the current active window in the top one-third of the screen.

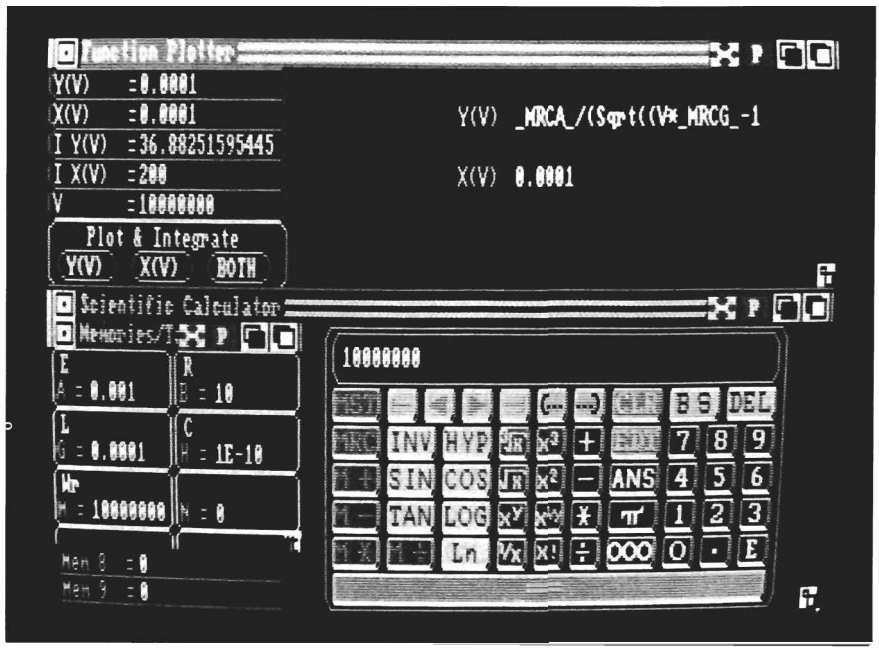
The MA program has several types of number cells for the input and output of data. Some number cells are used to input data while others display output or the results of a calculation. Output or results cells cannot be edited. On the other hand, input cells can contain either a number or the algebraic expression which created the number and can be edited. The program has several types of memories known as local memories which are tied to the current module. There are also 36 global memories which can be used throughout the program and between the modules. These memories are numbered 0-9 and alphabetically A-Z. The global memories can be accessed through the buttons on the scientific calculator or through keyboard commands listed in the appendix A of the user manual. It is this unique use of memories that is one of the powers of MA in creating a setup to solve a particular problem.

The Scientific calculator consists of a large calculator face with buttons for recall and store to the memories 1-9 or the A_Z memories through the keyboard as well as the standard functions such as +, x -, /, powers, log, ln, roots and the trigonometric functions. Values can be entered by loading memories into the module, or values can be dragged

from one cell to another by first selecting the destination cell with the left mouse button, and then second, selecting a source cell.

The cursor then shows the value it is dragging and the user needs only to click on the destination cell to complete the transfer of data. The scientific calculator can be used solely through the mouse by clicking on the appropriate keys. The text calls it a programmable calculator, but it lacks any means of performing any programmed instructions, rather the calculator will remember up to 600 keystrokes of input. Each time you select the "=" key, the answer is displayed on the calculator face as well as stored in the results window. These stored values can be recalled for later use in the current module or other modules. You only need to scroll backward through the results display to find the value you need. The MA program allows you to enter the displayed value into a new expression or the expression, which generated the value can be recalled for entry into the calculator display or into a memory cell.

The Matrix Calculator is even more impressive for those individuals working with matrices, such as second year Algebra/Trig students. The matrix calculator handles input to 2 matrices "A" and "B", each capable of containing 1600 cells or elements. To use the module, you enter the number of rows and columns in your matrix, and then enter the values in the appropriate rows and columns in the display. The program will then calculate the quantities A+B, A-B, k*A, k*B, INV A, INV B, as well as the transpose, determinant and trace of A or B. The results are displayed in a result matrix R and the values in the three matrices can be swapped or copied among one another in various combinations. The speed at which these calculations is carried out is almost instantaneous, only the entering of data can be tedious. With that in mind, the programmers of MA provided a means of entering data using a text editor or word processor. The file to be used as values must be in ASCII format with each entered value followed by a carriage return. The first value in the file must be the number 42 (CR), followed by the number of columns(CR), then rows(CR) and lastly the values by rows starting from left to right. The number 42 is MA's identifier that the file is a valid MA file.



Math-a-mation's Function Plotter

The Units module contains eighteen selections for conversion of units ranging from angles, length, area to flow rates, heating and time. Selecting the length module presents a window which allows the entry of a value into one of ten labeled cells, instantly seeing that value converted into nine other units. Hopefully this will save the user from having to look up the required conversion unit in a reference text.

The Geometry module provides the user with a means of solving problems dealing with finding missing sides or angles of a triangle, given a combination of sides or angles (problems that are usually covered in a trigonometry

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course, except that now you can get the solutions without taking the course). The other areas covered deal with rectangles, circles, and 3-D coordinates. The example for 3-D coordinates shows how to find the surface distance between JFK Airport in New York and Heathrow in London, something I have always wanted to know.

By far the most interesting sections are the Algebra and Stats modules of MA. These two modules provide the user with capabilities that were unavailable until MA. The Algebra module contains programs for plotting one or two functions. The user enters the equations for X(V) and/or Y (V) using the mouse and keyboard commands. These equations may be plotted singly or together after setting the plot range and the number of points to be plotted, with 1000 being the maximum allowed. The resulting graph can be "zoomed" in on by clicking on the graph at two points, thereby selecting a new range for the function. The graph is then redrawn by the program. You can perform this operation many times allowing you to locate points of intersection and to view very complicated functions quickly.

The polynomials module provides input for two polynomials of up to the fifth degree. Once the coefficients a0, a1, a2, etc. for each polynomial A and B are entered in the appropriate cells, the user can manipulate them in a variety of ways. They may be added, subtracted, swapped, multiplied, with the result placed in the cells labeled R, or the polynomial A may be plotted. The Diff button calculates the derivative of polynomial A, while the Itgr button allows you to find the integral of A once you have set the lower and upper bounds.

The Stats. section of the program offers a much needed module to the Amiga user, namely, the handling of data arrays and the fitting of this data to a variety of curves. The X Array Data module provides the user with tools for calculating the mean, standard deviation and variance of up to 999 numeric values. The data may also be grouped into ranges or intervals, and the data analyzed on that basis. You may also have a graphical display of your data in the form of a histogram. The X,Y Arrays module provides the most significant capability of MA yet discussed : the ability to input up to 999 data pairs and to use regression analysis to fit linear, exponential, polynomial or natural log curves to the data. The module also calculates the mean, variance etc. of the data as for X Arrays. Using a text editor, I was able to create some large arrays of paired data, both with and without scatter. The use of the editor makes the entry of large data arrays faster and easier than using the data cells in the module. Once a data array is loaded, you may select to have your data plotted and the desired curve or curves (linear, log, etc.) to fit your data displayed as well. When the Curve Fit With Plot is selected you may also choose to have a polynomial curve of desired degree fitted as well. By checking the F index you can tell at a glance which curve type achieves the best fit to your data. The coefficients for each graph type may be saved in memory cells to be used in the Functions module for closer examination. This module was cited by several other users of the MA program as being extremely valuable to them, both from educational as well as scientific viewpoints.

The business module is pretty much standard fair with the ability to enter data into a multicolumn display of cells along with appropriate titles and labels for the rows and columns. The data can be displayed in graphical format as a pie chart, 2-D or 3-D bar graph, line graph or as a cumulative line or bar graph. The rows and columns of your data may be swapped to present your data from a different perspective.

The final menu item is called the modules menu, which is for additional add on modules for different disciplines such as chemical engineering, electronics, architecture etc. These modules will be made available at a later date for additional charges.

The MA program provides numerous means of saving the results data, memory data, and even allows you to save the entire program environment in what is called a Snapshot, thereby saving all opened modules and their data. My suggestions for improvement are as follows:

I would like to have seen the

geometry modules redraw the triangles, rectangles, and circles to give the user an indication of there approximate shape. Also, the number handling capabilities of the program need improvement. Entering data in many of the modules is clumsy and requires constant switching from mouse to keyboard. This is an unneccesary nuisance, even with the use of keyboard commands. A simple set of gadgets with the digits 0-9, plus a decimal point on each screen, would make data entry using the mouse extremely easy on small amounts of data. Although each module functions quite well, I found that the loading of individual modules was too slow for my own tastes. The file requester automatically loads the entire directory of the MA disk, instead of allowing you to select the device to be used before loading files.

Overall, I enjoyed the many capabilities of the program, and it remains to be seen if Math-Amation is truly equal to the sum of its parts in the hands of other users. Only the Statistics, Matrix calculator, and Algebra modules were of any real interest to me. My impression is that there will be something of value to most users, but I would try it out at your local dealer before buying the program.

Math-A-Mation $ 99.95

Progressive Peripherals
464 Kalamath Steet
Denver, Colorado 80204
(303) 825-4144

Farrari *(continued from page 37)*

and the 0-9 keys which control the amount of turboboost. The reference card also explains how to get to the race control area and save or load season statistics to a data disk.

The owners manual is really a guide to Formula Racing from an owner and driver's viewpoint. It begins with an explanation of the three days and six events which make up each race, then shows how to move about within the simulation. Finally, each of the many setup and testing options is explained and illustrated.

The starting order (or grid) for a Formula race is determined by performance in two qualifying races held days prior to the actual event. You also get two practice sessions to familiarize yourself with the track, and a warmup session on race day to make final preparations. The race itself if just the finale to these other events. To experience the simulation at its fullest, you will drive in these six sessions for each of the sixteen events of the 1986 season. Be sure to format a blank disk to store your performance if you undertake this circuit. Of course, you have control of when and where you choose to compete, but a clock starts ticking as soon as the game boots. Formula racing is a game of time and money, as well as racing reflexes.

As a driver for Team Ferrari, you have the advantage of the spectacular Fiorano test track. This is your home base and offers special facilities for developing your race car prior to leaving for competition. The paddock screen operates much like the paddock found in each track. Click on the truck when you are ready to transport your car to a race track. Click on one of the open garage doors to enter the garage...click on the top floor of the race building to enter race control, or the lower floor to see the score box. The red car awaits your click to begin the action. Two special screen areas are only available here at your home base. They are the dyno room and wind tunnel. Each of these areas is operated by the same common user interface.

Let's explore the race control panel as an example. Click on the window and a clock will appear while the disk spins. A large box with several lines of data appears. You will see + and - gadgets next to several of the lines and a red and green box at the bottom of the panel. To change the driver's initials click on the helmet. In this panel you can set your skill level from F1 to F3, or passenger. This last option is a good way to test the configuration changes you have made. In this mode, the computer will take big red out on the test track, while you go along as a passenger. You will still be in charge during pit stops. Here too, you select which session you are driving in, practice, qualifying 1, etc. When you have finished your selections, click on the green box to accept the settings, and return to the paddock screen.

Enter the garage to set up your Ferrari. Here you can click on the toolbox, engine crane, tires, sus-

(continued on page 63)

Fleet Check

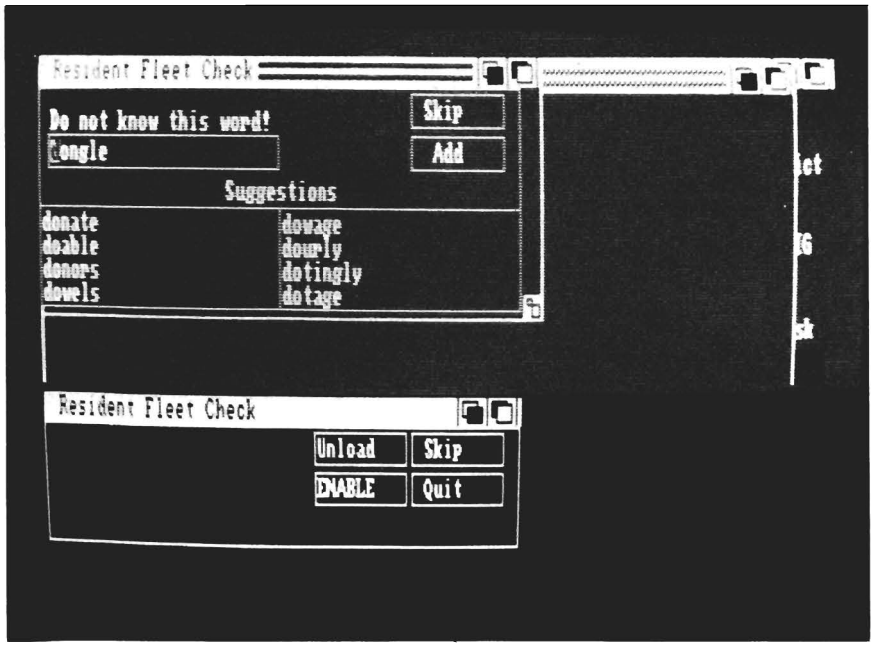
Automatic spell checking plus thesaurus from Professional Software

by Steve Dock

If you are the kind of typist who constantly mixes up the letters within words or leaves out vowels, then Fleet Check is for you. Fleet Check, from Professional Software, is a resident spell-checker. Once installed, it monitors every key you press and detects misspelled words as you type. This is quite different from the spell checkers included in most word processors, which review a document after it is typed. Fleet Check can be used with any program including the CLI.

Installation is simple, just click on the FltChk Icon, wait until disk activity stops, then press both shift keys. The Fleet Check window will appear offering you options to enable, unload, skip or quit. Click on enable to load the dictionary and you're all set. Now load your favorite editor or word processor and type. The screen will flash and a click sound will be heard if a misspelled word is detected. Press both shift keys and FltChk will present the offending word along with several suggestions. If you find the correct spelling in Fleet Check's list, simply click on it to return to your typing. Now watch carefully as Fleet Check removes the misspelled word, working backward letter by letter, and inserts the correction.

Once installed, the spelling checker is always on line and checks your spelling on the fly



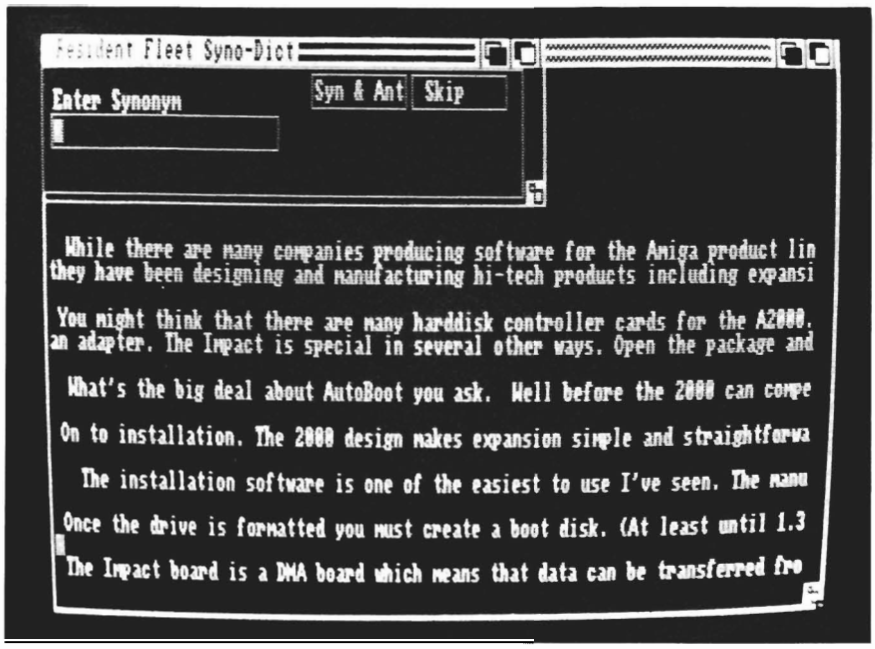
You don't have to stop typing when the screen flashes. FltChk keeps track of up to sixty characters and will remember the misspelled words within that range. Perhaps you prefer finishing your sentence. OK, when you press the shift keys, Fleet Check will present each incorrect word, beginning with the first that it detected.

The correction process makes even more interesting watching in these cases. The words will be backspaced one letter at a time until the first error is corrected, then the rest of the sentence will

be retyped for you. Now the process will repeat for the second or third misspelling. The program and its dictionary must be memory resident to be useful. If memory gets tight, you can use the unload option to release the dictionary and its memory. I've measured memory usage as follows:

Fleetcheck Window Loaded-
48,782 bytes
Dictionary Enabled-
118,400 bytes
Total Memory Used-
167,182 bytes

If you are using a 512K Amiga and running a sizable word processor you will barely have room for Fleet Check.



The thesaurus is activated by pressing both "Alt" keys simultaneously

Fleetcheck provides two versions, FltChkWin and FltChkScn. They operate the same way and use the same dictionaries (The main dictionary is supplemented by an user dictionary, which you can add words to using an editor or word processor). The window version pops up on the screen being used by your word processor. The screen version slides up from the bottom on its own Amiga Screen. You should use the window version whenever possible, but some programs may necessitate use of a separate screen.

In addition to the spell-check function, Fleet Check provides an online thesaurus. Press both ALT keys and a small window pops up with a blank line. You must type the word for which you are seeking an alternative, then press return. Fleet Check will provide a short list of synonyms and antonyms for you. As this process is completely manual, you must return to the document and type a new word if you find one which suits your needs. The thesaurus comes with almost 10,000 synonyms and antonyms.

I find Fleet Check well suited to my fractured typing style, although the constant screen flashes and clicks break my rhythm. However the dictionary leaves something to be desired. Too often, common words are flashed as errors, and the suggestions for actual mistakes can be way off, since they are based on the first 3 letters you type. If you ignore Fleet Check's suggestions and type your own incorrect word, it will be cheerfully accepted. I also feel that Professional Software should have offered an option to check a document after it has been typed. Most Amiga users won't want to pay for two spell checkers, even if one is memory resident. Fleet Check may not be the ultimate implementation, but the concept of resident spell checkers is a winner.

Fleet Check $ 39.95

Professional Software
51 Fremont Street
Needham, MA 02194

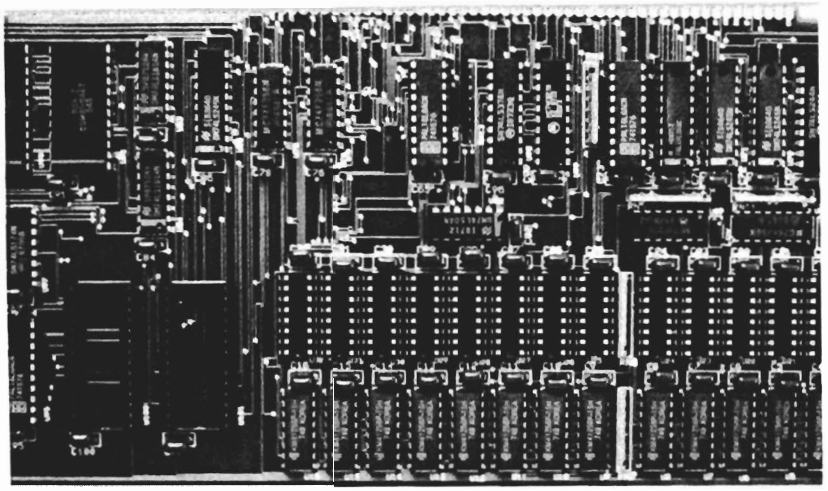
(800) 343-4074

Impact A2000 (*continued from page 28*)

have chosen to leave the market for the time being. This leave a single US manufacturer, Micron, in the enviable position of providing all the 256K Drams available. Recently, prices for these chips have soared to $7-8 each. GVP's clever idea of combining RAM and SCSI seems less clever in the current market.

I am very favorably impressed by the Impact board. It is a very clean and well laid out circuit board. There were no extraneous traces or jumpers anywhere. Any question that I had was quickly and enthusiastically answered by the GVP staff. I did experience a couple inexplicable Gurus during the course of my testing the board. This stumped both myself and the GVP staff, but GVP did indicate that they have a replacement policy for any defective boards. The software is also "tops" in quality and ease of use.

The A500/HD-RAM controller will also combine the functions of a DMA hard disk and RAM expansion in one add on box. The information provided by GVP indicates that this unit will support the SCSI controller and up to two megabytes of RAM. It will be the first of the Amiga 500 add-ons that will use the DMA channel for high data transfer rates, and the autoboot under 1.3 AmigaDos. GVP is serious about serving all segments of the Amiga marketplace and has announced a new configuration of its A2000 Board, which can be ordered with 0, 1 Meg or 2 Meg of RAM. Other products in the works include an internal 2400 baud modem card and a HardCard, which combines the SCSI controller with a harddrive on the expansion card. GVP's pricing policy is intended to be aggressive. The Impact A2000 with 512K or RAM is priced at $549.00, and with 1 Meg $695.00. The SCSI controller without RAM will be priced at $349.00. GVP is also offering special pricing on 40 Meg .28 MS access MiniScribe harddrives, so check with your dealer. The only improvement that I would like to see is a list of suggested drives that will work best with the GVP controller. I would also like to see some mention of the use of the Adaptec 4000 and 4070 controller/adapter cards. These allow a SCSI controller to operate an ST506/412 (IBM style) drive. Because of the price difference between the SCSI and ST506/412 drives, many potential hard disk owners might like to use the cheaper and more readily available IBM style drives.



The Impact controller features DMA design for increased efficiency. The two empty sockets will ultimately hold the ROMs that allow autobooting from a hard drive

The combination of two functions in one board is a valuable new addition to the Amiga marketplace. It is also a very necessary one, as more and more RAM expansions, coprocessor, video, Hard disk, and Bridge cards compete for a limited number of expansion slots. GVP has given us a great alternative for freeing up slots, and not losing functions.

Impact A2000-.5
SCSI Controller $549.00
Great Valley Products
P.O. Box 391
Malvern, Pa. 19355
1-800-426-8957

Farrari *(continued from page 59)*

pension, gearbox, etc. to make selections or adjustments. If you select one of these areas, the same style control panel will appear with status of components indicated by shaded boxes. The Owners guide gives suggestions on varying your choices for practice, qualifying, and racing. I didn't realize that entirely different setups, including special ROMs and tires, are used for each session. You can get scientific feedback on your setup by clicking on the dyno icon and watching the performance curves carefully. Likewise, the wind tunnel screen will show how much downforce you are generating at various speeds.

You could spend days tweaking your Ferrari, but sooner or later you will be ready for competition. Click on the truck and the transport screen appears. This is a map of the continents, with a list of racetracks in a file requestor in the middle. You use standard scroll arrows to highlight the track you desire and click on the familiar green box to begin. An amusing animation of a jet plane will transport you from your current location to the proper continent, and the race track will load. Hopefully you have an idea of the richness of this simulation by now. Its as if Flight Simulator included airplane design and manufacturing facilities, along with the actual flying.

I'd recommend Ferrari Formula One to anyone who is looking for months of entertainment. The graphics are good, with the still pictures being the best. Sounds vary from good to excellent, with the whirr of the airwrench my favorite one. I do wish that an option for use of the joystick had been provided. A joystick would let you move around and lean to get your race car through the sharp turns.

In truth, I actually prefer the setup and practice phases of the game to the actual racing (please don't tell Paul).

Farrari Formula 1 $ 49.95

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