ST LOG

THE ATARI ST MONTHLY MAGAZINE

SEPTEMBER 1988 ISSUE 23

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09

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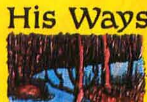
In the Days of Legends, there was a young Paladin named Brandon. Brandon had Heard that the King of a Far Kingdom was Bestowing Knighthood upon those Souls who Proved themselves Worthy of the Title. Resolute upon the Goal of Knighthood, Brandon gathered a Fine Band of Nine to accompany him. He took Mages, with their Arcane Magics and Strange Potions. He called upon Swordsmen, with their Sharp Blades. With him came Rangers and even a Thief who had Reformed His Ways. Their journey took them across Fierce Deserts and Swift Rivers,  through Steamy Jungles and into Caverns that Descended to the Very Heart of the Earth. On their Long and Perilous Journey, they Did Battle Nasty Trolls who carried Great Axes. Undead Zombies Plagued them and Dragons Burned Their Hides. Sorcerers Exchanged Orbs of Fire with their Wise Mage and Cast Mind Stuns on the Unwary.

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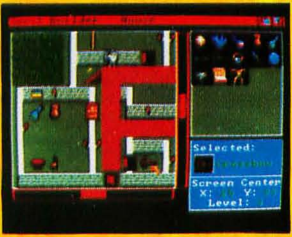
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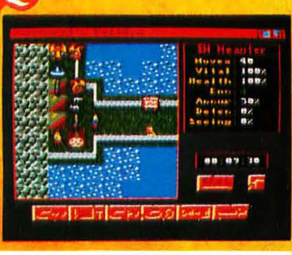
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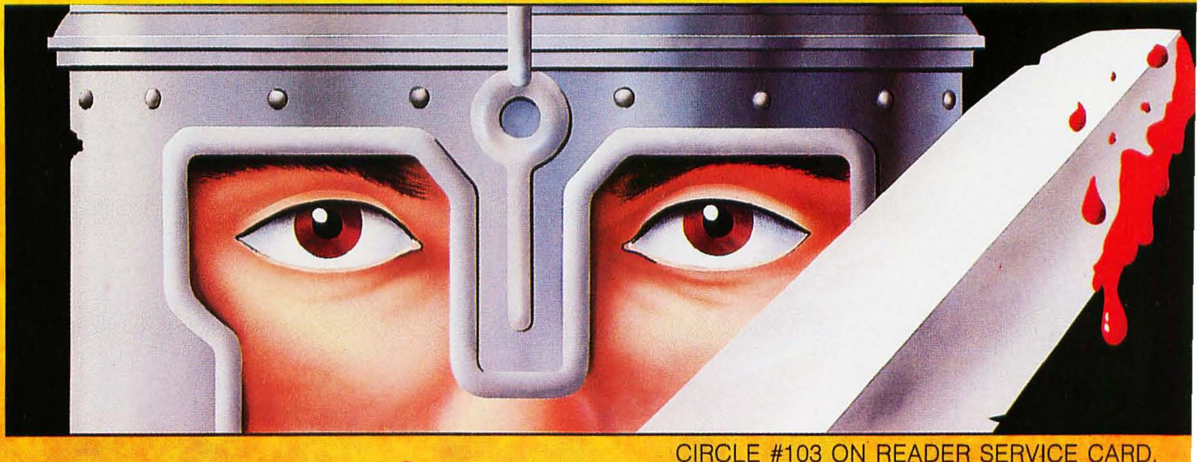

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SOFTWARE
P.O. BOX 733 – WEST SIMSBURY, CT 06092

CIRCLE #103 ON READER SERVICE CARD.

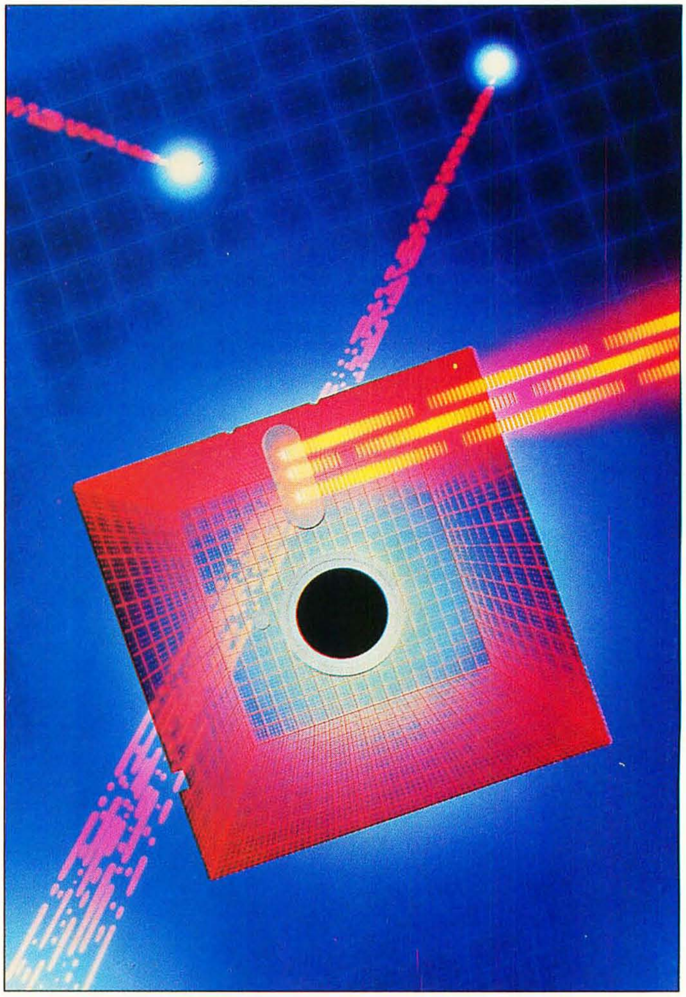
EDITORIAL

by Clayton Walnum

Let's talk about dangerous maliciousness.

The computer industry has always had more than its share of troublemakers; however, it used to be that these immature and socially retarded individuals limited themselves to leaving obscene messages on bulletin-board systems and performing other mostly harmless pranks. (Yes, we've all read stories about people who've managed to break into large systems and cause serious trouble, but these cases are in the vast minority.) Now we've got a new and potentially disastrous troublemaker: the computer virus.

For those of you who have never heard of a computer virus, let me hasten to tell you that it is not a joke. Though a computer virus is not a disease in the way we think of a disease, it does spread from computer to computer (via floppy disks and telecommunications networks) and can wreak havoc with any computer system it happens to infect.



A computer virus is actually a small program that, when it gets into your computer system, will wait for the proper moment to do as it was instructed. It may show up in subtle ways, such as a few of your files mysteriously disappearing; or it may, in one fell swoop, destroy everything it can get into contact with.

What makes computer viruses so dangerous is that the perpetrators of these "practical jokes" aren't satisfied just to make computing miserable for the home user. According to *The Washington Post,* "Such viruses have been found at the National Aeronautics and Space Administration; International Business Machines Corp.; the House of Representatives; at least six universities; several major networks, such as Compuserve; and several businesses, including the world's largest computer-service company, the $4.4- billion Electronic Data Systems Corp. of Dallas."

Reported in the February 1, 1988, issue of *Newsweek* was the virus infection of a hospital's computer system. Before the problem was found and eradicated, almost 40% of the patients' records were destroyed.

We're no longer talking about harmless pranks; we're talking about a potential threat to human life. The *Newsweek* article states, "Scientists worry that viruses could cripple a system like the air-traffic-control computers." Imagine air-traffic controllers believing that incoming and outgoing planes are in one place when they're really in another. It's frightening.

And, yes, there have even been reports of viruses on the ST computers. The staff of ST-Log hasn't as yet seen firsthand evidence of one, but people claim that ST viruses are making the rounds, and there's even a public-domain program available called *Flu-shot* that's supposed to be able to locate a virus on your computer disks and eradicate it.

But just to throw a "bug" in the ointment, it's also been reported that earlier versions of the Flu-shot program have also been infected with a virus. While you're using Flu-shot to kill off one bug, you may actually be creating another.

Atari STs are not found only in homes; they are also being used professionally. Do the creators of ST viruses (or any computer virus, for that matter) really know what the outcome of their actions might be? Do they, for instance, want to be responsible for modifying a physician's data files? What may start off as an innocent practical joke could turn into a life-threatening situation. Anybody who thinks computer viruses are a wonderful new way to get a few "yucks" should carefully consider the potential consequences.

If you're one of those people who absolutely has to get attention by playing computerized practical jokes, then we ask you to go back to leaving obscene messages on bulletin-board systems. The rest of us can live with that.

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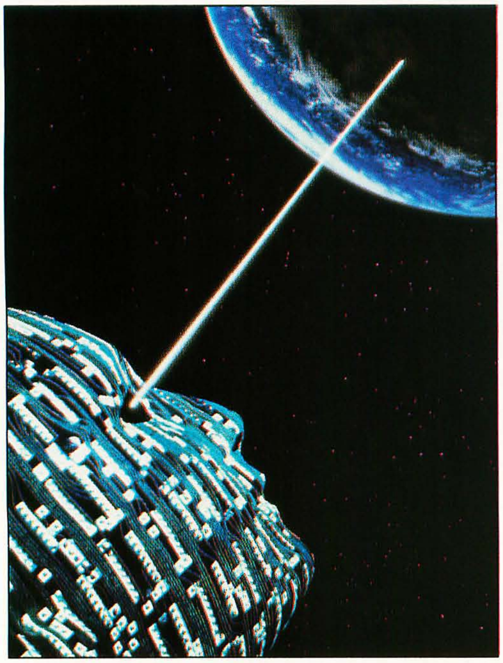

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This does not apply to programs which specifically state that they are *not* public domain and, thus, are not for public distribution.

In addition, any programs used must state that they are taken from **ST-Log** Magazine. For further information, contact **ST-Log** at (617) 797-4436.

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When submitting articles and programs, both program listings and text should be provided in printed *and* magnetic form, if possible. Typed or printed text copy is mandatory and should be in upper- and lowercase, with double spacing. If a submission is to be returned, please send a self-addressed, stamped envelope with your manuscript to **ST-Log**, P.O. Box 1413-MO, Manchester, CT 06040-1413.

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THE ATARI ST MONTHLY MAGAZINE

SEPTEMBER 1988
ISSUE 23

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ST NEWS

Atari Fair 1988

Last year the annual Atari Fair in West Germany drew in more than 20,000 interested ST users and enthusiasts. Atari Corp., Germany is holding the fair this year on September 2, for three days. The Atari Fair usually has more than 100 independent suppliers of hardware and software showing their new products and technical innovations.

For more information contact: Atari Corp. Deutschland, Postfach 1213, Frankfurter Strasse 89-91, 6096 Raunheim. You can also phone them at 0-61-42-209.

CIRCLE #116 ON READER SERVICE CARD.

Turbo CADD package

ISD Marketing announces *DynaCADD*, a very high-end CAD package for the ST. At $695 list, this CAD package becomes the highest priced system for the ST. ISD, who also markets *VIP Professional*, a *Lotus 1-2-3* clone, expects the true CAD professional to be the major purchaser of DynaCADD, since the program supports all of the standard features of a CAD package: two- or three-dimensional drawing format, mouse or graphics tablet input, plotter, laser printer or dot-matrix output.

DynaCADD can import industry standard DXF file formats and provides compatibility with their new desktop publishing system *Calamus*. The system is mainly intended for professionals working with electrical, mechanical, architectural or civil applications, and is mostly icon driven; so users of *AutoCADD* or *Drafix* should find the user interface similar.

DynaCADD runs on any ST system with one megabyte of memory.

ISD Marketing, Inc.
2651 John Street, Unit 3
Markham, Ontario L3R 2W5
Canada
(416) 479-1880

CIRCLE #117 ON READER SERVICE CARD.

Memory chips cost more

Since last year, the price of RAM memory chips has nearly tripled, causing dramatic price increases of memory upgrades for 520 ST machines. E. Arthur Brown, a popular mail-order supplier of ST software and hardware add-ons, has increased the price of their popular ST Solderless RAM upgrade to $249.95 with one megabyte of RAM chips installed.

The Brown memory upgrade board has been redesigned to incorporate two foolproof connection points. The user removes the MMU chip (one of the square VLSI custom chips) from a 520 ST mother board and plugs an adaptor board into the original MMU socket. The video-shifter chip is also removed, and a plug fits snugly into the shifter socket. The chips are then reinserted, and your 520 ST has more than one megabyte of memory.

E. Arthur Brown Company
3404 Pawnee Drive
Alexandria, MN 56308
(612) 762-8847

CIRCLE #118 ON READER SERVICE CARD.

Rumor du jour

Microdeal—the major supplier of Michtron's entertainment products—has been hit with a virus. The first shipments of the Amiga version of *Time Bandit* were found to be infected! The Amiga, which has a disk-based operating system, has been hard hit by virus programs. Several public domain Amiga antivirus programs have been developed; Brian Meadows' *Viewboot* is noted as being one of the better ones.

CIRCLE #119 ON READER SERVICE CARD.

Atarifest, DC

The Washington, D.C. area Atari user group is going to be holding its fourth Atarifest on October 1st and 2nd, 1988. The Atarifest will again showcase both ST and 8-bit software and hardware products. This show is unique in that it brings together several Atari groups from neighboring states. For more information contact, D.G. Elmore, 506 N. York Road, Sterling, VA 22170.

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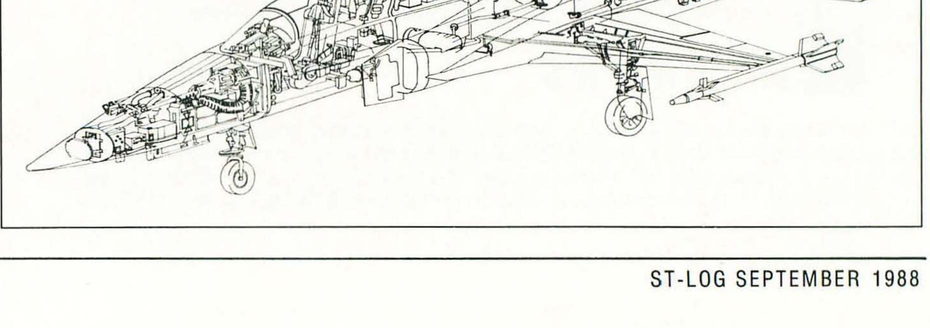


More ST CAD

GFA Draft Plus is a two-dimensional computer-aided design (CAD) program that gives new functions and enchanced utility to the previous GFA Draft program. The new system is available for both the ST and IBM PC (and compatibles) from Michtron.

Draft Plus has a new Macro command language to automate the drawing of objects and pictures. Macros can be strung together to form more complex drawings (similar to the LOGO language.)

Self-running demonstrations can be created by using Draft Plus' disk command ability. Commands can either be entered from the keyboard or from a disk file. Command files can be created with GFA's products: Object and BASIC.

Draft Plus also offers three font styles; parallel, tangent and vector-line drawing; a streamlined GEM user interface and polar coordinates.

Draft Plus has a list price of $159.95 and comes with a fairly well-documented manual and two disks (program and data).

Michtron
576 S Telegraph
Pontiac, MI 48053
(313) 334-5700
CIRCLE #121 ON READER SERVICE CARD.

Supra Modem 2400

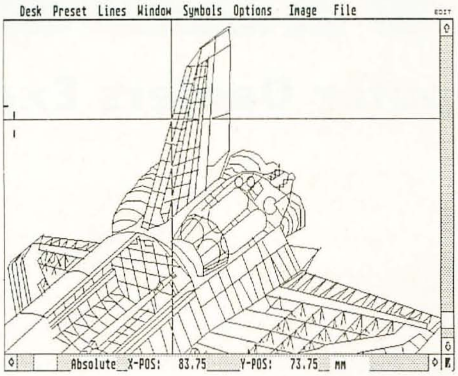
For those of you just not satisfied with talking to DELPHI, CompuServe or GEnie at 1200 baud, Supra has released its new Hayes-compatible 2400 baud modem (Supra 2400) for only $179.95. The unit is very compact. All of the usual user configurations are set by issuing commands from your terminal program, eliminating the use of DIP switches. The unit has two modular phone jacks and can auto-dial and auto-answer. The built-in speaker volume is programmable from your terminal program.

The biggest feature of the Supra 2400 is its low price. Similar 2400 baud modems usually have a list price of $500 to $700.

Supra has simple communications packages available for the ST, XL and XE systems. They are also supporting the Commodore 64/128, Amiga and Macintosh.

Supra Corp.
1133 Commerical Way
Albany, OR 97321
(503) 967-9075
CIRCLE #122 ON READER SERVICE CARD.

> **Self-running demonstrations can be created by using Draft Plus' disk command ability. Commands can either be entered from the keyboard or from a disk file.**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Dreams of dark silicon jewels

Firebird has introduced two new titles for the ST: *Silicon Dreams* and *Jewels of Darkness.* Both games are graphic adventures where you play a central role spread across three smaller games. Silicon Dreams casts you as a colonizer of the planet Eden in the 23rd Century. Jewels of Darkness takes place in the "Land of the Demon Lord." Both games have a list price of $29.95.

Rainbird
P.O. Box 2227
Menlo Park, CA 94026
(415) 329-7699
CIRCLE #123 ON READER SERVICE CARD.

Supra Modem 2400
HS AA CD OH RD SD TR MR
ON/

Stand and be counted

JAV is now selling a new accessory for your ST, a solid oak stand that holds your disk drives and monitor. The stands are made by hand and allow your ST to slide underneath for easy storage. A color or monochrome monitor can be placed on the top shelf, and your floppy or hard-disk drives fit in the middle shelf. The stand sells for only $49.95 list.

JAV also produces a solid oak diskette storage case. The case is portable; a lid closes and latches with a brass clasp. Up to 120 3.5-inch floppy disks can be housed in the case and eight removable compartments are included. The Oak Disk Safe has a $42.95 list price and is available now.

JAV Products
PO Box 1091
Grants Pass, OR 97527
(503) 474-2354
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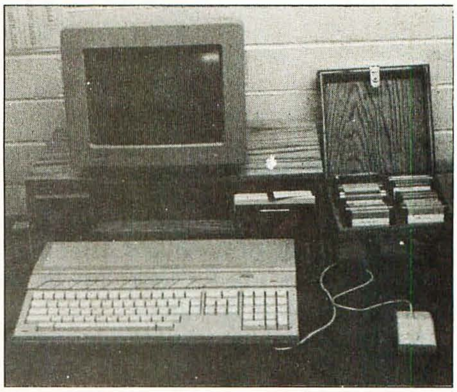


THUNDER
ATARI TOS

COMDEX '88

The Computer Dealers Exposition

by Frank Cohen

Attendance was down at this year's spring COMDEX trade show in Atlanta; only 55,000 people attended the show! Shaking hands with each of them and listening to their sales plans, marketing information and technical wizardry took much of the week. The show ran for four days in May and included over 1,200 booths at the Atlanta convention center, spilling over to the Apparel Mart next door.

Atari attended the show with its usual bag of tricks. Packed into the Atari booth were more than 20 independent manufacturers of software and hardware applications for the ST. ST-Log went to the show to put its finger on the pulse of the ST market, and we found it to be alive and well.

Atari computers

Atari announced that a new division has been established called "Atari Computers." In an age where you can buy an Atari calculator in a grocery store or buy a 7600 cartridge-based game machine at a toy store, Atari Computers is a newly founded division to market Atari's home and business computers in the U.S. market.

At the time this article was written, days after COMDEX, the new Atari Computers division was headed by Chuck Babbit, president, Tony Gould, VP sales and Neil Harris, marketing. However somewhere in those busy weeks between this show and the Summer Consumer Electronics Show, Atari found it in their infinite wisdom to do away with Mr. Babbit and Mr. Gould.

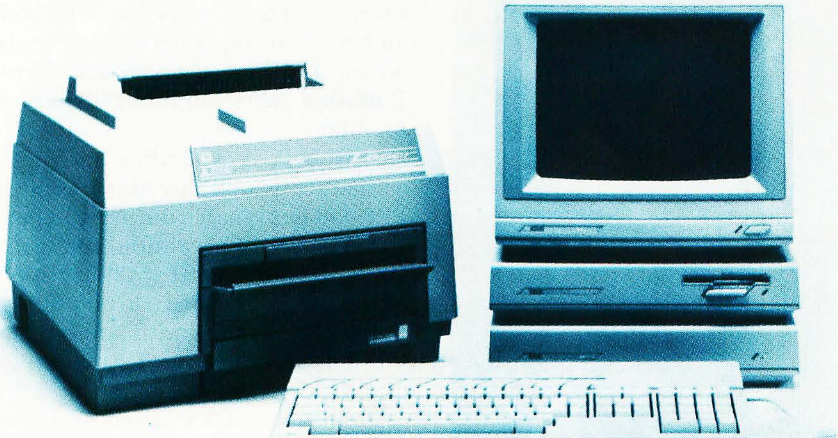
Harris was formerly the director of corporate communications for Atari Corp., which made him the mouthpiece through which the company communicated both rumors and facts about news and information pertaining to Atari computers. Harris has now changed his title to director of product marketing.

Speaking at a panel discussion on Niche Marketing at COMDEX, Harris told the small but interested audience that "Atari's roots were firmly placed in games, even before the Tramiels took over the company." Harris said the domestic slump in Atari computer sales has partly been due to slow product releases and to the lack of a game plan to revamp the dealer channel for home computers.

The new Atari Computer's first marketing push was into the desktop-publishing market. At the show Atari demonstrated its desktop-publishing system using a Mega 4, monochrome monitor, SLM804 laser printer, 20-megabyte hard disk and *Publishing Partner Professional* (Soft-Logik). The total package price for this setup is $5,492. This is a savings of up to $2,000 over the equivalent setup using a Macintosh SE or a PC Clone and equivalent software.

Although there are some technical details which might make a Mac or PC Clone better suited for your application, Atari makes a very strong point for using its laser printer: *The Atari laser printer is fast!* One page of graphics can be printed in under 30 seconds, while the same page using a Postscript laser printer might take up to 20 minutes to print. The Atari laser printer is speedy because the

COMDEX
WELCOME TO COMDEX
COMDEX



communications interface between the printer and an ST doesn't rely on a local area network like the Macintosh, and the images to be printed are developed inside the ST, which has a quick CPU compared to most laser printers.

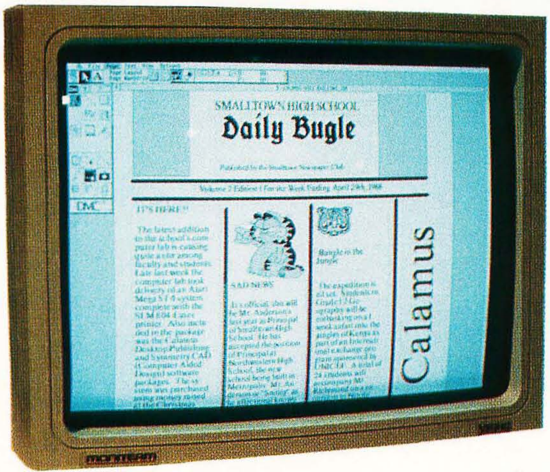
Another strong point for the ST is its use of standard connectors. Just about every printer and modem has a jack for a DB25 connector, so connecting them to the ST is a simple process. The Apple Macintosh uses its own mini-network system to communicate with a printer, which makes it necessary to buy expensive Apple equipment and slow because of network communication protocols.

Everyone demonstrating products in the Atari booth was equipped with a Mega 4, SLM804 laser printer and the new Mega-compatible 20-megabyte hard disk, which fits neatly under the Mega's square box. Rumors of some software not working with the Mega because of the new operating system ROMs seem to be fading into the sunset, because everyone at COMDEX was running with a Mega 4.

Atari vendors

Atari has in past trade shows found a tangible benefit in hosting third-party vendors in their booth. In addition to making the booth seem more crowded with interested people, the vendors are themselves some of the best salesmen for Atari. This show had minibooths set up within the Atari booth for approximately 20 vendors to show their interesting wares, both soft and hard!

It's no great surprise to find some of the more interesting hardware developments coming from West Germany, Atari's favorite playground. At the Atari booth, ISD Marketing, the company that brought *VIP Professional* (a *Lotus 1-2-3* clone) to the ST, was showing a new desktop-publishing system running on a Moniterm large-screen monitor.



The Moniterm Viking 1 monitor gives you 1,280 by 960 dots of resolution. Imagine having a desktop twice the size of your current ST GEM Desktop. Instead of having to view only a little part of a page, you can use a desktop-publishing package to edit an entire magazine layout.

Moniterm Corporation is a leading supplier of high-resolution monitors for the computer industry. It began by developing custom high-resolution monitors for space research, typesetting equipment and medical screening applications, and in 1986, it entered the personal-computer market with large-screen products for the IBM PC and Macintosh computers.

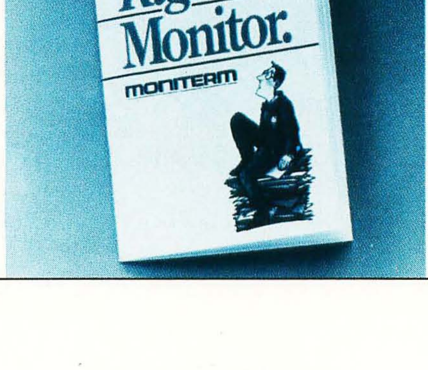
Moniterm's high-resolution monitors are in themselves small computers, as they intercept the commands that the IBM PC or Macintosh computer use to display text and graphics on their normally small video screens. When you buy a Moniterm monitor, a controller card is included that plugs into your computer.

A group of engineers in West Germany developed the *Matrix* controller for use with the Atari ST computer. The Matrix card works with any GEM-based software product, and the combination of a Viking 1 monitor and Matrix card is being sold for DM 5,000 (deutsche marks), approximately $2,500.

ISD Marketing was the first company to show this unique combination of equipment in the U.S. They expect to be selling the Viking 1 ($2,395 list) monitor, Matrix card and their new high-end desktop-publishing system *Calamus* ($449 list) for approximately $3,000, although exact prices were not known at the time of this writing. If you don't want to plunk down a big chunk of money, fear not. ISD's new desktop-publishing system, Calamus, also works on a standard Mega ST with a monochrome monitor.

Calamus is a big system. The program combines the best features of a word processor, page-layout program, graphics-illustration utility and layout-design system. Calamus can import graphics from scanners, digitizers and word-processor files. Just about everything is icon-driven so most functions are intuitive. Finished documents can be printed on any Epson dot-matrix printer or Page Description Language (PDL) printer (e.g., Postscript, DDL, Interpress, Linotype typesetters and encapsulated Postscript files).

ISD is currently negotiating with Bitstream for the license of several fonts for Calamus. Bitstream Inc. is a leading supplier of fonts for the IBM PC and Macintosh graphics market. They make their money mostly from licensing fonts and software for Postscript supporting companies.



Calamus will have a hefty list price of $449, and ISD is marketing it for the high-end desktop-publishing user who needs a package saturated with functions and special controls. ISD expects to have a scaled-down version available for 1040 ST systems at $199.95 later this year.

If you are interested in the Moniterm monitor in general, Moniterm publishes a small booklet titled *How to Buy the Right Monitor.* The booklet is filled with information about high-resolution monitors. They will send you a copy at no charge. Their address can be found at the end of this article.

More desktop publishing packages

Calamus is designed for the high-end desktop-publishing (DTP) system market. Soft-Logik and Timeworks seem to be aiming at the low-end DTP users. Both companies have new products that are soon to be released for the ST.

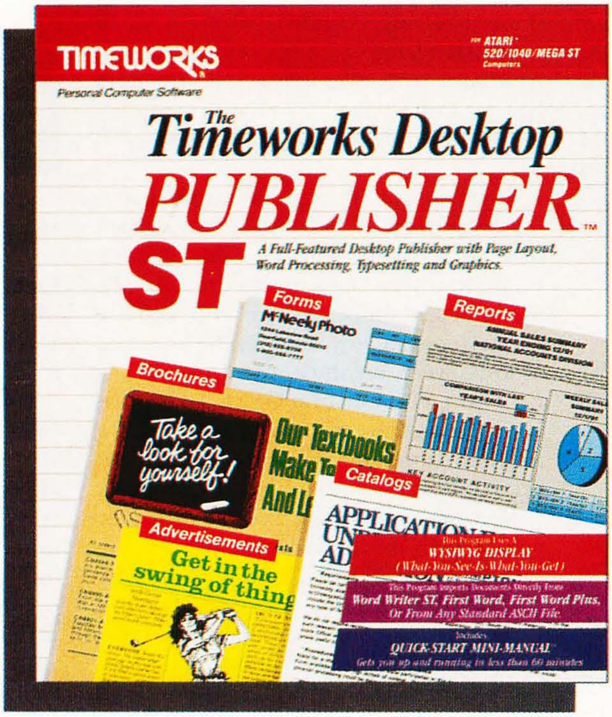
Publishing Partner Professional ($199.95 list) is SoftLogik's next generation of ST publishing systems, though the former Publishing Partner program will continue to be marketed at a lower price of $79.95. Users can upgrade for a nominal fee, if they later choose to do so.

Publishing Partner Professional (PPP) supports variable zoom ratios; so you can zoom in on any area of a page easily using the mouse. It loads pictures in GEM image-file format, so any pictures from *Easy Draw, Degas Elite* and other scanned images may be incorporated. Text can be rotated in one-degree increments to create some pretty interesting effects. Font's can be scaled to a user-definable measure making it easier for the nongraphic artist to understand the difference between picas and inches. You will also find an 80,000-word spelling checker has been added and new Tag-Sheets so Ventura Publisher users will find PPP to be very familiar.

SoftLogik is expanding into the Amiga market as well. An Amiga version of PPP will be available during summer '88.

Timeworks has announced its new Desktop Publisher ST ($129.95 list). Publisher is a full-featured desktop-publishing system with an integrated Word Processor, Page Layout Program and Typesetting system.

Publisher is GEM-based and easy to use. It includes a small selection of typefaces, sizes and styles. Large headline and body-type are included with typessizes ranging from 7 to 96 point. Editing features include auto-hyphenation, master pages, style sheets, paragraph tagging and keyboard macros. Graphics from DEGAS, Neochrome, Easy Draw and GEM image files can be imported. You can import text from *Word Writer, First Word,* and *First Word Plus.* Output can be sent to a standard Epson dot-matrix compatible printer, Atari or HP Laserjet laser printer, all Postscript-compatible printers and the NEC P6/P7 printer.


TIMEWORKS
Personal Computer Software
FOR ATARI 520/1040/MEGA ST Computers
The Timeworks Desktop PUBLISHER ST
A Full-Featured Desktop Publisher with Page Layout, Word Processing, Typesetting and Graphics.
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Advertisements
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Get in the swing of things
This Program Uses A WYSIWYG DISPLAY (What-You-See-Is-What-You-Get)
This Program Imports Documents Directly From Word Writer ST, First Word, First Word Plus, Or From Any Standard ASCII File
Includes QUICK-START MINI-MANUAL Gets you up and running in less than 60 minutes

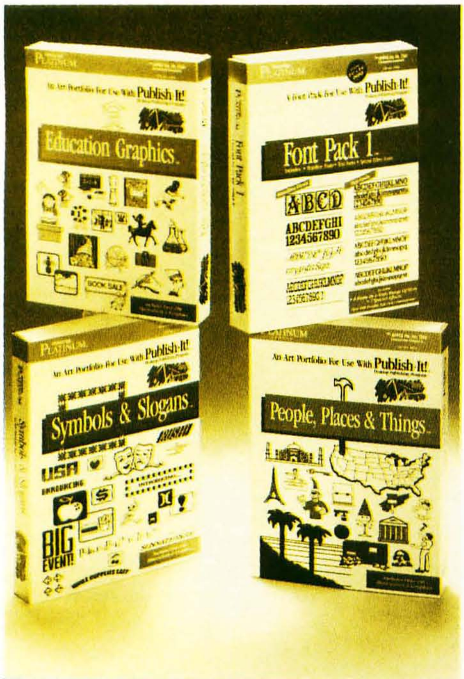
Publisher works on a 520, 1040 and Mega system, with color and monochrome monitor support. The program should be on the market at the end of summer '88.

If you haven't noticed already, most of the desktop-publishing packages for the ST include graphics import capabilities from Easy Draw. Migraph was one of the first companies to support GDOS, Atari's graphics operating system that lets ST users print fonts and graphics on an ST's screen or to a compatible graphics printer. GDOS can import graphics from a standard GEM image file; so Migraph has found an entire market of people with GDOS-compatible programs who want graphic images that can be used in newsletters, forms and other artwork.

The Migraph Scanner / Printer (expected to be less than $1,000 list) looks like a photocopier. Original documents, photographs and graphics are placed inside the Scanner. The pictures are converted into a GEM image file which can be loaded into any of the desktop-publishing programs or into Migraph's *Supercharged Easy Draw* ($149.95 list). The scanner has a bi-directional Centronics parallel interface, so it can be easily plugged into the printer port of your ST. It takes ten seconds to scan an image, and the software included with the Scanner allows for hatching patterns, gray-scale contrast control, and image sensitivity.

The scanner also includes a thermal printer which can be used to print GEM image files. The printer can print 200 dots per inch, which is good enough for most applications. The unit weighs about 22 pounds and is very quiet; so it should be good for small businesses with limited office space.

Migraph expects to be shipping the Scanner/Plotter later this year. They are also working on a Facsimile (FAX) system that would use the Scanner and an ST to send and receive FAXs. If all this turns out to be true, they will beat most FAX company equipment prices by at least $500 to $1,000.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CIRCLE #125 ON READER SERVICE CARD.

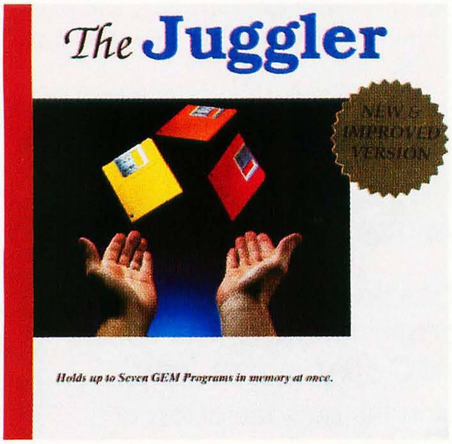
($49.95 list), a collection of images scanned with their Scanner/Plotter that can be used with any of the desktop-publishing systems for the ST and IBM PC. Inside the Scan Art box you will find

($49.95 list), a collection of images scanned with their Scanner/Plotter that can be used with any of the desktop-publishing systems for the ST and IBM PC. Inside the Scan Art box you will find

an ST disk and an IBM PC disk. Migraph will also be releasing *Draw-Art Professional* ($59.95 list), a compilation of GEM drawings for *Easy Draw 2.3.*

Multi finder for ST

The other 68000-based microcomputers have built their new operating systems around multitasking environments. A typical multitasking case lets you run a word processor at the same time a telecommunications program is downloading a file. Since the operating system supports multitasking, programs for the Mac and Amiga can be run at the same time. The ST's GEM system doesn't support multitasking; however, several programs have been popping up that let you run more than one program in your ST's memory at once.



Michtron's *Juggler* ($49.95 list) lets you load up to seven GEM-based programs into your ST. Each application is loaded into a certain portion of memory, then a switch box allows you to select which application will be the "live" program. The ability to switch instantly between applications can greatly improve your productivity. Michtron just released its new *Juggler II*, an improved version which lets you partition your ST's memory into two, four or eight sections. The new software handles TOS and non-GEM applications too! Now you can switch between a video game and word processor, quicker than your boss can catch you.

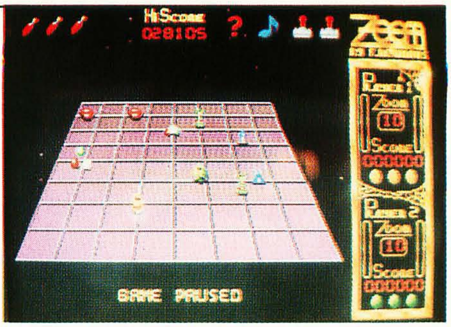
Intersect Software's *Revolver* ($49.95 list) is another program that, among other things, switches between various applications. Revolver can save a copy of the entire one megabyte of memory in your 1040 ST to a compressed disk file. At a later time, you can reload the disk file data into your ST's memory and begin running the program where you left off.

Revolver is a TOS application that is put into the AUTO folder of your boot disk. When you turn on your ST computer, Revolver loads itself into your ST's memory and waits for the user to activate its main menu. Revolver can be accessed in any screen resolution and within any program, GEM or non-GEM. Therefore, you could save a video game during a difficult game-playing section, and later reload the section to replay the fun parts.

Revolver is also an incredible utility for your ST. In addition to its application switching functions, it has an impressive list of disk utilities, printer spoolers, reset-button-proof RAM disks, automatic backup utilities and other functions for which you might otherwise depend on a desk accessory.

Neo word Fontz

Neotron Engineering, the makers of *Word Up,* a GEM word processor for the ST, is now Neocept Inc. It seems that the name Neotron was taken when they tried to incorporate earlier this year.



Mike Fulton, senior programmer at Neocept, demonstrated his new program *Fontz,* a GEM font-generating program which can import font files from the Macintosh and Amiga computers, and from *Hippoword* and *DEGAS.*

Fontz ($34.95 list) comes with six typefaces in a variety of sizes. The typefaces are GDOS font files that can be used with any GDOS application (e.g., Word Up, DEGAS Elite, etc.), Fontz will also scale fonts to practically any size or the resolution of an output device, such as a printer or video screen. The program scales fonts mathematically, so a certain amount of "clean up" is needed once a font has been scaled up. To clean up a font, Fontz includes a handy font editor which is completly mouse-driven, so it is easy to use.

Word Up ($79.95 list) is a "What You See Is What You Get" (WYSIWYG) word processor for the ST that uses Atari's GDOS to display fonts on the screen and eventually print them on your Epson compatible printer. Included

Neil Harris of the ATARI Computer Division

with Word UP are clones of some standard fonts: Swiss (Helvetica), Dutch (Times Roman), Typewriter (Courier.) You can import graphics from DEGAS Elite, Neochrome and other GDOS applications (e.g., Easy Draw and Clip Art.) Word Up also supports the Star NB-series, Citizen Tribute 224, Atari SMM804 9-pin dot matrix, HP Laserjet and Atari SLM804 laser printer.

Word Up is a big package for the price. Shelby Moore and Mike Fulton wrote Word Up over almost a two-year period. Moore wrote most of the main program, with Fulton writing the Mail Merge, Glossary, Font Selector and other parts of the package. The program has gone through the typical revisions you would expect of the first release of a program. The current release is Version 1.0 (4/21/88).

Neocept offers free customer support for users of Word Up and Fontz for the first 60 days of ownership. A $25-per-year customer-support charge is due for additional support.

Iliad and Odesea

A new version of *Circuit Maker* ($79.95), a simulation program that constructs and tests digital circuits, has been released from Iliad Software. The new version fixes several minor bugs, adds Macro capabilities and supports more printers and output devices.

Iliad Software began as a group of engineers who bought their ST computers from Lloyd's computers in Orem, Utah. They started a micro-software business through Lloyd's and built a good line of products directed at the CAD/CAM market. Recently, the engineers bought Lloyd out and moved their thriving software and hardware business to a larger office outside of the shopping mall in which Lloyd's was located.

Athena II ($99.95 list) is their current CAD package. It supports a large number of functions and is very competitive with *Drafix 1* ($195 list, Foresight Resources), *First CADD* ($49.95 list, Generic Software) and *GFA Draft Plus* ($99.95 list, Michtron). Iliad also markets *Teacher's Pet* ($49.95 list) for teachers to track their student's grades on the ST. The system works much like a spreadsheet.

Iliad is now shipping image libraries for Athena II. *Electronics 1* ($29.95 list) contains commonly used electronics design symbols, while *Archetecture 1* ($29.95 list) is filled with CAD symbols and building images.

Math Co-Processors

Rumors about adding a 68881 math chip to the ST have been roaming the rumor mills for the past year. At COMDEX we found not one company with an add-on kit, but two!

Xetec makes the XCEL card for the ST. XCEL supports the IEEE 32- and 64-bit data types and comes with a library of routines for Megamax C to gain full access to the floating point processor. Other compilers will be supported in the near future. XCEL plugs into the cartridge port on any ST or Mega system so it doesn't require special installation.

Weide Elektronik is a West German company that makes a 68881 math coprocessor add-on board for the ST. The board fits inside a 520 or 1040 case; so it must be installed by a dealer or technical person. The software library that comes with the add-on supports Megamax C, Mark Williams C, DRI C, Lattice C, Prospero, Fortran 77, Module II and CCD Pascal. Michtron supplied ST-Log with a copy of the Weide board, so they will most likely market it domestically.

Arithmetic Coprocessor
MC 68881
for ATARI
1040 ST
© 1987 by Weide ELEKTRONIK
Regerstr. 34 · D-4010 Hilden
Tel. 0 21 03/4 12 26 · West Germany

Both cards are extremely useful for engineering (CAD/CAM) and scientific programming. They typically yield speed improvements to a factor of 900. Costs range from $300 to $400 and include both hardware and software.

Deutschland = Atariland

Horst Brandl is the editor of *68000er/ST Computer* magazine, a very popular magazine in Europe. The German publication is part of the Markt & Technik publishing group which usually sends up to 20 people to COMDEX to cover its many computer-related products (e.g., books, hardware, software, magazines, etc.)

68000er is a big magazine, with as many as 40 people working in its editorial offices. Brandl told ST-Log about some of the new inventions and products he has seen for the ST in Germany, some of which were developed by his editorial staff.

"We have sent a new version of GDOS to Atari in Sunnyvale," said Brandl. "The new system was written by Arnd Beissner, who works for us. He is only 18 years old and wrote his own GDOS after seeing the many problems with Atari's version."

Brandl wanted this new version of GDOS to be accepted by Atari Corp.; so they sent a package to Shiraz Shivji, the senior engineer at Atari in Sunnyvale. They are currently evaluating the new software. Brandl hopes that Atari will distribute the new GDOS as a replacement to the old system.

"I am suprised by the missing products at COMDEX," Brandl said. "At the CeBit (Hannover) fair the Atari booth had many more new products on display. For example, we now have in Germany an MS-DOS Emulator for the ST that was shown."

The MS-DOS Emulator was shown as a prototype at the CeBit show and it uses the NEC-V30 processor, the equivalent of an Intel 8086. The card has one megabyte of RAM and a socket for a compatible math coprocessor. The MS-DOS Emulator runs at 10 Mhz, so it should be much quicker than using Avant Garde's *PC-Ditto*, a software MS-DOS emulator. The price in Germany is DM600, about $300.

"We also have Borland's Turbo C compiler in Germany," Brandl commented"It was developed by a a couple of programmers who contacted Borland directly to see if they could use Borland's compiler-parser source code."

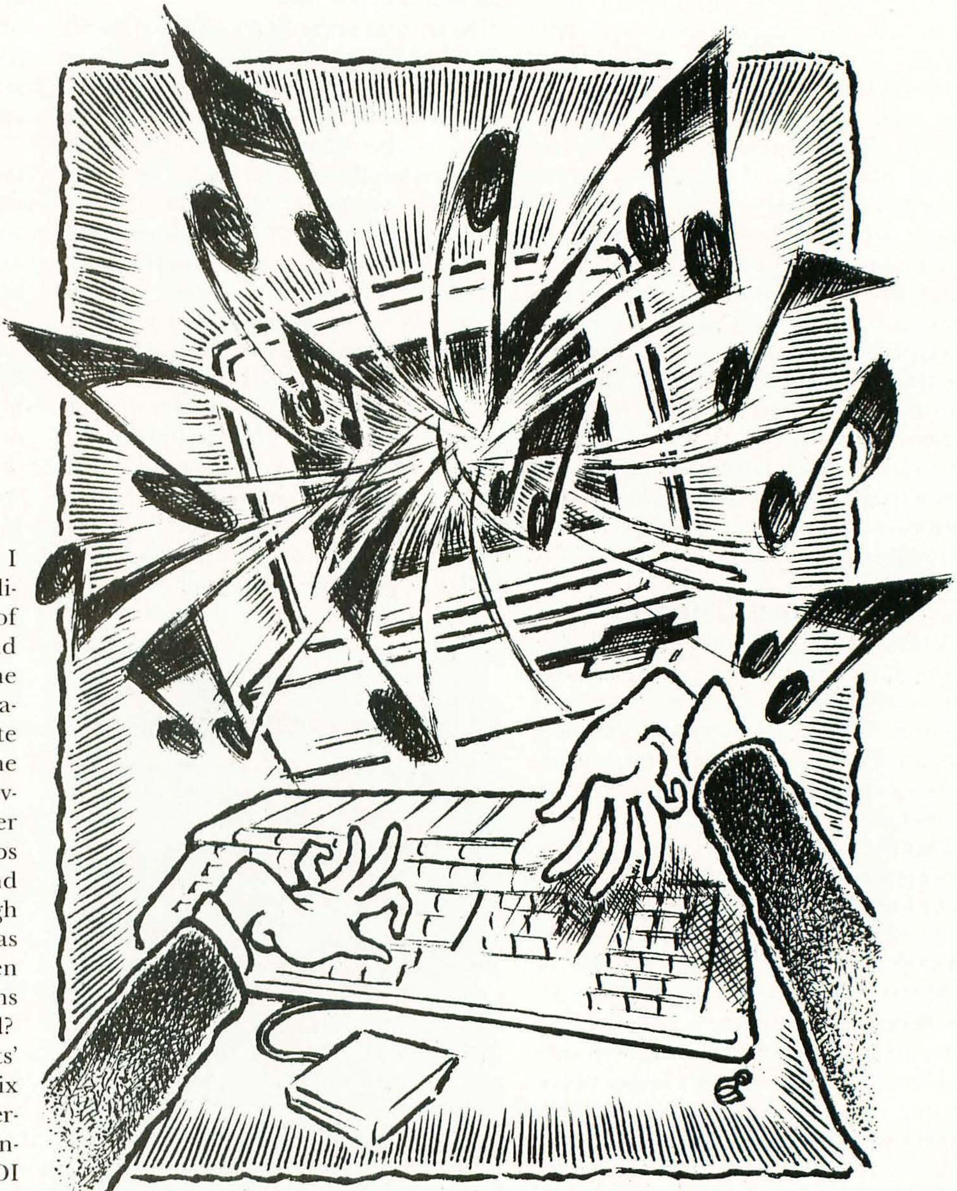
Borland is also licensing some of its other products to German software developers because they see a strong market in Europe for ST products. Borland's *Turbo Assembler* will be released for the ST later this year.

New hardware

Strange Systems, a new company from Huston, Texas, has entered the ST market with two new hardware add-on products for the ST. *ST Accelerator* ($249 list, available spring '88) is an add-on card that replaces your ST's 68000 CPU with a 68000-16 CPU. The new CPU runs your ST at 16 Mhz, twice its normal

(to page 77)

READER COMMENT



ILLUSTRATIONS BY JOHN BERADO

The forgotten MIDI

I feel that, as a concerned ST user, I must comment on your game review policies. Many times I've heard arguments of how much more superior the sound and graphics are on other machines, and the points I've heard are valid. Graphics capabilities on other computers are quite good; however, with programs such as the *Quantum Paintbox*, our STs are now achieving remarkable graphics results. Other computers have dedicated sound chips (synthesizers on a chip), and they sound quite good, especially when put through amplification system; but the ST has MIDI! So what puzzles me most is: when MIDI is used on various programs (read:games), why isn't this mentioned?

An example of this is Electronic Arts' release of *Marble Madness*. I've read six different reviews of this game in six different magazines and not one of them mentions that this wonderful game is MIDI compatible! Not one! The only reason I got hooked on this game was because of the arcade sound track. Now with my MIDI synthesizer (Yamaha's TX 81Z). I can bring the arcade sound track home! EA doesn't even mention this fact. No one does.

So as a first and much needed service to your loyal readers, why don't you, ST-Log, become the first to make mention of available MIDI sound in future reviews. The review of *Karate Kid II* in your May 1988 issue didn't mention this fact, and the article entitled "The Perfect Computer Game" forgot to note how important sound is to the completion of the *perfect* game.

The ST doesn't have the best sound chip in the world, but it does have built-in MIDI, and those of us with MIDI-compatible synthesizers would like to know what works and what doesn't.

—Fred Olivaws
Carpinteria, CA

We suspect that so many reviewers neglect to mention MIDI-compatible features due to the fact that they don't themselves own MIDI equipment, and thus are unable to test the feature for themselves. You're right, however, that if a program offers MIDI sound, it should at least be mentioned in the review. Game reviewers take note!

Over the big water

I have been an Atari fanatic for about four years now. I have the 130XE, 1050 disk drive with the U.S. Doubler, 1027 printer and the cassette deck. I also have the 520 ST, but I have replaced the half-meg drive with a one-meg drive. And lastly, I have the monochrome monitor. I belong to the Lee Valley Atari User Group and attend most Atari shows held in London; they are fantastic. I went to the tenth PCW show in London at Olympia last year, and I was amazed at how the Atari world dominated the whole show; they are quite simply the best in the world.

I am writing to you because I would like to get in touch with some Atari pen friends in the states, and you are the only people I can think of who may be able to help me.

—S. Ireland
95 Rundells
Harlow, Essex
England CM18 7 HD

Concentrate on the little guys!

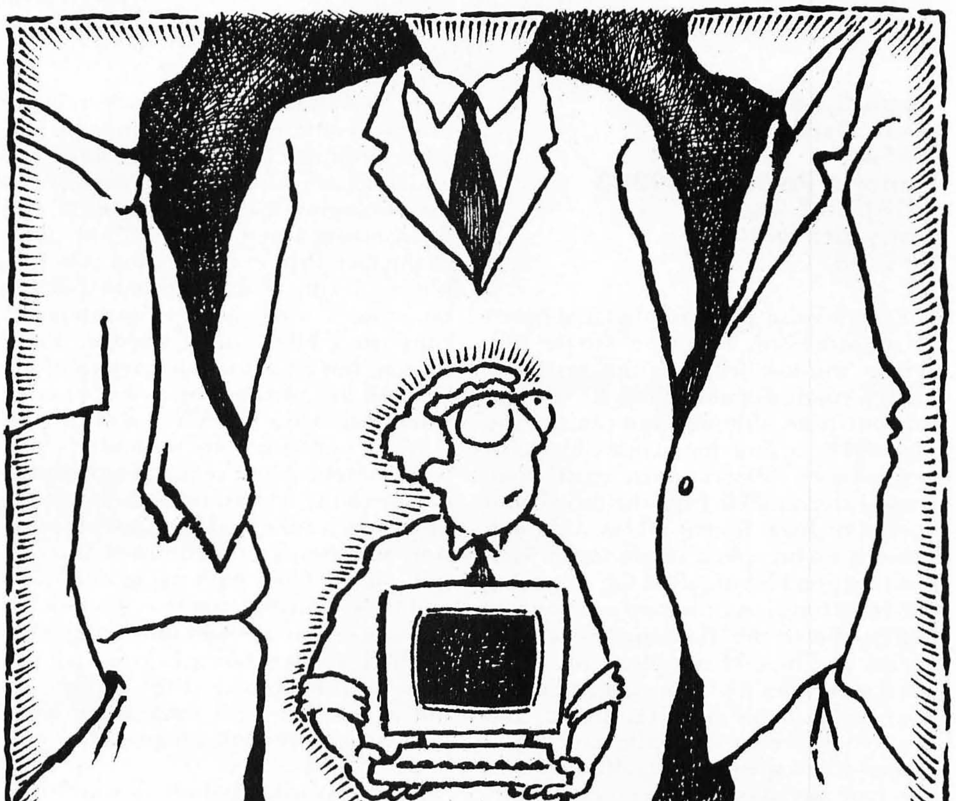
Three pieces in your June issue prompted me to write this letter: "The Absent Revolution" by Mike Donahue, "Ian's Quest," and Walnum's editorial. All make excellent points and should be required reading at Atari Corp.

I have one observation to add to this forum. Why does everyone seem so concerned with seeing an ST in use in a Fortune 1000 company, anyway? Surely the large-corporation desktop market is a relatively saturated area whose growth potential pales in comparison with the vast number of small businesses in the world that could benefit from office automation, but could not afford it until now due to the prohibitive costs associated with previously available machines. The ST seems tailor-made for such a "niche," an area that the big boys seem content to ignore. The budgetary realities of small businesses are much closer to the scale of home budgets, the price point for which Atari seems determined to build machines

In an attempt to put our money where our mouths are, my wife and I (both dentists) have assembled our own dental office practice-management system around a 1040 using self-written software and installed it in our own office. We have been automated in all of our financial and bookkeeping operations since August 1987. Our system does everything the established marketing systems do—and all this without any blue logos. If it would be a little too much to call ourselves revolutionaries, then at least call us dissidents for using this "game machine" in a professional business installation!

—James C. Stamey
Huntington, WV

We agree that the ST is perfectly suited for small business use, especially considering its reasonable price. We'd like to add, though, that it's certainly not necessary for the ST owner wishing to use his machine for business applications to write his own software. There is almost any type of software available for the ST, including some very sophisticated business products—everything from databases and word processors to professional accounting packages. There's even a cash register program!



ST-Check to the rescue

Back in the good ole days, while I was still banging away on my 8-bit, you ran a program called *ST-Check* in the ST supplement to ANALOG Computing. Since I didn't have an ST, I ignored the program and forgot all about it. Since then I have taken the plunge and purchased an ST, and now desperately need an error checker for such programs as *Art Gallery*. How can I get a copy of ST-Check? Is it on disk or do you have a reprint of the original article so I can type it myself? Please let me know what, if any, arrangements have to be made to procure this program.

—Robert E. Baumann, Jr.
Merced, CA

Goodness, but it has *been a long time since the original publication of ST-Check, hasn't it. Our apologies to all you new ST owners who may have been trying to locate a copy of our ST BASIC typing checker. If you take a look at this month's table of contents, you'll see that your search is over.*

DOING IT WRITE

Word Processing on Your ST

by David Plotkin

Regardless of what else they might have bought it for, most people do some word processing on their Atari ST. It may even be (as it is in my case) that word processing is their No. 1 application—used more than anything else. This should not be a surprise to anyone, because, from writing lengthy manuals to sending a letter to a family member, the ST is a superior word processing tool. The crystal-clear monochrome screen or 80-column color screen, the large memory space and the GEM operating system all combine to provide the potential for powerful and easy-to-use word processing.

Of course, the ST by itself won't process words; it takes software. By my last count, there were six word-processing packages still actively on the market. These range from relatively simple packages with a few features (but still enough to get a variety of tasks done) to an amazingly powerful program with a 600-page manual and a price to match! One of the packages (*WordPerfect*) has been plagued with bugs, while another (*WordUp*) is new to the market but appears to be quite solid. The rest of the packages—*Regent Word 2, Word Writer, ST Writer* and *1st Word Plus* have been around for quite a while and have had several revisions. The purpose of this article is to take a look at each package, its features, shortcomings and unique points.

Regent Software
7131 Owensmouth,
#45A
Canoga Park, CA 91303
(818) 882-2800
Copy protected
$79.95

Regent Word 2 is a simple, GEM-based word processor. It uses a single full-screen window, which is not resizable. Only a single document can be open at any one time, although you can use the Cut-and-Paste function to move blocks of text between different documents. Commands are available from the drop-down menus or from function keys, although there is no on-screen reminder of what the function keys are used for. Accessing the Help function brings up a dialog box which shows the function-key assignments and menu-key equivalents. Standard text styles (bold, underline, italics, etc.) are available from the menu, and these styles are shown on the screen. The screen-scroll speed is fast, although you can type ahead of the screen rather easily. These keystrokes are not lost, however, and the program catches up with you eventually.

This was the first GEM-based word processor that automatically reformatted text as you typed, not requiring you to press a special key to rearrange text when inserting new material into existing work. It was also the first to do reliable double column printing (newspaper-style columns). Headers and footers are available, as is the ability to change formats (margins, spacing, justification, etc.) by inserting a new "ruler" at any point in the text. Printer installation is as simple as clicking on a selection in a dialog box, and a wide range of printers are supported. Files can be saved in ASCII format, but an automatic backup of the file you are working on is not created when you save a new version of the file.

Block operations are somewhat clumsy. Selecting a block requires moving the cursor to the beginning and end of the block, each time making a menu selection or pressing a function key. You cannot select a block with the mouse (click and drag). Further, the selected block is not marked in any way. Once a block is defined, an alert box asks you what you want to do with it, and the choices are not as wide as with some other word processors, although adequate for most uses.

Regent Word 2 includes a simple calculator (available from the menu), as well as word counter and spell checker. The spell checker can be run from within the word processor, but does not support "correct as you type" checking, nor is there a personal dictionary. You can, however, add words to the main dictionary.

ST Writer
Public domain

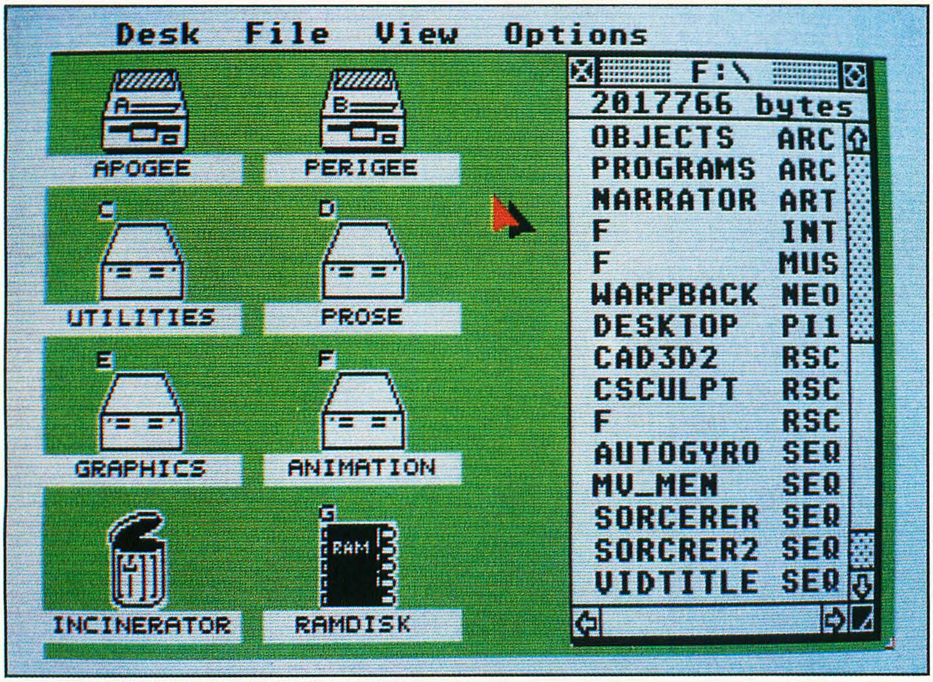
ST Writer started life as a quick effort by Atari to provide a useful application for the ST. It was given away free with early STs. Dr. Bruce Noonan obtained the source code and has been making upgraded versions available for some time. Each new version added considerable functionality. I suspect ST Writer's popularity surprised Atari, since until its most recent incarnation, it did not use any GEM-based items at all: no mouse, no menu, no windows. It was (and still is, in many ways) a throwback to 8-bit days. All editing commands are accessed via keystrokes (i.e., Control-L is the command to set the left margin), and the editing screen does not show any of the special effects (bold, italics, etc.). Instead, you must remember the commands and live with a variety of arcane codes in your document which indicate the effects. It can open only a single document at a time, and to configure for a printer, you must run a different program. ST Writer can automatically reconfigure text in other formats to its own format (this works most of the time), but lacks the ability to save files in ASCII format. (You can, however, print a document to disk, but printer controls will also be sent to the file.)

The trade-off for these shortcomings is

(to page 74)

Test your knowledge

S



```
F:\
2017766 bytes
OBJECTS  ARC
PROGRAMS ARC
NARRATOR ART
F        INT
F        MUS
WARPBACK NEO
DESKTOP  PI1
CAD3D2   RSC
CSCULPT  RSC
F        RSC
AUTOGYRO SEQ
MV_MEN   SEQ
SORCERER SEQ
SORCRER2 SEQ
VIDTITLE SEQ
```

Figure 1

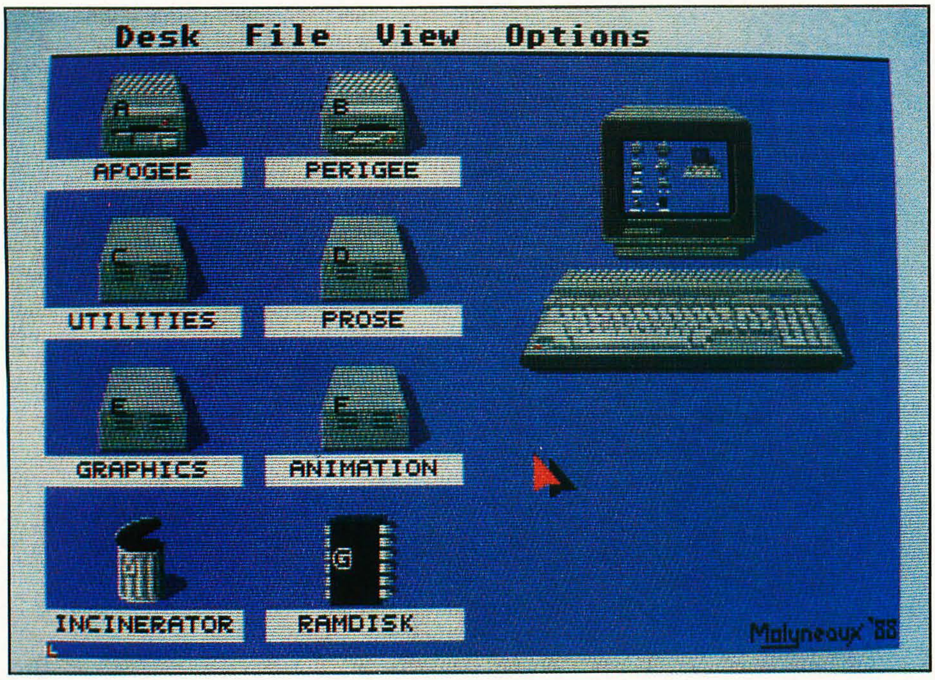


Figure 2

No, this isn't a rerun. This is the "sequel" to the original "Customizing the GEM Desktop," which appeared in the May 1987 issue of ST-Log. Although that article was pretty exhaustive, as time has passed I've found new ways to make the GEM Desktop even more a creature of your own design. Also, with the introduction of the Mega STs, there are some updates and changes with regard to some of the information contained in the original article (which you may want to dig up and keep handy as an additional reference.)

Furthermore, after the rather heavily technical nature of the last three Step 1s (covering printer drivers and ST hardware), I thought it was time to have a little "fun." But before the fun stuff, let's get the updates out of the way.

Mega updates

The Mega ST computers put new wrinkles in the saga of the infamous DESKTOP.INF file (DI). Not only is there the long-anticipated "blitter" chip and the "new" TOS ROMs (which also appear in later models of the 1040ST and 520STfm), but also a revised Control Panel accessory. These cause additional values to be set or changed in the DI.

Let's start with the new CONTROL.ACC. It includes the Control Panel, Set Printer and Set RS232 Config. boxes in a single accessory slot. Previously, CONTROL.ACC contained the Control Panel and Set Printer boxes, but they took two accessory slots out of the maximum of six. It did not contain the Set RS232 option, which was found in EMULATOR.ACC. Furthermore, there are now 16 baud/bps rates to select from in the Set RS232 panel, whereas there were only four originally. If you open the DI file (using a word processor with an ASCII or nondocument mode, like 1st Word, at the top of the file you will find a line like the following (the numbers may change, but the line will

TEP 1

Customizing the GEM Desktop Too!

Mega notes and more Desktop changes

by Maurice Molyneaux

always begin with "#a"):

#a000000

This line saves the data from Set RS232 Config. The values here will change depending on how you configure the port. Each digit represents a single setting of the RS232 port configuration, with the exception of the fifth digit, which sets two of the selections found on the Set RS232 alert box. The second digit may contain a number or an ASCII character. The six digits represent the following, going from left to right:

1st—DUPLEX—A 0 sets Full and a 1 sets Half.

2nd—BAUD RATE—The following baud/bps rates are denoted by the character which appears to the value's right (i.e., if 75 baud is selected the character ">" will be the second digit, as in #a0>0000).

50—? 1200—2
75—> 1800—8
110—= 2000—7
134—< 2400—6
150—; 3600—5
200—: 4800—1
300—3 9600—0
600—9 19200—4

3rd—PARITY—0 = None, 1 = Odd, 2 = Even.

4th—BITS/CHAR—0 = 8 bits, 1 = 7, 2 = 6, 3 = 5.

5th—XON/XOFF & RTS/CTS—Combined in a single digit. In the examples given here, XON/XOFF is the first listed, and RTS/CTS the second, so that "Off/On" means XON/XOFF is "off" and RTS/CTS is "on."

0 = Off/Off 2 = Off/On
1 = On/Off 3 = On/On

6th—Strip Bit—0 = On, 1 = Off.

Now, the blitter chip. At the very bottom of the Options menu on the Desktop there's a selection called "blitter." If a check mark appears next to it, the blitter chip is active, if not, the chip is off. The system setting is for the blitter to be on. However, the user can set the default blitter status by setting it the way he/she wants and saving the Desktop. The DI file now contains a value for this setting, in the line which starts with #E, as in:

#E FB 02

The first value, one byte (hexadecimal FB in this example), holds the preferences for sorting files (as set from the View menu), copy/delete confirmations on/off, and the mouse double-click rates (set from the Control Panel). The value changes, of course, depending on which bits are set on or off.

The second byte (02 in this example) is used to control which resolution to use. Now it also records/sets the blitter status. If the blitter is off, then the first numeral of the pair is a 0, if on, it is a 1. Therefore, with the blitter off, 01 is low, 02 is medium and 03 is high. Blitter on, 11 is low, 12 is medium and 13 is high. Of course, putting a value of 03 or 13 here if you have color monitor, or putting a 01, 11, 02 or 12 here if you have a monochrome monitor, won't trick your ST into using a resolution your monitor cannot display.

Other GEM Desktop changes include "Are you sure? [Yes/No]" alert boxes which appear when you click on Save Desktop and Print Screen under the Options menu. Furthermore, if you click the left mouse button while pointing at a window's scroll arrows or in the gray area around a scroll "box" (called the scroll bar) and hold the button down, the scroll

Although the last article, "Customizing the GEM Desktop," was pretty exhaustive, I've found new ways to make GEM Desktop even more a creature of your own design.

will auto-repeat until you let go. No more clicking on the scroll bar 1,000 times to leaf through large documents in 1st Word!

There has even been a fix in TOS/GEM that eliminates the infamous type-an-underscore-and-crash-the-system bug. This bug, if you've never encountered it, strikes when you try to type an underscore in fields in certain kinds of dialog boxes. Try, for example, calling up the Control Panel accessory and click on the time or date as if you were going to set it. Now, type an underline. *Kablooey!* This can also happen in the GEM item selector and other dialog boxes. It doesn't happen with the new ROMs, fortunately.

Of course, that doesn't mean TOS/GEM is bug-free. Far from it. There are some "new" bugs to contend with. One has to do with running program from a non-active window (which you do by holding down the right mouse button while double-clicking with the left). Doing this with the new TOS causes the machine to lock up! Furthermore, there's a goof in the file-naming routines. If you save a file without an extender, as in PICTURE, the OS (operating system) automatically appends the period (.) character that separates the filename from its extender, regardless of the extender. So, if you have a program that specifically looks for PICTURE, it won't work because the file you saved will have a period as part of its filename.

There are other bugs, but as with the old ROMs, they are more likely to be encountered by programmers than end users. Users whose machines have the new ROMs are more likely to encounter compatibility problems. This means that a few programs that ran fine on an older ST won't run properly or at all on a Mega or the later model STs with the new ROMs. This is due to changes made in the ROMs, but don't go pointing fingers at Atari. In the vast majority of cases, the programmers of the software used an undocumented memory location or called an operating system routine in some fashion other than through "legal" means. When changes were made, those programs working so illegally have problems.

Oh well; you win some, you lose some. Fortunately, word is that Atari will have revised ROMs this fall which will speed up GEMDOS (disk operating system) routines, fix more bugs, etc (cross your fingers!)

There are many programs that will change the icons on your Desktop, but not many that let you design your own.

Desktop too

People who look at my ST's Desktop often do a double take. No, I don't use *Neodesk* or some other "alternate" desktop. However, the on-screen disk icons look just like my disk drives, and the hard-disk partitions are represented by little pictures of my SupraDrive. And—what's this?—there's a RAM chip icon for the RAM-disk and the trash can's lid is open! (Figure 1.)

Some of you might have guessed that I've used an icon-editing program to change the appearance of the Desktop icons. However, what confuses a lot of people is how I have three different types of drive icons on my Desktop. This is no magic, no special programming trick, just a little icon redefinition and a bit of surgery on the DI file. (Of course!)

There are a number of programs that will change the icons on your Desktop, but not many let you design your own. If you have one of these programs you can design your own floppy disk, trash can and other icons.

The problem with some of these utilities is that they use an accessory in conjunction with a TOS program to install the icons. Once the icons are installed, they need not be reinstalled until you reset or reboot. But, regardless of this, the blasted accessory takes up RAM and an accessory slot. The solution? If possible throw away the accessory and put the icon-loader program and the icon-data file in the main directory of your boot disk. Don't put the program in an AUTO folder! It won't work! This is because the programs in the AUTO folder are run before the GEM Desktop program is run. If you tried to run such an icon installer from the AUTO folder it would fail to work, this due to the fact that it can't find icons to replace because the Desktop has yet to be set up.

Now, you can either run the installer manually, or get one of those programs to make GEM auto-run programs as soon as the Desktop comes up. Thus, the new icons are installed, but no memory is consumed by useless accessories. (A note: Some icon replacement utilities are very sensitive to AUTO folder programs which alter the way programs, accessories and other RAM are used, such as programs like John Eidsvoog's excellent Topdown.)

Now, how do you get multiple types of icons for different drives (if you have a hard disk, RAM disks, etc.)? Easy. When you redefine the icons, you change the icons for folders, programs and data files to pictures of different devices. In my case the folders stay folders, the data/text files become RAM chips and the program file icons become hard-disk drives.

Next, we have to install these icons on the Desktop. Usually, the only icons used outside windows are the disk and trash icons, but we can change that. Load the DI file into your word processor, ASCII or non-document mode on (if possible), and edit the file. (Consult "Customizing the GEM Desktop" in ST-Log #14 for a detailed walk-through of modifying this file.)

Scan down until you find the information for the Desk icons, their names, identifiers, etc. If you have one or two floppy drives, you'll see two lines something like this:

```
#M 00 03 00 FF A FLOPPY DISK@ @
#M 01 03 00 FF B FLOPPY DISK@ @
#T 07 03 02 FF   TRASH@ @
```

If you have a hard disk (partitioned, of course), perhaps something like this:

```
#M 00 03 00 FF A DISK A@ @
#M 01 03 00 FF B DISK B@ @
#M 02 03 03 FF C UTILITIES@ @
#M 03 03 03 FF D PROSE@ @
#M 04 03 03 FF E GRAPHICS@ @
#M 05 03 03 FF F ANIMATION@ @
#M 06 03 04 FF G RAMDISK@ @
#T 07 03 02 FF   TRASH@ @
```

These set the icons for the Desktop. The first value (after the #M) is column of the icon (0 to 3 in low resolution, 0 to 7 in medium or high), and the second is the row (0 to 3 in color, 0 to 7 in monochrome). The third determines which of the system icon images (disk/file drawer, trash can, program, data, or folder icon) to display. Change the third value to one of the following for different icons:

00 = File Drawer (disk drive)
01 = Folder (subdirectory)
02 = Trash Can
03 = Program (.APP, .PRG, .TOS, .TTP)
04 = Data/Text (pile of paper)

You can select any icon you wish to use on the Desktop, but be warned that the "letter" for a drive icon (if using anything but the disk icon) will appear in the upper left corner of the icon, rather than where it appears on the file-drawer icon. Therefore, you should draw the icon so that no part of it enters the 6x6 block of pixels in the upper left-hand corner of the icon block. (Look at the icons in Figure 1 and note where the drive identifiers are located.)

If you don't have the means to automatically run your icon installation utility, you may be forced to run it manually.

Following the icon value number is an FF, which is then followed by the drive identifier, and then the text of drive name/label. The "@ @" indicates the end of the drive line.

Before modification, the lines might look like the following. Note that the icon value (third column of numbers) are all the same: 00 for the "file drawer" icon.

```
#M 00 03 00 FF A DISK A@ @
#M 01 03 00 FF B DISK B@ @
#M 02 03 00 FF C UTILITIES@ @
#M 03 03 00 FF D PROSE@ @
#M 04 03 00 FF E GRAPHICS@ @
#M 05 03 00 FF F ANIMATION@ @
#M 06 03 00 FF G RAMDISK@ @
#T 07 03 02 FF   TRASH@ @
```

After modification, it might look like the following. Here we have left the regular disk icons (icon number 00) in place for the floppy drives A and B, and left the trash can alone as well (icon number 02). For drives C through F, the hard-disk partitions, the icon value has been changed to 03, the icon for a program. For drive G, the ramdisk, the icon number was changed to 04, the icon for a data/text file.

```
#M 00 03 00 FF A DISK A@ @
#M 01 03 00 FF B DISK B@ @
#M 02 03 03 FF C UTILITIES@ @
#M 03 03 03 FF D PROSE@ @
#M 04 03 03 FF E GRAPHICS@ @
#M 05 03 03 FF F ANIMATION@ @
#M 06 03 04 FF G RAMDISK@ @
#T 07 03 02 FF   TRASH@ @
```

Once all these changes have been made, save your DI file (Remember! ASCII mode!) to your boot disk. If you have multiple DI files, as with programs that let you select different DIs for different resolutions, you will either need to modify them all or make certain that your ST uses the DI file you just modified.) Reset your computer. When the Desktop appears, it should look pretty weird. The icons will be all wrong (if you didn't already install your own custom icons). You'll have text, program, maybe even folder icons sitting out on the Desktop, each with little identifying letters attached.

Now, run the program that installs the icons. When you come back to the Desktop, you'll see your own customized images in place of those shabby old GEM icons. You may find one or more of your new icons look wrong. If so, edit and resave them. Once all is to your satisfaction, you're ready to roll. Set up the icon in staller to run automatically when you reach the Desktop (you'll need one of those aforementioned GEM-boot programs to do this) and you're all set. Every time you boot, you'll have a custom look to your ST Desktop.

If you don't have means to automatically run your icon installation utility, you may be forced to run it manually upon reaching the Desktop.

This makes for one sharp-looking Desktop. But it has one drawback. Since you've modified the icons normally used in the Desktop windows, those icons will be identical to those you made into drives. You'll have to sort by text (View menu) to keep the whole thing looking good. Unless, of course, you like double-clicking on hard-drive icons to run ST Writer.

Even more mods

Now here's the rub: a really wild Desktop overhaul. It requires you to have a program (such as *Easel ST*, by Computer Fenestrations) which installs a graphic image as the Desktop background (e.g., a Neo or DEGAS pic) and an icon redesigner. What you'll do is draw a NEO or DEGAS picture of the Desktop, complete with (in low resolution) multicolor icons, etc. The best way to do this is to take a "snapshot" of your current Desktop, using one of the many public domain snapshot utilities. This will show you precisely where the icons, their labels and identifying letters will be.

Next, you'll use the icon editor and reduce the program icons to a single dot (the smallest allowed), which, if possible, you should place where it will disappear behind the drive-identifier letter. (In this case, you will probably not want to redefine any window icons for use on the Desktop. Why bother when all you're doing is making them invisible!) You will then install the picture as the Desktop background, and your nearly nonexistent new icons as well. You cannot, however, eliminate the icon labels nor the drive-identifier letter which appears on them. You must take this into account as you redesign your icons and draw your background for them.

What you end up with might well look something like the picture in Figure 2. The main limitation to this particular modification is that if you drag an icon to another location, you'll see its "ghost" outline, but when you drop it, it will nearly disappear. Furthermore, the icon drawn on the background stays where it is. Ah well, sacrifice in the name of art.

The final step

For quite some time a number of people have rather pithily observed that this series was a dead end in its original conception. "How much beginner's stuff can you cover?" they would say, then laugh and add (all thinking they were very witty and original in saying this), that I would have to go on to intermediate level stuff, and call the series "Step 2."

They were right and wrong as well. There is a lot of material beginners need to know, but I've covered most of the technical aspects over these past 12 articles. I'm finding it difficult to write anything more without endlessly repeating myself. Furthermore, because of all this background material, I find myself constantly forced to choose between restating previously printed material for the sake of new readers, or referring people back to old issues, which they may or may not have access to. Usually, I choose the latter just so as not to end up repeating myself ad infinitum (a great way to make money, but a sloppy way to write a column).

So, of late I have been thinking about what to do. I really don't want to keep trudging over the same ground, so to speak. Then again, I don't want to start discussing power-user level stuff and abandon all the novices and part-time users out there. It was quite a problem. Finally, I decided there was nowhere to go with the series as it stood. After all, I've written approximately 40,000 words of beginner's material for ST-Log in the past year and a half! Where do you go from there?

So, Step 1, as you and I have come to know it, takes its final bow this issue. But, don't panic, I'm not abandoning all you novices. The old Step 1 is being retired, but it's going to be replaced with something better; something a little more broad based. Instead of just defining terms, explaining the myriad complexities of an ST and telling you how to tweak your printer, I'm going to be telling you about different uses for your ST system.

For example, we might talk about how a word processor, spelling checker, etc., can help you in writing articles and stories. We might discuss the process of designing graphics for a game. I'll definitely be talking to you about what kinds of things you can really do with these machines.

Yes, they can play games, and yes, they can be used for business management, but there are so many other possibilities—exciting ones—that shouldn't be ignored. In the three years I've had my ST, I've used it to write dozens of articles, revise a 130,000 word novel, design game graphics for several companies, create 3D cartoon characters, and produce a ten-minute animated, sales-video cartoon for Epyx and the possibilities keep growing all the time.

Computers are powerful tools. If you're willing to learn to use one, all kinds of opportunities for business and/or pleasure will open up.

Possibilites, that's where we're going. From the first step in understanding your computer to the first step in using it. Computers are powerful tools. If you're willing to learn to use one, there are all kinds of opportunities, for business, pleasure or both. My ST was the smartest investment I ever made, because it's allowed me to do things—inexpensively—that I couldn't have done otherwise. This little Atari computer has made quite a difference in my life, and many others have had the same experience. I intend to show you these things as well, and maybe open your eyes to some possibilities.

And all this is not to say I'll no longer be dispensing useful tips and information as I have in the past. That won't change. The change you will see is that it won't always be the same sort of thing each and every month. My main concern in this series has always been helping you readers, and that will remain the core of whatever this column evolves into.

I'm excited by the possibilities. Hope you stick around for the ride.

When not writing articles for ST-Log, *Maurice Molyneaux continues to struggle with a 9-year-old science fiction novel, designs game graphics, consults for software companies and creates animated cartoon productions using microcomputers. Despite a ridiculously French name, he claims to having been born in Vicenza, Italy, and denies vicious rumors that he eats escargots and calamari while computing. He is the creator and director of the "Art and Film Director" sales video for Epyx — a ten-minute, fully animated, cartoon demonstration created entirely with ST systems. His DELPHI username is MAURICEM.*

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CIRCLE #107 ON READER SERVICE CARD

DOUBLE PRINTING

The *Regent Word II Double Column Utility* program is a full-GEM program that uses the mouse to point and click on the document file to be printed. When the document is printed, the text will be formatted into a double-column format such as you would find in a newspaper or magazine. Note that, due to the size of this program, the program listings are not printed here. They are available on this month's disk version or in the ST SIG on DELPHI.

The program is fairly sophisticated; most of the *Regent Word II* print format commands are supported, including Page Breaks, Justification On / Off, Header Definition, Footer Definition, Primary and Secondary Left Margins, Right Margin Setting, Bold Print, Underlined Print, Italic Print, Super and Sub-scripted Print.

These functions cover enough of the formatting commands to print a user-group newsletter, a report or other double-column document. The other formatting commands are ignored (i.e., Pitch, Font, Line Spacing, etc.).

To start the program from the GEM Desktop, move the mouse pointer over the icon or file named PRINT.PRG and double-click the left mouse button. You may also click the left mouse button once and use the OPEN drop-down menu selection. After a few moments the title screen will appear as shown in Figure 1.

To use the utility, move the mouse pointer over the Continue button and click the left mouse button. All functions are accessed through the drop-down menus that appear on the top of the screen.

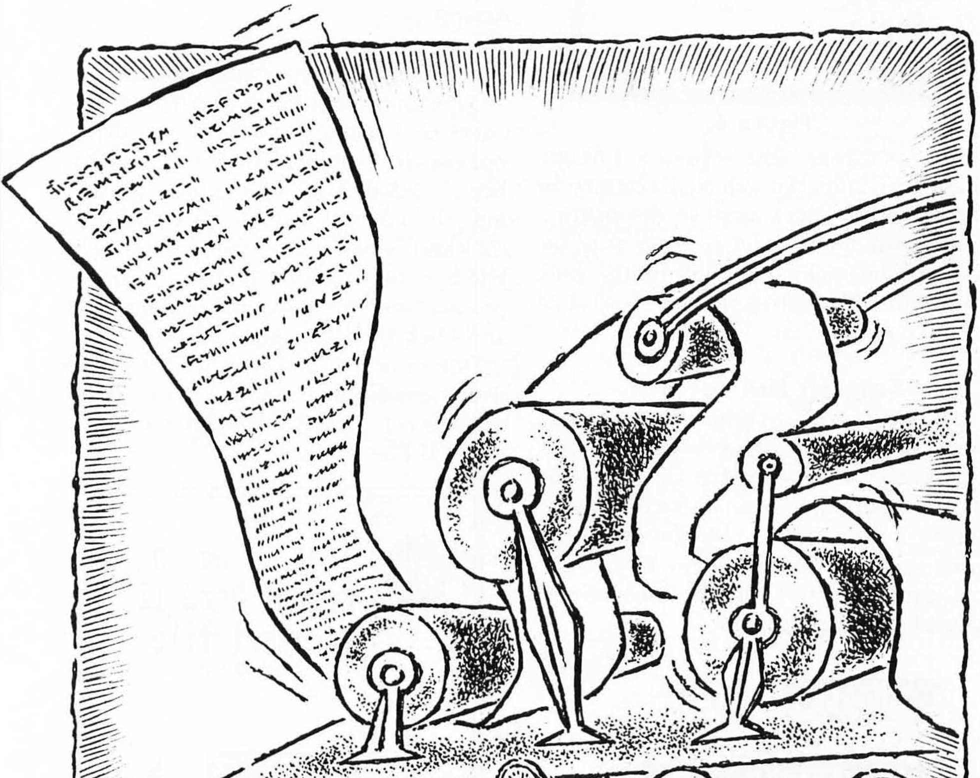
The Double Column Utility program supports many print styles, e.g., bold, underlined, etc. As Atari never authorized any particular printer to be the standard ST printer, the utility program must be flexible enough to support all possible printers. A printer is supported through a "printer driver."

A special program has been included with the Double Column Utility to create a printer driver and the program is run from the GEM Desktop. I've included several pre-defined printer drivers, which you can modify using the *Printer Driver Create* program.

If you want to use one of the prede-

COLUMN UTLITY

by Frank Cohen



The program is fairly sophisticated—its functions cover enough of the formatting commands to print a user-group newsletter, a report or any double column document.

fined printer drivers, skip the following section. When the Double Column Utility is started, no printer driver has been selected. The default settings are compatible with Epson-compatible printers. Use the Printer Driver Create program to customize a printer driver to your printer.

Creating your own printer driver

If you wish to develop your own printer driver, move the mouse pointer over the PDCREATE.PRG file on the GEM Desktop and double click the left mouse button. A dialog box will appear as shown in Figure 2.

Click Create a new Driver to enter a new printer driver. Figure 3 shows the special edit window which will appear. The printer control commands that make up a printer driver are shown. When you press a key, the key character will appear at the location of the cursor.

The first printer control code is used to instruct your printer to begin printing using a special font (e.g., pica, elite, etc.). Refer to your printer manual for the exact codes to control your printer. Enter the decimal values. If there is more than one number, separate the numbers by commas. To enter the next printer control code press the down arrow key. The cursor will jump to the next line.

Once you have finished entering values, press the return key. The dialog box shown in Figure 4 will appear, asking for the file name of the new printer driver. Type the filename, and press the return key. After a few moments the GEM Desktop will appear, and the new printer driver will have been successfully created and may be used in the Double Column Utility.

Move the mouse pointer over the PRINT.PRG file, and double-click the left mouse button. The Double Column Utility title screen will appear. Press Return or click the continue button.

Selecting a printer driver

When the Double Column Utility is first started, the program defaults to an Epson setting. To select a printer driver, move the mouse pointer into the printer drop-down menu, and click the choose printer driver option.

The file selector window will appear as illustrated in Figure 5. Printer drivers have a file extension of .W2P, so the file selector window will show only those file types. Move the mouse pointer over the printer driver name and then double-click the left mouse button. Once the printer driver has been loaded, the printer drop-down menu will indicate which driver was last loaded as you can see in Figure 6.

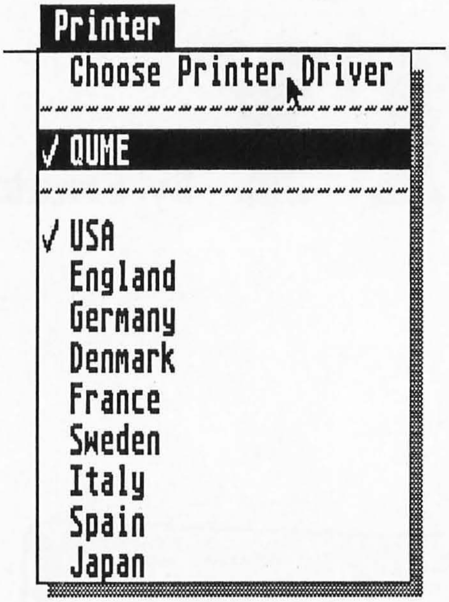


Figure 6.

The program also supports foreign characters, and the selected country is shown with a check-mark in the printer drop-down menu. The country may be changed by clicking the left mouse button while the mouse pointer is over a country name.

Setting the format

The next step is to adjust the page layout. The default settings will print the document on a normal 8 1/2 x 11-inch sheet of paper, with a two-inch margin. Figure 7 shows how to set the print formatting. You probably will not have to adjust these settings, unless you have a special job in mind.

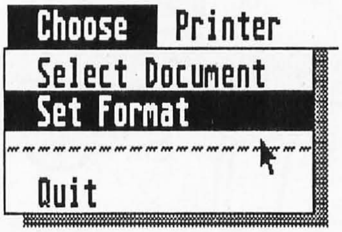


Figure 7.

To adjust the format settings, move the mouse to the Choose drop-down menu. Select the Set Format option by clicking the left mouse button while the mouse pointer is over the Set Format item. The format screen will appear.

Figure 8 shows the various page layout adjustments that you can set from the format screen, including Page Length, Top Margin Length, Bottom Margin Length, Column 1 Width, Inter-Column Width, Column 2 Width, Primary Left Margin, Secondary Left Margin and Right Margin.

A vertical cursor will appear in the top margin setting adjustment. Pressing the escape key will clear the old contents. Enter the number of lines for the top margin (as measured from the top of the page down).

The Up Arrow and Down Arrow keys may be used to move to the next or previous adjustment. Once all of the adjustments have been made, press the return key or click the left mouse button while over the OK box. The format screen will disappear.

Printing the document

To begin printing your document, first check that your printer has been turned on, switched on-line, and that paper has been loaded. Move the mouse pointer into the Choose drop-down menu, and click on the Select Document option. The File Selector will appear. Move the mouse pointer over the desired document file, and click the left mouse button.

Don't worry if you click on the wrong document as the program will first check to make certain the document is a Regent Word II file as shown in Figure 9.

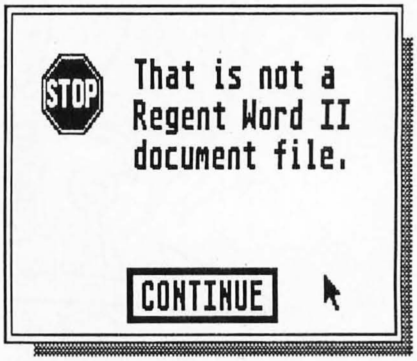
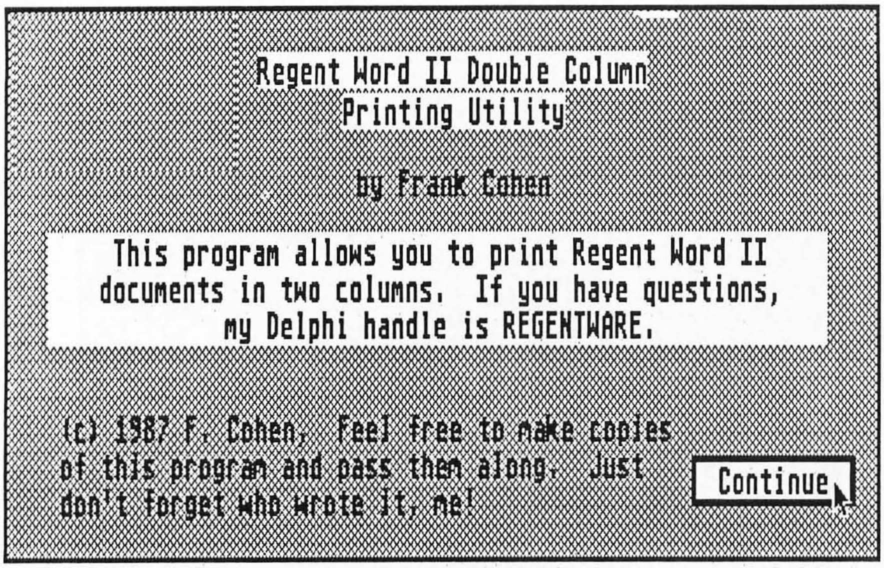

That is not a Regent Word II document file.

Figure 9.

If everything has been done correctly, the dialog box shown in Figure 10 will appear on the screen, indicating the page



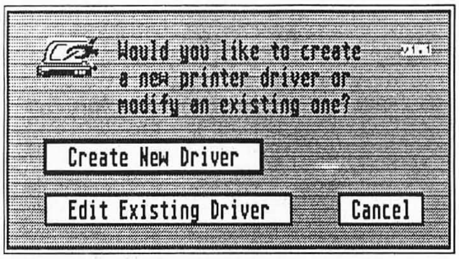
Regent Word II Double Column
Printing Utility

by Frank Cohen

This program allows you to print Regent Word II documents in two columns. If you have questions, my Delphi handle is REGENTWARE.

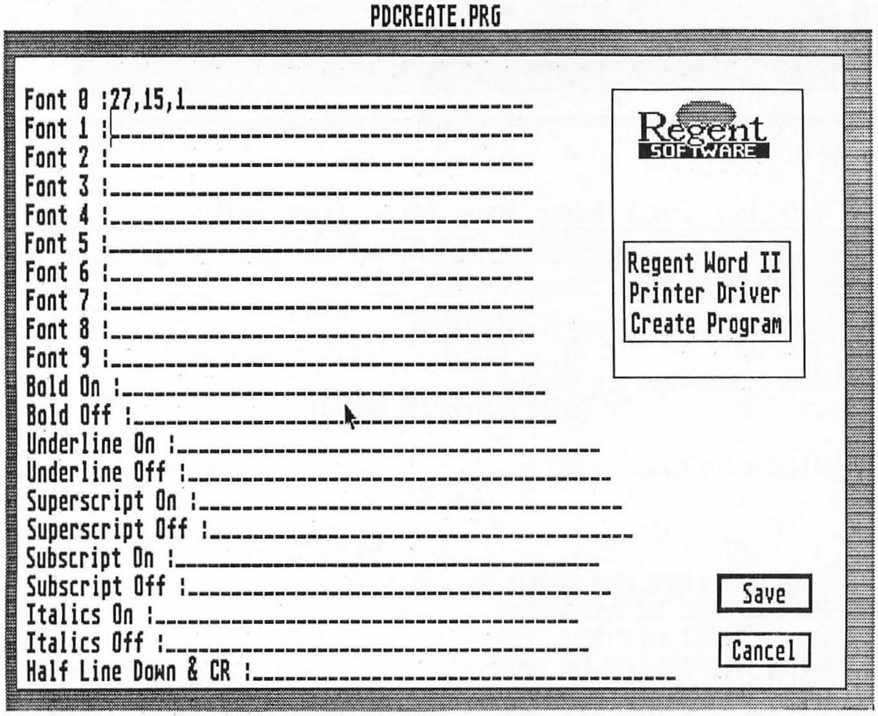
(c) 1987 F. Cohen, Feel free to make copies of this program and pass them along. Just don't forget who wrote it, me!

Figure 1.



Would you like to create a new printer driver or modify an existing one?

Figure 2.

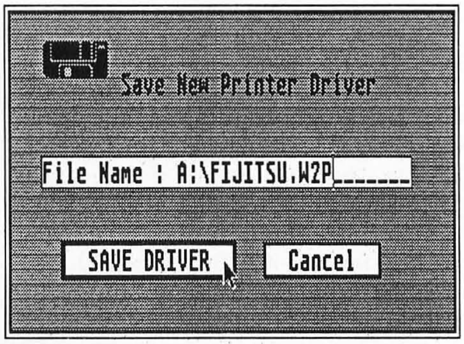


PDCREATE.PRG

Font 0 :27,15,1
Font 1 :
Font 2 :
Font 3 :
Font 4 :
Font 5 :
Font 6 :
Font 7 :
Font 8 :
Font 9 :
Bold On :
Bold Off :
Underline On :
Underline Off :
Superscript On :
Superscript Off :
Subscript On :
Subscript Off :
Italics On :
Italics Off :
Half Line Down & CR :

Regent Word II
Printer Driver
Create Program

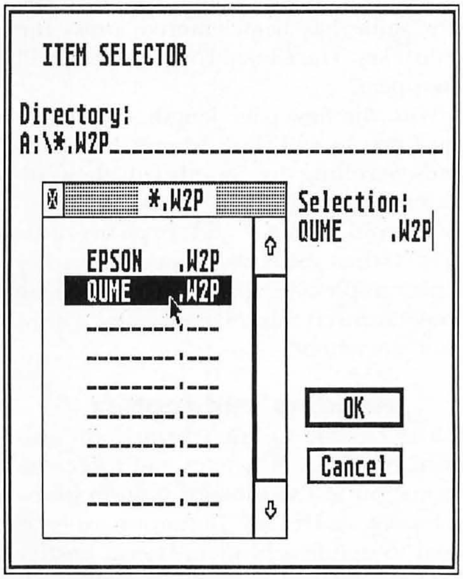
Figure 3.



Save New Printer Driver

File Name : A:\FIJITSU.W2P

Figure 4.



ITEM SELECTOR

Directory:
A:\*.W2P

*.W2P
EPSON .W2P
QUME .W2P

Selection:
QUME .W2P

Figure 5.

number being printed. The document will be printed according to the format information you have provided.

Once you've printed a document, you may exit the Double Column Utility by moving the mouse into the Choose drop-down menu, and clicking on the Quit entry.

Page layout

The layout of each printed page can be set while editing the document in Regent Word II. Load Regent Word II by clicking on the WORD2.PRG program from the GEM Desktop. Then load into Regent Word II the document you will be printing using the Double Column Utility.

The Double Column Utility program formats the document to the two-column format described in the format screen. However, certain other functions may be used by defining special rulers while using Regent Word II, such as page breaks, header/footer definition, etc.

Since the utility program formats the page for two columns, special ruler settings must be used to correctly view the document as it will be printed. Set the first margin ruler to these settings for two column printing:

LM1 = 8   LM2 = 5   RM = 35

This sets the primary left margin to 8, secondary left margin to 5, and right margin to 35. To change the margin ruler settings, move the mouse pointer over the LM1 = 5 entry and click the left mouse button. The information line will ask for the new value of the primary left margin (LM1). Type 8 and press Return. Set the other margin ruler settings.

Figure 11 shows how your document will appear on the screen once the ruler settings have been changed. Each paragraph will be indented by three characters (LM1 = 8).

Page breaks may be made visible by moving the mouse pointer into the Special drop-down menu as shown in Figure 12 and clicking the Show Page Breaks option. A horizontal line will appear at a page break. The visible page breaks ap-

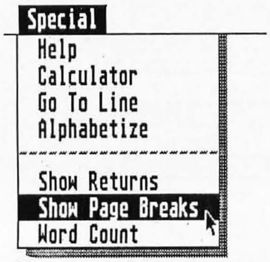


Figure 12.

pear at the end of a sheet of 8 1/2 x 11-inch paper. This may be adjusted for double column printing by adjusting the values found in the Global Format screen.

Move the mouse pointer into the print drop-down menu and click on the Global Format entry. Figure 13 shows the printing options that may be set from this dialog box. Change the page length to 108. This value was arrived at by subtracting the top margin and bottom margin from the page length. The result is multiplied by two (for double columns). Once the new value has been entered, press the return key. The Global Format screen will disappear.

With the new page length, the visible page breaks will show where each page ends. Scrolling downwards will show additional page breaks.

To avoid "widows" and "orphans" (this occurs when the last sentence or word of a paragraph overlaps to the next page), you may insert a page break ruler within your document.

Headers and footers

The Double Column Utility will also print two lines of header and footer information at the top and bottom of every page. A Header Definition ruler is used to define a header. After a header has been defined, the utility program will print the two lines at the start of every page—provided the top margin allows enough room.

Wrapping it up

The Double Column Utility was fun to write, and I hope it's useful. I might even expand it to print graphics. If you have any suggestions, I can be contacted on DELPHI; my handle is REGENTWARE.

Frank Cohen has been developing software for Atari computers since 1983 when he wrote his first game, Clowns and Balloons. *He recently joined* ST-Log *as a contributing editor. He may be contacted for more information on DELPHI (REGENTWARE) or CompuServe (72457, 3171).*

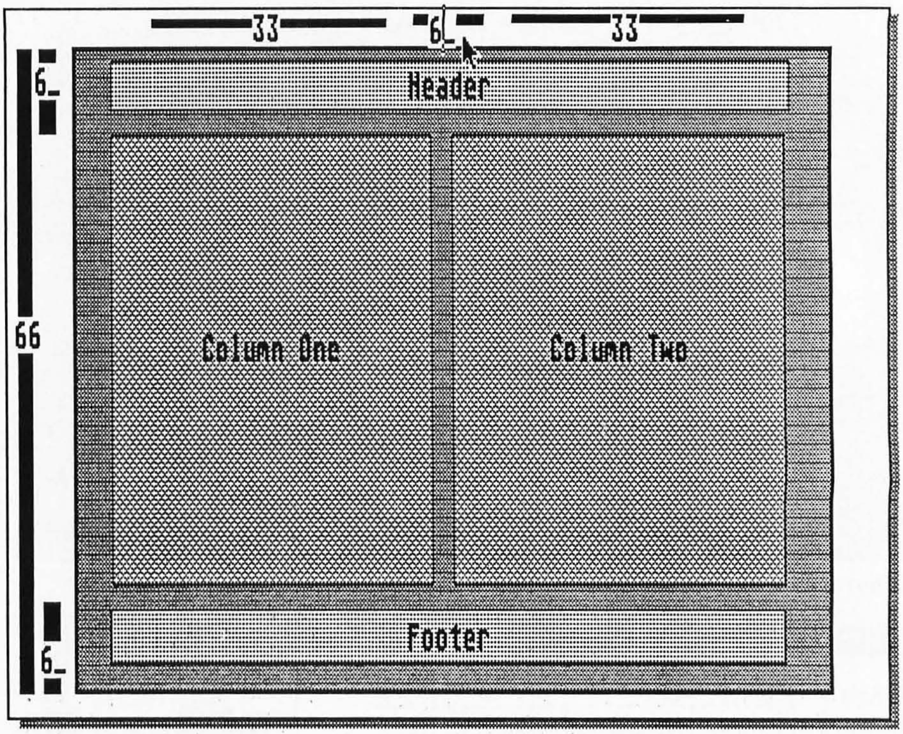
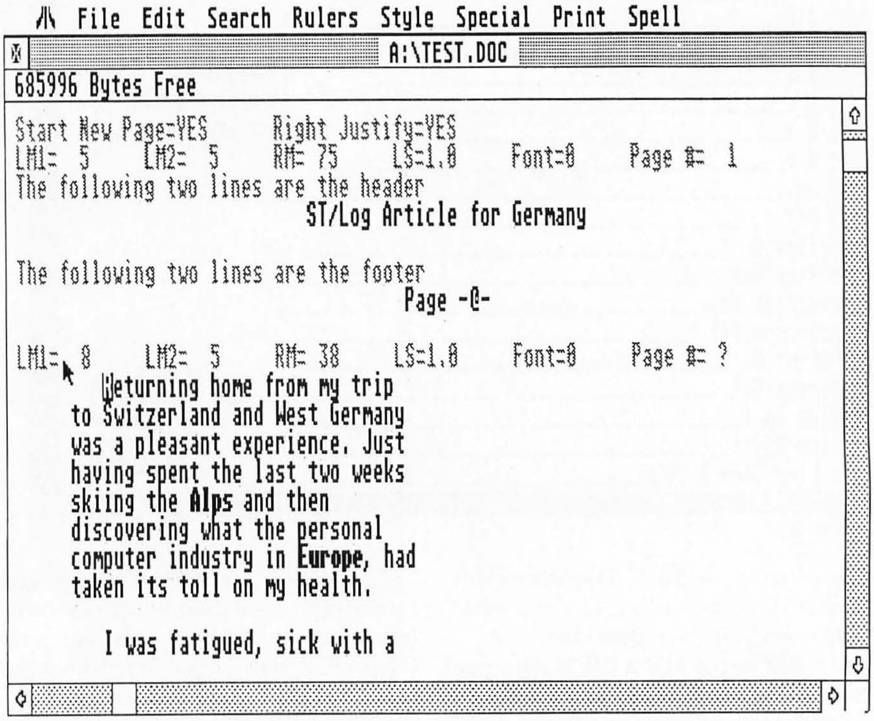


Figure 8.



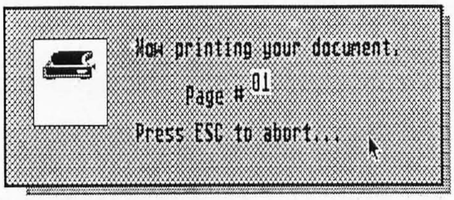
```
685996 Bytes Free
Start New Page=YES     Right Justify=YES
LM1=  5     LM2=  5    RM= 75    LS=1.0     Font=0     Page #=  1
The following two lines are the header
                              ST/Log Article for Germany

The following two lines are the footer
                                      Page -@-

LM1=  8     LM2=  5    RM= 38    LS=1.0     Font=0     Page #= ?
     Returning home from my trip
  to Switzerland and West Germany
  was a pleasant experience. Just
  having spent the last two weeks
  skiing the Alps and then
  discovering what the personal
  computer industry in Europe, had
  taken its toll on my health.

     I was fatigued, sick with a
```

Figure 11.

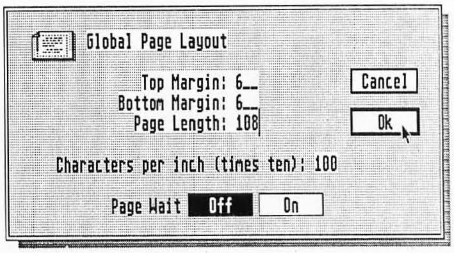


Now printing your document.

Page # 01

Press ESC to abort...

Figure 10.



Global Page Layout

Top Margin: 6__
Bottom Margin: 6__
Page Length: 108

Characters per inch (times ten): 100

Page Wait [✓ Off] On

Figure 13.

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● ● ● ● ● ● ● ● ● ● ● ● ●

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START THE PRESSES

Creating an Atari Newsletter

by Gregg Anderson

One of the advantages of being in an Atari users' group is getting a newsletter filled with tidbits of information, news, reviews and upcoming local events. But have any of you ever wondered what goes into putting your local newsletter together? I used to—that is, until I started doing a newsletter for a new users' group last year. For those who are interested in starting a newsletter for their own club, I thought I'd give you an outline on putting one together and some of the options available to you.

Doing a newsletter can be a lot of fun, but it can also be something of a headache. It all depends on what you want to do and how much help you get from your club members. The software/hardware combination you use for creating a newsletter can be almost anything. When RACE (Rushmore Atari Computer Enthusiasts) first started, I was using an Atari 800 with LJK's *Letter Perfect.* Since then I've moved to a 1-meg 520ST with Neocept's new *WordUp* graphics-based word processor, with a whole lot of experimentation in between. Since I'm currently using an ST, I'll be basing this article on that system.

Software

There are a lot of programs available for simple DTP (desktop publishing), and the selection grows every day. It's quite feasible to do a simple newsletter with the more popular ST word processors, such as *1st Word* and *WordWriter ST.* These offer ease of use in a familiar environment, but limit you to straight ASCII text in a single size, without special fonts, columns or graphics. To add graphics you have to "cut and paste," which adds complexity and tends to look pretty rough.

Also, your print quality will depend entirely on your printer's built-in Letter Quality (LQ) mode. Never, never try to produce a newsletter in draft mode—not unless you enjoy having rocks thrown at you, that is. Word processors usually limit you to "pamphlet" format, since reducing it to "booklet" form often makes the text too small for easy reading (more on this later).

A step from word processors is *Easy Draw* (EZD) from Migraph. This cost-effective drafting/DTP package allows dual (or more) columns, custom GDOS fonts, and the ability to add .IMG graphics anywhere on your page, as well as create your own picture images using EZD's extensive built-in drawing functions. Unfortunately, EZD really isn't set up for extensive DTP. Your text is created in a "graphics box," and you're limited to only 1 font per box. You're also limited to editing one page at a time and having to save page 1 before loading page 2 to edit. This can be a problem because it interrupts your train of thought, making it difficult to pick up on page 2 what you've left half-finished on page 1.

Also, its text buffer limits you to less than five pages or so of imported ASCII text. Because of this, loading in large articles can be a problem. Like most GDOS applications, however, the print quality tends to be very good, if a trifle slow I've produced a lot of newsletters with EZD and found it to be flexible and very powerful. I especially like EZD's built-in drawing functions, and feel it's a good compromise between drafting and DTP. The customer support from Migraph is also outstanding, with printer drivers available for most 9- and 24-pin printers, the Hewlet Packard (HP) laser and its various third-party clones, and the new HP DeskJet.

One of the most popular DTP programs available for the ST is SoftLogic's *Publishing Partner* (PP). Though complex and still a bit bomb-prone, it has to be one of the best dedicated DTP systems currently available. PP offers variable columns, imported graphics, multiple fonts and the widest selection of fonts available for the ST today. Unfortunately, the print quality on PP's smaller (18-point and below) fonts isn't quite up to GDOS's level, and PP has to have the slowest print speed in the industry, even with the new laser printers. Word is that PP Professional corrects most of these shortcomings, and shows that SoftLogic's support is second to none. I've not used PP very much, preferring EZD's more powerful drawing tools.

One of the new kids on the block is Timework's *Desktop Publisher.* I haven't seen this one yet, but comments on the BBSs all seem very positive. Watch ST-Log for a review of this one soon. Also recently released is *Fleet Street Publisher* from MirrorSoft-Spectrum Holobyte. This package has received mixed reviews and is not one I've used.

The newest kids are Atari's *Microsoft Write* and Neocept's *WordUp.* I can't really talk about Write, but I'm quite familiar with WordUp. This GDOS-based program offers the multiple font capability of PP, importation of .PI3 (in high res), NEO (pretty useless since it's limited to low-res images), .IMG graphics and multiple-page editing. Though set up more for word processing than as a DTP (its multiple-column output is less than ideal), WordUp is a capable program for this purpose (especially if you intend to do a booklet format). It's faster than PP and very easy to use. I've done my last four newsletters with this package.

Printers

As a rule, I don't recommend using a daisy-wheel printer for newsletters. Though they produce a high-quality text, they limit you to simple ASCII. Otherwise, your choice of printers is almost limitless, especially given the almost universal acceptance of the Epson command set. The better 9-pin printers can produce a very acceptable LQ print, and their GDOS output must be seen to be believed. Text produced by a 24-pin printer can match a daisy wheel's and, better yet, do so at up to a page a minute. Most (though not all) 24-pin units respond to Epson 9-pin commands for ASCII text, and there are several companies that offer GDOS drivers and fonts for 24-pin Epson-compatible units.

Finally getting close to affordable levels are the new generation of laser printers. Though expensive ($1500 and up), these offer the highest quality print (and speed) available to the small PC user. The main contenders here are Atari's own SLM804 and the wide range of HP clones. As usual, there are GDOS drivers available, and most HP clones offer Epson or Diablo emulation for your software. Just now entering the market is the new HP DeskJet inkjet printer. Word is that the unit produces near laser-quality print, though compatibility with existing software is still a question. By the way, for the past year my newsletter has been done with a Panasonic 1092.

Formats

There are two basic formats for most small newsletters: pamphlet and booklet. Pamphlet is by far the easiest to produce, being little more than stapling your pages together as they print out. Though simple to produce and easy to read, it's the least cost-effective and most expensive to mail, since it's fairly wasteful. You can save some mailing costs by printing on both sides of the page during your copying process.

Booklet is far and away the most professional and cost-effective method. To produce a booklet format requires that you reduce your printed text (on an enlargment/reducing copier) to 65% of its original size. By doing this you can fit two pages of text on each 8.5 x 11 sheet (four if you're doing front and back printing). Because of this reduction, it helps to print your original in 12-point (or larger) text, limiting you to Publishing Partner or a GDOS-based program. Booklet is also the most time-consuming and difficult method, however, as you must insure your pages are in the correct order for reading once everything is stapled together. I've been using the booklet format for three months now, fitting 16 pages of newsletter onto only four sheets of paper. All in all, it takes about three hours to reduce, print and staple 50 copies.

Unless you're producing more than 75 copies of a fairly large newsletter, a copy shop is the easiest way to produce your copies. Look for one that will print your copies for five cents or less each. Costs for my newsletter run from $20 to $25 a month, with postage extra. If you're doing a larger newsletter, you might want to consider a typesetter or print shop. These will cost you more initially, but with large numbers the costs come down to a more reasonable level fast.

It's always a good idea to have a noticeable mailer for your newsletter, something with your club's name and address printed in large and highly visible letters. The mailer sheet should be designed so that the stamp is located on the opposite side of your staple; this way the post office can process your newsletter by machine and reduce the chances of it getting trashed in the process. Using the booklet format allows me to place all address, club information and the stamp on half a page, leaving the other half to hold text or what-have-you.

Columns, fonts and graphics

So how fancy do you want to be? Unless you're willing to do a lot of cutting and pasting, you can't use a basic word processor if you want multiple columns, special fonts and pictures. For those, you will have to get one of the programs I mentioned above.

Multiple columns are nice and almost necessary for a pamphlet-style newsletter since it breaks up the monotony of a solid page of text. However, if you're using the booklet format, they are unneeded and often undesirable.

Variable font sizes and styles can work wonders for a newsletter. They can emphasize words, start new sections, attract special attention and more. A word of caution, though: Never overuse fonts. Keep to a single font size/style for your text, and break it up with different sizes/styles when starting a new topic or when special importance is noted. Nothing can confuse a reader faster than trying to make sense of a page of jumbled fonts and styles. When planning on using the booklet format, be sure to use 12-point or larger text, since anything smaller is likely to be unreadable once reduced.

Justified text almost always looks better than unjustified text, though if your program justifies by simply adding spaces, you may want to keep the right side ragged rather than risk spacey text that not only looks poor, but can be difficult to read as well.

Graphics are nice, but rarely necessary. After all, we're trying to create a newsletter, not the next copy of ST-Log. Don't throw in a graphic just for the sake of having a graphic. A picture to help explain an article is fine, and something for a holiday is good, but don't clutter your page with pictures just because you have the ability to do so.

Putting it together

Well, so much for the basics. So how do you put your newsletter together? First off, you should divide your planning into at least five areas: minutes of the last meeting, plans for the next meeting, an editorial (if desired), news and developments (local and Atari related) and reviews. Try to make your writing interesting and fairly entertaining; don't be too dry, or you'll lose your audience. Don't be too wordy either (my problem), or you'll end up boring them to death.

Try and keep the minutes and editorial sections limited to one page or less. If a detailed description of the past meeting is desired, it's best to do it as a separate article. The outline for the next meeting should be just that, an outline. When possible, list specific demos and plans, but don't go into too much detail. Your news and developments section can be as large as needed. Always try to include any club- or Atari-related events that might interest your members. Other items can be included if of special interest. A good source of news items are the CompuServe, GEnie and (of course) DELPHI BBSs. If you happen to repeat a news item from a magazine or BBS, be sure to give credit where credit is due, and remember to not simply duplicate or copy the item; most people look on that as theft.

Perhaps the hardest part is in gathering your general articles and reviews. The easiest way is to just download them from a BBS (giving credit, of course), and plug them into your newsletter. The best way is to combine one or two BBS articles with material from your own membership. This is often the most frustrating part of all: getting talented and perfectly capable individuals to produce something for their newsletter.

Unless you're lucky, you'll find that most members don't think they're qualified to write articles. They feel inadequate and may be afraid of being laughed at if they make a mistake. Getting them past this point may be your greatest challenge. Your best strategy is to convince them of two things: First is that writing articles isn't all that difficult (after all, if I can do it, anyone can). Explain that they have important information and thoughts they should share with others. Second is to point out that everyone starts out somewhere, even the most prolific of today's writers started out as beginners. Once started, you'll find that many of these reluctant types soon become your most reliable and proficient writers.

When selecting articles and reviews, try to tailor them to your membership. Suppose you have no members with hard drives; printing a review of a hard drive is fine, but don't bother with an article explaining how to cross-wire one to add in a second since no one is likely to be interested. You'll have to decide what your membership is interested in by asking them and listening to their comments on the newsletter in general.

Like everything else, the size of your newsletter should be determined by the interests of your membership, your own patience and the size of your club's bankroll. Usually six to eight pages is enough for a small club. While WAACE's *Current Notes* is over 80 pages, *RACE Tracks* (my newsletter) usually runs 12 to 16 pages. By the way, if you're producing more than a few pages worth, you might want to consider adding a small table of contents on the first page. It gives a professional appearance and helps your readers locate specific articles more quickly.

Newsletters cost money to produce, and the club must be willing to pay for it out of club funds. Sometimes, you'll get lucky and get a local business (or Atari dealer) to advertise in the newsletter. This can often offset the cost of printing down to where it won't drain the club's savings. Otherwise, you have some hard choices to make.

Conclusion

And thus ends yet another episode in the never-ending saga of Atari computing. I hope I've given you some help in putting a newsletter together for your own club, along with a few tips and some free advice. (You know what they say about free advice, don't you?) Editing a newsletter can be a lot of work and sometimes it's a royal pain, but it can also be a lot of fun and very satisfying. Thinking of starting your own newsletter? Take my advice, and have some fun. Go for it!

Gregg Anderson, a captain in the USAF with a background in electronics repair, has been an avid Atari user since 1982 and upgraded to an ST about a year ago. He is president of the Rushmore Atari Computer Enthusiasts (RACE) and editor of the club's newsletter. Gregg's roommate, a cat, often leaves messages on DELPHI II under his username. "One of these days," Gregg insists, "I'll catch him at it."

The size of your newsletters should be determined by the interests of your membership, your own patience and the size of your club's bankroll.

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THE DEGAS ELITE FAST LOADER

by Charles F. Johnson

Anyone who uses Tom Hudson's excellent *DEGAS Elite* paint program will really appreciate this desk accessory. The *DEGAS Elite Fast Loader* lets you load both DEGAS Elite-compressed pictures and Tiny format-compressed pictures into your current workscreen in Elite, and it decompresses them almost ten times faster than DEGAS Elite itself! The DE Fast Loader is written in 100% machine language, for maximum speed and compactness. It detects the presence of DEGAS Elite, and will not work unless Elite is present. In addition, you must not have changed the name of the DEGAS Elite main program; it must be called "DEGELITE.PRG" on the disk you load it from.

How to use the DE Fast Loader

First, type in the ST BASIC program in Listing 1, save it to disk, and make sure you've typed it all correctly by running it through *ST-Check* (see page 52 of this issue). When you run this program it will create a file on drive A called "DELOADER.ACC"; this is the desk accessory file which should be placed on your boot disk. You may be booting with a special disk containing GDOS.PRG when you run DEGAS Elite; if so, DELOADER.ACC should be placed in the main directory of this disk.

When you use this disk to boot your ST, the DE Fast Loader will automatically be installed among the accessories in your Desk drop-down menu. If you try to call the DE Fast Loader from the desktop, or from any program except DEGAS Elite, you will see an alert box reminding you that Elite must be currently running in order for the DE Fast Loader to work.

Let's load some pictures! Double-click on DEGELITE.PRG, and when you see Elite's main screen, click on DE Fast Loader in the Desk menu. Now you should see the DE Fast Loader's title box, with three buttons labeled DEGAS, Tiny and Cancel. Cancel will exit without loading a picture; click on DEGAS or Tiny and a GEM Item Selector box will appear to let you choose a picture file to load. DEGAS Elite presently allows up to eight drawing screens at once, depending on the amount of RAM installed in your ST. The DEGAS Elite Fast Loader will always load pictures to the currently selected screen; the color palette for all images will be changed as well.

Try loading a .PC1 (compressed low resolution) picture with DEGAS Elites Load Pic option, accessible from the File drop-down menu. Now load the same picture file with the DE Fast Loader. You won't believe the difference. If you have Tom Hudson's public domain TINYLOAD accessory (which also loads Tiny pictures into DEGAS Elite), you'll notice a similar speed increase with DE Fast Loader's Tiny picture decompression option. Now you can spend your time using Elite's dazzling array of drawing tools, instead of waiting for picture files to load!

How it works

When Tom Hudson re-wrote the original DEGAS program and resurrected it as DEGAS Elite, he built in some special features that allow the program to communicate with and receive commands from other applications or desk accessories. The procedure goes something like this:

An accessory uses the AES *appl_find,* function to determine if DEGAS Elite is running or not. When you call *appl_find* you pass it the filename of a program to search for (this is why DEGAS Elite's filename must be DEGELITE.PRG); the function returns the application ID number of the program if that program is currently on GEM's active applications list. If *appl_find* is successful, the accessory and DEGAS Elite may send messages to each other using the AES *appl_write* function, which must be passed the application ID (obtained from the *appl_find* call) of the program that will receive the message, and a pointer to a buffer which holds the message to be sent. "Messages" are normally 16 bytes in length. GEM has a number of predefined messages which deal with things like window sliders and scroll bars, timer events, drop-down menu selections, and the opening and closing of desk accessories. In addition to the standard GEM messages, DEGAS Elite defines and recognizes several custom messages, allowing a certain degree of "remote control" by an external application. (The "external application" in this case is, of course, the DE Fast Loader.)

This "message pipeline" enables the DE Fast Loader to find out the memory addresses of DEGAS Elite's drawing screens, and change its current color palette. Unfortunately, the DEGAS Elite message pipeline system includes no commands to set color animation parameters; so the DE Fast Loader will ignore color animation data in picture files.

Charles F. Johnson is a professional musician, and now semi-professional computer programmer/reviewer/author. He lives in Los Angeles with his wife Patty and Spike, the world's most intelligent (and gluttonous) cat. Charles is a sysop on the ANALOG *and* ST-Log *Atari SIGs on DELPHI; his* username *is CFJ.*

The DE Fast Loader lets you load DEGAS Elite-compressed pictures and Tiny format-compressed pictures into your workscreen, and decompresses them ten times faster than DEGAS Elite itself!

DEGAS

Fast Loader
Listing 1 — ST Basic

```
100 filename$="a:\DELOADER.ACC"
110 fullw 2:clearw 2:gotoxy 0,0:print
"creating file..."
120 option base 0
125 dim a%(16000):def seg=1:v$=""
130 p=varptr(a%(0)):bptr=p+1
140 for i%=1 to 3353
150 read v$:code%=val("&H"+v$)
160 poke p, code%:print ".";
170 p=p+1
180 next
190 bsave filename$,bptr,3353
200 print "file written":end
1000 data 60,1A,00,00,08,90,00,00,03,8
2,00,00,0A,A2,00,00
1010 data 00,00,00,00,00,00,00,00,00,0
0,00,00,2E,7C,00,00
1020 data 16,9C,42,B9,00,00,0E,8C,42,B
9,00,00,0E,90,42,B9
1030 data 00,00,0E,94,42,B9,00,00,0E,9
8,23,FC,00,00,0B,84
1040 data 00,00,08,90,61,00,08,56,33,F
9,00,00,0D,7E,00,00
1050 data 0C,46,23,FC,00,00,0B,B6,00,0
0,08,90,33,F9,00,00
1060 data 0D,7E,00,00,0C,7E,23,FC,00,0
0,08,BC,00,00,0E,9C
1070 data 61,00,08,2A,33,F9,00,00,0D,7
E,00,00,0C,42,3F,3C
1080 data 00,04,4E,4E,54,8F,33,C0,00,0
0,0C,40,3F,3C,00,19
1090 data 4E,41,54,8F,D0,3C,00,41,26,7
C,00,00,10,EC,28,7C
1100 data 00,00,11,2C,16,C0,18,C0,20,7
C,00,00,0B,6B,22,7C
1110 data 00,00,0B,73,3A,3C,00,07,16,D
8,18,D9,51,CD,FF,FA
1120 data 0C,79,00,02,00,00,0C,40,66,0
A,13,FC,00,33,00,00
1130 data 10,F3,60,1A,4A,79,00,00,0C,4
0,66,0A,13,FC,00,31
1140 data 00,00,10,F3,60,08,13,FC,00,3
2,00,00,10,F3,2A,7C
1150 data 00,00,A0,00,28,7C,00,00,08,A
E,7A,0C,10,15,B0,14
1160 data 67,04,52,8D,60,F6,20,4D,B9,0
D,66,E8,51,CD,FF,FA
1170 data 20,08,23,C8,00,00,0C,26,22,0
8,08,81,00,00,20,41
1180 data 55,88,22,10,B0,81,66,F8,23,C
8,00,00,0C,22,33,E8
1190 data 00,08,00,00,0C,3A,23,FC,00,0
0,0B,A2,00,00,08,90
1200 data 23,FC,00,00,10,9C,00,00,0E,9
C,61,00,07,50,0C,79
1210 data 00,28,00,00,10,9C,66,DE,30,3
9,00,00,10,A4,B0,79
1220 data 00,00,0C,42,66,D0,3F,3C,00,1
9,4E,41,54,8F,33,C0
1230 data 00,00,0C,3C,3F,3C,00,00,2F,3
C,00,00,11,AC,3F,3C
1240 data 00,47,4E,41,50,8F,23,FC,00,0
0,0B,98,00,00,08,90
1250 data 23,FC,00,00,08,CD,00,00,0E,9
C,61,00,07,00,4A,79
1260 data 00,00,0D,7E,6A,12,2A,7C,00,0
0,08,D6,3A,3C,00,01
1270 data 61,00,06,D4,60,00,03,A0,33,F
9,00,00,0D,7E,00,00
1280 data 0C,36,2A,7C,00,00,10,9C,3A,B
C,DE,00,3B,79,00,00
1290 data 0C,46,00,02,42,6D,00,04,23,F
C,00,00,0B,8E,00,00
1300 data 08,90,33,F9,00,00,0C,36,00,0
0,0C,7E,33,FC,00,10
1310 data 00,00,0C,80,23,FC,00,00,10,9
C,00,00,0E,9C,61,00
1320 data 06,9C,23,FC,00,00,0B,AC,00,0
0,08,90,20,7C,00,00
1330 data 0C,7E,30,BC,00,30,31,7C,07,D
0,00,1C,42,68,00,1E
1340 data 23,FC,00,00,10,9C,00,00,0E,9
C,61,00,06,70,08,39
1350 data 00,05,00,00,0D,7F,66,00,FF,6
E,0C,79,DE,80,00,00
1360 data 10,9C,66,00,FF,62,23,F9,00,0
0,10,A2,00,00,0C,12
1370 data 2A,7C,00,00,10,9C,3A,BC,DE,0
1,3B,79,00,00,0C,46
1380 data 00,02,42,6D,00,04,23,FC,00,0
0,0B,8E,00,00,08,90
1390 data 33,F9,00,00,0C,36,00,00,0C,7
E,33,FC,00,10,00,00
1400 data 0C,80,23,FC,00,00,10,9C,00,0
0,0E,9C,61,00,06,0E
1410 data 23,FC,00,00,0B,A2,00,00,08,9
0,23,FC,00,00,10,9C
1420 data 00,00,0E,9C,61,00,05,F6,0C,7
9,DE,81,00,00,10,9C
1430 data 66,00,FE,F4,70,00,30,39,00,0
0,10,A2,20,7C,00,00
1440 data 0B,7B,72,07,42,42,B0,18,67,0
6,52,42,51,C9,FF,F8
1450 data D4,3C,00,31,13,C2,00,00,0A,9
2,E5,48,20,79,00,00
1460 data 0C,12,D1,C0,23,D0,00,00,0C,1
6,20,79,00,00,0C,12
1470 data 23,E8,00,14,00,00,0C,1A,23,E
8,00,14,00,00,0C,1E
1480 data 06,B9,00,00,29,B8,00,00,0C,1
E,4A,79,00,00,0C,40
1490 data 66,08,2A,7C,00,00,09,54,60,0
6,2A,7C,00,00,09,C0
1500 data 3A,3C,00,03,61,00,05,60,0C,7
9,00,03,00,00,0D,7E
1510 data 67,00,02,24,33,F9,00,00,0D,7
E,00,00,0C,44,0C,79
1520 data 00,01,00,00,0C,44,66,28,23,F
C,00,00,10,EC,00,00
1530 data 0C,2E,23,FC,00,00,10,CC,00,0
0,0C,32,23,FC,00,00
1540 data 0B,3E,00,00,0C,2A,33,FC,00,B
0,00,00,0C,38,60,26
1550 data 23,FC,00,00,11,2C,00,00,0C,2
E,23,FC,00,00,10,DC
1560 data 00,00,0C,32,23,FC,00,00,0B,5
5,00,00,0C,2A,33,FC
1570 data 00,A8,00,00,0C,38,23,FC,00,0
0,0B,FC,00,00,08,90
1580 data 2A,7C,00,00,0C,7E,42,55,3B,7
C,00,04,00,02,61,00
1590 data 04,EC,23,F9,00,00,0D,80,00,0
0,0C,48,23,F9,00,00
1600 data 0D,84,00,00,0C,4C,23,FC,00,0
0,0B,D4,00,00,08,90
1610 data 42,55,2B,79,00,00,0C,48,00,0
```

```
2,2B,79,00,00,0C,4C
1620 data 00,06,61,00,04,B8,4A,79,00,0
0,0D,7E,6A,10,2A,7C
1630 data 00,00,0A,31,7A,01,61,00,04,8
E,60,00,01,5A,33,F9
1640 data 00,00,0D,7E,00,00,0C,50,23,F
C,00,00,0B,DE,00,00
1650 data 08,90,3A,B9,00,00,0C,50,2B,7
9,00,00,0C,48,00,02
1660 data 2B,79,00,00,0C,4C,00,06,61,0
0,04,72,20,79,00,00
1670 data 0C,22,20,B9,00,00,0C,2A,31,7
9,00,00,0C,38,00,08
1680 data 00,68,00,01,FF,FE,23,FC,00,0
0,0B,CA,00,00,08,90
1690 data 23,F9,00,00,0C,2E,00,00,0E,9
C,23,F9,00,00,0C,32
1700 data 00,00,0E,A0,61,00,04,36,20,7
9,00,00,0C,22,20,B9
1710 data 00,00,0C,26,02,68,00,FE,FF,F
E,31,79,00,00,0C,3A
1720 data 00,08,20,79,00,00,0C,32,4A,1
0,67,00,00,A4,0C,79
1730 data 00,01,00,00,0D,80,66,00,00,9
8,2A,7C,00,00,0A,70
1740 data 3A,3C,00,01,61,00,03,E0,0C,7
9,00,01,00,00,0D,7E
1750 data 66,00,00,7E,42,40,20,79,00,0
0,0C,2E,10,10,90,3C
1760 data 00,41,3F,00,3F,3C,00,0E,4E,4
1,58,8F,20,79,00,00
1770 data 0C,2E,54,88,22,7C,00,00,11,6
C,7A,3F,4A,10,67,06
1780 data 12,D8,51,CD,FF,F8,7A,3F,0C,2
1,00,5C,67,04,51,CD
1790 data FF,F8,52,89,42,11,48,79,00,0
0,11,6C,3F,3C,00,3B
1800 data 4E,41,5C,8F,42,67,2F,39,00,0
0,0C,32,3F,3C,00,3D
1810 data 4E,41,50,8F,4A,40,6B,18,33,C
0,00,00,0C,3E,0C,79
1820 data 00,01,00,00,0C,44,66,04,61,4
C,60,04,61,00,01,58
1830 data 23,FC,00,00,0B,E8,00,00,08,9
0,33,F9,00,00,0C,50
1840 data 00,00,0C,7E,61,00,03,56,23,F
C,00,00,0B,F2,00,00
1850 data 08,90,61,00,03,48,3F,39,00,0
0,0C,3C,3F,3C,00,0E
1860 data 4E,41,58,8F,2F,3C,00,00,11,A
C,3F,3C,00,3B,4E,41
1870 data 5C,8F,60,00,FB,C2,2A,7C,00,0
0,0C,54,7A,02,61,00
1880 data 02,EC,30,39,00,00,0C,54,2A,7
C,00,00,0C,06,3A,3C
1890 data 00,05,B0,5D,67,08,51,CD,FF,F
A,60,00,01,72,10,39
1900 data 00,00,0C,55,B0,39,00,00,0C,4
1,66,00,01,20,61,00
1910 data 02,B4,08,39,00,07,00,00,0C,5
4,66,14,2A,79,00,00
1920 data 0C,16,2A,3C,00,00,7D,00,61,0
0,02,A2,60,00,01,9E
1930 data 2A,79,00,00,0C,1A,2A,3C,00,0
0,7D,00,61,00,02,8E
1940 data 2A,79,00,00,0C,1A,28,79,00,0
0,0C,16,4A,39,00,00
1950 data 0C,55,66,12,7A,03,28,3C,00,0
0,00,C7,26,3C,00,00
1960 data 00,A0,74,06;60,28,0C,39,00,0
1,00,00,0C,55,66,12
1970 data 7A,01,28,3C,00,00,00,C7,26,3
C,00,00,00,A0,74,02
1980 data 60,0C,7A,00,28,3C,00,00,01,8
F,76,50,74,00,33,C5
1990 data 00,00,0C,52,42,81,42,80,10,1
D,6B,16,26,4C,D7,C1
2000 data 16,9D,52,81,08,01,00,00,66,0
2,D2,82,51,C8,FF,EE
2010 data 60,18,44,00,1C,1D,26,4C,D7,C
1,16,86,52,81,08,01
2020 data 00,00,66,02,D2,82,51,C8,FF,E
E,B2,83,6D,C8,92,83
2030 data 54,81,51,CD,FF,C2,3A,39,00,0
0,0C,52,D9,C3,51,CC
2040 data FF,B4,60,00,00,E8,2A,7C,00,0
0,0C,54,7A,01,61,00
2050 data 01,DC,0C,39,00,03,00,00,0C,5
4,6D,12,57,39,00,00
2060 data 0C,54,2A,7C,00,00,0C,56,7A,0
4,61,00,01,C0,13,F9
2070 data 00,00,0C,54,00,00,0C,55,42,3
9,00,00,0C,54,30,39
2080 data 00,00,0C,54,B0,79,00,00,0C,4
0,67,12,2A,7C,00,00
2090 data 0B,05,3A,3C,00,01,61,00,01,A
E,60,00,00,94,61,00
2100 data 01,84,2A,7C,00,00,0C,5A,7A,0
2,61,00,01,80,2A,7C
2110 data 00,00,0C,5C,7A,02,61,00,01,7
4,0C,79,29,AB,00,00
2120 data 0C,5A,62,0A,0C,79,3E,80,00,0
0,0C,5C,63,08,2A,7C
2130 data 00,00,0A,D1,60,BC,2A,79,00,0
0,0C,1A,42,85,3A,39
2140 data 00,00,0C,5A,61,00,01,46,23,C
0,00,00,0C,5E,E3,F9
2150 data 00,00,0C,5C,2A,79,00,00,0C,1
E,42,85,3A,39,00,00
2160 data 0C,5C,61,00,01,28,23,C0,00,0
0,0C,62,42,85,3A,39
2170 data 00,00,0C,5A,BA,B9,00,00,0C,5
E,66,B2,3A,39,00,00
2180 data 0C,5C,BA,B9,00,00,0C,62,66,A
4,61,14,61,00,00,9E
2190 data 3F,39,00,00,0C,3E,3F,3C,00,3
E,4E,41,58,8F,4E,75
2200 data 42,80,20,79,00,00,0C,16,32,3
9,00,00,0C,5A,53,41
2210 data 22,79,00,00,0C,1A,24,79,00,0
0,0C,1E,42,43,16,19
2220 data 4A,03,6A,06,44,03,61,2A,60,2
2,4A,03,67,06,B6,3C
2230 data 00,01,66,16,18,19,E1,4C,18,1
9,55,41,C9,43,4A,04
2240 data 66,04,61,1A,60,06,61,0A,60,0
2,61,12,51,C9,FF,CE
2250 data 4E,75,53,43,3A,1A,61,12,51,C
B,FF,FA,4E,75,53,43
2260 data 3A,1A,61,06,51,CB,FF,FC,4E,7
5,38,00,E3,4C,31,85
2270 data 40,00,D0,7C,00,50,B0,7C,3E,7
F,6F,0E,90,7C,3E,7C
2280 data B0,7C,00,4F,6F,04,90,7C,00,4
F,4E,75,0C,79,00,05
2290 data 00,00,10,B0,66,08,33,FC,00,1
5,00,00,10,B0,2A,7C
2300 data 00,00,10,9C,3A,BC,DE,04,3B,7
9,00,00,0C,46,00,02
2310 data 3B,7C,00,20,00,04,3B,7C,00,0
1,00,06,23,FC,00,00
2320 data 0B,8E,00,00,08,90,33,F9,00,0
0,0C,36,00,00,0C,7E
2330 data 33,FC,00,30,00,00,0C,80,23,F
C,00,00,10,9C,00,00
2340 data 0E,9C,60,38,2A,7C,00,00,10,A
C,7A,20,2F,0D,2F,05
2350 data 3F,39,00,00,0C,3E,3F,3C,00,3
F,4E,41,DF,FC,00,00
2360 data 00,0C,4A,80,4E,75,23,CD,00,0
0,0E,9C,33,C5,00,00
2370 data 0C,7E,23,FC,00,00,0B,C0,00,0
0,08,90,22,3C,00,00
2380 data 08,90,20,3C,00,00,00,C8,4E,4
2,4E,75,00,00,0C,66
2390 data 00,00,0E,7E,00,00,0C,7E,00,0
```

(to page 96)

GETTING DOWN TO BUSINESS WITH ATARI

by Daniel A. Silvestri

At last, computer hobbyists and business people alike can take their Ataris and get down to real business. Personal computers have now been around long enough for most of us to be on our second- or third-generation machine. Because of this proliferation and overwhelming acceptance of computers, software authors have been extremely busy writing application software which can take advantage of the ever-increasing capabilities of our new machines. Join me in a quick trip back in time, before we explore the possibilities before us today with our Atari STs!

In 1983, I bought my first Atari 400 computer with 16K of memory because a friend of mine had one—and I thought that *Star Raiders* and *Crypts of Terror* were the greatest games I had ever played. Also, he lived about 25 miles away, and the late night drives were getting tedious (too much downtime); so I needed one in my own home. From that point on, I was hooked on the hidden power of these amazing machines, and more importantly, on what they did and *could* do.

Since that time, we have seen changes equivalent to the transition from horse and buggy to the automobile. 16K? 48K? 8-bit machines? Now the Atari STs are bringing new meaning to the word "Atari." Ah, remember, just a few short years ago.

But today, we have super computers that are faster, more powerful, versatile, able to store data in a single bound, and the software has been keeping pace with the rapid advancements in hardware technology.

In this article, I will not speak of specifically named software packages. Rather, I will explore the world of possibilities of business applications. Fasten your seat belts as we hyperspace from Star Raiders to serious business.

Business applications

Computers were first seen as useful business tools when the *VisiCalc* spreadsheet was introduced. For the first time, the number-crunching was done for you; recalculations happened quickly and without the need for erasers, and "what if" modeling was a snap. Cash-flow analysis, costing of goods and services and financial planning were all made easy with this electronic spreadsheet. Whether you run a mail-order business or a doughnut shop, numbers are your game and computers make it easier to win.

Truly, electronic spreadsheets helped

legitimize these strange new machines.

Word-processing software followed quickly behind, offering new vistas of possibilities to large numbers of users for document processing without Liquid Paper. Imagine, correcting mistakes right on a CRT, before ink ever touches paper! In fact, probably 60% of all the computers which are targeted for business are used for either spreadsheets or word processing.

Database management (DBMS)—keeping track of names, addresses and other more sophisticated information—ceased to be a Herculean task, and DBMS software became available. Graphics were a natural addition, then telecommunications and integrated packages that did some of everything. And now there's desktop publishing! Naturally, the market for specialty software grew constantly: money management, real estate, stock portfolio managers, etc. There are thousands and thousands of titles available in these categories.

What we can do and how

When you take a step back and look at what really is available in the software market today, you can be overwhelmed at the number of software offerings, the number of companies publishing the software and the number of retail or mail-order sources to purchase what you select. Critically, when business is your business, you want to invest in software that will: 1) Do the job you need done; 2) do it reliably and with as short a learning curve as possible; and 3) be cost-effective. Out of these three requirements, No. 1 demands the most attention.

Selecting software that will get the job done

Before the purchase of any business software, outline on paper the desirable goals that you hope to achieve by purchasing the software. Remember, software is a solution to a need, so spend ample time defining and refining your needs through a comprehensive needs-analysis. Once this thorough soul-searching is completed, you can begin to entertain the thought of finding the software that will match or exceed the defined criteria.

Do not be afraid of buying software that does a little more than you need to do. Plan on growth, including your knowledge index of computer software. Software packages that allow you to grow with them are the most desirable, since you will not likely outgrow their usefulness in a short time.

Begin by listing the things you need to do, and define them by categories. For example, a friend of mine had a mail-order business at one time, and I suggested that he would need to track the names and addresses of all his customers, send out occasional product offerings to them, track the financial picture of the company by doing some cost-accounting, etc. Immediately we can see a need for a database product, a word processor and a spreadsheet.

In another example, I had a manufacturing business which designed and marketed children's apparel. We needed to do all of the above, and in addition, upload (or send by modem) our cutting orders to the remote factory we contracted with in Texas. So we needed, additionally, telecommunications software so that we could send information over the phone lines to another remote computer 1,200 miles away!

After you have exhausted the list of tasks that you need to accomplish to operate your business more effectively and efficiently, you must look at the overall software picture. Computers are supposed to save us time and be more efficient than we can be. Therefore, data integrity is a critical, but oftentimes overlooked, subject of inquiry.

By data integrity I mean simply this: Once you have keyed in information into one of your software selections, you want to be able to *use* that information later, whether it's database management that you're doing, word processing, financial analysis, etc. It happens too often that a business does not plan ahead for this variable.

Therefore, you must look for software that *works together.* Oftentimes, a single software publisher will make offerings in all major categories. The hook, as I call it, is that the products work together. For example, the names and addresses that you have spent two days inputting into your database can now be *merged* into a letter that you are sending out to all of your clients—merged seamlessly into the document to give it that custom-written look. Any piece of data from your database can then march across the bridge to the printed page inside your letter.

By putting the proper code in the body of your letter, you can customize each letter as if it were individually written for each customer. This adds a personal touch that means a better company image and increased customer service. Likewise, statistical or financial information that you have in your spreadsheet can be moved or used in your letter to your lending institution, to show them how well your business is doing.

Avoid the trap of buying business tools that do not contribute to the overall accomplishment of the project.

Years past, software publishers concentrated on putting out individual products which worked well, in a single environment. Today, the software movement is to see a software application as an "integrator"; that is, an environment in its own which allows other data to exist in a variety of other formats, yet still be compatible with it by allowing importing and exporting of other files.

Now the buzzwords are document processing, desktop publishing, database publishing and so on. Remember that the whole purpose of software as a business tool is *output*—output to the screen, to a dot-matrix printer, letter-quality printer, laser, plotter and so on. The business person wants to see and use the data for financial analysis, charting or graphing, mail-merges, presentations and consolidation documents that utilize data from a variety of sources.

A final business-application document might require data from a remote computer, might need to represent that data graphically and in speadsheet form, might need to send that information to a number of business contacts (bankers, venture capitalists, investors, partners etc.), and might look best if its final layout integrated this data in a single document with special effects like different font styles, columnar format (like a newsletter), graphics and all mixed onto a single page or series of pages.

When planning your business needs, plan for today and the future. Strategize on what you need now, and what you are likely to need as your business and your business requirements grow. Go for it!

Reliable software/ease-of-use

Your best source for information about individual software packages is independently written reviews, as you see in this magazine. Of course, if you have a business acquaintance or friend who can fill you in with the details, that is wonderful too. Your retailers can also be of assistance, if selected carefully. Some dealers are full-service dealers, where you may pay a little more for the product, but will get expert guidance and the ability to "test-drive" the software before buying it.

Also check SIGS (Special Interest Groups) on bulletin boards such as DELPHI, CompuServe, The Source and so on, for ideas, suggestions, and answers to any specific questions that you may have.

Cost-effective

There's price and then there's cost. We should all be concerned with cost. And here's the difference. Price is something that we are definitely concerned with when we are *buying* the product. Cost is something that is a concern for the life of the product. If you save a little on price when you buy, but realize several months later that the software is not doing the job for you, you will have lost all of what you spent on that product when you have to replace it. Therefore, your cost has just gone up tremendously. On the other hand, if you spend a little extra on the product that will do the things you need to do and in the future, though you may spend a little more on the price of the product now, the life of the product doing what you need to do will be longer, and your cost will be less.

Be careful. Good deals are only good if the product you receive does what you expect it to do. And keep in mind always, the discussion of "software as integrator." You want to use that data over and over again (data integrity) without rekeying it. The old adage is true, once again: "Plan your work, then work your plan."

Some useful examples

Writers: I absolutely enjoy writing articles and software reviews. There are many of you out there who enjoy writing as well. In fact, working at home is becoming so popular because of the locations of main offices, traffic congestion and so on, that many people who are on payrolls of magazines and newspapers work primarily out of their homes.

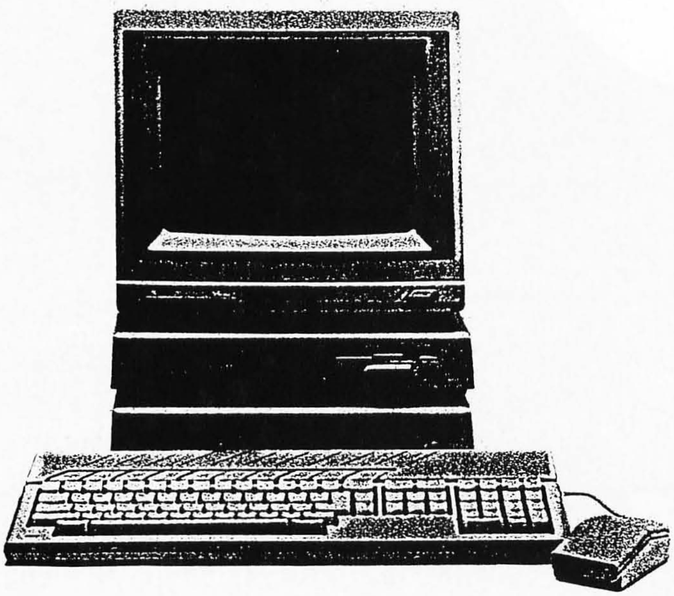
Many of these writers use their favorite word processor (or the favorite of their employer), research their articles through the growing number of information databases available online today, write them at home and then upload their articles to the company's computer at headquarters. Word processing and telecommunications software play a big role in their financial security. Independent writers who write in their spare time oftentimes have the same option.

Newsletters: As you are all aware, there is an ever-increasing number of professional newsletters being published now. Financial newsletters, stock and bond newsletters, newsletters for collectors, car enthusiasts, stock clubs, golfers, boaters—you name it, and you can find a waiting crowd to purchase a quality newsletter on the topic.

Almost every category of software can be used in the publication of newsletters, from desktop publishers (the obvious choice) to word processors for the heavy-duty writing, graphic packages whose image files can be exported to the desktop publisher, to databases to merge subscribers and more.

Mail-Order Business: A computer is perfectly suited to help run a mail-order business, with a database tracking customer information, including favorite items or other preferences; and a word processor to maintain continuous contact and merge with the database for special mailings to those customers who have a special interest. You can track your vendors, prices, availability of goods; your spreadsheet will help analyze cash flow, and so on. You may even want to publish a monthly or quarterly newsletter for your customers. The possibilities are endless.

Real Estate: Again, your Atari ST can help you run your real estate business more effectively. Track the cash-in and cash-out for the buildings you own; use the database and word processor to keep in contact with your tenants. When I was looking to buy a home, I tracked the asking price and sale price of comparable homes in the area for about six months prior to purchasing, and tracked the percent-variance between asking and selling to help me make an offer the buyer couldn't refuse! Similarly, if you are looking to purchase investment properties, you can apply the same principle and put the software to work in the same way.



Conclusion

When you are wondering how to make the transition from super-sophisticated games and educational software to genuine business software that can meet and exceed your needs, crank up your Atari ST one more time, and put its business savvy to the test. Or if you are in the market for a computer that can do it all, look into the Atari ST line. For your business needs, the Atari STs can really "get down to business!"

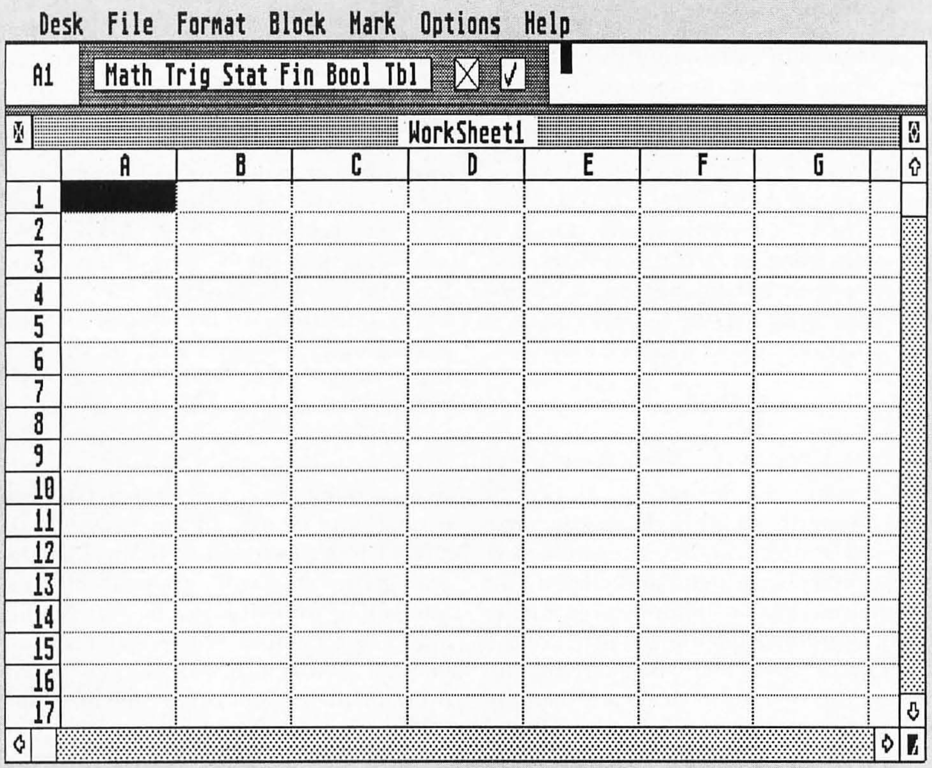
Let me know how *you* use your STs. Write to me care of ST-Log. In the meantime, I'll be waiting and writing!

Opus

by Doug Harrison

Whether you're a businessperson forecasting profits, a scientist analyzing data, or the average guy trying to figure out where all his money's going, there's no doubt about it—you can solve these problems and many more with a spreadsheet program. A spreadsheet presents you with a large array of cells, and each cell can hold a number, label, or formula. Formulas allow you to reference values held in other cells, so you may add them, subtract them, etc., and you may also supply them to various functions such as SUM, FV, and LINR. This makes it easy to construct complicated models with a minimum of effort, and you can change a value and instantly observe the effect on cells that depend on it (a game called "what if").

Meet **Opus,** a fully GEM-based, 999 row by 255 column spreadsheet written wholly in Personal Pascal from OSS featuring sparse matrix design, flexible on-screen formatting with WYSIWYG printer output, more than forty functions, natural order recalculation, expandability through the GEM message pipeline, genuine ease of use, comprehensive error trapping, and much more. In the following pages, I'll more or less explain the operation of the program for the spreadsheet novice, but when relative, I'll also try to describe why certain things are done the way they are. And next month, I'll discuss some items of interest to programmers.


Desk File Format Block Mark Options Help
A1
Math Trig Stat Fin Bool Tbl
WorkSheet1
A B C D E F G
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

Getting started

Due to the huge size of this program, it is impossible to supply program listings in the magazine. You may get your copy of Opus by purchasing this month's disk version, or by downloading the program from the ST-Log SIG on DELPHI.

The complete program consists of the following files: OPUS.PRG, OPUSM.RSC, OPUSH.RSC, PRINTER.INF, INSTALL.PRG, INSTALL.RSC, and several files with the extender "OPS," which are sample worksheet files in OPUS format. OPUS.PRG is, of course, the worksheet program; OPUSM.RSC is the resource file for medium resolution; OPUSH.RSC is the resource for high resolution; and PRINTER.INF is a printer configuration file for EPSON-compatible printers. INSTALL.PRG allows you to create a printer driver for non-compatible printers and is fully self-explanatory when run. However, you will be required to research your printer's control codes, which should be listed in the printer manual.

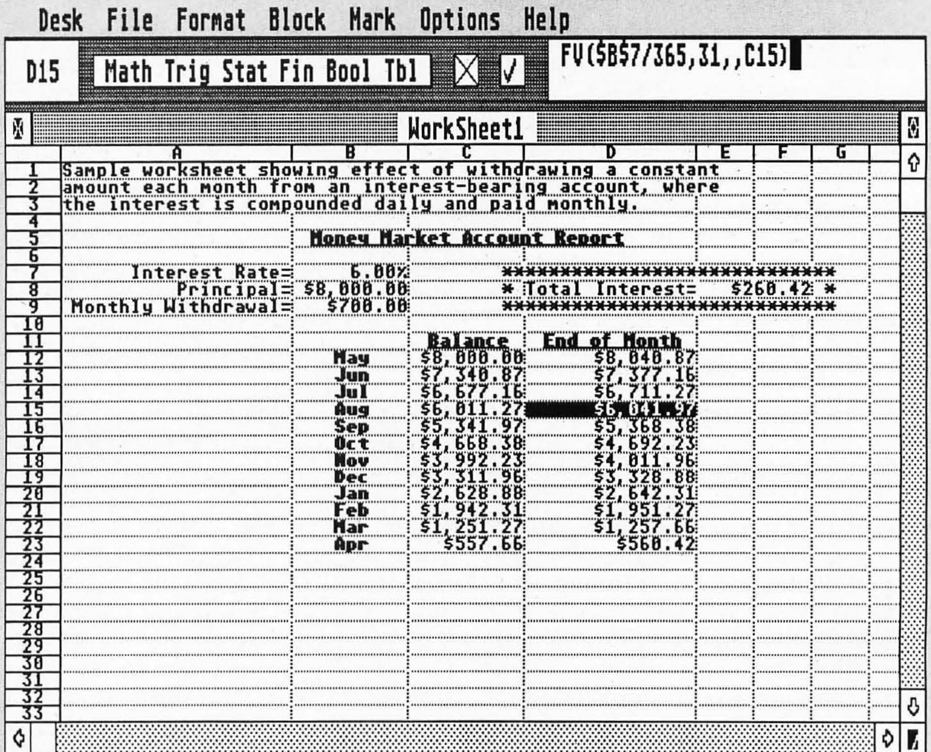
You may transfer the Opus files to any folder and hard disk partition, as long as they all reside in the same directory (the OPS files may be placed in any directory). Color monitor owners should make sure they are in medium resolution before running Opus. As Opus is a fairly large program, owners of 520STs with the standard 512K should make sure they haven't booted with accessories requiring great amounts of memory, although the Control Panel and many others are certainly not a problem; the only real way to tell if an accessory is too large is to experiment.

Double-click on OPUS.PRG; the program will first load its resource file and then PRINTER.INF. Should it fail to find OPUS(M/H).RSC, the program will terminate with a message; should it fail to find PRINTER.INF, you will be informed that any printing will be done without the special codes needed for italic print, NLQ, etc., and Opus will otherwise run normally.

First impressions

Opus initially greets you with a typical GEM display, consisting of the menu bar, a "control panel" and a single window. Opus's control panel contains, from left to right, the cell name of the active cell, a pulldown menu area from which you may select functions, the cell-delete icon, the data-entry icon, and the edit area. Items to note in the worksheet window include the row and column titles and the "cell-cursor," which initially is found in the upper-left cell or "home" cell.

Cells are identified by combining the column letter(s) with the row numbers; thus, the first cell is written as "A1." Other examples of valid cell references are Q950, CA1, DZ25, and $A$1 (more on the "$" later). The control panel will always display the location of the cell-cursor—that is, the name of the "active" cell. The characters you type appear in the edit area, and you enter data into the active cell by terminating your entry with any of the four cursor keys, Return or Enter, or by clicking on the data entry icon (the one with the checkmark). Naturally, the cursor keys assign a value to the active cell and then move in the appropriate direc-


Desk File Format Block Mark Options Help
D15
Math Trig Stat Fin Bool Tbl
WorkSheet1

FV($B$7/365,31,,C15)

	A	B	C	D	E	F	G
1	Sample worksheet showing effect of withdrawing a constant						
2	amount each month from an interest-bearing account, where						
3	the interest is compounded daily and paid monthly.						
4							
5		Money Market Account Report					
6							
7	Interest Rate=	6.00%		*****************************			
8	Principal=	$8,000.00		* Total Interest= $260.42 *			
9	Monthly Withdrawal=	$700.00		*****************************			
10							
11			Balance	End of Month			
12		May	$8,000.00	$8,040.87			
13		Jun	$7,340.87	$7,377.16			
14		Jul	$6,677.16	$6,711.27			
15		Aug	$6,011.27	$6,041.97			
16		Sep	$5,341.97	$5,368.38			
17		Oct	$4,668.38	$4,692.23			
18		Nov	$3,992.23	$4,011.96			
19		Dec	$3,311.96	$3,328.88			
20		Jan	$2,628.88	$2,642.31			
21		Feb	$1,942.31	$1,951.27			
22		Mar	$1,251.27	$1,257.66			
23		Apr	$557.66	$560.42			
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							

tion if possible, activating the adjacent cell, while Return, Enter, and the entry icon all assign a value to the active cell without moving, unless the cell-cursor is within a block and "Auto Cursor" is selected (more on that later).

You may have noticed that Opus is presently ignoring certain keystrokes, specifically ones not allowed in valid real numbers. Moreover, the function menu is not active. Let's take a closer look.

Cell class

Individual cells may assume, at any one time, one of three classes: Numeric, Label and Formula. By default, all cells are of class Numeric. You may change the class of a cell at any time by either dropping down the Format menu and clicking on the desired class or simply by pressing the corresponding function key, listed to the right of the menu items. Be aware that invoking this operation clears any data the cell may contain, even if you didn't actually change class.

Numbers may be expressed in scientific notation using the familiar "E" notation, such that 1 x 10^2 is written as 1E2. To cut down on errors, you are allowed to enter only valid characters while in Numeric cells; Opus will alert you should you enter a number in improper format, i.e., 10 – 2. The range for numbers is +/–1 x 10^+/–38 or thereabouts, and the precision is 11 digits.

Of course, Labels and Formulas allow you freedom to enter whatever you desire; the maximum length is 60 characters. When editing Labels and Formulas, you may select a function from the function menu by clicking on the desired category. A menu will drop down, and you should continue pressing the button as you position the mouse over the desired item; to select the item, simply release the button, and the function name will appear in the edit area.

Formatting cells

In addition to specifying the class of a cell, you may also control certain parameters affecting the appearance of a cell onscreen and as printed. These parameters or attributes include—in the order listed under the Format menu—Column Width, Dollar, Justification, Percent, Precision and Style. Select one of these from that menu or press the corresponding keyboard-equivalent (the Atari logo means Alternate) and examine the admittedly busy dialog box that appears.

All of these attributes are represented by buttons, and the one you selected is highlighted. The current settings of all attributes for the active cell are displayed, and you may change any combination of these you wish, provided you click on the attribute button(s) before clicking OK. The objects at the bottom of the dialog box allow you to designate the "extent" of the operation; with no block selected and as long as Global was not selected, the active cell will be the default.

Note: You may type in a range in the "Begin" and "End" fields and select the Range button to modify a range of cells or select Global to change the default cell format (and modify all assigned cells). If a block was selected prior to invoking the dialog, the range will appear and the extent will be for that range by default (this applies for all Opus dialogs with range arguments). Note also that you may always override the default extent and attribute selection.

The default class is Numeric, as mentioned earlier; the default format is Column Width = 10, Precision = 2, and Justification = Right for Numerics and Formulas, while Justification = Left for Labels. Experiment with all the formatting features, and you will quickly find ways to emphasize key cells and generally improve your worksheet's appearance.

You may be wondering why I failed to include the option to change cell class in this dialog. Partly it was lack of room, but the main reason is that changing the cell class is a destructive operation, while altering the cell format information leaves the data intact. Later, I'll discuss an easy way to change the class of a range of cells.

Memory considerations

In order to allow for the 254,745 cells making up the Opus spreadsheet, I employed a "sparse matrix design"; in other words, none of the cells really "exist" prior to containing data. Format and class, among other things, require a cell to exist in order to differ from the default, and a cell which exists consumes memory. The most important consequence is that although you may change the global format at any time, you may not change format over an arbitrarily large range containing many nonexistent cells, because Opus may run out of memory as it creates these cells. Should this occur, it will inform you with a friendly message.

Memory usage information may be found by dropping down the Options menu and clicking on Statistics. Very briefly, unassigned cells of default format consume no memory, Numerics require 26 bytes each, and Labels and Formulas require 88 bytes each. In a stock 512K 520ST with no accessories or resident programs, about 150K is available for the worksheet data, allowing for greater than 5,700 Numerics and about 1,700 Labels/Formulas. Likewise, a one megabyte ST supports more than 24,000 Numerics and about 7,000 Labels/Formulas.

To determine the maximum number of cells for any memory configuration, simply take the value for free memory given by Statistics and divide by 26 or 88, depending on the class you are interested in. I will describe the *cell data structure* and further discuss memory allocation/deallocation later.

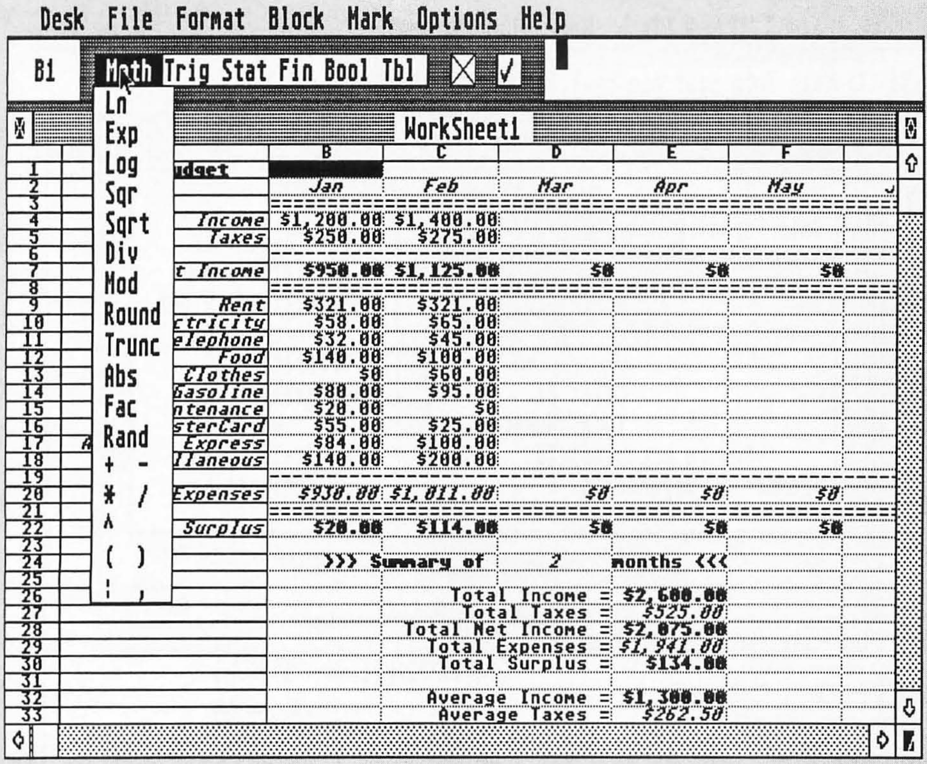
Blocks

Blocks or ranges are simply rectangular groups of cells used by various worksheet operations and also as parameters for certain functions. To define a block, move the cell-cursor to the cell you wish to be the upper-left corner of the block, drop down the Block menu, and click on Start Block (or press the keyboard equivalent, Alt-A); then move the cursor to the cell you want to be the lower-right corner of the block and mark it as the end of the block. You may also select a block by dragging the mouse through a range of cells. Note, however, that this limits you to the cells currently displayed. Finally, you may select an entire row or column as a block by clicking on the row or column title.

Once a block is selected, the cells within the block are displayed in reverse video, and certain menu items are affected. Under the Block menu, Copy, Move, and Delete Block are now available, and under the Mark menu, the items which previously were Show First and Show Last Cell have now become Show Block Start and Show Block End. A list of operations accepting or requiring block information follows.

Auto cursor

To demonstrate this function, drop down the Options menu and make sure that Auto Cursor is checked. Next, select a block and position the cell cursor within it. Now, enter some data and press Return or Enter or click on the data entry icon, and note that the cell cursor moves either to the right or down, providing you did not place it in the last cell of the block.


Desk File Format Block Mark Options Help
Math Trig Stat Fin Bool Tbl
Ln
Exp
Log
Sqr
Sqrt
Div
Mod
Round
Trunc
Abs
Fac
Rand
+ -
* /
^
( )
; ,
WorkSheet1

B1

		B	C	D	E	F	
1	udget						
2		Jan	Feb	Mar	Apr	May	J
3		==========	==========	==========	==========	==========	=====
4	Income	$1,200.00	$1,400.00				
5	Taxes	$250.00	$275.00				
6		----------	----------	----------	----------	----------	-----
7	t Income	$950.00	$1,125.00	$0	$0	$0	
8		==========	==========	==========	==========	==========	=====
9	Rent	$321.00	$321.00				
10	ctricity	$58.00	$65.00				
11	elephone	$32.00	$45.00				
12	Food	$140.00	$100.00				
13	Clothes	$0	$60.00				
14	Gasoline	$80.00	$95.00				
15	ntenance	$20.00	$0				
16	sterCard	$55.00	$25.00				
17	A Express	$84.00	$100.00				
18	llaneous	$140.00	$200.00				
19		----------	----------	----------	----------	----------	-----
20	Expenses	$930.00	$1,011.00	$0	$0	$0	
21		==========	==========	==========	==========	==========	=====
22	Surplus	$20.00	$114.00	$0	$0	$0	
23							
24		>>> Summary of		2	months <<<		
25							
26			Total Income =		$2,600.00		
27			Total Taxes =		$525.00		
28			Total Net Income =		$2,075.00		
29			Total Expenses =		$1,941.00		
30			Total Surplus =		$134.00		
31							
32			Average Income =		$1,300.00		
33			Average Taxes =		$262.50		

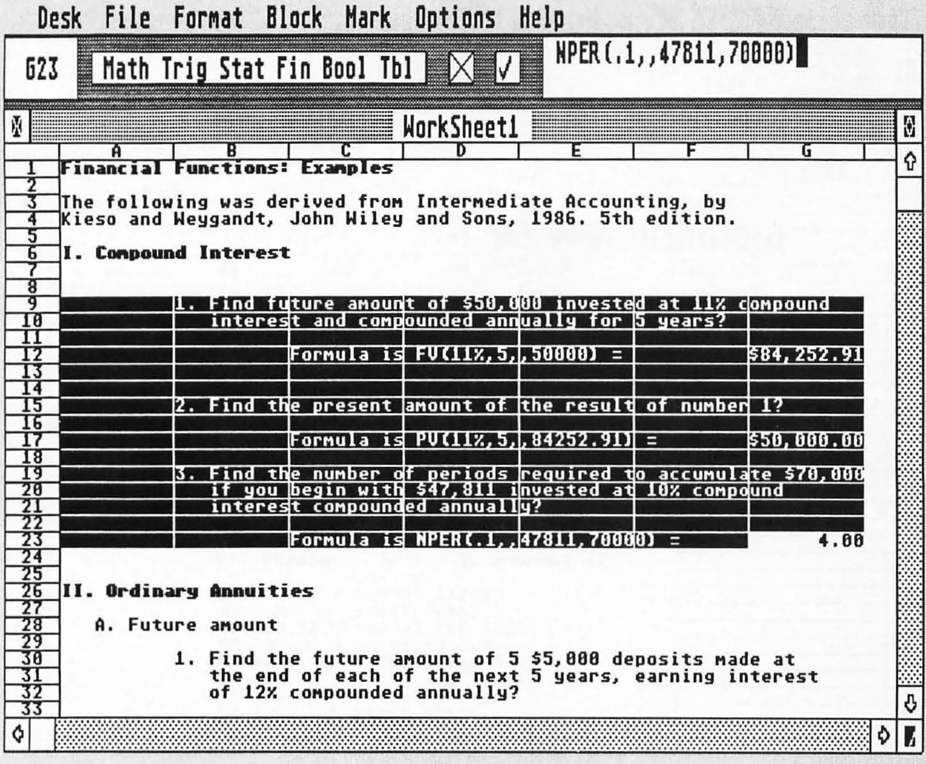
You may specify the "Auto Cursor direction" through the Options menu. This is in general a quite useful feature and is especially appreciated when a large amount of tabular numeric information is to be entered, as you may first specify the range and then enter the data solely through the numeric keypad, using the Enter key, thus speeding data entry.

Copy, move and delete block

Copy and Move Block are similar commands, differing in that Copy leaves the source block intact, while Move deletes it. For both operations, you first select the source block and then move the cell cursor to the cell you desire to be the start of the destination block. After selecting the command, you are prompted for confirmation, and then you are asked if the operation is to treat cell references within formulas as relative or as absolute.

If absolute is chosen, formulas are copied or moved without change, whereas if relative is chosen, cell references will be adjusted to reflect their new position within the worksheet. Note that if you move the range referenced by a function and not the cell containing the function, the function will not be adjusted to reflect the new position of the range; rather, it will continue to reference the original position. That is, moving the range A1:B2 will not cause any change in a cell outside that block containing the function SUM(A1:B2).

Deleting a block, of course, destroys any data and format information of existing cells within the block. It also frees the memory occupied by those cells as it deallocates them, except if a cell has entries in its "dependent cell list," i.e., if the cell is referenced by a formula in a cell outside the block. Use of the delete icon is equivalent to performing a block-delete on a one-cell block. Note the difference (and *raison d'etre*) between this icon and the class change function: the latter never deallocates the cell. I'll elaborate on the dependent cell list concept shortly.


Desk File Format Block Mark Options Help
Math Trig Stat Fin Bool Tbl
WorkSheet1
A B C D E F G

G23 NPER(.1,,47811,70000)

```
1  Financial Functions: Examples
2
3  The following was derived from Intermediate Accounting, by
4  Kieso and Weygandt, John Wiley and Sons, 1986. 5th edition.
5
6  I. Compound Interest
7
8
9             1. Find future amount of $50,000 invested at 11% compound
10               interest and compounded annually for 5 years?
11
12                       Formula is FV(11%,5,,50000) =              $84,252.91
13
14
15            2. Find the present amount of the result of number 1?
16
17                       Formula is PV(11%,5,,84252.91) =           $50,000.00
18
19            3. Find the number of periods required to accumulate $70,000
20               if you begin with $47,811 invested at 10% compound
21               interest compounded annually?
22
23                       Formula is NPER(.1,,47811,70000) =               4.00
24
25
26 II. Ordinary Annuities
27
28    A. Future amount
29
30            1. Find the future amount of 5 $5,000 deposits made at
31               the end of each of the next 5 years, earning interest
32               of 12% compounded annually?
33
```

More on absolute vs. relative cell references

As mentioned earlier, you may be given the option to consider cell references in formulas as absolute or relative. You may make any cell reference absolute by preceding the row or column by the dollar sign. Examples are: $A1, A$1 and $A$1. The dollar sign ensures that, even if Relative was chosen, these cell references (or portions of the reference) will never be adjusted. Of course, this notation has no effect on formula calculation.

Insert and delete rows and columns

These functions appear under the Block menu with their function key equivalents. They define a "virtual block" appropriate for the desired action and perform a block move. After selecting one of these commands, you will be asked to confirm it, specify relative vs. absolute (as above) and also the "sense" of the operation, whole vs. partial. If whole is selected, then the operation will act on the entire row or column containing the active cell.

However, if partial was selected, one of two things may happen. If no block is selected, then a virtual block is assumed beginning at the active cell and extending to the worksheet borders. If a block is selected, a virtual block is defined beginning at the start of the actual block and extending to the border of the worksheet in the direction of the operation and confined to the extent of the actual block in the converse direction.

For example, the range C3:D4 is selected, and you choose to insert a partial row. A row is inserted beginning at row 3 and confined to the columns C and D; the rest of the worksheet is unaffected. If instead you chose Delete Column, a column beginning at column C and confined to rows 3 and 4 is deleted.

Note that Insert causes data in the last row or column to be lost as it moves the virtual block down or to the right. On the other hand, Delete erases the data in the first row or column of the virtual block, as it moves the block up or to the left.

Data fill

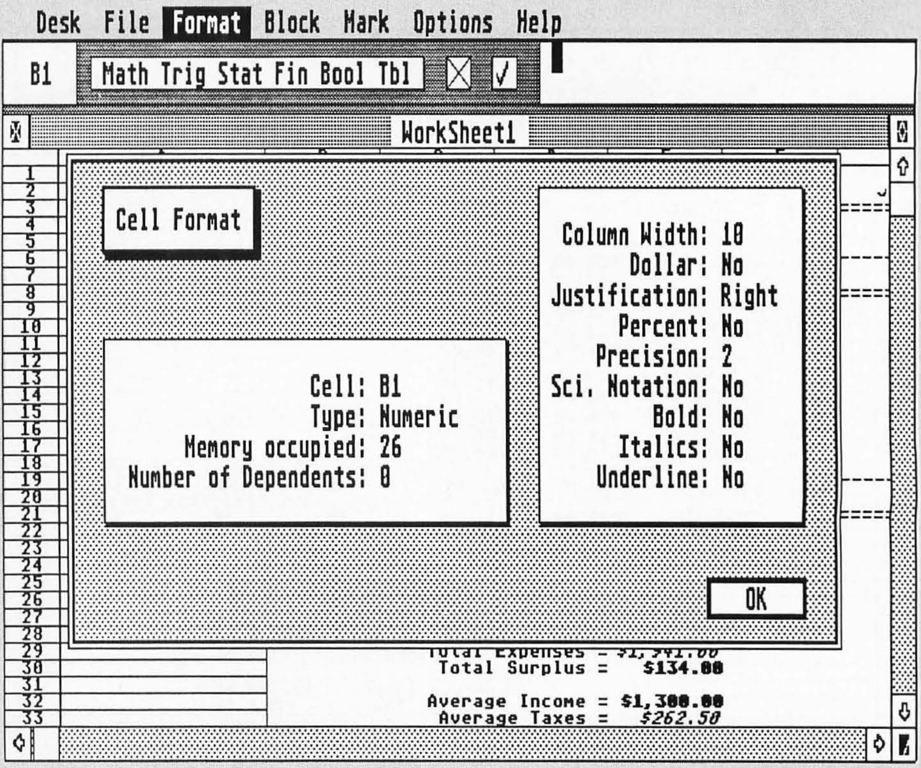
This function requests a starting value, an increment and direction (down or right), as well as block coordinates. The increment must always be numeric; however, the starting value may be a number, a weekday name or a month name.

For example, if you were creating a template for a yearly budget organized by months, you could use this function with a starting value of Jan, an increment of 1 and the range A1:A12, and the range would be filled with the abbreviations of all the months of the year, in order. Painless and commonly needed.

You have full control of capitalization and abbreviation, as follows. To capitalize the entire day or month name, make sure at least the first two characters are capitalized to capitalize just the first letter, only capitalize the first letter; and to display in lower case, capitalize no letters. To abbreviate, simply enter the first three characters of the day or month name; otherwise, enter the entire name. Cells of class Label will be created, and they will be left-justified.

Replicate cell

This powerful function allows you to copy a single cell through a range. You may again choose relative vs. absolute, but this is really important only for formulas. Replicate greatly facilitates creation of tables where the same formula must be copied through many cells and cell references maintained in a consistent relative fashion.

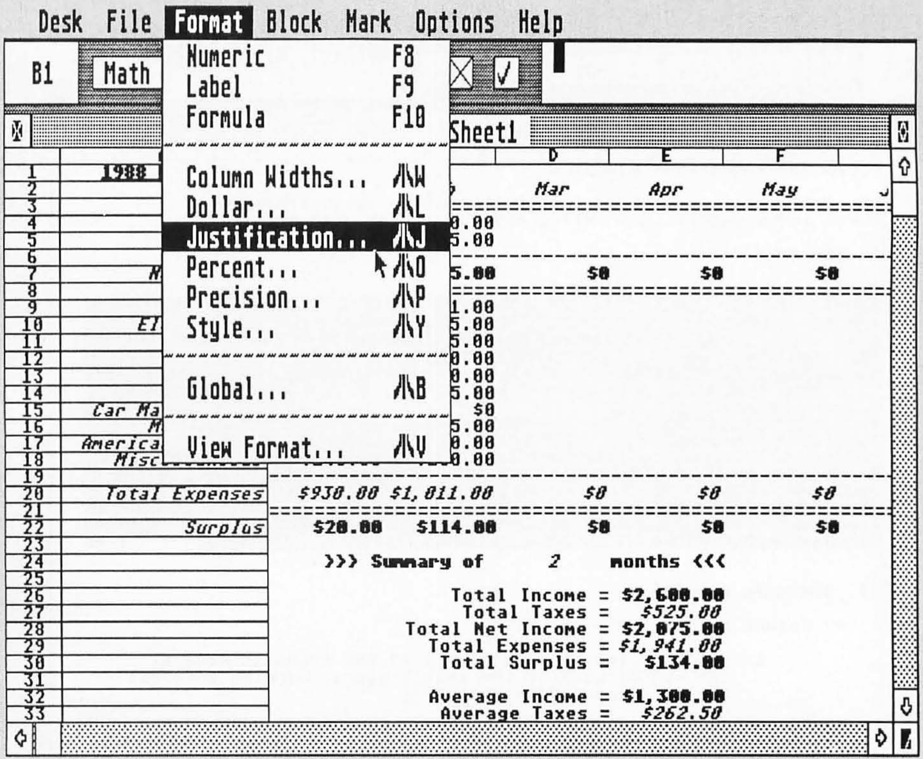


Cell: B1
Type: Numeric
Memory occupied: 26
Number of Dependents: 0

Column Width: 10
Dollar: No
Justification: Right
Percent: No
Precision: 2
Sci. Notation: No
Bold: No
Italics: No
Underline: No

For example, in a budget spreadsheet, you would want to have a cell containing the sum of the expenses. Suppose the expenses, on a monthly basis, were to appear in the ranges A1:A5, B1:B5, C1:C5, and so on, up to L1:L5 for 12 months. These will be simple numerics. The sums would appear in cells A10, B10, C10, etc., and the formula in cell A10 would be SUM(A1:A5).

Now, you *could* enter the remaining formulas by hand, but it is much easier to enter the first one, select the range B10:L10, place the cursor in A10, and replicate this formula through the range. B10 will then contain SUM(B1:B5), C10 will contain SUM(C1:C5), and so on. You may also use this function to copy a cell



```
   Total Expenses  $930.00 $1,011.00   $0   $0   $0
          Surplus   $20.00   $114.00   $0   $0   $0

        >>> Summary of    2    months <<<

            Total Income = $2,600.00
             Total Taxes =   $525.00
        Total Net Income = $2,075.00
          Total Expenses = $1,941.00
           Total Surplus =   $134.00

          Average Income = $1,300.00
           Average Taxes =   $262.50
```

class with format information through a range.

Again, as in all Opus dialogs requiring cell or range parameters, you may override the default parameters supplied or type in the range rather than first selecting it.

Sort

Sort operates on either a row or column basis within the boundaries of the designated block. It requires a "key cell," which must lie within the block boundaries, and it uses this cell as a compare value against the other cells in its row or column, depending on the direction of the sort. You may also specify ascending vs. descending order, i.e., lowest to highest and vice versa. Precedence is as follows, from lowest to highest:

1. Empty Cells that exist
   a. Numerics = Formulas
   b. Labels
2. Assigned cells (as in 1).

Sorting thoroughly scrambles the cells, so adjusting relative cell references within formulas would almost always be meaningless; thus, it is not done (you probably shouldn't be sorting formulas anyway). For the sake of a printout, you may occasionally need to sort formulas, and you may wish to first save the worksheet to preserve the relationships.

Alternatively, you might fill a range using Data Fill such that the first formula has a corresponding number 1, the second 2, etc. These numbers will then "follow" the formulas to their new location, and you may restore the original order simply by sorting the range in ascending order using any cell within this "number field" as the key cell.

Formulas

Opus provides more than 40 functions for use in formulas. A comprehensive list is found under the Help menu, and I will describe them more fully here. But first, some general considerations.

Formula Entry. To enter a formula, you must first change the cell class to Formula by either dropping down the Format menu and clicking on Formula or pressing F10. Then, you may enter any valid algebraic expression, using cell references and any combination of supported functions. Remember, cell references can be made by "shift-clicking" on a displayed cell, and all functions may be entered using the function menu.

Recalculating. Opus provides "natural order" recalculation; that is, instead of just "grabbing" the current value of a cell reference to a formula, Opus will first recalculate the formula. Thus, formulas are evaluated using up-to-date values, independent of position within the worksheet. This ensures accuracy and reliability.

Opus also provides automatic recalculation, so that a change in one cell causes all cells containing formulas that reference the changed cell to be recalculated, while all other cells will not be affected. This feature increases speed of recalculation, as you may change the value of one cell and immediately see the results in affected cells, without having to wait for all other cells to be recalculated.

Both automatic recalculation and natural order are defeatable through the Options menu, and turning them off may speed global recalculation of large spreadsheets somewhat. I'll discuss another reason to disable these features later, but for the vast majority of cases, you should just leave them on.

In order for Opus to provide automatic recalculation, cells referenced by formulas *must* exist, for these cells need to "know" they are referenced and who their "dependents" are so that Opus knows which cells to reevaluate when the value of a cell changes. Thus, if a referenced cell does not exist, it will be created, consuming 34 bytes of memory (the standard 26 bytes plus eight bytes to indicate its dependent). Essentially, every non-redundant cell reference creates an entry in the referenced cell's "dependent-cell list," and each of these entries requires eight bytes. Information on the total number of dependents is found through Options/Statistics.

One problem with natural order and automatic recalculation is the handling of "circular" cell references. For example, cell A1 contains the formula B1*2 and B1 contains the formula A1*2. Were natural order calculation in effect, the expression evaluator would try to recalculate B1 before using its value for the formula in A1. But, it would then see that B1 depends on A1, so it would try to recalculate A1, but since A1 depends on B1, it would need to recalculate B1, and so on. If this infinite looping was allowed to go unchecked, the machine's stack would be overrun, leading to a crash.

The solution to this is simple: set a bit in the format field of the cell when it is recalculated, but its result is "pending," and test this bit before attempting to recalculate it. It is also necessary to use another bit to indicate "completed recalculation." The net effect is this: if a cell reference refers to a pending cell, then the cell containing the formula can't be recalculated at that time, so we jump to the end of the procedure and continue.

Generally, the cell will later be fully evaluated in the course of a global recalculation or provided another cell references it. Since evaluation stops at that point, syntax errors in the formula occuring after the pertinent cell reference can slip by.

As can be inferred from the above, I consider circular references to be errors and only support them in the sense that the machine definitely will not crash should it encounter one. I make no guarantees regarding the accuracy or predictability of their results, so please, take care not to use them.

Now let's consider the actual formula building blocks: values, operators, and functions.

Values. Values are comprised of real numbers and cell references; the formats of each have been previously described. However, in the formula context (but not in Numeric cells), you may append a number with the percent sign, and the expression evaluator will divide the number by 100 before using it. This doesn't work for cell references, since you may specify cell format as percent and achieve the same result. Opus doesn't allow string data in formulas. Consequently, for the purpose of recalculation, Opus considers Labels to have values of zero or one (whatever is appropriate), ignoring the string it may contain.

Operators. Opus provides the standard arithmetic operators, listed below in order of precedence, from highest to lowest, with operators of equal precedence listed on the same line:

- (negation)
^ (exponentiation)
* /
+ −
= < > <= >= <> (logical operators)

Parentheses may be used in the standard fashion to group operations and force calculation to proceed in the desired order, and expressions may be arbitrarily complex.

Functions. The general function format is "function name" (argument list). For discussion's sake, I'll consider related functions together in groups or "libraries," as they are listed in the Function menu and in the Functions selection of the Help menu. (For programming purposes, they are arranged in libraries on the basis of the number or types of arguments they require.)

Ranges are written "cell reference : cell reference." An example is SUM(A1:G10). Note that when a range is used by a function, every cell in that range will have its dependent cell list updated to contain a reference to the cell holding the formula, and if any of these cells do not exist, they will be allocated if memory allows. Therefore, one can not reference an arbitrarily large range in a function.

The math functions supported by Opus are:

1. LN(x), EXP(x): Natural logarithm (Base e) and antilogarithm.
2. LOG(x): Base 10 logarithm (to get Base 10 antilog, 10∧x).
3. SQR(x), SQRT(x): Square of x and square root of x.
4. DIV(x,y): Divides x by y and returns integer portion of quotient.
5. MOD(x,y): Returns the remainder of x divided by y. Both MOD and DIV are real-valued functions and are related by the equation x = DIV(x,y)*y + MOD(x,y).
6. ABS(x): Returns the absolute value of x.
7. ROUND(x,y): Rounds the number x to y places. If y is zero or negative, then the integer portion of x is rounded. Ex., ROUND(567.89,1) returns 567.9; ROUND(567.89, – 1) returns 570.
8. TRUNC(x,y): Truncates the number x to y places; y acts as in ROUND. Equivalent to INT in other spreadsheets when y = 0.
9. RAND(x,y): Returns a random number n such that x < = n < y.
10. FAC(x): Returns the factorial of x; 0 < = x < = 33.

The trigonometric functions supported by Opus are:

1. SIN(x), COS(x), TAN(x): These all expect the angle to be in radian units, i.e., radians = degrees X (pi/180).
2. ASIN(x), ACOS(x), ATAN(x): Inverses of the above. Again, they return the angle in radians.
3. RAD(x): Converts angle in degrees to radians.
4. DEG(x): Converts angle in radians to degrees.
5. PI() : Returns the value pi (the parentheses are necessary!).

The statistical functions supported by Opus are:

1. SUM(range), PROD(range), MAX(range), MIN(range), COUNT (range):

SUM adds all values within the range. Labels and unassigned cells are considered to equal zero.

PROD returns the product of all cells within the range. Labels and unassigned cells are considered to equal one.

MAX and MIN return the maximum and minimum values within the range. Labels and unassigned cells are not considered.

COUNT returns the number of cells within the range containing numeric values, including formulas. Labels and unassigned cells aren't counted.

2. MEAN(range), VAR(range), SDEV(range), SERR(range):

MEAN returns the average of all cells containing numbers. Labels and unassigned cells are not considered.

VAR returns the sample variance of numeric values within the range.

SDEV returns the sample standard deviation of the values within the range.

SERR returns the sample standard error (standard deviation of the mean) of the values within the range.

3. LINR(y-range,x-range), CORR(y-range,x-range), REDV(y-range,x-range,x):

LINR: Linear regression via the least squares method returns the slope of the regression line in the cell containing the formula and the y-intercept in the cell immediately to its right. The "y range," of course, refers to the dependent variable (ordinate) and "x range" to the independent variable (abscissa). The ranges may extend over some unassigned cells, but a one-to-one correspondence between the two variable lists must exist. Also, one range may be horizontal and the other vertical, and either may extend over more than one row or column, i.e., A1:B5. If A1:B5 was the y-range, then for the sake of relating y to x, value 1 would be cell A1, value 2 B1, value 3 A2, and so on; the evaluator proceeds by rows or in "row-major order" in such cases.

CORR: Parameters are the same as in LINR. This function calculates the correlation coefficient for the linear regression. This value is a measure of the goodness of fit of the regression line and always falls between – 1 and 1, such that CORR approaches 1 as the data approximates more and more closely a linear relationship. CORR approaches – 1 as the data approximates a negative linear relationship, i.e., a straight line with a negative slope. CORR approaches zero for data that is not linearly related.

For all of these functions, the "type" argument is optional; it allows you to specify for annuity calculations whether the calculation is for an ordinary annuity (type = 1) or an annuity due (type = 0).

PREDV: Parameters are similar to LINR and CORR, except this function expects an additional parameter, x. PREDV returns the predicted value of the dependent variable using the slope and intercept derived from linear regression on the data set, i.e., it returns y from y = mx + b. The usefulness of CORR is apparent in the context of this function; the closer CORR is to 1 or – 1, the more "believable" the PREDV. Note that use of this function is most suited for x = values lying within the range defined by the minimum and maximum values of the x-range; results based on values lying outside this range may or may not be valid.

The financial functions supported by Opus are:

PV(rate, # periods, payment, future value, "type")

FV(rate,#periods, payment, present value, "type")

NPER(rate, payment, present value, future value, "type")

PMT(rate, #periods, present value, future value, "type")

For all of these functions, the "type" argument is optional; it allows you to specify for annuity calculations whether the calculation is for an ordinary annuity (type = 1) or an annuity due (type = 0). An ordinary annuity is the default for annuity calculations (payments occur at end of periods). It is up to you to provide correct rate and # periods arguments.

PV: Calculates the present value of an annuity or single sum, based on compound interest for the latter. For a single sum, leave out the payment argument, and insert a comma in its place instead. For an annuity calculation, leave out the future value argument and only insert a comma in its place if you include the type argument.

FV: Calculates the future value of an annuity or single sum; usage is similar to PV.

NPER: Calculates the number of periods for an annuity or the number of periods required to reach a given future value from a given present value in a compound interest calculation. Again, use commas as place-holders to skip arguments if necessary.

PMT: Calculates the payment or rent for annuities. Present and future value arguments may not be present simultaneously.

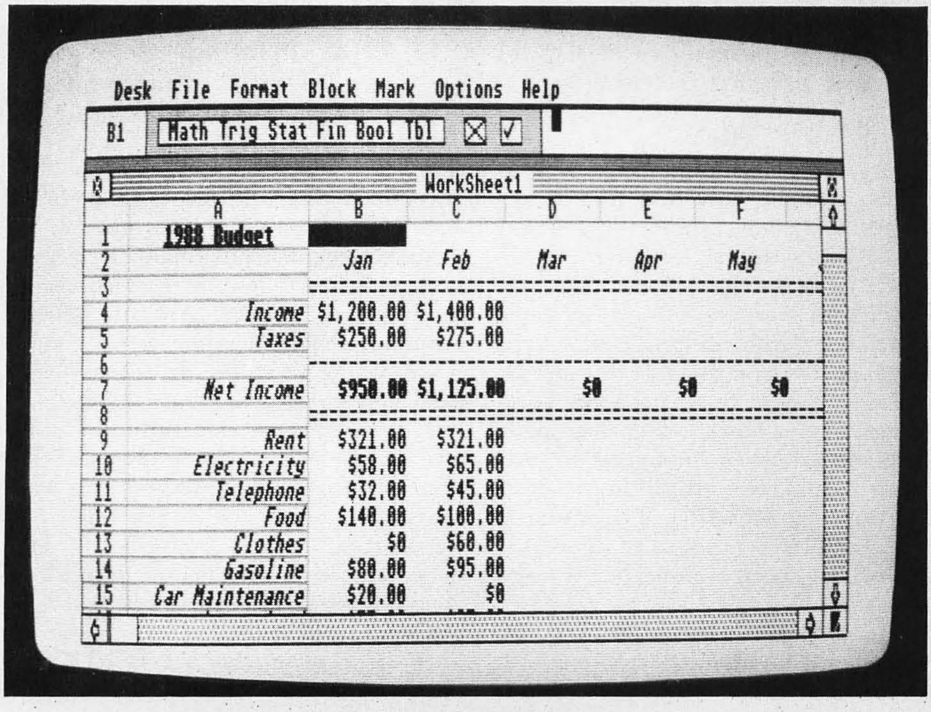
Obviously, these commands are powerful and very flexible, and they can be somewhat confusing as a result. Various combinations of arguments are possible, and some are not permitted. For example, specifying the type argument for a compound interest calculation FV(10%, 5,,100) would be illegal. Unfortunately, lack of space precludes detailed discussion on usage and principles of these financial functions; however, any good accounting or business math book would be suitable as a reference and will provide examples for you to solve using these functions.

The Boolean or logical functions supported are:

The logical operators have already been listed; they may be used at any time but are most useful when used in conjunction with these functions. An example "condition" as intended below is A1 = 1; however, it may be any valid expression.

1. IF(condition,action,alternate action): When "condition" evaluates to a non-zero number (TRUE), "action" is performed, and if condition evaluates to the number zero (FALSE), the "alternate" action is taken. The condition is most commonly a comparison between a cell and a value or two cells but may be any valid expression or even just a number. The two actions may themselves be any valid expression, including IFs, so that IF-THEN-IF-THEN-ELSE type constructs may be used. As an example:

```
IF(A1 = 2,IF(A2 > 3,1,0),A4) reads:
    IF A1  = 2 THEN
        IF A2 > 3 THEN
            return 1
        ELSE
            return 0
    ELSE return the value of A4.
```


Desk File Format Block Mark Options Help
B1
Math Trig Stat Fin Bool Tbl
☒ ☑
WorkSheet1

	A	B	C	D	E	F
1	1988 Budget					
2		Jan	Feb	Mar	Apr	May
3						
4	Income	$1,200.00	$1,400.00			
5	Taxes	$250.00	$275.00			
6						
7	Net Income	$950.00	$1,125.00	$0	$0	$0
8						
9	Rent	$321.00	$321.00			
10	Electricity	$58.00	$65.00			
11	Telephone	$32.00	$45.00			
12	Food	$140.00	$100.00			
13	Clothes	$0	$60.00			
14	Gasoline	$80.00	$95.00			
15	Car Maintenance	$20.00	$0			

2. AND (condition, condition, condition . . .): Independently evaluates all conditions and returns one (TRUE) if all conditions returned non-zero values and zero (FALSE) if any of the conditions returned zero. Between two and twenty conditions may be supplied (this applies to OR as well). Of course, this may be used in IFs, and IFs can serve as conditions.

3. OR (condition, condition, condition . . .): Similar to AND, except OR returns one if any of the conditions returned non-zero values and zero only if all equalled zero.

4. NOT(condition): Returns one if condition evaluates to zero, and returns zero if condition evaluates to a non-zero value.

The Table LookUp functions provided in Opus are:

1. INDEX(row index, column index, range)
2. VLOOKUP(value, index, range)
3. HLOOKUP(value, index, range)

These three functions allow you to create tables of data and then extract information in a predictable way. They are very useful for such things as tax tables or grade assignments.

INDEX: This function adds the row and column numbers you provide to the coordinates of the first cell in the range and returns the value of the cell at the resulting coordinates. For example, INDEX(2,3,A1:C5) returns the value of cell C2, that is the cell found at the second row and third column within the range. Likewise, INDEX(1,1,A1:C5) references the first cell, A1. The row and column indices may be expressions; it is an error to reference a cell outside the range.

VLOOKUP: This function searches in the first column of the indicated range for the greatest value less than or equal to the value you supplied, and it returns the value in the same row but in the column equal to the first column plus the index. The function is a "vertical lookup," as it searches in the vertical direction. An error occurs if no match is found or the index references a location outside the block. As an example, consider a grading scale where 0-59 is an F, equal to zero quality points, 60-69 is a D, equal to one quality point, 70-79 is a C, 80-89 is a B and 90 and above is an A. We can construct a lookup table to assign these quality points as shown in Table 1.

	A	B	C	D
				Quality
1	Score	Points	Scale	Points
2	75	2	0	0
3	88	3	60	1
4	70	2	70	2
5	93	4	80	3
6	59	0	90	4

Table 1

The basic formula to access the table and assign the point values is entered in cell B2 as VLOOKUP(A2,2,$C$2:$D$6). This formula is then replicated through the range B2:B6 to complete the table, using the relative option.

HLOOKUP: Complementary to VLOOKUP, this function searches the first row of the indicated range. Thus, it is an "horizontal lookup" function. Using Table 2 as an example, HLOOKUP(2.5, 3,A1:D3) returns 4 (value of B3); HLOOKUP(1,4,A1:D3) returns an error, as the index referenced a location outside the range.

	A	B	C	D
1	1	2	3	4
2	2.3	3	5	8
3	7.8	4	7	16

Table 2

In order to function properly, both VLOOKUP and HLOOKUP expect the lookup column or row, respectively, to be sorted in ascending order. If it is not, an error message may result, or the function may simply return an incorrect value.

Caveats

I had earlier purported that Opus provides "comprehensive" error-trapping, and in general, this is not an unfounded claim. Division by zero, attempting square roots of negative numbers, attempting logarithms of numbers less than or equal to zero, raising a number to too great a power, etc., are trapped and flagged as errors, since it is a reasonably simple matter to do so.

Unfortunately, the standard Personal Pascal response to a floating point overflow is a system crash, and I was unable to obtain information necessary to alter this. Thus, short of writing my own assembly language floating point routines, there is nothing within reason I can do to prevent a crash if you enter a formula such as 1E20*1E20. This also applies to functions such as LINR and SDEV, which perform multiplications and divisions "hidden" to the user, but this should be an exceedingly rare problem unless you are commonly performing these operations on numbers near the real number bounds.

Error messages

Every existing cell has a "status" field, which indicates if it is empty, assigned, or has an error condition associated with, in which case a small message will be displayed in the cell. The error messages are "Division by Zero," "Overflow," "Undefined," "Bad Real Number," "Bad Cell Reference," "Out of Range," "Syntax Error," and a "Generic Error." If evaluation of a newly entered formula results in an error, a dialog box will appear, and you may immediately correct any mistake if you so desire. If not, the formula will be stored as entered, and the cell will assume the error status.

Formulas that reference a cell with an error status will themselves assume the same error status upon calculation. Of course, once a cell with error status assumes a non-error status, the display will be updated to reflect the changes.

Files

Opus is capable of producing two types of files: loadable worksheet files identified by the filename extender "OPS" and ASCII files with the extender "DOC" suitable for printing from the desktop or loading into word processors. The latter is equivalent to printing to disk, except that no printer control codes are stored.

You may choose to save the entire worksheet or just a block. When loading a block, you are given the option to load at the original location within the sheet or at the cursor location. If the latter is chosen, cell references are adjusted as if the block had been moved from its original location.

When saving a worksheet, information is stored only for allocated cells (naturally). Further, since we needn't store on disk such things as the values of pointers and contents of dependent cell lists, worksheet files always consume less space than do their in-memory counterparts. And, although Personal Pascal doesn't provide variable length strings (which requires us to declare all strings as maximum length), we can fairly easily save just the actual string length for labels and formulas, yielding a great reduction in required disk space.

Various worksheet parameters are saved for both blocks and sheets. These include the column widths, status of the "checkable" menu items under the Options menu, the titles, headers, etc. of the Print/Save as Text dialog, and the default cell format. When loading a block, these worksheet settings will not be altered, the rationale being that you will build a library of commonly needed formulas for later incorporation into sheets; however, you may elect to load a block "as a sheet," and the settings in this case will be altered to reflect those of the file.

Another important difference in loading sheets vs. blocks is that the former clears the worksheet, while the latter does not. Loading a block "as a block" is thus equivalent to a merge.

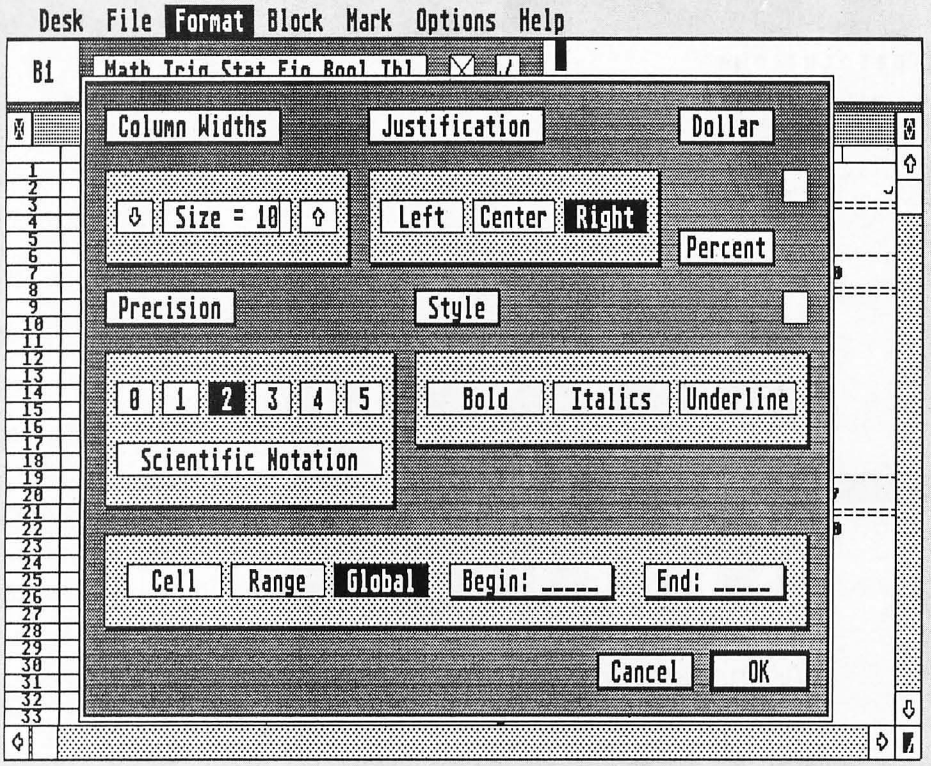
Opus's file structure is proprietary (my euphemism for incompatible with everything), meaning that it can only read files it created. Conversely, other programs won't be able to use Opus files. As a positive aspect, Opus files tend to be somewhat smaller than other spreadsheet programs'.

Printing

As mentioned earlier, Opus is supplied with an EPSON-compatible printer driver, called PRINTER.INF. It must reside in the same directory as OPUS.PRG and OPUS(M/H).RSC. INSTALL.PRG allows you to create drivers for other printers. See the printer manual for control codes, and follow the instructions in the dialog, as INSTALL's error-trapping is somewhat less than extensive!

Opus supports multiple features providing attractive on-screen formatting, including individual cell justification and text special effects. These are not lost upon printing, so that you get "what you see is what you get" or WYSIWYG (wiz-i-wig) output.

Drop down the File menu and click on Print. Examine the dialog box that appears. You may enter two (or none) title lines of up to 40 characters each, and these will appear, centered, on the first



page of the printout. You may enter a one-line each header and footer, which appear on every page. You should check the Help menu item for description of the control codes allowed in headers and footers, which allow justification, inclusion of date/time, filename and page number.

You may also specify whether the output is to be at regular pitch or condensed; you may choose to make "condensed" the 96 char/line mode rather than 137 char/line; just be sure to update PRINTER.INF via INSTALL, including the "Condensed Char/Line" field as well as the printer control code field.

If you check "Show Formulas," formulas will be printed out in source form rather than as values, which is handy for documenting and debugging your spreadsheets. You may choose to suppress the row numbers and column letters for final reports. Last, you may control draft vs. near letter quality print providing your printer supports this option.

Printing (and saving as text) requires that you specify a block, and the default block is the smallest one encompassing all defined cells. So you need do nothing to print the entire worksheet, unless a block is selected, in which case that block will be the default. The print algorithm fits as many cells per line as are possible, given the number of print columns as per PRINTER.INF. It then prints as many of those lines as will fit on a page, which is always 66 lines long.

It continues to print those columns until all indicated rows have been printed. Then it moves on to the adjacent columns, if any, and it repeats itself in this manner until done. A dialog appears while printing and shows the current page number, and you may cancel the print at any time by pressing Escape.

Potpourri

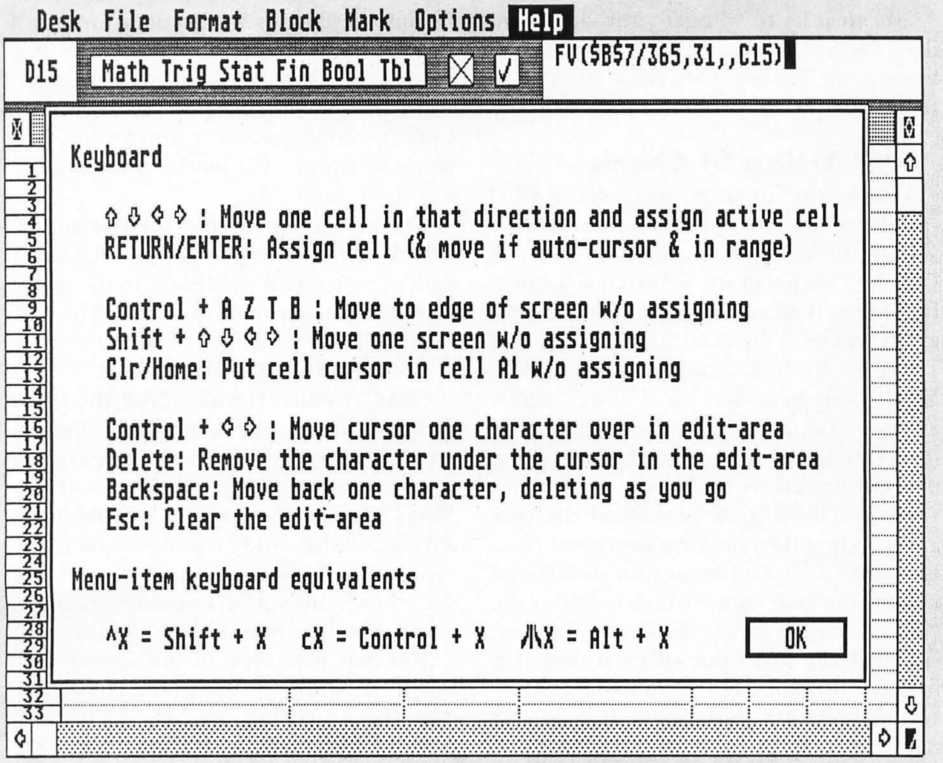
Opus supports dual windows, suppression of grid lines, and several other options; review the menu items and experiment! Options/Clear Worksheet offers a choice of "clear mode." When "Number" is chosen, only cells with Numeric class are cleared. This is handy for spreadsheets that are used again and again as templates, as it preserves the formulas and labels and erases only the numeric data.

Options/Freeze Titles allows you to "lock" a row or column or both on screen, so that you may not scroll past it. Further, the locked row/column remains on screen as you scroll away from it. This is very useful for data entry over large ranges, as you may keep your labels on screen at all times. This has no effect on printing.

The Mark menu facilitates moving about the spreadsheet; you may directly go to any cell via Goto Cell, go to the start/end of the worksheet/block, and go to a "marked" cell via Set/Goto Mark.

Stay tuned

You should now have all the information you need to get the most out of Opus. For the programmers among you, a discussion of the programming techniques involved in writing a spreadsheet program will be presented in next month's ST-Log. Be there!


Desk File Format Block Mark Options Help
D15
Math Trig Stat Fin Bool Tbl
OK

`FV($B$7/365,31,,C15)`

```
Keyboard

    ⇧ ⇩ ⇦ ⇨ : Move one cell in that direction and assign active cell
    RETURN/ENTER: Assign cell (& move if auto-cursor & in range)

    Control + A Z T B : Move to edge of screen w/o assigning
    Shift + ⇧ ⇩ ⇦ ⇨ : Move one screen w/o assigning
    Clr/Home: Put cell cursor in cell A1 w/o assigning

    Control + ⇦ ⇨ : Move cursor one character over in edit-area
    Delete: Remove the character under the cursor in the edit-area
    Backspace: Move back one character, deleting as you go
    Esc: Clear the edit-area

Menu-item keyboard equivalents

    ^X = Shift + X   cX = Control + X   /|\X = Alt + X
```

FEATURE
UTILITY ALL RESOLUTIONS

ST-Check

A checksum program for the ST

by Clayton Walnum

Typing in a BASIC program listing can be a frustrating and time-consuming task. Just one mistyped character will frequently render a program completely unusable. So to ensure that your program will run correctly, the entire listing must be checked character by character against the original. This can take many hours. To make matters worse, you can't trust your own eyes. Do you know how easy it is to overlook an O where a 0 is supposed to be?

Typing checkers like *ST-Check* take over the arduous task of proofreading your program files. Using this program can cut down your debugging time by a huge factor. When the checker's output matches that published with the listing, you can be sure your typing is accurate.

Introspection

When you run ST-Check against itself, you will get one of several results. The program may just give up and crash. In that case, go through the listing character by character until you find your typing error.

A second possibility is that the program will run okay, but will create all bad checksum data. This may indicate an error somewhere between Lines 80 and 420. Find the typo and correct it.

The last possibility is that the checksum data will have only a few bad values. In this case, use the normal method detailed below to locate your errors.

Warning: Until you get your checksum data for ST-Check to match the data following the listing, you can't trust it to proofread other programs.

Using ST-Check

When you finish typing a ST BASIC program listing from the magazine, save a copy to your disk, and then run ST-Check. The program will first ask for a filename. Type in the name for the program you wish checked (the one you just saved to the disk), and press RETURN. You'll then be asked for a "bug" name. Enter a filename for the checksum file (this can be any name not already on the disk), followed by RETURN.

ST-Check will now proofread the program. When the checking process is complete, you'll have a file on your disk (saved under your bug name) which contains the checksum data for the program checked.

Check the last value of each line. If it matches the value in the published checksum data, go on to the next. If it doesn't match, you've got a typo.

To find the error, look at the line number of the data statement in which the bad value occurred. This number is equivalent to the first program line the data evaluates. Let's call this "Line X." Count the entries in the data line until you get to the bad value. We'll call this count "Y." Now look at the program you typed in. Starting with and including Line X, count down Y lines. The line you end up on will be the one containing the typo.

Correct the error, and then rerun ST-Check. When you get all the checksum data to match that published in the magazine, your new program is ready to run.

Passing the buck

Okay, friends. Here's where the truth comes to the fore. I can take only minimal credit for ST-Check, as it's virtually a direct translation from D:CHECK2 (ANALOG #16) by Istvan Mohos and Tom Hudson. All accolades and tribute should be directed to those two fine gentlemen. I'm sure they'll divvy it up fairly, and perhaps pass a small share onto me. Thanks, guys!

You may now type in this month's ST BASIC program, secure in the knowledge that the searching eye of ST-Check is primed and ready.

ST-Check
Listing 1 — ST Basic

```
10 'ST CHECK typing validator by Clayt
on Walnum
20 'based on a program by Istvan Mohos
 and Tom Hudson
30 if peek(systab)=1 then cl=17 else c
l=32
40 fullw 2:clearw 2:gotoxy cl,0:? "ST
CHECK":ex=0:sp=0:x=0
50 input "Enter filename: ",f$:input "
Enter BUG name: ",f1$
60 on error goto 590:open "O",#1,f1$:o
pen "I",#2,f$:close #2
70 open "I",#2,f$:on x goto 140,220
80 color 2:?:? "Counting lines":lineco
unt=0:color 1
90 on error goto 570
100 line input#2,i$:linecount=linecoun
t+1
110 ? ".";:goto 100
120 close #2:q=int(linecount/10):dim c
(linecount),r(q)
130 x=1:goto 70
140 range=0:lyne=0:color 2:?:?:? "Fill
ing array":color 1
150 ? ".";:count=0
160 line input#2,i$:count=count+1
170 lyne=val(i$):r(range)=lyne:range=r
ange+1
180 on error goto 580
190 line input#2,i$:count=count+1:if c
ount=10 then 150
200 goto 190
210 close #2:x=2:goto 70
220 color 2:?:?:? "Calculating checksu
ms":color 1
240 for i=1 to linecount:checksum=0:li
ne input #2,i$:l=len(i$)
245 if mid$(i$,l,1)=" " then l=l-1:got
o 245
250 for z=1 to l:number=asc(mid$(i$,z,
1))
260 if number=asc(" ") and ex=0 and sp
=1 then goto 320
270 if number<>asc(" ") then sp=0 else
 sp=1
280 if number<>34 then 300
290 if ex=1 then ex=0 else ex=1
300 if ex=0 and number>=asc("a") and n
umber<=asc("z") then number=number-32
310 product=x*number:checksum=checksum
+product:x=x+1:if x=4 then x=1
320 next z:? ".";
330 checksum=checksum-1000*int(checksu
m/1000):c(i)=checksum:x=2:next i
340 close #2:lyne=r(0):item=0
350 color 2:?:?:? "Creating BUG file":
color 1
360 count=10:total=0:if linecount<10 t
hen count=linecount
370 i$=str$(lyne):i$=i$+" data "
380 for i=1 to count:datum=c(10*item+i
)
390 i$=i$+str$(datum):i$=i$+",":total=
total+datum:next i
400 i$=i$+str$(total):print #1,i$:? ".
";
410 item=item+1:linecount=linecount-10
:if linecount<1 then 430
420 lyne=r(item):goto 360
430 close #1:clearw 2:?:gotoxy 0,1
440 ? "To check BUG data against the c
hecksum data found in the magazine,"
450 ? "return to the GEM desktop and d
ouble click your BUG file.  You may"
460 ? "then SHOW the data on your scre
en or PRINT the data to your printer."
:?
470 ? "The line number of each data st
atement coincides with the first line"
480 ? "of the user program the data st
atement evaluates.  Numbers within"
490 ? "each data statement represent c
onsecutive lines of the user program."
500 ? "The last number is the total.":
?
510 ? "Check the last number of each s
tatement against the version in the"
520 ? "magazine.  Only when there's a
discrepancy need you check each number
"
530 ? "in the data statement.":?
540 ? "Take note of the lines containi
ng typos, then make corrections.  When
"
550 ? "all corrections have been made,
 rerun this program to double check."
560 ? "Press <RETURN>":input i$:close
#1:close #2:end
570 if err=62 then resume 120
580 if err=62 then resume 210
590 if err=53 then ? chr$(7);"FILE NOT
 FOUND!":close:resume 50
600 ? "ERROR #";err;" at LINE ";erl:en
d
```

ST-Check
Checksums

```
 10 data  447, 129, 203, 518, 661, 160
, 942, 482, 640, 556, 4738
 110 data  25, 905, 797, 52, 79, 349,
852, 644, 9, 402, 4114
 210 data  883, 479, 834, 822, 42, 498
, 255, 165, 826, 410, 5214
 310 data  337, 1, 166, 578, 136, 801,
 898, 937, 271, 769, 4894
 410 data  363, 99, 155, 889, 243, 764
, 168, 192, 906, 156, 3935
 510 data  757, 251, 146, 509, 146, 91
6, 539, 541, 733, 845, 5383
```

END

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CIRCLE #119 ON READER SERVICE CARD.

ST GOSSIP from Hollywood, USA

by TG

Flash! Atari laser printer emulators

Last month we reported that Atari had acquired the rights to a Postscript emulator for the SLM804 laser printer. This month we have even better news. Michtron has been quietly working on an Epson Driver for the laser printer and it's due out *now!* With GDOS, Epson and Postscript emulators now available for it, the Atari laser printer is becoming a very marketable product.

Laptop, laptop, laptop

You can make book on this: There will be a laptop ST before the first of the year! Several of my sources at Atari have confirmed that the LapTop ST has been moved up to No. 1 priority in the hearts and minds of the powers that be. The details are a little slim at this point but the fact that the LapTop is being developed on a very high priority basis is *firm.*

Best guess on the configuration for the system is one meg in a 1040 style case with a fold-down screen and all the standard ports. Where Atari is going to put the power supply is the problem right now, all the supplies that Atari has looked at are either too large or the wrong shape to fit where the present 1040 power supply is located. More to follow on this as the picture becomes clearer.

What's NeXT?

What's happened to the NeXT? It was less than a year ago that the computer market was waiting anxiously for the new Steve Jobs computer, the NeXT. Lately we haven't heard a word about it. This machine was scheduled to be a powerhouse with a high-resolution, 1280 x 640 RGB monitor, Postscript to both the screen and to print and four-meg of memory. A victim of the rising prices of chips?

At Atari, the LapTop ST has been moved up to No. 1 priority in the hearts and minds of the powers that be.

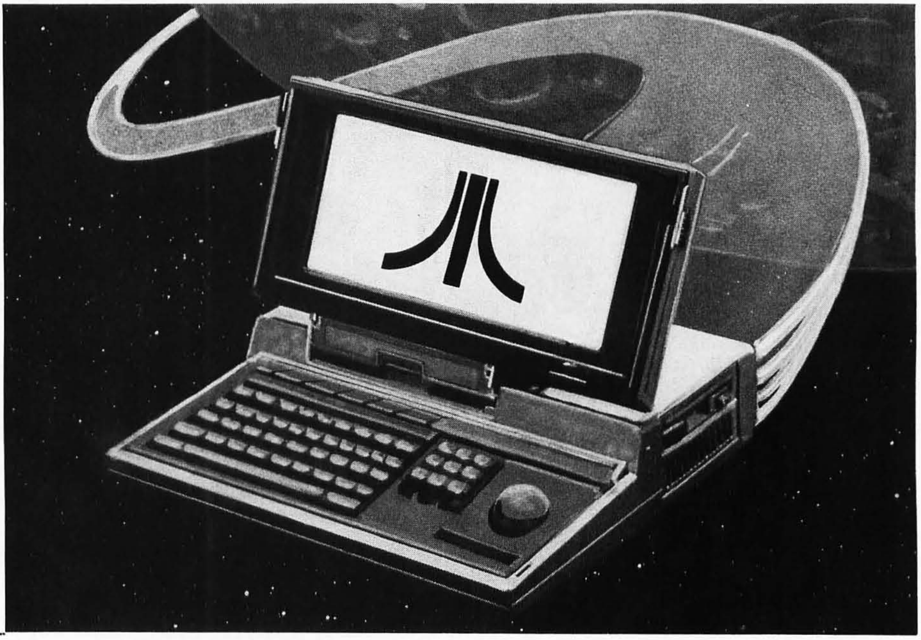

Illustration by Brent Watts

Its not true

That Atari is planning to drop the 520 and 1040 computers in favor of the Megas. It is true however that some redesign work is being done on the packaging of all of the Atari computers. In fact we would expect that the first thing to be dropped from the Atari line will be the SF354 single-sided drive.

It is true

That IBM has signed a deal with Walter (and that's the way it is) Cronkite to be a spokesman for their computers. Now as I understand it, Atari is talking with one of the lead characters from *Star Trek, The Next Generation.* Mr. Data as the new Atari Spokes (machine) person ?

Mecion, the british Super Mini, uses the same transputer chips as the ABAQ. We learned at a computer seminar this week that they will also be using the same new operating system, Heilos, that the ABAQ will be using. Early reports are that the operating system is shaping up to be *very* powerful and will find widespread use among the European computer community.

Have you seen the new Atari TV commercials yet? Wait, you will.

Word is that Atari is using Federated Stores as a test site for marketing plans and sales staff-training programs, that will show up in the dealer-sales plans later this year.

The transition is now complete, and there are no sources open to dealers for Atari Computers other than Atari itself. Cutting of the distributors was a painful and expensive step for Atari, but one that was necessary for them to maintain control of their products. They had promised dealers as far back as January 1986 that they would control mail-order sales to enable dealers to make a living margin on 1040s. Clearly they had not done this as of spring 1988, and dealers were dropping out as fast as new dealers were being added. Biting the bullet was necessary and, to their credit, Atari saw this and did it in spite of the howls from all sides (other than dealers). The results are beginning to show as the number of dealers rise again with fewer dropouts and many new dealers signing. Just as important, Atari now has profitable dealers to point to when signing up new dealers. See, you can make money selling the ST line of computers.

With GDOS, Epson and Postscript emulators now available for it, the Atari Laser printer is becoming a very marketable product.

8-bit revival?

Atari has been looking for some time now at a company that has designed a "Desktop" for the 8 bit line of Atari Computers. The product will be on the market, one way or another, but the expectation here is that Atari will be bundling it with new 130s in the near future. Loaded into a super cartridge, this graphics interface will allow the user to make selections with a mouse just as the current owners of Commodore can do with GEOS. Atari hopes that bundling this product will do as much for the 8-bits as it did for the Commodore 64.

Chip watch

This (as I'm writing this) is the 456th day of the memory chip shortage with hopes that it will change RSN (real soon now).

This year Atari will tell the masses that all those 65XE game systems they bought last year for Christmas are really computers. With thousands (well I guess there are still hundreds still being made) of titles available including things like word processing, spreadsheets, etc. What will they think of next? Smart dealers are loading up on disk drives and waiting for the rush.

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All submissions for publication, both program listings and text, should be provided in printed and magnetic form. Typed or printed copy of text is mandatory and should be in upper and lower case with double spacing. By submitting articles to **ST-LOG Magazine**, authors acknowledge that such materials, upon acceptance for publication, become the exclusive property of **ST-LOG Magazine**. If not accepted for publication, the articles and/or programs will remain the property of the author. If submissions are to be returned, please supply a self-addressed, stamped envelope. All submissions of any kind must be accompanied by the author's full address and telephone number.

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ST USER

by Arthur Leyenberger

I've said it before. The best user group newsletter in the United States is *Current Notes,* published by a consortium of user groups in the Washington, D.C. area. Although it is stretching the term to call this monthly tome a newsletter, it is nonetheless user written and published. Joe Waters, Frank Sommers and Len Poggiali continue to do an excellent job. (For a 1 year subscription, send $20 to Current Notes Inc., 122 N. Johnson Rd., Sterling, VA 22170.)

The April 1988 editorial written by Darek Mihocha piqued my interest. Titled "I Want TOS/2!! A Fantasy," this well-written piece expressed many of my own views about Atari, the ST product line and what is required for Atari to become a real (my words) computer company in the United States. Unfortunately, Darek makes some false assumptions at the start of his argument which precludes a logical avenue to his conclusion. First, a summary of Darek's arguments.

Foremost in Darek's editorial comment is the lack of true multitasking on the Atari ST. Not being able to run two or more programs simultaneously and easily switching from one to the other has prevented the STs from becoming the "powerful contenders in the PC marketplace" that they could have been. Further, even with the minor speed increases in GEM resulting from the addition of the long-awaited Blitter Chip, TOS is still too flawed and too slow to benefit from "Band-Aid" patches such as desk accessory switchers. Darek goes on to label the Mega STs as "not much more than slightly faster STs upgraded with four megabytes."

Next, Darek mentions the MS-DOS marketplace and how the software and hardware products have continually been updated, upgraded and otherwise improved. Specifically, since the introduction of the IBM PC, there has been the XT, AT, and now PS/2 machines from IBM. Other vendors have also kept pace with the new technology by replacing 8086 processors with 8088-2 versions running at faster speeds, replacing those with 80286 models, and even replacing those with the latest 80386 processors. This improvement in processing speed has occurred in the last few years. It's no secret that the clone manufacturers are making faster computers with more features and at lower prices.

I agree with everything discussed so far. I would further add that when the ST was first introduced three years ago, its speed, memory, graphics and price gave it virtually no competition in the marketplace. Unfortunately, an ST or even a Mega ST can barely compare with the latest 80286 AT clone with VGA graphics, multi-megabyte memory and other features in terms of processing speed or price. With the addition of the new, soon to be released OS/2 operating system for MS-DOS computers, the Atari machines are blown out of the water.

OS/2 is a true multitasking environment that allows multiple programs or even multiple versions of the same program to run simultaneously. It allows a text-based program to run at the same time as a window-based program. It also includes the necessary memory management, inter-process communication and resource management capabilities to accomplish its task efficiently and cleanly.

Darek makes the case for the creation of a new ST operating system he calls "TOS/2" and the use of the newer and faster 68020 processor. This new multitasking operating system would fix all of the bugs in TOS, offer faster system throughput and allow faster floppy and hard disk access. Further, Atari should offer an upgrade kit to existing ST owners to give them these capabilities.

Once again, I agree with Darek. It's time that Atari updated the ST with an improved OS among other things and make the ST (ST2) competitive again. However, I disagree with Darek's use of IBM as an analogy for Atari. (True, IBM has worked with companies such as Microsoft, Lotus, and even single developers, and listened to their suggestions when they were creating each of their new products.)

It's clear by now that Atari does not do that. Atari is a very closed company, and it seems that only the Tramiel family themselves have any impact on future products. From the outside, it looks like the Tramiel family is interested primarily in what I call "deal making." The small staff spend most of their time bargaining with suppliers, negotiating with software developers for cheap rights to their products and generally pushing machines out the door regardless of the long-term impact of their actions.

I cannot blame Atari for wanting to make a product at the lowest cost and maximum profit. That is what business is all about. However, the lack of a significant follow-up product to the ST may hurt Atari in the long run, as will the absence of an upgrade path for existing ST owners. The person who bought an ST when it first appeared has to go to the outside for a memory upgrade and cannot obtain the new ROMs (which still don't correct all the bugs) or the blitter chip for their machine. Atari originally promised that they would support their products for existing owners.

When will we see the ST in corporate America as Atari has been promising for three years?

Another apparent problem is Atari's neglect of the U.S. market. When will we see some advertising for the ST? When will we see the ST in corporate America as Atari has been promising for three years? It is understandable for Atari to focus on the European market where they are doing very well and where the foreign currency means more to the income statement than U.S. dollars, but what about us?

In Darek Mihocha's editorial he was on target as far as what is needed for Atari to stay (become?) competitive. It is not clear whether or not Atari will take these actions. Those of us who have been supporting and still support Atari hope that the Tramiel family does indeed have a grand plan that we are perhaps unaware of. If they don't, the future may not be bright at all.

Software Advertising

Here is a clever idea. For the past several months, there have been these drop-in cards from Buick in *PC Magazine* and a few others. I call them "drop-in" cards because when you open up the magazine, they drop in your lap. Anyway, the card proclaims "Road Test A Buick In Your Home."

The deal is that you answer a few questions on the card, such as the year and make of your current vehicle and whether you have a Macintosh or an IBM PC. Once you mail it in, Buick will send you a free copy of their "Dimension" program to run on your computer. What we are talking about here is electronic advertising. A taste of the future where your computer is the gateway to a host of information services.

I sent in the card and in about four weeks I received a package from Buick containing a 1988 Buick brochure, a certificate for $100 off any Buick product I cared to purchase and a 2-disk program set called the "Great American Road Test." The program can be run with either two floppy-disk drives or a hard disk and requires that your PC have CGA (Color Graphics Adapter) graphics capability.

Upon starting the program, a brief animation of a car zooming down a desert highway appears. Next comes a graphics image of a Buick Reatta, a three color Buick Logo animation, a quick cut to a Buick commercial (I thought the whole thing *was* a commercial) and finally a screen telling you that this computerized ad will give you information on 20 automobiles, their specifications, standard features and (my favorite expression) much, much more.

The entire program is menu-based, so it is easy to use. Two alternative paths can be taken through the program—take an in-depth look at the new Buick Reatta or browse through the 20 or so Buick models. If you choose the "1988 Buick Line" you are presented with nine cars on the screen from which you select the one you are interested in. That particular car is shown on the screen followed by an on-screen index card describing the main features of the model and then another menu of the particular versions of that model.

The nitty-gritty information on the vehicle consists of model specifications, optional packages, comparisons with other car manufacturer's products, sticker price and purchase plan. For example, choosing the Buick Regal from the main car list allowed me to pick from the Regal Custom, Regal Ltd. and Regal with appearance package. When I asked for the sticker, I was given the option of printing it as well as reading it on the screen.

I was curious to see the comparison option. The Buick Regal with appearance package was compared to a Chrysler LeBaron, Ford T-Bird, and Mercury Cougar LS. I was surprised with the completeness of the comparison. Standard features, options, list prices and specifications were all displayed.

Since the Buick Reatta is Buick's hot new car for 1988, it had a menu option all to itself. Choosing it allowed me to inquire about the car's performance, handling, comfort and style. The "performance" option presented an index card with a brief list of the vehicles specs followed by a picture of the engine sideways, head-on and its internal workings. Then came an index card discussing each of the engine's features—balance shaft, sequential fuel injection, and Bosch fuel injectors.

Overall, this computerized advertisement was well done. The information on each of the cars was complete, and I thought the comparisons with the competition were generally correct (that is, which cars were direct competition with the particular Buick vehicle). My only criticism was the minimal animation and lack of color. Animation may not have helped explain the features of these Buicks, but it sure would have livened it up somewhat. I understand that with so many different computer brands, graphics cards, etc., it would be difficult to have super animation that would run on everyone's computer.

The Buick Great American Road Test was created and produced by the SoftAd Group in Sausalito, California. I understand they are in the process of producing other computerized advertisements. It is an interesting concept that, in the case of cars, should prove worthwhile. Someone shopping for a Buick can at least get product information in the comfort of their own homes before they visit the showroom. Best of all, getting the information from the computerized Buick ad was a lot more fun than getting it from most car salesman that I have known.

CD-ROM Update

Ever since Atari's announcement two years ago of an affordable CD-ROM (Compact Disk—Read Only Memory) player, many Atari users have been waiting patiently and watching the CD-ROM industry come of age. As mentioned in the April column, CD-ROM players and a handful of application titles are currently available for the IBM PC and PC clones.

Techno soothsayers predict that CD-ROM will become the electronic medium for distributing masses of information.

For the last several years, Microsoft has been the champion of the fledgling CD-ROM industry by sponsoring an annual conference on the subject, publishing technical standards and reference works, and producing an innovative CD-ROM application with a collection of reference works that would be useful to anyone who does a lot of writing (Microsoft Bookshelf).

Slowly other major players in the industry are rallying around the CD-ROM movement. It seems clear that CD-ROM players may soon be as common as 5-1/4-inch floppy disk drives. One reason for this approaching ubiquity is Tandy Corporation's decision to sell the Hitachi CD-ROM drive at its more than 7000 Radio Shack stores. This is the same drive that Amdek sells for a list price of $895 and is bundled together with Microsoft's Bookshelf package.

Another signal that CD-ROM is ready to enter the consumer marketplace is the adoption of CD-ROM file standards. Until now, almost every application required its own search software. By establishing a standard file structure for a database, just about any software will work with all applications. This should result in improved, easy to use and faster search software. This and other critical issues in software standards had to be addressed before a mass market could develop for CD-ROM applications.

Other news in the CD-ROM industry includes Lotus Development (makers of 1-2-3 spreadsheet program) producing CD-ROM financial databases, Apple producing a CD-ROM drive for their machines, several companies producing hardware and software to use CD-ROMs over local area networks (LAN) and the falling price of producing CDs. These days several different vendors will make you a CD-ROM master for under $2000 and produce 200 CDs for about the same price.

CD-ROM Breakthrough

Many technology soothsayers predict that CD-ROM will eventually become the standard electronic medium for distributing large amounts of information. However, one drawback that has plagued this technology is the inability to change the contents of a CD-ROM disk once it has been created (remember, ROM stands for Read Only Memory). Tandy has recently announced that they have developed a compact disk system that allows data to be stored, erased and stored again much like with a floppy disk or audio tape.

Tandy calls this CD storage system CD-THOR and expects to have it available by 1990. The system would sell for about $500 and be marketed through the familiar Radio Shack stores. According to Tandy, any digital data such as music, video, or computer data could be stored on this medium. If this system were mass marketed at such a low price, it could compete with DAT (Digital Audio Tape) recorders which will continue to be rather expensive for the next couple of years.

Tandy emphasizes that digitized music recorded on the new media will be compatible with existing CD audio players. Having a system that allows perfect copies of audio compact disks to be made is likely to further upset the recording industry. As you may know, the introduction of DAT into the United States has been stalled by vocal opposition from the recording industry who claim that the sale of DAT recorders will result in rampant piracy of compact disks.

Tandy has not yet disclosed the technical details of CD-THOR but it is believed that it is based on the ability of a laser to write and erase microscopic pits in the dye-polymer to represent bits of data. This dye-polymer material is embedded in the CD substrate just like current audio CDs. To write information, the laser creates a dimple (logical one) by heat. To erase information, the laser smoothes out the dimple (logical zero). The company has said that they have been able to write and erase data from a disk 40 times although they are uncertain what the limits may be.

Critics claim that Tandy does not have the technical wherewithal to fully develop and introduce such an optical storage system. Further, they also claim that Tandy is being overly optimistic with both the target introduction price and the availability date.

Regardless of whether Tandy can or cannot develop the technology or deliver it "on time," erasable optical data storage technology is in our future. It will surely become available sometime within the next decade and is certain to change our lives. It will affect computer use as a storage medium, someday replacing floppy disks, and it will affect our leisure activities by becoming the recording/playback medium for music.

One cannot help but be excited about the future that technology will continue to bring us. See you next month.

Arthur Leyenberger is a human factors psychologist and freelance writer living in New Jersey. He has written over 100 articles about computers in the last five years and continues to be an Atari enthusiast. When not computing he enjoys playing with robotic toys.

IAN'S QUEST

by Ian Chadwick

I was rather surprised to receive several letters asking about a comment I made way back when, about using my Toshiba T1100+ laptop and my Atari ST together. Let me clarify it, for all those who asked.

Any IBM PC or compatible with a 3.5-inch drive can format a disk that the ST can read from and write to. The PC can also read and write to it, so they can both use it to share files. However, unless you have a special program to do it, many PCs cannot write single-sided (360K) floppies in a 3.5-inch drive. My Toshiba can do it, but not my AT clone.

The ST cannot normally write to a disk readable by the PC unless you use a program that writes the correct boot sector to conform to the MS-DOS standard. One example is the excellent *DC Formatter,* a public-domain utility from Double Click Software. Others are available on most bulletin boards. This process does not alter the disk in any way so as to make it unusable by the ST—it simply allows both systems to use it.

You *can* write 360K floppies on the ST and write the MS-DOS boot sector for the PC to read. The PC seems quite tolerant about reading from and writing to the single-sided disks, even if it won't format them. The PC is less fault-tolerant than the ST; so I recommend that, if possible, you format your disks in the PC, rather than the ST.

However, there is a caveat. You *must* write the MS-DOS boot sector *before* you write any files to the disk—immediately after format is the best time. One of the things the boot sector establishes is which sector(s) holds the directory table. On the ST, sector 11 is the norm, but on the PC it's sector 07. If you write the boot sector after you've copied files to the disk, you can't read them on either machine! I haven't found a "restore" utility which changes a disk back to ST format yet.

Another caveat is to beware of "twister" and other fancy formatting techniques on the ST. I've had problems using these disks between systems, so stick to the standard single- or double-sided formats and you won't have any problems.

Data files (straight text or ASCII) and any software-compatible files (e.g., Word Perfect) can then be transferred between machines and used by programs. Of course, program files can't be used at all, since they're written for different processors. However, it means you can buy a cheap XT clone with a 40mb hard drive and use it to store all of your ST software for about the same price as a dedicated ST hard disk!

Which brings up another issue: I have a Supra 20mb hard disk—an early model, not one of their slim-line versions. I have trouble with it. When it's cold or has not been used in a while, it stubbornly refuses to boot right away. I have to turn it and the computer on and off several times, and usually let it run a long while before it "catches" and boots. This can take as long as 15 minutes; no small wait.

This problem has been with me for a long time—ever since I've owned it—and remains despite updates to my boot program. I'm not sure I have the latest boot. I once asked Supra about the problem via CompuServe, but I got a less than satisfactory answer. The problem remains, and I am less than happy with my drive's performance. I have considered upgrading to 40mb or even 60mb, but my experience with this drive discourages me from pursuing Supra's line further. I'd appreciate any advice from readers about this and other hard-drive issues.

I just received Firebird's *Universal Military Simulator* (UMS) and have spent considerable time with it. Anyone who knows me is aware of my penchant for military games and history. For years I wrote a column about computer war games for the largest military history/game magazine. My library is full of military reference books. My board-war-gaming friends, like me, have little time for long, drawn-out games; so I always look forward to a new war game for my computer.

From the advertisements, I expected something truly amazing. It promised to be a design kit with which the user could create any historical battle. For we grognards, this is a ticket to the promised land. Alas, promises made are not always kept.

The ST cannot normally write to a disk readable by the PC unless you use a program that writes the correct boot sector to conform to the MS-DOS standard. One example is the excellent *DC Formatter*, a public-domain utility from Double Click Software.

SSI released *Wargame Construction Set (WCS)* last year, a game designed along similar lines, in which the user can create his own armies and battlefields. WCS is quite a good package, albeit limited because it allows far too few units on a side to truly simulate a lot of historical battles and has a somewhat limited range of terrain types—probably the result of too close adherence to the 8-bit versions in the translation. It does, however, allow a spectrum of unit types, including helicopters, infantry, tanks, cavalry and boats. WCS plays wells and aside from the limitations, it's a good, enjoyable package. It makes good use of color and the mouse; it has sound effects, interesting screen graphics and reasonably intelligent algorithms to handle things like combat, spotting and the aggressive nature of the computer-controlled opponent.

UMS, on the other hand, is even more limited, to the point of ridiculousness. A maximum of 24 units is allowed on a side: 18 regulars, six "wildcards." That rules out a lot of battles right there: Too many compromises have to be made to fit an actual order of battle into 24 units. In the Waterloo scenario, in order to fit the battle into the unit restrictions, historical units are simply ignored, and artillery is lumped into corps units. The entire Prussian army is gone, along with Grouchy's corps!

None of the units on-screen look like anything military: They appear as black and white signposts with an abbreviated name and a unit symbol. So much for historical color.

Terrain is worse. There are only clear and woods squares. Clear can be given four height levels: depression, flat, hill and ridge. That's it. You might think you were fighting on the moon! Woods are simply green squares. They don't look anything at all like woods. The effects of these limited types of terrain on combat are only discussed in passing, in the documentation.

The playing area map is a lifeless grid work without even the slightest visual appeal. It doesn't even pretend to simulate real terrain, merely abstracts it. The back of the package announces: "You no longer have to settle for inferior graphics . . ." I'd be pleased if they were as good as inferior!

Towns, villages and landmarks can be

added, but aside from visual clutter, they have no effect on play. The chateaux and farms at Waterloo, so bitterly contested, are nothing in UMS. Worse perhaps, there is no provision for water: no rivers, seas, shorelines. Battles like Marengo, Austerlitz, Saipan, Stalingrad, Wavre and a thousand others which were fought around or near water and which played so critical a role in the action can't be simulated. Most of the predesigned scenarios in the package were also fought around water—for example, the Smohain river that restricted Napoleon's right wing, Rock Creek that runs east of Gettysburg.

The combat results provide interesting, if not very amusing and unpredictable results. I've had crack units—advancing heavy infantry, good morale, 2,000 strong—beaten by 500 retreating infantry with poor morale, my division taking 1000 + casualties while handing out only 100 themselves! Artillery is considerably over-gunned, at least in the Waterloo scenario. A single unit (I Corps, 46 guns) can cause 500 + casualties in a single ten-minute phase. A trifle historical? This happens a bit too often to be considered a unique event.

Unit speeds are another curiosity. Heavy infantry, they say, march at 12.5 mph. (British army marching pace is only 4 mph!) Artillery move at 18.5 mph. (No time is required to limber and unlimber the guns!) By this I gather they assume all artillery is horse artillery; a sad mistake since they weren't. Cavalry also travels at 18.5 mph, only 50% faster than the infantry (and a lot slower than charge speed!) and no faster then the heavily encumbered artillery. I guess they came by these figures by lottery; there's no reason for them otherwise.

In combat, units retreat in any direction. They don't logically fall back towards their supply source. They don't run pell-mell away from the advancing enemy, even when they have room to do so. Instead, the appear to move randomly, often into enemy units, sometimes causing severe casualties as they retreat. Just plain nonsense.

The scenario booklet suggests that the human take Wellington's army and force the computer Napoleon to attack to show how weak the Emperor's position was. Well, I made the computer take the Duke's forces instead, but I let the computer decide all the strategy. It drove the troops out of the positions and headlong into my French army. As a result, it was soundly defeated. Why couldn't the computer recognize its superior position? Not a very intelligent routine, I'd say.

There is no level for army morale to break. Armies don't fight to the last man. They break, they rout, they collapse at a certain point when the overall morale breaks. In UMS, they fight to the last. *Crazy.*

The UMS order of battle for Waterloo in the scenario booklet is based on sources at least 90 years old, and the numbers disagree with modern sources such as Chandler and Bowden. It contains basic mistakes such as splitting the Young Guard into 1st & 3rd Tirailleurs and 1st & 3rd Voltigeurs and assigning their leadership to Duhesme (misspelled "Duheame"), the division commander and his second, Barrois. In actuality the 1st Tirailleurs and 1st Voltigeurs were together under Chartrand and the 3rd Tirailleurs and 3rd Voltigeurs were together under Guye. Finally, the 21st Division (VI Corps) under General Teste, 4,000 men, is missing. This sort of mistake is very irritating, especially to a history buff.

There is no level for army morale to break. Armies don't fight to the last man. They break, they rout, they collapse at a certain point when the overall morale breaks. In UMS, they fight to the last. *Crazy.*

And there are more problems. I can't get the program to work if any desk accessories are installed (therefore it won't work with my hard disk since it loads several accessories). There is an annoying double redraw of many screens. There's no undo option. There's no hands-off automatic mode (computer vs. computer); you have to manually press N for "next phase" all the time. There is no grid numbering system for the map, so it's easy to misplace terrain and units when trying to create a scenario. From what I can fathom, moving diagonally costs the same in movement points as moving the same number of squares orthogonally, ignoring basic lessons of geometry. You can create "wildcard" units but their effect and purpose are unexplained. Then again, the rule book explains very little else, so why worry about one more detail?

I wish the designers had bothered to read some of the books on the topic, such as Dupuy's *Numbers, Prediction and War* or Rothenberg's *The Art of Warfare in the Age of Napoleon*, Keagan's *Face of Battle*. UMS's designers showed no insight into the mechanics of battle at all.

My sneaking suspicion is that UMS was translated exactly as is from the C64 version, complete with errors, nagging limitations, ugly graphics and lousy history. SSI, in translating WCS, made some allowances for the ST. Firebird did not. Whatever strengths this program has (and it does have a few) are drowned by the deluge of weaknesses. Back to the drawing board folks: We expect a *lot* better from you than rehashed C64 programs! UMS goes back onto the shelf, at the bottom of the heap.

Remember *Max Think? Hippo Concept?* I do. They were outline processors, like *Think Tank* and *Ready* for the Mac/PC. They obviously didn't make much of a splash, because I haven't seen Max around for at least a year and Hippo went the way of the Anthracotherio idea (the ancestral artiodactyls). Too bad. I liked Concept even more than Max, especially since it created an ASCII file I could edit with a word processor.

I like outline processors. I use Ready all the time on my PC and have just found a PD version called *PCO*. They provide a unique approach to data organization, a tree structure that can't be recreated easily in a word processor. I'm using one to keep achronological record of battles of the Napoleonic Wars. For this sort of database, an outline is extremely well suited; you can see the overview, zoom in on any detail, open whole sections and explore. You're not limited to fields and other vertebrate structures.

This little blurb is by way of asking for any information about existing (surviving?) ST outliners. I'd like to transfer some more of my PC data over to my ST. Send your cards and letters. . . .

Pretentious? Moi?

Editorial constraints (not to mention the threat of lawsuit) prevent me from putting into print my more rabid attacks on such areas of interest as mediocre software development, Atari's weak support of the ST, lukewarm media response, the competition, and other tender areas. So instead of putting my thoughts in print, I'm going to publish them on DELPHI, in the ST SIG area. Free-wheeling personal opinion and point of view only, not necessarily the editorial viewpoint of this magazine, not for reprint. Responses welcome. Watch for it on DELPHI.

Ian Chadwick is a Toronto-based technical writer. He lives with his wife, Susan, their cats, dog, computers, guitars, war games, homemade wine and beer and 10,000 books in a somewhat too small house. His current pastimes are designing a simulation of Napoleon's campaigns and gardening.

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C-

Here we are, back again after a month's respite (did you miss me?), and I think that this time around we'll tackle a subject that we've managed to avoid these last 2½ years—the Atari ST's real-time clock.

Actually, "avoid" probably isn't a good word to use here, since reading and setting the ST's clock is really not very hard. You just need to become proficient with handling data in a bitwise fashion rather than as words or bytes. And as we'll soon see, attaining those skills will not require an inordinate amount of effort, and what you'll learn will be a valuable addition to your future C programming projects.

But first you should get this month's sample program up and running, and that involves a little more work than usual. You're going to need to create the dialog box shown in Figure 1. There are two ways you can do this. The first is to type in Listing 3 with ST BASIC (make sure you check your typing with ST Check), and then run it. The program will create the necessary resource file for you. The other way to produce the dialog box is to use a resource construction program to create it for yourself. It's a fairly simple dialog box, so this should be an easy task.

The dialog contains only four objects—the editable text fields showing the time and date and the two exit buttons—but they must be created and named carefully. The dialog box itself is named DATEDIAL. The OK button is named OKBUTN and is simply a shadowed, exit button. The CANCEL button is named CANBUTN and is also a shadowed, exit button, but it is set as the default. The "Time" field is an unboxed, editable text string that is named TIMEFLD. Its ptmplt, pvalid and ptext strings, shown in order, are:

```
Time: __:__:__ __
999999AA
000000AM
```

The "Date" field is also an unboxed, editable text field. It's named DATEFLD, and its ptmplt, pvalid and ptext strings, also in their respective order, are:

```
Date: __/__/__
999999
000000
```

That's all you need to know to reproduce the dialog box shown in Figure 1 (except that you must name the .RSC file DATE.RSC). If all of this sounds confusing to you, either review the C-manship columns on dialog boxes (Issues 13 and 14) or use Listing 3 to create your resource file.

Now that you've created your resource file, you may type in Listing 1 and compile it. If you used the ST BASIC program to create your resource file, you must also type in Listing 2 before you try to compile the program. Save this listing to disk as DATE.H.

Now run the program. If you've got the resource file in the same directory as the program, you'll see the dialog box shown in Figure 1. (If you're missing your resource file, the program will warn you, and then return to the Desktop.) The time and date shown in the dialog box are the current settings of your system clock. If you'd like to reset the clock, just edit the time and date strings and click on the OK button. If the strings you've entered are valid, the program will reset your system's clock and return to the Desktop. Otherwise you'll receive an error alert box, and you'll have to re-enter the information.

If you're satisfied with the time as it is, click on the CANCEL button or simply press RETURN.

Computer dating

Let's take a look at Listing 2 and see what's going on here. You should already be familiar with most of what we're doing in this program. For instance, we long ago discussed how to load a resource file and get a dialog box up on the screen. In case you've gotten a little rusty over the last few months, the program listing is commented so that you should be able to see what's being done.

Take a look at the function *get__date( )*. It's here that we retrieve the system date from the computer's clock and convert it into a form that we can use in our dialog box. First we get the time with the call

```
date = Tgetdate ();
```

where date is an integer. The function *Tgetdate()* is defined in your osbind.h file as gemdos(0x2a) and returns all the information we need to figure out the current date. Piece of cake, right? Not quite. If your noodle is active today, you'll remember that our dialog box displays the date by month, day and year. However, the *Tgetdate()* call yielded us only one value. See a problem here?

To simplify the process of storing and passing the system date, the people who designed your ST's operating system decided to cram all the information we need to extract the current month, day and year into a single integer; and if you're *really* on the ball today, you'll realize that that means we're going to have to finagle some bits to separate the information we want from the information we don't care about.

The system time returned from the *Tgetdate()* function is formatted in the following manner. Bits 0 to 4 (counting from right to left, remember) contain the day, bits 5 to 8 contain the month, and bits 9 to 15 contain the year since 1980, or, in other words, the current year minus 1980. Figure 2 illustrates this format. What we have to do is figure out a way to extract the day, month and year from the entire integer. Thank heavens for bitwise operations!

A bit about bits

The C programming language supplies us with five operators to manipulate the bits that make up a piece of data. Some of them you've seen before; a couple of them are new to you. Those operators are:

```
&  Bitwise AND
^  Bitwise exclusive OR
|  Bitwise inclusive OR
<< Left shift
>> Right shift
```

-MANSHIP

BY CLAYTON WALNUM

We've already had experience with the bitwise AND and bitwise inclusive OR operators. The AND operator compares the bits of two values and places into the result a 1 in any position where both bits of the compared values are set and a 0 in every other case. This allows us to "mask" out the bits in a value that we're not interested in. We create a mask by setting the bits of the mask that correspond to the bits we wish to extract from the value of interest. Every other bit is turned off.

Let's say we wanted to get the value of the low byte of a word. We would create a mask that looked like this:

Suppose the value we want to extract information from is called *number* and the binary value that *number* contains is 0010110101100110. The calculation would look like this:

```
0010110101100110 number
0000000011111111 Mask
----------------
0000000001100110 Result
```

As you can see, the result contains only the bit values we wanted to retain. In a C program the above calculation would be written as:

```
result=number&0x00ff
```

The inclusive OR operator is almost the opposite of the AND operator. Rather than extracting portions of a value, it lets us insert them. When you inclusive OR two values together, the result will have a bit set wherever there was a bit set in either one or both of the compared values. Let's say we wanted to merge the values contained in two variables called *var1* and *var2*. The binary value contained in *var1* is 0000000010101011, and the binary value contained in *var2* is 1101101100000000. The inclusive OR operation looks like this:

```
0000000010101011 num1
1101101100000000 num2
----------------
1101101110101011 Result
```

You can see from the result that we've combined the low byte of *num1* with the high byte of *num2*. There's one important thing you must be aware of, though. This combining of values will work only when the positions that will hold the merged value all contain zeroes. In other words, we would not get the proper result in the above operation if the high byte of *num1* was not cleared:

```
1111111110101011 num1
1101101100000000 num2
----------------
1111111110101011 Result
```

The same problem would crop up if the low byte of *num2* hadn't been cleared.

A bitwise exclusive OR is similar except that the result will contain a 1 only in those positions where either one or the other bit is set. If both bits are set or both bits are cleared, the result will be a 0.

The left-shift operator causes the bits in the first operand to be shifted to the left the number of times indicated by the second operand. The right-hand, emptied bits will be filled with zeroes. For instance, let's take a variable named *num* that contains the binary value 1011010110101101. If we were to perform the operation *num<<5*, the result would be 1011010110100000.

The right-shift operator works much the same way, except that the emptied left-hand bits may or may not be zero-filled, depending on the machine and data type you're using. The rule is if the data type is unsigned, you are guaranteed to get a zero fill; otherwise, the left-hand bits may (depending on the machine) be filled with the value of the sign bit (the most significant bit).

But what about the date?

So here we are, finally back to the original problem of extracting the day, month and year from the single integer returned from the *Tgetdate()* call. Think about it for a minute. Have you got it figured out yet? No?

Let me explain then. The information we need for the day is contained in bits 0 through 4, right? So, what we need to do is mask out bits 5 through 15. Then our result will contain only the value stored in the lower five bits—and that value is the current day. (Of course, whether or not this value matches your wall calendar depends on whether your system clock has been set properly.) Let's say the value returned from *Tgetdate()* is the one shown in Figure2. Figure 3a then illustrates the operations involved in extracting the day.

We first create a mask we can AND with our integer—a mask that will ensure that bits 5 through 15 in our result will be clear, while at the same time maintaining the values of the lower five bits. The proper mask is 0000000000011111 in binary or 0x001f in hexadecimal. (Note that it's much easier to create your mask in binary first then convert it to hexadecimal. That way you can easily see which bits you're setting.) Then all we have to do is AND the system date with our mask. In Listing 1, the line that accomplishes this feat looks like this:

```
day = date & 0x001f;
```

Say! That was pretty easy, wasn't it.

The next step is to get the month, but we run into a complication right away. If we were to just AND out the bits we weren't interested in, we'd end up with the value 0000000101100000 which translates to a decimal value of 352. Ouch! When's the last time you saw a month numbered 352 on your calendar? To get the value we really want, we have to move the four bits we're interested in to the right five places. Sounds to me like a good job for the right-shift operator to handle.

But let's perform the shifting first and then mask out the unnecessary bits. That way we make sure we don't get any garbage in the upper bits as a result of the shift operation. Theoretically, it would work either way, since our sign bit will be a zero. But I learned a long time ago that, when it comes to computers, you can only trust what you're certain of. And I'm *certain* that if I do the AND operation last, I'll have the result I'm looking for. In Listing 1, the line that gets us our month looks like this:

```
mnth = (date >> 5)
       & 0x000f;
```

These operations are illustrated in Figure 3b.

Finally, to get the year, we have to do the same operation, only we'll be shifting the bits down nine places instead of five, and we'll be using a different mask because we're interested in a different number of bits. Figure 3c illustrates this operation, and the equivalent line in Listing 1 looks like this:

```
year = ((date >> 9)
   & 0x007f) + 80;
```

Although Figure 3c doesn't show it, we have to remember to add 80 to the result because, as I mentioned before, the year returned from the *Tgetdate()* call is the year since 1980.

Some timely information

Now let's look at the function *Get_time()* in Listing 1. We get the system time with the call

```
time = Tgettime ();
```

where *time* is an integer. Bits 0 through 4 of this value will contain the seconds divided by two, bits 5 through 10 will contain the minutes, and bits 11 through 15 will contain the hour. We can extract this information in the same way we calculated the date—by shifting the bits we're interested in all the way to the right, and then using a mask and the AND operation to clear the bits we're not interested in.

I don't think we need to go into a lot of detail here, but there is one thing I want to mention—something that we didn't have to deal with when we calculated the date. The value for the hour portion of the system time is in 24-hour format; that is, it'll be a value from 0 to 23. Values from 0 to 11 represent the hours of midnight to 11 a.m., and the values from 12 to 23 represent the hours from noon to 11 p.m. To make the time more readable to the user, our function *get_time()* does some converting so that the time will be displayed in the manner we're most used to seeing it. (Of course, if you're in the military, you may not approve of this conversion!)

Also, keep in mind that the value for the seconds is the number of seconds divided by two. This means that you must multiply times two the value for the seconds returned by the *Tgettime()* function. This also means that your ST's clock is only accurate to the nearest even second.

Setting the time and date

Setting the system's time and date requires only that we reverse the process we used to get the time and date. Instead of using an AND operation, we'll be using the inclusive OR, and instead of shifting bits to the right, we'll be shifting them to the left.

In Listing 1, the function *set_date()* handles both the setting of the time and the setting of the date. To set the time, we use the call

```
Tsettime ( time );
```

where the integer *time* uses the same bit format we studied when we discussed the *Tgettime()* call. To set the date, we use the call

```
Tsetdate ( date );
```

where the integer *date* uses the same bit format we learned about when we discussed the *Tgetdate()* call. These functions are defined in your osbind.h file.

Let's take just a quick look at how we prepare the integers for these calls, and let's use *time* as our example this time around. Suppose the time we wanted to set the system clock to was 14:36:34 (that's 2:36 p.m. for those of you who could never get the hang of a 24-hour clock). Setting the seconds is easy:

```
time = seconds;
```

Here, *seconds* is equal to 17. (Remember that the number of seconds must be divided by two; that's the only way the designers of the operating system could get the system time to fit into an integer.) Now *time* contains the binary value 0000000000010001, which equals 17 in decimal. Our value for *minutes* is 36, which is 0000000000100100 in binary. We have to move this information up into bits 5 through 10. The operation

```
minutes=minutes<<5
```

gives us a result of 0000010010000000 which is exactly what we want.

Now we have to combine the seconds (the value of which is already stored in *time*) with the minutes. The operation

```
time = time | minutes
```

does the trick handily. On a binary level that operation looks like this:

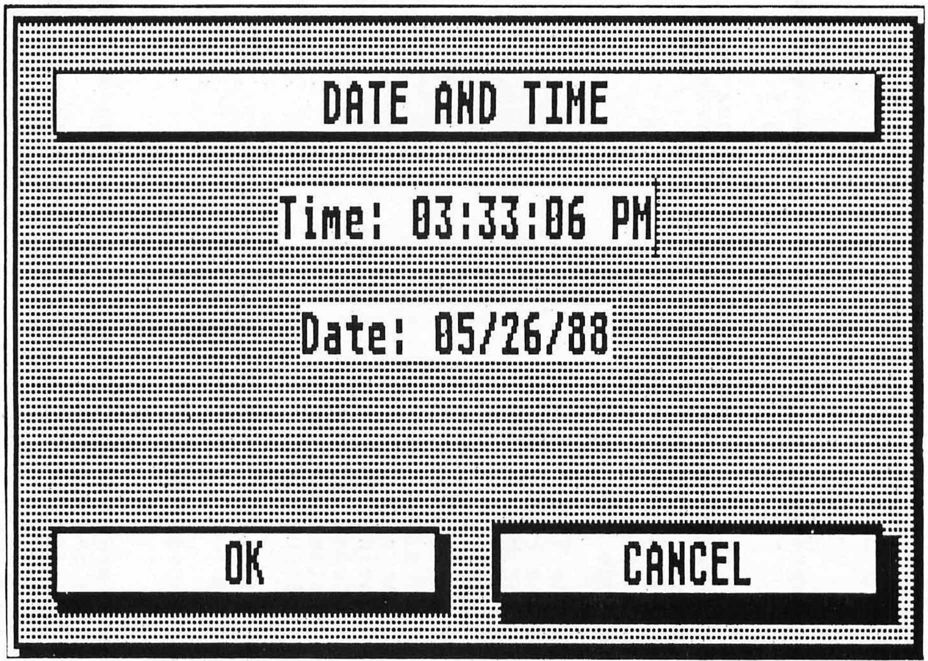
```
0000000000010001 Seconds
0000010010000000 Minutes
----------------
0000010010010001 Time
```

To add the hours, we do the same sort of operation, only we'll be shifting the value for *hours* 11 places to the left. I might also add that it doesn't matter in what order we store the seconds, minutes and hours, as long as we follow the general procedure outlined above. If you look at Listing 1, you'll see that I started with the hours instead of the seconds.

All ashore who's going ashore

That about covers it. As you peruse this month's program, you may come across a couple of functions that aren't familiar to you. If so, just look them up in your manual. There's nothing complicated with any of them, and you should be easily able to figure out how everything in the sample program works.

figure 1



DATE AND TIME

Time: 03:33:06 PM

Date: 05/26/88

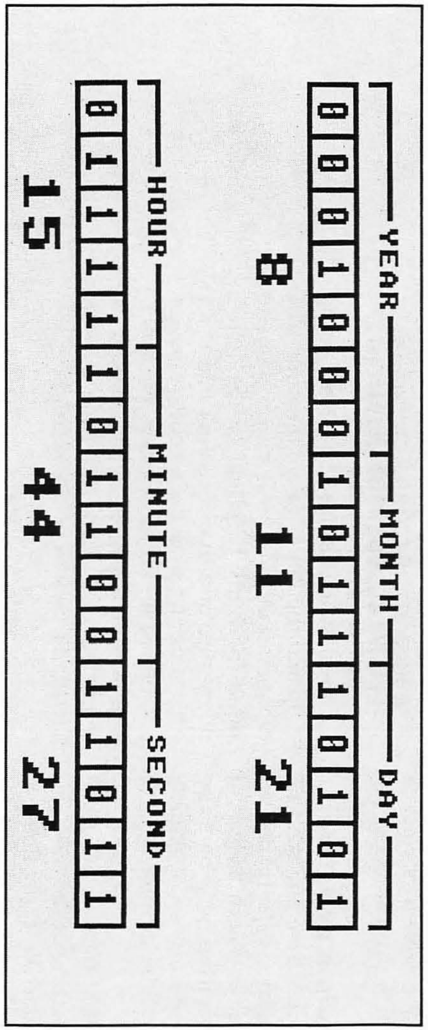

YEAR
MONTH
DAY
0 0 0 1 0 0 0 1 0 1 1 1 0 1 0 1
8
11
21
HOUR
MINUTE
SECOND
0 1 1 1 1 1 0 1 1 0 0 1 1 0 1 1
15
44
27

figure 2

C-Manship
Listing 1 — C

```
/*******************************************************/
/*                 C-manship, Listing 1                */
/*                      ST-Log #23                     */
/*               Developed with Megamax C              */
/*******************************************************/
#include <osbind.h>
#include <gemdefs.h>
#include <obdefs.h>
#include "date.h"

#define TRUE   1
#define FALSE  0
#define MATCH  0

/* GEM arrays */
int work_in[11],
    work_out[57],
    contrl[12],
    intin[128],
    ptsin[128],
    intout[128],
    ptsout[128];

int handle,   /* Application handle. */
    dum;      /* Dummy storage.      */

char *get_tedinfo ();


/****************************************************
* Main program.
****************************************************/
main ()
{
   appl_init ();              /* Init application.          */
   open_vwork ();             /* Open virtual workstation.  */
   do_date ();                /* Go do our thing.           */
   rsrc_free ();              /* Release resource memory.   */
   v_clsvwk ( handle );       /* Close virtual workstation.*/
   appl_exit ();              /* Back to the desktop.       */
}


/****************************************************
* do_date ()
* Loads the resource file and handles the dialog box.
****************************************************/
do_date ()
{
   int dial_x, /* Dialog's X coord.  */
       dial_y, /* Dialog's Y coord.  */
       dial_w, /* Dialog's width.    */
       dial_h, /* Dialog's height.   */
       choice, /* Exit button clicked from dialog.       */
```

```
      okay;   /* Flag indicating if entered date valid. */

   OBJECT *datedial_addr; /* Address of dialog box. */

   char date_str[8],   /* String to hold date. */
        time_str[10]; /* String to hold time. */

   char *string; /* Temp string pointer. */

   graf_mouse ( ARROW, 0L );

   /* Load resource file. */
   if ( !rsrc_load ( "\date.rsc" ) )
      form_alert ( 1, "[1][date.rsc missing!][OK]" );

   else {

      /* Get address of dialog and init time and date strings. */
      rsrc_gaddr ( R_TREE, DATEDIAL, &datedial_addr );
      get_time ( time_str );
      get_date ( date_str );

      /* Copy system time and date into dialog box, */
      string = get_tedinfo_str ( datedial_addr, TIMEFLD );
      strcpy ( string, time_str );
      string = get_tedinfo_str ( datedial_addr, DATEFLD );
      strcpy ( string, date_str );

      /* Prepare dialog box for drawing, and init flag. */
      form_center ( datedial_addr, &dial_x, &dial_y, &dial_w, &dial_h );
      form_dial ( FMD_START, 0, 0, 10, 10, dial_x, dial_y, dial_w, dial_h );
      okay = TRUE;

      /* This loop repeats until the user clicks the CANCEL button       */
      /* or until the user enters a valid date and clicks the OK button. */
      do {
         /* Draw dialog and allow user to manipulate it. */
         objc_draw ( datedial_addr, 0, 8, dial_x, dial_y, dial_w, dial_h );
         choice = form_do ( datedial_addr, TIMEFLD );

         /* Reset the state of the chosen button. */
         datedial_addr[choice].ob_state = SHADOWED;

         /* If OK button clicked, check entered date and set system */
         /* date if date entered is valid,                          */
         if ( choice == OKBUTN ) {
            okay = chk_date ( datedial_addr );
            if ( okay )
               set_date ( datedial_addr );
         }
      }
      while ( okay == FALSE && choice == OKBUTN );

      /* Get rid of the dialog box. */
      form_dial ( FMD_FINISH, 0, 0, 10, 10, dial_x, dial_y, dial_w, dial_h );
   }
}
```

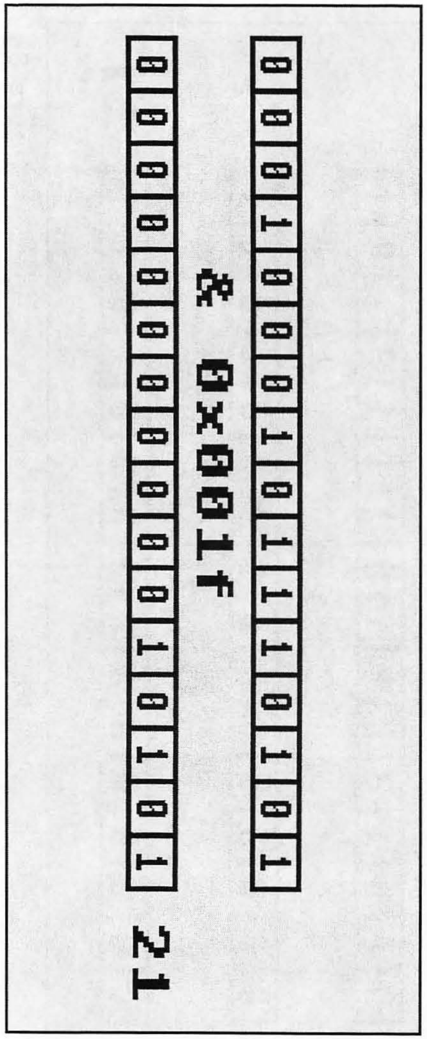


figure 3a

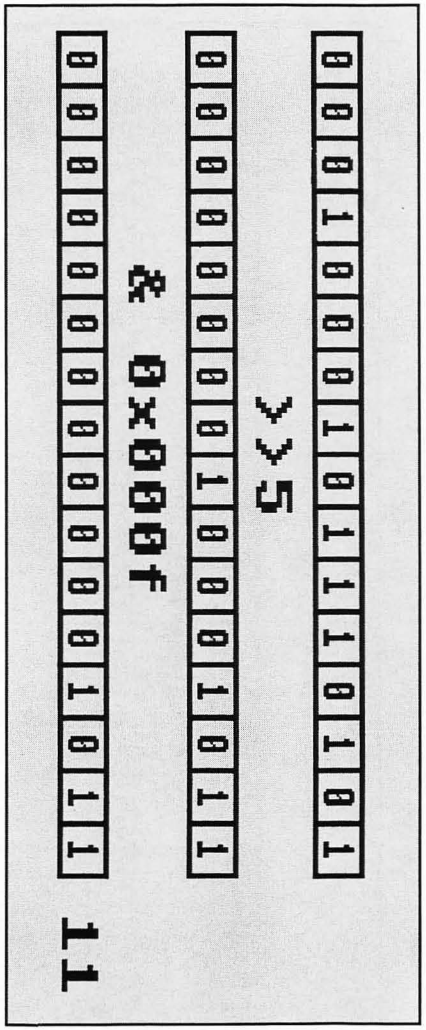


figure 3b

```
/*******************************************************
* chk_date ()
* Examines the strings in dialog for a valid date
* and valid time.
*******************************************************/
chk_date ( dial_addr )
OBJECT *dial_addr; /* Address of dialog box. */
{
   int mnth, day, year, /* Date and time broken down into integer portions.*/
       hour, min, sec,
       space,           /* Flag indicating non-valid chars in time string. */
       okay,            /* Flag indicating valid time and date. */
       x;               /* Loop variable. */

   char m[3], d[3], y[3], /* Date and time as character arrays. */
        h[3], mn[3], s[3],
        ap[3];             /* "AM" or "PM" */

   char *date_str, /* Pointer to string containing date. */
        *time_str; /* Pointer to string containing time. */

   /* Init date and time integers to error condition. */
   mnth = day = year = hour = min = sec = -1;

   /* Get address of string containing date. */
   date_str = get_tedinfo_str ( dial_addr, DATEFLD );

   /* Convert date string to integer format. */
   if ( strlen ( date_str ) == 6 ) {
      strncpy ( m, date_str, 2 );
      m[2] = 0;
      strncpy ( d, &date_str[2], 2 );
      d[2] = 0;
      strncpy ( y, &date_str[4], 2 );
      y[2] = 0;
      mnth = atoi ( m );
      day = atoi ( d );
      year = atoi ( y );
   }

   /* Get address of string containing time. */
   time_str = get_tedinfo_str ( dial_addr, TiMEFLD );

   /* Check for spaces in time string. */
   space = FALSE;
   for ( x=0; x<6; ++x )
      if ( time_str[x] == ' ' )
         space = TRUE;

   /* Convert time string to integer format. */
   if ( (strlen ( time_str ) == 8) && !space ) {
         strncpy ( h, time_str, 2 );
         h[2] = 0;
         strncpy ( mn, &time_str[2], 2 );
         mn[2] = 0;
         strncpy ( s, &time_str[4], 2 );
         s[2] = 0;
         hour = atoi ( h );
         min = atoi ( mn );
```

```
            sec = atoi ( s );
            strcpy ( ap, &time_str[6] );
    }

    /* Examine time and date for validity. */
    if ( mnth < 1 | mnth >12 | day < 1 | day > 31
           | year < 0 | year > 99 | hour < 0 | hour > 23 | min < 0
            | min > 59 | sec < 0 | sec > 59 |
           ( (strcmp (ap,"AM")!=MATCH) && (strcmp (ap,"PM")!=MATCH) ) ) {
        okay = FALSE;
        form_alert ( 1, "[1][Date or time not valid!][CONTINUE]" );
    }
    else
        okay = TRUE;

    return ( okay );
}

/*****************************************************
* set_date ()
* Sets the system time and date to the values
* entered into the dialog box.
*****************************************************/
set_date ( dial_addr )
OBJECT *dial_addr; /* Address of dialog box. */
{
    char *string; /* Temporary string pointer. */
    char s[3];    /* Temporary string storage. */
    int h,        /* Work variable.            */
         time,    /* Time in system format.    */
         date;    /* Date in system format.    */

    /* Get address of string containing time. */
    string = get_tedinfo_str ( dial_addr, TIMEFLD );

    /* Extract "hours" portion and convert to integer. */
    strncpy ( s, string, 2 );
    h = atoi ( s );

    /* Adjust hour to the 24-hour clock format. */
    if ( (strcmp ( &string[6], "PM" ) == MATCH) && (h != 12) )
        h += 12;
    if ( (strcmp ( &string[6], "AM" ) == MATCH) && (h == 12) )
        h = 0;

    /* Shift bits into the proper position and place them */
    /* into the time integer.                             */
    h = h << 11;
    time = h;

    /* Get the "minutes" portion, convert to integer,      */
    /* shift bits and place them into the time integer.    */
    strncpy ( s, &string[2], 2 );
    h = atoi ( s );
    h = h << 5;
    time = time | h;

    /* Process the "seconds" portion of the time. */
    strncpy ( s, &string[4], 2 );
```

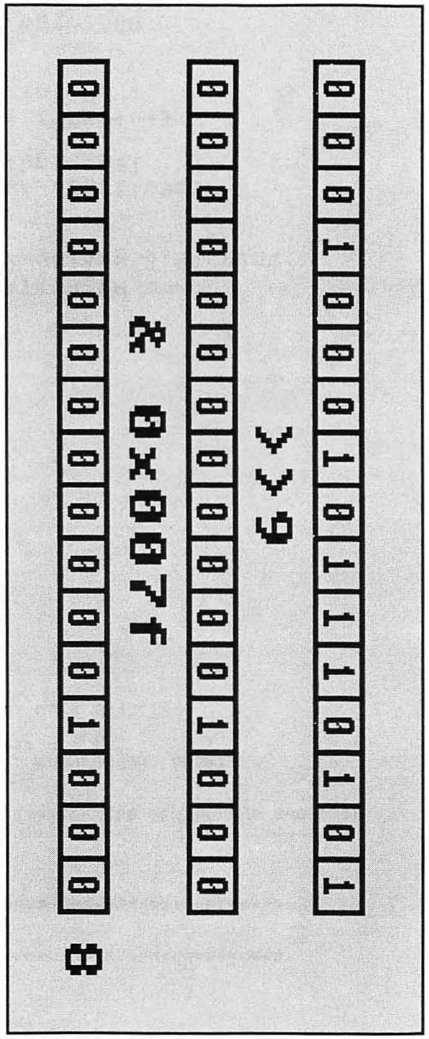


figure 3c

```
   h = atoi ( s ) / 2;
   time = time | h;

   /* Set the system clock to the new time. */
   Tsettime ( time );

   /* Get the address of the string containing the date. */
   string = get_tedinfo_str ( dial_addr, DATEFLD );

   /* Process the "month" portion. */
   strncpy ( s, string, 2 );
   h = atoi ( s );
   h = h << 5;
   date = h;

   /* Process the "day" portion. */
   strncpy ( s, &string[2], 2 );
   h = atoi ( s );
   date = date | h;

   /* Process the "year" portion. */
   strncpy ( s, &string[4] );
   h = atoi ( s ) - 80;
   h = h << 9;
   date = date | h;

   /* Set the system to clock to the new date. */
   Tsetdate ( date );
}

/****************************************************
* get_time ()
* Gets system time and converts it to string format.
****************************************************/
get_time ( string )
char *string; /* Pointer to string in which to store time. */
{
   int time,          /* Time in system format.            */
      hour, min, sec; /* Time broken down into separate ints. */

   char s[3];         /* "AM" or "PM" */

   /* Get system time and break down into individual components. */
   time = Tgettime ();
   sec = ( time & 0x001f ) * 2;
   min = ( time >> 5 ) & 0x003f;
   hour = ( time >> 11 ) & 0x001f;

   /* Convert system 24-hour format to regular 12-hour format. */
   if ( hour > 11 ) {
      strcpy ( s, "PM" );
      if ( hour > 12 )
         hour -= 12;
   }
   else {
      strcpy ( s, "AM" );
      if ( hour == 0 )
         hour = 12;
   }

   /* Convert and add hours to time string. */
   if ( hour < 10 ) {
      string[0] = '0';
      sprintf ( &string[1], "%d", hour );
   }
   else
      sprintf ( string, "%d", hour );

   /* Convert and add minutes to time string. */
   if ( min < 10 ) {
      string[2] = '0';
      sprintf ( &string[3], "%d", min );
   }
   else
      sprintf ( &string[2], "%d", min );

   /* Convert and add seconds to time string. */
   if ( sec < 10 ) {
      string[4] = '0';
```

```
/****************************************************
* get_tedinfo_string ()
* Returns a pointer to an editable string in a
* dialog box.
****************************************************/
char *get_tedinfo_str ( tree, object )
OBJECT *tree; /* Address of dialog box.          */
int object;   /* Object that contains the string. */
{
   TEDINFO *ob_tedinfo; /* Pointer to a tedinfo structure. */

   ob_tedinfo = (TEDINFO *) tree[object].ob_spec;
   return ( ob_tedinfo->te_ptext );
}

/****************************************************
* open_vwork ()
* Opens a virtual workstation.
****************************************************/
open_vwork ()
{
   int i;

   /* Get graphics handle, initialize the GEM arrays and open  */
   /* a virtual workstation.                                   */

   handle = graf_handle ( &dum, &dum, &dum, &dum);
   for ( i=0; i<10; work_in[i++] = 1 );
   work_in[10] = 2;
   v_opnvwk ( work_in, &handle, work_out );
}
```

C-Manship
Listing 2 — C

```
#define DATEDIAL 0
#define TIMEFLD 2
#define DATEFLD 3
#define OKBUTN 4
#define CANBUTN 5
```

C-Manship
Listing 3 — ST BAsic

```
100 filename$="a:\DATE.RSC"
110 fullw 2:clearw 2:gotoxy 0,0:print
"creating file..."
120 option base 0
125 dim a%(16000):def seg=1:v$=""
130 p=varptr(a%(0)):bptr=p+1
140 for i%=1 to 360
150 read v$:code%=val("&H"+v$)
160 poke p, code%:print ".";
170 p=p+1
180 next
190 bsave filename$,bptr,360
200 print "file written":end
1000 data 00,00,00,D4,00,80,00,80,00,8
0,00,00,00,24,00,80
1010 data 00,00,01,64,00,06,00,01,00,0
3,00,00,00,00,00,00
1020 data 00,00,01,68,44,41,54,45,20,4
1,4E,44,20,54,49,4D
1030 data 45,00,00,00,30,30,30,30,30,3
```

```
      sprintf ( &string[5], "%d", sec );
   }
   else
      sprintf ( &string[4], "%d", sec );

   /* Add "AM" or "PM" to time string. */
   strcpy ( &string[6], s );
}


/*****************************************************
* get_date ()
* Gets system date and converts it to string format.
*****************************************************/
get_date ( string )
char *string; /* Pointer to string that will contain the date. */
{
   int date,             /* Date in system format.      */
       day, mnth, year; /* Date broken into components. */

   /* Get system date and convert to individual components. */
   date = Tgetdate ();
   day = date & 0x001f;
   mnth = (date >> 5) & 0x000f;
   year = ((date >> 9) & 0x007f) + 80;
   year = year % 100;

   /* Convert and add "months" portion to date string. */
   if ( mnth < 10 ) {
      string[0] = '0';
      sprintf ( &string[1], "%d", mnth );
   }
   else
      sprintf ( string, "%d", mnth );

   /* convert and add "days" portion to date string. */
   if ( day < 10 ) {
      string[2] = '0';
      sprintf ( &string[3], "%d", day );
   }
   else
      sprintf ( &string[2], "%d", day );

   /* Convert and add "year" portion to date string. */
   sprintf ( &string[4], "%d", year );
}
```

```
0,41,4D,00,54,69,6D
1040 data 65,3A,20,5F,5F,3A,5F,5F,3A,5
F,5F,20,5F,5F,00,39
1050 data 39,39,39,39,39,41,41,00,30,3
0,30,30,30,30,00,44
1060 data 61,74,65,3A,20,5F,5F,2F,5F,5
F,2F,5F,5F,00,39,39
1070 data 39,39,39,39,00,4F,4B,00,43,4
1,4E,43,45,4C,00,00
1080 data 00,00,00,24,00,00,00,32,00,0
0,00,33,00,03,00,06
1090 data 00,02,11,80,00,00,FF,FF,00,0
E,00,01,00,00,00,34
1100 data 00,00,00,3D,00,00,00,4F,00,0
3,00,06,00,00,11,80
1110 data 00,00,FF,FF,00,09,00,12,00,0
0,00,58,00,00,00,5F
1120 data 00,00,00,6E,00,03,00,06,00,0
0,11,80,00,00,FF,FF
1130 data 00,07,00,0F,FF,FF,00,01,00,0
5,00,14,00,00,00,30
1140 data 00,02,11,21,00,00,00,00,00,2
9,00,0C,00,02,FF,FF
1150 data FF,FF,00,16,00,00,00,20,00,0
0,00,80,00,02,00,01
1160 data 00,25,00,01,00,03,FF,FF,FF,F
F,00,1D,00,08,00,00
1170 data 00,00,00,9C,00,0C,00,03,00,1
1,00,01,00,04,FF,FF
1180 data FF,FF,00,1D,00,08,00,00,00,0
0,00,B8,00,0D,00,05
1190 data 00,0E,00,01,00,05,FF,FF,FF,F
F,00,1A,00,05,00,20
1200 data 00,00,00,75,00,02,00,09,00,1
1,00,01,00,00,FF,FF
1210 data FF,FF,00,1A,00,27,00,20,00,0
0,00,78,00,16,00,09
1220 data 00,11,00,01,00,00,00,D4
1230 data *
```

END

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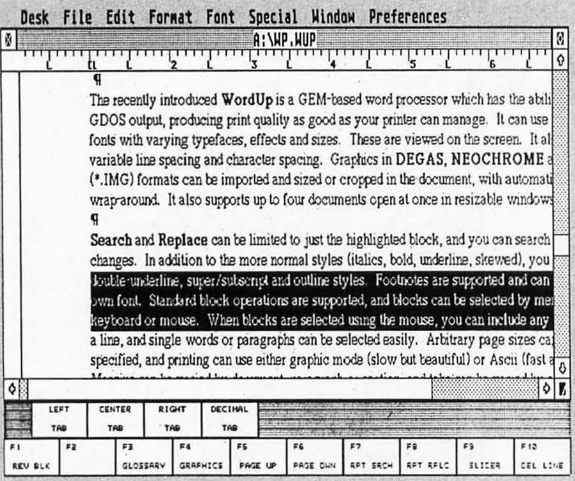
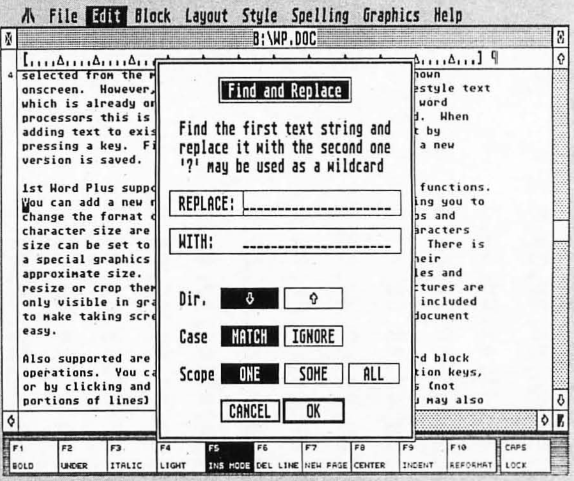
(from page 17)



¶
The recently introduced **WordUp** is a GEM-based word processor which has the abili
GDOS output, producing print quality as good as your printer can manage. It can use
fonts with varying typefaces, effects and sizes. These are viewed on the screen. It al
variable line spacing and character spacing. Graphics in **DEGAS, NEOCHROME** a
(*.IMG) formats can be imported and sized or cropped in the document, with automati
wrap-around. It also supports up to four documents open at once in resizable windows
¶
Search and **Replace** can be limited to just the highlighted block, and you can search
changes. In addition to the more normal styles (italics, bold, underline, skewed), you
double-underline, super/subscript and outline styles. Footnotes are supported and can
own font. Standard block operations are supported, and blocks can be selected by me
keyboard or mouse. When blocks are selected using the mouse, you can include any
a line, and single words or paragraphs can be selected easily. Arbitrary page sizes ca
specified, and printing can use either graphic mode (slow but beautiful) or Ascii (fast a

WORD UP



Find the first text string and
replace it with the second one
'?' may be used as a wildcard

REPLACE: ____________________

WITH: ____________________

1ST WORD PLUS

speed, and many people swear by ST Writer because it is so fast. It can also do double column printing, headers and footers and supports normal find, replace and block operations (cut, paste, copy). Blocks can only be marked using keystrokes (makes sense), but marked blocks do show up differently on the screen. It also automatically reformats text very quickly as you type.

The latest version of ST Writer adds some limited mouse support. The previously separate command screen, from which you perform such operations as save, print and load can be replaced with a GEM screen. The window is always empty, but the overall file commands are available from standard menus. You can also switch to the edit screen by selecting a menu item. Further, desk accessories are available under the Desk menu of the GEM command screen. On the edit screen, the normal cursor is a text cursor, manipulated using the arrow keys. However, you can switch to the mouse cursor, which serves only to allow you to relocate the text cursor over large distances without having to use the arrow keys.

Word Writer
Timeworks
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$79.95

Word Writer is a relatively powerful, GEM-based word processor. It has multiple resizable windows and can open up to four documents at once in separate windows. Most commands are available from drop-down menus, and many have "quick key" equivalents (press the key combination instead of using the menu). These quick keys are shown in the menus themselves, which makes learning them very easy. Commands are also available by pressing the function keys, and a reminder of the function-key assignments is shown on-screen.

Standard styles of text (bold, underline, italics) can be selected from on-screen buttons or keys, but not from the menus. The different styles are shown on-screen. The currently selected style is indicated by letters in the upper left corner of the screen. When adding text to existing work, you must manually reformat by pressing a key, and switching to a different line spacing requires reformatting the entire document.

Word Writer supports headers, footers and page-layout functions, although the margins can be set only for the document as a whole. Also supported are search and replace as well as standard block operations. You can select a block from the menu, function keys or by clicking and dragging the mouse. Only whole lines (not portions of lines) can be selected using the mouse. The printer selection can be changed at any time from a menu option. Printing requires saving a file to disk (which can be a problem with a large file), but printing then becomes a background task—that is, you can continue editing your document (or even another document) while you are printing. Word Writer can save ASCII files, and there is a public domain program available which can convert ASCII files to Word Writer format.

Word Writer also includes a substantial thesaurus and spell checker. The spell checker can check either the entire document or can continously check as you type. When a word is encountered that is not recognized, you can add it to a personal dictionary and multiple personal dictionaries are supported. A limited outlining function is also provided. The file generated is a normal one, but when using the outliner, automatic indenting based on outline level is provided, and special functions for editing levels (up a level, move a level, etc.) are available.

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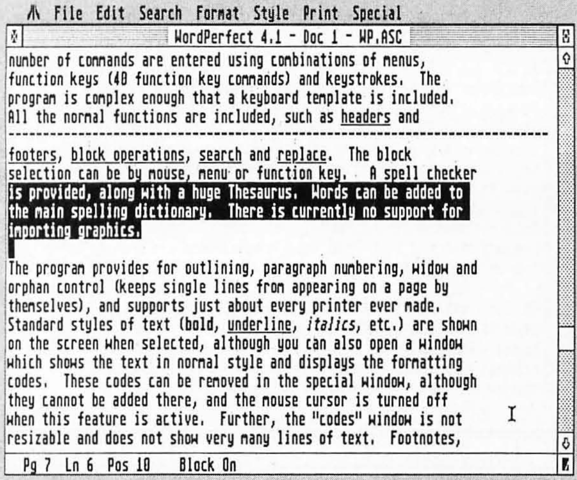
011-44-954-61258
$99.95

1st Word Plus is an upgraded version of 1st Word, which many people received free when they purchased their ST. It is a GEM-based program with multiple resizable windows and the ability to open four documents at once. All control is from drop-down menus and the function keys, with a reminder of the function-key functions being present on the screen, much as with Word Writer. A special window can be made visible on the screen, from which you can use the mouse to select characters which are supported by your printer but which don't appear on a keyboard key. European language letters and other special characters are available this way. Standard styles of text (bold, underline, italics) can be selected from the menus, and the different styles are shown on-screen. However, it requires an extra operation to restyle text which is already on the screen, whereas with most other word processors, this is automatic when a block is highlighted. When adding text to existing work, you must manually reformat by pressing a key. Files are automatically backed up when a new version is saved.

1st Word Plus supports headers, footers and page-layout functions. You can add a new ruler at any point in the text, allowing you to change the format of subsequent text: margins, tab stops and character size are all variable by using the ruler. Characters size can be set to pica, elite, condensed and expanded. There is a special graphics mode which shows the characters in their approximate size. You can also import .IMG


File Edit Search Format Style Print Special
WordPerfect 4.1 - Doc 1 - WP.ASC

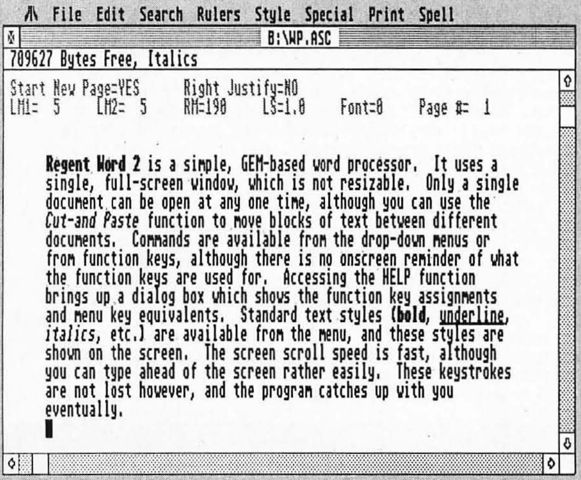
number of commands are entered using combinations of menus, function keys (40 function key commands) and keystrokes. The program is complex enough that a keyboard template is included. All the normal functions are included, such as headers and

footers, block operations, search and replace. The block selection can be by mouse, menu or function key. A spell checker is provided, along with a huge Thesaurus. Words can be added to the main spelling dictionary. There is currently no support for importing graphics.

The program provides for outlining, paragraph numbering, widow and orphan control (keeps single lines from appearing on a page by themselves), and supports just about every printer ever made. Standard styles of text (bold, underline, *italics*, etc.) are shown on the screen when selected, although you can also open a window which shows the text in normal style and displays the formatting codes. These codes can be removed in the special window, although they cannot be added there, and the mouse cursor is turned off when this feature is active. Further, the "codes" window is not resizable and does not show very many lines of text. Footnotes,

Pg 7 Ln 6 Pos 10 Block On

WORDPERFECT



709627 Bytes Free, Italics

Start New Page=YES Right Justify=NO
LM1= 5 LM2= 5 RM=190 LS=1.0 Font=0 Page #= 1

Regent Word 2 is a simple, GEM-based word processor. It uses a single, full-screen window, which is not resizable. Only a single document can be open at any one time, although you can use the *Cut-and Paste* function to move blocks of text between different documents. Commands are available from the drop-down menus or from function keys, although there is no onscreen reminder of what the function keys are used for. Accessing the HELP function brings up a dialog box which shows the function key assignments and menu key equivalents. Standard text styles (**bold**, underline, *italics*, etc.) are available from the menu, and these styles are shown on the screen. The screen scroll speed is fast, although you can type ahead of the screen rather easily. These keystrokes are not lost however, and the program catches up with you eventually.

REGENT WORD 2

picture files and resize or crop them right in the document. Imported pictures are only visible in graphics mode. A snapshot accessory is included to make taking screen shots for use in a 1st Word Plus document easy.

Also supported are search and replace as well as standard block operations. You can select a block from the menu, function keys or by clicking and dragging the mouse. Only whole lines (not portions of lines) can be selected using the mouse. You may also save a block to disk. Printing requires saving the file to disk—which then closes the file. The file cannot be printed if it is open on the screen. 1st Word Plus handles ASCII files by use of mode: if it is in WP mode, it uses files compatible (except for graphics) with Word Writer. If WP mode is off, files can be loaded and saved in ASCII format. You can also save just the specified format of a document. If you then open a document with the same extender as the format file, this format will automatically be used initially.

1st Word Plus allows you to set marks in the text and then return to that mark with a menu selection, making it easy to find a particular place in the text. Also available are word count, automatic hyphenation and a spell checker. The spell checker allows both continuous and whole-document spell checking. No personal dictionaries are used, but you can add words to the main dictionary. Footnotes are supported, and you can add text for a footnote in its own window. Included is a utility called *1st Mail,* which allows merging of text and data to produce form letters.

WordUp
Neocept Corporation
908 Camino Dos Rios
Thousand Oaks, CA 91630
(805)498-3840
$79.95

The recently introduced WordUp is a GEM-based word processor which has the ability to use GDOS output, producing print quality as good as your printer can manage. It can use multiple fonts with varying typefaces, effects and sizes. These are viewed on the screen. It also allows variable line spacing and character spacing. Graphics in *DEGAS, Neochrome* and GEM (.IMG) formats can be imported and sized or cropped in the document, with automatic text wrap-around. It also supports up to four documents open at once in resizable windows.

Search and replace can be limited to just the highlighted block, and you can search for style changes. In addition to the more normal styles (italics, bold, underline, skewed), you can use double-underline, super/subscript and outline styles. Footnotes are supported and can have their own font. Standard block operations are supported, and blocks can be selected by menu, keyboard or mouse. When blocks are selected using the mouse, you can include any portion of a line, and single words or paragraphs can be selected easily.

Arbitrary page sizes can be specified, and printing can use either graphic mode (slow but beautiful) or ASCII (fast and crude). Margins can be varied by document, paragraph or section, and tabs can be varied by section. The File menu allows access to handy disk operations such as formatting, renaming and deleting files. Automatic backup files can be created when you save a new version, although this can be turned off.

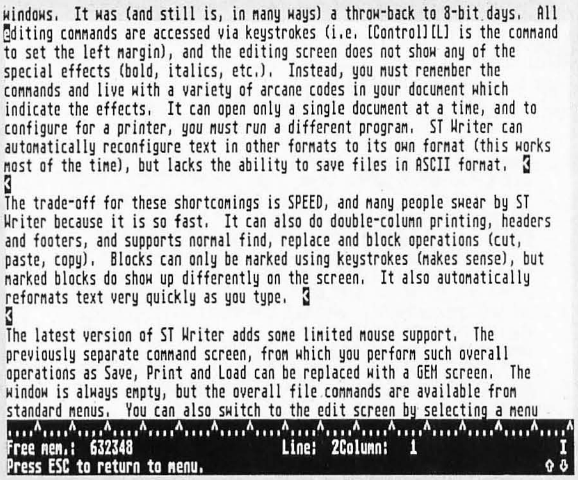
WordUp supports a glossary function, which allows you to define a block of text and associate it with a word. When the word is encountered in the text, it can then be expanded into the defined block—a very powerful feature. Also available is an exceptional Mail Merge function. A master page feature lets you define items (such as headers, footers, graphics, borders, etc.) which you want to appear on each page. These items will then appear when the document is printed. New master pages can be inserted at any place in the document, making multiple-section formats possible. You can also put the time and date on a master page (or anywhere else) and even have them updated whenever you print the document.

WordPerfect
WordPerfect Corp.
288 West Center St.
Orem, UT 84057
$395

Easily the largest (with a 600-page manual!) and most expensive of the word processors available for the ST, WordPerfect is the best-selling word processor in the IBM world. Ported to the ST and released too early, it was the subject of much user wrath as bug after bug surfaced. This was especially unfortunate, since the package is very expensive. However, WordPerfect Corporation and its team of programmers strove mightily and brought out several new versions, and by early May had a relatively clean word processor available. User updates and user support are free, a worthy policy in light of the cost of the package and its problems.

WordPerfect is a GEM-based word processor which has multiple resizable windows and can have four documents open at once. The huge number of commands are entered using combinations of menus, function keys (40 function-key commands) and keystrokes. The program is complex enough that a keyboard template is included. All the normal word-processing functions are supported, such as headers and footers, block operations, search and replace. The block selection can be by mouse, menu or function key. A spell checker is provided, along with a huge thesaurus. Words can be added to the main spelling dictionary. There is currently no support for importing graphics.

The program provides for outlining, paragraph numbering, widow and or-

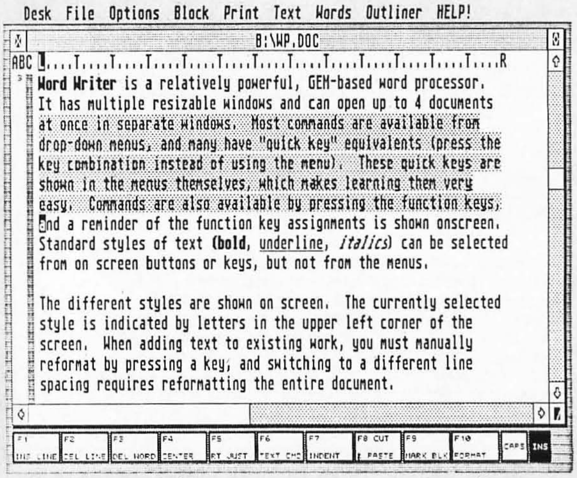


ST-WRITER

```
windows.  It was (and still is, in many ways) a throw-back to 8-bit days.  All
editing commands are accessed via keystrokes (i.e. [Control][L] is the command
to set the left margin), and the editing screen does not show any of the
special effects (bold, italics, etc.).  Instead, you must remember the
commands and live with a variety of arcane codes in your document which
indicate the effects.  It can open only a single document at a time, and to
configure for a printer, you must run a different program.  ST Writer can
automatically reconfigure text in other formats to its own format (this works
most of the time), but lacks the ability to save files in ASCII format.

The trade-off for these shortcomings is SPEED, and many people swear by ST
Writer because it is so fast.  It can also do double-column printing, headers
and footers, and supports normal find, replace and block operations (cut,
paste, copy).  Blocks can only be marked using keystrokes (makes sense), but
marked blocks do show up differently on the screen.  It also automatically
reformats text very quickly as you type.

The latest version of ST Writer adds some limited mouse support.  The
previously separate command screen, from which you perform such overall
operations as Save, Print and Load can be replaced with a GEM screen.  The
window is always empty, but the overall file commands are available from
standard menus.  You can also switch to the edit screen by selecting a menu
Free mem.:  632348                   Line:  2Column:   1                  I
Press ESC to return to menu.
```



WORD WRITER

```
Word Writer is a relatively powerful, GEM-based word processor.
It has multiple resizable windows and can open up to 4 documents
at once in separate windows.  Most commands are available from
drop-down menus, and many have "quick key" equivalents (press the
key combination instead of using the menu).  These quick keys are
shown in the menus themselves, which makes learning them very
easy.  Commands are also available by pressing the function keys,
and a reminder of the function key assignments is shown onscreen.
Standard styles of text (bold, underline, italics) can be selected
from on screen buttons or keys, but not from the menus.

The different styles are shown on screen.  The currently selected
style is indicated by letters in the upper left corner of the
screen.  When adding text to existing work, you must manually
reformat by pressing a key, and switching to a different line
spacing requires reformatting the entire document.
```

phan control (keeps single lines from appearing on a page by themselves), and supports just about every printer ever made. Standard styles of text (bold, underline, italics, etc.) are shown on the screen when selected, although you can also open a window which shows the text in normal style and displays the formatting codes. These codes can be removed in the special window, although they cannot be added there, and the mouse cursor is turned off when this feature is active. Further, the "codes" window is not resizable and does not show very many lines of text.

Footnotes, endnotes, headers and footers do not show up in the document on the screen, they only show up at print time. Placing them exactly where you want them can require some trial-and-error printing.

Beyond the normal word-processing functions are a whole wealth of "power functions," which normally would be used by people who do a lot of word processing. As mentioned above, footnotes and endnotes are supported, and can run multiple pages. Automatic hyphenation is also available. Automatic backups can be created when you save a new version of a file, but in addition, a backup can be saved on a periodic basis (this works best to a hard drive) so that a power failure doesn't wipe out all your work.

Word-processing documents can include math functions. You can send a block of text to another file without loading that file first; the block is appended to the end of the other file. This is very useful for archiving portions of your work. You can also view portions of another file without actually loading the file, very handy for deciding what file to load!

Two types of multiple columns are supported: newspaper-type (read top to bottom) and database-type (side by side). The mail-merge function can generate mailing labels. If you mark words as you go through your text, WordPerfect will generate an index of your document automatically, including the page number that the word is to be found on. It will also automatically generate a table of contents. The multiple levels of Undo let you back out of the last few changes you have made to your document. You can even design your own text cursor and mouse pointer to customize your version of WordPerfect.

A unique and powerful function is the use of macros. A macro is a series of keystrokes which are activated by one key. For example, you could define macros which perform some of the more complex (in terms of keystrokes) commands WordPerfect is capable of. Or, if you don't like the keys that WordPerfect has used for commands, you can define your own. Thus, you can completely customize your copy of the program, as well as make your use of it more efficient. The macro function is especially useful in view of the fact that many of the WordPerfect commands require a lot of keystrokes (six or more in some cases).

Conclusion

As with anything else, which package makes the most sense for you depends on personal taste and what you want to do with it. Word Writer is an excellent package both for short documents and relatively long manuscripts. It is fast, includes a spell checker and can open multiple documents. It is also GEM-based, so is easy to learn. 1st Word is somewhat clumsier in places, but allows importing graphics. WordUp is not as fast as Word Writer, but the multiple faces/point sizes and ability to import graphics makes it ideal for writing which must include pictures. Be prepared for the very slow output. If raw speed is your only concern, ST Writer can't be beat.

It is very fast and supports multiple-column output. If you insist on multiple columns (but only a single document open) in a GEM-based environment, Regent Word is the way to go. And if you must have every feature needed to write a book and don't mind making a commitment both in time and money to your word-processing package, then WordPerfect may be the package for you.

Some words about desktop publishing

None of the packages discussed above could be called true desktop-publishing packages. WordUp comes the closest, with its ability to handle graphics and multiple faces and points. Desktop-publishing packages handle these features, as well as being able to do page layout: flow text in multiple columns over multiple pages, import and modify graphics, add simple graphics to a page, and make modifications to imported text (and generate original text when necessary).

Desktop-publishing packages are usually able to import text in a variety of formats, which makes it generally more efficient to do the bulk of your text work using a word processor (which has more powerful text-handling capabilities), then import that text into a desktop-publishing package.

Word Writer is an excellent package both for short documents and relatively long manuscripts.

(from page 13)

speed; so any processing intensive application is improved by as much as a twofold speed increase.

The ST Accelerator is hardwired into your ST, so it requires a technician to install the board. Because all programs work at 16 Mhz, the board has a button which can disable the Accelerator at any time.

Strange Systems expected to show a working prototype of the Accelerator; however, on their way to the COMDEX show in Atlanta, Strange System's car was broken into and stolen. Its only prototype was in the trunk of the car and has since not been found. At the company's hotel suite in Atlanta, the members showed a quickly made breadboard version of the turbo board. Attention all cars: A dragnet has been initiated.

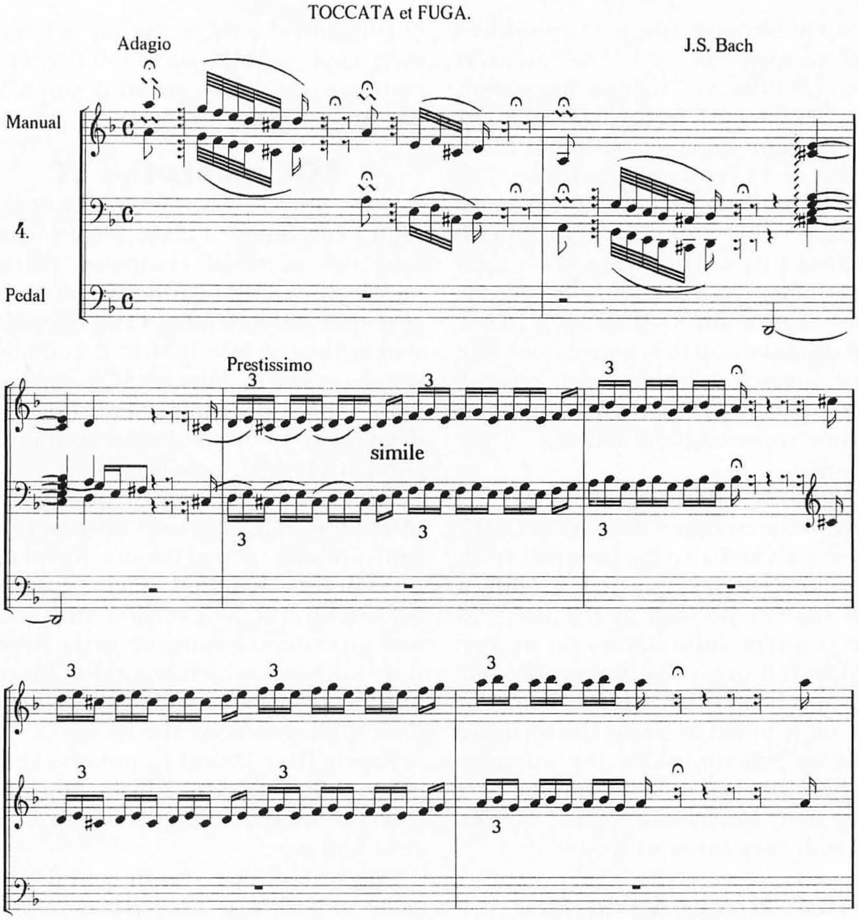
Strange Systems has also announced the ST Expander ($200 list, available summer '88). Long ago, a rumor of an expansion box for the ST floated from Atari's corridors onto the pages of many magazines. Like most vaporware, it never surfaced. Strange is working on a box that fits behind your ST and provides for eight expansion cards to be plugged into the bus of your ST. ST Expander comes with a heavy-duty power supply, cooling fan and Blitter socket. Its sturdy metal case makes an ideal monitor stand, as the electronics inside are RF protected.

Strange Systems will shortly be releasing the bus information on the ST Expander and is providing developers with additional support and information. Strange is also considering adding an external IBM-style keyboard to the ST Expander for an extra $100.

Supra is now shipping a newly redesigned hard-disk drive controller which includes output to SCSI hard disks *and* DMA devices (such as the Atari hard disk or Atari Laser Printer). The new controller also has a battery-powered clock to reset your ST's internal clock whenever you turn on your computer. Upgrading your existing Supra controller will cost approximately $125.

Supra Corp. told ST-Log that it was now shipping the FD10 ($895 list), a 10-megabyte *removable* floppy-disk drive that runs about as fast as a normal hard disk. With the FD10 you can change disks—impossible for a hard disk—so backing up your information is easy.

Supra has also begun shipping a 45-megabyte hard disk that fits inside a Mega ST. The unit costs $1,095 list and has to be installed by Supra dealers.



MIDI software

One island of the Atari booth was devoted to music products, and while the display was impressive, it would make more sense to lower the concentrated noise level by spreading the music around the booth for future shows. All of the companies showing music composition, editing and recording software had new versions of their products—the ST music market is alive and vital.

Hybrid Arts showed their ADAP rack, which records sound digitally and reproduces it exactly. Frank Foster, president of Hybrid, was on hand to demonstrate *CZ-Android,* a MIDI-patch program which can also store, playback and edit music. Foster told ST-Log about Disney Studio's use of several 1040 ST computers to clean up the sound tracks of several old Disney cartoons. [Ed. Note – A full story of this interesting application of the ST is upcoming].

Dr. T's Music Software has released the new *Copyist V1.4* a score editing program with transcription capabilities for the ST. The Copyist program loads music files from Dr. T's Music Recording System (MRS) and prints a complete score on a laser printer or dot-matrix graphics printer. The results are publishing-quality scored music.

"What we have developed is something better than Juggler," said A.L. Hospers Jr., VP of Dr. T's. "All of our music programs share information."

Dr. T's has developed a multiple program environment (MPE) where all of its music recording, scoring and sequencing systems can reside in your ST's memory at once. Merging data from one program to another is simple and straightforward.

Passport Designs demonstrated their new *Master Tracks Jr.* ($129.95 list) music recording system. A low-cost personal MIDI-compatible recording studio, Master Tracks Jr. provides the tools for composing recording and editing music, using an easy-to-learn GEM interface. Once you get comfortable with Master *Tracks Jr.*, you can upgrade to Master Tracks Professional, a more complete version which is suitable for professional musicians.

Sonus showed its line of high-end music software for the ST: *MasterPiece* ($375 list) is a music sequencing system that lets you control sequences of up to 32 tracks at a time, *SuperScore* ($299 list) is a desktop-publishing system that produces complete, scored music and *SST Super Sequencer* ($149.95) is a sequencing system for the 520/1040ST, featuring dual MIDI ports, real and step recording and 18 sequences of 24 tracks of playback.

MIDIsoft demonstrated *MIDIsoft Studio* (standard edition $99 list, avanced edition $149 list) which works like a multitrack tape recorder with 32 tracks. Rather than controls that work like a drum machine's, all the controls look like a tape recorder: fast forward, reverse, record, play, etc. The program supports real-time recording and editing.

Weird show displays

One of the strangest displays at COMDEX was a video-display terminal from Datapoint Systems sporting a built-in video camera pointed at the user. So while you type information on its keyboard, a full-size, color screen of your face stares blankly back at you. The new terminal is billed as being the ultimate "check-up" system, where the operator can check himself to make sure he isn't taking long lunches or coffee breaks. What will they think of next?

Tom Harker, Mr. ICD

ICD recently took over the OSS line of 8-bit and ST products. At their first COMDEX with the OSS products, Tom Harker, President of ICD, showed ST-Log the new packaging for *Personal Pascal* ($99.95 list). Currently, Personal Pascal becomes the third Pascal compiler for the ST, after *Alice* and *Prospero.*

Personal Pascal is a sophisticated Pascal development system originally developed at OSS that includes full support of GEM, mouse controls, windows, and alert and dialog boxes. It complies with the international standard (ISO) for Pascal and is extended with the GEM library of function calls.

Except for very minor changes in the manual, the ICD marketed version of Personal Pascal is the same as the OSS version. The package comes with a compiler, linker, editor and library. The compiler is a fast single-pass system that runs on any ST and Mega computer.

ICD continues to market the FA*ST Hard Disk Drive ($699 to $1,700 list depending on storage capacity). The drive fits under an Atari monitor and plugs into your ST's DMA (Hard Disk) jack, providing another DMA output jack at the hard disk for daisy chaining to other hard disks or the Atari laser printer.

"Sparta DOS X is currently in beta testing and should be out in early summer," explained Harker about ICD's new cartridge-based disk-operating system for the Atari XE/XL computer.

SQL meets the ST

The Structured Query Language (SQL) continues to make great inroads into the personal computer market, mostly due to IBM's announcement last year that the Extended OS/2 operating system for the new IBM PS/2 computer system would include an SQL database. Upon IBM's announcement all of the database software companies announced compatible SQL products.

Regent Base is the only ST product that offers the SQL database language. Regent Software showed the new *Regent Base 2* ($150 list), 4GL SQL database system for the ST. The new version adds many new procedural commands to the Regent Base langauge which is rapdily becomming a favorite among developers of custom applications on the ST.

Regent Base 1.0 and 1.1 owners can upgrade to Regent Base 2 by buying a $50 upgrade kit available directly from Regent Software.

Regent Software also showed the *SQL Database Add-On for LDW BASIC Compiler* ($30 list), which adds the SQL command set to LDW's BASIC language for the ST. If you are planning to write an application program using BASIC that must keep track of large amounts of data, Regent's new product gives you all the database query and manipulation commands you will need.

Development software

C has become the favored development language on the ST computer. BASIC, Pascal, and Modula 2 follow as leading development languages. Several products surfaced at COMDEX that show the advanced nature of these markets.

Aztec Manx Software introduced its new C compiler for the ST, *Aztec C* ($199.95 list). The Aztec compiler is said to generate compiled programs which are 40% smaller than the same program compiled using Megamax C. Macros can be used to change the development environment, and once created macros can be saved for later use. *Aztec C Express* is a turbo version that is reported to be *very* fast and will be available later this year.

Manx is also marketing a *Source Level Debugger* (SLD) for the ST at a low price of $75. The SLD lets developers set breakpoints, single-step by source-code lines, evaluate and print any C expression, evaluate assembly-language calls and debug desk accessories.

Aztec also makes compatible C development systems for the Amiga, IBM PC and Macintosh. Cross development is supposed to be easy as the developer uses the same environment across all of the computers.

Michtron announced it will shortly ship the Version 3 of *GFA BASIC* ($99.95 list) for the ST. The original version was released in June '86 and received good reviews, and currently 50,000 copies of GFA BASIC have been sold worldwide. The new version includes over 300 new commands and an enormous increase in speed, though GFA BASIC 3 remains compatible with older versions. The new editor allows you to hide procedures and see line numbers. All AES functions, Line-A calls, joystick commands and integer operations have been included in the new system.

Michtron has also begun a book publishing division headed by George Miller, who was previously the editor of Compute's Atari ST magazine. Michtron has published Miller's first ST books *The GFA BASIC Programmers Reference Guide,* Vol. I ($29.95 list) and *GFA BASIC Training Re-Boot Camp* ($19.95 list). Both books are suppliments for GFA BASIC.

Shorts

John Demarr showed QMI's new *ST Talk Professional* ($39.95 list) which is being sold in beta test form until the finished version is out. Abacus is now shipping *GFA Basic Quick Program Reference Guide.*($19.95 list) for GFA BASIC owners. Robtek is now shipping *Skyplot* ($99.95) an Astronomy program, Home Publisher ($39.95) a low-end desktop-publishing package that supports 24-pin printers, and *Dizzy Wizard* ($19.95 list) a "Marble Madness" style game. Michtron showed *Omnicard,* an ST clone of Hypercard for the Mac.

Atari Germany will be producing another Atari Fair in September as a follow-up to last year's fair which had 20,000 attendees. Electronics Arts is still in the ST software business, but didn't have anyone demonstrating their products even though Atari had a booth set up for them. Niel Harris reported that *Flu Shot 3,* a free anti-virus program available on DELPHI, GEnie and CompuServe, has been virused. So, be certain to use a more recent version.

Companies Mentioned

Xetec, Inc.
2804 Arnold Road
Salina, KS 67401
(913) 827-0685

Weide Elektronik
Regerstrasse 34D-4010
Hilden, West Germany
021 03 41226

Michtron
576 Telegraph
Pontiac, MI 48053
(313) 334-5700

ISD Marketing, Inc.
2651 John Street, Unit 3
Markham, Ontario
L3R 2W5 Canada
(416) 479-1880

Atari Computer
1196 Borregas Avenue
Sunnyvale, CA 94086

Walt Disney World Co.
PO Box 10,000
Lake Buena Vista, FL 32830-1000

Moniterm
5740 Green Circle Drive
Minnetonka, MN 55343-9074
(612) 935-4151

Iliad Software, Inc.
PO Box 1144495
West 920 North
Orem, UT 84057
(801) 226-3270

Neocept, Inc.
908 Camino dos Rios
Thousand Oaks, CA 91360
(805) 498-3840

Laser Graf Publishing
Jack Durre
13904 S.W. 75th Street
Miami, FL 33183
(305) 382-1900

Dr. T's Music Software
220 Boylston Street #306
Chesnut Hill, MA 02167
(617) 244-6954

Intersect Software
3951 Sawyer Road #108
Sarasota, FL 33583
(800) 826-0130

ICD, Inc.
1220 Rock Street
Rockford, IL 61101-1437
(815) 968-2228

Regent Software
PO Box 14628
Long Beach, CA 90803
(213) 439-9664

Abacus Software
5370 52nd Street SE
Grand Rapids, MI 49508
(616) 698-0330

Robtek Limited
1983 San Luis Avenue #24
Mountain View, CA 94043
(415) 968-1345

Strange Systems
(800) 255-5786
(713) 338-2231 within Texas

Aztec by Manx
1 Industrial Way
Eatontown, NJ 07724
(800) 221-0440

Soft Logik Publishing Corp.
11131 F South Towne Square
St. Louis, MO 63123
(314) 894-8608

Timeworks Inc.
444 Lake Cook Road
Deerfield, IL 60015
(312) 948-9200

Migraph
720 S. 333rd St. #201
Federal Way, WA 98003
(800) 223-3729

Supra Corp.
1133 Commerical Way
Albany, OR 97321
(503) 967-9075

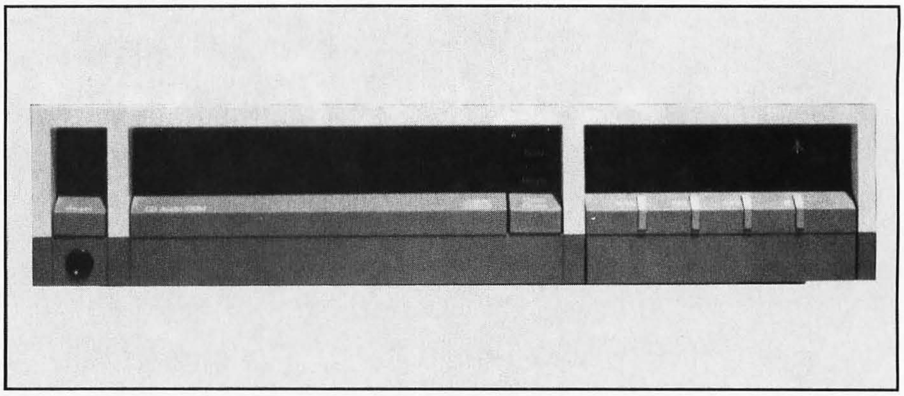
Passport Designs
625 Miramontes Street
Half Moon Bay, CA 94019
(415) 726-0280

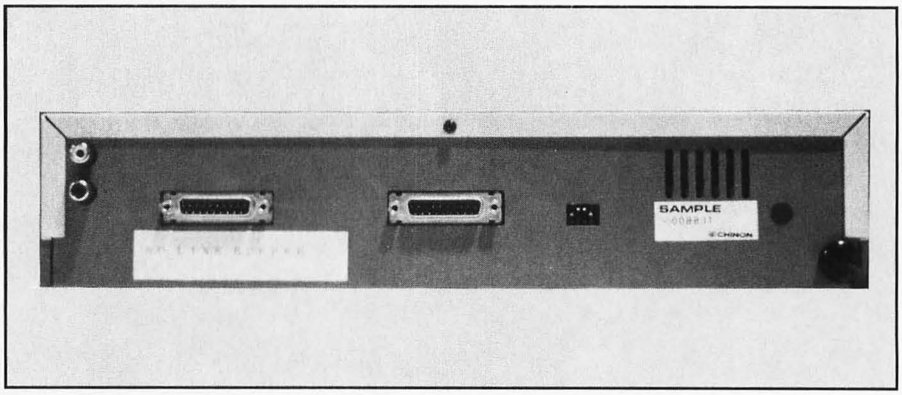
Sonus Corp.
21430 Strathern St. Suite H
Canoga Park, CA 91304
(818) 702-0992

MIDIsoft
PO Box 1000
Bellevue, WA 98009
(206) 827-0750

68000er / ST Magazin
Horst Brandl
Redaktion Markt & Technik Verlag
Aktiengesellschaft
Hans-Pinsel-Strasse 28013 Haar bei
Munchen, West Germany

COMDEX Sidelights ➡





ATARI CD-ROM

Laser disc opportunities

For the past year Atari has been showing a prototype of an accessory box for your ST that will read recorded information from a compact disc. The unit is called a CD-ROM, and prerecorded information is available from companies who might have previously sold you an encyclopedia, dictionary, thesaurus or database library. The Atari CD-ROM unit looks and functions just like run-of-the-mill compact disc player. A compact disc is loaded into the machine, and the Play button is pressed. Once active, your ST can query the CD-ROM for any information stored on the disc. The data can be text or graphics, and lots of it. A typical compact disc can hold the entire Webster's encyclopedia and Roget's thesaurus.

CD-ROM is an offshoot from the laser disc technology developed for the recording and entertainment industry. Laser discs encode information as minute impressions in a clear plastic disc, then a laser beam is used to read the recorded information.

CD-ROM has already made inroads into libraries. A listing of all of the magazine articles published since 1982 is available on a CD-ROM from IAC Systems, called INFO-TRAC: An IBM PC/AT communicates with a Pioneer laser disc player to find magazine information. Suppose you want to find the most recent articles about CD-ROM. Typing "CD-ROM" on the PC's keyboard would cause names of appropriate articles and the magazines they were published in to appear. With this information, you can find the periodical containing the article. The amazing thing about the INFO-TRAC is its lightning-fast retrieval speed, thanks to laser disc technology.

CD-ROM units come in several varieties; some can find text and graphics, others can also handle recorded video and high-fidelity sound. Although the Atari CD-ROM unit will only communicate text and graphics with your ST, the machine can also be used as a CD Player to listen to prerecorded music.

A new development in the CD-ROM field is Compact Disc Video (CDV), in which recorded video and sound can be played back. Cinemaware, a popular producer of entertainment titles for the Atari and Amiga computers, has begun working on an interactive CDV system with Disney and Magnavox. The system will be based on the planned Magnavox CDV player, using Cinemaware's operating software. Disney is involved to provide its resources and input for the planned system, and one of the ideas on the drawing board is to create an interactive game based on Disney's popular *Duck Tails* television series that is now on the air.

CD-ROM and CDV applications are much more difficult to develop than the average computer application. Writing an interactive game requires the talents of good programmers, graphic artists, cartoon producers, talent coordinators, consultants during the development of the CD-ROM and a company which can bring all of these resources together.

Disney has already produced a CDV system that has been in operation since September 1985, when the EPCOT Center facility opened its doors for the first time at the Magic Kingdom in Florida. Throughout the new park, guests may use the World Key system to find information about the park. The system uses a microcomputer, Sony LDP 2000 laser disc player, and a Sony Trinitron monitor with a special "touch-screen" interface.

World Key users first see a map of the entire park. If the user touches the screen over one of the park's pavilions, a prerecorded one minute overview of the pavilion is shown. The show can include animation, special effects, sound effects and other interesting video animation to show the user the detailed points of interest in the pavilion.

"When the World Key screen is pressed, the computer compares where the user's finger is to the graphic being displayed from the laser disc player," said John Kemp, general manager of Automation/Computer for Walt Disney World. "The laser disc player is then instructed to play a recorded video message, then wait for another screen press."

Originally, Disney used two Sony LDP 1000 laser disc players, because the access speed to play a video message took too long between messages.

Disney used the World Key system to pioneer some of the technology needed to develop interactive video disc systems. In 1985 the technology was very new, but in 1988 it has become commonplace. Arriving at Atlanta airport for the COMDEX '88 trade show, we found a kiosk of touch-screen information terminals describing all the available hotels, car rentals and restaurants in and around Atlanta. By touching the screen a picture of the hotel appears; the system can also place a free call to the hotel for reservations or check-in information.

Disney is now working on advancing this technology into areas of EPCOT that were previously based on hard disks and audiotape for information retrieval. Within EPCOT at any point in time, a dozen or more live shows will be taking place using hydraulics, light shows, servo controllers and other special effects.

"The EPCOT system currently uses an audiotape of the pavilion show to drive a VAX 1150 main-frame computer. The VAX looks up the event on one of its 100-megabyte hard disks and sends the event information through a simple network to the pavilion," explains Kemp. "In the pavilion is a show controller which translates the event into a digital or analog signal which can control one of the thousands of devices that go into one of our shows.

"We've been looking into changing the system to use microcomputers, instead of the VAX main-frames. We went with the VAX systems because the research and development time before EPCOT opened was very short," Kemp said. Microcomputers are perfectly suited for the day-to-day task of looking up data and transmitting it over a small network.

The techology of laser discs could easily be used at EPCOT center. Laser discs with the audio portion of a show could be recorded. A CDV would also hold the event information for each show, then a micro would be used to coordinate the show information and the network. This application would be both reliable and inexpensive.

Kemp told us Disney estimates the new microcomputer-based system to be installed within the next 18 months. Although many systems are currently being evaluated, Kemp didn't rule out a 68000-based machine to do the job.

A LOOK INTO THE MAIN COMPUTER ROOM AT WALT DISNEY WORLD EPCOT CENTER.

▼

People on the move

The COMDEX show has many incarnations: Winter in Las Vegas, Spring in Atlanta, Summer in the Orient. The Atlanta show usually doesn't draw as many attendees as some of the other shows — the attendance in Atlanta was only 55,000 people. Among the hustle and bustle of the show, many faces, old and new, were seen comming in and out of the Atari industry.

Computer Software Service (CSS) is the largest distributor of software for the ST computer. CSS was run by Bob Schurit, V.P. Sales, and Roger Young, V.P. Marketing. Both men were rather flamboyant and gave a certain "fun" feeling to the risky venture of selling consumer software. Under Young and Schurit, CSS grew tremendously. They tripled their office space and bought out Apex Distributors, another strong Atari distributor. Both men have now left CSS. The new general manager is Paul Davidson, who was previously vice president/general manager at CSS's parent company Chas Levy Company.

Richard Frick has left Atari. Frick was one of the original "good-guys" at Atari when he worked on 8-bit Atari products before the Tramiel's bought the company. Like most Atari employees, Frick was bounced around the company doing various jobs mostly related to the ST. Early this year Frick was moved to Mike Katz' office. Katz (formerly of Epyx) is the V.P. of Consumer Electronics, which means games. Apparently, Frick didn't like the new assignment as he quit shortly after. We wish him well in his new position at Tengen.

George Miller has moved to Michtron Software from Compute! Publications. Miller left his editing position at Compute's ST magazine to become the Director of Support at Michtron. Since joining Michtron, Miller has founded Michtron's book division. The *GFA Basic Training Reboot Camp* ($19.95, Michtron) which was written by Miller is the company's first offering from the new division.

Joining the ranks of Commodore, Ken Weber brings his 21 years of marketing experience at IBM to his new position as vice president of sales. Ken is already praising the virtues of the Amiga and predicting a 60% increase in the Commodore market.

Unfortunately James Mitchell Small, won't get to work at Data Pacific. David Small's newborn son is now a pretty bouncing baby who in April joined the Small household. Small, the inventor of the Magic Sac, has left Data Pacific in search of fun and frolick. The split between Small and Rosenblum was friendly, with Rosenblum continuing to market the Magic Sac. Joel Rosenblum, president, and Dan Moore, R&D, are still working on new ways to put Macintosh software onto your ST (and soon onto your Amiga.)

Jack Duree, publisher of the *Atari Journal,* a small monthly magazine devoted to the ST, has decided to get out of the ST industry. The *Atari Journal* will become *Pages,* a newsletter for people involved with desktop publishing. The newsletter will be published under the new company name of Laser Graf publishing and will at first cover ST products and eventually broaden to include IBM PC and Macintosh software.

Dead zones at the Atari booth

While people were milling about the Atari booth, gazing with wonder over the new software being shown and the new hardware add-ons on display, several parts of the Atari booth were empty and otherwise deserted.

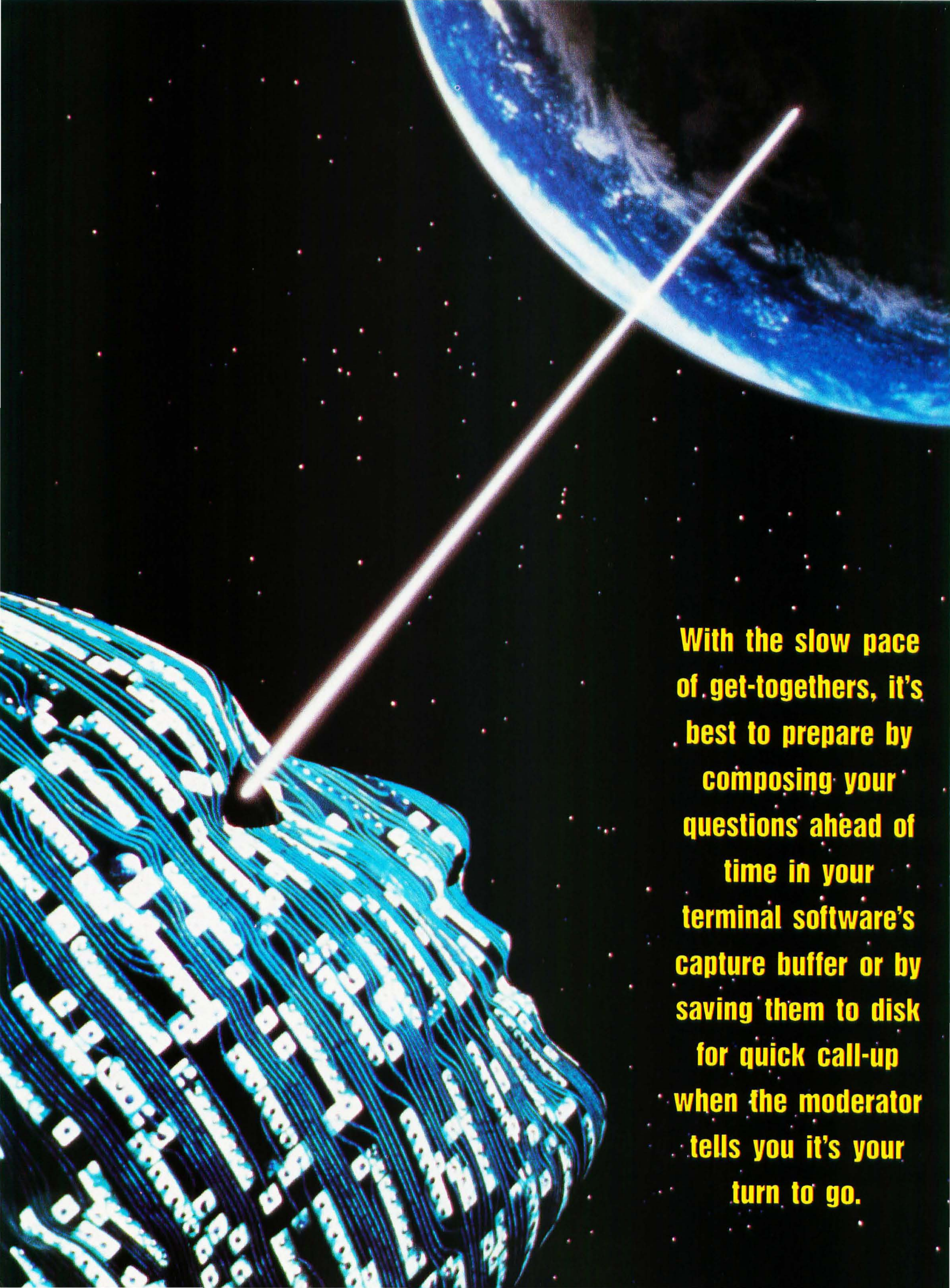
One minibooth displayed the announced, but not shipped, Atari PC MS-DOS machine. Atari announced their IBM PC compatible unit at last year's Summer Consumer Electronics Show (CES, as covered in ST-Log.) The new machine received little fanfare, with Atari being more apologetic than enthusiastic about its new product offering. The Atari PC is equipped with a 80286 CPU and has four slots for expansion cards. There it sat, in the Atari booth, with no one looking on.

Another booth that seemed to repell onlookers was the *Microsoft Write* display. Microsoft Write was first announced in 1986, when the ST market was hot for a multifont word processor that could also handle graphics like Microsoft Word for the Macintosh. MS Write is a port of Microsoft Word 1.05 for the Macintosh. As a typical program which relies on GDOS — the utility software which allows GEM to display and print fonts and graphics — MS Write for the Atari received little fanfare when it finally hit the market two years after its impending announcement.

The other exhibits at the Atari booth were well attended with excited visitors who got a chance to see the next wave of software for the ST.

EPCOT CENTER'S NEW MIGHTY SPECTACLE "ILLUMINATIONS." ▶

THE NEW ATARI IBM PC COMPATIBLE UNIT WAS INTRODUCED AT LAST YEAR'S SHOW. ▶



With the slow pace of get-togethers, it's best to prepare by composing your questions ahead of time in your terminal software's capture buffer or by saving them to disk for quick call-up when the moderator tells you it's your turn to go.

DATABASE DELPHI

by Andy Eddy

The ST area is shaping up quite nicely since its inception in late March. As we mentioned last month, the loss of the Starship Amiga area left an open slot for the ST SIG. For those of you newcomers to DELPHI and Atari telecomputing, when you log in to the system, type "GRO ST" (an abbreviation for Groups and Clubs menu and selecting the ST SIG) to quickly enter our new home. Activity is quite brisk, and there are dozens of new forum messages posted every day.

Along with the forum action, the databases have been bristling with new files. One of the sections of interest is the ST Report (type "DAT ST" to get there from the ATARI ST> prompt). This group of dedicated individuals brings out an online magazine every week, detailing the events of the week, be it an online conference with an industry leader, reviews and comments on new software or modifications to the ST hardware. It offers a different perspective to the Atari world.

Speaking of online conferences, we've just hosted a couple with Atari's Neil Harris and Gribnif Software's Dan Wilga, Mike Cohan and Rick Flashman (makers of *Neodesk*, the desktop alternative program) as guests. These events usually draw a good-sized crowd and put the users into the position of devil's advocate, firing questions with the aplomb of Sam Donaldson at a presidential news conference.

There's no need to go through the details here of what took place at those events; this column's purpose is to make your use of DELPHI more rewarding and introduce you to some of the more useful aspects of the service. If you want to look back at the transcripts of these conferences (or any other, for that matter), they are filed in the databases in the General Information (type "DAT GEN" from the ATARI ST> prompt). Searching for "transcript" as a keyword ("SEA TRANSCRIPT") will bring up these files for you to peruse or download.

The gift of gab

While on the subject of conferencing, let's look at this side of the network. Conferencing (or COs, as they are called) is a bit different from the rest of what DELPHI has to offer, due to fact that it takes place in "real time," much like a telephone call. Add to that the ability to group a large number of people together, and you've got a great way to get the latest news of the Atari world, get help when you're in a bind or just meet other Atari users and gab.

When you enter "CO" from the ATARI ST> menu, you'll find yourself ported to DELPHI's conference system. Here's what you'll see:

```
Welcome to the Atari ST Conference System
Conference Menu:
WHO (list groups) PAGE a user
JOIN a group      NAME nickname
EXIT
CONFERENCE>
```

Simple enough, right? This is the easiest part of the conferencing area; once you join a group, you will have quite a bit more power at your beck and call.

Let's say you're having a problem finding a particular file in the databases, and you want to ask a sysop (system operator, the folks who maintain the SIGs) who is online at the time. Well, you could use the /SEND command to ask your question, but if it extends past a few lines of text, you will find the repeated typing of the /SEND command to be a bit tedious.

In such a case, it would be worth your while to enter the conference area, start a group and page the sysop into the conversation:

```
CONFERENCE> /join This is a test.
You have just created group "This is a test."
(Type Control-Z to exit back to menu)
/page analog2
ANALOG2 would like to talk with you in Atari ST conference.

analog2 being paged.
```

Okay, this may seem a bit confusing to look at. The reason for that is that *I* am ANALOG2, and I'm paging myself. For the purpose of this tutorial, the previous example shows what the "pager" and the "pagee" will see on their screen. If you attempt to call someone into conference, you'll be shown the username of the person you paged (or be notified that they are either tied up with another chore, have locked themselves out of external contact with the /BUSY command, or are not available on the system); if you receive a page, you'll be told who is trying to contact you.

In a group, you have a slew of commands you can use. Many of them help you communicate with others better, such as /GNAME XXXX (to select a descriptive name for your get-together; "/GNAME Talking About New Software," for instance), /NAME XXXX (where XXXX is a name different from your ID, so people know who you are; "/NAME Andy," for example), /ANSWER or /ACCEPT (to agree to another person's page and be brought to their group), and /REJECT (to kindly turn down a page).

There are also a few commands that you may not need to use very often, but are nice to have around anyway. The /RNAME XXXX command will display a user's ID (where XXXX is the name they are using in CO). If someone is getting out of hand and you don't want to see anymore of their messages you can use the /SQUELCH XXXX command to lock out their text from your screen. To get the full slate of "/" commands, type /HELP from the conference area.

I'm a little confused this about

Getting used to the sequence of conference text can be difficult. The main reason for this is the delay between when a person hits Return to pass text to DELPHI, and when the text actually appears on everyone's monitors. This delay results in a staggered conversation. If you're not accustomed to it, this can be quite awkward and frustrating, because it may appear that people are ignoring you when they actually are composing their replies. Most keyboard jockeys come from the Christopher Columbus Search and Discover School of Typing, so it may take some time before a full response is received.

A couple of other commands also make it easier for you to keep up with the action. Many ST terminal software packages let you enter your text from a "type-ahead" line, where you can compose your entries before you hit RETURN and they get sent to DELPHI. If you use this method, it isn't necessary—and in fact, it can be more confusing—for DELPHI to echo your text back to you. Using /NOECHO tells DELPHI not to bother showing you your initial entry when you hit RETURN; /NOREPEAT gets the system to hold the bounce back of your line (as the others see it) from going to your screen also. The pair accomplish somewhat the same thing, but in different manners.

No need for a tuxedo or gown

The final note about online conferencing regards "formal conferences." When we have a guest who will answer questions from the users (as we mentioned at the onset of this column), the situation calls for formal protocol, so the onslaught of queries can be better controlled. One of the sysops will usually moderate—using special commands that DELPHI sets up for such an occasion—setting up a group name and playing traffic cop to the proceedings.

It's requested that the attendants follow some rules also. Among these are keeping an ASCII hush when not asking a question, signalling the moderator with a "?" when you'd like to ask a question and keeping the length of comments and questions to a limit for the benefit of others. Again, with the slow pace of these get-togethers, it's even better to prepare by composing your questions ahead of time in your terminal software's capture buffer or by saving them to disk for quick call-up when the moderator tells you it's your turn to go.

Looking over the transcript of any formal CO will give you a better idea of what takes place—though they are edited a little for clarity. We've also placed a help message in the SIG to advise you of the other devices you can use to keep a formal CO moving along at a decent clip. To read this help message, type "HELP" at the Atari ST> prompt, then "REA 1" to read the text of the Formal Conference Protocol message.

Keep your eyes open for word of formal conferences, as well as other important announcements, at the entry to the ST SIG. As always, we also hold our weekly CO on Tuesdays. Till next month, C U online. . . .

Make the DELPHI Connection

As a reader of ST-Log, you are entitled to take advantage of a special DELPHI membership offer. For only $19.95 ($30 off the standard membership price!), you will receive a lifetime subscription to DELPHI, a copy of the 500-page *DELPHI: The Official Guide* by Michael A. Banks and a credit equal to one free evening hour at standard connect rates. You can make the DELPHI connection by signing up now; using an Atari computer and modem, almost anyone in the world can access DELPHI (using Tymnet, Telenet or other networking service) via a local phone call.

To join DELPHI

1. Dial 617-576-0862 with any terminal or PC or modem (at 2400 bps, dial 576-2981).

2. At the Username prompt, type JOINDELPHI.

3. At the Password prompt, enter STLOG.

For more information, call DELPHI Member Services at 1-800-544-4005, or at 617-491-3393 from within Massachusetts or from outside the U.S.

DELPHI is a service of General Videotex Corporation of Cambridge, Massachusetts.

Astra News

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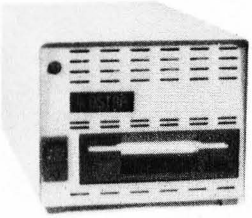
NOW THREE SERIES OF HARD DRIVES !

System HD+ Series **Home / Office Series** **Studio Series**



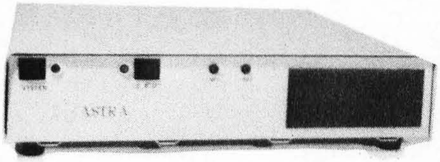
THE "TANK"

The System HD+ has been recognized as extremely tough and reliable by hundreds of Atari ST users. It is built to exacting standards and scrupulously tested. Astra Systems is so confident of the quality of this unit we offer a limited one year warranty.

Originally offered as a 20 Megabyte hard drive with built-in 3 1/2" floppy, it now is also available in 30 and 40 Megabyte units with floppy.

Supplied with formatting, partitioning software, and backup program.

The floppy used in this unit is a precision drive with direct drive motor, and can be formatted with high density format programs.



THE EXPANDER

Internally expandable hard drives come either with or without precision 3 1/2" floppy drives.

Four AC outlets with full three line surge suppression are installed at the rear of the unit. One of these controls the CPU and the others are available for monitor, printer, etc. Two push button switches on the front control the CPU independently of other peripherals. EMI and RFI filtration is included.

Twenty, thirty, and forty megabyte units expandable to 120 megs.

All necessary hardware is already installed in original unit so addition of upgrade kits is fast and easy.

RM 60/120

The RM 60 rack mount hard drive for the MIDI musician fits both permanent and portable racks.

Expandable from 60 to 120 Megabytes internally with the addition of the +60 kit. Or purchase it complete in the model RM 60/120.

Astra hard drives for the Atari MIDI musician have become the standard for the industry, and are being used by top professional groups worldwide. Our power supply is equipped for 120 and 240 volt operation by merely moving one wire. This makes performing in UK and Europe easier and safer.

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REVIEW

DeskJet Printer

Hewlett Packard Company
P.O. Box C-006
Vancouver, WA 98668
$995

Reviewed by David Plotkin

With the advent of the *HP Deskjet Printer,* quiet printing at 300 dots per inch (identical to Laser printers) just became available to those of us who don't have bottomless pockets. The Deskjet features fast printing, single-sheet feeding and graphics output unmatched by any other printer in this price range.

The Deskjet has a standard Centronics parallel port as well as a serial port for connection to your ST. It uses inkjet technology, in which the ink is sprayed onto the paper through tiny holes in the combination ink cartridge/print head. When the ink is used up, you simply throw the whole print head away and install a new one. Unlike some earlier inkjet printers, however, the Deskjet does not require special paper, and is quite fast—240 characters per second in draft mode. Only single-sheet paper (either 8.5 x 11 or 8.5 x 14) can be used—there is no way to use tractor feed paper. However, you can feed envelopes without removing the single-sheet paper—which is very convenient. Try feeding envelopes into your dot-matrix printer! The front panel of the Deskjet includes buttons to cycle the printer on- and offline, eject a sheet of paper, switch print modes (draft or letter quality) and switch fonts. The printer comes equipped with normal and condensed Courier fonts built-in and plug-in font cartridges can be purchased. You can also purchase a RAM cartridge for downloading fonts to the printer.

The Deskjet is quiet. It is just barely audible while printing, primarily due to the paper-feed mechanism. It certainly is a pleasant change after the constant whine of my 9-pin printer. But the test of any printer is, of course, its printing, and it is here that the Deskjet really shines. It is designed to work just like HP's famed LaserJet II, and will accept commands from any program with a LaserJet driver. While there are currently few of these, professional quality programs such as Migraph's *Easy Draw,* Neocept's *WordUp* and *TimeWork's Desktop Publisher ST* all include LaserJet drivers. Further, it is no more difficult to construct a custom printer driver for the Deskjet for your favorite word-processing program, than for any other printer. The excellent manual includes all the command codes for italics, bold, condensed, etc.

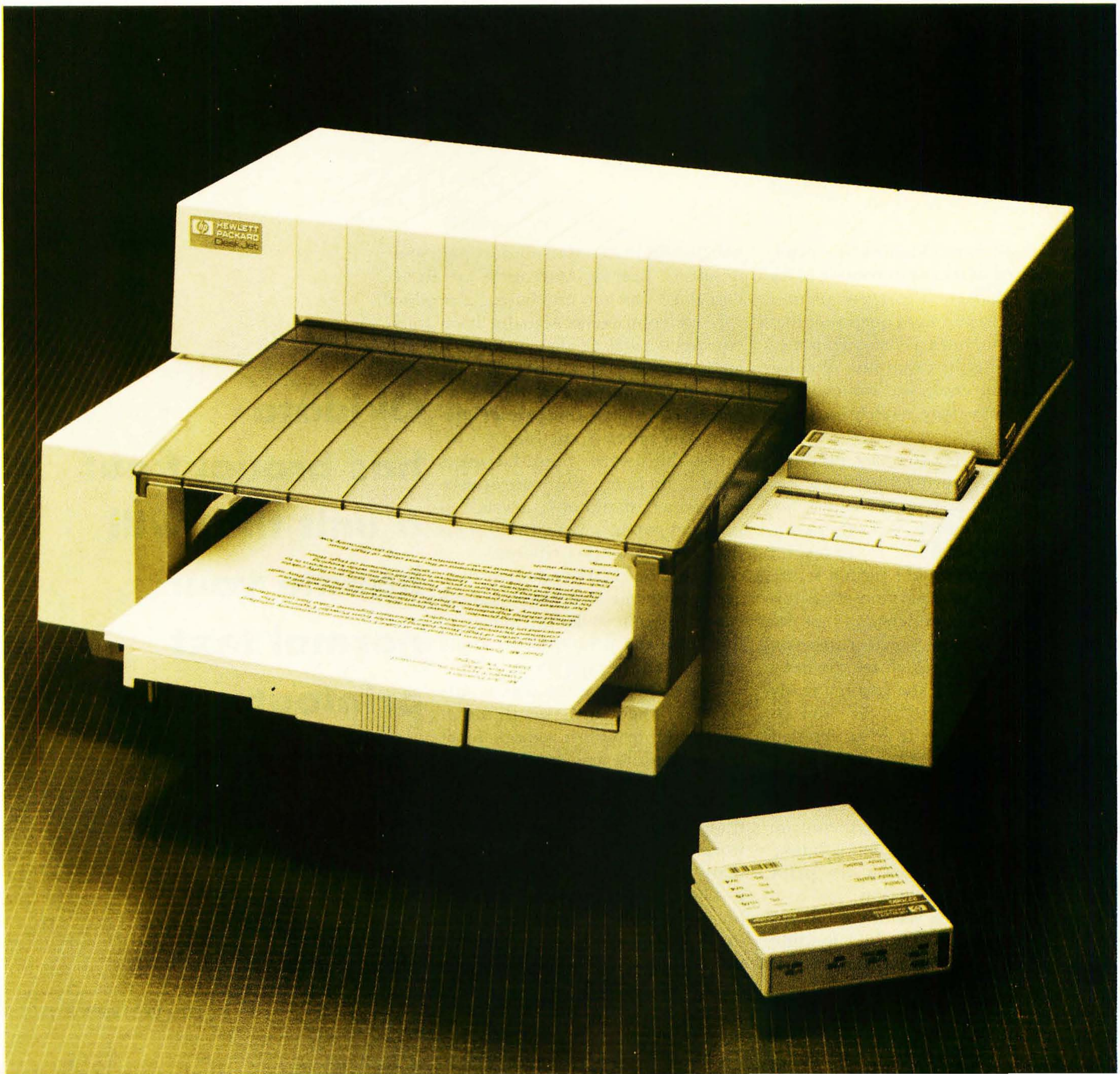
Letter-quality printing is virtually indistinguishable from a daisy wheel printer, just as it is with a Laser printer. When printing graphics with Easy Draw's Deskjet driver, the output quality is absolutely stunning. In fact, any GEM format picture (such as those output by Migraph's *Supercharger*) will print out beautifully on the Deskjet, since GEM format pictures will print out in whatever resolution the printer is capable of. This is unlike graphics packages such as DEGAS, where the print-out is limited to the resolution of the screen (about 72 dots per inch). In fact, the combination of Migraph's Supercharger, Easy Draw and the new Deskjet driver work so well together that Migraph has decided to market the Deskjet and is advertising it through their user newsletter. The package containing the Deskjet and the driver is available for a limited time for $949.

What you give up when you buy the Deskjet (instead of a Laserjet) is speed. While a Laserjet can produce a page of complex graphics in about a minute, the Deskjet can take four times this long, or longer. With the purchase of an inexpensive printer buffer (or by using part of your ST's RAM as a buffer), you can continue to work while the printer churns on. Further, because the Deskjet accepts data from the printer line by line (instead of a whole page at a time like the Laserjet), you can print out a whole page of graphics *without* the extra two megabytes of memory required by the Laserjet. Purchasing this extra memory raises the cost of a Laserjet to about $3,000, so the Deskjet costs only about a third as much. I'll give up the speed to save $2,000!

Also available from HP is an Epson FX-80 emulation cartridge that plugs into the Deskjet. This cartridge works very well, printing text and graphics from every program I tried, including the ST screen dump and GEM graphics from Easy Draw using an FX-80 driver. DEGAS also worked well. This cartridge makes it possible to use the Deskjet even if your favorite program doesn't have the proper driver.

I like the Deskjet a lot. I wish the paper tray had a larger capacity, and the mechanism does jam on occasion. But overall, it is sturdily built, small, quiet and relatively fast. Some 24-pin printers are faster, but they are noisier and don't have as good a resolution. I'm not going back to my old printer.

The Deskjet features fast printing, single-sheet feeding and graphics output unmatched by any other printer in this price range.


HEWLETT PACKARD DeskJet

Okimate 20 color printer

Okidata
532 Fellowship Rd.
Mt. Laurel, NJ 08054
(609) 235-2600
Printer with Plug 'N Print Module
$268

Reviewed by Andy Eddy

Bored of the same old mundane printouts? Tired of that drab, routine black on white? Okidata, a proven printer manufacturer, has brought out a unit that will handle your normal text print-outs, as well as adding the capability of color printing to your computer duties. And, may I add, they've done it fairly inexpensively, too!

The Okimate 20 is a compact, unidirectional printer measuring 13 x 7½ x 2¼ inches, so it won't take up very much additional space alongside your other computer hardware. It features a comprehensive manual—perhaps the most complete, well-diagrammed, informative and easiest to understand that I've seen in some time—which runs you through the various procedures you need to undertake to make the printer ready for work with your system. To show its comprehensive nature, it gives detailed examples of troubleshooting, going so far as to suggest how to replace the print head and how to repair a broken ribbon. This completeness goes against the norm; most companies would just tell you take it to a service center to get a new print head or go buy a new ribbon.

To get it to operate, you must buy an accompanying "Plug 'N Print" module that works with your specific computer, which eliminates the photocopied "addendum" that we Atari users are so accustomed to when purchasing a product for our computers. Actually, it's a fully-equipped package that includes the circuit board/interface (that easily slips into the side of the printer), a cable to connect between the printer and your computer (something I wish more hardware manufacturers would include), the previously-mentioned handbook, a stack of pin-feed paper, a disk (we'll discuss that next) and two ribbons—one color and one black-and-white. Both are in cartridge form for maximum simplicity in installation, as easy to load into the printer as an audio cassette is in a tape player.

The software on the disk is substantial: There are two different screen dump utilities—both print the screen out as viewed, but one takes up less memory to allow more room for your application; the trade-off is that the latter version works slower. There are also two short, ready-to-print demo pictures that show how well your Okimate 20 prints displays, but they're also a good test of whether there are any problems with the printer, how it operates, and how dark or light

Okidata has brought out a unit that will handle your normal text printouts, plus color printing capabilities.

OKIMATE 20
Dark
Ready
Select
OKIDATA
Requires Plug 'N Print Package. Sold Separately
OKIMATE
THE PERSONAL COLOR PRINTER
20
OKIDATA
One Color Printer

your want the output (there is a darkness setting switch on the top for manual adjustment). Okidata sports a toll-free help line to assist you with most problems that crop up.

Either of the print utilities can be placed in an AUTO folder to be enabled right after boot-up; to get things running, the program is called with the Alt-Help key combination. An annoyance that surfaces with color print-outs (if that's your wont) has to do with the necessary installation of the Control Panel accessory, because you have to set up the Install Printer accessory for color output. My wish would be for the screen dump programs to handle this duty, leaving one or two accessory slots open for more useful utilities. As an alternative, you can find printer drivers available for *DEGAS/DEGAS Elite* and word processing programs on most online services, and from user groups, especially as the Okimate 20 becomes more popular.

Once called into action, the Okimate 20 is not exactly what you'd call speedy; this is because of the method the printer uses to do its tricks. Instead of the "standard" dot-matrix manner, Okidata uses a thermal transfer, which melts a waxy ink off the ribbon and onto your paper. This means that each ribbon is only good for one pass, which limits its lifespan to about 15 color screens or 75 screens with the black ribbon. Let me add that due to this technology, the standard rough bond paper used by most printers ends up unusable. Smooth paper (like that used in photocopiers) is desirable, and Okidata makes several recommendations in their manual to help you out.

In color, it takes three passes over a print line to get the various shadings onto the page, as it mixes red, blue and yellow in different concentrations to create the correct hue. In my tests, it took about 11½ minutes for a color screen dump, and 2¾ minutes for a black and white screen dump. The only shortcoming in printing pictures is that the "lines" of data are often unevenly printed. Because of this, some lines end up slightly separated, leaving a minuscule gap of white in the middle of your graphic; others cause a thin slice of darkening where the two lines overlap. How dark the image is printed and the content of the picture will determine how annoying this effect is.

Cost is the other consideration you must face. Being that you get so few prints from a single ribbon cart, and the price of a replacement ribbon cartridge (from Okidata) being $6.69 for a color ribbon and $5.95 for a black ribbon, this isn't your best bet for anything other than final drafts. Unlike most printers, though, you are offered another less-expensive option, that of not using a ribbon at all, accomplished by removing the ribbon and loading the printer with thermally-sensitive paper; of course, this doesn't work with color printing. As mentioned in the manual, thermal paper usually comes in rolls, and for that purpose, Okidata offers an optional roll stand for the Okimate 20.

Not to ignore its other side as a text printer, it also handles that chore well—a formatted page of text prints in approximately 2½ minutes. Again, it suffers from the speed limitation, meaning you might choose against it if your applications require heavy-duty document print-out.

On the other hand, if you opt to use it for color screen dumps or an occasional text print-out, the Okimate 20 will give you a decent, low-cost, all-purpose printer. At its price, it makes an especially fine counterpart to your regular printer.

It takes three passes over a print line to get the various shadings onto the page, as it mixes red, blue and yellow in different concentrations to create the correct hue.

REVIEW

Atari ST Realtizer

Print Technik
Marketed in USA by Michtron
576 S. Telegraph
Pontiac, MI 48053
Low or high resolution,
$199.95

Reviewed by Maurice Molyneaux

After the debacle of the software that (now defunct) Hippo packaged with their digitizer, it became common to turn a wry eye on *any* video digitizers for the ST. Then Digital Vision released color and black and white ST versions of their popular ComputerEyes, and at last we could get decent digitizers. Now Michtron has entered the fray, distributing the *Atari ST Realtizer,* manufactured by the German company Print Technik. The Realtizer's packaging says it is "for Quick Snapshot Digitizing." Scanning time is listed as between 1/50 and 1/2 second! The accompanying software includes programs for digitizing in gray scales and in color.

The Realtizer itself is a small black box—approximately three inches on each side and just under an inch tall—with a connector that plugs into the cartridge port of your ST. On the top of the unit is a standard RCA female jack for receiving the video cable from your image source. The software is provided on one single-sided disk, which is not copy protected. You are, in fact, instructed to make a backup before using the digitizer the first time.

With your ST off, you plug the digitizer into the cartridge port (RCA plug side up), hook it up to your camera, VCR, etc. (you'll need your own cable—none were supplied with the Realtizer I used), then boot your ST and run one of the digitizing programs. The programs are GEM driven, with most controls available via drop-down menus or alert boxes; some adjustments can be made from the keyboard as well.

Running DQUI.PRG (from either low or high resolution) puts you in what I call "monochromatic" digitizing mode, where your picture is composed of gray scales, the number of which is user selectable from two to 16. When using a color monitor you are initially presented with varying shades of gray. With monochrome various "dithered" dot patterns are used for different gray scales. If you select two shades, the shades will be pure black and pure white.

As you increase the number for shades (to 4, 8 and finally 16), more gray levels are inserted between black and white. The fewer gray scales you have, the faster the images can be digitized. Selecting two grays and turning the continuous digitize mode on results in a real-time image, but one with only two shades. Not useful for most applications, but great if you wanted to grab "silhouette" images.

If you plan to use actual grays on a color monitor, you'd probably be best off using the eight shade mode, because the ST, having only eight levels for each primary color, can only generate eight levels of gray anyway. In fact, when you boot the program in low resolution, you'll find that the same gray is assigned to *two* shades. In low resolution you can assign colors to various grays by selecting "Lookup." Here you click on the number of the color you want to set (the actual color is displayed to the right of the number), and then go to a color table from which to choose a hue. The table displays 96 colors at one time in a 12 x 8 grid. Clicking on a color puts it into the proper gray slot. Right-clicking advances the grid to show you more colors, apparently allowing you to choose any 16 from the full palette of 512.

Unfortunately, the way these tables are set up, it's difficult to tell if the color you think you want really *is* what it appears to be. Also, you can't see the colors you've previously selected while trying to choose another, making it more difficult than necessary to set up your palette. Even more aggravating is that there doesn't seem to be a way to abort to the Lookup table from the color tables without selecting a color. And, once you've chosen a color, to restore the original shade you either have to try to find that shade on the color table or Cancel the operation, which undoes *everything* you've done in that menu. If you've just set 15 out of 16 colors the way you want, then mess up the 16th and click on Cancel, *zap!* There goes all your work.

To avoid this, you should click on OK whenever you get a few colors set to your liking, then re-enter the Lookup table to continue. It seems to me a standard RGB color mixer would have simplified matters immensely. (Please note that although you can select colors in this manner, the digitizer does not actually scan in color. You are merely "colorizing" a black and white image.)

Digitizing speed isn't quite what you'd

expect with the claim of 1/50 to ½ second. In 16-shade mode with "Fast" selected, I'd say from the moment you click on "Digitize" to when the finished image appears on the screen takes about 1½ seconds. This is because while the digitizer can grab the image in the specified time, it takes the software a bit longer to convert the image to an ST screen display.

The "Fast" selection under the Option menu toggles between scanning all gray levels and showing them on the screen, and scanning each gray level and displaying them separately as it assembles the image. With "Fast" on, the digitized images seem a little grainier and less detailed.

To digitize you first click on "Digi Calib," which automatically calibrates the brightness and contrast adjustment. Next you can use "PICPARA" to adjust the brightness and contrast of your picture. An alert box with buttons appears for this task. The picture is redigitized every time you make an adjustment. An easier method is to select "DIGI CONT," which puts the program into continuous digitizing mode. You can then adjust the brightness and contrast with the F1 through F8 keys.

When you are finished with the adjustments, pressing Escape stops the continuous digitizing. To digitize a single image merely requires you to click on "Digitize." You should use "Digi Calib" whenever you change lighting, camera angle or subject, or whenever there is a scene or POV (Point of View) change on the videotape you are using as a video source.

The Realtizer's packaging says it is "For Quick Snapshot Digitizing." Scanning time runs between 1/50 and ½ second!

There are also tools for inverting all screen colors, horizontally mirroring (flipping) the image and zooming in on areas of it to see details. A "Dezoom" option returns you to the original picture after zooming.

The PRN-Param menu lets you select a printer. The supported types are Epson and C. Itoh compatibles, the Canon PJ-1080A color inkjet and Cannon LPA2 laser printers. X and Y resolution controls let you set the horizontal and vertical size of a print-out, and "PRN-LOOK-UP" lets you set the printer's "color table," choosing dithering patterns for output, or selecting color patterns for output if you have the color inkjet printer.

To print the image you must use "Print" under the Option menu. The output from within the program is generally better than using the usual ST screen dump, and, if you are looking to digitize images specifically for printing, you'd be best off to set the grays to 16.

Screens can be saved and loaded in *NeoChrome, DEGAS, Art Director* and *Doodle* (high-resolution only) formats or as bit images. The color and printer lookup tables can be saved to disk, and both contained in a single file, which can be

recalled for later sessions. Unfortunately, the printer selection and resolution are not saved in this file.

Color digitizing requires the DQUICL program. It works only in low-resolution mode, and, strangely, is missing the printing and picture manipulation options of the gray-scale program (you can't print, invert, mirror or zoom). Images can be saved and loaded, in Neo, DEGAS, Art Director or bit-image formats, as well as in a special RGB format that stores the actual digitized data, not just the pixels of the screen image.

To digitize in color, the manual states you must use a camera to supply video input, not a VCR. This might seem puzzling until you understand how the "real color" images are made. Packaged with the digitizer are three colored filters: red, green and blue. You must mount each filter over your camera's lens and click on the digitizing option for each color, adjusting the image until it is correct. You have to do this for *each* primary color!

In other words, you must shoot color separations! You have to switch filters and take the same image *three times* over! Try to get a person to sit perfectly still through an operation like that! If the subject moves at all, the images become fragmented, and the resulting picture looks like one of the dance scenes in *West Side Story* (where the color negatives were purposefully thrown a few frames out of synch so that "Maria" fragmented into several varicolored ghost images).

And, even if you can find someone rigid enough to get a good shot, chances are the colors won't be what you expect. You have to make a lot of adjustments while digitizing each separation, and also adjust the color saturation of the images. With correct lighting, and a lot of fine-tuning, I was able to get some good pictures. However, in general, I had problems with one color overpowering the picture, or trying to get a flesh tone to show up, looking something like it should.

Realtizer comes with a TOOLBOX program, which allows you to load and save pictures in Neo and DEGAS format, cut, paste, save and load blocks (called "symbols" for some reason). A symbol can be "bent" vertically or horizontally, rotated, rescaled, etc. Colors can be replaced with other colors too. This mini-paint utility is handy for making color adjustment and doing block work. Oddly, it doesn't seem to feature any kind of Draw option!

It's my impression that the weakness of the Realtizer lies in its software. As far as the programs go, they are rather simple, and could have benefitted from a little more work in the user-interface department. Items are grouped strangely, and tools like the alert box for setting brightness and contrast are not intuitive. Perhaps someone will write some new software to make this digitizer really shine.

Finally, there's the manual. This 20-page pamphlet is a sorry excuse for a real manual. Not only is it poorly organized, badly written and sloppily laid out, but it contains some flat-out mistakes. The manual makes reference to an "UNZOOM" selection in the PIC-OPS menu, but the item in question is called "DEZOOM" in the program. The manual refers to two options called "FILTER3" and "FILTER4," which, although they are said to be nonfunctional, don't even appear anywhere in the programs! Furthermore, there's an adjustment screw in the top of the digitizer casing, but nowhere in the manual is it mentioned. It seems to be used to adjust the incoming signal, but I had to whip out a tiny screwdriver to find this out.

You must shoot color separations. You have to switch filters and take the same image *three times* over. Try to get someone to sit still through that!

The pictues taken in gray-scale mode can be pretty good, although they are a bit grainy. The color mode is an outright pain! You *can* get decent color pictures, but it seems more trouble than it's worth. The fact that you can't color digitize off a VCR also limits this unit's usefulness. The color ComputerEyes digitizer doesn't require this color-filter nonsense, and with the release of the *Digispec* program for the color ComputerEyes, I'd have to say that it's a much better choice than the Realtizer.

The black and white ComputerEyes is only $149.95, and the color version is $249.95, as opposed to the Realtizer's $199.95. In light of its price and the limits of its color digitizing software, I'm afraid the Realtizer isn't a viable option for most.

DEGAS

(from page 37)

```
0,0D,7E,00,00,0E,9C
2400 data 00,00,0F,9C,00,00,00,00,08,A
E,49,54,45,4D,20,53
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2420 data 74,20,4C,6F,61,64,65,72,00,4
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2430 data 45,00,5B,33,5D,5B,20,54,68,6
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2440 data 20,45,6C,69,74,65,20,46,61,7
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2480 data 27,76,65,20,73,65,61,72,63,6
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2490 data 75,74,20,49,20,63,61,6E,27,7
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2500 data 69,74,21,7C,20,5D,5B,20,43,6
1,6E,63,65,6C,20,5D
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F,61,64,65,72,20,20
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D,2D,2D,2D,2D,2D,2D
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B,20,44,45,47,41,53
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2610 data 2D,2D,2D,2D,2D,2D,2D,2D,2D,7
C,20,20,BD,20,31,39
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Fast Loader Checksums

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 1080 data  767, 865, 767, 981, 684, 8
01, 795, 775, 122, 650, 7207
 1180 data  888, 718, 759, 797, 829, 7
57, 771, 795, 759, 776, 7849
 1280 data  850, 720, 779, 735, 779, 8
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53, 941, 878, 834, 868, 8417
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27, 905, 827, 902, 839, 8708
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88, 830, 725, 525, 519, 7647
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 2980 data  625, 636, 613, 552, 558, 6
06, 600, 632, 632, 629, 6083
 3080 data  596, 559, 194, 1349
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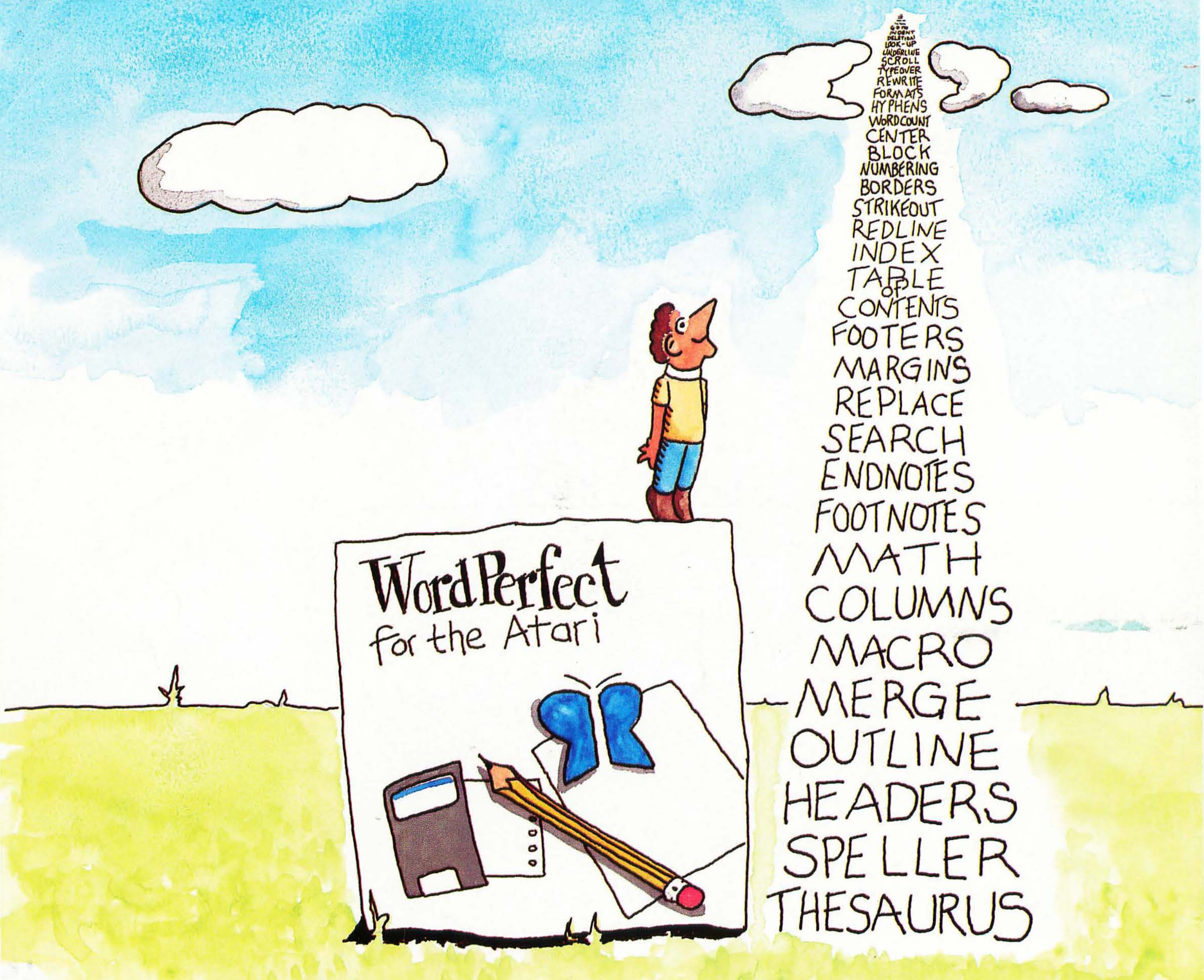
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