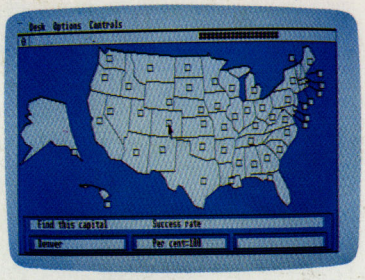
Interview with Leonard Tramiel

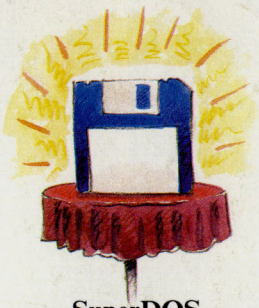
DISK INSIDE

COMPUTE!'s Atari ST DISK & MAGAZINE

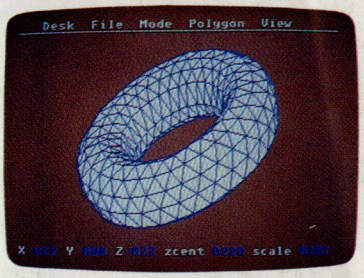
$12.95
October 1987
Issue 7
Vol. 2, No. 5
$17.95 Canada
ISSN 0888-8442
02617



STates & Capitals
What's the capital of Missouri? Montpelier is the capital of which state? Master U.S. geography with this entertaining and educational program for both youngsters and adults.



SuperDOS
This major enhancement of our prize-winning ST-Shell™ *adds nearly 70 MS-DOS and UNIX commands, numerous help screens, and built-in utilities. Execute batch files, run TOS and GEM programs, automate compilers, and more.*



3-D Edit
Create three-dimensional shapes, rotate and view them from any angle, and save them on disk in NEOchrome *or* DEGAS *format. Six sample shapes are included to get you started. A winner in our ST Programming Contest.*

Features and Columns

2 **The Editor's View** ..... *Tom R. Halfhill*
4 **Readers' Feedback** ..... *The Editors & the Readers*
10 **ST News & Notes** ..... *Sheldon Leemon & The Editors*
18 **Interview with Leonard Tramiel** ..... *Tom R. Halfhill & Selby Bateman*
62 **Author's Guide** ..... *The Editors*

The Disk

7 ***3-D Edit*™: Honorable Mention Contest Winner** ..... *Mike Kerekes*
24 **Memory Minder** ..... *Tim Midkiff*
26 **Atari Art: Sailboat** ..... *Arie Berman*
27 **STates & Capitals** ..... *Robert P. Dolan*
30 **Whirling Lines: A Graphics Demo** ..... *Lance F. Squire*
34 ***SuperDOS*** ..... *Richard Smereka*
64 **How to Use the Disk** ..... *The Editors*

Reviews

50 ***The Isgur Portfolio System*** ..... *Thomas M. Castle*
52 ***Easy-Draw 2.0*** ..... *David Plotkin*
58 ***Logistik*** ..... *David Plotkin*

10
0 71486 02617 4

From Origin comes the long-awaited sequel to the award-winning Ultima™ III

Ultima IV

Quest of the Avatar

Available on Apple®

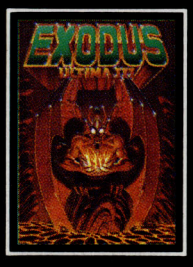
A state-of-the-art fantasy role-playing game of unprecedented magnitude by Lord British™.

Prepare yourself for a grand adventure: Ultima™ IV, sixteen times larger than Ultima III, is a milestone in computer gaming—one that challenges your physical and mental skills while testing the true fabric of your character.

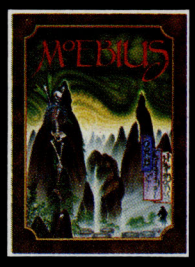
Enter Britannia, kingdom of Lord British. Journey through terrain of infinite proportions, conversing with characters on hundreds of topics. Unravel the mysteries of a superior magic system. At each turn beware of daemons, dragons and long-dead wizards haunting the most tranquil of places. Encounters with parties of mixed enemy types test your strategic abilities. Shrewd use of terrain can lead to victory against seemingly impossible odds.

Survive this multi-quest fantasy, then begin the final conflict, your quest of the Avatar. The ultimate challenge—the self—awaits....

ORIGIN SYSTEMS INC. 136 HARVEY ROAD, LONDONDERRY, NH 03053 (603) 644-3360



ULTIMA™ III sends you on an incredible fantasy role-playing journey through monster-plagued Sosaria in search of the elusive Exodus.



MOEBIUS™ takes you through the elemental planes of a colorful Oriental world of fantasy and adventure in search of the Orb of Celestial Harmony.

AUTODUEL™ is a futuristic, fast-paced strategy role-playing game where the right of way goes to the biggest guns.

OGRE™ is a strategy game fought on the nuclear battlefield of tomorrow as an inhuman juggernaut Cybertank battles conventional forces.

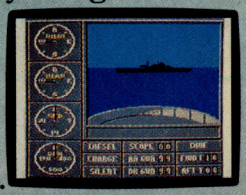
Ultima and Lord British are trademarks of Richard Garriott / Moebius is a trademark of Greg Malone / AutoDuel and Ogre are trademarks of Steve Jackson / Apple is a trademark of Apple Computer Inc / Previous Ultimas are not needed to enjoy Ultima IV

Authors wanted. Call us today.

TEST DIVE ONE FOR YOURSELF.

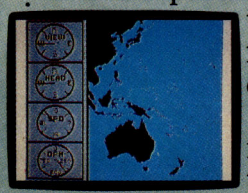
In their day, they ruled over three quarters of the earth's surface.

During WWII, they viciously brought Britain to her knees. And Japan to the ground.



These were the silent killers: Tench. Gato. U-Boat.

And now, they return. In this, the most realistic, all-encompassing simulation ever created for the personal computer.



You will command one of six types of American subs or German Kriegsmarine U-Boats, during any year from 1939 to 1945. You'll perform one of over 60 missions. Or you'll engage in the most difficult task of all: To make it through *the entire war.*

Each vessel is completely unique and painstakingly authentic, so you'll have a lot to learn: Navigation. Weather. Radar.

And the contents of a vital target book, among other things.

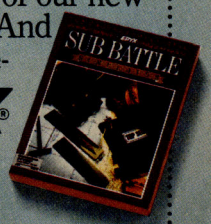
Your arsenal will include deck and anti-aircraft guns. Torpedoes. And mines.

But even all that may not be enough.

Because besides the risk of bumping a depth charge or facing a killer Destroyer, you'll still have to contend with the gunfire of enemy aircraft.

No simulation has ever had the degree of authenticity, gut-wrenching action or historical accuracy of this one.

The first release of our new Masters Collection. And a challenge of unbelievable depth. **EPYX®**



Apple II & compatibles, Apple IIGS, Atari ST, C64/128, IBM & compatibles, Macintosh.

TAKE OUR PREVIEW DISK FOR A SPIN. Drop this coupon in the mail with your check or money order, and we'll gladly send you to the South Pacific to have it out with an enemy fleet.

Mail to Sub Battle Preview, P.O. Box 8020, Redwood City, CA 94063.

	Quantity		Total
Apple II & compat. (128K)	_____	*$1.50 ea.*	_____
Commodore 64/128	_____	*$1.50 ea.*	_____
IBM PC & compat.	_____	*$1.50 ea.*	_____
Atari ST	_____	*$2.75 ea.*	_____
Macintosh	_____	*$2.75 ea.*	_____
Apple II GS	_____	*$2.75 ea.*	_____
Total Disks Ordered	_____	*Total Enclosed*	_____

Name _____ *Phone ( )* _____

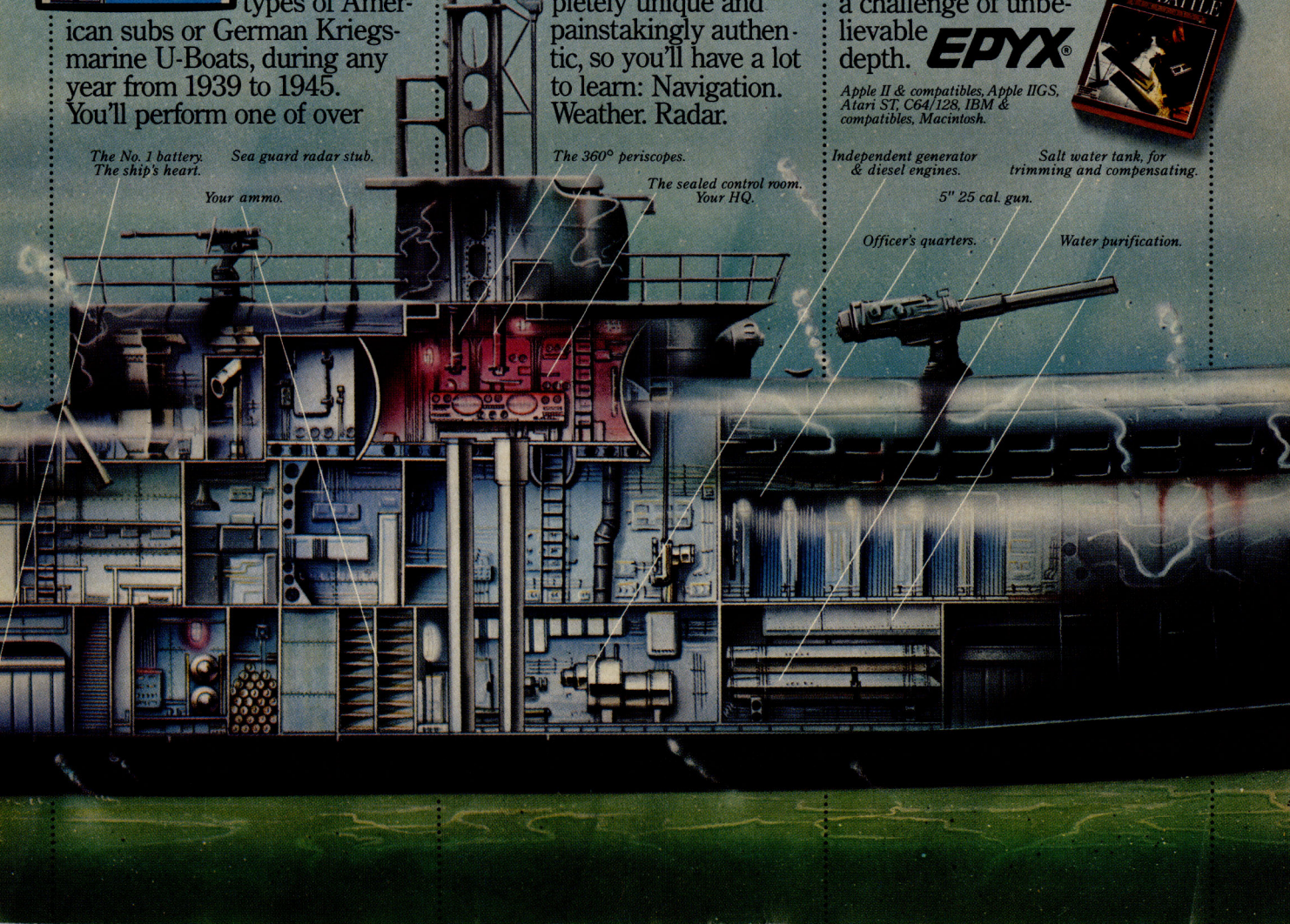
Address _____ *Age* _____

City/State/Zip _____

Canadian orders please add 50¢ for additional postage.

Please allow 4 to 6 weeks for delivery. Offer expires 8/30/87 and is valid only in the continental U.S. and Canada. Void where prohibited.

20



Publisher	James A. Casella
Editorial Director	Richard Mansfield
Managing Editor	Kathleen Martinek
Associate Publisher	Selby Bateman
Editor	Tom R. Halfhill
Assistant Editor	Todd Heimarck
Production Director	Tony Roberts
Editor, COMPUTE! & COMPUTE!'s GAZETTE	Lance Elko
Editor, COMPUTE's Apple Applications Magazine	Gregg Keizer
Features Editor	Keith Ferrell
Technical Editor	Ottis R. Cowper
Assistant Technical Editors	George Miller, Dale McBane, Jim Fuchs
Assistant Editor, COMPUTE!	Rhett Anderson
Assistant Editor	John Shadle
Programming Supervisor	Patrick Parrish
Editorial Programmers	Tim Victor, Tim Midkiff, William Chin, Randy Thompson
Copy Editors	Karen Uhlendorf, Karen Siepak, Jill Champion
Editorial Assistant	Caroline Hanlon
Submissions Reviewer	David Hensley
Programming Assistants	Troy Tucker, Joyce Sides
Executive Assistant	Debi Nash
Administrative Assistants	Julia Fleming, Iris Brooks, Sybil Agee
Receptionist	Anita Armfield
COMPUTE!'s Book Division Editor	Stephen Levy
Assistant Editors	Tammie Taylor, Robert Bixby
Programming Assistant	David Florance
Director of National Sales	Joseph W. Hatcher
Production Manager	Irma Swain
Art Director	Janice R. Fary
Assistant Art Director	Lee Noel, Jr.
Assistant Production Manager	De Potter
Artists	Robin Case, Kim Potts, Scotty Billings, Tony Jacobson
Typesetting	Terry Cash, Carole Dunton
Illustrator	Harry Blair
Director of Advertising Sales	Peter Johnsmeyer
Advertising Director	Bernard J. Theobald, Jr.
Production Coordinator	Kathleen Hanlon
Customer Service Manager	Diane Longo
Dealer Sales Supervisor	Jose Cruz
Individual Order Supervisor	Cassandra Green

James A. Casella, President
Richard Mansfield, Vice President, Editorial Director
Richard J. Marino, Vice President, Advertising Sales
Christopher M. Savine, Vice President, Finance & Planning

Editorial Board
Richard Mansfield, Kathleen Martinek, Selby Bateman, Lance Elko, Tom R. Halfhill, Stephen Levy
Robert Lock, Founder and Editorial Consultant

Editorial offices:	324 West Wendover Avenue Suite 200 Greensboro, NC 27408 USA
Corporate offices:	825 7th Avenue New York, NY 10019 212-265-8360
Customer Service:	800-346-6767 (In NY 212-887-8525) 10:00 AM–12:30 PM; 1:30 PM–3:00 PM Monday–Friday
Dealer Sales:	800-638-3822 (In NY 212-887-8566) 9 AM–5 PM Monday–Friday

Advertising Sales Representatives

New England & Mid Atlantic
Bernard Theobald, Thomas Link: 212-315-1665

Midwest & Southwest
Jerry Thompson, Lucille Dennis: 312-726-6047 (Chicago), 713-731-2605 (Texas), 303-595-9299 (Colorado), 415-348-8222 (California)

West, Northwest & British Columbia
Jerry Thompson, Lucille Dennis: 415-348-8222

Southeast & International
Harry Blair: 919-275-9809

Send all advertising materials to:
Kathleen Hanlon
324 West Wendover Ave., Suite 200
Greensboro, NC 27408

COMPUTE! Publications, Inc.
Part of ABC Consumer Magazines, Inc.
One of the ABC Publishing Companies
ABC Publishing, President, Robert G. Burton
1330 Avenue of the Americas, New York, New York 10019

The Editor's View

As promised, this issue of COMPUTE!'s Atari ST Disk & Magazine contains what is perhaps the most versatile program ever published by an Atari magazine: *SuperDOS*. It's a complete disk operating system shell that provides an advanced command-line interface for your Atari ST.

SuperDOS is an enhancement of *ST-Shell™*, which won an Honorable Mention in our ST programming contest last year, but it goes far beyond its predecessor. *SuperDOS* now boasts nearly 70 commands with scores of options, and many commands have both UNIX and MS-DOS synonyms for maximum flexibility. What's more, *SuperDOS* has extensive online help screens—a help screen for virtually every command, in fact.

In addition, *SuperDOS* has built-in utilities for printing files and compiling programs, generalized output redirection, improved batch-file processing, autobooting batch files, and much more. Yet, it occupies only about 65K of memory—the best bang for the byte you'll find anywhere.

Another valuable program in this issue is *3-D Edit™*, which won an Honorable Mention in our programming contest. *3-D Edit* is a cross between a drawing program and a computer-aided design program. You can create three-dimensional shapes, rotate and view them from any angle, display them with various shading options, and even save the images on disk in *NEOchrome* or *DEGAS* format as well as *3-D Edit*'s own format.

"STates & Capitals" in this issue is the first truly educational program we've published in COMPUTE!'s Atari ST Disk & Magazine. Ideal for youngsters who are learning U.S. geography—or adults who are a bit rusty—STates & Capitals demonstrates that the ST has a lot of potential in the educational market. Frankly, we think the ST needs a big boost in this area, and we'd like to see more submissions like STates & Capitals. Since we've provided the source code on disk, any accomplished ST programmer should be able to take advantage of the basic structure and modify the map. How about a version that teaches European countries and capitals? Or Asian countries and capitals? Or South America, or Africa?

If you take up this challenge, don't forget to retain an important feature of STates & Capitals—its compatibility with both color and monochrome monitors. Only about 20 percent of ST users in the U.S. have monochrome monitors, but they're vocal when they feel they've been unfairly excluded. The vast majority of ST submissions we receive are written for color monitors, and often we'll ask an author to modify a submission so it works in monochrome, too. But if the author doesn't have a monochrome monitor, it's like working blind. Sometimes we end up modifying the program ourselves, as was the case with *3-D Edit* in this issue. However, it's a tough job to analyze and modify someone else's code, particularly when a deadline is looming. That's why a submission that's designed for both color and monochrome is always greeted with an especially warm welcome.

To round out the issue, we've got "Memory Minder," a handy desk accessory that keeps track of the amount of free RAM in your ST; "Whirling Lines," a graphics demo that's particularly impressive in lo-res; "Sailboat," a very painterly Atari Art screen; "Interview with Leonard Tramiel," a fascinating conversation with the most technically minded Tramiel; an extensive "ST News & Notes" section; and our other regular columns and reviews. We hope you enjoy them.

—Tom R. Halfhill, Editor

COMPUTE!'s Atari ST Disk and Magazine is published bimonthly by COMPUTE! Publications, Inc., 825 7th Ave., New York, NY 10019 USA. Phone: (212) 265-8360. Editorial Offices are located at 324 West Wendover Avenue, Greensboro, NC 27408. Domestic Subscriptions: 6 issues, $59.95. POSTMASTER: Send address changes to: **COMPUTE!'s Atari ST Disk and Magazine**, P.O. Box 10775, Des Moines, IA 50347-0775. Second class application pending. Entire contents copyright ©1987 by COMPUTE! Publications, Inc. All rights reserved, ISSN 0888-8442.

The COMPUTE! subscriber list is made available to carefully screened organizations with a product or service which may be of interest to our readers. If you prefer not to receive such mailings, please send an exact copy of your subscription label to: COMPUTE! P.O. Box 10955, Des Moines, IA 50950. Include a note indicating your preference to receive only your subscription.

Authors of manuscripts warrant that all materials submitted to COMPUTE! are original materials with full ownership rights resident in said authors. By submitting articles to COMPUTE!, authors acknowledge that such materials, upon acceptance for publication, become the exclusive property of COMPUTE! Publications, Inc. No portion of this magazine may be reproduced in any form without written permission from the publisher. Entire contents copyright © 1987 COMPUTE! Publications, Inc. Rights to programs developed and submitted by authors are explained in our author contract. Unsolicited materials not accepted for publication in COMPUTE! will be returned if author provides a self-addressed, stamped envelope. Programs (on tape or disk) must accompany each submission. Printed listings are optional, but helpful. Articles should be furnished as typed copy (upper- and lowercase, please) with double spacing. Each page of your article should bear the title of the article, date and name of the author. COMPUTE! assumes no liability for errors in articles or advertisements. Opinions expressed by authors are not necessarily those of COMPUTE!.

More Great Atari ST Titles

from COMPUTE! Books

***These program-packed books offer you a wide-range of applications, tutorials, utilities, and games for your Atari ST. You'll find information on programming, how-to guides for home and business use, complete instructions for creating art and graphics, plus the award-winning game* Laser Chess™.**

COMPUTE!'s Atari ST Artist **$16.95**
Selby Bateman and Lee Noel, Jr.
ISBN 0-87455-070-X 268 pages
Book/disk combination **$29.95**
ISBN 0-87455-071-8
A step-by-step guide to creating dazzling graphics and art on the Atari ST using *NEOchrome* and *DEGAS*, this book is full of tips and techniques that show the most efficient ways of creating graphics and explain how to produce colorful art. Examples illustrate each step and demonstrate everything that can be done with the Atari ST and its graphics software. *A disk that includes artwork from the book is available for $15.95.* 70XBDSK.

COMPUTE!'s Second Book of the Atari ST **$18.95**
Edited
ISBN 0-87455-098-X 199 pages
Book/Disk Only
This special book/disk combination taps all the power of the Atari ST. Packed with articles on programming techniques, games, utilities, and tutorials, all highlighting the ST's remarkable graphics and sound, this book offers something for every programming interest. And it includes prize winners from COMPUTE!'s $10,000 ST programming competition. Written for beginning-to-advanced-level-programmers, this book/disk will be a valuable addition to any ST owner's stock of useful applications and programming information.

COMPUTE!'s ST Applications **$16.95**
Brian Flynn and John J. Flynn
ISBN 0-87455-067-X 365 pages
This book contains an excellent selection of games and applications for home and business, all written in BASIC and ready to type in and use on the 520 or 1040ST. Each program takes advantage of the advanced features of the ST such as crisp, colorful graphics and mouse selection of options. This instant library of programs includes "IRA Planner," "Electronic Spreadsheet," "Solitaire Checkers," "Weather Forecasting," and "Enigma." Also included are menu drivers that make loading the programs a snap. *A disk that includes the programs in the book is available for $15.95.* 67XBDSK.

More Atari ST Applications **$16.95**
Brian Flynn
ISBN 0-87455-087-4 326 pages
Here are some of our best BASIC applications for home and business, games for education and entertainment, programming utilities, and problem-solving tools for science and math. Take advantage of the ST's speed, large memory, and powerful graphics and sound capabilities. *All the programs in the book are available on disk for $15.95.* 874BDSK.

COMPUTE!'s First Book of the Atari ST **$16.95**
Edited
ISBN 0-87455-020-3 340 pages
This collection of ready-to-type-in-and-use applications, games, and utilities for the Atari ST includes "Doodler," "Switchbox," "Reversi," "Hickory Dickory Dock," "Home Financial Calculator," "File Handling in ST BASIC," and "Making Music on the ST." Plus, there are tutorials to help you add power, sound effects, and graphics to your programs. *A disk is available that includes all the programs in the book, $15.95.* 203BDSK.

To order COMPUTE! Books, call toll free 1-800-346-6767 (in NY, 212-887-8525) or write COMPUTE! Books, P.O. Box 5038, F.D.R. Station, New York, New York, 10150. Customer Service hours are 10:00 a.m. to 12:30 p.m. and 1:30 p.m. to 3:00 p.m. EST. Please allow 4–6 weeks for delivery. Include $2.00 per book shipping and handling for U.S. and surface mail, $5.00 for airmail. NC residents add 5 percent sales tax, and NY residents add 8.25 percent sales tax.

COMPUTE! Publications, Inc.
Part of ABC Consumer Magazines, Inc.
One of the ABC Publishing Companies

COMPUTE! books are available outside the United States from subsidiaries of McGraw-Hill International Book Company.

Readers' Feedback

Do you have an ST-related question or problem? Have you discovered something that could help other ST users? We want to hear from you. Write to ST Feedback, COMPUTE!'s Atari ST Disk & Magazine, P.O. Box 5406, Greensboro, NC 27403.

More GEM Desktop Shortcuts

Regarding the article "Recoverable RAM Disk" [June 1987], I've found another way to copy files from a disk to the ramdisk. Simply drag the icon of the floppy disk into the open directory window of the ramdisk.

Moshe Neuman

Thanks for the tip. This is a fast, efficient way to copy the entire contents of a floppy disk onto a ramdisk. As pointed out in the article, if you drag a floppy-disk icon onto the ramdisk icon, an alert box tells you that the disk formats are incompatible. We hadn't tried dragging the icon to an open directory window, but it seems to work fine.

Here are a few other copying tricks using the GEM desktop:

As you know, when several directory windows are on the screen, only one is active. To copy a file from an inactive window without making it active, point to the file and hold down the right mouse button. Then press and hold the left mouse button as usual. You can drag the file from the inactive window to another window, a folder, or an icon.

To copy several files that aren't arranged together in the directory, hold down the Shift key while you select each file with the left mouse button. Then drag all the selected files to the destination disk or folder.

If you hold down Shift while clicking on a file that's already selected, the file is deselected. This comes in handy if you want to copy an entire group of files except a few. You can select the whole group by dragging, then deselect the few you don't want to copy.

Finally, after switching disks it's not necessary to close a directory and reopen it. Just press the Escape key to update the active directory.

1ST Word Printer Drivers

Attached is a sample of a *1ST Word* screen dump using different print types. Just above it is my printer's interpretation of this same document.

I was told that my printer was compatible with Epson and I assumed I would be able to print exactly what was produced by *1ST Word*. The dealer could not tell me what the problem was. I guess I'll have to buy a different word processing program or a different printer to have the versatility of italics, underlining, and so on. I'd appreciate any suggestions you have.

Keith Noe

You probably won't need another word processing program or a new printer. What you do need is a new printer driver for 1ST Word. *Try this:*

First, enable the write-protect tab on your original 1ST Word *disk by sliding the tab toward the top, opening the square hole. This keeps you from accidentally erasing any files on your original disk during this process.*

Run 1ST Word. *When you see the file selector box, open the folder called PRINTER. From that folder, load one of the files that ends with .HEX. If your printer is Epson-compatible, you might want to start with the EPS_RX80.HEX file. The list of commands contains notes about turning italics on and off, turning bold on and off, and so on. Check your printer manual for the appropriate codes. Note that the numbers are listed in hexadecimal (base 16) format.*

As an experiment, just change a few codes—italics and underline, for example. Select the Save as... option from the File menu to save the new codes with a new name to a different disk (not your original 1ST Word *disk). The filename should end with .HEX.*

Exit 1ST Word *and copy the program INSTALL.PRG from the PRINTER folder to the disk with the new .HEX file. Run INSTALL.PRG. It should create a new file called 1ST_PRNT.DOT. This is the printer driver. Copy it to your* 1ST Word *disk and test out the features you enabled (italics and underlining). If it works, go back to the .HEX file and modify the codes for whatever other features your printer supports.*

If you have a modem, another alternative is to explore the Atari areas on commercial information services such as CompuServe and GEnie. Chances are very good that someone with the same kind of printer has already solved your problem. A large number of printer drivers for 1ST Word *are available for downloading on these services. Many Atari user groups and independent bulletin board systems (BBSs) also make these drivers available to members.*

Mousing Around

In recent programming work, I've noticed a peculiar problem with detecting the up/down state of the mouse button. Occasionally, when the mouse button is pressed and then released, something in the computer continues to believe that the mouse button is still pressed.

You can see what I'm talking about if you go to a blank area on the desktop and hold the left mouse button. You see a blinking cursor and a small box outline. Without moving the mouse, release the button. If everything is working right, the cursor stops blinking. But if you try several times, clicking and releasing the button, eventually you'll be treated to the sight of a blinking cursor *even though the button is up*. Any movement of the mouse will stop the blinking.

This is not just a problem with my machine. I've duplicated the effect with every ST I could get my hands on. There's got to be a memory location we can fiddle with to force it to reset. Any ideas?

Norman C. Koger, Jr.

The situation you've described happens not only on the GEM desktop, but within programs as well. Fixing it might not be as simple as changing a memory location. The keyboard and mouse are controlled by the Intelligent Keyboard Device (IKBD), which monitors key-

board, mouse, joystick, and other activity. The interpretation of keypresses and mouse clicks is not under the direct control of the 68000 microprocessor, and there aren't any memory locations to tweak. Our advice: Learn to live with it.

You'll occasionally see variations of this phenomenon. For example, there are times when you click on a menu item, but the program doesn't act on your choice until you've moved the mouse. Sometimes you can double-click on a program, and it won't start loading into memory until after you move the mouse. You can also try this: Double-click on the desktop (outside of a directory window) but keep the left button held down after the second click. With the button down, drag the mouse pointer over to a directory. The first program it touches will run.

Personal Pascal PEEKs And POKEs

How do I simulate a PEEK and POKE in Personal Pascal? I can't seem to get it working right. I know that I must turn the P compiler directive off and do something with a pointer from inside a record, but what?

Christoph L. Herd

According to the philosophy of the language, PEEK and POKE promote "unstructured programming" and are unnecessary. They are therefore unsupported in Pascal. However, there are times when PEEK and POKE are useful, so here are three function definitions to get around the problem:

To use peek( ) or poke( ), you must first put the 68000 microprocessor in supervisor mode. Call the super( ) function, sending it a value of 0, and save the value returned in a long_integer variable. Call peek( ) or poke( ), then return the value you saved from super( ) back to super( ). Here's an example program:

```
VAR
  ssp: long_integer;
BEGIN
  ssp := super(0);
  writeln( peek($4ba) );
  ssp := super(ssp);
END.
```

Incomplete Screen Dumps

I own a 520ST, one disk drive, and a Panasonic KX-P1080i printer. I can't seem to get a complete screen dump with the Alternate and Help keys. I've tried using the printer driver from the Desk menu and Print Screen from the Options menu. All or most of the other print options work very well with the *1ST Word* program. Thank you for whatever help you can give me.

Richard Kenney

When you hold down the Alternate key and press Help, an exact pixel-by-pixel copy of the screen should be printed. The problem you're having is common, and it's easily fixed.

You said you've tried adjusting the printer driver for 1ST Word. *However, the driver file is used only by* 1ST Word—*not by any other programs or desktop functions such as printing a screen.*

If the Alternate-Help combination only prints about two-thirds of the screen, copy the CONTROL.ACC file to your boot disk (the disk you insert when you first turn on your ST). Now reboot your computer. You should see under the Desk menu at least two accessories: Control Panel and Install Printer. Select the second accessory and change the Pixels/Line from 1280 to 960. Click on OK. Since the Cancel button is in a heavier box, it's the default answer if you press Return, so don't press Return. From now on, when you use Alternate-Help, the screen should print correctly.

To make this change permanent, insert your boot disk in drive A and select Save Desktop from the Options menu. A file called DESKTOP.INF will be written to the disk. (Note: If you have a ramdisk or hard disk installed as drive C, the DESKTOP.INF file will be saved on that drive instead of drive A. In that case, you should copy it to the boot disk.)

Before saving the desktop, you may wish to use the Control Panel to set the colors and other options. Also, whichever windows are visible when you save the desktop will automatically open when you boot from this disk.

Ramdisk AUTO Copy

I just picked up your June 1987 issue and I have a question about the "Recoverable RAM Disk" program. I use another ramdisk program that seems to be quite tenacious in its own way (I can reset the computer without losing the ramdisk). I have it in an AUTO folder. After booting, I move everything into it, including programs and folders.

What I found interesting about your program was its ability to load into the ramdisk while booting up, which would save me the trouble of moving the programs I use on a daily basis. I've tried Recoverable RAM Disk and have managed to copy programs automatically while booting.

My question is this: Can I load into a folder on the ramdisk, or can I copy a folder and its contents? I find the directory window confusing and use folders to reduce this confusion.

Roger H. Algie

When you run the "Recoverable RAM Disk" program, it looks for a file named RAMDISK.INF and follows the instructions there. One of the commands allows you to copy files from a floppy disk to the ramdisk.

You can move programs from a root

```
FUNCTION peek( address: long_integer ): long_integer;
  TYPE
    byte_ptr = ^byte;
  VAR
    funny: RECORD
      CASE boolean OF
        true: ( a: long_integer );
        false: ( p: byte_ptr );
          END
BEGIN
  funny.a := address;
  peek := funny.p^;
END;
PROCEDURE poke(address: long_integer; value: byte);
  TYPE
    lint_ptr = ^long_integer;
  VAR
    funny: RECORD
      CASE boolean OF
        true: ( a: long_integer );
        false: ( p: lint_ptr );
          END
BEGIN
  funny.a := address;
  funny.p^ := value;
END;
FUNCTION super( sp: long_integer ): long_integer;
  GEMDOS( $20 );
```

directory to the root of the ramdisk, and you can copy programs from within a folder on the floppy disk to the root directory of the ramdisk. Unfortunately, you can't automatically create *a new folder on the ramdisk. Nor can you copy a folder and its contents at the time that you boot the ST.*

There's a solution, however. In this issue you'll find a program called "SuperDOS," which is an enhanced version of "ST-Shell" from the December 1986 issue. If you put it in the AUTO folder, it will load and run when you boot your computer. When SuperDOS runs, it looks for a batch file of instructions to follow. Within that batch file you can include instructions to create folders or copy folders from the floppy disk to the ramdisk.

For this to work properly, the ramdisk must be installed before SuperDOS runs. Therefore, the ramdisk program should be copied to AUTO before SuperDOS, because programs in the AUTO folder run in the order of oldest to newest (as determined by their time/date stamps on the directory).

A second option is to run the ramdisk program not from the AUTO folder, but from a batch file with SuperDOS.

New Rules For New Machines

Development of a program I'm working on has come to a standstill because the documentation on loading a program within another program is poor. I have enclosed the C source code for the program and would appreciate any help.

Marvin Johnson

The two key lines in your program look like this:

```
Pexec(0,"A:\STTALK.PRG\0",13,0x00L);
form_alert(1,[3] [Fatal error!|Program
  Error.|[Cancel]");
```

No doubt you're thinking that either Pexec( ) will work or it won't. If it works, the second program runs. If not, the program falls through to the line that displays an alert box with an error message (which, by the way, is missing one of the closing right brackets).

If you've previously programmed an eight-bit computer such as the Atari 800, Commodore 64, or Apple II, you might remember that loading and running a second program erases the first program from memory (at least in BASIC). The rules are different on the ST. There's plenty of available memory and programs are designed to run from any location, so when you run a second program, the first one stays where it is. If Pexec( ) fails, the program should drop through to the error message. But if it succeeds, the second program will run and eventually end. When it does, the ST returns to the first program and prints the error message, even though there's no error.

However, the way you've set up Pexec( ), it neither succeeds nor fails. It crashes the program, displaying two bombs on the screen.

The Pexec( ) function takes four parameters. The first should be a zero, which tells the function to load and run the program. The second should be the address of the name of the program to load. It's permissible to give the filename inside quotation marks, as you've done, but the trailing zero byte isn't necessary. A zero is automatically appended to strings inside quotation marks. You should include two backslashes in the pathname—A:\\NEO instead of A:\NEO. If you put just one backslash in the filename, a sequence such as "\n" would be interpreted as a new line character in C.

The third parameter is the address of the command line to be passed to the second program. The second program can read this information from the variables argc *and* argv *in the main( ) function. Presumably, you're sending a 13 because CHR$(13) is a carriage return character and you don't wish to send a command line. There are two problems with the number 13, however. Pexec( ) recognizes it not as a CHR$(13), but as the memory location 13, which happens to be in a protected area of memory you can't access unless the 68000 microprocessor is in supervisor mode.*

The fourth parameter is the environment string, which you can usually ignore.

Here's an example program that loads and runs a second program named BELL.PRG. When the second program ends, control is returned to the original program.

```
/* Sample C program to load and run
   another file */

#include <osbind.h>

int contrl[12],intin[128],intout[128];
int ptsin[128],ptsout[128];
int work_in[11], work_out[57],handle;
char command[ ]="/0"; /* no
   commandline */
char environment[ ]="/0"; /* no
   environment */

main( )
{
int j,err;

for( j=0; j<10; work_in[j++]=1)
    ;
work_in[10]=2;
/* start up the application */
appl_init( );
/* ask for a workstation */
v_opnvwk( work_in, &handle,
   work_out );
/* clear the screen */
v_clrwk( handle );
Cconws("This is the loader program.
   Press a key.\r\n");
/* wait for a keypress */
Bconin(2);

/* run BELL.PRG */
err = Pexec( 0, "F:\\BELL.PRG",
   command, environment );

if(err < 0) /* negative number means
   disk error */
     form_alert(1, "[3][Error loading
        program][OK]");
Cconws("Back in the loader program.
   Press a key.\r\n");
Bconin(2);
v_clsvwk( handle ); /* close the vwk */
appl_exit( ); /* finished */
}
```

ST

ST HARDWARE

DESKCART	$ 89.95
COMPUTEREYES	218.50
SUPRA 20MEG	650.00
SUPRA 30MEG	999.95
HYBRID SMPTE TRAKS	550.00
HYBRID SYNC TRAKS	325.00
STEREO TEK 3D GLSES	148.50
1MEG UPGRADES	149.95

ST SOFTWARE

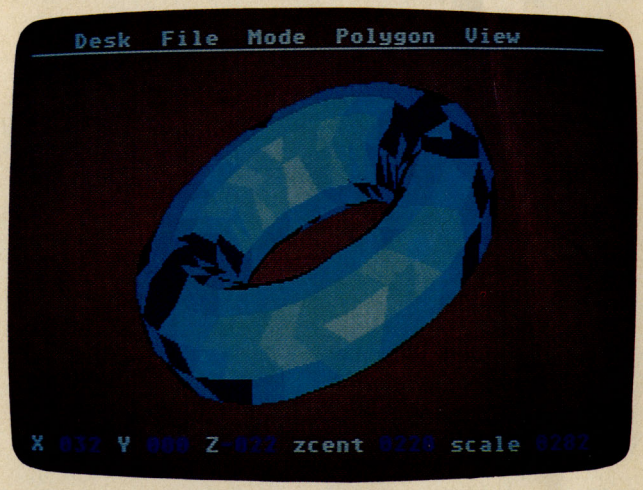
The GUILD of THIEVES	$ 36.50
The LURKING HORROR	34.50
STATIONFALL	34.50
PLUTOS	24.50
VEGAS CRAPS	31.50
VEGAS GAMBLER	31.50
LOTTERY ST	26.50
ROADWAR 2000	35.95
GOLDEN PATH	40.50

CONSUMER ELECTRONIC STORE
335 S. State College Blvd.
Fullerton, CA 92631-4902
(714) 447-8300
The C.E.S. is 18+ years old! We are the oldest ATARI Dealer around! M/C, VISA, DISCOVER, AMERICAN EXPRESS cards are accepted! Shipping Charges are additional, Call us today!
The CESBBS! (714) 447-9338

3-D Edit

Mike Kerekes

A cross between a conventional graphics editor and a computer-aided design (CAD) program, "3-D Edit" lets you create three-dimensional shapes, rotate them for viewing at any angle, modify them in numerous ways, and even save the screens in NEOchrome *or* DEGAS *format for further manipulation later. The program won an Honorable Mention in our Atari ST Programming Contest last year. It runs on all ST systems in low, medium, or high resolution.*



Drawing programs like *NEOchrome* and *DEGAS* are invaluable tools for creating many kinds of artwork, but they have some limitations when it comes to modeling solid objects. Unless you're a skilled artist, you'll probably find it difficult to render a three-dimensional object on a two-dimensional surface (such as a computer screen) at various angles with convincing accuracy. Things would be easier with a program that gives you more help in drawing the object in the first place, then performs the tricky calculations required to generate different views.

"3-D Edit" may be just what you need. Although it's not a full-fledged computer-aided design program, it does provide enough basic CAD functions to realistically portray solid objects from an infinite variety of angles. Objects can be manipulated right on the screen using mouse and keyboard controls. Up to eight objects can be stored in memory at once, even on a 520ST. Objects can be displayed as wire-frame, opaque, or shaded forms, with or without true perspective. You can zoom and rotate the view in any direction, and an object can be larger than a single screen. The screen image may be saved on disk in a special 3-D Edit format, or in standard *NEOchrome* and *DEGAS* formats.

Getting Started

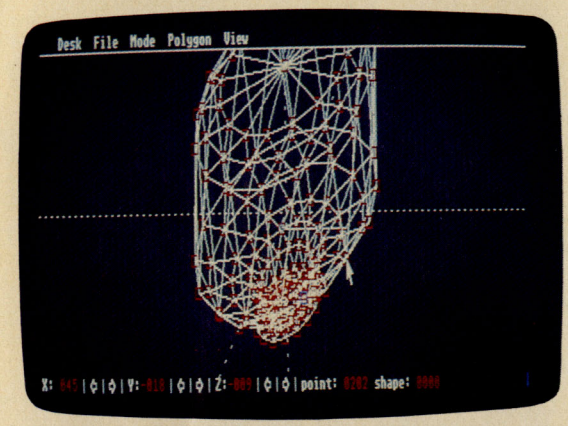
The program is called 3DEDIT.PRG on this issue's disk. If you make a backup copy, be sure to copy the *resource file* (called 3DEDIT.RSC) as well. It must be on the same disk and in the same directory in order to run 3-D Edit.

You may run 3-D Edit from the magazine menu program or from the GEM desktop. The source code—written with the *Megamax C* compiler—is also included for the benefit of programmers who want to study the program. The source code files are named 3DEDIT.C and 3DEDIT.H.

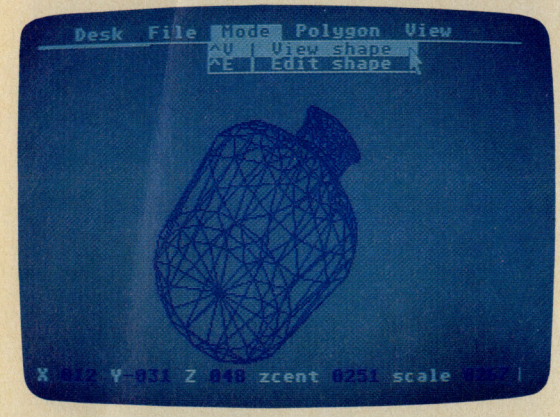
In 3-D Edit, you create shapes by manipulating polygons, and by expanding and rotating polygons to make solids. (A *polygon* is just a multisided flat shape such as a triangle or square.) There are two main parts to the program: Edit mode and View mode. In Edit mode you create shapes by selecting corner points for each polygon. View mode can then display the solid shapes from various angles.

When you first run 3-D Edit, it's not in either mode because there are no shapes in memory. You might call this *nothing mode*. The screen is blank except for a menu bar. To get started, either load a previously created shape from disk or start a new shape. Select one option or the other from the File menu. Either of these actions sets up an internal file for the shape.

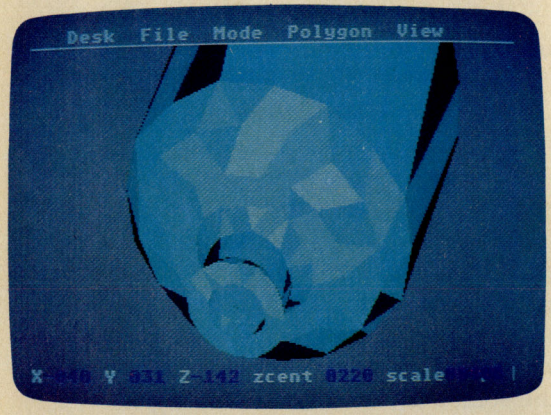
A sample shape, JUG.SHP, is included on this issue's disk. To load it, select Load Shape from the File menu and click on JUG.SHP. Then find View from the Mode menu. The shape may seem rather small and distant at first. To bring it closer, click on Zcent and type in a smaller number (which makes the distance from you shorter) or click on Scale and



Modifying the jug shape in Edit mode.



In View mode, the jug as a wireframe figure.



Use the controls on the bottom of the screen to zoom in and twist the shaded shape.

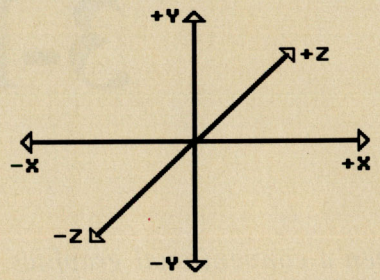
type in a bigger number (larger scales make images appear larger).

3-D Edit can handle a maximum of eight shapes at once. When you start a new shape, it contains only one polygon of three points. If you ever delete the last polygon in a shape, the file for that shape closes and the current shape switches to one of the other shapes in memory. If no other shapes exist, the program returns to nothing mode. To change from one shape in memory to another, just click on the value of shape at the bottom of the screen and type in the number of the shape you want.

The Coordinate System: X, Y, And Z

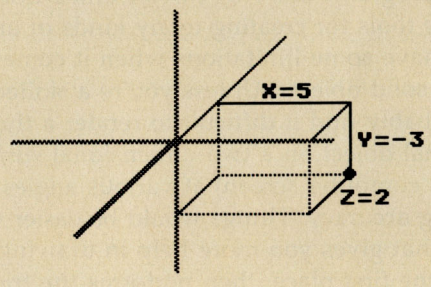
You can name any point in a three-dimensional space with three coordinates. Within 3-D Edit, these points are called *x*, *y*, and *z*; and they're arranged like this:

Figure 1: *The x, y, and z axes.*



The *x*-axis is the line running from left to right. The *y*-axis runs from bottom to top. And the *z*-axis ranges from near to far. (Incidentally, the plural of *axis* is *axes*.) The origin in the middle where all three axes intersect is the point called (0,0,0). Other points may have positive or negative values depending on their location relative to the origin. For example, to find the point (5,−3,2), count five spaces to the right, three spaces down, and two spaces away from you:

Figure 2: *Three values mark the location of point (5,−3,2).*



Edit Mode

After selecting New Shape from the File menu, a triangle appears on the screen and you're in Edit mode. The *x*-/*y*-/*z*-axes are displayed with the current shape drawn in wireframe. Each corner of the polygon is marked by a drag box. To change the location of any of the points, just press and hold the left mouse button while pointing to the drag box and drag it to a new position.

There's an important thing to remember about these 3-D objects. Although they're stored in the program as sets of three-dimensional coordinates, when you actually see them on the screen, they're being projected onto a two-dimensional surface—the flat screen. The View mode allows you to look at an object from different points of view and to zoom in and out. But while you're in Edit mode, it may be somewhat difficult to visualize how the shape is constructed. It sometimes helps to write down the approximate coordinates of the shape you want to build.

When you select points with the mouse pointer, you must also keep in mind that the mouse is moving around on a two-dimensional surface (a flat

screen). Therefore, when you click and drag one of the corners of the shape, you're only changing *two* of its coordinates. The third coordinate remains constant. To select a fixed dimension, press the X, Y, or Z key. If you press Y, for example, it means the mouse movements will change the *x* and *z* coordinates of the point, but *y* will stay the same.

The current position of the point is displayed at the bottom of the screen along with the point number. Remember, you can change a maximum of two of the coordinates at any time. The coordinate that is not being changed by the mouse can be modified by using the up and down cursor keys.

The list of *x*, *y*, and *z* values can be edited directly. In medium and high resolution, you may click on the arrows next to each coordinate to change its values. In all resolutions, you can click on the value and type in a new one. The shifted arrow keys scroll the shape and axes on the screen, enabling you to create objects that are larger than one screen.

To add another polygon to your shape, select Add from the Polygon menu or press the A key. Use the left mouse button to mark out the points in the polygon. When all points have been entered, press the right mouse button to leave Add mode. 3-D Edit then asks if you like the polygon, to which you respond Y or N. If you want your new polygon to be connected to other polygons, select a point inside a drag box on the second polygon. This is the only way that polygons can be connected together.

To delete polygons, select Delete from the Polygon menu or press D. You may delete one or all of the polygons while in Delete mode. Press the < and > keys (less than and greater than) to select a polygon, and press Return to delete it. When you are finished, press Escape to get back to edit mode.

Donuts And Coffee Cups

Two interesting functions are found under the File menu: Expand and Rotate. Expand starts with a polygon and pulls it into a 3-D shape. For example, if you begin with a circle, Expand would stretch it into a cylinder. A square would be expanded to become a cube or block. Rotate takes a polygon and rotates it around an axis. With rotate you can make interesting shapes like cups, spheres, and donuts.

The starting shape is always flat. Move the existing points in a polygon by dragging them. You can delete the last selected point by pressing D. Add more corners by pressing A (new points are inserted next to the last selected point). Press Return when you are satisfied with the polygon you've created.

If you are performing an Expand operation, the first and last points of the shape are automatically connected. For a Rotate, you will be asked to select the axis around which the polygon is to be rotated. Move the mouse left and right to set the axis of rotation. Both of these functions will make a complete new shape and will not affect any other shapes in memory.

The best way to learn how Expand and Rotate work is to experiment. If you Rotate a many-sided polygon, the resulting shape looks very complex in Edit mode. It's easier to see how a shape has turned out by going to View mode.

View Mode

In View mode, the line at the bottom of the screen lists *x*, *y*, and *z* values, but (unlike Edit mode) they're not locations on the screen. Instead, they're the rotations of the shape measured in degrees.

In addition to the rotation information, you'll also see values for Zcent and Scale. Zcent indicates how far you are from the shape's center—the point (0,0,0). The closer you are, the more effect you'll see from the Perspective option.

Scale makes small or faraway objects fit nicely onto the screen. As you change Zcent, you may also have to adjust Scale to get an object with a good size. Any of the values can be changed by clicking on their values and typing in new ones. The rotations can also be changed by clicking on the arrows.

The View menu contains four items. The first three select how the shape is drawn: wireframe, opaque, or shaded forms. Wireframe gives you a hollow shape, with only the edges visible (as if the object were built of thin wire). Shaded shapes in medium resolution are given different fill patterns of a single color. Shaded shapes in low resolution are rendered in solid colors that are different intensities of blue. If you'd prefer other colors, use the Control Panel accessory that came with your ST to change the hues. Perspective, the fourth item on the menu, turns the perspective on or off.

Hurtling Through Space

Use the Save Degas and Save Neo commands at any time to save the screen to disk in one of the two formats. Note that if you use the Save Shape option, you can transfer shapes between different resolutions. If you Save Degas or Save Neo, you're stuck with the resolution you're currently using.

If you have the "Art-ST" program from the August issue of COMPUTE!'s Atari ST Disk & Magazine, you can create some impressive animation sequences. Use 3-D Edit to create a single shape, then view it from different angles or from different distances and save each picture to disk in *DEGAS* format. Load each shape into a different screen in Art-ST. Then flip through the screens using the SLIDE option.

If you rotate a shape around one axis, it will seem to be tumbling in place. Or, decrease the Zcent distance and watch the shape come hurtling toward the screen. You can merge together shapes of spaceships and planets or create a coffee cup that does a dance around a cube. **ST**

Trade Show Adventures

Why Atari Kept Its Laser Light Under A Bushel And Displayed Videogame Machines Instead

The repackaged Atari 65XE home computer, now called the XE videogame system.

The sudden five-point jump in the price of Atari stock in late May aroused hopes of yet another blockbuster product announcement at the Summer Electronics Show (CES) in Chicago. But alas, it was not to be. It turned out that the big boost was triggered by favorable financial news: a large increase in 1987 first-quarter earnings over the same period in 1986, and a two-for-one stock split.

Those looking for dramatic ST developments at Summer CES were disappointed. The new Mega ST line and laser printer announced at the Winter CES in January were nowhere to be seen, and another product announced in January—the Atari PC—sat in a corner almost unnoticed.

Atari's star attraction at Summer CES? A videogame system based on a modified 65XE home computer. Honest.

This might seem like a strange approach for a company that has always struggled against its videogame image—a company trying to establish the Mega ST as a serious computer for desktop publishing and other business applications. Why would Atari hide the Mega ST and laser printer, and play down the PC clone, in favor of a repackaged game machine? The answers apparently have to do with both an unfortunate trade show schedule that backed Atari into a corner, and changing trends in the mass-merchant marketplace.

A Tough Choice

By far, the two biggest trade shows for the home computer industry are the Computer Dealers Exposition (COMDEX), which is held each May in Atlanta and each November in Las Vegas, and CES, which is held each January in Las Vegas and each June in Chicago. Attendance at these shows often tops 100,000 or more. Although both shows are massive media events, their main purpose is to allow manufacturers to display their wares in order to sign up new dealers. Therefore, the mid-year shows—Spring COMDEX in Atlanta and Summer CES in Chicago—are particularly vital, because manufacturers display the new products that will hit the market during the all-important holiday shopping season.

CES and COMDEX have radically different characters. CES embraces consumer electronics of all kinds, from videocassette recorders and stereos to home computers and telephones. COMDEX is strictly a computer show with heavy emphasis on business computing. Because of IBM's dominance in the business world, COMDEX has become practically an MS-DOS show.

Usually, Spring COMDEX and Summer CES are held a few weeks apart, giving companies that display at both shows enough time to knock down their elaborate COMDEX exhibits, ship them from Atlanta to Chicago, and set them up for CES. This year, however, the COMDEX and CES dates overlapped. For most companies, exhibiting at both places at once was simply too expensive and demanded too much manpower, so they had to choose between the two.

Atari chose CES. Archrival Commodore chose COMDEX.

Sheldon Leemon & The Editors

The New Computerphobia

Atari's choice of CES virtually dictated the nature of its exhibit. Because there is such a wide range of electronics products at the show, most of the attendees are not computer-specialty dealers. Instead, they're mostly buyers for department stores, regional and national chains, discount stores, independent video shops, and the like.

Unfortunately for Atari, these mass merchants have soured on computers lately. They complain they can't sell computers anymore, or at least that they can't make as much money selling computers as they can selling other products. They've especially had trouble selling higher-end computers like the Atari 520ST, as evidenced by the withdrawal of the 520ST from the nationwide Toys "R" Us chain last year. As a result, many mass merchants have dropped their computer lines or have reduced the amount of shelf space devoted to computer products.

Undoubtedly, that's why Atari decided not to display the Mega STs and laser printer at CES. It just wasn't the appropriate market. Very few of the dealers who visited the exhibit were likely to want them anyway. Atari also downplayed the Atari PC, perhaps only showing it to quell persistent rumors that it isn't really a functional machine. (The prototype we saw at CES seemed fully functional; we used it without Atari supervision for about 15 minutes.)

Although Atari did show a few 520STs and eight-bit XE computers, most of its booth was given over to its lineup of videogame machines: the tenacious 2600 VCS (first introduced a decade ago), the 7800 ProSystem (another leftover from the old, pre-Tramiel Atari), and the latest entry, the XE videogame system.

They're Back

Why did Atari transform its 65XE home computer into a videogame machine? Because videogames are back, and they're an increasingly important source of revenue for Atari. At the same time, Atari would like to get more mileage out of its line of aging, eight-bit computers. It's no secret that the eight-bit 65XE and 130XE aren't selling particularly quickly in the U.S. (Although Atari says that overseas sales are somewhat better.)

When the old Atari was stuck with products that didn't sell, it buried them in warehouses. The motto at the new Atari, however, is "waste not, want not," so Atari came up with a flashy new plastic case for the 65XE; detached the keyboard; threw in a joystick, a light pistol, and three game cartridges; and nearly doubled the price to $150.

This is an ironic twist in the evolution of home computers. During the home computer explosion of the early 1980s, companies like Atari and Commodore pushed computers as the up-and-coming successors to videogame machines. After all, it was argued, you can play videogames on a home computer, but you can't run a word processor or a spreadsheet on a videogame machine. And when the prices of home computers like the Atari 400, Atari 600XL, TI-99/4A, Commodore VIC-20, and Commodore 64 started dropping close to the prices of videogame machines, observers predicted the imminent demise of the dedicated game machine.

They were almost right. Just a couple of years ago, the home videogame market was in its death throes. Atari, then a subsidiary of Warner Communications, was staggering toward bankruptcy. Companies that had reaped fast fortunes selling game cartridges, such as Activision, were forced to enter the computer software market or go broke. Dozens of less agile companies did go broke. Videogames were perceived as a fading fad, doomed to oblivion with mood rings, pet rocks, and hula-hoops.

Spinning Straw Into Gold

Meanwhile, all was not well with the home computer market, either. Prices dropped so low that almost no one could make money selling home computers. Although the Commodore 64 was the best-selling microcomputer in the world, Commodore faced serious financial problems while companies like Apple and IBM maintained higher prices and stayed healthy.

Simultaneously, there was a shift among buyers toward higher-end computers. If you're going to buy a computer to do something practical, consumers reasoned, why not be even more practical and buy something more powerful? Sales of the Apple Macintosh, IBM PC series, and PC compatibles skyrocketed.

Last year, when Commodore repackaged the 64 as the 64C and raised its price to nearly $200, the Atari 65XE and 130XE became the lowest-priced home computers surviving in the U.S. market. The 65XE is widely available for under $89, a startling price considering that it's a 64K RAM enhanced version of the old Atari 800 that originally retailed for $1,100 with 8K in 1979. The 130XE, with 128K RAM, is a similar bargain at $139. But even at these prices, they aren't selling very fast.

So, with a minimum of effort, Atari turned the 65XE into the XE videogame system—and it just might work. Interest among dealers at the show seemed brisk, and Atari claims to be doing land-office business with it. The best part is that even if the "new" game machine flops, Atari hasn't lost much more than the cost of the new cases. And with any luck, Atari could find a liquidator to take the game machines off its hands at a fire-sale price of $75 or so—just about the original price of the computer.

The XE videogame system comes with a computer keyboard (required for some games with keyboard controls, such as *Flight Simulator* and *Star Raiders*), so the

addition of a disk drive turns the game machine back into a full-fledged computer. And it's fully compatible with all eight-bit Atari software and peripherals. If this entices videogame addicts into the world of computing, the odd evolution of the videogame/home computer market will have come full circle.

Amiga Island At COMDEX

Despite the XE game system's apparent welcome at CES, Atari expressed some regret that it missed COMDEX. Without Atari's support, only a handful of companies were exhibiting ST products in Atlanta. (See "Emulators at COMDEX" elsewhere in this section.) Meanwhile, Commodore's COMDEX exhibit championed the new Amiga 500 and 2000, and the enthusiastic crowds were reminiscent of those at Atari's past appearances. Dozens of Amigas were busily running a great deal of flashy, impressive software, and people found them a refreshing respite from the MS-DOS products that dominated the rest of the convention hall.

Sigmund Hartmann, Atari's vice president for software, flew to Atlanta to scout the show. Hartmann, a former Commodore executive who left to join Jack Tramiel at Atari, even breezed by the Commodore booth. In MacArthur-like tones, he promised, "We'll be here in November [at the Fall COMDEX in Las Vegas]."

Skeptics—who weren't hard to find at the Commodore booth—contended that the real reason Atari opted for CES, and didn't display the Mega ST and laser printer, was that those products still weren't close to shipping, and Atari didn't want to field embarrassing questions about why they were so late.

It's true that Atari was silent on firm ship dates and prices, which usually indicates that availability is a few months off. When the Mega ST, laser printer, and Atari PC were first unveiled at the Winter CES in January, Atari announced that they would be available in March or April. Those dates were soon pushed back. Right before CES, an Atari spokesman said the laser printer would be ready in May and the computers, in late June. But those dates were missed, too.

Rumors began to circulate that Atari had yet to take delivery of any of the laser engines that are the heart of the laser printer. (Some sources say the laser engines are being supplied by a Japanese manufacturer, TEC.) Atari has also repeatedly missed delivery dates for the long-awaited blitter chip, first announced more than a year ago. Even software developers don't have blitters or the revised operating system chips which support the blitter.

In addition, doubts resurfaced that the promised blitter upgrades for the 520ST and 1040ST will be feasible, particularly in light of the cramped quarters within the case of the 1040ST. Atari, however, maintains that blitter upgrades are still planned for existing STs. (See "Interview with Leonard Tramiel" elsewhere in this issue.)

Poor Timing?

In general, there was a feeling at the shows that Atari's timing is working against the company. The announcement of a whole new line of STs in January, more than six months before the machines were ready, undoubtedly caused some potential purchasers to back off from buying a 520ST or 1040ST in early 1987. And long production delays tend to erode Atari's price advantage as well.

For example, when Atari announced a $300, 20-megabyte hard disk drive for the ST in 1985, nobody believed it was possible. But by the time the drive was delivered in 1986 (for $600), every mail-order house in the country was selling IBM PC-compatible 20-megabyte drives for $300.

Similarly, the $1,500 price tag on Atari's laser printer sounded incredibly low when rumors about it started circulating in late 1986, but laser printer technology hasn't been sitting still in the meantime. Japanese giants like Okidata and Panasonic have been showing laser printers for list prices under $2,000. Thanks to steep discounting, these printers have been advertised for as little as $1,300. And these are full-featured models that can work with any computer, not the stripped-down version that Atari recommends for STs with at least two megabytes of memory. Atari's $3,000 desktop publishing system—built around a Mega ST-2 and a $1,500 laser printer, not including software—may soon be uncomfortably close in price to an IBM AT clone, general-purpose laser printer, and proven software like Ventura *Publisher* or Aldus *PageMaker*.

Despite all this, the future still looks good for Atari. Increased profits, healthy stock prices, and long-term financing have finally granted the company a good measure of financial stability. Since summer is traditionally the slowest season for computer sales, perhaps it doesn't matter much if the Mega STs, laser printer, or PC clones don't arrive on time. The real selling season doesn't start until fall, and even the cynics are (reasonably) sure that the new products will be available by then.

Moreover, Atari really seems committed to making the fall and holiday selling seasons successful. Starting in September, Atari plans to spend 10 percent of its revenues on personal computer advertising. That means we'll finally be seeing some ST ads on TV. (See "Atari on the Airwaves" elsewhere in this section.) TV advertising was one of the key elements in Jack Tramiel's fantastic success with the Commodore 64, and perhaps a similar campaign will help Atari sell six million ST systems. Maybe that kid who flunked out of college and came forlornly home on the train could go back for another try, this time armed with an ST.

Emulators At COMDEX

Although Atari didn't exhibit at the Spring COMDEX industry trade show, there were still a few companies that came to Atlanta to display ST-related wares.

Perhaps the most interesting product was Avant-Garde Systems' IBM PC emulator, *PC-Ditto*. This emulator is implemented entirely in software; no extra hardware is required, but a 5¼-inch floppy disk drive is optional. *PC-Ditto* appears to offer a higher level of compatibility and somewhat more speed than other PC emulators for the ST we've seen.

Since the IBM PC uses the Intel 8088 microprocessor, a very different chip than the Motorola 68000 used in the ST, it's quite a feat to get PC software to run at all on an ST without additional hardware. The job takes a great deal of interpretation, so programs run more slowly, even though the ST is much faster than a PC. Avant-Garde estimates that *PC-Ditto* runs most PC software at about 80 percent the speed of an IBM PC. A standard PC is clocked at 4.77 megahertz compared to 8.00 megahertz for the ST. Thus, 80 percent speed works out to 3.816 megahertz.

The slowdown is less noticeable with text applications like word processors or spreadsheets, of course. We ran *WordPerfect*, and although it couldn't keep up with a fast touch-typist, it seemed compatible. (However, the computer did lock up when we tried inserting text within a paragraph at fast typing speeds.) We also tried a graphics-intensive program, *Flight Simulator*. It seemed to run very slow. Fortunately, there's already a good version of *Flight Simulator* for the ST.

Speed considerations aside, *PC-Ditto* appears to be a fairly compatible emulator. It emulates both the monochrome and color/graphics video adapters, works with both color and monochrome monitors, and even imitates the PC's internal speaker for sound. The ST's built-in parallel and serial ports are treated like LPT1: and COM1: on the IBM machines. *PC-Ditto* works with Atari 3½-inch floppy drives, the optional 5¼-inch drive, or ST hard disks. Priced at $89.95, it offers an interesting option for ST owners to consider.

Sigmund Hartmann, Atari's vice president for software, seemed to be impressed with *PC-Ditto* at the show. Hartmann has been trying to sell the ST to large government and corporate buyers, but their strict PC compatibility requirements have made it difficult for him to get his foot in the door. Partial compatibility, even at slower speeds, may make it possible to clear those initial hurdles so he can pitch the ST on its own merits.

Atari exhibited a prototype of a hardware-based PC emulator for the ST more than a year ago, but the box quickly vanished into limbo. According to Atari, the problem with hardware-based emulators is that they cost nearly as much as a stand-alone PC clone. (See "Interview with Leonard Tramiel" elsewhere in this issue.)

American Networks Development Corporation (AND) shared a booth at COMDEX with Avant-Garde and showed off an ST version of IDRIS—a Unix-like operating system that has been available since 1979 on Digital Equipment minicomputers like the PDP-11 and VAX. The ST version of IDRIS was written by Computer Tools International (Federal Way, Washington) and is a multitasking, multiuser operating system compatible with Unix System III. It temporarily disables the TOS operating system built into the ST and therefore doesn't support GEM.

To demonstrate the multitasking and multiuser capabilities, the IDRIS setup at COMDEX included a second ST that ran as a terminal off the serial port of the main ST. And AND claims to be working on a box that would allow up to eight terminals on the system at once.

IDRIS requires a hard drive and takes up three or four megabytes of disk space, but that still leaves plenty of room for programs and data files. It includes about 80 commands, compared to the usual complement of about 150 commands on full-blown Unix systems.

As far as Unix clones go, IDRIS is said to be very compatible, and the folks at AND say they were able to move a wide variety of Unix applications over to the ST with virtually no changes. One reason for this is that the package includes the *Whitesmiths C* compiler, a standard implementation that is well known in the minicomputer and mainframe arenas.

The entire IDRIS package is expected to sell for $800, which is much less than similar implementations on other computers, such as Xenix for the PC AT. The *Whitesmiths C* compiler usually sells for more than $1,000 by itself, and the IDRIS package includes a Pascal compiler as well.

Although IDRIS is mostly text-based, it is possible for programmers to access the ST's graphics capabilities through C equivalents to the VDI (Virtual Device Interface) graphics routines.

ATARI ST
REPAIR CENTER

520ST 1 MEG UPGRADE INSTALLED	$104.95*
UPGRADE SF354 TO SF314	$139.95*
ALL 520ST REPAIRS	$74.95*
ALL 1040ST REPAIRS	$89.95*
ALL SF354 REPAIRS	$79.95*
ALL SF314 REPAIRS	$94.95*

* PLUS SHIPPING

MICRO-TIME ST
INTERNAL CLOCK CARD
WITH FREE UTILITIES

$49.95
FREE
2nd DAY AIR
UPS SHIPPING

TOLL FREE ORDER LINE (800) 223-3978

VISA & MASTERCARD WELCOMED

MICRO-TIME ELECTRONICS
837 N.E. Sixth Grants Pass, OR 97526

The Ear

News, rumors, and gossip heard around the ST community.

Attention: Bounty Hunters

Frustrated software developers are **losing their patience** with pirates. **Gordon Monnier** of MichTron, a leading developer for the ST, got so upset about finding his company's copyrighted programs available for downloading on renegade bulletin board systems (BBSs), that he recently posted the electronic equivalent of a **reward poster** on GEnie. Monnier is offering bounty hunters their choice of **$200 cash** or **$400 worth of MichTron software** for the capture of a pirate BBS that has MichTron products. To collar a BBS, you have to supply Monnier with its **phone number** and a **valid password.** Monnier promises to keep the identities of informants secret. As a special deal, he's offering a reward of a hard disk drive for anyone who hunts down **three pirate BBSs.**

Workstation In The Works

Although Atari wasn't showing any new ST products at the spring/summer trade shows, the folks from Sunnyvale weren't completely silent on the subject. At a Chicago user group meeting held during Summer CES, **Leonard Tramiel** once again confirmed that Atari is working on an **advanced graphics workstation.** This is probably the same machine that has been referred to before as the **E-ST**, an ST computer with an enhanced graphics display chip that works with a multiscan monitor. The likely resolution of this system is in the range of IBM's Enhanced Graphics Adapter (EGA), approximately **640 × 350 pixels with 16 colors** onscreen at once. The fast-growing workstation market is in an uproar right now because of Apple's introduction of the **Macintosh II.** The Mac II is seen by many as a **threat** to established workstations like the Sun and Apollo.

The Wizard Of TOS

Rumors have been flying over the **revised version** of the Tramiel Operating System (TOS) that will accompany the blitter chip. Atari says the new TOS will support the blitter *and* fix some lingering bugs in the ST that have been **driving programmers crazy.** Atari recently mailed a newsletter to registered software developers with a list of the TOS modifications. Most of them are **rather arcane** and will be appreciated only by programmers, but a few will be noticed by users. Examples: When you open a nonexecutable file on the GEM desktop, the **Show** option will be the default instead of **Cancel;** fewer disk swaps are needed when copying disks on a single-drive system; and the Save Desktop and Print Screen options will request confirmation with an alert box. One modification might upset **520ST owners**, though. Very large programs which require that no desk accessories be installed in order to fit in a 520ST **may no longer have enough memory** to run.

Multifaceted GEM

Speaking of operating systems, The Ear hears that Atari is toying with a multitasking version capable of running **more than one GEM application simultaneously.** The Ear also hears that it's giving Atari a **tough time.**

GDOS, By Gosh

Still speaking of operating systems, rumors persist of **yet another version** that incorporates the Graphics Device Operating System, more popularly known as GDOS. (Hey, does anybody **really believe** that Atari is working on this many different versions of the same operating system? Who **feeds** these rumors, anyway?) GDOS is actually a **missing part of GEM** which is needed to support multiple text fonts and the forthcoming laser printer. Since it was left out of the current version of GEM, it must be loaded from disk each time you boot the ST.

Some software developers don't much like the way Atari is handling GDOS. One of the most vocal has been **Frank Cohen** of Regent Software, publisher of *Regent Word.* Cohen has posted messages on information services about his own version of GDOS, dubbed **RDOS,** which he is releasing with the next version of his word processor. He also sparked a **writing campaign** among software developers which resulted in the GDOS question coming up at Atari's first stockholder's meeting, much to the chagrin of Atari officials. At CES in Chicago, things **came to a head** when Cohen ran into Leonard Tramiel on the show floor. They immediately engaged in a GDOS debate which left both participants rather **perturbed.** But Cohen contends his complaints have had some effect—he says Atari has agreed to charge developers a one-time $500 fee for unlimited use of GDOS instead of $500 per product.

Emulator Outcry

Over the past few months, a growing number of Atari user groups and bulletin boards have been **howling mad** at Atari for not cooperating with a Canadian programmer who is working on an **eight-bit Atari emulator** for the ST. Several outraged newsletter editors implored readers to flood Atari with angry protests until the **evil company relented.** Recently, they appeared to have won. Atari granted permission for the author to freely distribute his emulator. What's the **real story** behind all this fuss?

It started last year when 20-year-old **Darek Mihocka** of London, Ontario, wrote a simple 6502 software emulator for his Atari ST. The program simulated the execution of 8-bit 6502 language instructions on the ST's 16/32-bit 68000 microprocessor. **So far so good.** But then Mihocka converted the 6502 emulator into a crude Apple II emulator by **transferring a copy** of the Apple's operating system and a copy of Applesoft BASIC into the ST. He passed it around and submitted it to various publications (including COMPUTE!'s Atari ST Disk & Magazine). Of course, the emulator **couldn't be published or distributed** without infringing on Apple's copyrights, and Apple wasn't about to release the rights. Also, the emulator suffered from major problems such as incompatibility with most software, and very slow execution.

Mihocka next created an **eight-bit Atari emulator** by copying that computer's operating system along with BASIC into his ST. He guessed that Atari, unlike Apple, wouldn't mind, since he was emulating an Atari computer on another Atari computer. **But he guessed wrong.** Atari defended the copyright on its system software and said it shouldn't be distributed without permission.

Mihocka decided to modify his emulator so that **users could copy** the operating system themselves, so he wouldn't have to distribute it. Atari objected to that, too. Nevertheless, Mihocka posted copies of his emulator on bulletin boards, submitted it to magazines, and announced intentions to create a **Commodore 64 emulator** by copying that machine's operating system. Some newsletter editors took his side and started **railing at Atari.**

The whole controversy began reaching **ridiculous proportions** when Atari finally reached a compromise with Mihocka. **Neil Harris,** Atari's media relations director, posted a message on GEnie to announce that Atari granted permission for Mihocka to distribute the emulator **under one condition:** that he also make the C source code available so other programmers could contribute to the project. Mihocka agreed.

Apparently, Atari figured that defending its copyright on eight-year-old system software **wasn't worth the grief** the company was getting from upset users. But The Ear has heard of another possible reason why Atari gave in. The current version of the emulator runs at only about **one-fourth the speed** of an eight-bit computer and is **incompatible** with practically all eight-bit software except for relatively simple BASIC programs. Not many knowledgeable programmers inside or outside Atari believe it will ever emulate an eight-bit computer at anything close to full speed. Therefore, the thinking goes, Atari is allowing the emulator to circulate so people will see how **useless** it really is and realize that all the fuss was for **nothing.**

If you want to decide for yourself, contact an ST-oriented BBS, commercial information service, or Atari user group; the emulator will probably be available **everywhere** soon. Download a copy and try running your favorite eight-bit programs on your ST side by side with an eight-bit Atari.

Whisper To The Ear

Got something you want to get off your chest? **The Ear wants to hear.** *Mail missives to The Ear, c/o COMPUTE!'s Atari ST Disk & Magazine, P.O. Box 5406, Greensboro, NC 27403. All sources treated confidentially.*

Atari On The Airwaves

Are you tired of watching the ex-M*A*S*H crew plugging the IBM Personal System/2 computers on TV? Do you cringe when Apple spends more money for a single Macintosh commercial during the Super Bowl than Atari spends on TV advertising in a year? Do you wish the ST had more visibility so people wouldn't respond with a blank stare when you tell them which computer you own?

Take heart—Atari has a remedy. Starting in September, Atari is launching an expensive ad campaign for the ST that will run through the holiday shopping season in December. Atari has repeatedly stated that its main goal for 1987 is to boost distribution and sales of the ST in the U.S., and TV commercials are seen as an important tool.

Four commercials for the ST have been prepared for network broadcast, and Atari was screening the 30-second spots at its booth at the Summer Consumer Electronics Show (CES) in Chicago. Atari Chairman Jack Tramiel isn't one to pull punches, so the commercials are as confrontational as the Commodore 64 spots he aired in the early 1980s, when he was in command of Commodore. All four of the commercials name names—they compare the 1040ST to the Apple Macintosh and IBM PC AT.

For instance, one commercial begins with Tramiel's famous business philosophy, "business is war," filling the screen with huge letters. The voice-over hammers the point that the 1040ST comes with one megabyte of RAM—twice as much as a standard Macintosh and four times as much as an off-the-shelf AT. Yet it costs only half as much as the Macintosh and a fourth as much as the AT.

Atari placed ads like this one in trade magazines at COMDEX to lure more dealers into carrying the ST.

One satirical scene shows the extra features that, according to Atari, account for the difference in price—the Apple and IBM logos. Another commercial attributes the success of the Mac and AT to the marketing prowess of Apple and IBM rather than to the quality of the computers themselves. All four commercials end with a rapid-fire sequence of impressive Atari ST color screen shots.

In addition to the TV spots, the campaign is scheduled to include both commercials on top-40 radio stations and advertisements in consumer and computer magazines.

The ST isn't the only Atari product getting a boost this fall. Atari also plans to air two commercials for its new XE videogame system and one for the 7800 ProSystem, and it plans to advertise both game machines in comic books for the first time.

ST

COMPUTE!'s
Atari ST Disk & Magazine
Toll Free Subscription Order Line
1-800-727-6937

"Don't even think about another C compiler"

- Mike Fleischman, ANTIC: The Atari Resource, Sept. 1986

Megamax Professional C Development System For The Atari ST
Rated #1 C compiler by ANTIC, Compute!'s Atari ST, and Start: The ST Quarterly

- Full Kernighan and Ritchie implementation
- Single pass compilation
- Full access to GEM routines
- Graphical shell
- Intelligent Linker produces efficient native code
- Extensive documentation
- Disassembler
- C programmer's editor
- Code improver
- Developer support included
- Resource construction program
- Create desk accessories
- In-line assembly and structure passing
- Object file librarian
- Six times faster than Atari Development Package
- Develop on single drive 520 ST

- The compiler chosen for development by:
  Batteries Included
  FTL Games
  Supra Corp.

$199.95
Mastercard, VISA, American Express & C.O.D. accepted

Megamax
Development Systems

Megamax, Inc. • Box 851521
Richardson, TX 75085
(214) 987-4931

System HD+ by Astra

2 DRIVES IN ONE !

LET'S TALK QUALITY!

* Top of the line components !
* Superior design !
* Extreme care in assembly !
* Scrupulous testing !

LET'S TALK CONVENIENCE!

* 20.8 megabyte hard-drive (formatted) !
* Double sided 3.5" floppy drive !
* Internal power supply !
* All in one neat, strong, housing !

LET'S TALK FEATURES...

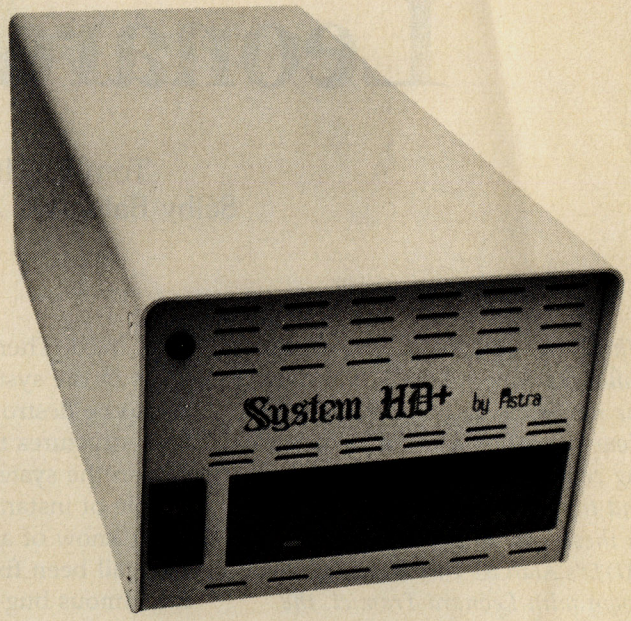
* 36" hard drive cable lets you place unit conveniently, not on top of your keyboard !
* A single AC powercord replaces power supply and two powercords !
* Lighted front switch lets you turn unit on without a lot of gymnastics !
* Lighted busy lights tell you when your hard drive and floppy drive are working !
* Our small footprint (5 1/4"W, 4 1/4"H, 12"L) saves space on your crowded desk !

LET'S TALK WARRANTY...

We have taken extreme steps to insure the quality of these units. Therefore we feel confident enough to offer a ONE YEAR LIMITED WARRANTY covering defects in both parts and labor. This is four times as long as usually given in the industry!

LET'S TALK FUN !

Until you have experienced the fun and convenience of using a hard disk, you have missed a lot of the fun you expected from your computer. Faster access to programs and data make for more fun and less waiting !



LET'S TALK FREEBIES !

We supply complete formatting and partitioning software. (So does everyone else.) We also supply BRS,a unique backup and restore program that will back up your valuable files to floppies. This is a $39.95 value. And when you return your registration card to us we will send you a free "Mousterpiece" mouse pad !

LET'S TALK TURKEY...IT'S AT YOUR DEALER NOW !

---

*ASTRA SYSTEMS, INC.

2500 S. Fairview, Unit L
Santa Ana, CA 92704
(714) 549-2141

Interview With Leonard Tramiel

Tom R. Halfhill, Editor
Selby Bateman, Associate Publisher

What's the outlook for long-awaited enhancements to the ST line? What's the next step beyond the Mega ST? How will Atari respond to increasing competition from Commodore and the Amiga 500? To seek answers to these and other questions, COMPUTE!'s Atari ST Disk & Magazine sat down with Leonard Tramiel, the most technical-minded of the three Tramiel brothers who run Atari with their father, Jack Tramiel. The interview took place on May 31 at the Summer Consumer Electronics Show in Chicago.

Q. We've been getting conflicting answers to the following question. We know the ST's operating system is being modified to work with the new blitter chip, and that the blitter chip upgrade for existing STs is supposed to be shipped with a new set of read only memory (ROM) chips containing the modified operating system. But, will the operating system be modified in other ways to fix existing bugs?

Tramiel: Yes. There have been a fair number of rather annoying bugs fixed. There were a couple of areas in the system that turned out to be destroying some internal data structures that would sort of poison the system. We've found a couple of instances of that; we don't know of any others. Those have all been fixed. We have fixed the famous bug—published for the first time, I believe, in COMPUTE!—where you hit the underscore in a dialog box and the system crashes. Thank you for publishing that; that's been fixed. There are a couple of other things in that category which have been fixed.

The VDI [Virtual Device Interface] was modified so that if a blitter is there and activated, all of the low-level routines execute through the blitter. If the blitter is either not there or shut off, which can be done via software, then it will use the software version, which is as compatible as we can make it to the existing version. That way, programs which counted on the speed of drawing for their timing won't go bonkers. Plus, it's nice to go and turn the blitter on and see it speed up, and turn the blitter off and watch it go at the normal speed.

So we have enhanced it by putting the blitter in. We have fixed some bugs, and we have added some rather invisible features that will make future enhancement easier.

Q. Is the software-selectable switch for the blitter an operating system call, or is it something the average user can access?

Tramiel: Both.

Q. Are both the 520ST and 1040ST still planned to use the blitter?

Tramiel: Yes.

Q. And the Mega STs are still planned to ship with the blitter?

Tramiel: They're planned to have a blitter socket in there. Whether we get enough blitters to match Mega ST shipments in the very beginning is something I wish I had a crystal ball to tell me. But it will go in with the ROMs that are used with the blitter, and if they don't make it out the door in time, there will be some extremely

The family Tramiel: (From left) Garry, Sam, Jack, and Leonard.

reasonable upgrade—you'll just pop the chip in. It's just a question of not everything coming from the same manufacturer, and we're not the manufacturer of everything. So we cannot control exactly how much we get of what. At this point, we believe people would rather have a Mega that is ready to take a blitter as soon as it's available rather than not have a Mega at all. In an ideal world, which is not impossible given the current situation, the Mega would ship with the blitters.

Q. Is it the lack of the blitter that's holding up the Megas, or is it the price of the one-megabit RAM chips—or is it a combination of other things?

Tramiel: Other things. There's lots of stuff involved in putting together a machine: There are mechanical things, FCC [Federal Communications Commission] approvals, UL [Underwriters Laboratories] approvals, getting the circuit board all cleaned up so there are no cuts and jumpers required. There's a lot of stuff involved in putting a new machine together.

Q. Neil Harris was telling us that most of your suppliers are not based in Japan now, or actually that none of them are. Does that mean that Atari is fairly immune to these trade wars that are going on, and the fluctuation between the yen and the dollar?

Tramiel: I wouldn't say we're immune to it, because it's not just fluctuations of the yen. It's fluctuations of the dollar, the Taiwan dollar, the French franc, the German mark, the English pound. Being a very international company, we spend a lot of time worrying about exchange rates and how they're going to change, figuring how to best match those things. It's very tough. But we're flexible enough that it's not a big problem. When we see certain suppliers getting a little expensive, we go to others. If you open up an ST and look inside, you'll see there's not a whole heck of a lot of stuff that comes from a particular country. It's a fairly international-supplied machine as well.

Q. When the Mega STs and the laser printer come out, what's the next step for the ST line?

Tramiel: That's a really difficult question to answer. We've got three or four different paths that we're simultaneously progressing along, and which one is going to come out first I can't really say. We've spoken in the past about most of them—STs with more resolution, 68020 add-on boxes.

One of the big things that we're going to be concentrating a lot on, of course, is getting U.S. distribution and sales up. We've spoken of that a few times since the beginning of this year. That's our thrust now.

I think the biggest changes that are going to be, are going to involve better and better software available for the machine. I think the machine as it currently exists is one heck of a powerful computer. The surface is barely being scratched in what the machine can do with the software that's currently available. We try to point the way with things like *NEOchrome*, which is very, very easy to use and really pushes some of the capabilities of the hardware. The full-time, realtime, fat-bits image that *NEOchrome* gives is something you cannot do on a lesser machine. You need a fair amount of computing power. Take a look at the speed at which *NEO* does circles, filled circles, ellipses, and things like that. It's real fast. You just couldn't do it on a less-powerful computer.

There's a fair amount of room in most software for improvement. I think that's where most of the improvements will come. You know, in Europe and especially in Germany, the ST has been doing terrifically well. The last reports we got, the ST was the number one selling computer in Germany.

Q. What is the difference between the sales and enthusiasm in Germany as opposed to the situation in the U.S.? You haven't had as much success in the U.S.

Tramiel: I wish I were a psychologist and could give an accurate answer to that. We've made a lot of guesses. One is that the per capita income is lower there, so they're more price-conscious. They don't have IBM mania quite as badly as we do. If IBM says "this," not everyone jumps in

line. There are lots of independent companies in Germany.

Germans have always been very, very technical. They like gadgets. If you want to go and buy a really neat-looking thing, it's from Germany. The most expensive hand-held calculator—those Braun things—they're German. They like techie gadgets. And the ST is a pretty darn good techie gadget. It turns out to be a very powerful general-purpose computer as well. So when they look at a computer, they don't go, "Is it IBM-compatible?" They *look* at it.

One of the dealers I talked with at the show yesterday has an interesting technique he uses to sell the ST. People come in, they look at the machine, they ask questions, and of course they want to go out to other dealerships to price-compare and just to check the thing out, to see how it looks. So he tells them what to ask. He says, "Go to a Computerland," or whatever place they're looking, "and say, 'I'm evaluating a 68000-based computer. It runs at 8 megahertz; has one meg of RAM; a double-sided, double-density floppy disk that stores 720K; an RGB monitor—and I'm going to get it for about $1,200. What do you have that's comparable?'" And the answer is always, "Nothing." So they always come back, and a lot of them buy the machine.

See, if you can get people in that direction—looking at the machine for its merits—it sells. Easily.

Q. What do you think it will take in the U.S., then, to fight that IBM-compatible surge now?

Tramiel: Public awareness. Getting people to know what's there. You've seen the first throes of us trying to get into that area with those TV ads [screened at the Atari CES exhibit].

Q. I assume, too, that in Germany the ST is getting some very serious, high-quality software—business-oriented.

Tramiel: It's getting a fair amount.

Q. Is it comparable to what's appearing here, or is it leading over there?

Tramiel: It was leading over there. I don't know if it still is. I think it's still leading in quantity, but not necessarily in quality. I've been spending a lot of time recently worrying about the operating system and things, so I haven't really checked what are the best products available. . . .

One of the guys at the office—his wife is an auditor. She uses an ST and a particular piece of software whose name I don't remember right now. . . . She said it is—I don't want to quote her and do it incorrectly—but the impression I have is that this is the best piece of software she's seen for the machine, for this particular area. And this is a fairly heavy-duty financial thing.

This [software brochure] comes from Venezula, and this is a very nice CAD package. The guy brought it up to show us while it was under development. One of the guys in the office is in the process of building a house, so we entered his house plans with this, and it worked just fine. It's really quite a nice package.

And if you've seen the push toward MIDI, that's also coming [along] very, very well on the ST. You can see the stuff on Dr. T's with their program *The Copyist*, which is a scoring program, and the professional sequencer stuff from Hybrid Arts. There are some really good things coming out in that area. It's really an exciting area.

The last report I got, I was told that *Keyboard* magazine did a survey, and of the musicians who are planning to buy a computer, the ST is the number one choice. There are more people planning to get an ST than any other. Next being a Mac, next being a Commodore 64, next being an IBM PC—which is an interesting inversion of other markets. When it comes to realtime processing, few things are quite as demanding as music. You can see it in that order. The reason the 64 is in there higher than the IBM PC is its built-in sound capabilities and the processing capabilities of the two machines. People from IBM don't like this, but a Commodore 64 and a standard IBM PC are about the same in processing capabilities. But for music, a 64 is much better. Of course, an ST or a Mac will blow them away.

Q. In terms of price/performance, with the Amiga 500 coming out now in the U.S. at a price of about $650, without a monitor, and expansion to one meg for an extra $150. . . .

Tramiel: That'll be interesting. I'm not quite sure I believe that.

Q. That's the price they announced and that it's selling at. . . .

Tramiel: The problem is where, or how, are they going to do the expansion?

Q. When you flip it over there's a hatch that comes off, and a small circuit board plugs in, which gives you an extra 512K plus a battery-backup clock/calendar. That's supposed to cost about $150 extra.

Tramiel: Putting more than half a meg on an Amiga is a funny thing to do because of the chip RAM, and fast RAM, and slow RAM, and all those things. I don't know how functional that really is.

Q. The extra 512K, I understand, is the so-called "fast RAM."

Tramiel: So the stuff that's in there now is slow? Oh, that's right. The extra stuff is the fast RAM, which can't be used by the custom chips. So it can't be used for loading programs, it can't be used for doing video, it can't be used for the blitter, and things like that.

Q. Still, that puts a one-meg Amiga with a color monitor roughly around $1,000; suggested retail. . . .

Tramiel: No. The color monitor costs more than that.

Q. About $350 or so.

Tramiel: For what?

Q. It depends on which one. There are two monitors. The higher-priced one is the [long-persistence] monitor which doesn't have the flicker in hi-res, but the other one is a little lower in price.

Tramiel: I haven't seen an RGB monitor for less than $400. I'd be real surprised.

Q. Well, we had it figured that it'll come in for around $1,000 with one meg—the street price, at least.

Tramiel: It's possible, but I would be very surprised.

Q. Well, assuming that happens, it seems that it would be pretty stiff competition for the 1040.

Tramiel: Maybe. Single- or double-sided disk?

Q. Double-sided, 880K.

Tramiel: Might be. We'll see if it comes out, and at what price, and how much the RAM upgrade is going to be, and whether or not it's FCC-approved.

I don't know what software will run on a one-meg Amiga because of the difference in the memory maps. I also haven't checked out, technologically, with anyone at Commodore. I'm not all that interested, but I've been told that the way the memory map in the Amiga 500 is done, it's very different from the Amiga 1000, so you wind up with pretty bad performance in the initial half meg. And then they've got their own problems with going up to one meg.

But if they are, in fact, close to the same price, it might be some competition. The battle when the two machines were first coming out was fairly even. At this point, all around the world we have such a tremendous head start in software, it's going to be very difficult for them to catch up. As we all know, computers without software are useful for basically boat anchors. And both the 1040 and the Amiga 500 are too small to be decent boat anchors.

Q. How has the introduction of the Macintosh II and Macintosh SE affected your thinking about how your computers should evolve?

Tramiel: Very little. The Mac SE is a very interesting machine. It rhymes with ST. Every improvement they put in it is something that's already in a Mega. They added hardware support for the hard disk—that's been in the ST from the beginning. They added an internal slot—that's in the Mega. They went halfway to-

The Amiga Memory Debate

The Amiga 500 memory expansion discussed in the accompanying interview is a complex technical issue. Since much of the spirited debate between ST and Amiga owners touches on this aspect of the Amiga, and since a great deal of misinformation abounds on both sides, let's take a brief look at what's involved.

Unlike the ST, the Amiga 1000 supports two types of RAM. The internal 512K is known as *chip memory,* since only that memory can be accessed by the custom graphics and sound chips. Expansion memory is known as *fast memory,* for a more obscure reason. Most of the time, the Amiga's custom chips and 68000 processor share the RAM addressing lines without getting in each other's way. But when the Amiga displays a 640 × 200 screen with 16 colors at once (a mode which, to be fair, is unavailable on the ST), the video display chip can slow down a program running in chip memory by as much as 50 percent.

However, if the program is running in expansion memory, which can't be addressed by the graphics chips, it will execute at full speed, even if it uses all the colors available in the high-resolution mode. Since very few Amiga programs use all the colors in hi-res mode, in practical terms there is no difference in speed between chip memory and fast memory.

As if this situation weren't confusing enough, the internal 512K RAM expansion for the Amiga 500 is a *third* type of memory. Since it's addressed in the space reserved for internal chip memory, it can be added to the system without the expensive hardware required by external memory. But because of this, programs running in this memory can be slowed down when using all the colors in hi-res. Still, if Amiga 500 users need fast memory for a special application, the 500 has an expansion slot for adding up to eight megabytes of fast memory.

In actual practice, none of these technical issues affects the Amiga 500 user very much. All three kinds of memory can be used for storing programs and data, and the 512K of display memory is quite adequate. So far there have been no problems reported with running existing software on the expanded 500s.

About a week after this interview was conducted, the Amiga 500 became available in the U.S. at a street price of about $1,050 for a one-megabyte system with 880K disk drive and color monitor. This is sure to spark increased competition with the 1040ST—and spark renewed debates on BBSs and information services over which machine is better.

wards getting the performance that a Mega has. They changed the way the hardware works so it doesn't steal as many processor cycles as it used to—but still not as much as an ST does. When they went to the Mac Plus, they added cursor control keys and a numeric keypad, which we always had. If the SE did anything, it confirmed that we had done things right.

The Mac II is an interesting machine. It's extremely expensive. It'll be interesting to see how truly software-compatible it is. There are some subtle differences in the instruction processing between the 68000 and the 68020. Some instructions that were accessible in user mode are no longer. Some instructions affect the stack differently in the two processors. We'll have to see what works and what doesn't. I know of a couple of programs that do not work. That'll sort itself out.

When they went to the Mac Plus with the hierarchical file system, a lot of software didn't work. And they came out with new versions that worked—and I'm sure they'll come out with new versions that run on the Mac II. But it's going to be a problem at the beginning.

Q. What's the biggest question you get from ST users? Do you get many technical questions, or questions about other areas of confusion?

Tramiel: I don't get that much in the way of questions from users. I get a lot of questions from developers. The answer is usually, "Read your manual," and I tell them where. That's the answer to most technical questions that anyone gets.

When I go to talk to user groups and things like that, the funniest question I get is, "Why did you come out with an ST and make my eight-bit computer obsolete?" I look puzzled and ask them, "Before we came out with the ST, did it answer your needs and do what you wanted it to do?" And the answer is always, "Yes, I love the computer, it does everything I want." So I say, "Can you please explain to me how something I do in Sunnyvale makes your computer stop working? It's not obsolete. If people always worried about doing something better, no one would have made your eight-bit computer. You don't want to hold back progress." And everyone applauds, and they're a little sheepish for a moment.

Q. What about the IBM emulator, which isn't important to some people and is very important to other people? Is that ever going to come out? Is it important?

Tramiel: I don't think it's that important. You can't really get good performance in a software emulator. The cost of a hardware emulator is not going to be a heck of a lot less than a clone, because it's got to be an IBM PC. It'll be a little less; it doesn't need to have the keyboard; it doesn't need to have the screen. But everything that you take away decreases the performance, because it's got to go through some emulation to make it work.

I think what's more important is something which is one of our corporate best-kept secrets. If you take a 3½-inch disk from an IBM PC Convertible, you can read it on an ST.

Q. And the IBM Model 30, too.

Tramiel: And the Model 30, or the Data General DG-1, or lots of other things. In fact, before we got all the floppy code working on the ST, we used to format disks on a DG-1. The data is compatible. There are already a few programs that are data-compatible between the two. *VIP Professional* is data-compatible with *Lotus 1-2-3*, as is *Logistik*, which is a program coming over from the U.K.—a time management, spreadsheet, database program that looks very interesting. [Editor's note: See review of *Logistik* elsewhere in this issue.] *WordPerfect* should be available sometime early this summer, and it's going to be file-compatible with the IBM PC version.

People don't necessarily want to have exactly the same program. That's not as important as being able to take your work home, continue what you're doing at the office, take it back in, and be fine. And you can do that. As an example, there's a new Z80-based product in England from Sinclair which he [Clive Sinclair] calls "IBM-compatible." And it is exactly as IBM-compatible as the ST. It runs CP/M, which, as you know, is not IBM-compatible, but it has 3½-inch disks that are formatted in IBM format. Thank you very much. We didn't feel that we could get away with calling that "IBM-compatible." We backed down probably more than we should have from the marketing point of view. It's really a well-kept secret. Both of you are shaking your heads, "Yes, we knew about it."

Q. We got an IBM Personal System/2 Model 30 in the office a few weeks ago, and one of the first things we did was to take a disk from the Model 30 and stick it in the ST, and it works fine. But it didn't work vice versa.

Tramiel: Right. It's got to be formatted on the PC. PC-DOS insists on having an 8088 jump instruction in the boot sector of the floppy disk—something which doesn't make a whole heck of a lot of sense on a 68000-based machine. However, if we don't do it, someone else will. Someone will write a program that will allow you to format your floppy on an ST, so that can be written.

Q. Somebody has done that.

Tramiel: Yes. I'm not sure if that's the one that we wrote and put up [on bulletin board systems]. The guy that was doing that went off to Japan to finish up some production issues. I'm not sure if his version got out into the public domain, or if someone else wrote it, or if he told someone

how to do it. But I remember that, up on BIX [*Byte* magazine's BBS], there was a question about what makes an ST-formatted disk not work on a PC, and he laid it all out and told him how to fix it. So that information is readily available. If it's a real pain—and I can't imagine why it would be—but if it is, there will be programs, or there already are programs so that you can format a disk on an ST and read it fine on a Personal System/2 Model 30, or any of those.

Q. When we picked up a brochure at the Atari exhibit on the Atari PC, we noticed that it mentioned only the higher-end model with the EGA (Enhanced Graphics Adapter) board. Are you dropping the lower-end model?

Tramiel: I'm really not sure. That's basically a packaging issue, on how things are going to get laid out. I would ask the marketing people that.

Q. Do you still have plans to get in that market more heavily than with the low-end clones?

Tramiel: That depends on how things sell. The IBM PC market is a commmodity market. You make them and hope that people go out and buy them. If it works out that way, great. If it doesn't, you've still got a market over here, and you might as well do it with STs; they're better machines.

Q. What do you see as the future for the eight-bit line?

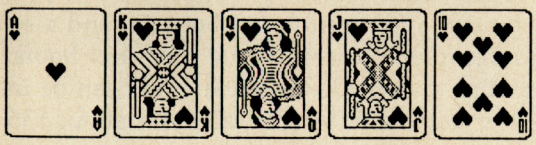
Tramiel: With the XE game system and the XEP-80 [80-column screen adapter], there's going to be a fair amount of resurgence in that market. People are going to find with the XE game system a lot of software that was formerly available that hasn't been for a while coming back out. That machine—you've seen the reaction to it at the show—it looks pretty good. People like it. Someone from *ANALOG* told me that this was the first computer he's seen that can be described as "Cute." If you've seen the package, it's physically very pretty. They did a really nice job on it, and it's compatible with everything that's out. I think that will spur a lot of people to go back into the distribution of software that has been available before. And as we all know, there's a lot of software available for the Atari eight-bits.

The XEP-80 answers that begging question of "How do I do 80 columns?" That's going to be nice. Plus, the Atari eight-bit computers are, because of their price, an overwhelmingly needed product in less-developed countries. If you go to South America, the eight-bit Atari stuff just dominates the market—like 80 or 90 percent of the market is Atari eight-bit. . . . It's the only computer that's low enough cost, that's got decent distribution, that's got software in various languages, and that's available. And they love it. So it's going to be around for a while. **ST**

We've domesticated one of the most played, most playable computer games anywhere.

HOME CASINO POKER™

converts your Atari ST color system to a Draw Poker machine just like those in Las Vegas, Atlantic City and Reno.



• 1 to 4 players • wild card options • user-programmable payoffs • cut for double • superior graphics • music • sound effects • scrolling, push-button menus • PLUS head-to-head Stud Poker for 1 to 4 players •

Dealers contact:

Dubl Dubl Funware
P.O. Box 06401
Portland, Oregon 97206
(503) 771-7833

BUZZWORD

An aid to the best source of good times.

The newer computer games, instead of placing the computer at center stage the way standard video-games do, use it as an adjunct, an aid to the best source of good times: the interaction of family and friends.

Buzzword is a solid example of this kind of game. It stimulates, it teaches, and it's fun. Geared to those ages ten and up, it provides challenging entertainment for the whole family.

Buzzword is a big hit with our family. It bills itself as ranging "from a simple word guessing game. . . to a sophisticated strategy-filled test of your knowledge", a game to appeal to trivia buffs, word games aficionados, and puzzle-solvers." It is. It does. The mental exercise of Buzzword sharpens wits, and has enlarged our daughter's vocabulary, and spelling skills.

Excerpts from review by
Robin & David Minnick
COMPUTE's Gazette July 1987

SAVE $5.00 plus Free Shipping by mentioning this advertisement.

To receive Buzzword for the Atari ST, send $37.95 (normally $42.95) to:
The Buzzword Game Co., Inc.
5582 S. Zeno Court
Aurora, CO 80015
(303) 693-4263

Visa & Mastercard Accepted.
If not completely satisfied, you may return the game within 30 days for a complete refund.
Color Monitor Required.

Memory Minder

Tim Midkiff, Editorial Programmer

Ever wonder how much free memory is available in your ST? Try this short and simple desk accessory to find the answer. It works on all ST systems, color or monochrome.

Picture this: Using your favorite spreadsheet program, you've constructed a worksheet that tracks quarterly budgets for the past five years. Finally, after hours of work, you're ready to enter results for the latest quarter.

Bombs away! The dreaded bomb icons flash on the screen, and the computer crashes with an out-of-memory error.

Well, OK, the spreadsheet program should've trapped the error instead of crashing. But sometimes it happens. Not all programs are perfect. If only it displayed the amount of free memory remaining, perhaps you could have anticipated the problem and avoided the crash.

A "memory meter" is a useful feature in all kinds of programs that dynamically allocate memory—including spreadsheets, word processors, database managers, address filers, notepads, and even drawing programs. If your favorite GEM-based program lacks this feature, you can add it quickly and easily with "Memory Minder."

Memory Minder is a handy desk accessory that performs one simple task: It constantly monitors the amount of free random access memory (RAM) remaining in your ST, and reports this figure whenever you call it from the Desk menu. Because it's a desk accessory, Memory Minder is installed in the computer automatically when you switch on the system, and it's available from the Desk menu from within any GEM-based program.

Easy Installation

Memory Minder is a cinch to install. You'll find it on the magazine disk under the filename MEMORY.AC. *It will not be installed if you boot up your ST from the magazine disk.* Instead, you should copy it to your boot disk (the disk you insert in drive A when switching on the computer) and rename it MEMORY.ACC.

From now on, whenever you boot the system using this disk, Memory Minder automatically loads into the computer and remains dormant until summoned from the Desk menu. The Desk menu is always the far-left menu in GEM-based programs; sometimes, as in *1ST Word*, it's labeled with the Atari logo instead of "Desk." Desk accessories like Memory Minder aren't available in programs that don't support GEM features, such as *ST Writer*.

Although the 520ST has 512K of RAM and the 1040ST has 1024K of RAM, don't be alarmed if Memory Minder reveals that much less memory is free even when no programs are loaded. The missing RAM is reserved by GEM for the screen, disk directory windows, other desk accessories which may be installed, system variables, and miscellaneous other needs.

Remember that the ST allows a maximum of six desk accessories to be installed at a time. The Control Panel accessory that comes with the ST (CONTROL.ACC) counts as *two*, because it includes the Install Printer accessory.

If your ST system has a hard disk configured as drive C, desk accessories are loaded from there instead of from drive A. That means you'll have to copy the .ACC files to drive C. Also, if you set up a ramdisk as drive C, the computer looks there for desk accessories when you press the reset button or change resolutions on color systems. If you want to retain your desk accessories after a reset or resolution change, you'll have to copy the .ACC files to drive C.

Finally, if you're using a very early 520ST that does not have the TOS operating system in read only memory (ROM), you should rename MEMORY.ACC to DESK*x*.ACC, where *x* is a number from 1 to 6 that does not conflict with other desk accessory files on the boot disk. Example: DESK5.ACC. It's easy to determine if a 520ST lacks TOS in ROM; the system takes a few minutes to boot up, and a screen of flowing colors appears as the computer boots. ROM chips to upgrade these early STs can be installed by authorized Atari dealers for about $35.

Notes For Programmers

Memory Minder is written in TDI's Modula-2, a structured language that closely resembles Pascal. For those who wish to study how the program works, the source code is included on the magazine disk under the filename MEMORY.MOD.

If you have a copy of TDI Modula-2 and wish to recompile MEMORY.MOD, remember to link it with GEMACCX instead of GEMX. After compiling and linking, the MEMORY.PRG file must be renamed to MEMORY.ACC. **ST**

COMPUTER VICE now joins with S & S Wholesalers!

Join the celebration and SAVE, SAVE, SAVE.

S & S Wholesalers, Inc.

1-800-331-7054 ORDERS ONLY

CUSTOMER SERVICE - IN FLORIDA (305) 538-1364

FREE FREIGHT ON ALL ORDERS WITHIN CONTINENTAL U.S. OVER $100.00

Orders under $100.00 add $4.00 shipping and handling. C.O.D. orders add $4.00. Prices reflect a 3% cash discount. Add 3% for VISA/MC. (FPO, APO, Canadian & all other Postal Orders actual shipping charged.) Florida residents add 5% sales tax. Personal checks & money orders allow 2 weeks for processing. Prices subject to change without notice. **Orders received before 12:00 PM will be shipped same day.**

ST HARDWARE

520 ST Computer	$399.90
SF 314 Disk Drive	$207.77
SF 354 Disk Drive	$149.77
SCI 224 Monitor	$297.77
SCI 24 Monitor	$167.77
SM 804 Printer	$199.77

JOYSTICKS/ ACCESSORIES

WICO The Boss	$10.77
WICO Ball	$14.77
WKOS Way	$18.77
Kraft	$ 8.77
Recoton Big Shot	$11.77
5¼" Drive Cleaner	$ 8.77
5½" Drive Cleaner	$ 9.77
CRT Cleaner	$14.77
800 XL Cover	$ 7.77
520 ST Cover	$ 9.77
Drive Cover St	$ 7.77
1050 Cover	$ 7.77
1025 Cover	$ 7.77
1017 Cover	$ 7.77
130 XE Cover	$ 7.77
1224 Cover	$11.77

STAR MICRONICS

NX 10	$239.90
LU 1210	$199.77

DISKETTES

Sony DSDD 5¼"	$ 9.97
Memorex DSDD 5¼"	$ 8.97
Precision DSDD 5¼"	$ 7.97
Bonus by Verbatim DSDD 5¼"	$ 6.97
Sony 3½" DSDD	$25.50
Sony 3½" SSDD	$19.50
Winners 3½" DSDD	$24.00

ST SYSTEMS

COLOR SYSTEM

520 ST Computer
SF 354 Disk Drive
SCI 224 Color Monitor
Basic/Logo/First Word — $779.00

MONOCHROME

520 ST Computer
SF 354 Disk Drive
SCI 24 Monitor
Basic/Logo/First Word — $569.00

1040 COLOR & MONO SYSTEMS

IN STOCK — CALL FOR PRICING

ST HARD DRIVES

Atari 20MB	$ 649.90
Supra 10MB	$ 629.90
Supra 20MB	$ 639.90
SUPRA 30MB	$ 829.90
SUPRA 60MB	$1189.90

ST HARDWARE

520 ST Computer	$399.90
SF 314 Disk Drive	$207.77
SF 354 Disk Drive	$149.77
SCI 224 Monitor	$297.77
SCI 24 Monitor	$167.77
SM 804 Printer	$199.77

EPSON PRINTERS

LX 80 w/Tractor	$259.90
FX 85	$379.90
FX 268	$504.90

PANASONIC PRINTERS

KXP 1080	$199.90
KXP 1091	$249.90
KXP 3131 Daisy Wheel	$279.90
Panasonic Ribbons	$ 8.77
Parallel Printer Cable	$ 18.70

SOFTWARE ENTERTAINMENT

A Mind Forever Voy.	$ 27.87
Alternate Reality	$ 24.77
Artic Fox	$ 24.80
Balance of Power	$ 24.77
Ballyhoo	$ 24.77
Black Cauldron	$ 24.77
Bratacus	$ 30.97
Bridge 4.0	$ 18.57
Bureaucracy	$ 27.87
Champ Baseball	$ 24.77
Champ. Wrestling	$ 24.77
Chess	$ 37.17
Chessmaster 2000	$ 27.90
Crystal Castle	$ 18.57
Caneman	$ 30.97
Cutthroats	$ 24.77
Eight Ball	$ 18.57
Enchanter	$ 24.77
Fantastic 4	$ 12.37
Flight Simulator II	$ 30.97
Flip Side	$ 18.57
GATO	$ 24.77
GBA Basketball	$ 24.77
GFA Football	$ 24.77
Hacker	$ 15.47
Hacker II	$ 24.77
Harrier Strike Missile	$ 30.97
High Roller	$ 30.97
Hitchhiker's Guide	$ 18.57
Hollywood Hijinx	$ 24.77
Infidel\$ 27.87 Joust	$ 24.77
Karate Kid II	$ 24.77
Kings Quest	$ 30.97
Kings Quest II	$ 30.97
Kings Quest III	$ 30.97
Leaderboard	$ 24.77

ST SOFTWARE

Leather Godesses	$ 24.77
Mean 18	$ 27.87
Mercenary	$ 24.87
Music Studio	$ 30.94
Ninja	$ 15.44
Ogre	$ 24.74
Pawn	$ 24.74
Phantasie	$ 24.74
Phantasie II	$ 24.74
Pinball Factory	$ 24.77
Planetfall	$ 24.77
Roadwar 2000	$ 24.77
Rogue	$ 24.77
S.D.I.	$ 30.97
Silent Service	$ 24.97
Space Quest	$ 30.94
Star Raiders	$ 21.64
Starcross	$ 24.74
Star Glider	$ 27.87
Strip Poker	$ 24.77
Sundog	$ 24.77
Super Huey	$ 24.77
Time Bandits	$ 24.77
Winter Games	$ 24.80
Wishbringer	$ 24.74
Witness	$ 24.74
World Games	$ 24.80
Zork Trilogy	$ 43.
10th Frame	$ 24.80
Wordperfect 4.1	$ 24.77

ST SOFTWARE

Cash Disbursments	$ 49.95
DAC Easy Accounting	$ 43.37
Dollars and Sense	$ 61.97
Financial Cookbook	$ 31.00
Home Accountant	$ 30.97
Inventory Manager	$ 49.57
ISGUR Portfolio	$123.97
Payroll Master	$ 30.97
Payroll	$ 92.94
ST Accounts	$ 92.94
Homework Helper	$ 30.97
Intro to ST Logo	$ 18.57
Kid Talk	$ 30.97
Kinderama	$ 24.77
Math Talk	$ 30.99
Math Wizard	$ 24.74
Winnie the Pooh	$ 18.54

SOFTWARE GRAPHICS

Aegis Animator ST	$ 49.57
Art Gallery I	$ 18.57
Art Gallery II	$ 18.57
Art Pack for Animato	$ 21.67
CAD 3D	$ 30.97
Certificate Maker	$ 30.97
C. Maker Lib 1	$ 21.67
Easy Draw	$ 80.54
Font Editor	$ 49.57
Graphic Artist 1.5	$123.97
Degas Elite	$ 49.57
LM Signs and Banners	$ 12.34
LM Greeting Cards	$ 12.34
LM Calenders	$ 11.10
Megafont ST	$ 24.77
Neochrome	$ 24.77
Paint Pro	$ 30.97
Paint Works	$ 24.77
Print Master Plus	$ 30.97
Publishing Partner	$ 99.14
Rubber Stamp	$ 24.77
ST Music Box	$ 24.74

SOFTWARE LANGUAGES

Assempro	$ 37.17
Cambrgidge Lisp	$123.97
Fast Basic-M	$ 80.54
Forth	$ 30.97
GFA Basic	$ 49.57
Macro Assembler	$ 61.69
MCC Pascal	$ 61.94
Mark Williams C	$123.94
Micro MT C Shell	$ 80.57
Modula II	$ 61.97
Modula II Commercial	$185.97
Modula II Dev.	$ 92.94
Personal Pascal	$ 46.49

SOFTWARE UTILITY

ST Tool Box	$ 24.77
Calander	$ 18.57
Cards	$ 24.77
Deskmaster	$ 24.77
Disk Doctor	$ 18.57
Echo	$ 24.77
Flash	$ 24.77
Habba Com	$ 24.77
Habbadex	$ 37.17
Habamerge	$ 24.77
Habba View	$ 30.97
Hard Disk Excellerator	$ 24.77
IS Talk	$ 30.97
Mcopy	$ 49.57
Macro Manager	$ 43.37
Macro Desk	$ 24.77
Magic Sac	$123.94
Menu +	$ 18.57
Michtron BBS	$ 61.94
Michtron Utilities	$ 37.14
Metacomco Make	$ 43.37
Zoomracks	$ 49.57
Copy II ST	$ 23.77

SOFTWARE PRODUCTIVITY

A-Calc	$ 37.17
A-Copier	$ 24.77
A-Mailer	$ 24.77
Business Tools	$ 30.97
DB Master	$ 30.97
Data Manager St	$ 49.57
Datatreive	$ 30.97
Datamap	$ 15.47
Dbman	$ 92.97
Deadline	$ 30.97
Deep Space	$ 27.87
EZ-Data	$ 30.97
EZ-Thesaurus	$ 24.77
Easy Record	$ 49.57
Habba Special	$111.57
Habba Writer	$ 46.47
Habba Writer II	$ 37.17
Habaspell	$ 24.77
Help-Calc	$ 15.47
Help-Mate	$ 12.37
Logistix 1040	$ 92.99
Logistix 520	$ 61.97
Mail Room	$ 49.57
Power Plan	$ 49.57
Regent Word	$ 30.97
Regent Base	$ 61.97
Regent Word II	$ 49.57
Superbase	$ 92.94
Swiftcalc ST	$ 49.57
Text Pro	$ 30.97
VIP Professonal	$123.94
Wordwriter ST	$ 49.57
Final Word	$ 89.90

Sailboat

Arie Berman

Each issue, COMPUTE!'s Atari ST Disk & Magazine features computer artwork contributed by an ST artist. This issue's screen is "Sailboat" by Arie Berman. You'll find the NEOchrome*-format file on the magazine disk under the filename ART.NEO. It can be loaded into any graphics-design program compatible with* NEOchrome *files.*

If you want to contribute a screen, send the disk to COMPUTE!'s Atari ST Disk & Magazine, P.O. Box 5406, Greensboro, NC 27403. All artwork must be completely original and previously unpublished in any form. Screens should be drawn in the low-resolution color mode in either NEOchrome *or* DEGAS *format. You may include a paragraph or two of text describing the artwork and any special techniques employed. We pay $100 for artwork that is accepted for publication, plus disk royalties for artwork included on the disk. Accepted artwork becomes the property of COMPUTE! Publications, Inc. Only those disks accompanied by a self-addressed, stamped mailer will be returned.*

STates & Capitals

Robert Dolan

As this program demonstrates, the ST is an ideal computer for educational applications. It makes the most of the ST's graphics and easy user interface. For all ST systems, color or monochrome.

When the Atari eight-bit computers first became popular in the early 1980s, hundreds of educational programs appeared. Atari promoted the Atari 400 and 800—and later the 600XL and 800XL—as affordable alternatives to the Apple II, which was already beginning to entrench itself in schools at the time.

It seemed as if the same thing would happen when Atari introduced the ST in 1985. But although Atari voiced its intention to penetrate the educational market, relatively few educational programs have been written for the ST. I decided to remedy this by writing an updated version of an old favorite on the eight-bit computers, *States & Capitals.* The ST version, appropriately, is called "STates & Capitals."

Like the original, the new version teaches youngsters the names of all 50 states and their capital cities. But STates & Capitals also takes advantage of the ST's GEM interface as much as possible. All input is controlled with the mouse, and the program uses the high-resolution graphics available on the ST. You can even call desk accessories from within STates & Capitals.

Getting Started

STates & Capitals is found on the magazine disk under the filename STATES.PRG. It runs in the high-resolution mode with a monochrome monitor or the medium-resolution mode with a color monitor. If your ST is set for low-resolution color, switch to medium-res before running the program; otherwise, an alert box will ask you to make the switch.

When you copy STATES.PRG to another disk, be sure to also copy the file STATES.RSC. This is a *resource file* required for the program to work properly. It must be saved on the same disk and in the same directory/subdirectory as STATES.PRG.

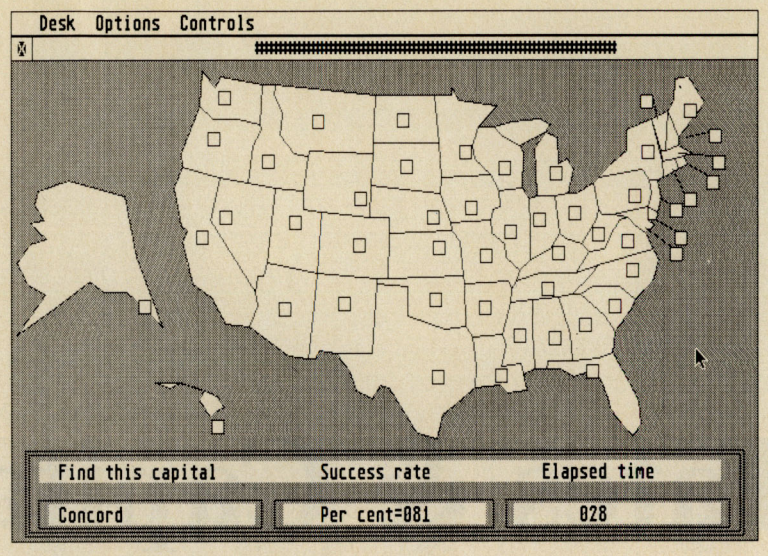
Another related file on the magazine disk is STATES.C. This is the C source code for STates & Capitals; it's included for programmers who wish to study how the program works. Unlike STATES.RSC, it is not required to run STates & Capitals.

When you run STATES.PRG, a full-screen window opens and displays a map of the United States. (See figure.) At the top of the screen is the menu bar with the titles of three menus: Desk, Options, and Control. At the bottom of the screen is a status box which displays information for the user.

The Menu Bar

At the far left of the menu bar is the Desk menu. This familiar menu, common to all GEM applications, lets you summon any desk accessories that may have been installed when you booted your ST. For instance, you can call the Control Panel accessory that came with your ST to adjust the screen colors of the map in STates & Capitals (if you have a color monitor, of course). The Desk menu also contains the usual copyright notice.

The second menu is titled Options. This can be considered the main menu in STates & Capitals; it



"STates & Capitals" tests students on how much they really know about the United States.

lets you access all of the main program functions.

The third menu is titled Controls; it contains two functions that will be described in a moment.

To begin using STates & Capitals, click on the first selection under the Options menu, Learn It!. This mode allows the student to review the locations of the states and the names of their capital cities. Simply point to the small icon within a state and click the left mouse button. The name of the state and its capital are displayed in the status box at the bottom of the screen. This can be repeated as many times as desired. To exit this mode, click the right mouse button.

The next two selections under the Options menu let students test their knowledge. The selections are labeled Find The State and Find The Capital. The function of each is fairly obvious. First, you'll notice a row of pound-sign characters (#) at the top of the screen, which indicates how many states or capitals remain to be found (each round consists of 50 queries). If you selected Find The State, the program displays the name of a capital and asks you to find the matching state. If you selected Find The Capital, the program displays the name of a state and asks you to find the matching capital. The state or capital you're searching for is shown in the status box at the bottom of the screen, along with a running total of your success rate (in percentages).

You can stop a quiz before the end of a round, at any time, by clicking the right mouse button.

Race Against The Clock

The next two items under the Options menu allow students to view their results. The selection labeled Show Totals indicates their attempts, successes, and percentages since the program was run. The other item, Show Best Time, is related to the timer functions found under the Controls menu.

The Controls menu has two selections: Timer On and Reset Total. When you choose Timer On and then Find The State or Find The Capital, the quiz is timed by a clock which appears in the status box. There's no time limit—students can take as long as they want to finish a round—but the total elapsed time at the end of the quiz is recorded by the program. Each tick of the clock ("time unit") is equal to two seconds. Time values are recorded only for completed rounds.

When the Show Best Time item is selected from the Options menu, the status box displays the shortest time in which any round was completed since the program was run.

By default, the timer is turned off. It's intended for more advanced students, since the main purpose of using STates & Capitals is learning, not winning. If two or more students want to test their skills against each other, however, the timer option is available. A checkmark next to the Timer On item indicates that the timer is active; the checkmark disappears when you turn off the timer.

The item labeled Reset Total under the Controls menu allows you to clear the score totals shown in the status box. Normally, the program keeps a running score for all of the rounds played since the program was run. Reset Total is useful if more than one student wants to play a round and they want separate scores.

Finally, the Return To Desktop item under the Options menu exits the program and brings you back to the GEM desktop.

Programming Notes

One of the problems with writing a GEM application is the Desk menu. Your program doesn't have complete control over the system; the user might have installed several desk accessories which can be called at any time. This means that you must anticipate almost any conceivable headache that might arise when a desk accessory is summoned from within your program. The fact that another window can be opened and moved around on top of your application means that you have to be concerned with situations that have nothing to do with your program.

Fortunately, the *apskel* code provided by Atari solves this problem rather neatly. By using the *evnt_multi* function, STates & Capitals basically shares time with whatever else is going on. The most work that an intruder (my term for accessories that open on top of my programs) will create is when the main program is told that it's necessary to redraw the screen.

Since STates & Capitals requires a fair amount of printing text to finite (row/cursor) locations, I developed a few routines to aid in the process. These routines are *sprint( )* and *vprint( )*. Sprint( ) accepts literal strings and vprint( ) handles integer variables. The first parameter in each is a resolution switch that corrects for differences in vertical resolution (640 × 200 for medium-res and 640 × 400 for hi-res). This parameter value should be 0 for medium-res and 1 for hi-res.

Along with the full definitions of these functions are a few other goodies, such as a definable random number generator (like the one in eight-bit Atari BASIC), and small forms of *hide_mouse* and *show_mouse* called *hm( )* and *sm( )*. These made my life easier when writing STates & Capitals, and hopefully they'll do the same for you.

The source code was compiled and linked with *Megamax C*, but can be adapted to other compilers.

ST

COMPUTE!'s
Atari ST Disk & Magazine
Toll Free Subscription Order Line
1-800-727-6937

Release the POWER of your mouse

with software for the ST

TextPro
Write a novel...

TextPro-This is a serious word processor! Written with speed and maximum control in-mind. Advanced features—mail merge for form letters..., multiple columns, automatic table of contents, automatic index , sorting (to alphabetize list of words) and define up to 30 user definable keys. Full screen editing with mouse or keyboard. **$49.95**

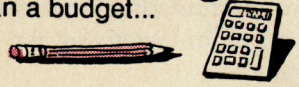
PaintPro
Create a masterpiece...

PaintPro-Draw upon your creative talents with **PaintPro**, the GEM-based, full-page graphics design package. Multiple windows. Cut & paste. 16 tools. Variable line width. Define your own fill and line patterns (up to 32 in memory at once). **$49.95**
PaintPro **Library #1**–Many clip-art pictures, 5 GDOS fonts. Degas compatible. **$29.95**

DataRetrieve
Manage a mailing list...

DataRetrieve—Data management was never this easy! Design your database using the mouse. *Lightning-fast* operation; tailorable display; user-definable reports; up to 64,000 records. Supports multiple files. Includes RAM-disks. Complete search, sort and file subsetting. Works with TextPro. Easy printer control. Five setups included. **$49.95**

PowerLedger
Plan a budget...



PowerLedger—Finally, a full-powered spreadsheet for your ST. Powerful, large capacity (65,000 by 65,000 cells) spreadsheet. Built-in calculator, online notepad and integrated graphics. Seven different chart types (pie, bar, 3D bar, line, etc.) Multiple windows (up to seven).14 digit precision with 37 math functions. ***New Version!*** **$79.95**

Ask about any of the 14 books in our ST Reference Series

Call **now** for the name of the dealer nearest you. Or order direct using your credit card. Add $4.00 per order for shipping. Foreign orders add $12.00 per item. Call or write for your **free** catalog covering our software and books. 30-day software guarantee. Dealers inquires welcome–over 2000 dealers nationwide.

Abacus

P.O. Box 7219, Dept. SA, Grand Rapids, MI, 49510
Phone 616/241-5510 Fax 616/241-5021 Telex 709-101

Whirling Lines: A Graphics Demo

Lance F. Squire

Here's a simple but entertaining graphics demo presented in two forms: the original ST BASIC program, and another version rewritten entirely in machine language. Both programs work only in the low-resolution color mode.

When I bought my ST, one of my first projects was to convert a screen demo program that I had written for my eight-bit Atari. This turned out to be much more difficult than I had anticipated. In ST BASIC, the program requires numerous VDISYS and GEMSYS calls, and the manual contains practically no information on these subjects.

After the purchase of a GEM reference book and a few months of work, I finally produced a reasonable facsimile of my screen demo. The result can be found under the filename LINES.BAS on the magazine disk. It's a dancing line routine that features delayed erasing, 506 random colors, and automatic selection of horizontal, vertical, diagonal, and four-way reflections.

To run LINES.BAS, drop down the Options menu and choose Select Preferences to switch into the low-resolution mode. Then load ST BASIC from the language disk which came with your ST. (It's not included on the magazine disk.) Next, load and run LINES.BAS as you would any other BASIC program. To start new lines, press and hold the left mouse button.

Time For A Rewrite

Although LINES.BAS works fairly well, I was really looking for a much faster effect. Figuring that machine language was the answer, I bought a 68000 macro assembler and various books on ML and the ST. Then I began rewriting the BASIC program in ML.

The result is "Whirling Lines," found on the magazine disk under the filename LINES.PRG. Since it's written completely in ML, you simply run it from the desktop or disk menu like any other stand-alone program. It works in the low- and medium-resolution color modes as well as high-resolution monochrome.

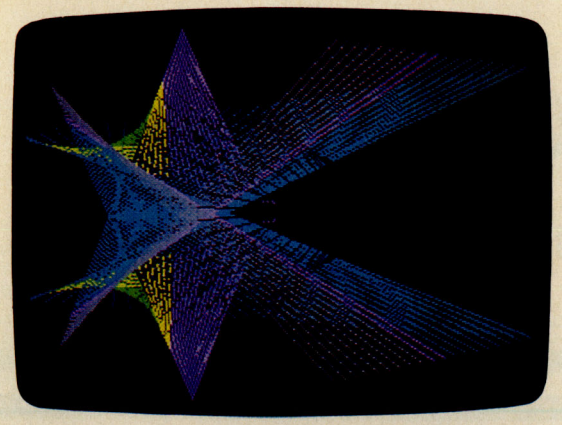
Like its BASIC predecessor, Whirling Lines displays 506 random colors (only in the color screen modes, of course). Whirling Lines also has selectable options:

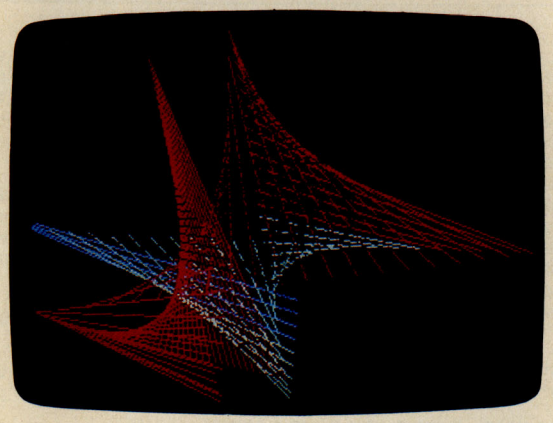
Key	Function
1–9	10- to 90-line trail
h	Horizontal mirror toggle
v	Vertical mirror toggle
S	Stop program (return to desktop)

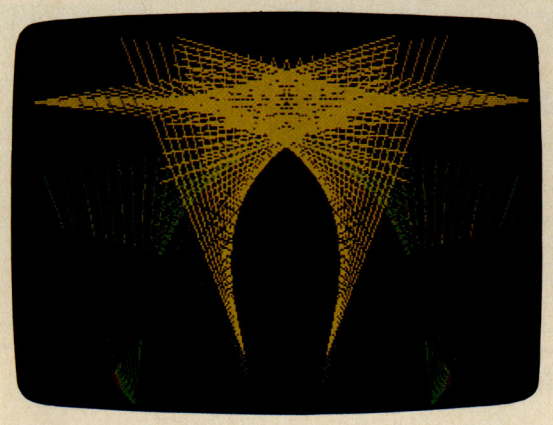
Notice that the keys for the horizontal and vertical mirror toggles must be typed in lowercase; the S key must be pressed in uppercase.

To get a four-way mirror effect, turn on both the horizontal and vertical mirrors.

For those interested in studying how Whirling Lines works, the ML source code is on disk under the filename LINES.S.







The machine language version of "Whirling Lines" includes options for horizontal and vertical mirroring effects.

ST

ProCopy

ST BACKUP UTILITY

You can't backup your software because copy protection locks you out. **ProCopy** is the key!

- Protects against the accidental loss of expensive software
- Works with all Atari STs
- Copies both S/S & D/S disks
- Use with 1 or 2 disk drives
- Not copy protected
- **FREE** shipping and handling
- **TOLL-FREE** telephone number
- Updates are only $12 with return
- Orders shipped same day
- Disk analyze function included

Dealer Inquiries Welcome

VISA MasterCard and C.O.D. orders

Call (800) 843-1223

$34.95

Send check for $34.95 (overseas add $2.00 for air mail) to:

PROCO PRODUCTS

P.O. BOX 665, CHEPACHET, RHODE ISLAND 02814 USA
(401) 568-8459

Available Internationally in Europe and Australasia

THE MOVING FINGER CO.
Building 2
Shamrock Quay
Southampton, SO1-1QL
England
Tel. 0703-227274

TECH-SOFT
COMPUTER WHOLESALE
324 Stirling Highway
Claremont
Western Australia 6010
Tel. 09-385-1885

Tired of Switching Cables? *Switch To*

MONITOR MASTER™

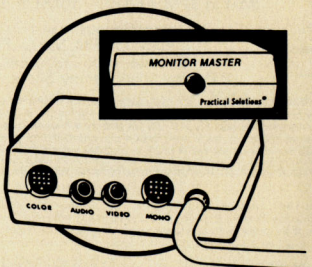
for the Atari™ ST

- Single push-button switches between your color and monochrome monitors.
- Prevents damage to your cables and computer by omitting the need to plug and unplug your monitors.
- Custom molded case and cable matched to the ST.
- High quality construction ensures no picture or sound degradation.
- Audio jack enables the ST's sound to be fed into your VCR composite monitor or stereo.
- Composite jack brings out composite video on ST's with RF modulators.

ONLY

$49.99

Plus Shipping & Handling



Practical® Solutions **602-884-9612**

1930 East Grant Road, Tucson, Arizona 85719

VISA MasterCard

Lyco Computer

Marketing & Consultants

Since 1981

Lyco Means Total Service.

Mark "Mac" Bowser, Sales Manager

I would personally like to thank all of our past customers for helping to make Lyco Computer one of the largest mail order companies and a leader in the industry. Also, I would like to extend my personal invitation to all computer enthusiasts who have not experienced the services that we provide. Please call our trained sales staff at our toll-free number to inquire about our diverse product line and weekly specials.

First and foremost our philosophy is to keep abreast of the changing market so that we can provide you with not only factory-fresh merchandise but also the newest models offered by the manufacturers at the absolute best possible prices. We offer the widest selection of computer hardware, software and accessories.

Feel free to call Lyco if you want to know more about a particular item. I can't stress enough that our toll-free number is not just for orders. Many companies have a toll-free number for ordering, but if you just want to ask a question about a product, you have to make a toll call. Not at Lyco. Our trained sales staff is knowledgeable about all the products we stock and is happy to answer any questions you may have. We will do our best to make sure that the product you select will fit your application. We also have Saturday hours — one more reason to call us for all your computer needs.

Once you've placed your order with Lyco, we don't forget about you. Our friendly, professional customer service representatives will find answers to your questions about the status of an order, warranties, product availability, or prices.

Lyco Computer stocks a multimillion dollar inventory of factory-fresh merchandise. Chances are we have exactly what you want right in our warehouse. And that means you'll get it fast. In fact, orders are normally shipped within 24 hours. Shipping on prepaid cash orders is free in the U.S., and there is no deposit required on C.O.D. orders. Air freight or UPS Blue/Red Label shipping is available, too. And all products carry the full manfacturers' warranties.

I can't see why anyone would shop anywhere else. Selection from our huge in-stock inventory, best price, service that can't be beat—we've got it all here at Lyco Computer.

TO ORDER, CALL TOLL-FREE: 1-800-233-8760
In PA: 1-717-494-1030
Hours: 9AM to 8PM, Mon. - Thurs.
9AM to 6PM, Friday — 10AM to 6PM, Saturday

For Customer Service, call 1-717-494-1670,
9AM to 5PM, Mon. - Fri.
Or write: Lyco Computer, Inc.
P.O. Box 5088, Jersey Shore, PA 17740

MasterCard VISA

Risk-Free Policy: • full manufacturers' warranties • no sales tax outside PA • prices show 4% cash discount; add 4% for credit cards • APO, FPO, international: add $5 plus 3% for priority • 4-week clearance on personal checks • we check for credit card theft • compatability not guaranteed • return authorization required • price/availability subject to change

PRICE GUARANTEE

Since 1981, we have led the industry by continuing to offer the lowest national prices while providing quality service. Many companies have come and gone trying to imitate our quality and service. If by some oversight we do not have the lowest prices advertised on the products you desire, then we would appreciate the opportunity to rectify this oversight.

ATARI ST SOFTWARE/ACCESSORIES

Activision:
Champion. Baseball $24.95
Champion. Basketball . $24.95
Championship Golf ..... $New
GFL Football $24.95
Hacker 2 ..... $24.95
Leather Goddesses $24.95
Moonmist $24.95
Music Studio $29.95
Paint Works $24.95
Shanghai $24.95
Bureaucracy $24.95
Stationfall $24.95
Lurking Horror $24.95

Unison World:
Art Gallery 1 or 2 ..... $18.95
Print Master $24.95

Epyx:
Apshai Trilogy $14.95
Sub Battle Simulator ... $24.95
Super Cycle $14.95
World Games $24.95
Wrestling $24.95

Access:
Leader Board $24.95
Tournament #1 ..... $13.95
10th Frame $24.95

Broderbund:
Karateka ..... $CALL

Microleague:
Microleague Baseball .. $35.95
General Manager $19.95

Firebird:
Pawn $26.95
Starglider $26.95
Golden Path $26.95
Guild of Thieves $27.95
Tracker $27.95

Strategic Simulations:
Phantasie $24.95
Phantasie II $24.95
Road War 2000 ..... $24.95
Colonial Conquest $24.95

Microprose:
Silent Service $24.95

Optimized Systems:
Personal Pascal $48.95
Personal Prolog $51.95

WE STOCK OVER 5000 SOFTWARE TITLES!

New Item!

THOMSON MONITORS

230 Amber TTL/12" . $85
450 Amber TTL/15" $149
980 White TTL/20" . $695
4120 CGA $229
4160 CGA $289
4460 EGA $359
4375 Ultra Scan . . . $525

Great Bargain

MOUSE PADS
- Provides clean, dust-free surface for your mouse
- No-mar back to protect your desk surface

8x9 . . . . . $8.95
9x11 . . . . . $10.95

DISK STORAGE
QVS-10 5¼ $3.99
QVS-40 5¼ $16.95
QVS-40 3½ $11.95

Joysticks

Tac 3 . . . . . $9.95
Tac 2 . . . . . $10.95
Tac 5 . . . . . $12.95
Tac/IBM/AP $26.95
Economy $5.95
Slick Stick $6.95
Black Max $10.95
Boss $11.99
3-way $19.99
Bat handle $16.75
500 XJ $14.75
500 XJ - Apple/PC . . $28.95
Winner 909 . . . . . $24.95
WICO IBM/AP $29.95
Contriver Joystick Bd $34.95

MODEMS

AVATEX
1200 . . . . . $89
1200 i $99
2400 . . . . . $289
2400 i . . . . . $CALL

AVATEX MODEM SPECIAL
$99.95 with purchase of cable.

HAYES
Smartmodem 300 . . . . . $125
Smartmodem 1200 . . . . . $369
Smartmodem 1200 B $339
Smartmodem 2400 . . . . . $559
Micromodem IIe $125
Smart 300 Applic $149

DISKETTES

5-1/4		3.5	
Maxell:		**3M:**	
SSDD	$9.95	SSDD	$16.95
DSDD	$12.95	DSDD	$23.95
Bonus:		**Maxell:**	
SSDD	$6.95	SSDD	$15.95
DSDD	$7.95	DSDD	$21.95
SKC:		**Verbatim:**	
SSDD	$8.95	SSDD	$16.95
DSDD	$9.95	DSDD	$24.95
DSHD	$16.95	**SKC:**	
Verbatim:		SSDD	$14.95
SSDD	$9.95	DSDD	$16.95
DSDD	$12.95		

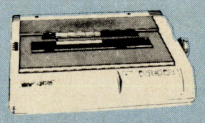
Call for generic diskette pricing!

1-800-233-8760

star micronics · inc

NP-10

NOW $129.95



- 100 CPS draft
- 25 NLQ
- 1 Year Warranty

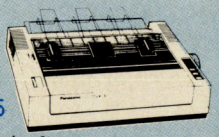
Great Performance, Great Price.

Panasonic

1091 i

FOR ONLY!

$179.95



- 160 CPS draft
- 32 NLQ
- 2 Year Warranty

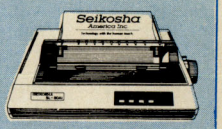
FAST

SEIKOSHA

SL - 80 AI

SLASHED!

$349.95



- 135 CPS draft
- 45 NLQ
- 2 Year Warranty

Superb Letter Quality.

SAVE ON THESE PRINTERS

STAR MICRONICS

NP-10	$129
NX-10	$169
NL-10	$209
SD-10	$229
NX-15	$295
ND-10	$299
SD-15	$349
SR-10	$379
ND-15	$399
SR-15	$439
NB24-10	$499
NB24-15	$599

BROTHER

HR 10	$195
M 1109	$195
M 1409	$329
HR 20	$339
M 1509	$365
M 1709	$475
2024 Letter quality	$665
Twinwriter Dot & Daisy	$849

PANASONIC

1080 i	$155
1091 i	$179
1092 i	$229
3131	$259
1592	$379
3151	$379
1595	$419

DIABLO

D25	$499
635	$779
D-80 IF	$1299

(special shipping call)

SILVER REED

EXP 420P	$209
EXP 600P	$539
EXP 800P	$649

EPSON

LX-800	$179
FX-86e	$299
EX-800	$365
FX-286e	$419
LQ-800	$429
EX-1000	$489
LQ-1000	$595
LQ-2500	$865

CITIZEN

120D	$165
MSP-10	$259
MSP-20	$299
MSP-15	$329
MSP-25	$399
Tribute 224	$629

TOSHIBA

321SL	$CALL
P341E	$699
P351 Model II	$1099

SEIKOSHA

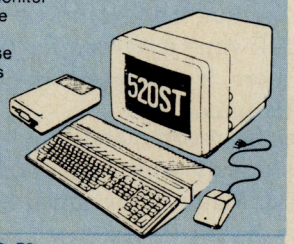
SP-180 Ai	$129
SP-1000 i	$159
SP-1200 Ai	$179
SP-1200 AS RS232	$195
3131	$249
SL-80 Ai	$349
MP-1300 Ai	$329
3151	$379
MP-5300 Ai	$429
BP-5420 Ai	$999

OKIDATA

Okimate 20	$129
Plug n Print	$CALL
120 NLQ	$205
182	$235
192+	$339
193+	$519
292 w/interface	$519
293 w/interface	$655
180	$CALL

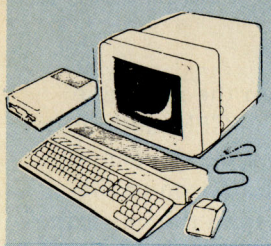
ATARI 520 ST COLOR SYSTEM

- SC 1224 Color Monitor
- SF 354 Disk Drive
- 520 Keyboard
- Two Button Mouse
- MIDI In/Out Ports



$609

ATARI 520 ST MONO SYSTEM

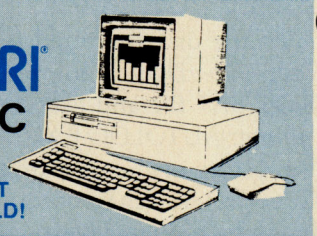


- SM 124 Mono Monitor
- SF 354 Disk Drive
- 520 Keyboard
- Midi In/Out Ports

$479

ATARI PC

~~$499~~



WE WILL NOT BE UNDERSOLD!

ATARI HARDWARE

21040 ST COLOR	$825.95
520 ST MONO	$479.95
130 XE	$125.95
65 XE	$89.95
SM 124 MONO MONITOR	$139.95
SC 1224 Color Monitor	$299.95
XM 801 Printer	$185.95
XM 804 ST Printer	$185.95
SX 212 Modem	$95.95
SHD 204 Hard Drive	$CALL
SF 314 Double Drive	$199.95
1050 Drive	$135.95
SX 551 Drive	$179.95

Seagate

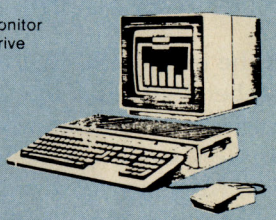
Hard Drives For PC Compatibles

ST 225 (20 meg)	$289.95
ST 238 (30 meg)	$355.95
ST 251 (40 meg)	$539.95

price includes controller!

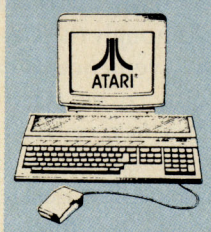
ATARI 1040 ST COLOR SYSTEM

- SC 1224 Color Monitor
- Built in 3½ inch drive
- 1040 Keyboard
- Midi In/Out Ports



$825

ATARI 1040 ST MONO SYSTEM

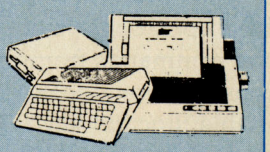


- SM 124 Mono Monitor
- Built in 3½ inch drive
- 1040 Keyboard
- Midi In/Out Ports

$679

ATARI 130 XE SYSTEM

- 130 XE Computer
- 1050 Drive
- Star NP-10 Printer



$399

SuperDOS

Richard Smereka

In our December 1986 issue, COMPUTE!'s Atari ST Disk & Magazine published ST-Shell, *an operating system shell that simulated a UNIX command-line interpreter.* ST-Shell *won an Honorable Mention in our Atari ST Programming Contest, so we're especially proud to present this enhanced version of* ST-Shell*—a revision so extensive and so powerful that it deserves a new name,* SuperDOS. *With nearly 70 commands, built-in utilities, and numerous online help screens,* SuperDOS *provides an extremely versatile alternative to the GEM desktop. It now emulates many MS-DOS commands as well as UNIX commands, and it runs on all ST systems, color or monochrome.*

After the original *ST-Shell* was published in the December 1986 issue of COMPUTE!'s Atari ST Disk & Magazine, some readers wondered why an alternative to the GEM desktop was necessary. With drop-down menus, windows, icons, and a mouse, why would anyone want to type in cryptic commands?

But those who started using *ST-Shell*—and those who were already accustomed to command-line interpreters on MS-DOS and other computers—quickly grasped its significance. Although the desktop-style interface is designed for convenience, it can sometimes become a minor nuisance, especially if you perform a certain series of actions every time you turn on the computer. And there are certain things you simply can't do with the GEM desktop; batch files are a prime example. *ST-Shell* filled the void quite nicely.

Now there's a major new enhancement of *ST-Shell* that's even more powerful: *SuperDOS*. A full-fledged operating system shell, *SuperDOS* contains all the commands from the original *ST-Shell* plus numerous additional features. For instance, it has 20 definable function-key macros, special options for controlling the behavior of the shell, an intelligent extended disk-search feature, process return codes, output redirection, wildcards in many disk commands, selectable disk drives, nested batch files, a built-in TYPE utility, a built-in MAKE utility, extended copy features, flexible abbreviations for all commands, easy execution of GEM-based programs, and much more.

Even though *SuperDOS* represents a sweeping revision of *ST-Shell*, it retains as much compatibility as possible. Batch files you may have created for *ST-Shell* will execute properly under *SuperDOS* with little or no modification.

Important: *SuperDOS* is an extremely powerful alternative to the GEM desktop and is recommended for intermediate and advanced users. Some readers may find the instructions for using *SuperDOS* somewhat involved and complicated. If so, they should remember that *SuperDOS* isn't an ordinary utility program or application; it's a complete disk operating system shell. If you've never used a command-oriented DOS before, it will take some time to fully master this environment.

The complexity of command-line interpreters like *SuperDOS* is exactly why Atari chose to equip the ST with GEM. Many of the functions provided by *SuperDOS* can be performed more easily with GEM, but some can't be performed at all. *SuperDOS* offers full flexibility in return for its complexity.

Running *SuperDOS*

The *SuperDOS* program appears on the magazine disk as SUPERDOS.PRG. From the GEM desktop, you can run it just like any other program; simply double-click on the SUPERDOS.PRG icon or filename. *SuperDOS* can also be run from the magazine disk menu.

A related file on the disk is named AUTOLOG-.BAT. When you run *SuperDOS*, it automatically reads the AUTOLOG.BAT file and executes the instructions there. (Note: AUTOLOG.BAT must be located in the root directory of the disk from which SUPERDOS.PRG is run.) You may use a word processor or text editor to write your own AUTOLOG-.BAT file or any other batch files, as we'll explain in more detail below.

The source code for *SuperDOS* (written in *Megamax C*) is not included on the magazine disk. Regrettably, it was far too large to fit, even if compressed.

SuperDOS works best with an 80-column screen. That means you should run it in medium resolution with a color monitor or high resolution with a monochrome monitor. Although you may use low resolution, certain features aren't supported; *SuperDOS* displays a warning if you attempt to execute the program in this mode.

The AUTO Folder

If you wish, you may copy *SuperDOS* to the AUTO folder on a boot disk to make it run automatically when you turn on your ST. (Any programs placed in the AUTO folder will automatically run in order of their time/date stamps when saved to AUTO.) This is a convenient way to let *SuperDOS* carry out a series of commands that you usually execute manually each time you boot your system. Within *SuperDOS*'s AUTOLOG.BAT file, you might place commands to set the time and date, run a ramdisk program, copy files and folders to the ramdisk, and so on.

However, one problem with the ST is that it does not initialize GEM before running programs from the AUTO folder. That's why GEM-based programs such as *1ST Word* can't be run from AUTO. This creates a few complications when *SuperDOS* is automatically run from AUTO.

SuperDOS is written as a GEM-based program to make it possible for you to run other GEM-based programs from its command line. If *SuperDOS* were a non-GEM (TOS) program, you couldn't access the mouse or use windows in other GEM-based programs. But since *SuperDOS* itself is GEM-based, normally it couldn't run from AUTO.

To get around this problem, *SuperDOS* checks the current path when it runs to discover whether it was booted from AUTO. If so, it doesn't do anything related to GEM (such as turning on the mouse). This makes it possible to boot *SuperDOS* from the AUTO folder. When you do this, however, you can't run other GEM programs from *SuperDOS*, because the ST hasn't initialized GEM yet.

Because of these complications, we recommend booting *SuperDOS* from AUTO under only two conditions: First, if you don't plan to run any other GEM programs during a session; or second, if the AUTOLOG.BAT file ends with an EXIT or BYE command. This terminates *SuperDOS*, allowing the ST to initialize GEM and display the GEM desktop. From there, you can run *SuperDOS* again, if desired. Once GEM is initialized, *SuperDOS* has no problems launching other GEM programs.

Command Formats

SuperDOS has a total of 68 commands, but some commands have duplicate names to maintain compatibility with other shell environments.

Every message that appears on the screen is in the format *xxx: message*, where *xxx* is the part of *SuperDOS* issuing the message. This allows you to easily identify errors within the command line or batch record.

Please note that there are two conventions to indicate the format of command arguments. First, the square brackets [ ] indicate an optional parameter. *Do not type the brackets.* For example:

COPY [−R][−P][−S] [*x*:][*path*\]*name1* [*x*:][*path*\][*name2*]

If you do not include the options enclosed in brackets, a default value is used. In this example of the COPY command, if you omit the disk drive and folder specifier, the current drive and folder are used.

The second convention is that commands and parameters in a normal, uppercase typeface (such as COPY) should be typed literally. When using *SuperDOS*, you can type these commands in either upper- or lowercase; they're shown here in uppercase for clarity. Parameters in lowercase italics (such as *path* or *filename*) indicate that you should substitute a pathname, filename, number, or some other variable parameter.

For instance, referring again to the example above, you would preserve a time/date stamp when copying a file from drive A to drive B by entering COPY −P A:*filename1* B:*filename2*. You would actually type COPY, the minus sign, and the letter P, but you would substitute the appropriate filenames for *filename1* and *filename2*.

The Command Line

In *SuperDOS*, the command line always begins with a drive prompt that tells you the current disk drive. For example, *A:* means drive A is currently in use. This is common to many command-line environments, such as MS-DOS, CP/M, and UNIX.

At the drive prompt, you have three options. You may type a *SuperDOS* command, the name of a program file to run, or the name of a *SuperDOS* batch file to run. Each of these actions is covered in detail below.

A special *SuperDOS* routine gets keyboard input in single or multiple lines. In addition to the standard keys on the keyboard, there are 12 special-action keys you may use:

Name of Key	Action
HELP	*SuperDOS* online help (see help section below)
UNDO	Erase current command line
ESC	Force directory update on current drive
DELETE	Delete character under the cursor
BACKSPACE	Delete character to the left of the cursor
INSERT	Insert a space at current cursor position
LEFT ARROW	Cursor left
RIGHT ARROW	Cursor right
CLR/HOME	Clear screen and home cursor
SHIFT–CLR/HOME	Clear rest of current line (from cursor)
SHIFT–LEFT ARROW	Move to beginning of line
SHIFT–RIGHT ARROW	Move to end of line

These special keys are valid anytime you see the drive prompt. The action takes place immediately without the need to press the Return or Enter key.

If the command string you are entering is too long for a single 80-column line, you may enter multiple lines as if they were a single long line. Just place an at-sign (@) at the end of a single line. *SuperDOS* then supplies the greater-than sign (>) as the prompt to indicate that a line continuation is in effect. At the end of each individual line, *SuperDOS* inserts a space into the main command line being formed. You must therefore place the line-continuation character (@) between command-line parameters. Do not split a single parameter in the middle. *SuperDOS* acts on the command when you press the Return (or Enter) key without the continuation character on the line.

There is no limit to the number of continuation lines you can use. *SuperDOS*'s keyboard buffer can hold up to 1000 characters, even though GEMDOS places a limit of 128 characters as the maximum amount that you can pass to an executable program.

Running Programs From *SuperDOS*

To run a program, just type in the name of the program followed by any arguments that you want to pass to the program. For example, to execute a text editor with the program name ED.PRG, and make it automatically load the text file GAME.C, type this:

```
ED GAME.C
```

(Of course, you can pass an argument like this only if the particular program allows it.)

Separate the program name and the parameter with a single space. Notice that when you give *SuperDOS* a program name, you don't type the file extension (a file extension is the part of the filename which contains a period followed by up to three characters). In the example above, the program was named ED.PRG. To run it, just type ED; don't type ED.PRG.

When you type a filename at the *SuperDOS* prompt, *SuperDOS* searches for files with these extensions and in this order: .PRG, .TOS, .TTP, and .BAT. In other words, if you type 1ST_WORD at a *SuperDOS* prompt, *SuperDOS* will run the 1ST_WORD.PRG file before the 1ST_WORD.BAT file, assuming they are both in the current directory. To avoid problems, give each file its own unique name. Also, since *SuperDOS* commands are searched first, it's not a good idea to give a program a filename that's identical to a *SuperDOS* command.

Note to programmers: Every program and *SuperDOS* command sends back a *process return code* which indicates the success or failure of that command. A process return code of zero indicates the command or program was completed successfully. All *SuperDOS* command errors return a value of one as the process return code. When writing your own programs to run under *SuperDOS*, it is a good idea to return a nonzero value if an error has occurred within the program. Using this method, you can cause a batch file or command to abort if something goes awry.

Shell And Command Options

Eight options control the behavior of *SuperDOS*. Each may be turned on or off by its shell command or by giving the appropriate *command option*. Following is a summary of the shell/command options. (We'll explain what the shortened versions, such as 'C for CONFIRM, mean in a moment.)

CONFIRM 'C default = ON

This option controls all confirm prompts. For example, each time you use a shell command with a wildcard, you are asked for confirmation before the command is actually acted on. This confirm prompt can be suppressed by setting CONFIRM OFF. CONFIRM affects such areas as the extended search, date and time prompting, and all operations involving wildcards.

SEARCH 'S default = ON

This option turns on or off the extended search feature (explained below).

VERBOSE 'V default = OFF

VERBOSE controls how much information *SuperDOS* puts on the screen. When VERBOSE mode is on, every shell and process return code is displayed on the screen. VERBOSE mode also controls things like displaying the directory in long form, printing every command on the screen as it is executed, and generally being very wordy about everything that is happening within *SuperDOS*.

TRANSLATE 'T default = ON

Commands and data may be entered from the command line or from a batch file using upper- or lowercase letters. With TRANSLATE ON, all input is converted to uppercase before being executed. With TRANSLATE OFF, the input is passed as is, without any translation.

RING 'R default = ON

When an error occurs within *SuperDOS* and RING is on, a beep is sent to the console.

GEM 'G default = OFF

When a .PRG file is being executed and the GEM option is on, the program is treated as GEM-based. The cursor is turned off, and the mouse pointer is turned on before loading the executable program.

OUTPUT 'O default = ON

This option gives you additional control over how much output you want to have on the screen. With OUTPUT OFF, commands are not echoed to the screen. You may achieve full output suppression by turning off both OUTPUT and VERBOSE.

ABBREVIATION 'A default = ON

Every *SuperDOS* command may be abbreviated to a minimum of three characters if ABBREVIATION is on. Please be aware that abbreviations are searched by their order in the command table (in the *SuperDOS* command section which follows, each command is presented in its appropriate order within

SOFTWARE DISCOUNTERS OF AMERICA

S.D. of A.

For Orders Only — 1-800-225-7638
PA Orders — 1-800-223-7784
Customer Service 412-361-5291

- Free shipping on orders over $100 in continental USA
- No Surcharge for VISA/MasterCard
- Your card is not charged until we ship

ACCESS
Software Incorporated

Get out that shirt, put on your shoes and get ready to roll.

Tenth Frame
List $39.95
Our Discount Price $25

ABACUS BOOKS

ST Basic to C	$15
ST Drives	$19
ST Gem Prog. Ref.	$15
ST Graphics & Sound	$15
ST Internals	$15
ST Machine Language	$15
ST Midi Programming	$15
ST Peeks & Pokes	$13
ST 3-D Graphics	$19
ST Tricks & Tips	$15

ACADEMY

Typing Tutor	$23

ACCESS

Leader Board Golf	$25
L.B. Tourn. Disk #1	$14
Tenth Frame	$25

ACCOLADE

Hardball	$25
Mean 18 Golf	$25
Mean 18 Famous Course Data Disk	$14

ACTIVISION

Hacker II: The Doomsday Papers	$25
Little Computer People Discovery Kit	$19
Music Studio	$33
Paintworks	$25
Shanghai	$25
Tass Times	$25

AEGIS

Animator	$49
Art Pak #1	$19

ARTWORX

Bridge 5.0	$23
Linkword French	$19
Linkword Spanish	$19
Minature Golf	$14
Strip Poker	$25

*Buy Compubridge for $9.88 w/purchase of Bridge 5.0!

ATARI

Algebra 1, Vol. 1	$14
Chemistry, Vol. 1	$14
Crystal Castles	$19
Geometry, Vol. 1	$14
Star Raiders	$19
VT100 Emulator	$25

BATTERIES INCLUDED

D.E.G.A.S. Elite	$39
Thunder: The Writers Assistant	$25

BRODERBUND

Karateka	$23
Print Shop	Call

CENTRAL POINT

Copy 2	$23

CDA

America Cooks Series:

American	$9.88
Chinese	$9.88
French	$9.88
Italian	$9.88
Mexican	$9.88

World of Wine Series: Award Winning

Wine	$9.88
Bordeaux	$9.88
Champagne	$9.88
Chardonnay	$9.88

DAC

Easy Accounting	$44
Easy Payroll	$33

ELECTRONIC ARTS

Arcticfox	$29
Chessmaster 2000	$29
Financial Cookbook	$14
Music Construction Set	$32
Skyfox	$14
Star Fleet 1	$35

EPYX

Champ. Wrestling	$23
Rogue	$23
Sub Battle Simulator	$23
Super Cycle	$14
Temple Apshai Trilogy	$14
Winter Games	$23
World Games	$23
World Champ. Karate	$23

FIREBIRD

Golden Path	$29
Guild of Thieves	$29
Starglider	$29
The Pawn	$29

FIRST BYTE

First Shapes	$33
Kid Talk	$33
Math Talk	$33
Speller Bee	$33

*these programs talk!

GFA Basic:

Compiler	$49
Interpreter	$49
GFA Draft	$65
GFA Vector	$33
Goldrunner	$25
Major Motion	$25
M-Disk Plus	$25
Match Point	$25
Pinball Factory	$25
Space Shuttle 2	$25
Stuff	$25
Super Conductor	$49
Time Bandit	$25

MICROLEAGUE

Baseball 2	$39
WWF Wrestling	$33

MICROPROSE

F-15	Call
Silent Service	$25

MI-GRAPH

Easy Draw 2.0	$59
FAST	$33
Label Master Elite	$29

MILES COMPUTING

Harrier Strike Mission	$29
ST Wars	$25

MINDSCAPE

Balance of Power	$33
Brataccas	$33

EPYX

The Ultimate Joystick!

500XJ Joystick List $19.95
Our Discount Price $14
(for right-handed players only!)

FTL

Sundog	$23

GAMESTAR

Champ. Baseball '86	$25
Champ. Basketball	$25
GFL Champ. Football	$25

INFOCOM

Bureaucracy	$25
Hitchhiker's Guide	$19
Leather Goddesses	$25
Stationfall	$25
The Lurking Horror	$25
Trinity	$25
Zork 1	$25
Zork Trilogy	$44

LDW

Basic Compiler	$44
Vegas Craps	$23
Vegas Gambler	$23

MASTERTRONIC

Ninja Mission	$14
Renegade	$14

MICHTRON

Air Ball	$25
BBS	$49
Calendar	$19
Cornerman	$33
High Roller	$33
Into the Eagle's Nest	$25
Trail Blazer	$33

MINDSCAPE-CINEMAWARE

Defender of the Crown	$33
S.D.I.	$33

MONOGRAM

Dollars & Sense ver. 2	$65

ORIGIN

Autoduel	$33
Ogre	$26
Ultima 3	$29
Ultima 4	$39

OSS

Personal Pascal ver. 2	$59

PCA

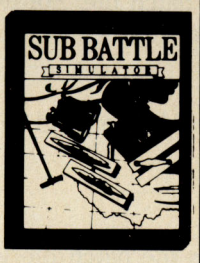
Graphic Artist	$129

*Desktop Publishing Library $33
*Electronic Library $33
*Font Editor $49
*Font Pack $33
*Graphic Artist add-ons!

PROGRESSIVE

Logistix Jr. 520	$59
Logistix 1040	$95

EPYX



The most detailed, historic WWII sub simulation ever!

Sub Battle Simulator
List $39.95
Our Discount Price $23

FIREBIRD

A tale of the mysterious East, drawn from Chinese Mythology.

Golden Path
List $44.95
Our Discount Price $29

Superbase	$95

QMI

Desk Cart	$69

SHELBOURNE

Pool	$19
Shuffleboard	$19

SIERRA

Black Cauldron	$25
Donald Duck's Playground	$16
Kings Quest 1, 2, or 3	$33 Ea.
Space Quest	$33
Winnie the Pooh	$16

SOFT LOGIC

Font Disk 1 or 2	$19
Publishing Partner	$95

SPECTRUM HOLOBYTE

Fleet Street Publisher	$95
Gato	$23

SPRINGBOARD

Certificate Maker	$33
C.M. Library Disk	$23

SSI

Colonial Conquest	$25
Phantasie	$25
Phantasie 2	$25
Phantasie 3	$25
Rings of Zilfin	$25
Roadwar 2000	$25
Wizard's Crown	$25

SUBLOGIC

Flight Simulator 2	$33

TIMEWORKS

Data Manager	$49
Partner	$44
Swiftcalc w/Sideways	$49
Word Writer	$49

UNICORN

Animal Kingdom	$25
Decimal Dungeon	$25
Fraction Action	$25
Kinderama	$25
Math Wizard	$25
Read & Rhyme	$25

UNISON WORLD

Art Gallery 1	$19
Art Gallery 2	$19
Print Master Plus	$25

VIP TECHNOLOGIES

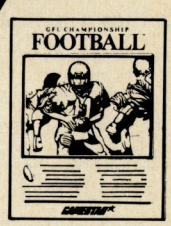
VIP Professional	$149

ACCESSORIES

Anchor VM 520 300/1200 Baud Modem	$129
Bulk Disks 3½	Call
Compuserve Starter Kit ($25 usage credit)	$23
Disk Case (Holds 30)	$9
Disk Drive Cleaner 3½	$9
Navarone Timekeeper	$35
Navarone Sound Digitizer	$89
Panasonic Printers	Call
Supra 20 meg Drive	Call
Wico Boss	$12
Wico Bat Handle	$17
Wico Three Way	$19

CALL FOR LOW PRICES ON PANASONIC PRINTERS!

GAMESTAR



The most realistic computer football simulation ever designed!

GFL Champ. Football

GFL Champ. Football
List $39.95
Our Discount Price $25

P.O. BOX 111327 — DEPT. CST — BLAWNOX, PA 15238

*Please Read The Following Ordering Terms & Conditions Carefully Before Placing Your Order: Orders with cashiers check or money order shipped immediately on in stock items. Personal & Company checks, allow 3 weeks clearance. No C.O.D.'s! Shipping: Continental U.S.A. — Orders under $100 add $3; free shipping on orders over $100. AK, HI, FPO, APO — add $5 on all orders. Canada & Puerto Rico — add $10 on all orders. Sorry, no other International orders accepted! PA residents add 6% sales tax on the total amount of order including shipping charges! REASONS FOR CALLING CUSTOMER SERVICE — 412-361-5291 (1) Status of order or back order (2) If any merchandise purchased within 60 days from S.D. of A. is defective, please call for a return authorization number. Defective merchandise will be replaced with the same merchandise only. Other returns subject to a 15% restocking charge. After 60 days please refer to the manufacturers warranty included with the merchandise & return directly to the manufacturer. Customer service will not accept collect calls or calls on S.D. OF A.'s 800# order lines! Have you seen our on line catalog of 1000 software titles for Commodore, Atari, Apple, IBM and Amiga? It's on Compuserve's Electronic Mall — just type GO SDA and shopping for software will never be the same again! HOURS: Mon.-Fri. 9AM-5:30 PM, Sat. 10AM-4PM Eastern Time. Because this ad had to be written 2-3 mos. before it was published, prices & availability are subject to change! New titles are arriving daily! Please call for more information!

this table). Any amount of abbreviation from three characters on is acceptable. ABBREVIATION should be turned off if there is a chance that a *SuperDOS* command could be confused with an executable program, since *SuperDOS* commands always take priority over an executable program.

The state of each one of the above options may be changed by two methods. On the *SuperDOS* command line, you may explicitly set an option. For example, typing the line VERBOSE ON sets VERBOSE mode on until you turn it off. You may also change the state by using the command options. For example, suppose that you want to execute an editor program with the filename ED.PRG, editing a file called TEST.C. At the same time, you also want to change the state of VERBOSE only for the duration of the edit command. You would type

```
ED 'V TEST.C
```

This sample command would execute the file called ED, passing the parameter TEST.C to the editor. At the same time, the state of VERBOSE mode would also be reversed, but only during this command.

In other words, when you explicitly set a shell option on or off, the option status remains that way. The command options change the status of a shell option only for the duration of the current command. After the command is finished (either from the command line, or from a batch file), the option status returns to its previous value. Thus, VERBOSE ON permanently turns on VERBOSE mode, while ED 'V FILE.C uses the 'V option to affect VERBOSE mode only for the duration of that single command.

Command options should appear as the first parameter on the command line or in a batch record (just after the program or *SuperDOS* command name). The back apostrophe (') must be the first character, followed by the command option(s) in any order. This is not the regular apostrophe found below the brackets, to the left of the Return key. The back apostrophe is on the top line, just to the left of Backspace. Command options should not have any spaces between them. For example, here is a sample command that uses multiple command options:

```
1ST_WORD 'GVC LETTER.DOC
```

This command will execute the program 1ST_WORD, reversing the state of the GEM, VERBOSE, and CONFIRM options. The parameter LETTER .DOC will be passed to the 1ST_WORD program, meaning that 1ST_WORD will automatically load that file when it runs.

Command options may be used with *SuperDOS* commands, executable programs, or batch files. You may also obtain the status of each shell option by typing its name on the command line or in a batch record without any parameters. For example, to see if the GEM flag is on or off, just type GEM. Refer to the *SuperDOS* command section for further information on all of the shell options.

The Batch Processor

SuperDOS assumes all files with the extension .BAT are *batch files.* A batch file is simply a plain ASCII text file containing *SuperDOS* commands. Any command you can type on the *SuperDOS* command line is also valid within a batch file. When you run a batch file, *SuperDOS* executes these commands—one line at a time—just as if you typed them on the keyboard. You can create a batch file with any word processor or text editor that is capable of saving plain ASCII text files.

You may also execute additional batch files from within a batch file, which is called *nesting* batch files. Batch files may be nested up to nine levels deep, and each batch file may contain an unlimited number of commands, up to the limit of available memory.

A batch file aborts anytime the Escape key is pressed or when a process return code exceeds the current abort code (refer to the *SuperDOS* command ABORT for more information on how this works). The same holds true for all nested batch files.

If a line in a batch file begins with an asterisk, it marks the beginning of a remark statement. *SuperDOS* ignores anything on that line which follows the asterisk. You can use this feature to add notations. *SuperDOS* also ignores blank lines in the batch file.

When *SuperDOS* first runs, it searches for a special batch file called AUTOLOG.BAT. If it is present, the commands listed in the file are executed. This allows you to customize the initialization of *SuperDOS.* Note that an extended search will not be performed when *SuperDOS* looks for this batch file.

If you run *SuperDOS* from the GEM desktop, the AUTOLOG.BAT file should be in the same directory as *SuperDOS.* If you put *SuperDOS* in the AUTO folder, the AUTOLOG.BAT file should be on the root directory (not in AUTO).

Passing Parameters To A Batch File

SuperDOS lets you pass parameters from the command line to a batch file. For example, you could type this on the command line:

```
LFILES DOC
```

LFILES.BAT could be a batch file which contains these lines:

```
CLS
DIR *.%1
```

This means the batch file would clear the screen and print a selective directory of files. You pass the first (%1) argument found on the command line to the LFILES.BAT file. The specifier %1 is like a variable; it replaces the characters found in the batch file with the *n*th command line argument. In this case, the batch file would print a list of all .DOC files in the current directory. Command line arguments start from zero, which is the actual program name and is not especially useful in a batch file.

Don't Get Lost!! Order from the ST Specialists!

STPlus

We are dedicated to providing you with the best software at the best price, and in most cases we ship within 24 hours.Were here to help you get the most from your ST

BUSINESS

DATAMANAGER	56
WORDWRITER	56
SWIFTCALC	56
LOGISTIX	104.95
SUPERBASE	104.95
PHASAR	63
PAYROLL MSTR	56
INVENTORY MGR	56
ZOOMRACKS 2	104.95
DBMAN	104.95
DATATRIEVE	35
EZ CALC	48.95
REGENT BASE	69.95
ST ONEWRITE	49.95
VIP(LOTUS)GEM	175
TRIMBASE	69.95
DOLLAR&SENSE	69.95
DACEASY ACCT	52
DACEASY PAYRL	42
POWERPLAN	56

GAMES

GOLDRUNNER	27.95
CRYSTAL CSTLS	21
STARRAIDERS	21
JOUST	21
TIMEBANDITS	27.95
SUBBATTLE	27.95
OGRE	27.95
QUIZAM	24.95
WANDERER(LCS)	27.95
ROADWAR 2000	27.95
SHANGHAI	27.95
TECHMATE	27.95
PSION CHESS	42.00
CHESSMSTR	35.00
FLTSIM MONO	35
SCENERY 7/11	17.50
INFOCOM	27.95
AIRBALL *****	27.95
ST WARS	27.95
STARGLIDER	32.50

GRAPHICS

OPTISCAN	999.95
PRNTR SCAN	80.00
NEOCHROME1	27.95
DEGAS	27.95
DEGAS ELITE	56
SART	22.95
PAINT PRO	42
CERTIFICATE	35
EZDRAW 2.0	48.95
PUB PARTNER	105
FONTPAK 1,2,3	21
P. P. CLIP ART	21
AEGIS ANIMTR	56
PRINTMASTER	27.95
GRAPH ARTIST	139.9
GFA DRAFT	69.95
1ST CADD	35
COMPUTEREYES	199

SPECIAL

MAKE YOUR ATARI ST IBM OR MAC COM-PAT-IBLE PC DITTO WORKS!

$63

&

DON'T FORGET MAGIC SAC+

FOR MAC COMPATIBILITY

$119.95

WORDPROCESSING

1st WORD 1.6	$14
1st Mail	21
Fontwriter +	27.95
Thunder Speller	27.95
Final Word	104.95
WordWriter	56
Regent Word 2	69.95
TextPro (255 cols)	35

EDUCATIONAL

Arakis Chem 1	14
" Biology 1	14
" Algebra 1	14
" Geometry 1	14
Homework Math	32
Math Talk	35
Kid Talk	35
Unicorn series	27.95

BOOKS

C Made Easy	18.95
Abacus (most)	15.95
Sybex Ataribasic	15
Atari ST Explored	13
ST Disk drives	21.95

MUSIC

Hybrid Arts	30 % off
Dr. T	30 % off
Casio CZ 101	289

ST Special: ➔ 4meg board $200

PROGRAMMERS!: GFA BASIC $56 GFA COMPILER $56 TRUEBASIC $70
MEGAMAX "C" $159.95 MARK WILLIAMS "C" $125.95 DEVPAC 56
LDW COMPILER 56 GFA VECTOR 48.95 FORTRAN 105

CALL US WHEN YOU KNOW WHAT YOU WANT !!!!!!! THANKS

NATIONAL (800) 433-6222 P.O. BOX 1197
CALIFORNIA (800) 874-4789 BERKELEY. CA
BAY AREA (415) 849-8717 94701

We sell all ST HARDWARE , Laser Printers, Panasonics & Epsons at 20 % off and perform ultimate service on all Atari products we sell!!!

The Extended Search Feature

Normally when you enter a program filename or batch filename on the command line or in a batch file, *SuperDOS* searches for that file only in the current folder on the current disk drive. If the program or batch file is stored in another directory or on another drive, *SuperDOS* won't find it. But if the search option is on, *SuperDOS* will perform an extended search.

During an extended search, *SuperDOS* checks all folders on every drive connected to your system until the appropriate file is found or the search fails. If the CONFIRM option is also on, you're prompted for a *yes* or *no* when a matching file is found. This prevents situations where you have multiple files with the same name on different disks and/or different folders. This prompt can be suppressed by setting CONFIRM OFF.

You may cancel the extended search at any time by pressing the Escape key, which forces a shell error (a process return code of one). An extended search can be performed only on the name of the program or batch file and not on any parameters that you pass to the file.

Output Redirection

You may send the output of any *SuperDOS* command or batch file to a file, printer, or any legal device. Legal device names are

PRT: a printer
AUX: the RS-232 port

The device name must end with a colon and may be typed in uppercase or lowercase.

The greater-than sign (>) tells *SuperDOS* to redirect output. For example, to print out the current directory, type **LS >PRT:**. The printer receives the output in standard ASCII format. To execute the same command but send the result to a disk file instead of the screen, try this:

```
LS >D:\LST\DIR.LST
```

This command prints the current directory to a disk file on the D drive inside the folder called LST giving the file the name DIR.LST. Use caution when you send to an already existing filename, since the original file will be deleted in favor of the new file.

You may also append to a file instead of creating a new one. A double greater-than sign (>>) indicates an append. It is illegal to attempt an append to an actual device such as PRT: or AUX:. If the named file does not exist when you attempt to append, the file will be created. For example, to append a directory listing to the filename used in the previous example, use:

```
LS >>D:\LST\DIR.LST
```

This command would append the contents of the current folder to the file DIR.LST in the folder LST on drive D.

Miscellaneous Features

You may refer to the current folder's *parent folder* at any time by using two periods instead of its name. The parent folder is the next higher folder in the directory hierarchy. For example, suppose that you've changed directories inside a folder and you want a directory of the parent folder. Type this:

```
DIR \..\
```

SuperDOS also supports wildcards in the following commands: RM, DELETE, MV, RENAME, CP, COPY, TOUCH, FUPDATE, ATTRIBUTE, LS, and DIR.

SuperDOS supports two wildcards. An asterisk means *match anything*, and a question mark means *match a character in that position*. For example, to call a directory of all C source files in the current directory, type:

```
LS *.C
```

The following example would copy all files on drive A beginning with the letter *G* and having an extension of BAS to drive C.

```
COPY A:\G*.BAS C:
```

To list all files in the current directory that have a single character extension, enter:

```
LS *.?
```

The question mark in place of the file extension indicates that any file that has a *single* character extension will match.

You may only use wildcards in the first parameter on the command line or in a batch record. It is illegal to use wildcards in place of a folder name. Each time a *SuperDOS* command with a wildcard is executed, a CONFIRM prompt will appear on the screen. You may suppress this prompt by setting CONFIRM OFF.

SuperDOS also has a fill-in-the-blank feature. The *SuperDOS* commands RM, DELETE, MV, RENAME, CP, COPY, CPDIR, and DIRCOPY support a fill-in-the-blank feature similar to the MS-DOS model. Whenever *SuperDOS* finds the destination name ending with a colon or a backslash, or if the destination name is completely absent, *SuperDOS* fills in the missing parts to form the complete path.

For example, suppose the current drive is D, and the current folder is TEST. You could copy a file called LIST.C from the A drive in this manner:

```
COPY A:LIST.C
```

Notice that the destination parameter is completely absent; this is because it will be filled in by *SuperDOS*. In this example, the complete command would be expanded by *SuperDOS* to:

```
COPY A:LIST.C D:\TEST\LIST.C
```

To make it easier for you to remember the scores of commands and variations in *SuperDOS*, there is a complete built-in help facility. A *SuperDOS* command called HELP will list the proper syntax for using any command. For instance, to get help for the COPY command, simply type HELP COPY. You

may also type HELP by itself or press the Help key on the ST. This gives you an explanation of the last *SuperDOS* command executed.

SuperDOS Commands

Following is a list of all *SuperDOS* commands and their explanations. You can also refer to the Quick Reference Table included in the article.

Remember that optional parameters are listed in [brackets]. *Do not type the brackets.* Type uppercase **BOLD** commands and parameters as listed. Insert the appropriate filename or other parameter where you see ***lowercase bold italics***.

x:

Changes drive

This command changes the *SuperDOS* prompt to the specified drive (A–P) using the previously set path. If no path was set, default is root directory.

ABBREVIATION [ON][OFF]

SuperDOS abbreviation option

Given no parameters, ABBREVIATION returns the status of the abbreviation flag. With ON or OFF, it changes the abbreviation flag to allow or disallow shortened commands.

ABORT [*num*]

Gets or sets process abort code (same as ACODE)

ABORT returns the current *abort code*, the error level at which *SuperDOS* will abandon a batch file. If followed by a number, ABORT sets the error level. Negative numbers are not allowed.

Anytime a process (*SuperDOS* command, executable program, or batch file) returns a code to *SuperDOS* that exceeds the current shell abort code, the process terminates. This feature is especially important in batch files to conditionally abort the entire process (including all nested batch files). By default, on initialization of *SuperDOS*, the abort code is set to zero, which means that any error will cause the process to terminate. Since all *SuperDOS* errors have a process return code of 1, you could override certain errors within a batch file by setting the abort code higher than 0. It is illegal to set a negative abort code.

Note to programmers: *SuperDOS* considers a negative process return code to be fatal; therefore, the user cannot override this error. It is a good idea to return a negative value to *SuperDOS* from your own programs if the program encounters a fatal situation so that the batch file running from *SuperDOS* will abort even if the user has set a high abort code. *SuperDOS* will attempt to translate all nonzero process return codes in actual GEMDOS error messages; therefore, it is a good idea to return values from your programs that represent actual GEMDOS error codes. These codes are listed in all compiler manuals and GEMDOS-specific texts.

ACODE [*num*]

Gets or sets process abort code (same as ABORT)

ATTRIBUTE [−N][−H][−R] [*x:*][*path* \ ]*filename*

Gets or sets file attributes

ATTRIBUTE followed by a filename prints the current attributes. If you include one of the three parameters, you may set a file to normal (−N), hidden (−H), or read-only (−R). Hidden files are useful if you want to delete all files except one. First, you hide the file, then RM *.* (which removes all files with all extensions). Then set the original file back to normal.

BEEP [ON][OFF]

Bell control (same as RING)

With no parameters, this command causes the monitor to emit a beep sound, which is most useful within batch files. BEEP ON (or RING ON) tells *SuperDOS* to ring the bell when an error occurs. BEEP OFF (or RING OFF) removes this function. Default is BEEP ON.

BGROUND *color*

Changes screen background color

On a medium-resolution screen, valid background colors are numbered 0–3. On a low-resolution screen, colors are 0–15.

BYE

Exits *SuperDOS* from command line or batch file (same as EXIT)

BYE (or EXIT) may be typed on the command line or included at the end of a batch file. Either way, it causes *SuperDOS* to stop running.

CAT [−T*nn*][−L][−N][−F] [*x:*][*path* \ ]*filename*

List utility (same as LIST and TYPE)

This command lists the contents of a text file. Options include −T (tab settings, default 3 spaces, maximum 30), −L (linefeeds off), −N (line numbers included), and −F (no formatting). Output redirection to a printer, RS-232 port, or disk file is available.

The screen format lists one page to the screen and then places a menu bar at the bottom of the screen:

Q=Quit; Space or Cursor Down=Next Page; RETURN=Next-line; Cursor Up=Previous Page

Using the appropriate keys, you can skim forward or backward through the file at will. To list a file to the screen in raw form (just the way it was typed in), set format off. If you're not using the format option, use CTRL-S to halt the listing to the screen and CTRL-Q to restart it.

Printer format consists of 55 lines per page with the filename and page number at the top of each page. The file may also be printed in raw form by setting format off.

CD [\ ][*path*][\ ]

Changes default directory (same as CHD)

If no pathname is included, CD (or CHD) puts you in the root directory. If the first character is a backslash (\ ), the given pathname starts at

the root directory regardless of which directory is currently in use. If no backslash is included, *SuperDOS* looks for the directory within the current directory.

CHD [\][*path*][\]
Changes default directory (same as CD)

CLICK [ON][OFF]
Controls status of keyboard click
CLICK returns the current key click status. When followed by ON or OFF, it sets or unsets the keyboard click.

CLS
Clears the screen (same as WIPE)
CLS (or WIPE) clears the screen. On the command line, a quicker way to do the same thing is to press unshifted CLR/HOME. CLS (or WIPE) is most useful within batch files.

CONFIRM [ON][OFF]
Controls confirm flag (default is ON)
CONFIRM affects a variety of commands that cover file handling and time/date setting. When you're using these commands and CONFIRM is turned on, *SuperDOS* asks for a Y or N answer before proceeding.

COPY [−R][−P][−S] [*x*:][*path* \]*filename1* [*x*:][*path* \][*filename2*]
Copies file(s) (same as CP)
This command copies a file from one device (floppy disk, hard disk, or ramdisk) to another. You may include wildcards (* and ?) in the first filename only. If the second file specifier is omitted, the file is copied to the current directory. Options include −R (replace if a duplicate file exists), −P (preserve time/date stamp of original), and −S (supersede only if *filename1* has a newer time/date stamp).

CP [−R][−P][−S] [*x*:][*path* \]*filename1* [*x*:][*path* \][*filename2*]
Copies files (same as COPY)

CPDIR [−P][−R][−S] [*x*:][*path* \]*olddir*[\] [*x*:][*path* \][*newdir*][\]
Copies directory (same as DIRCOPY)
The CPDIR (or DIRCOPY) command copies a directory and its files (but not subdirectories) from one disk to another. If the subdirectory contains other subdirectories, they must be copied separately. If the new directory already exists, use the −R (replace) or −S (supersede) options. The −P option preserves time/date stamps. If *newdir* and its path are omitted, they're filled in from the current path.

CURSOR [ON [−B]] [OFF [−B]] [SOLID] [FLASH] [RATE [*x*] [−N]]
Changes appearance of the cursor
This command affects the behavior of the cursor. ON and OFF turn it on and off. The −B flag affects whether or not the cursor is on while batch files are being processed. SOLID and FLASH control whether the cursor blinks or not. RATE controls how fast it blinks. −N sets it back to normal.

DATE [*mm/dd/yy*[*yy*]]
Gets or sets current date
If CONFIRM is off, DATE prompts the user for the current date. If CONFIRM is on, DATE prints today's date. If month, day, and year are included, the date is reset.

DELDIR [*x*:][*path* \]*filename*[\]
Deletes a subdirectory (same as RMDIR)
With this command, you may remove directories that contain files or empty subdirectories. But if there's a subdirectory that holds files, you must delete that subdirectory before removing the parent directory.

DELETE [*x*:][*path* \]*filename*
Deletes file(s) (same as RM)
If no path is included, the file is erased from the current directory. You may include wildcards. This command affects files only. To delete a directory, see DELDIR or RMDIR.

DF [*x*:]
Displays free disk space (same as DFREE)
DF (or DFREE) returns the size of the disk and the available disk space. You may also ask for the free space on another disk drive.

DFREE [*x*:]
Displays free disk space (same as DF)

DIR [−H] [*x*:][*path* \][*filename*]
Lists system directory (same as LS)
With no parameters, this command lists the files on the current directory. Wildcards (? and *) may be used in the filename (but not the path) to list selected files in a directory. The −H option makes hidden files visible.

DIRCOPY [−P][−R][−S] [*x*:][*path* \]*olddir*[\] [*x*:][*path* \][*newdir*][\]
Directory copy (same as CPDIR)

DOC [*text*]
Documentation/comment
DOC is a remark/documentation statement for use in batch files.

DRIVE [*x* ON][*x* OFF]
Changes status of connected drives
This command controls which drives can be accessed by the user. It's most useful for controlling the range of the extended search option, especially for people with hard disk drives subdivided into several logical drives. The extended search will search all connected drives. By turning off one of the drives, you limit the scope of the search.

ECHO [−R] [[*nn* [0*nn* [0x*nn* ['C [*text*]]
Echoes text to the screen (same as SEND)
ECHO (or SEND) prints messages to the screen, which is most useful within batch files to tell the user what is happening. You may

NEW

ATARI 520ST SYSTEM FM PACKAGE

* RGB Monitor or Monchrome Monitor
* Built in 3 1/2" SS Double Density Drive
* Basic
* TOS on ROM
* RF Modulator
* Full Manufacter's Warranty

CALL FOR LOWEST PRICE

ATARI 1040ST SYSTEM PACKAGE

* RGB Monitor or Monochrome Monitor
* Built in 3 1/2" DS Double Density Drive
* Basic
* TOS on ROM
* Full Manufacter's Warranty

CALL FOR LOWEST PRICE

ATARI SF 314 DISK DRIVE

DOUBLE SIDED/ 1 MEGABYTE STORAGE

CALL

OKIMATE 20 COLOR PRINTER & ST PLUG N' PRINT

$205

SUPRA 20 MEG HARD DRIVE ONLY

$539

ST MODEM PACKAGE

* AVATEX 1200HC MODEM
* ST MODEM CABLE
* ST TALK TELECOMMUNICATIONS PACKAGES

$145

PANASONIC

PANASONIC 1080i	159
PANASONIC 1091i	189
PANASONIC 1092i	299
PANASONIC 3131	269
PANASONIC 3151	409
PANASONIC 1592	419
PANASONIC 1595	449

EPSON

LX 86	189
FX 86E	339
EX 800	409
EX 1000	549
FX 286E	479
LQ 800.	469
LQ 1000	669
LQ 2500	929

STAR MICRONICS

NX-10	179
NL-10	CALL
NP-10	149
NX-15	329
ND-10	349
NR-15	479
NB-24/10	439
NB-24/15 (24 wire)	639

OKIDATA

OKIDATA 120	205
OKIDATA 182	249
OKIDATA 192+	369
OKIDATA 193+	559
OKIDATA 292E	449
OKIDATA 293E.	599

CANON

CANON A-50	279
CANON A-55	389
CANON A-60	349

SEIKOSHA

SP-180	169
SP-1000A	199
SP-1200	209

BROTHER

BROTHER 1009	139
BROTHER 1509	379
BROTHER 1709	489
BROTHER HR 35	749
BROTHER 2024 LD	819
WINWRITER 5	839

MICHTRON

BBS 2.0	48.95
Business Tool	31.95
Calendar	18.95
Cornerman	31.95
DOS Shell	24.95
Echo	24.95
M-Disk +	24.95
Major Motion	24.95
Make It Move	44.95
Mi-Term	31.95
Michtron Utilities	37.95
Cards	24.95
The Animator	24.95
Time Bandits	24.95
Mighty Mail	31.95
Personal Money Mgr.	31.95
Pinball Factory	24.95
Financial Future	24.95
Eight Ball	18.95
Hard Disk Backup	24.95
Match-point	24.95
Karate Kid II	24.95
GFA Basic	48.95
Trimbase	62.95
Shuttle 2	24.95
M-Cache	24.95
GFA Draft	62.95
GFA Vector	31.95
Goldrunner	24.95
GFA Compiler	48.95
Realtizer	149.95

ST ACCESSORIES

Flip'n' File II- Micro	19.95
Dustcovers	Call
3.5 Drive Clean Kit	16.95
Mouse Pad	8.95
Mouse House	6.95
6 Way Surge Protector	19.95
Anti-Glare Screen	19.95
6 FT SF 354/314 Cable	19.95

ADVANCED ORDERS

Magical Myths	31.95
All About America	36.95
Adv. of Sinbad	31.95
Arabian Nights	31.95
1st Letters and Words	33.95

ST ADVENTURES

Hacker	17.95
Hacker II	25.95
Sundog	24.95
Black Cauldron	25.95
Apshai Trilogy	14.95
Universe II	44.95
The Pawn	29.95
Starglider	29.95
Dungeonmaster	24.95
Alternate Reality	26.95
Tass Times	25.95
Mercenary	26.95
Autoduel	32.95
Ogre	25.95
Defender of Crown	32.95
S.D.I.	32.95
Balance of Power	32.95
Ultima III or IV	38.95
Portal	32.95
Kings Quest 1,2 or 3	32.95
Space Quest	32.95
Tracker	29.95
Colonial Conquest	25.95
Roadwar 2000	25.95
Wizard's Crown	25.95
Rings of Zilfin	25.95
Sinbad	32.95
Golden Path	29.95
Phantasie 1,2 or 3	25.95
Leisure Suit Larry	32.95
Guild of Thieves	29.95
221 Baker Street	26.95

ABACUS

Textpro	32.95
Datatrieve	32.95
Forth MT	32.95
Paintpro	32.95
Assempro	39.95
Powerplan	49.95
Abacus Books	Call

ST DATABASES

DB Man	96.95
Regent Base	57.95
Data Manager ST	48.95
Zoomracks II	77.95
Superbase Gem	94.95

ST EDUCATIONAL

Aesop Fables	31.95
Decimal Dungeon	24.95
Fraction Action	24.95
Kinderama	24.95
Read & Rhyme	24.95
Math Wizard	24.95
Animal Kingdom	24.95
Speller Bee	33.95
Kid Talk	33.95
Math Talk	33.95
First Shapes	33.95
Read-A-Rama	31.95
Math Talk Fractions	33.95
Winnie the Pooh	16.95
Buzzword	27.95

ST UTILITIES

Music Studio	32.95
Digi-Drum	24.95
Time Link	33.95
Middiplay	32.95
Micro Cookbook	32.95
CZ Droid	64.95
EZ Track	39.95
ST Replay	99.95
Write 90	18.95
Fast	31.95
Labelmaster Elite	27.95
St Doctor	24.95
Back Pak	64.95
Video Wizard	39.95
K-Switch	25.95
Partner ST	44.95
Desk Cart	72.95

ST PRINT UTILITIES

Rubber Stamp	18.95
Printmaster Plus	24.95
Megafont ST	24.95
Art Gallery 1 or 2	18.95
Typesetter Elite	31.95
PM Interface	18.95
Certificate Maker	31.95
Library 1/Certificate Mkr	21.95
Print Shop	Call

ST LANGUAGES

Personal Pascal	49.95
Alice Pascal	49.95
Mark Williams C.	114.95
Metacomco Pascal	69.95
Macroassembler	49.95
Lattice C	99.95
Cambridge Lisp	139.95
Modula II	67.95
Metacommco Make	49.95
Micro C shell	34.95
Modula II Developer	Call
Fast Basic	48.95
True Basic	49.95
Fortran 77	124.95
LDW Basic	44.95
MT C Shell	84.95

ST BUSINESS

VIP Professional	Call
Swiftcalc ST	48.95
Isgur Portfolio	124.95
Financial Cookbook	14.95
DAC Payroll	32.95
DAC Easy Accounting	44.95
Dollars and Sense	64.95
Sylvia Porter	48.95
A-calc Prime	39.95
Logistix Jr.	57.95
Logistix Sr.	89.95

DESKTOP PUBLISHING

Drawrite	99.95
Publishing Partner	99.95
Partner Fonts	19.95
Fleet ST Desktop Pub	74.95

ST GRAPHICS

Degas Elite	52.95
Easy Draw	64.95
Cad 3-D	32.95
Graphic Artist	124.95
Paintworks	25.95
1st Cadd	31.95
Aegis Animator	48.95
Pro Sprite Designer	36.95
Neochrome	34.95
Stereo Cad 3-D	67.95

ST ARCADE GAMES

Winter Games	24.95
Rogue	24.95
Super Huey	25.95
Mean 18	27.95
Famous Course Disk	14.95
Leader Board	25.95
Brattacus	32.95
Silent Service	25.95
Flight Simulator II	33.95
Champ. Wrestling	24.95
World Games	24.95
Video Vegas	24.95
Strip Poker	25.95
Little Computer People	16.95
Gato	24.95
Joust	20.95
Star Raiders	20.95
Chessmaster 2000	29.95
Tenth Frame	25.95
Shanghai	25.95
3-D Helicopter	32.95
Micro League Baseball	39.95
Gen Mgr/for MLB	19.95
'86 Team K For MLBB	16.95
WWF Micro Wrestling	39.95
Skyfox	14.95
Super Cycle	14.95
ST Pool	22.95
Indoor Sports	32.95
F-15 Strike Eagle	27.95
High Roller Simulator	32.95
Two on Two Basketball	25.95
Deep Space	19.95
Arena	14.95
ST Karate	22.95
The Wanderer	25.95
Champ Baseball '86	25.95
GFL Football	25.95
Harrier Srike	24.95
Space Stat/Protector	25.95
Sub Battle Simulator	25.95
Arctic Fox	26.95
RPV	24.95
Crystal Castles	20.95
Gridiron Football	33.95
ST Wars	24.95
Hardball	24.95
Psion Chess	38.95
Plutos	19.95
Q-Ball	19.95
Vegas Gambler	21.95
Vegas Craps	21.95
Airball	24.95
Bridge 5.0	22.95
Karateka	22.95

DISKETTES

Sony 3.5 SS/DD (10 PK)	13.95
Sony 3.5 DS/DD (10 PK)	18.95

Note: Buy Diskettes at these low prices when added to any other order.

ST WORD PROCESSORS

Regent Word II	48.95
Wordwriter ST	48.95
Thunder	26.95
Microsoft Write	Call
Word Perfect	Call

CASIO KEYBOARDS

CZ 101	Call
CZ 230S	Call

INFOCOM ST

Bureaucracy	25.95
Enchanter	19.95
Hitchiker	19.95
Leather Goddess	25.95
Lurking Horror	25.95
Moonmist	25.95
Stationfall	25.95
Trinity	25.95
Wishbringer	11.95
Zork I	25.95
Zork II or III	28.95
Hollywood Hijinxs	25.95
All Invisiclues	CALL

ST TELECOMM

ST Talk Ver 2.0	CALL
BB/ST	31.95
Flash	27.95
I.S Talk	33.95

No surcharge for Master Card

To Order Call Toll Free

800-558 0003

P.O. BOX 17882, MILWAUKEE, WI 53217

ORDER LINES OPEN

Mon.-Fri. 9AM-9PM CST Sat. 11AM-5PM. CST

ComputAbility
Consumer Electronics

TELEX NUMBER 9102406440

(ANSERBACK = COMPUT MILW UQ)

No surcharge for Visa

For Technical Info, Order Inquiries, or for Wisc. Orders

414-357-8181

ORDERING INFORMATION: Please specify system. For fast delivery send cashier's check or money order. Personal and company checks allow 14 business days to clear. School P.O.'s welcome. C.O.D. charges are $3.00. In Continental U.S.A. include $3.00 for software orders 5% shipping for hardware, minimum $5.00. MasterCard and Visa orders please include card #, expiration date and signature. WI residents please include 5% sales tax. HI, AK, FPO, APO, Puerto Rico and Canadian orders, please add 6% shipping, minimum $6.00. All other foreign orders add 15% shipping, minimum $15.00. All orders shipped outside the Continental U.S.A. are shipped first class insured U.S. mail. If foreign shipping charges exceed the minimum amount, you will be charged the additional amount to get your package to you quickly and safely. All goods are new and include factory warranty. We do not guarantee compatability. Due to our low prices all sales are final. All Defective returns must have a return authorization number. Please call (414) 357-8181 to obtain an R.A. # or your return will not be accepted. Prices and availability subject to change without notice.

send control codes by including a left bracket and a decimal, octal, or hexadecimal number—or a left bracket, apostrophe, and a character. (This is the one exception when you type brackets on the command line.) CTRL-Z, for example, would be a [26, [032, [0X1A, or ['Z. ECHO (or SEND) may be redirected to a printer or to a disk file. Sending control codes and escape sequences to a printer allows you to set certain parameters (like italics, near-letter quality, foreign character sets, and so on). For commonly used printer modes, you may create batch files that send specific sequences of control codes.

EXIT

Exits *SuperDOS* from command line or batch (same as BYE)

FGROUND ***color***

Changes foreground color (same as TEXT)

This command changes the color of text on the screen. The current screen resolution determines which values can be included.

FKEY [*num*][*text*]

Gets or sets function-key macros

The ten function keys (plus the shifted function keys, treated as F11–F20) can be defined from the command line or a batch file. If FKEY is followed by a number and text, that function key's definition is set. Typing FKEY and a number lists the current definition for that key. Typing FKEY with no parameters lists all current definitions.

The Return key can be represented within a function-key definition by placing the *tilde* character (Z) at the end of the *text* definition.

FREE

Prints amount of free memory (same as MF)

FREE (or MF) checks the system's random access memory (RAM) and tells you how much is available.

FUPDATE [*x*:][*path* \]*filename*

Updates file's time/date stamp (same as TOUCH)

This command copies the current time and date to a file's time/date stamp.

GD [*x*:]

Gets the current directory (same as PWD)

GD (or PWD) lists the current and parent directories.

GEM [ON][OFF]

SuperDOS GEM option

Before running a GEM-based program, the GEM flag should be turned on. Typing GEM with no parameters lists the current state of the flag.

HELP [*command*]

SuperDOS help screens

HELP plus a command name prints the proper syntax for using the command. If you omit the command name, HELP lists the syntax for the most recently used *SuperDOS* command.

HISTORY [ON][OFF]

SuperDOS history list control

HISTORY lists the 40 commands you've used most recently. You may repeat any of the commands by typing an exclamation point and one of four parameters. HISTORY OFF turns off this feature.

The signal to indicate that you are referencing a history command is the exclamation point (!). There are several ways that you can access a stored command:

!!	references the last command entered
!*n*	references command *n* in the history list
!−*n*	references the last command minus *n*
!*string*	references the command matching *string*

The command will not be acted on until you press the Return or Enter key, so you may build a command that is made up of several already-stored commands. For example, suppose that the history list looks something like this:

```
0 LS
1 C:\BIN\
2 HISTORY
```

You could form a single command to list the entire contents of the BIN folder on drive C by entering

```
!0 !C:
```

or

```
!0 !1
```

or

```
!1 !−2
```

All of these example commands are equivalent. They take history commands 0 and 1 to form a new command.

You can save a small amount of system memory by switching HISTORY OFF within the AUTOLOG .BAT batch file. Accessing history commands is only available from the command line, and cannot be done within a batch file. History commands themselves and batch commands are not placed in the history list. By default, HISTORY is ON.

HOME

Homes cursor

This command puts the cursor in the top left corner of the screen.

INVERSE [ON][OFF]

Screen inverse video control (same as RVS)

If the current characters are black on a white background, this command switches the colors to make messages print in white letters on black. For use primarily in batch files.

LIST [−T*nn*][−L][−N][−F] [*x*:][*path* \]*filename*

List utility (same as CAT and TYPE)

LS [−H] [*x*:][*path* \][*filename*]

Lists system directory (same as DIR)

MAKDIR [*x*:][*path* \]*dirname*[\]

Makes (creates) a subdirectory (same as MKDIR)

This command is the equivalent of the New Folder item under the File menu on the GEM desktop. It creates a new subdirectory (folder).

MAKE [−F] [*x*:][*path* \][*makename*]

SuperDOS MAKE utility for programmers

MAKE selectively compiles and links a program, based on the source file's time and date stamp. Files that have been changed are compiled. Others are not. If you don't provide a filename, MAKE looks for its instructions in a file called SHELL.MAK. The −F option forces compilation of all files (rather than checking the time and date).

In order to use the *SuperDOS* MAKE utility, you must compose a MAKE file. The MAKE file describes all files within the program and their relationship to each other. The default *SuperDOS* MAKE filename is SHELL.MAK. An extended search will not be performed if the MAKE file is not found in the current or specified directory.

There are five possible instructions that can be given within a MAKE file. These five are divided into two categories, file descriptions and compile/link instructions. Each MAKE file instruction contains a single character (in uppercase or lowercase), followed by a semicolon (;). Here is a list of all the possible MAKE file instructions and their meanings:

File Descriptions

S; source-code file
D; dependent file
R; result file (after compilation)

Compile/Link Instructions

C; compile (or assemble)
L; link

File descriptions describe all files that are used within the program. The given source file (S;) is dependent on any D; files. Anytime the contents of any dependent file changes, the source must be recompiled. Here is a sample MAKE file:

```
C;MMCC %1$
S;MAIN.C D;STDIO.H D;OSBIND.H R;MAIN.O$
S;C:\LIB\EXTRA.C D;OSBIND.H R;C:\LIB\EXTRA.O$
L;MMLINK MAIN.O C:\LIB\EXTRA.O −O TEST.PRG$
```

In this example, MAIN.C is dependent on STDIO.H and OSBIND.H. Header files written in C are an excellent example of dependent files. A file sequence is the sum of all files that, when compiled, create a result file. There can only be one source and one result file per file sequence. There can be up to 100 dependent files per file sequence. This should be enough in all but the most extreme cases.

File descriptions (S;, D;, R;) must be followed by the name of the file, including any optional drive identifier and/or path list. The source (S;) and result (object) file (R;) in the previous example provides an example of using a full path list. The dollar sign ($) at the end of each line indicates the end of a file sequence in the case of file descriptions, and the end of a single instruction in the case of compile/link instructions. You may use more than one line in the MAKE file for file descriptions or compile/link instructions.

Two placecards are available from within the MAKE file which represent the source file (%1) and the result file (%2). No other parameters can be passed into the MAKE file.

The MAKE file instructions do not have to be in any special order, but it is advisable to declare the compile instructions first. This way, any file sequences encountered can be executed right away without having to be stored in the computer's memory. If the compile instructions are declared first, the number of file sequences that the MAKE file may contain is unlimited. The MAKE utility can store up to 100 file sequences if necessary. There can also be up to 100 compile and 100 link instructions per MAKE file. *SuperDOS* commands can be placed with the compile and/or link instructions only from within a batch file. As an example:

```
C;MMCC %1$
S;MAIN.C D;STDIO.H D;OSBIND.H R;MAIN.O$
S;C:\LIB\EXTRA.C D;OSBIND.H R;C:\LIB\EXTRA.O$
L;MMLINK MAIN.O C:\LIB\EXTRA.O −O TEST.PRG$
L;SPACE 'C$
```

This example is just like the previous one, except there's an extra link instruction which consists of executing the file SPACE (and reversing *SuperDOS*'s CONFIRM option). SPACE could be an executable program or a batch file. Since SPACE is part of the link instructions and it appears after the program has been linked, it will be executed once—right at the end of processing the MAKE file.

The rules covering the MAKE utility are as follows:

1. If a source file has a time/date stamp which is newer than the time/date stamp of the result file, or if the result file does not exist, the source will be compiled.
2. If any one of the dependent files has a time/date stamp which is newer than the time/date stamp of the source file, the source will be compiled.
3. If at least one source file is compiled, the link instructions (if any) will be executed.
4. Compile instructions (C;) are required; link instructions can be missing (MAKE will generate a nonfatal warning).
5. It is considered to be an error to have a file sequence with a missing source or result file.

Even though the MAKE examples have been based on the *Megamax C* compiler, the *SuperDOS* MAKE utility can be used with any compiled and/or assembled language with any compiler program. Since the *SuperDOS* MAKE utility uses the time/date stamp of the various files within the MAKE file, it is

essential that you maintain an accurate system clock. You should develop a habit of setting the system clock each time you boot up the computer.

MF
Memory free (same as FREE)

MKDIR [*x*:][*path* \ ]*dirname*[\ ]
Makes (creates) a subdirectory (same as MAKDIR)

MV [*x*:][*path* \ ]*filename1*
[*x*:][*path* \ ][*filename2*]
Moves or renames file(s) (same as RENAME)

MV (or RENAME) can move files between directories on a disk or can rename a file. If the second name and its path are partially or completely omitted, the current name and path are used. Wildcards are permissible with *filename1*, but not with *filename2*. To copy files between separate disk drives, use CP or COPY, not MV or RENAME.

OUTPUT [ON][OFF]
Gets or sets the output option

The OUTPUT and VERBOSE flags determine how much information *SuperDOS* returns to the user. If OUTPUT is on, all commands are echoed to the screen. Typing OUTPUT with no parameters tells you the current state of the flag.

PLOT *row column*
Plots (position) cursor on the screen (same as POSITION)

This command is most useful within batch files. It simply positions the cursor at a given row and column.

POSITION *row column*
Positions cursor on the screen (same as PLOT)

PWD [*x*:]
Prints working directory (same as GD)

RENAME [*x*:][*path* \ ]*filename1*
[*x*:][*path* \ ][*filename2*]
Renames or moves file(s) (same as MV)

RING [ON][OFF]
Bell control (same as BEEP)

RM [*x*:][*path* \ ]*filename*
Removes or deletes file(s) (same as DELETE)

RMDIR [*x*:][*path* \ ]*dirname*[\ ]
Removes or deletes a subdirectory (same as DELDIR)

RVS [ON][OFF]
Screen reverse video control (same as INVERSE)

SEARCH [ON][OFF]
Extended search option

When you type the name of a program, *SuperDOS* attempts to load and run it by searching the current directory for a matching filename. If the filename is not found and the SEARCH flag is on, *SuperDOS* will look in other directories and on other drives to find a program that matches the filename provided.

SEND [−R] [[*nn* [0*nn* [0x*nn* ['*c* [*text*]]
Sends text to the screen (same as ECHO)

TEXT *color*
Changes text color (same as FGROUND)

TIME [*hh:mm:ss*[AM][PM]]
Gets or sets current time

If you type TIME and the CONFIRM flag is on, *SuperDOS* returns the current time. If the CONFIRM flag is off, it prompts you for the time. Listing AM or PM is optional. Both military (24-hour) and civilian time are acceptable.

TOUCH [*x*:][*path* \ ]*filename*
Updates file's time/date stamp (same as FUPDATE)

TRANSLATE [ON][OFF]
SuperDOS translate option

The TRANSLATE flag defaults to ON. *SuperDOS* translates all commands to uppercase characters (including filenames). If you want to pass both uppercase and lowercase characters to a file, turn TRANSLATE OFF. If you type TRANSLATE with no parameters, the current status of the flag is displayed.

TYPE [−T*nn*][−L][−N][−F] [*x*:][*path* \ ]*filename*
List utility (same as CAT and LIST)

UNFKEY [*num*]
Unsets function key macros

When followed by a number in the range 1–20, UNFKEY erases the macro defined for that key. When no number is included, it erases all function-key definitions.

VERBOSE [ON][OFF]
Verbose option

Given no parameters, VERBOSE tells you the status of the VERBOSE flag (which defaults to OFF). If VERBOSE is turned on, *SuperDOS* provides more information about what it's doing.

VERIFY [ON][OFF]
Gets or sets status of disk verify

When you save a file to disk, the ST automatically checks the file by comparing the copy on disk with what's in memory. If you turn VERIFY OFF, operations involving writing to disk will be faster. Typing VERIFY with no parameters tells you the current status.

WIPE
Wipes the screen clear (same as CLS)

WRAP [ON][OFF]
Screen wrap control

WRAP defaults to OFF. Characters that overflow the screen width disappear. With WRAP ON, characters printed beyond the last column wrap around to the beginning of the line. If you enter this command with no parameters, the current WRAP status is displayed.

The following command list is given in the exact order in which *SuperDOS* searches for commands. This allows you to use the ABBREVIATION feature of *SuperDOS* to its maximum potential without getting into trouble because of abbreviation conflicts.

THE LOWEST PRICES | THE BEST SERVICE

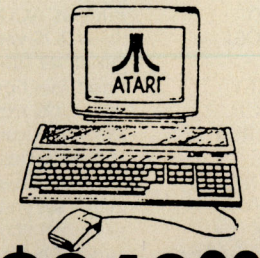
ELECTRONIC ONE*

PHONE LINES OPEN 10-6 E.S.T. M-F

CALL (614) 864-9994 • P.O. Box 13428 • COLUMBUS, OHIO 43213

ATARI 1040 ST
Personal Computer System

- 1,048,576 BYTES RAM
- 196,608 BYTES ROM
- BUILT IN TOS
- 3½ INCH DBL. SIDED DISK DRIVE
- TWO BUTTON MOUSE
- COLOR MONITOR
- 512 COLORS
- MIDI IN/OUT PORTS



$849.99 COMPLETE COLOR SYSTEM

B/W SYSTEM $669.99

ATARI 520ST

520ST SINGLE DISK DRIVE B/W Monitor Complete **489.99**

520ST SINGLE DISK DRIVE Color Monitor Complete **649.99**

- SF354 SGL DISK DRIVE 129.99
- SF 350-20 MEG HARD DRIVE 529.99
- SF 314 DBL DISK DRIVE 199.99
- COLOR MONITOR 299.99
- B/W MONITOR 129.99

COMPUTERS FOR THE HOME AND OFFICE AT LOW, LOW PRICES ELECTRONIC ONE

LOW, LOW PRICE HOME COMPUTERS

ATARI 800XL (64k)	$79.99
ATARI 65XE (64k) W/SOFTWARE	$99.99
ATARI 130XE (128k)	$138.00
STAR NX10	$187.99
STAR NP10	$147.99
FORTIS DM 13010 (130 CPS)	$187.99
PANASONIC 1080i	$167.99
PANASONIC 1091i	$197.99

S.T. SOFTWARE UTILITIES/EDUCATIONAL

PAINTWORKS	42.99
MUSIC STUDIO	36.99
AEGIS ANIMATOR	48.99
N VISION	24.99
DEGAS ELITE	48.99
ISGUR PORTFOLIO	119.99
IS TALK	29.99
THUNDER	24.99
TIME LINK	29.99
AMERICA COOKS	8.99
COPY II	25.99
DAC EASY ACCOUNTING	41.99
DAC EASY PAYROLL	29.99
BUSINESS LETTERS	29.99
HABA CHECK MINDER	44.99
DATA MANAGER S.T.	47.99
SWIFT CALC S.T.	47.99
WORD WRITER S.T.	47.99
VIP PRO	149.99
VIP LITE	59.99

S.T. SOFTWARE ENTERTAINMENT

THE PAWN	27.99
HACKER 2	29.99
CHAMP BASEBALL	28.99
CHAMP FOOTBALL	28.99
MICRO LEAGUE BASEBALL	28.99
LEADERBOARD	24.99
MEAD 18	27.99
LITTLE COMPUTER PEOPLE	29.99
TASS TIMES	29.99
BAKER ST.	10.99
BRIDGE 4.0	18.99
COMPUBIDGE	18.99
STRIP POKER	24.99
BREAKERS	27.99
ALTERNATE REALITY	29.99
MERCENARY	24.99

LOW, LOW, LOW PRICES

HABA WRITER 2	36.99
HABA VIEW	44.99
HOME ACCOUNTANT	44.99
BASIC COMPILER	42.99
DFT	29.99
GFA BASIC	47.99
BASIC COMPILER	47.99
EASY DRAW	47.99
DOLLAR & SENSE	59.99
PERSONAL PASCAL	44.99
REGENT WORD 2	47.99
ST. ONE WRITE	36.99
PUBLISHING PARTNER	89.99
MODULA 2	47.99
PRINTMASTER PLUS	24.99
SPELLER BEE	29.99
MATH TALK	29.99
KID TALK	29.99
FIRST SHAPES	29.99
DONALD DUCK PLAYGROUND	15.99
WINNIE THE POOH	15.99
HOMEWORD HELPER MATH	29.99
HOMEWORD HELPER WRITING	29.99

OGRE	27.99
SKYFOX	28.99
ULTIMA 3	39.99
CHAMP WRESTLING	24.99
ROGUE	24.99
TEMPLE APSHAI TRILOGY	12.99
WINTER GAMES	24.99
WORLD GAMES	24.99
SUN DOG	24.99
TWO ON TWO BASKETBALL	27.99
BALLY HOO	24.99
LEATHER GODDESSES	24.99
HEX	24.99
KARATE KID 2	24.99
SILENT SERVICE	24.99
HARRIER STRIKE MISSION	29.99
BRATACCAS	29.99
BALANCE OF POWER	29.99
SDI	29.99
UNIVERSE II	42.99
BLACK CAULDRON	24.99
KINGS QUEST 1	29.99
KINGS QUEST 2	29.99
KINGS QUEST 3	29.99
PHANTASIE II	24.99
FLIGHT SIM. II	29.99

CALL FOR COMPLETE CATALOG

HOW TO ORDER: CASHIER CHECK, MONEY ORDER, MASTERCARD* OR VISA* (ADD 4% FOR CHARGE CARDS) . . . NO PERSONAL CHECKS . . . NO C.O.D.'S . . . SHIPPED U.P.S. . . . ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE.
SHIPPING: ADD $3.00 ON ALL ORDERS UNDER $100.00 . . . ADD $5.00 ON ALL ORDERS OVER $100.00. ACTUAL FREIGHT CHARGED ON MULTIPLE ORDERS.
INTERNATIONAL: ACTUAL FREIGHT CHARGED ON ALL ORDERS OUTSIDE THE CONTINENTAL UNITED STATES INCLUDING A.P.O.
POLICIES: NO RETURNS WITHOUT A RETURN AUTHORIZATION . . . NO RETURNS UNLESS DEFECTIVE. ALL DEFECTIVES WILL BE EXCHANGED . . . NO EXCEPTIONS. PLEASE SPECIFY . . .

CALL OR WRITE FOR FREE CATALOG

CALL ELECTRONIC ONE (614) 864-9994 **P.O. BOX 13428 COLUMBUS, OHIO 43213**

SuperDOS *Commands:* *Quick Reference Guide*

Command	Function
x:	change to the specified drive (A–P)
DF	display free disk space
DFREE	same as DF
MKDIR	make (create) a subdirectory (folder)
MAKDIR	same as MKDIR
RMDIR	remove (delete) a subdirectory (folder)
DELDIR	same as RMDIR
CD	change default directory
CHD	same as CD
RM	remove (delete) file(s)
DELETE	same as RM
MV	move (rename) file(s)
RENAME	same as MV
COPY	copy file(s)
CP	same as COPY
GD	get the current directory (folder)
PWD	same as GD
LS	list system directory
DIR	same as LS
MF	get memory free
FREE	same as MF
CPDIR	copy a directory (folder)
DIRCOPY	same as CPDIR
ATTRIBUTE	get or set file attributes
ECHO	print text (for batch files)
SEND	same as ECHO
CLS	clear screen
WIPE	same as CLS
HOME	home cursor
PLOT	plot (position) cursor on the screen
POSITION	same as PLOT
TEXT	change the text screen color
FGROUND	same as TEXT
BGROUND	change screen background color
CURSOR	change appearance of the cursor

Command	Function
RVS	screen inverse video control
INVERSE	same as RVS
WRAP	screen wrap control
TIME	get or set current time
DATE	get or set current date
BEEP	beep (ring) terminal (also control error ring)
RING	same as BEEP
BYE	exit *SuperDOS* from command line or batch file
EXIT	same as BYE
ACODE	get or set process abort code
ABORT	same as ACODE
VERBOSE	*SuperDOS* verbose option
FKEY	get or set function-key macros
UNFKEY	unset function key macros
SEARCH	*SuperDOS* extended search option
CONFIRM	*SuperDOS* confirm option
DRIVE	change status of connected drives
HISTORY	*SuperDOS* history list control
VERIFY	get or set status of floppy verify
CLICK	get or set status of keyboard click
TRANSLATE	*SuperDOS* translate option
DOC	remark (documentation) statement (for batch files)
TOUCH	update file's time/date stamp
FUPDATE	same as TOUCH
GEM	GEM option
HELP	call help screen
ABBREVIATION	abbreviation option
MAKE	MAKE utility
LIST	LIST utility
CAT	same as LIST
TYPE	same as LIST
OUTPUT	*SuperDOS* output option

ST

Award Winning Software!

Winner of the Antic 1987 Outstanding Product Award!
MT-CShell — $129.95

You've heard promises about multitasking . . . But we've been delivering high quality multitasking for over one year!

Don't miss out on the new enhanced second generation of multitasking from Beckemeyer Development Tools!

- Installable device drivers increase functionality and flexibility.
- File and Terminal Control Functions are now available.
- Share hard disk files and resources with other users.
- Easy to Learn Unix-Like Operating System (similar to 4.3 BSD).
- Built-in print spooler allows you to work and print concurrently.
- Electronic Mail can automate your current communication system.
- Working Memory Manager eliminates erroneous "out-of-memory" messages.
- MT C-Shell even fixes TOS I/O bugs.
- Free On-Line Customer Support on the BDT Forum (415) 452-4792.

Other Quality Products from BDT:

- ON-Line Manual ($19.95) Documentation at your fingertips!
- VSH Manager ($34.95) GEM interface. Multitasking windows!
- MICRO C-Tools ($24.95) Features, calendar program, calculator, text editor, find program and many more.
- AnsiTerm ($24.95) Multitasking ANSI Terminal Emulator.
- Become a MICRO RTX registered developer for only $250.00.
- Complete Beckemeyer Development Tools MICRO RTX System (includes all hardware and software) Only $1,995.00.
- ADVANCED BUSINESS SYSTEMS — Call about our complete line of Multitasking/Multiuser Point-of-Sale Systems which include electronic cash registers, inventory control, and managerial reports with optional accounting package. Available NOW!

Beckemeyer Development Tools 415.452-1129 B.B.S. 415.452-4792
478 Santa Clara Avenue, Suite 300, Oakland, CA 94610

Make your game one of planetary adventure, discovery and conquest!

EMPIRE

'Wargame of the Century'

Version 2.0 *by Walter Bright & Mark Baldwin*

EMPIRE is a **real strategy** game in which you can experience the danger and drama of planetary land, air, and sea combat. Apply your skill as an Alliance task force leader to conquer and unite the planet. Choose one to three players--computer opponents use **artificial intelligence**. . . You **never** know what they're up to!

Available Now for IBM PC & Compatibles, Atari ST and Amiga

This program is the improved authorized edition of "EMPIRE - The Wargame of the Century" written by Walter Bright in 1977 which became one of the most popular games on mainframe and minicomputers. This is the only AUTHORIZED version being published on microcomputers.

interstel corporation
P.O. Box 57825
Webster, Texas 77598
713-486-4163

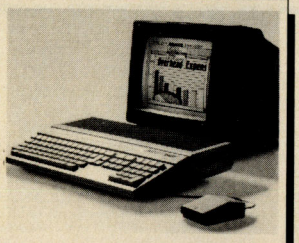
Distributed by
ELECTRONIC ARTS™

To Order: Visit your retailer or call 800-245-4525 (in CA call 800-562-1112) for VISA or MasterCard orders. Or send check or money order to Electronic Arts, P.O. Box 7530, San Mateo, CA 94403. Add $5 for s/h. Allow 2-4 weeks for delivery.

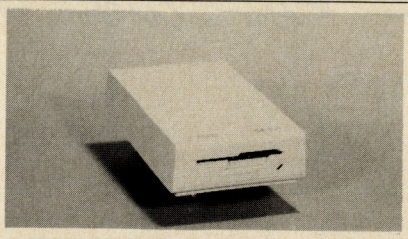
from the designers of **STAR FLEET I**

WHEN YOU WANT TO TALK ATARI...YOU WANT TO TALK TO US!

ATARI 520 System



520 Monochrome
No. AA520STM..... **$519.00**
520 Color/RGB
No. AA520STC..... **$679.00**



ATARI 354 Disk Drive

No. AA354..... **$139.00**

ATARI 1040 System

1040 Monochrome
No. AA51040M..... **$699.00**
1040 RGB/Color
No. AA51040C..... **$869.00**

CALL FOR PRICING ON THE NEW ATARI COMPONENTS

Access
Leaderboard 25.99
Activision
Hacker II..... 31.99
Music Studio..... 35.99
Antic
Cad 3-D..... 33.99
Atari
Algebra I Grade 5..... 19.99
Biology Vol. II..... 19.99
Battle Zone..... 22.99
Batteries Included
Degas Elite..... 48.99
Paperclip Elite..... 79.99
Thunder..... 25.99
Cygnus
Starfleet I..... 35.99
Ditek
STA Accounts..... 149.00
Electronic Arts
Chessmaster 2000..... 32.99

Epyx
Championship Wrestling..... 24.99
Winter Games..... 24.99
First Byte
Math Talk (Educational)..... 33.99
Haba
Habawriter 29.99
Infocom
Hitchhiker's Guide..... 26.99
Wishbringer..... 24.99
Michtron
Major Motion..... 25.99
Karate Kid..... 26.99
Microprose
Silent Service..... 25.99
F-15 Strike Eagle..... 25.99
Miles
ST Wars..... 29.99
OSS
Personal Pascal..... 48.99
Personal Prolog..... 59.99

Paradox
Wanderer 3-D..... 28.99
Polarware
Crimson Crown..... 25.99
Psygnosis
Arena 23.99
Deep Space..... 29.99
Sierra-on-Line
Winnie the Pooh (Educational)... 18.99
Strategic Simulations
Phantasie..... 25.99
Sublogic
Flight Simulator II..... 36.99
Jet..... 36.99
Timeworks
Swiftcalc Spreadsheet..... 49.99
Wordwriter 49.99
VIP
Professional (Gem)..... 149.00
X-Lent
Typesetter..... 27.99

PERIPHERALS

Atari Components
1040 Computer (No monitor).... 589.00
SM124 Mono Monitor..... 159.00
SM1224 RGB/Color Mono..... 299.00
XM804 Printer..... 189.00
520ST FM Computer..... 379.00

Modems
Atari XM301..... 42.99
Atari SX212 (300/1200)..... 89.99
Anchor AN520..... 129.99
Supra 2400ST..... 149.00
Hayes Smartmodem 2400..... 479.00

Drives
Atari 314 DS/DD..... 209.00
Atari 354 SS/DD..... 139.00
Atari SHD204 20 Meg. 589.00
Supra 20 Meg..... 559.00
Supra 30 Meg..... 769.00

ACCESSORIES

Maxell
3½" SS/DD (10)..... 12.49
3½" DS/DD (10)..... 18.49
Sony
3½" SS/DD (10)..... 12.99
3½" DS/DD (10)..... 19.99

Curtis
Safety Strip..... 19.99
Diamond 29.99
Emerald 39.99
Ruby..... 54.99
Universal Printer Stand..... 14.99

Allsop Disk Holder
ARDF10M (10)..... 3.99
ARDF30M (30)..... 9.99
Kalmar Designs (Teakwood)
Keyboard Caddy Drawer..... 54.99
CI 452 3½" Disk Holder..... 14.99

COMPUTER MAIL ORDER

In the U.S.A. and Canada

Call toll-free 1-800-233-8950

Outside the U.S.A. & Canada 717 327-9575 Telex 5106017898
Educational Institutions call toll-free 1-800-221-4283
CMO. 477 East Third Street, Dept. A610, Williamsport PA 17701
All major credit cards accepted.

POLICY: Add 3% (minimum $7.00) shipping and handling. Larger shipments may require additional charges. Personal and company checks require 3 weeks to clear. For faster delivery use your credit card or send cashier's check or bank money order. Pennsylvania residents add 6% sales tax. All prices are subject to change and all items are subject to availability. Defective software will be replaced with the same item only. Hardware will be repaired or replaced at our discretion within the terms and limits of the manufacturer's warranty. We cannot guarantee compatibility. All sales are final and returned shipments are subject to a restocking fee.

The Isgur Portfolio System

Thomas M. Castle

Requirements: Any Atari ST with the TOS operating system in read only memory (ROM); and either two single-sided floppy drives, one double-sided floppy drive, or a floppy drive and a hard disk. A Hayes-compatible modem and a printer are highly recommended.

One of the most frequently cited reasons for using a computer at home is to manage investments. Whether you manage a personal portfolio or professionally manage investments for others, the combination of the Atari ST, *The Isgur Portfolio System,* and commercial information services such as CompuServe is hard to beat for sophistication and performance.

The Isgur Portfolio System is a professional investment tracking system in a modular package. The three main programs in the package are *I*S Bridge,* a link between *Isgur Portfolio* and other software in the Integral Solutions series; the *Isgur Portfolio* program itself; and *IS*TALK,* a sophisticated telecommunications program. The system comes on four single-sided floppy disks which are not copy-protected. The manual is written for both the Atari ST and the IBM PC XT/ PC AT with GEM. (The IBM version, incidentally, is almost identical to the ST version, but costs $50 more.)

The documentation is a joy. It is enclosed in an IBM-style three-ring binder with slide-in case. The package also includes a subscription to the CompuServe Information Service with $15 of free online time.

Crossing The Bridge

Some file management is required to tailor the software to your hardware configuration. A program named INSTALL.PRG is provided for this purpose, although I had to write for a missing Appendix C (which gives the detailed instructions needed).

The *I*S Bridge* program is the traffic control tower for the Integral Solutions software series. It includes facilities to set the time and date, to inform the system about where all of your auxiliary files and folders are located, and to manage memorandums.

*I*S BRIDGE* does its job, but the memo function needs a carriage-return or word-wrap feature for memos with more than 60 characters per line. Instead, it requires you to press the Tab or cursor keys to move the cursor from line to line. True word-wrapping would be much nicer.

Overall, however, the authors (Mark Skapinker, renowned for *Thunder!,* and Lee Isgur, a vice president with Paine Webber) have gone to great lengths to produce a package that is easy to use, but which still offers the features required by professional portfolio managers.

An extensive tutorial guides the user through the various features and procedures of *Isgur Portfolio.* Menu items can be selected with the mouse controller or the keyboard. Screen-specific Help windows are available throughout.

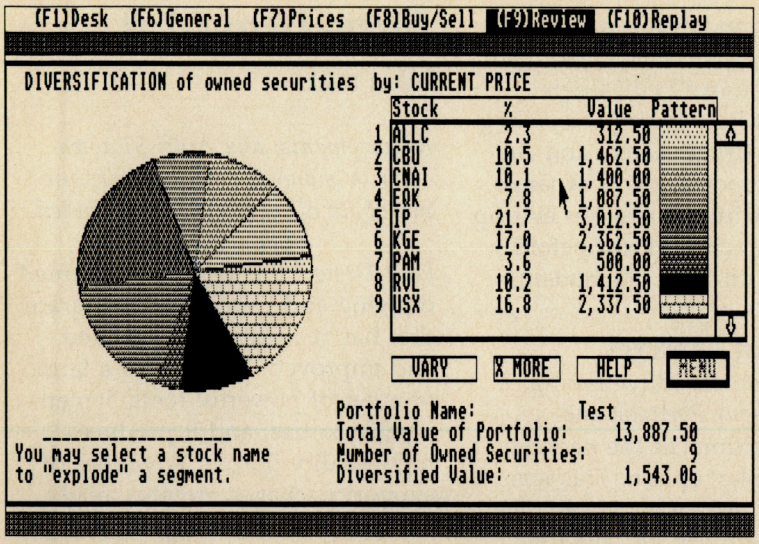
A Preferences window lets you present your portfolios in a variety of ways. Memo alarms can be set to announce the number of days before an option expires or a holding becomes "long-term" (although the Tax Reform Act of 1986 threw a wrench in all that). You can select decimal or fractional pricing. You can establish priorities—ranked by loss/gain and short-/long-term—for automatic selling functions (although again, the distinctions between short-term and long-term gains or losses are going by the wayside under the new tax laws).

Buy Low

Since *Isgur Portfolio* lets you manage several portfolios, the first step is usually to choose which portfolio you want to work with. If you're managing only one portfolio, of course, you can skip this step. Next, you specify the currency used for the portfolio, and the program establishes conversion scales between currencies on the portfolio-selection screen.

To record purchases, you select the Buy option. The official company symbols used by the stock exchanges must be recorded so the program can match the securities in your folder with those on the exchange and automatically update them. Once you've entered the price per share, the quantity purchased, the commission paid, the date, and whether the purchase is long or short, the program calculates and displays the total cost of the transaction. You can, of course, change or erase these entries.

The program presents a detailed screen for each new security purchased. You can enter the long name of the issue so you don't have to worry about memorizing



The Isgur Portfolio System *lets you view the diversification of your investments in graphic form. (Original screen in color.)*

all those exchange symbols. You stipulate the exchange on which the issue is traded, the type of security (commodity, stock, option, or bond), and whether you want the issue protected from sell suggestions. A history of low, high, and year-end prices can be recorded. High and low alert values can be set on the security so the program can automatically inform you of a target event. Spaces are provided for notes and other pertinent information.

Sell High

There are two ways to select securities to sell. Single items can be selected from a listing of the portfolio holdings, or you can ask the computer to experiment with combinations of sales to raise a specified amount of cash prescribed by preset priorities. If you made multiple purchases of a security, you'll have to select which holdings are being sold so that gain or loss can be accurately determined.

When the computer tries to raise cash for you, it can set its priorities on portfolio diversification or tax considerations. Printed reports of prospective sales or in-depth year-to-date reviews of sales along with the pertinent purchase information are only a mouse-click away.

There are three ways to update the price information for your portfolio. You can enter the new prices yourself, let *Isgur Portfolio* do it for you by automatically calling an online financial service, or retrieve the information from a text file. The documentation suggests updating price information manually for small portfolios because of the higher cost of online quotations. This requires you to select and change the information for each stock of interest. You can choose various display options to present the holdings for updating. You can also manually record splits and dividends for an issue.

If you want *Isgur Portfolio* to automatically update your investments, it can dial up CompuServe, Dow Jones Information/Retrieval, Infoglobe, or The Source. (However, a warning says that the program does not work well with The Source.) The program matches the company symbols in your portfolio with those on the official listings and retrieves the new price information. Of course, this assumes you have entered your modem settings and subscriber information so the program can autodial and connect with the specified service.

You can also extract price information from text files. This would allow distribution of updated information in the form of disk files or downloading from a source other than the online services mentioned above.

Reviewing Accounts

Another screen in *Isgur Portfolio* lets you record information about your cash and margin accounts. It includes amounts, dates of the most recent update, and interest rates of accrual or payments. The program can generate reports based on this information.

One of the strong points of *Isgur Portfolio* is the variety of ways it lets you assess the position of an individual security or of the portfolio as a whole. Bar graphs indicate security values, and pie charts depict the diversification of a portfolio (see the accompanying figure).

When using the SC1224 color monitor, however, you'll encounter a minor problem. The program lets you "blow out" a slice of the pie to accentuate a given security, but when you highlight another slice, some pixels along the border of the slice don't return to normal. After a few repetitions of this function, the screen becomes somewhat littered with stray pixels.

The review options let you analyze the value of an individual security or of the entire portfolio. Potential gains and losses along with percent changes are presented for purchase price versus current value. Those gains or losses can be displayed as actual amounts or in an annualized form. You can also play with the portfolio value in a What-If mode.

Telecommunications

The Isgur Portfolio System comes with the *IS*TALK* telecommunications program, which is also available separately. The latest version supports modems that are not compatible with the Hayes command set.

I still had trouble using a modem that was not Hayes-compatible, however. *IS*TALK* has a

screen that lets you specify your modem's commands for initialization, dial options, speaker options, and the like. But after I entered the codes and hit the Save key, not all of the changes were saved. I was never able to make it work.

*IS*TALK* includes a spelling checker program and dictionary, but this led to more problems when I attempted to load the dictionary from a hard drive. A README documentation file on the *IS*TALK* disk says the dictionary file should be placed in a folder with the other *IS*TALK* files. But Appendix C in the manual says the dictionary file must be on the root directory of the drive being used. Neither seems to be correct. Either way, the program displays an alert box which says the dictionary file must be on drive A.

Older versions of *IS*TALK* allowed you to keep only six phone numbers on file. Version 2.03 permits an unlimited number of phone listings, although the process of entering the numbers is not easy. One limitation is that you still can't enter a phone number longer than 20 characters, which may not be enough for some alternative long-distance carriers such as MCI. A local access number, customer code, and long-distance number would contain 22 characters, even without hyphens or other delimiters. If this is a problem, you'll have to use the long-distance carrier that offers dial 1 service.

For the most part, *IS*TALK* is full-featured and versatile. You can upload files from a disk file or the memory buffer, and transfer files to a disk file, the modem, the memory buffer, a printer, or the screen. This can be done with or without selectable filters. Note, however, that the transfer options can only access disk drives A–D; if you have a hard disk partitioned into more drives or several RAM disks, the program can't reach them.

The *IS*TALK* capture buffer is almost like a tiny word processor if you go into Local mode. Unfortunately, you have no cursor control and you can't edit single words. But it does have a spelling checker, a string search, and cut-and-paste operations. A separate Compose window lets you edit up to 200 characters of text before sending it through the modem.

Additional Features

To minimize repetitive typing, both the *Isgur Portfolio* and *IS*TALK* sections of the package have a Replay option. This lets you create macros—sets of commands which can be called by name to perform a list of functions automatically. The only thing that can't be recorded for a replay is the cut-and-paste operation in the capture buffer, since the right mouse button used for that purpose is not supported by Replay.

*IS*TALK* also lets you assign up to 60 characters of text each to as many as 25 keys to be pressed simultaneously with the F8 function key. This makes it possible to send the text through the modem with a single combination keypress. This comes in handy if there are certain phrases you find yourself typing frequently.

Most of the problems encountered with *The Isgur Portfolio System* were related to the *IS*TALK* section, and many of those were because I don't have a Hayes-compatible modem. Overall, aside from a few annoyances that will probably be ironed out in future updates, *The Isgur Portfolio System* is a competent program for managing securities. It is quite an extensive package.

The Isgur Portfolio System
Electronic Arts/Batteries Included
1820 Gateway Dr.
San Mateo, CA 94404
$199.95

Easy-Draw 2.0

David Plotkin

Requirements: any Atari ST with color or monochrome monitor; one megabyte of memory recommended.

Easy-Draw 2.0 is an object-oriented drawing and page-layout program that has recently been updated and improved. It provides a large number of powerful tools, it's enjoyable to use, and it produces high-quality output. A variety of support packages are also available, further increasing the usefulness of this program.

"Object-oriented" drawing programs are different from the "paint" programs you may be used to, such as *DEGAS*, *DEGAS Elite*, and *NEOchrome*. In a paint program, you can manipulate each pixel of the drawing, exercising a great deal of control—but once you've painted over a portion of the picture, it's gone. In object-oriented programs such as *Easy-Draw*, the picture is built from simple geometric objects, such as squares, circles, and polygons. Since each object is individually tracked by the program, you can resize, move, hide, or show any of the objects at any time—no part of the image is lost, even when one object is covered up by another.

The disadvantage to this type of program is that you can't modify each pixel to get the exact result you want. Instead, you must build up a complex shape from objects—which is more difficult.

Programs like *Easy-Draw* are primarily useful for simple drafting tasks, such as laying out floor plans, but because of *Easy-Draw*'s added text-handling capabilities, it's possible to lay out pages that mix pictures *and* text.

The Shape Of Things To Come

The first step in drawing a picture with *Easy-Draw* is to choose the shape you want to use. Pressing the right mouse button opens a dialog box on the screen which

COMPUTER GAMES +

(714) 639-8189

520ST or 1040ST CALL
WE ARE THE LOWEST

VIP PROFESSIONAL
$99.95 PRO
$119.95 GEM

ASTRA'S RAM EASY
$109.95
1 Meg ST upgrade

-ST DISK DRIVES-
SF314 d/s $199.95
20 MEG $549.95

DB MAN
$89.95
(Best ST Data Base)

130XE or
1050 Disk Drive
$149.95

GUARANTEED LOWEST PRICES — CALL FOR TITLES NOT LISTED

RECENT AND SOON TO BE RELEASED ST PROGRAMS
DEFENDER OF THE CROWN 32.95
AIR BALL 27.95
PHANTASIE III 27.95
MIDI MAZE 27.95
GRIDIRON FOOTBALL 39.95
POLICE QUEST 32.95
P.T. BOAT 27.95
LEISURE SUIT LARRY 32.95
FIRST CADD 34.95
SUB BATTLE 27.95
STWARS 27.95
PLUTOS 32.95
AUTODUEL 34.95
WIZARD'S CROWN 27.95
RINGS OF ZILFIN 27.95
DUNGEON MASTER 27.95
VIDEO VEGAS 22.95

ADVENTURES
GAUNTLET . . . . . **CALL**
S.D.I. 32.95
ALTERNATE REALITY-CITY 27.95
KING'S QUEST 32.95
KING'S QUEST II 32.95
KING'S QUEST III 32.95
SPACE QUEST 32.95
BLACK CAULDRON 27.95
ULTIMA II 39.95
ULTIMA III 39.95
ULTIMA IV 39.95
PHANTASIE 27.95
PHANTASIE II 27.95
MERCENARY 27.95
MERCENARY - 2nd CITY 14.95
PAWN 27.95
BORROWED TIME 32.95
MINDSHADOW 32.95
SPIDERMAN 9.95
UNIVERSE II 44.95
SUNDOG 24.95
BRATACCUS 34.95

ARCADE ACTION
WAR ZONE/FIRE BLASTER 27.95
SPACE STATION/PROTECTOR 27.95
WANDERER (3D!) 27.95
STAR GLIDER 29.95
DEEP SPACE 29.95
SUPER CYCLE 27.95
MAJOR MOTION 27.95
TIME BANDIT 27.95

STRATEGY/SIMULATION
HEX 27.95
BALANCE OF POWER 32.95
COLONIAL CONQUEST 27.95
ROADWAR 2000 . . . . . 27.95
SKYFOX 32.95
ARCTIC FOX 27.95
FLIGHT SIMULATOR II 37.95
SUPER HUEY 27.95
GATO 32.95
SILENT SERVICE 24.95
HACKER 29.95
HACKER II 32.95
SHANGHAI 29.95
CHESSMASTER 2000 . . . . . 29.95
BRIDGE 5.0 . . . . . 22.95
COMPUBRIDGE 19.95

SPORTS
MICROLEAGUE II - BASEBALL 39.95
CHAMPIONSHIP BASEBALL 29.95
10TH FRAME BOWLING 27.95
ST KARATE 19.95
WORLD CHAMPIONSHIP KARATE . . . 27.95
KARATE KID II 27.95
CHAMPIONSHIP WRESTLING 27.95
CHAMPIONSHIP BASKETBALL 29.95
WORLD GAMES 27.95
WINTER GAMES 27.95
LEADER BOARD 24.95
TOURNAMENT DISK 14.95

PRODUCTIVITY
PUBLISHING PARTNER 99.95
EASY DRAW 49.95
GRAPHIC ARTIST 149.95
ST TALK 2.0 . . . . . 19.95
PERSONAL PASCAL 47.95
GFA BASIC or COMPILER 54.95

COMPUTEREYES ST 179.95

TYPING TUTOR 24.95
WORD WRITER ST 49.95
DATA MANAGER ST 49.95
SWIFT CALC ST 49.95
REGENT WORD II 49.95
REGENT BASE 59.95
DEGAS ELITE 49.95
N-VISION (Paintworks) 29.95
AEGIS ANIMATOR 54.95
MUSIC STUDIO 37.95
PRINT MASTER PLUS 27.95
ART GALLERY I or II 19.95
DAC EASY ACCOUNTING 49.95
MAGIC SAC (with chips) 99.95

XE/XL SOFTWARE
BOUNTY BOB STRIKES BACK 29.95
RETURN OF HERACLES 9.95
BASIC XL 32.95
BASIC XE, ACTION, or MAC 65 . . . . 44.95
TOOL KITS 16.95
WRITER'S TOOL 38.95
SYNCALC or SYNFILE 32.95
ALTERNATE REALITY-CITY 24.95
ALTERNATE REALITY-DUNGEON . . . 24.95
VIDEO TITLE SHOP 22.95
UNIVERSE 58.95
MICROLEAGUE BASEBALL 24.95

ASTRA DISK DRIVES
THE ONE (XE/XL) 249.95
2001 (XE/XL) 279.95
HD+ (ST 20meg + d/s drive) . . . 849.95

PRINTER INTERFACES
MICROPRINT 29.95
MPP-1150 . . . . . 39.95

PRINTERS
STAR NX-10 PRINTER 189.95
STAR NB24-10 PRINTER 449.95

MODEMS
AVATEX 1200 . . . . . 89.95
AVATEX 1200HC 119.95
PRACTICAL 2400 . . . . . 199.95

ATARI

714-639-8189

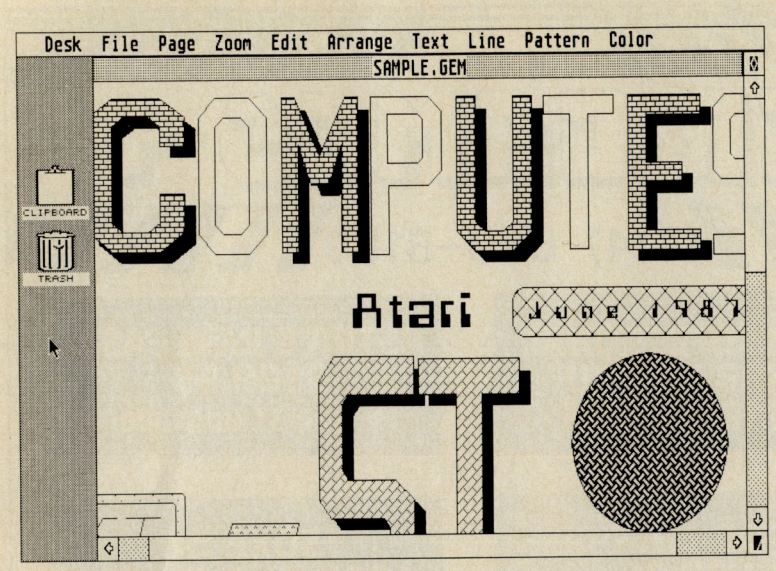
ORDERS ONLY PLEASE
1-800-443-8189

MasterCard

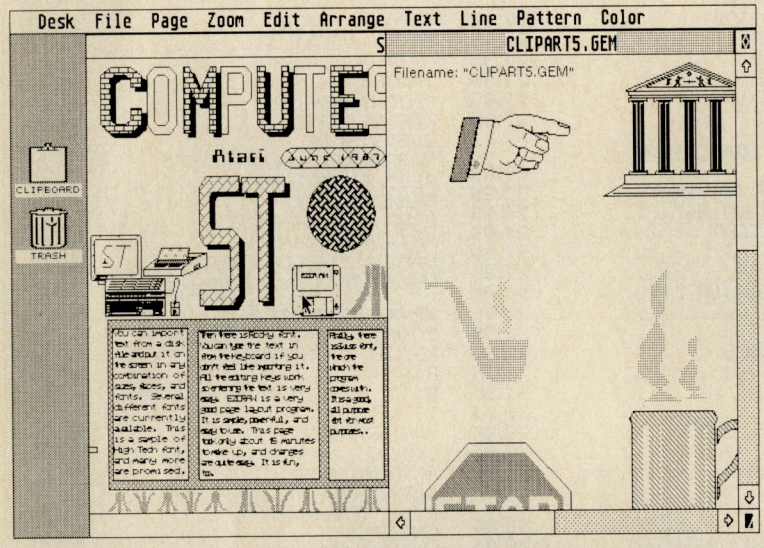
SHIPPING: Software - free shipping on U.S. orders over $100, otherwise $2.50 U.S., $6.50 outside U.S. Hardware - depends on weight, call for quote. Charge cards + 3%. C.O.D. orders are welcome, add $1.90 for UPS + 3%.

VISA

COMPUTER GAMES + • Box 6144 • ORANGE CA 92667 • (714) 639-8189



Easy-Draw *is ideal for two-dimensional drafting, diagramming, and even simple page layout. Here's a close-up view of a page.*



If a page is too large to fit on the screen in full detail, Easy-Draw *lets you see an overall view.*

shows all the choices available. These include rectangles with square or rounded corners, circles and ovals, circular or oval wedges, segments of circles and ovals, lines, and multilines. There's also a text option and freehand sketch mode. To select the tool you want, just point and click; the dialog box disappears and you're ready to draw.

Pressing the left mouse button while moving the mouse adjusts the size of the object. After releasing the button, you can move the mouse to adjust the position of the object. When you're satisfied with the size and position, you paste it down by clicking the right mouse button. The object appears in the currently selected line type, line width, color, and fill pattern.

Four colors are available in the medium-resolution screen mode, and there are 40 built-in fill patterns. You can also define and save your own patterns. There are four line widths and six line types to choose from, and all standard line ends are available (arrows, rounded, squared).

Manipulating Objects

The real power of *Easy-Draw* lies in its huge number of editing commands. To edit an object, simply click inside the object. A box with sizing points will appear around the selected object. You can click in the box and move the object elsewhere on the screen, or click on one of the sizing points and stretch the object to a new size. You can also change its line type, line width, color, fill pattern, and fill color. If you select an object by mistake, you can deselect it by simply selecting another object or clicking elsewhere on the screen.

Easy-Draw also lets you work with multiple objects at the same time. This is especially useful when you've constructed a complex object from a series of smaller, simpler objects. To group simple objects into a complex object, you can either click on each object while holding down the Shift key, or use the mouse to draw a rubber box around the objects. The sizing boxes will appear, and you can drop down the Arrange menu to group them all into one complex object.

A complex object can be moved or resized just like any other object, and you can "explode" it back into its component parts at any time.

When multiple objects are selected, you can align them in a variety of ways. You can line up the tops, bottoms, or center points of all the objects, spacing them evenly across the page, or center them on the page, either horizontally or vertically. You can even create a group of objects in which some of the objects are composed of groups of other objects. You can select all the objects on the page to make global changes, and you can arrange objects in front of or behind each other.

All objects, whether simple or complex, can be further modified with options in the Edit menu. They can be copied, flipped and mirrored in any direction, and rotated in 90-degree increments. (However, fill patterns and text

ATARI® STation

The one STop shop

ORDERS ONLY
CALL TOLL FREE
1-800-225-5878

ORDER STATUS, INFORMATION, R.A.'s
1-313-595-0788

THE NEW 520ST FM

With 1 MEG Upgrade (Already Installed) Add $99.

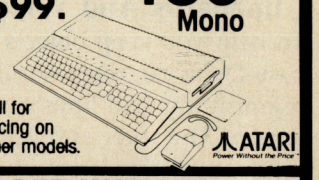
$489 Mono

BONUS! FREE STARTER KIT

- Monitor Riser
- 3½" Label Kit
- Dust Cover
- 3½" Disk Head Cleaner

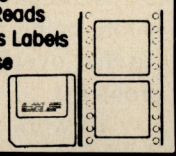
$50 VALUE

Call for pricing on other models.



3½" Continuous Label Kit $9.95

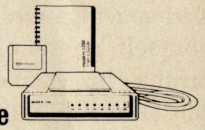
- 500 3½" Disk Labels
- FREE Label Program
- Automatically Reads Disk and Makes Labels
- Create Database



1200 BAUD MODEM KIT

Access Bulletin Boards & Information Services

All Just $119



- Avatex 1200 HC
- ST or PC Software
- Compuserve Starter Kit
- RS-232 Cable M-F
- Phone Cord

BULK 3½ DISKS

$.99 SS/DD QTY. 25 — $1.29 DS/DD QTY. 25

Haba Hard Drive CLEARANCE

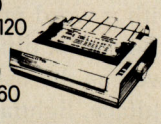
10 MEG $299

limited quantities

Panasonic Dot Matrix Printer

KXP-1080i $179.00
KXP-1091i $199.00

- Print speed (cps) KXP-1080i Draft 120
- Print speed (cps) KXP-1091i Draft 160



FREE STARTER KIT

- $68.00 value
- IBM-ST cable
- 200 pack paper
- Heavy duty metal printer stand
- Vinyl dust cover

NEW! Monitor & Drive Riser for ST

- ORGANIZES complete system
- Hides unsightly cables
- Heavy metal construction
- Custom fit for 520/1040 computers

$19.95

ST HARDWARE

Atari 1040ST	CALL
Atari 314 Drive	199.00
Atari 354 Drive	CALL
Atari 520ST	CALL
Atari SC1224 Color Monitor	299.00
Atari SH204 Hard Drive	CALL
Atari SM124 Mono Monitor	CALL
Supra 20 Meg Hard Drive	CALL
Upgrade, EZ-Ram	159.00
Z-Time 1040	49.95
Z-Time 520	39.95

PRINTERS

Okimate 20 w Plug-N-Print	198.00
Panasonic KX-P1080i	179.00
Panasonic KX-P1091i	199.00
Panasonic KX-P1092i	309.00
Panasonic KX-P1592	399.00
Panasonic KX-P1595	435.00
Panasonic KX-P3151	259.00
Panasonic KX-P3131	409.00

DUST COVERS

1040 ST	9.95
520 ST	6.95
520 ST System	24.95
Gemini 10	6.95
IBM PC Keyboard	6.95
IBM PC System	23.95
Panasonic 1080 90 91	6.95
SF 314	5.95
SF 354	5.95
SM 1224	11.95
SM 124	11.95

COLOR PAPER

BLUE, YELLOW, GREEN, PINK
WHITE, SALMON & GOLD
500 Sheets (Any Color)

20# LZ Cut, 9.5x11	6.95
Rainbow Pack #1 (P-Y-B)	6.95
Rainbow Pack #2 (Gr-S-Go)	6.95

CONTINUOUS CARD STOCK

3 X 5	4.99
4 X 6	7.99
5 X 7	9.99

CONTINUOUS LABELS

Audio Cassette, White	9.99
Disk (2.75 X 2) 250 White	4.99
File Folder (3 2 X 9 1) 750	9.99
Mail (3 2 X 5 6) 1000	6.99

CABLES, INTERFACES

AB Switch Box Parallel	39.95
AB Switch Box RS-232	39.95
AB-X Crossover Box Par	49.95
IBM ST Printer Cable 10'	9.95
IBM ST Printer Cable 6'	6.95
Microstuffer	59.95
P R Connection	79.95
RS-232 F F 6'	9.95
RS-232 M F 10'	12.95
RS-232 M F 6'	9.95
RS-232 M M 6'	9.95
ST Drive Cable 6'	14.95
XE Serial 6'	9.95

MISCELLANEOUS ACCESSORIES

14" Twist-N-Tilt	14.95
5.25" Disk Notcher	7.95
Amaray Printer Stand	14.95
Mouse House	4.95
Mouse Mat	7.95
Printer Stand 2-Piece	12.95
Six Outlet Surge Strip	14.95
Atari Economy	4.95
Epyx 500XJ	14.95

DISKETTES

Bulk 3.5" SS DD	.99
Bulk 3.5" DS DD	1.29
Bulk 5.25" DS DD	.39
BASF 3.5" SS DD	13.95
BASF 3.5" DS DD	19.95
BASF 5.25" DS DD	9.95
BASF 5.25" DS HD	19.95
Maxell 3.5" SS DD	14.95
Maxell 3.5" DS DD	22.95
Maxell 5.25" SS DD	10.95
Maxell 5.25" DS DD	11.95
Maxell 5.25" DS HD	23.95
Sony 3.5" SS DD	14.95
Sony 3.5" DS DD	22.95
Sony 5.25" SS DD	8.95
Sony 5.25" DS DD	9.95
Sony 5.25" DS HD	22.95
3M 3.5" SS DD	15.95
3M 3.5" DS DD	22.95
3M 5.25" SS DD	10.95
3M 5.25" DS DD	11.95
3M 5.25" DS HD	29.95

DISK STORAGE

Disk Directory (3.5")	22.99
Disk File 40 - 3.5"	6.99
Disk File 60 - 5.25"	6.99
Library Case-3 (5.25")	.99
Library Case-5 (3.5")	.99
Pocket Pack (3.5")	14.99

RIBBONS

Epson FX MX RX-80	5.99
IBM Proprinter	9.95
Panasonic 1080 90i	9.99
Star Okidata	2.99
XMM 801 Legend BMC	7.99
SMM 804	7.99

BUSINESS

Cash Disbursements Journal	66.95
DB Master One	39.95
Regent Word II	66.95
Dac Easy Accounting	46.95
Data Manager ST	52.95
DB Man	119.95
Isgur Portfolio	132.95
Swiftax ST	52.95
Swiftonic ST	52.95
Sylvia Porter Vol. I	52.95
VIP Professional	166.95
Word Writer ST	52.95

EDUCATIONAL

Decimal Dungeon	26.95
Fraction Action	26.95
Kinderama	26.95
Math Talk	32.95
Math Wizard	26.95
Speller Bee	32.95
Animal Kingdom	26.95
Donald Duck's Playground	19.95
First Shapes	32.95
Kid Talk	32.95
Read & Rhyme	26.95

ENTERTAINMENT

Alternate Reality	32.95
Autoduel	33.95
Crystal Castles	19.95
Deep Space	32.95
Dollars & Sense	66.95
Flight Simulator II	34.95
Guild of Thieves	29.95
Joust	18.95
Karate Kid II	26.95
Mercenary	26.95
Ogre	26.95
Psion Chess	39.95
Rogue	26.95
Skyfox	31.95
Space Quest	32.95
ST Karate	23.95
Tass Times	32.95
Temple of Apshai Trilogy	26.95
Tenth Frame	26.95
Winnie The Pooh	16.95
World Games	26.95
Artic Fox	27.95
Arena	23.95
Balance of Power	32.95
Black Cauldron	26.95
Brattacus	32.95
Championship Wrestling	26.95
Defender of the Crown	32.95
Dungeonmaster	26.95
F-15 Strike Eagle	26.95
First Word	34.95
Gato	32.95
Golden Path	29.95
Harrier Strike Mission	32.95
Hex	26.95
Jet	33.95
King of Chicago	32.95
Kings Quest I, II or III	32.95
Leader Board	26.95
Major Motion	26.95
Mean 18	29.95
Phantasie	26.95
Phantasie II	26.95
Pinball Factory	26.95
RPV	26.95
S D I	32.95
Shanghai	29.95
Silent Service	26.95
Sinbad & The Throne of the Falcon	32.95
Star Raiders	19.95
Starglider	29.95
Sundog	26.95
Super Cycle	26.95
The Pawn	29.95
Time Bandits	26.95
Ultima III	39.95
Wanderer	26.95
Wintergames	26.95

UTILITIES

Degal Elite	53.95
Easy Draw	53.95
GFA Basic	52.95
ISD Pascal	66.95
Lattice C	99.95
Mark Williams C	119.95
Neochrome	26.95
New Technologies Colunng Book	15.95
Paintworks	46.95
Personal Pascal	49.95
Publishing Partner	99.95
Thunder	26.95
Aegis Animator	53.95
Art Gallery I or II	19.95
Degas	26.95
First Cadd	32.95
GFA Basic Compiler	52.95
I.S. Talk	34.95
Music Studio	39.95
Paperclip Elite	66.95
PrintMaster Plus	26.95
ST Talk	9.95
Time Link	32.95
Z-Time 520	39.95

No surcharge for MasterCard or Visa

All orders are considered verbal contracts and adhere to all laws as set by the Federal Trade Commission. All order cancellations will be charged 5%. Ordering Information: Credit Card - Have number, expiration date, shipping address and DAY phone number ready with order. Personal and company checks: Call order in - you will receive an order number. Send order number and check to the P.O. Box listed. Allow 14 Business Days for check to clear. Money Orders: Call order in - you will receive an order number. Send number with money order to P.O. Box listed. Shipping: Continental USA - All Orders add 3%, minimum $3.00. HI, AK, Canada add 5%, minimum $5.00. All other order areas add 15%, minimum $10.00. No C.O.D.'s over $100.00, add an additional $3.00 shipping charge for C.O.D. All areas not serviced by U.P.S. will be shipped first class insured mail. All shipping charges in excess of the above items will be added. All orders are shipped on a first come first served basis and are usually shipped immediately. Please allow 2-3 weeks delivery time. All goods are new and include factory warranty. All defectives must have a return authorization number. Please call (313)595-0788 to obtain an R.A.# or return will not be accepted. Prices and availability subject to change without notice. All correspondence should be sent to P.O. Box 75 - Wayne, MI 48184. *SATISFACTION REFUND - IS LESS SHIPPING & HANDLING - Call for Details.

Not responsible for typographical errors.

within an object won't flip or rotate.) You can delete an object (and undelete it) with the Edit menu, or simply drag it to the trash can icon on the desktop.

Clipboards And Windows

To help you keep objects aligned, *Easy-Draw* can display rulers and nonprinting grid lines on the screen. The ruler and grid markings can be displayed in either conventional or metric units. You can also force objects to "snap" to grid spacings which you define yourself, so the objects always lie on the closest grid point. Objects can be made transparent so that objects behind them show through, and they can also be shadowed.

Another useful feature is the clipboard icon. When you drag an object or group of objects to the clipboard, it's temporarily stored; then you can drag the contents of the clipboard to another area of the page.

Easy-Draw lets you open two drawing windows at once, and each window can be saved in a separate file. This is especially useful when loading separate objects from disk. You can work on your picture in window 1, load the objects you need into window 2, and then move objects from window 2 into the desired positions in window 1.

Normally only a small portion of the picture you're working on is visible on the screen. You can display other parts of the picture by using the scroll bars at the edges of the window. The Zoom menu allows you to either get closer for more detailed work, return to the normal screen (which shows everything in the actual size it will print), or get a whole-page view.

To zoom in on any area of the drawing, draw a box around the area of interest and the area swells up to fit the window. However, if there's any text in the enlarged area, it won't be shown in actual size, since there are only a limited number of text sizes. Instead, text is shown in the nearest available size.

Working With Text

The provision for adding text to *Easy-Draw* screens is what gives this program its page-layout capabilities. *Easy-Draw* is not really a desktop publishing package—it lacks certain features such as automatic text wraparound (when adding text to a column automatically pushes the overflow to the next column). It is, however, quite adequate for single-page layouts, or for page layouts in which the text is already finished and edited before being placed on the page (so that overflow is not a problem).

To work with text, you choose the Text option from the object dialog box and define the size of the area which will contain the text. Next, you either type in the text or load an ASCII text file created with a word processor. You can choose six different font sizes, as well as the usual type styles (boldface, lightface, italics, underline, and justified). The font sizes range from 7 points (about 1/10 of an inch high) to 36 points (1/2 inch high).

Once a text object is created, you can manipulate it just like any other object. You can resize the box or change the font size and style. If you change the size of the box, *Easy-Draw* automatically word-wraps the text to fit. If you load a text file that's too large to fit the box you've defined, all the text that does fit will be shown in the box. You can either enlarge the box or continue the text in another box; however, *Easy-Draw* won't warn you if all the text doesn't fit, so you need to check the text files you load to make sure everything is visible.

High-Resolution Output

The power of *Easy-Draw* doesn't stop with the design of the page. After all, it would be pointless to do all that work if you were unable to print it.

In *Easy-Draw*, output is handled by a separate program which allows you to set the paper size, decide whether the picture should be printed in portrait or landscape modes, and choose how many copies you want printed of each picture. You can construct a list of files to print, and the output program will automatically load and print each one. You can even print to the screen to create a slide show. If you choose the screen option, the output program either waits for a specified period of time, or it waits for a keypress before moving on to the next picture. It can also cycle back to the first picture when all screens in the slide show have been displayed.

Easy-Draw's output resolution is not limited to the resolution of the Atari ST's screen. Instead, it will produce output with the highest resolution allowed by the printer. For instance, a Star SG-10 prints out a beautiful picture in quadruple density, and the NEC P6 24-pin printer produces output that is almost indistinguishable from professional-quality printing. Printer drivers for the Hewlett-Packard Laserjet are also available.

The *Easy-Draw* manual is nothing short of superb. Packaged in a three-ring binder, it begins with a "Getting Started" section that lets you try out the program, and it provides encouragement all the way. The step-by-step instructions are clearly written and very helpful. The manual includes a summary of all the commands, a section on hints and tricks, and a complete index. All important points are well-illustrated with sample screen figures.

Extra Fonts, Add-Ons

Migraph offers good support for *Easy-Draw*, with a technical help line and a slew of products designed to work with the program. The first of these is a disk which provides two new fonts. Since *Easy-Draw* includes Atari's GDOS (Graphics Device Operating System), which must be booted before using *Easy-Draw*, in theory, any

COMPUTE!'s Atari ST DISK & MAGAZINE

SAVE $17.00*

Say "YES" now to COMPUTE!'s Atari ST Disk & Magazine.

If you're one of the tens of thousands who've recently purchased an Atari ST, *here's great news!*

Introducing COMPUTE!'s Atari ST Disk & Magazine—an exciting new publication devoted exclusively to the special needs and interests of Atari ST users like you. And this special introductory offer is a great way to get acquainted.

Every other month, COMPUTE!'s Atari ST Disk & Magazine brings you exciting new action-packed programs already on disk! Each is ready to run. Just load the disk and you're ready to go.

You can depend on getting at least five new programs in each issue—high-quality educational, home finance, utility, and game programs you and the entire family will use, enjoy, and profit from all year long.

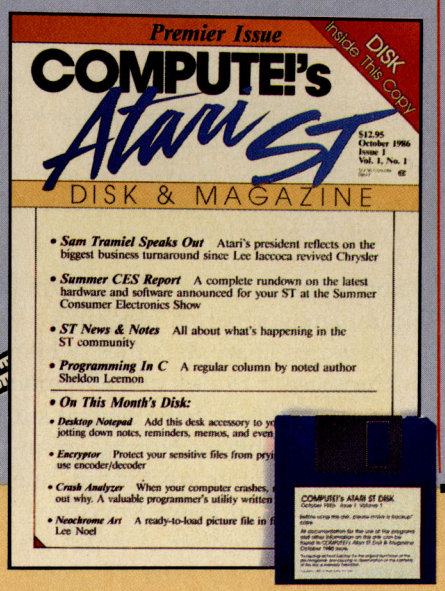
*Off the cover price

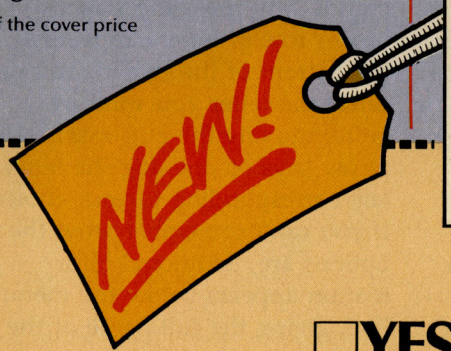
Fact is, the fantastic programs alone are worth much, much more than the low COMPUTE!'s Atari ST Disk & Magazine subscription price. But exciting new programs are just the very beginning of what you'll get as a COMPUTE!'s Atari ST Disk & Magazine subscriber.

Has a hot new piece of software suddenly hit the market? Turn to the magazine section and find out fast—and first. Our up-to-the-minute software reviews are timely and complete. And you can depend on each issue to deliver the latest inside word on everything from interfaces to languages...programming to disk drives. If it has anything to do with your Atari ST, you'll find out right here in the pages of COMPUTE!'s Atari ST Disk & Magazine...the definitive guide to your new Atari ST computer.

So subscribe today and take advantage of our special introductory offer. Sign up now and get a full year's subscription—6 big issues—for just $59.95. You save $17 off the regular subscription price.

But hurry. A deal this special can't last forever. So return the attached reply card now!





Mail coupon today or call toll-free

1-800-727-6937

COMPUTE!'s Atari ST Disk & Magazine

A **COMPUTE!** Publication

CHARTER SUBSCRIPTION OPPORTUNITY

☐ **YES!** Sign me up for a year's subscription to COMPUTE!'s Atari ST Disk & Magazine at the special introductory rate of just $59.95. Send me 6 big issues of the disk and magazine—at a savings of $17 off the newsstand price.

Mail today to:
COMPUTE!'s Atari ST
Disk & Magazine
P.O. Box 10775
Des Moines, IA 50340

☐Payment Enclosed ☐Bill My Visa/MasterCard/American Express**

Credit Card #_____ Exp. Date_____

Signature_____

Name_____

Address_____

City_____ State_____ Zip_____

**For American Express call toll free 1-800-727-6937.

Outside U.S.A., please add $10 (U.S. Funds) or $20 (Air Mail) per year for postage.

GDOS fonts should work as long as the point sizes are the same as those used by the program.

Migraph has also released two disks of artwork. These will be appreciated by those who are not artists and cannot generate the pictures they need for page layouts. The artwork is completely different (and not compatible) with artwork for such programs as *Printmaster.* One of the disks contains "personal" art, such as boats, planes, trucks, computers, figures, animals, and the letters of the alphabet. The second disk is "technical" art, including electrical, computer, hydraulic, and welding symbols, as well as a different set of letters.

By the time you read this, a utility package allowing you to load *DEGAS*-format screens and digitized pictures into *Easy-Draw* should be available. New drivers for 24-pin dot-matrix printers and laser printers also have been released.

Easy-Draw does have a few features which are clumsy to use. It can be difficult to select the object you want if it's completely contained within another object, and I had difficulty mastering the multiline and freehand sketching tools. However, these problems are minor when you consider the power of the program and the quality of the output. If you need to lay out pages or do two-dimensional drafting, I'd recommend *Easy-Draw.*

Easy-Draw 2.0
Migraph
720 S. 333rd St.
Suite 201
Federal Way, WA 98003
$79.95

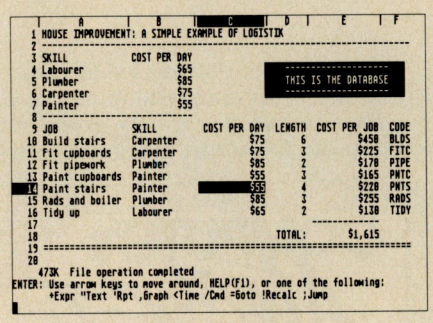
Logistik

David Plotkin

Requirements: Atari ST with at least one megabyte of memory, color or monochrome monitor.

Logistik is an integrated business package that includes a spreadsheet, time manager, database organizer, and graphics capabilities. Although it does not take advantage of the GEM user interface, it is a very powerful and easy-to-use piece of software. The package comes with introductory and reference manuals and two disks containing the programs and examples.

Integrated software has become one of those terms that can mean just about whatever the software publisher wants it to.



As seen here, the database manager functions can be called from within the Logistik *spreadsheet.*

Some publishers apply the term to completely separate programs which can share data files, while others use it to describe enormous programs which have several subprograms built in. Notable examples of the latter are Ashton-Tate's *Framework* and Lotus Development's *Jazz* (neither of which are available for the Atari ST). Integrated packages generally have a spreadsheet, a word processor, a database manager, and some kind of graphics generator. They not only share data, but also have identical (or very similar) command structures.

Logistik is essentially a spreadsheet, and its other features are implemented by entering commands within worksheet cells. This makes the package "integrated" in the same sense that *Lotus 1-2-3* is integrated; since everything is done within the context of the spreadsheet, you have only one file format to worry about, and everything is accessible. In general, though, the auxiliary applications (such as the database organizer) are far less powerful than stand-alone programs you can buy.

The Spreadsheet

Since the spreadsheet is the core of *Logistik*, let's start there. The maximum size of the spreadsheet is 1024 vertical columns by 2048 horizontal rows. The screen is a window onto the spreadsheet, which obviously cannot be seen all at once. As usual, each cell in the spreadsheet may contain numerical data, text, expressions (formulas), and program commands. A cursor indicates which cell you're working with, and the cursor can be moved from cell to cell. Using the built-in functions, you can make numerous calculations and try many different assumptions to see the results.

To enter data, you just type it into a cell. *Logistik* will interpret the entry as numerical data, text, or an expression, although you can force it to treat a number as text by preceding the number with quotation marks.

To bring up a menu of commands, you press the slash (/) key. A row of letters appears at the bottom of the screen. You can select the letter you want by either moving the cursor with the arrow keys or pressing the letter key corresponding to your choice. If you can't remember what the options are, additional information appears below the menu line, giving the full name of the command and a brief explanation of what it does. As you move the cursor over the commands, the information line changes accordingly. Further, you can press the Help key to bring up a full explanation of the particular command you have selected.

Logistik has all of the other spreadsheet functions you'd expect to find. Cells and cell ranges can be named, cells can be indicated in expressions by pointing, and both absolute and relative cell references are possible. You can do many things: insert columns and rows, replicate, move, or delete cells and ranges of cells, specify formatting options for the spreadsheet or for cell ranges, erase cells, protect cells from data entry, and print out the worksheet or graphs. You can set a series of rows or columns as permanent borders, so they are always visible at the edges of the screen. Built-in mathematical and logical functions include trig, calendar, min, max, average, sum, lookup, if, financial variables (NPV, FV, PV, PMT, and IRR), and all of the usual arithmetic and logical operators.

Multiple Windows

The Utilities menu lets you call a disk directory or copy, rename, and erase any file you choose. An indicator lets you keep track of the amount of memory available.

As with some other spreadsheet programs, you can split the screen into two separate windows to view two different parts of the sheet at the same time. These aren't the kind of windows you're used to with GEM—remember, *Logistik* isn't a GEM application. Instead, the screen is split into two parts, either horizontally or vertically. You can specify whether the two windows are to scroll together or independently.

One of the most powerful features is the ability to join spreadsheets. You can load information for a block of cells into your current spreadsheet from a named range of another spreadsheet stored on disk. The new information can either replace the current data or be added to it. If you make the link permanent, the data can be loaded each time you load your current spreadsheet. Thus, any changes made to the other spreadsheet will automatically be reflected in your current one.

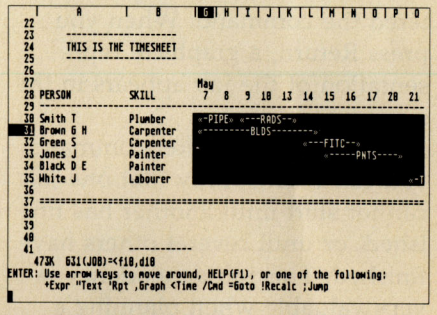
Another powerful option is the ability to load files created wih a host of programs for IBM compatibles, including *Lotus 1-2-3* and *dBase*. This is useful because the latest PC laptops and new IBM Personal System/2 computers have adopted the same 3½-inch microfloppy disks used by the ST, and the PC disks are readable in ST disk drives (though not vice versa). Thus, if you create a *1-2-3* spreadsheet at work and bring the data disk home, *Logistik* can read the spreadsheet data and let you continue working on it. This was tested with a Toshiba 1100 Plus portable, and it works very nicely.

To make this powerful package easier to use, *Logistik* allows you to automate keyboard entries by creating *autos*. (An auto is somewhat different than the more familiar *macro*—another feature of *Logistik* that we'll discuss in a moment.) An auto stores a sequence of keystrokes and assigns them to either a function key or a Ctrl- or Alt-key combination. When you activate the auto, all of the stored keystrokes are "played back." This can be a lot more efficient than typing a frequently used sequence of keys. Commands, cursor controls, and editing keys can be included in an auto. Further, there are commands to wait for input, ring the bell, print out a message, and replay an auto several times or until you press the Esc key.

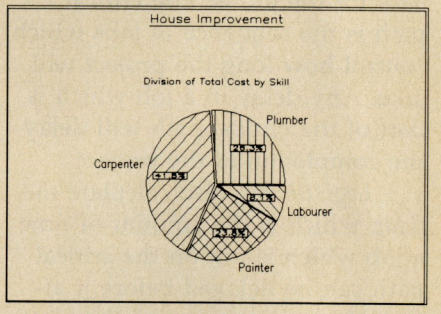
The Time Manager

Logistik's Timesheet application makes it possible to plan a project and plot a chart which shows how the project will be carried out. Since all this is done from within the spreadsheet, you don't have to learn a whole new set of commands. The time commands are entered in cells just like other spreadsheet commands, except they're preceded by a less-than (<) character. There are also slash commands intended for setting up and using the time management features.

The first step is to set up your calendar. Each increment of working time (hours, days, months, years, and so on) takes up one column. You specify which time units you want to use, what the work week consists of, on which date the project starts, and then fine-tune the calendar for such things as holidays.



Integrated time-management functions are another feature of Logistik.



Logistik *can be used to create pie charts and other types of graphs.*

For example, you could select a time increment of days, set up a five-day work week, and specify that September 7 is Labor Day, a work holiday. You can further customize the working day itself for the number of hours, or customize only certain days. Once this is done, the first time increment of the project (the first day, in this example) is placed in the specified column, the second increment goes in the next column, and so forth to the end of the project. You can label the top of each column with the date by using one of the calendar functions and replicating it across all of the columns. You may also want to list the names of your resources (Person1, Machine1, and so on) along a column on the left side of the timesheet.

Planning Jobs

Now you enter the time commands themselves. For each job within the project, you enter the name of the job, how many time increments it will take, and (optionally) the starting column and row (resource) it will fall into. If you don't specify the starting column and row, the job starts in the column and row where you entered the command. When you press Return, a graphical representation of the job appears in the spreadsheet.

By using the After command, you can even specify that one job cannot start until another has finished, or until several others have finished. This job dependency is very valuable when planning a job. Once you've defined it, *Logistik* can tell you what the *critical path* for the job is. The critical path is the sequence of jobs which control how long the project will take. Any delay in a job which is part of the critical path will delay the completion of the project.

Logistik can also calculate the *float*, which is the amount of time a job which is not on the critical path can be delayed before it affects the project's completion date.

Almost all of the time commands can refer to cell values in addition to constant numbers. This makes it very easy to change assumptions and to see how different scheduling will affect a project.

Organizing A Database

The database manager in *Logistik* stores related data in tabular form. Again, it functions within the spreadsheet part of the package. Each column in the spreadsheet becomes a field, and the first row of the database contains the field names. Each subsequent row is a record.

Once again, because it's used within the spreadsheet, the database manager doesn't require you to learn a whole new set of commands. It's easy to insert records (insert a row), add a field (insert a column), move fields and records (move blocks of cells), and edit or replicate a record (edit or copy blocks of cells). You'll find the usual database functions, such as sorting a column in ascending or descending order.

One useful feature is the *query*—though queries in *Logistik* are not as straightfoward as they are with most dedicated database programs. You must set up not only the input range (where the database is), but also a criterion range and, sometimes, an output range. The criterion range is the part of the worksheet that contains the names of the fields you want *Logistik* to look at and the contents of the fields that you want the selected records to match. You can use multiple rows in the criterion range; if the criteria are on the same line, the record must match them all. If the criteria are on separate rows, then the record must only match one of them.

The output range is where the records which match the specified criterion are put when using the extract operation. Once again, the first row must contain the names of those fields you want copied, and these names must be identical to the corresponding names in the input range.

Logistik lets you select certain records and find the minimum, maximum, sum, count, or average of the fields in all records which match the criterion. You can also load files created with Ashton-Tate's *dBase* programs.

Graphics Capabilities

Logistik can do extensive graphics, including clustered bar, stacked bar, Gantt, pie, scatter, area, spread, and line graphs. Most of these can be set up either horizontally or vertically. Commands to control the type of graph and other features are entered into spreadsheet cells preceded by a comma.

There are a number of ways you can customize your graphics, including: Setting up the axes (number of tics, grids, colors, fonts, sizes, limits, names, and labels); bar, spread, and pie patterns; markers (size, type and color); titles (size, placement, colors, and fonts); legends; and many others.

Luckily, you don't *have* to modify all of these variables, and many times the default values work just fine. For example, if you don't set the hatching values for pie charts, each segment gets a different pattern, which is probably just how you'd arrange it, anyway.

Although the graphics capabilities are powerful, they're not very easy to use. The problem is that like *Logistik*'s other auxiliary applications, the graphics are implemented from the spreadsheet. You must enter the graphics commands in spreadsheet cells, and the commands end up looking like this:

```
SPV H8 C3 F5 S3 L0
```

which is not easy to figure out. Further, the data and graph commands must be set up in exactly the right order, so you'll probably need to dig out the manual whenever a graph is necessary.

After a graph is defined, you can view it on the screen or print it out. When viewed on the screen, however, it takes over the whole screen; there is no way to overlay the graph on top of the data.

Programmable Features

In addition to the autos described above, *Logistik* supports macros, which are a series of commands entered as text into cells. To call a macro, you use the RUN command from an auto and select the cell range which holds the macro. All of the commands and keystrokes for autos are also available for macros, but there is much more.

Macros, in effect, are a programming language. With macros, you can run an auto by simulating the press of a function key or Alt/Ctrl combination, test the contents of a cell and branch to another macro or auto if certain conditions are met, call another macro as a subroutine, turn off the screen and display a message, and set up a menu of choices from which a user can select a macro to be executed.

Macros make it possible to completely hide the fact that *Logistik* is running at all—the screen can be made to look just like a custom application. You can specify your own menu choices to show up at the bottom of the screen, in place of *Logistik*'s own menus. To further this illusion, you could name the range of your macro START, and it will run as soon as *Logistik* is booted up. And since *Logistik* is a TOS (Tramiel Operating System) application, it can be placed in an AUTO folder and booted automatically when the computer is switched on.

Excellent Documentation

Logistik comes with two manuals in a single binder. The first gets you started by walking you through examples of each tool. The second is a reference manual. It carefully explains each section and command, and is one of the most well-written manuals I have ever seen. Each section begins with an introduction and then lists what will be covered. All of the commands and functions are covered, with extensive examples and screen shots. There's also a complete index, a quick reference card listing all commands, and a template for the function keys.

The manual appears to have been written for the IBM PC version of *Logistik*; there is a short addendum for the ST. Since *Logistik* is a TOS application, the two versions are so similar that the few places in the manual which don't apply to the ST are not that misleading. However, the section on Gantt charts is weak, and there are a few typos to confuse you. Also, all of the monetary examples are in English pounds instead of dollars. Overall, though, this is a very good manual.

Also included in the package is a disk of examples which are briefly explained in the manual. The only problem encountered was that one of the examples (for use with the introductory manual) is supposed to be incomplete, so that novices can follow along and fill in the data as instructed. Unfortunately, not only is the example complete, but pounds have been changed to dollars and all of the numbers are different, which would serve to confuse a beginner.

Good Technical Support

Technical help is available by phone between 9 a.m. and 5 p.m. (Mountain time). Progressive's support personnel seem to be fairly knowledgeable about the program, although they are still coming up to speed.

The warranty on this software is the common "we don't promise anything except that it will boot" type of guarantee. Further, the purchaser is supposed to agree to several restrictive license terms before technical support will be provided. For instance, the license forbids you from making your own backup, even though federal law expressly allows the owner of a program to make a backup for archival purposes. Progressive will sell you a backup disk for $30—but oddly enough, the program is not copy-protected.

In conclusion, *Logistik* is a powerful program which is highly recommended to anyone who needs its spreadsheet, macros, database, or time management capabilities. The graphics are a nice plus, although much simpler programs for generating graphics are available. Despite the lack of GEM features, the user interface with its menus, prompts, and context-sensitive help messages is so well done that it won't be long before you're doing productive work with this package. It *is* a complex program, and you must spend some time getting to know it, but it's an investment of your time that will be well spent.

Logistik
Progressive Peripherals
464 Kalamath St.
Denver, CO 80204
$149.95

ST

MONETARY MATTERS
Amortization program for the ST

* Calculates payments, amortization tables for mortgages and loans
* Monthly, biweekly, weekly, etc.
* Any standard printer

SEND JUST $14.95 to address below.

GRADE BOOK ST
Marks recording system for the ST computers

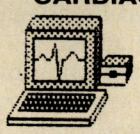
* Create and maintain student files
* Allows weighting and categories
* Prints mark summaries, attendance sheets and statistical analysis
* Up to 40 students, 50 marks each
* As many classes as desired
* Any standard printer

SEND JUST $29.95 to:
Micro Electronic Arts
18 Redwood Road,
Brantford, Ontario,
Canada. N3R 3M1

Further information, dealer or school licensing information available on request. Ontario residents add 7% pst.

COMPUTE!'s Atari ST Disk & Magazine Toll Free Subscription Order Line
1-800-727-6937

CARDIAC ARREST!



resuscitation simulator for XL/XE or ST
$69
includes medical manual

The patient just died. Are you good enough to "bring him back?" In "Cardiac Arrest!" you interpret EKG's, history, vital signs, and lab data while you order drugs and procedures for your patient. There's nothing else to compare to this simulator at any price. For ACLS training or just to "play doctor."

Our other medical software teaches ACLS concepts, from basic knowledge (CardioQuiz) to fancy lab analysis (Blood Gases) to rhythm strip interpretation (EKG Teaching) to cardiac treatment algorithms (Protocol Learning). Updates, $6.

Cardiac Arrest!	$69
Protocol Learning	$29
EKG Teaching	$29
CardioQuiz	$19
Above SERIES	$109
Demo	$7
Blood Gases	$24

Mad Scientist Software
2063 N. 820 W., Pleasant Grove, UT 84062
VISA/MC: 801-785-3028

COMPUTE!'s Atari ST Disk & Magazine Author's Guide

Most of the following suggestions serve to improve the speed and accuracy of publication. We are much more concerned with the content of an article than with its style, but articles should be clear and well-explained. The guidelines below will permit your good ideas and programs to be more easily edited and published:

1. The upper left corner of the first page of your article should contain your name, address, daytime telephone number, and the date of submission.

2. The following information should appear in the upper right corner of the first page: the language in which your program was written and the maker of that language, if applicable (for example, if your program was written in C, which compiler was used); the size, in kilobytes, of both your source code and executable object code; color or monochrome; screen resolution (low, medium, high); 512K or 1040K; double- or single-sided disks; and one drive or two.

3. The underlined title of the article should start about ⅔ of the way down the first page.

4. Following pages should be typed normally, except that in the upper right corner there should be an abbreviation of the title, your last name, and the page number—for example: Memory Map/Smith/2.

5. All lines within the text of the article must be double- or triple-spaced. A one-inch margin should be left at the right, left, top, and bottom of each page. No words should be divided at the ends of lines. And please do not right-justify. Leave the lines ragged.

6. Please use standard typing paper (no erasable, onionskin, or other thin paper), and type on one side of the paper only (upper- and lowercase).

7. Sheets should be attached with a paper clip. Please do not use staples.

8. If you are submitting more than one article, send each one in a separate mailer with its own disk.

9. Short programs (under 20 lines) can be included within the text. Longer programs should be separate listings. *It is essential that we have a copy of the program, recorded twice, on disk (single- or double-sided).* Include both the source code and the executable object code. The object code must be a self-standing runtime package that can be used by readers who do not own a copy of the language in which the program was written. In addition, we must be able to legally distribute the runtime code without incurring licensing fees or other obligations to the maker of the language. Check with the maker if you aren't sure. If your article was written with a word processor, we also appreciate a copy of the text file on the disk. The disk should be labeled with your name, the title of the article, and whether the disk is single- or double-sided. Disks should be enclosed within plastic or cardboard mailers (available at photography, stationery, or computer supply stores).

10. A good general rule is to spell out the numbers zero through ten in your article and write higher numbers as numerals (1024). The exceptions to this are: Figure 5, Table 3, TAB(4), and so on. Within ordinary text, however, the zero through ten should appear as words, not numbers. Also, symbols and abbreviations should not be used within text: Use "and" (not &), "reference" (not ref.), "through" (not thru).

11. For greater clarity, use all capitals when referring to keys (RETURN, TAB, ESC, SHIFT), language commands (LIST, RND, GOTO, CASE OF), and languages which are acronyms (such as, BASIC, PILOT, and FORTRAN, but not Forth, Pascal, or Logo). Headlines and subheads should, however, be initial caps only. Do not capitalize words for emphasis; instead, underline words you wish to emphasize, indicating italics.

12. Articles can be of any length—from a single-line routine to a multi-issue series. The average article is four to eight double-spaced, typed pages.

13. If you want to include photographs, they should be either 5×7 black-and-white glossies or color slides.

14. We do not consider articles which are submitted simultaneously to other publishers. If you wish to send an article to another magazine for consideration, please do not submit it to us.

15. COMPUTE! pays between $100 and $800 for published articles. In general, the rate reflects the length and quality of the article. Payment is made upon acceptance. In addition to the initial payment, royalties are paid based on the sales of the issue in which the article appears. The royalties are divided among the contributors to each issue on a pro rata basis. Following submission (Submissions Reviewer, COMPUTE!'s Atari ST Disk & Magazine, P.O. Box 5406, Greensboro, NC 27403), allow four to eight weeks for a reply. If your work is accepted, you will be notified by a letter which will include a contract for you to sign and return. *Rejected manuscripts are returned only to authors who enclose a self-addressed, stamped envelope.*

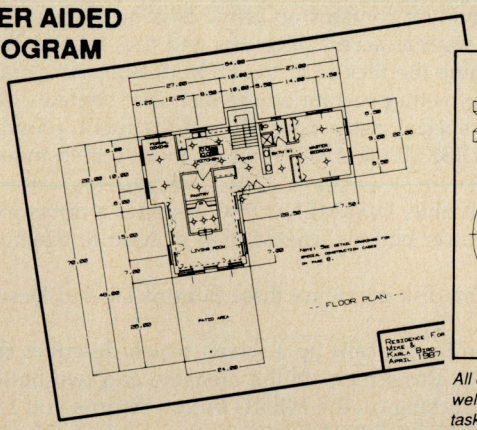
16. If your article is accepted and you have since made improvements to the program, please submit an entirely new disk and a new copy of the article reflecting the update. Send the revised version as if it were a new submission entirely, but be sure to indicate that your submission is a revised version by writing "Revision" on the envelope and the article.

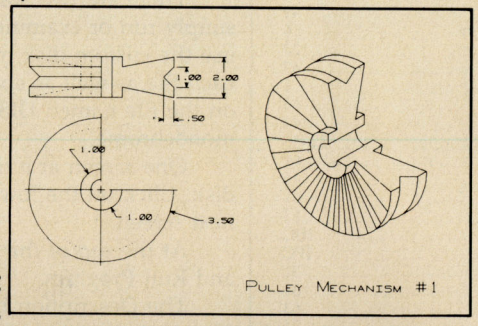
17. COMPUTE!'s Atari ST Disk & Magazine does not accept unsolicited product reviews. If you are interested in serving on our panel of reviewers, contact the Features Editor for details.

ATHENA II

A professional, full color, Two-Dimensional Computer Aided Design program, incorporating an ease of use seldom seen in CAD programs.

A COMPUTER AIDED DESIGN PROGRAM





All of Athena II's commands are well documented, in a large well organized manual. A wealth of commands make any task a breeze.

FEATURES:

Auto Dimensioning, B-Splines; 256 Layers, (16 Colors) **Circles;** (Radius, Diameter, & Three Point), Arcs, Ellipse, Elliptical Arcs, & Fillets. **Lines;** Horizontal, Vertical; Parallel, Perpendicular, Tangental, Line at an Angle, Line between Lines, Rectangles, Line Tangent to Two Circles, Etc. **Transformation;** Move, Copy, Rotate, Scale, Mirror, Trim (Adjusts any line or circle so that it will exactly intersect with any given line or circle. No magnifying an area to see if your lines exactly meet!) **Parts;** Create "Parts" from an existing drawing, and save them. Load "Parts" from libraries, and place them, anywhere, on any drawing. **Isometrics;** Semi-automatically transform existing drawings into an Isometric View. **Plus;** Grids, Fills, Erase, Text, Points, Files, Information and full Zooming capabilities

$99.95
Suggested Retail

Atari 520ST, 1040ST, SF-354, and SF-314 are registered trademarks of Atari Inc. GDOS is a registered trademark of ***iliad Software, Inc.***

iliad
SOFTWARE, INC.

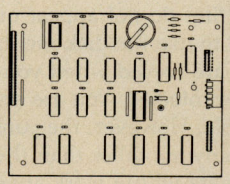
495 West 920 North
Orem, Utah 84057
Tel: 801-226-3270

THE *HARD DISK SOLUTION*

WITH THE BMS–100K HARD DISK INTERFACE KIT, YOU CAN NOW CONNECT READILY AVAILABLE PC COMPATIBLE HARD DRIVES TO YOUR ATARI ST COMPUTER.

THE BMS–100K KIT INCLUDES

- BMS–100 INTERFACE CARD W/REAL TIME CLOCK.
- ADAPTEC HARD DISK CONTROLLER.
- CABLES REQUIRED TO CONNECT 1 HARD DRIVE.
- MOUNTING HARDWARE.
- SUPPORT SOFTWARE.
- FULL DOCUMENTATION.



BMS-100K

ONLY $250

BMS

BERKELEY MICROSYSTEMS

360 OAKLAND AVENUE SUITE 5 (415) 465–6956 • OAKLAND, CALIFORNIA 94611

ST Software that *really* is 'TOP DOG!'

NEWS STATION ST $34.95
This entry level desktop publishing software will have you creating fancy newsletters in a snap! Text and graphics will flow together like never before. Features clipboard, multiple fonts, text importer and more, all from one power packed desktop publishing program!

DISK MASTER $29.95
The first COMPLETE disk analysis program for the ATARI ST is here! Create, edit, modify or repair existing disk formats. Other disk utilities lock you out...Disk Master lets you in!

ENTERTAINMENT

WORLD CLASS HOCKEY $29.95
With World Class Hockey there's no need to wait for Hockey season. WCH brings the stadium to your home! RHL league play, MIDI sound, arcade action, one/two players, slap shots, checking, passing, saves and more. Ice hockey doesn't get much better than this!

ADVENTURE CON-STRUK-TOR $39.95
Build your own adventures on your ST computer. From Knights and Dragons to Cowboys and Indians Adventure Con-struk-tor will do it, and best of all your adventures run by themseleves and can be given to friends. Music, graphics, treasures, and maps can all be created with this fantastic program.

Contact your local dealer or order direct. Send either check, money order, or call for COD. Free shipping on pre-paid orders!

REEVE Software
29W150 Old Farm Lane
Warrenville, IL 60555
(312) 393-2317

Advertisers Index

Reader Service Number/Advertiser	Page
102 Abacus	29
103 Activision, Inc.	BC
104 Astra Systems, Inc.	17
105 Beckemeyer Development Tools	48
106 Berkeley Microsystems	63
107 The Buzzword Game Co., Inc.	23
108 ComputAbility	43
109 Computer Games	53
110 Computer Mail Order	49
111 Consumer Electronic Store	6
Dubl Dubl Funware	23
112 Electronic One	47
113 EPYX	1
114 iliad Software, Inc.	63
115 Interstel Corporation	48
116 Lyco Computer	32–33
117 Mad Scientist Software	61
118 MegaMax	16
119 Micro Electronic Arts	61
120 Micro-Time Electronics	13
Mindscape, Inc.	IBC
121 Origin Systems Inc.	IFC
122 Practical Solutions	31
123 Proco Products	31
124 REEVE Software	63
S&S Wholesalers, Inc.	25
125 Software Discounters of America	37
126 ST Plus	39
127 ST Station	55
128 Superior Micro Systems	64

Ad Index	64
COMPUTE! Books' New Atari ST Titles	3
COMPUTE!'s Atari ST Disk & Magazine Subscription	57

Can Your Computer Make YOU $1,000,000?

WITH LOTTERY PC YOUR NEXT TICKET COULD BE WORTH MILLIONS!

LOTTERY uses the raw power and storage of your computer to determine and refine the number selection methods that will win the various lottery games you play. Don't be limited to the one or two methods that other programs use, they might not work in your state. There is no better system available!

Join the growing list of winners using our system.

SPECIFY:

Lottery 64 (C64/128) • Lottery +4 (Plus/4)
Lottery ST (Atari) • Lottery PC
IBM PC/XT/AT and compatibles

Commodore 64/128 & Plus/4 are registered trademarks of Commodore Int'l.
IBM PC/XT/AT are registered trademarks of International Business Machines Inc.
Atari ST is a registered trademark of Atari Corp.

To order, send $29.95 for each plus $3.00 postage & handling per order to:
(Illinois residents add 6% sales tax)
(Orders outside North America add $3.00)

MasterCard VISA

C.O.D. orders call:
(312) 566-4647

Superior Micro Systems, Inc.
P.O. Box 713 • Wheeling IL 60090

How To Use The Disk

Every issue of COMPUTE!'s Atari ST Disk & Magazine includes a 3½-inch microfloppy disk as part of the package. If you experience a problem with the disk, please contact us at (919) 275-9809 from 8:30 a.m. to 4:30 p.m. (Eastern time), Monday through Friday.

To use the disk, simply insert it in a drive and click on the appropriate file-drawer icon to display the directory window. If you wish, you may boot up your ST with this disk by inserting it in drive A and then switching on the computer, but normally it contains no active desk accessories.

There are two ways to access programs and files on the disk: One, you can simply run or examine the files from the GEM desktop as usual; two, you can use the custom disk menu program on the disk that contains descriptions of each file as well as special instructions. To run the menu program, double-click on the file named DISKMENU.PRG. It works in all screen modes, color or monochrome.

One screen at a time, DISKMENU.PRG displays a directory of files on the disk. Click on the lower buttons labeled Prev or Next to display the previous or next screen.

At the top of the disk menu are three buttons labeled Description, QUIT, and Run Program.

The Description button calls up a screen which describes the program or file. At the bottom of this screen are the filename and two buttons labeled MENU and RUN. Clicking on the MENU button returns you to the disk menu. Clicking on the RUN button loads and runs the program. However, if this particular file is not a runnable program (for example, a source code or data file), the RUN button is dimmed and disabled.

You can also run a program directly from the disk menu by clicking on the Run Program button at the upper right. However, if this particular file is not a runnable program, you'll be alerted to this fact.

Note that many files on the disk require special instructions or explanations; please refer to the corresponding article before attempting to run a program or access a file.

Clicking on the QUIT button on the disk menu returns you to the GEM desktop.

There are four files on the disk which are required for the disk menu program: DISKMENU.PRG, DISKMENU.RSC, MONOMENU.RSC, and CONTENTS.OCT. These files do not appear on the disk menu itself. Do not delete them if you intend to use the disk menu. If you plan to use the disk menu, be sure these files are copied when you back up the disk.

Our disk is not copy-protected. You are encouraged to make a backup of the disk as soon as possible. However, the contents of the disk are copyrighted and may not be used by anyone other than the owner of the magazine. Since the writers and programmers whose work appears on this disk are paid, in part, with royalties according to the volume of sales, we ask that you respect the copyright.

Special Notes

As the "STates & Capitals" article describes, the program works only in medium-resolution color and high-resolution monochrome. If you attempt to run the program in low-resolution color, normally a screen message alerts you to the mistake. However, this message does not appear if you try to run the program from the disk menu; the program crashes. Apparently the menu program is at fault.

When the machine language version of "Whirling Lines" is run in low-resolution from the disk menu, all 16 colors do not appear on the screen. The program works fine when executed from the desktop.

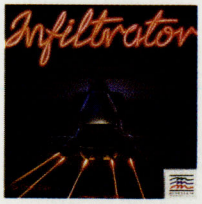
"3-D Edit" also exhibits a slight problem when run from the disk menu: After exiting the program, an alert box says *Can't run 3D.PRG*. The message can be safely ignored, and it doesn't appear if the program is run from the desktop.

Extra space on this issue's disk allowed us to include the Modula-2 source code for the "Directory Dump" program that appeared in the April 1987 issue. There wasn't room on the April disk for the source code, so we promised to include it on the next disk with available space. Note that the Directory Dump program itself is not included here; just the source code.

We also had room on this disk for several sample pictures created with *3-D Edit*. These images were created by the program's author and are not mentioned in the article. But the article does explain, in general terms, how to view and manipulate the pictures. They are compatible with all screen modes.

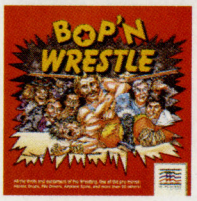
Mindscape Aims To Please With New Hits For the Atari XE™/XL™ and ST™.

INFILTRATOR



Fasten your shoulder harness and seat-belt. *Infiltrator* by Chris Gray puts you at the controls of a powerful gunship ready for action. You are Johnny "Jimbo Baby" McGibbits with miles of enemy airspace to clear. You'll then convert to covert ground action, behind enemy lines, to destroy the mad leader and his hostile troops. Available on the **Atari XE/XL** only.

BOP 'N WRESTLE

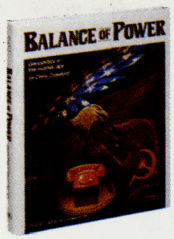


Pow! Sock! Slammo! *Bop 'N Wrestle* is as close as you can get to professional wrestling without drawing blood. Put yourself into the ring with 10 of the biggest, baddest bruisers ever to perfect the turn-buckle fly. Available on the **Atari XE/XL** only.

TRAILBLAZER

Push yourself to the limit in this hyperspatial spherical grand prix. Leave your opponent in a cloud of dust as you leap over black holes, purple walls, blue bouncers, and the terrible cyan nasty zone. Not for the faint at heart. But surely an action arcade adventure in which you can have a ball. Available on the **Atari XE/XL and the Atari ST.**

BALANCE OF POWER



by Chris Crawford. You are the President of the United States. Tension always escalates in this global geopolitical simulation of the cold war's cruel reality. Test your savvy with what the *New York Times* called one of the most sophisticated strategic simulations in America. Available on the **Atari ST** only.

HIGH ROLLER

Strap yourself into a Harrier jet and enter the dangerous world of vertical takeoffs, barrel roll attacks, and heat-seeking sidewinders. Learn to fly the most sophisticated combat aircraft in this flight simulation software. Your mission is to destroy the enemy headquarters 500 miles away. Good luck! Available on the **Atari ST** only.

Mindscape
Software that challenges the mind.

MINDSCAPE

Infiltrator is available on Apple II family, IBM & compatibles, C64 & C128 and Atari XE/XL. *Bop 'N Wrestle* is available on Apple II family, IBM & compatibles, C64 & C128 and Atari XE/XL (128K recommended). *Trailblazer* is available on C64 & C128, Atari XE/XL and Atari ST. *Balance of Power* is available on IBM & compatibles, Atari ST, Macintosh, and Amiga. *High Roller* is available on C64 & C128 and Atari ST.

Visit your retailer or call 1-800-221-9884 (in Illinois 1-800-942-7315) for Visa or MasterCard orders. To purchase by mail, send Visa or MasterCard number with expiration date, check or money order to Mindscape, Inc., P.O. Box 1167, Northbrook, IL 60065. Add $3.00 for shipping and handling. Allow 3-5 weeks for delivery.

If you're an attorney read this: Apple, IBM, PC Jr., Commodore, Atari and Amiga are registered trademarks of Apple Computer, Inc., International Business Machines, Commodore Electronics Ltd., Atari, Inc. and Commodore Amiga, Inc. respectively. Mindscape is a trademark of Mindscape, Inc.

You Told Us What The Best Computer Baseball Game Would Have

"Great graphics"

"Relief pitchers —and subs"

"I like to slide —even head first."

"Let me see what's happening on the whole field."

"I want to play in the series!"

"I want to be able to throw a lot of different pitches."

"Put me right at the plate when I'm batting."

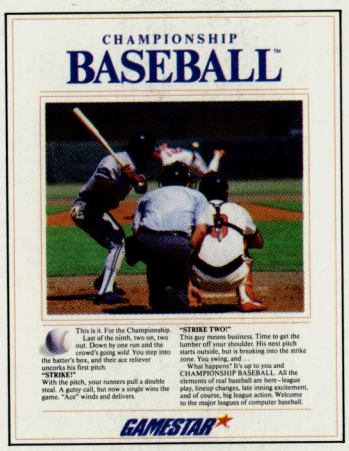
Here It Is.

CHAMPIONSHIP BASEBALL™

With 4 Divisions, 24 Teams, Playoffs and a Championship Series

You've been asking for the best in computer baseball games, and you want it *all*—graphics *and* features. We've heard you, and **Gamestar's** *Championship Baseball* delivers. No other product gives you the complete sport of baseball like *Championship Baseball:*

- Player Draft, complete with reserves.
- Setting your starting lineup.
- Batting Practice, Exhibition Game and League Play options.
- Each division is tougher than the last, so there's always a new challenge.

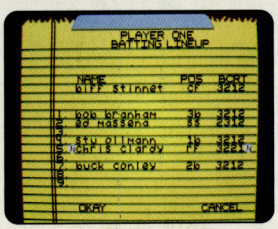


- You control all the action on the field—pitching (8 different pitches), hitting, catching, outfield relays, base running, even sliding under tags.
- Player substitutions can be made throughout the game.
- Division, playoff and championship series play.

All this and much more in the most complete baseball program available. When you're ready to step into the major leagues of computer baseball, Championship Baseball's your ticket. Nobody else gives you more.

For IBM PC, Tandy 1000, Apple IIe, IIc, Commodore 64/128, Amiga, Atari ST and 100% compatible computers.
To order, visit your local retailer or call 1-800-227-6900

Select your players from the talent pool, based on their characteristics and skill ratings. Name them after today's stars, or anyone you want.



Determine the batting order that will have the best chance against your opponent.

Batting window disappears when the ball's in play, so you can see continuous action.

GAMESTAR

Amiga screens shown; other systems may vary. Commodore 64, 128 and Amiga are trademarks of Commodore Electronics Limited.
IBM is a trademark of International Business Machines Corporation. Tandy is a trademark of Tandy Corporation. Atari and ST are trademarks of Atari Corporation. Apple is a trademark of Apple Computer.