START

#1 Guide To Atari ST

Volume 5, Number 4 December 1990 USA $14.95 • Canada $19.95

ON DISK

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- Monochrome Putmaker
- Mega/STE Twister
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DISK INSIDE

ANTIC THE 8-BIT RESOURCE! PAGE 92

The STE

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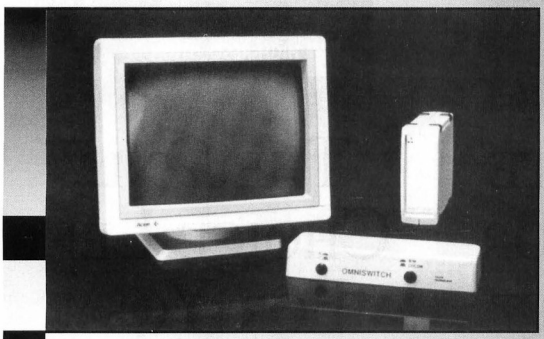

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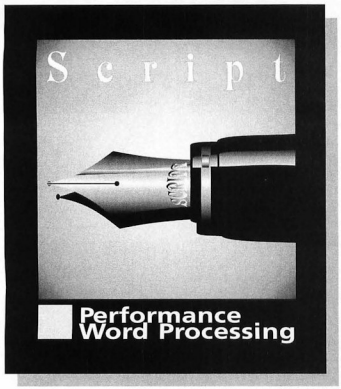

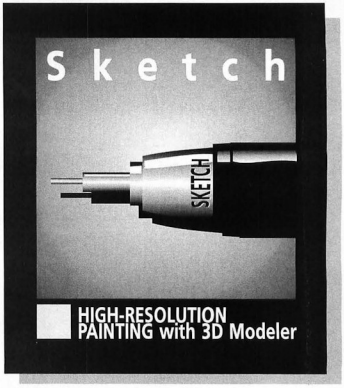

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#1 Guide To Atari ST

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DECEMBER 1990 VOLUME 5, NUMBER 4

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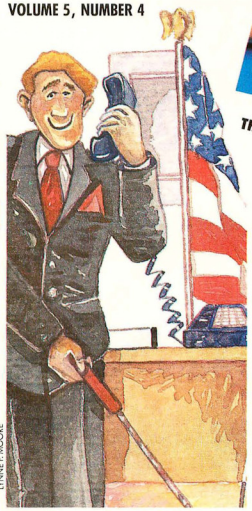
JOIN THE REVOLUTION™
...USE AN ATARI COMPUTER!

THE ULTIMATE ATARIAN, Page 50



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The Calamus Desktop

STUDIO

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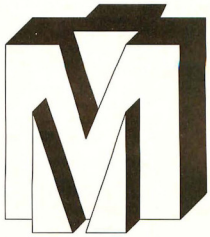
Minimum System Requirements:

All Atari ST's with at least 1 MByte of RAM, a double sided disk drive and an SM124 monochrome or 19" high resolution monitor.



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#1 Guide To Atari ST
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START Magazine is produced on an Atari Mega 4 running ISD Marketing's Calamus. Our service bureau for Linotronic output is Omnicomp of San Francisco. Special thanks to Transcoast Systems, San Francisco for technical support.

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December 1990, Volume 5, Number 4. START Magazine (ISSN #0889-6216), is published monthly by Antic Publishing, Inc., 544 Second St., San Francisco, CA 94107. Third-Class postage paid at Columbia, MO. Subscriptions (for 12 issues with disk): $79.95 in U.S.; California $85.35; Canada $97.95; Foreign surface $104.95; Foreign airmail $158.35. Foreign subscribers (not including Canada) must send full payment. Payment in *U.S. funds only.* POSTMASTER: Please send address changes to START Magazine, P.O. Box 535, Mt. Morris, IL 61054.

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History In The Making

When Steve Mortimer left the START fold for bigger and better things, we were left with the nearly impossible task of finding another solid newshound dedicated to Atari. Fortunately, such a creature exists. When I was in Glendale, Calif., for the latest Atari Computer Faire, I met with John Nagy and Ron Kovacs of Z*Net, the respected online weekly. The point of our meeting was clear: START needed a strong news section and Z*Net built its reputation by being a well-researched news source.

So this issue marks the debut of Z*NetNewswire, which replaces START's News, Notes and Quotes section. Many of you are already familiar with this service through your user-group newsletter, and many more of you have read Z*Net online in places like GEnie, CompuServe and Delphi. I hope you join me and the rest of the staff in welcoming Z*Net, Ron Kovacs and John Nagy to the pages of START.

START Plug #1: The Readers' Page

Have you got a hint or tip you'd like to share with other ST users? Well, here's your chance. User Interface, a new section in START, is an excellent way to get your great ideas to the largest number of people. Submissions can be anything from neat hardware hacks to quick tips on how to use a word processor more effectively to advice on dealing with pushy computer salespeople. Send your ideas to:

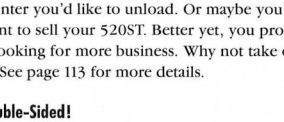
User Interface
START Magazine
544 Second St.
San Francisco, CA 94107

START Plug #2: The Classifieds

It bears repeating again and again and again: Each month START reaches some 50,000 Atari computer owners. With that kind of market penetration, what better place to sell your new and used hardware and software? Maybe you have an old printer you'd like to unload. Or maybe you've decided to buy an STE and want to sell your 520ST. Better yet, you produce great resumes and you're looking for more business. Why not take out an ad in the START Classifieds? See page 113 for more details.

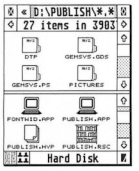
START Disk Goes Double-Sided!

That's going to be a headline in the January 1991 issue. As promised, the START disk will be straight double-sided. If you only have a single-sided drive, please find someone who can help you access the START programs. You can also check out Jim Burton's comparison of five double-sided disk drives in this issue for information on upgrading your drive.



TOM BYRON
START Editor

Ultimate Desktop



NeoDesk 3 allows you to look at two different parts of the same directory, thanks to its amazing *Split Window* feature.

Of course, each window in NeoDesk 3 now can be configured to display text or icons, independently of each other. Each window can even have its own sorting and text options.

NeoDesk is also smart, using all of the available memory for file copying. This means that as many files and folders that will fit into memory are read in at once, no more useless disk swaps. Hard drive owners will rejoice in its efficiency and speed.

Add some of the other NeoDesk features such as a brand new icon editor, keyboard equivalents, and hot keys (execute your favorite programs with a single key), then you have more than enough reasons to buy NeoDesk. But for those of you who need a little more, read on.

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NeoDesk 3 also has special support for 5 1/4″ floppy drives. It even formats all disks with the correct information so they will work on MS–DOS computers. NeoDesk 3 supports up to 10 different screen resolutions including low resolution.

Of course, these features would not be useful unless they are easy to use. Rest assured, NeoDesk 3 has been designed to be "upwardly compatible". Use NeoDesk just like you used the original desktop. No need to forget all that you've already learned. NeoDesk 3 also comes with a very complete and clear manual. If you happen to have any problems, our helpful support staff is only a phone call away.

It doesn't stop there. Its unique modular approach lets you add special accessories that add a whole new world of possibilities. Our *NeoDesk Developers Kit* has created a flow of neat new add–ons to NeoDesk. One included is the *Recoverable Trashcan* which lets you recover (at any time) any files deleted with it.

Then there's the companion *NeoDesk CLI*, a complete window based command line interpreter. It offers a complete series of standardized commands along with a very powerful batch file language. Create pop–up menus, automate file operations, and more.

No matter who you are, NeoDesk 3 has something to you. From helpful file search capabilities to a powerful directory reor–ganize function, you can do it all with NeoDesk. Thanks to NeoDesk's ability to reduce itself automatically, there is no need to worry about memory consumption. Of course, there's lots more, which you can discover by ordering your own copy today!

NeoDesk 3 and the NeoDesk CLI are available from your local dealer, or order toll free by calling (800) 284–GRIB and get FREE 2nd Day shipping (US only). Call or write for upgrade and other information.

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Little monster not included in package.

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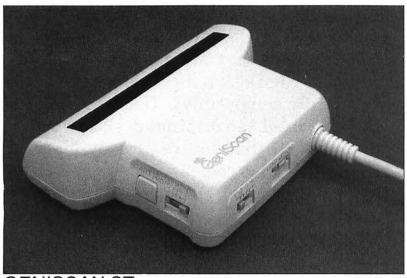

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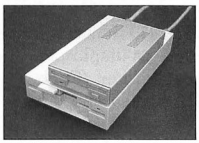

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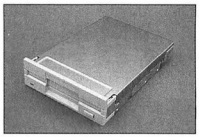

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Overseas Electricity

I am moving to Germany soon, and I am concerned about being able to use my ST there. The electricity of most European countries is 220 volts/50 Hz. I could be wrong, but I think it would be best to replace the power supplies to accept their type of current rather than hook the computer up to a converter that changes the voltage. I have no idea whether the components would even work with converted power. I'm very sure that the internal clocks and motors would slow down and not allow the hard and floppy disks I already have to be read properly. Please enlighten me as to whether it would be best to have the power supplies changed before I leave or wait until I get there. Or should I dump what I have and purchase a new ST in Germany? Is it even possible to change power supplies?

Name withheld by request

Atari technical support replies that a North American-model ST, disk drives and printer will work in European countries if you use the proper transformer to convert the voltage. There is no need to change power supplies. Voltage transformers are available at many electronics stores; ask the clerk to help you choose one that will work in Germany. If you plan to be overseas for a long time (five years or more), Atari recommends that you sell your ST system and purchase a European ST, simply for the convenience of not having to deal with the transformer. — START Ed.

Printer Control

I am writing to you for some information on setting the "Install Printer" function that comes with the Control Panel. It seems that whenever a program prints some graphics on my printer, I have to run the Control Panel and set the Pixels/Line to 960, or the last 1/3 of the graphic is lost on the page.

I really don't understand what the Pixels/Line setting is for. My printer manual only refers to setting the dots-per-inch from the application program. The choices are 60,72,80,90,120,240 dots per inch. What is the relationship of these to the 960/1280 setting in the Control Panel? Also, since I always set it to 960, what is the 1280 for?

One more thing, since I never use the Control Panel for anything else, has anyone figured a way to set the 960 Pixels/Line without having to load the 15K Control Panel? A short utility to accomplish this would be great for us memory-starved 520ST owners.

Charles Sabbiondo
College Point, NY

You don't have to set the Control Panel each time you use your printer. If you choose Save Desktop from the Options menu after changing any of the settings on the Control Panel, your settings, including Pixels/Line, are saved to disk (in a file called DESKTOP.INF) and are automatically loaded by the Control Panel accessory the next time you boot your ST with that disk. If you don't want to use up 15K of your memory, then you can replace CONTROL.ACC with the public-domain program GETDEFS.ACC, which will install your DESKTOP.INF settings, but requires only 1K of memory. (Be sure to save CONTROL.ACC in case you want to change the settings. It can be disabled by re-naming it CONTROL.AC.)

The Pixels/Line refers to the density of dots printed on one, 8-inch line by your printer. Epson-compatible printers default to 960 dots per 8 inches, or 120 dots per inch; this is what your printer manual is referring to. The Atari Dot Matrix Graphics Printer uses the 1280 setting. — START Ed.

BBS Search

I would like to buy a BBS with a program to modify it so that it looks the way I want. I have tried three BBS software packages, with no success in understanding them. The authors seem to assume that the user is already experienced with BBSs and telecommunications. Can you recommend a BBS program with an understandable manual?

Lynn Ellsworth
Albany, NY

We agree that setting up a BBS can be a complicated task. While we can't recommend any particular BBS, we can suggest that you find a BBS expert who can help you. Where can you find a BBS expert? At an ST users group, of course! It is possible that the group itself runs a BBS, and their sysop may be glad to help you set up your system. To receive a list of users groups located in your area, send a SASE to: Atari Corporation, Users Group List, P.O. Box 61657, Sunnyvale, CA 94088. — START Ed. ■

ALERT BOX

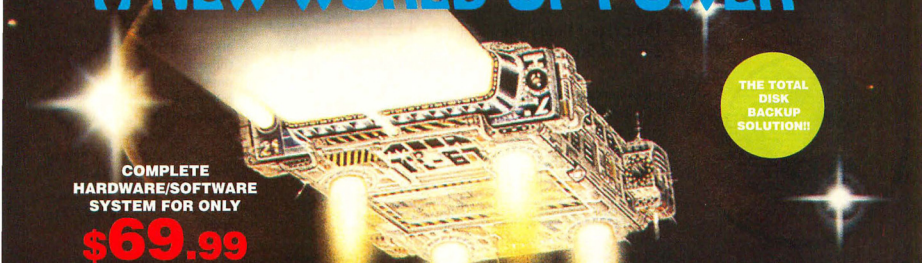
Pro MIDI Player

We printed the wrong address for Pro MIDI Systems in our review of Pro MIDI Player version 4.0, which appeared in the October 1990 START. The correct U.S. address is:

Box 13
Laurier, WA 99146

In Canada, write:
Box 562
Christina Lake, B.C.
Canada V0H 1E0

A NEW WORLD OF POWER



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- Menu Drive Control Program couldn't be simpler!! Select Number of Tracks, and that's it! Don't be mislead by outrageous claims for "Nibbler" programs. This system can guarantee success by using the very Hardware/Software techniques that made the original!!

Why will Syncro Express succeed where others fail?

- Some programs now have very sophisticated protection including long tracks, Incryption, etc. But remember, whatever the programmer comes up with, the disk then has to be commercially duplicated. That's where Syncro Express beats all others - it transfers data at MFM/TTL level, just like the duplicators.

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- Syncro Express is designed in Europe where "Digital Image Copying" is the present sensation. This device, with it's custom chip, goes even further by offering a complete system for under $70!!
- Manufactured in our European facility using the latest Surface Mount Techniques - Syncro Express is warranted for 6 months against manufacturing defects.

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Syncro Express comes fitted with it's own on-board Custom LSI Chip giving it the power to transfer an MFM image of the original disk directly to your blank disk - quickly, simply & without user knowledge. So it doesn't matter what kind of data is there or whether the disk is "protected" - Syncro Express will make an identical "Clone" of your original without fuss. One external drive is required.

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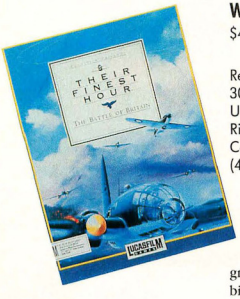
Their Finest Hour: The Battle of Britain $59.95

Lucasfilm Games
P.O. Box 2009
San Rafael, CA 94912
(415) 662-1966

Fly both German and British missions in the historic World War II confrontation, in a simulation combining historical and technical accuracy with seat-of-the-pants flying action.



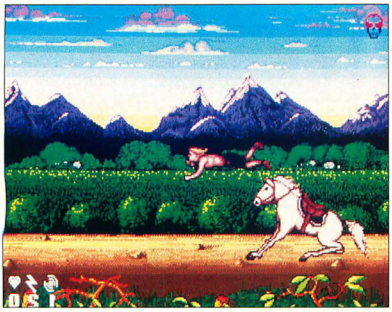
Their Finest Hour

Wrath of the Demon $49.95

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

Wrath of the Demon combines state-of-the-art, multilevel, parallax scrolling with spectacular graphics, animation andplayability in a danger-filled quest to rid the kingdom of an evil demon and his minions, rescue the princess, and restore honor to your king.

Wrath of the Demon



PowerMonger $49.95
Flood $39.95
Imperium $39.95

Distributed by
Electronic Arts
820 Gateway Drive
San Mateo, CA 94404
(800) 245-4525

PowerMonger casts you as the leader of a displaced tribe newly arrived in an uncharted land. There are 200 territories to conquer before the world is yours and each territory begins with a different layout to yield millions of possible games.

In Flood, you play Quiffy, the lone survivor of a noble race of Blobbies. The game begins when Quiffy discovers that the caverns he calls home are suddenly filling up with water. It's only a matter of time before the flood destroys everything. And there's only one way to escape — up.

Imperium places you in the hot seat as the Emperor of Earth and the Solar System. Your job is to engineer the growth of your empire while maintaining the delicate balance between many economic and political factors. There are a hundred nearby worlds to conquer, but there are other empires with conquest in mind, so watch out.

Elvira, Mistress of the Dark (call for price)
Heat Wave: Offshore Superboat Racing $44.95

Accolade
550 S. Winchester Blvd.
Suite 200
San Jose, CA 95128
(408) 985-1700

Let Elvira, the world's most famous spokesperson for ghouls and goblins, guide you through a demon-filled medieval castle in this new role-playing game, Elvira, Mistress of the Dark. Available early next year.

Offshore racing is a new breed of thrill that initially gained notoriety in the hit television series "Miami Vice" and has been taken up by such well-known faces as Don Johnson and George Bush. Now Accolade lets you strap on the life vests for the first time in Heat Wave: Offshore Superboat Racing.

Just Another War In Space $49.95

Azeroth Publishing
3020 Issaquah-Pine Lake Road, Suite 341
Issaquah, WA 98027
(800) 594-4798

Just Another War In Space is an extremely detailed simulation of interstellar, ship-to-ship combat. Engagements are resolved in realtime and spacecraft maneuver accurately in accordance with Newtonian spaceflight mechanics. Scenarios include stand-alone tactical engagements and a campaign-length conflict.

The Fool's Errand $49.95

Miles Computing Inc.
5515 Douglas Fir Road, Suite 1
Calabasas, CA 91302
(800) 245-4525

The evil High Priestess has cursed the land and hidden its 14 treasures. Clues to unravel the mystery lie intertwined within a labyrinth of puzzles.

Alien Druglords (call for price)

Panther Games
P.O. Box 5662
Derwood, MD 20855
(301) 977-3379

Hold on to your laser blasters for a death-defying raid on the planet Chyropia, current headquarters of the evil, alien Intergalactic Benevolent Corporation. Having muscled in on this weird, out-of-the-way planet, IBC has exploited a strange mineral to produce the most addictive drug ever seen in the galaxy. Your mission is to find the antidote, and destroy the drug operation and the organization's stash of drugs before they obliterate your raiding party.

MidiMagnet $15.00
MIDIX32 $15.00

Phil Comeau Software
43 Rueter St.
Nepean, Ontario
Canada K2J 3Z9

MidiMagnet captures MIDI output from other programs and creates standard MIDI files. It adds format 0 and 1 standard MIDI file output capability to most sequencer programs. Using MidiMagnet, you can upgrade to a newer sequencer program that supports standard MIDI files without forfeiting your existing MIDI song collection.

MIDIX32 plays standard MIDI files via the ST's built-in sound generator. MIDIX32 can output C or GFA BASIC source code so musical effects can be incorporated into your programs. It also can be used to play music in standard MIDI files without a synthesizer.

Home Entertainment Management System
$34.95

Software Development Systems
996 Redondo Ave., Suite 404
Long Beach, CA 90804
(213) 434-5751

Get organized with the Home Entertainment Management System. Besides your computer, chances are you also enjoy other electronic "toys" such as CD players, home stereo systems and VCRs. Now you can organize and catalog your videotape and CD collections — even baseball cards — as easily as copying a file on the ST's Desktop.

C-manship Complete
$19.95

Taylor Ridge Books
P.O. Box 48
Manchester, CT 06040
(203) 643-9673

C-manship Complete is the book form of the popular GEM programming tutorial originally published in *ST Log* magazine. Written by Clayton Walnum, a former editor of *ST Log*, C-manship Complete guides readers through both the basics of C programming and the complexities of the GEM operating system.

HyperLINK (call for price)

JMG Software Inc.
801 Mohawk Road W.
Hamilton, Ontario
Canada L9C 6C2
(416) 575-3200

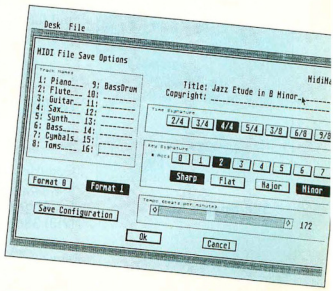
This Hypertext-like product combines graphics, sound and data manipulation. HyperLINK goes farther than frame or card-based metaphors by allowing more direct interaction between different HyperLINK applications; most of these applications can be generated quickly and easily via HyperLINK's Builder function.

Heat Wave

Diamond Back II $44.95

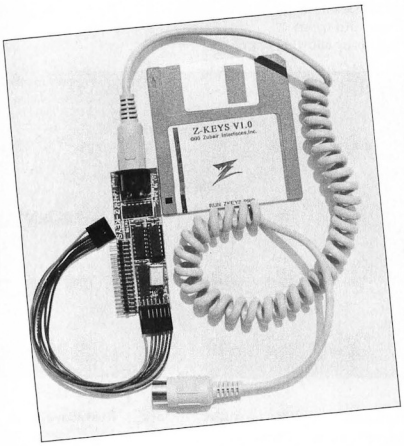
Data Innovations Inc.
127 N. Front St.
Rising Sun, IN 47040
(812) 438-3733

Diamond Back II provides a true file backup at image-backup speeds with more speed, power and flexibility than the original version. Its features include the ability to backup and restore any number of drive partitions, directory paths, single directo-



MidiMagnet

ries, specific files, or Spectre partitions.



Z-Keys

Stik-Gripper T.C.S $19.99

Duggan DeZign Inc.
300 Quaker Lane, Suite 7
Warwick, RI 02886
(401) 823-8073

This novel accessory keeps your joystick clamped rigidly front and center where you need it most. Designed to eliminate hand fatigue, the Stik-Gripper T.C.S. brings fast and furious arcade action into your home.

Stik-Gripper T.C.S.

LookIt! & PopIt! $39.95 for both

CodeHead Software
P.O. Box 74090
Los Angeles, CA 90004
(213) 386-5735

The CodeHeads are at it again. LookIt! is a fast, easy-to-use, ASCII file viewer and binary file editor. It features a custom user interface that overcomes many of the shortcomings in GEM. Accompanying it is PopIt!, a desk accessory that lets you assign "hot keys" to your desk accessories and call up any one with a simple keypress.

Z-Keys $99.95

Zubair Interfaces Inc.
5243 B Paramount Blvd.
Lakewood, CA 90712
(213) 408-6715

If you're unhappy with the present ST keyboard, Zubair Interfaces has the answer. Z-Keys is a hardware/software interface that connects the keyboard of any IBM-PC or AT to your ST.

KeySkins $25.95

Computer Supply House
1112 Second St.
Kenai, AK 99611
(907) 283-5837

Protect your computer from dust, hair and liquids with KeySkins, a soft, clear, durable custom cover for your ST that won't slow down your typing.

STOS Canada Club $25 for one-year membership

P.O. Box 2083, Station B
Kitchener, Ontario
Canada N2H 6K8

If you're a fan of STOS, the popular game-programming language from Mandarin, and have been wondering what happened to support, then wonder no more. The STOS Canada Club provides technical support for all STOS users. You'll receive a monthly newsletter full of programming hints and tips, product news and special deals. A disk packed with great games and other surprises is also available.

DATa free, see below

Digidesign Inc.
1360 Willow Road #101
Menlo Park, CA 94025
(415) 688-0600

Digidesign announces the release of DATa, an application that backs up their Atari Sound Tools files to digital audio tape (DAT). DATa saves the audio recording as well as all file data parameters, such as edit points and Playlist markers, onto regular DAT cassettes. Available free with purchase of DAT I/O, an option for their Sound Tools system.

Write 90° $15.00
MegaFont ST $15.00
Typesetter Elite $15.00

XLENT Software
P.O. Box 847
Springfield, VA 22150
(703) 569-8881

Write 90° lets you print spreadsheet and text files sideways on continuous or single sheet paper. Files can be printed in five sizes or previewed on screen.

Add pizzazz to your word processing with MegaFont ST. Your files can be printed using any combination of fonts, and graphics from DEGAS, NEOchrome and other popular drawing programs can be

added to your printouts. Use the fonts provided or create your own with the included font editors.

Typesetter Elite is your tool for designing pages of mixed text and graphics with complete flexibility in a WYSIWYG environment. It's the right tool for creating charts, graphs, simple newsletters, flyers and more.

EPS Clip-Art Professional Logo Series Vol. 1 $29.95

Computer Safari
606 W. Cross St.
Woodland, CA 95695
(916) 666-1813

Computer Safari announces EPS Clip-Art, a collection of graphics in encapsulated postscript format, for use with desktop publishing programs that support postscript printers. The EPS disk contains over 30 files ideal for designing logos, flyers, newsletters, brochures and letterhead.

FontPaks $42.95 each

Cherry Fonts
2250 Tyner St., Unit 4
Port Coquitlam, B.C.
Canada V3C 2Z1
(604) 944-2923

Five new FontPaks, containing four to six high-quality fonts for use with ISD's Calamus desktop-publishing software, have been released by Cherry Fonts. Each of the fully scalable outlines can be used within Calamus to produce type sized from extremely fine print to colossal characters larger than a page in height.

A.P.E. Newsletter $6 for one-year subscription

Clinton Smith, Editor
2104 North Kostner
Chicago, IL 60639
(312) 227-2352

New for Lynx enthusiasts: A.P.E. (Atari Portable Entertainment) is a quarterly newsletter devoted to news, information and game tips for owners of the Lynx portable game system.

AdSpeed ST Hardware Accelerator $299.95

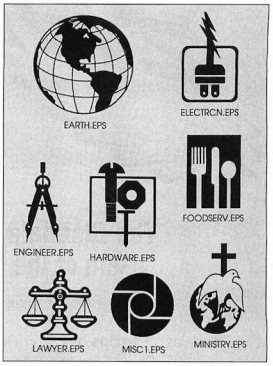
ICD Inc.
1220 Rock St.
Rockford, IL 61101
(800) 373-7700

AdSpeed is a 16MHz accelerator for all ST/Megas. Some of the features include a software-selectable true 8MHz mode for 100-percent compatibility that lets you switch speed on the fly without rebooting, and full read- and write-through caching for maximum speed. AdSpeed's multilayer, surface-mount design makes it the smallest accelerator available anywhere.

MegaTalk Board $299

Gadgets By Small
40 W. Littleton
Blvd. #210-211
Littleton, CO
80120
(303) 791-6098

Gadgets' MegaTalk is a multifunction expansion board for the Mega that lets the Mega "talk" to things it could never talk to before. MegaTalk plugs into the Mega's expansion slot and has two Apple Macintosh serial ports and two mini DIN-8 connectors, one for each port. These connectors are Mac ready; you can plug straight into a LocalTalk network or LaserWriter. In addition, MegaTalk supports all Mac MIDI software and Mac SCSI peripherals — just plug and play.



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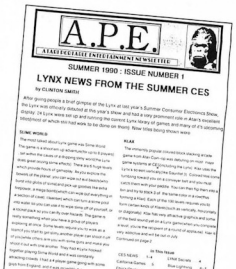
A.P.E.
ATARI PORTABLE ENTERTAINMENT NEWSLETTER
SUMMER 1990 : ISSUE NUMBER 1
LYNX NEWS FROM THE SUMMER CES
by CLINTON SMITH

A.P.E. Newsletter

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Manufacturers' addresses and phone numbers are published for the convenience of our readers. We encourage anyone interested in these products to first check their local Atari dealer for availability before contacting a company directly.

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Products Update
START Magazine
544 Second St.
San Francisco, CA 94107

The Glendale Show: Gem of the West

By John Nagy

Billed as "Perhaps the Largest Atari Show Ever in the USA," the Southern California Atari Computer Faire, version 4.0b, also known as the Glendale Show, delivered at least part of the promise. While less than 3,000 visitors filled the huge Glendale Civic Auditorium on Sept. 15 and 16, those who came saw more ST developers and dealers than had ever been assembled for previous domestic Atari shows. Over 40 exhibitors and groups filled 55 floor tables plus the entire stage in this fourth in the series of user-group Atari shows held in Glendale. As before, the host for the show was John King Tarpinian and the HACKS Atari Computer Club, although many other clubs were also represented.

Official paid attendance was 2,459, with as many as an additional 300 courtesy admittance and workers. Although a smaller turnout than was anticipated, the show was a roaring success when measured by sales, satisfaction and participation. Most vendors reported significantly higher sales at Glendale than at any recent Atari show of any size.

A major reason for the high spirits that prevailed throughout the show was the dynamic involvement of Atari Corp. Among the Atari employees tending their large and varied booth that took the entire stage of the auditorium were Bob Brodie, Don Thomas, Art Morgan, Ken Badertscher, Dan MacNamee and John Townsend. Top Atari executives Leonard Tramiel and Elie Kenan, the new Manager of Atari USA, spent all day Saturday at the show, talking to visitors, looking at displays, participating in seminars and interviewing developers. Atari also invested over $20,000 in advertising in both the major L.A. newspapers as well as on a popular radio station.

Show Highlights

Atari Corp. filled the stage with all the current hardware, and a special mini-studio setup featuring the Hotz MIDI Translator was manned by Jimmy Hotz throughout the show. A "Lynx Playground" ringed the stage with dozens of Lynx machines running new release game titles and several that are not yet available to the public.

Branch Always Software debuted Quick ST 2.2, the latest version of the popular software accelerator.

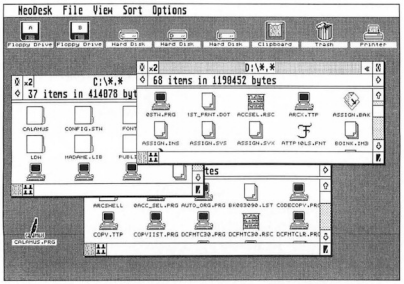
CodeHead Software introduced CodeKeys, a macro-creator for all ST/Megas. John Eidsvoog of CodeHead was on hand to conduct a seminar on the integrated Hotwire system.

D.A. Brumleve premiered her latest title, Telegram, a new educational program for children.

Gadgets by Small showed MegaTalk which makes the Mega compatible with such Macintosh network systems as AppleTalk and all Mac MIDI programs. It retails for $299. Dave and Sandy Small of Gadgets also gave show-goers a look at version 3.0 of the Spectre GCR software. Their 68030 board for the ST, though still in development, was not shown.

Goldleaf, makers of Wordflair, the first "true" document processor for the ST, released version 1.1 at the Glendale show. This new version is smaller, faster and includes utilities that make it easier to use.

Perhaps the hottest product to premiere at Glendale



Gribnif's NeoDesk 3.0, the popular alternative to the ST's Desktop debuted at this year's Glendale show.

NEWSWIRENEWSWIRENEWSWIRENEWSWIRE

Atari Corp.'s Leonard Tramiel revealed that the TT (shown here running DynaCADD) will have a clock speed of 32MHz.

was Gribnif Software's NeoDesk 3. This alternative to the ST/Mega Desktop presents advanced features such as the ability to keep folders directly on the Desktop itself and the ability to set up elaborate macros to automatically handle your more routine computer chores.

Glendale saw the first public showing of ICD's AdSpeed, a new 16 MHz hardware accelerator for the ST/Mega. The $299 board is the fastest and most compatible accelerator yet and includes the ability to switch from 16 MHz to 8 MHz without rebooting.

MichTron offered their wares to the public and to other dealers. Rumor has it that MichTron will be bought by Talon Technologies.

Sliccware showed their alternative Desktop system. In its release form, SliccTop will be a multitasking environment.

ST Informer, the popular monthly newspaper/magazine for the Atari community, was on hand to show Universal Item Selector III, which they developed. They also showed the Universal Network System that will allow any of a variety of network systems to be interconnected. Although not finished, it looked promising.

ST Journal, the newest ST magazine featuring comprehensive reviews and a no-playing-around attitude, offered prerelease copies of their third issue.

TalonTechnologies showed off the latest version of SuperCharger,their IBM emulator for the ST. Among the enhancements, SuperCharger now lets you switch from PC to ST mode with a simple press of a key combination.

A newcomer to the Atari market, Xoterix, offered applications and hardware for the Portfolio, including a 20MB hard drive.

Zubair Interfaces, maker of affordable and versatile memory upgrades, demonstrated their Z-Keys, an IBM keyboard adapter; AT Once, the 80286 IBM board for the Atari; and a hand scanner, to be available soon.

New GEM, GDOS, 32 MHz For Atari TT030

By John Nagy

At the Atari Faire held in Glendale in September, Leonard Tramiel,one of Atari's owners and head of their technical division, officially announced that the production TT030 computer would indeed have a 32 MHz 68030 CPU. The new design is expected to perform about 1.7 times faster overall than the "prototype" 16 MHz TTs that have been sold to some developers.

Tramiel also announced that GEM has been totally rewritten for the TT. The resulting Desktop is much more versatile and pleasing to look at and work with. Developers who have the old TTs are being offered both the CPU and Desktop upgrades. The new GEM is remarkably like Gribnif's NeoDesk 2 in appearance and operation; Gribnif's Rick Flashman confirmed that they had no hand in the design of the TT Desktop.

The new TT GEM Desktop includes custom-editable icons for any program, programs on the Desktop, "live" icons that let you drag a data file to an application to simultaneously load the application and the data, configurable keystroke equivalents and macros, color and appearance options, printer icons and just about everything you've seen in NeoDesk and other advanced Desktops. As it takes up more ROM than the old GEM, it will not be adapted by Atari for their ST line. However, the new Control Panel is to become standard on the STE. The beefed-up Panel features clever images including a turning head that wears earphones to graphically show stereo balance.

Further, Tramiel and other Atari officials indicated that the Mega STE idea is still alive at Atari, and that if it is committed for production, the Mega STE will carry the new Desktop.

(At the Glendale show, industry observers noted that Atari could have saved time and money by having Gribnif design a TT version of NeoDesk. But as Tom Harker of ICD explained while pondering the fact that his own hard drive host adaptor would be unnecessary on the new TT — which will feature a true SCSI port — "It's the third-party developer's place to patch holes we find in existing hardware, not to dictate where we want the holes to be in future hardware.")

Tramiel also made mention of the new GDOS and►

that it will be released "soon." This version will feature scalable, rotatable outline fonts and should be compatible with existing GDOS-based programs such as Word Up and Wordflair.

Atari plans to release the TT in the United States after Comdex in early November. Pricing has not been announced, but Atari has leaked that "$3,000 will get you substantially more than a base model." Already selling in Germany and Switzerland, the TT ranges in currency exchange prices from about $3,500 for a 4MB RAM, 40MB hard drive unit up to nearly $4,000 for the 8MB unit.

What Is Z*Net?

Z*Net is the monthly Atari newsletter supplement for user-group newsletters, and Z*Net, Z*Net Online and ZMagazine are cooperative not-for-profit efforts of Ron Kovacs and John Nagy as Rovac Industries Inc. Z*Net is part of five continuous years of commitment in providing news and assistance to the Atari community.

ZMagazine is a bi-weekly online publication of Atari 8-bit news and reviews and Z*Net Online covers all of the Atari product lines each week. These publications are available on the pay telecommunication services such as CompuServe and GEnie and over 600 registered bulletin board systems around the world.

Z*Net (the monthly) currently serves nearly 4,000 subscribers by providing a news supplement to be included in the monthly newsletters of more than 35 clubs. We can be part of your user-group newsletter too, and provide you with eight to 10 pages of quality news and reviews each month.

This month marks the beginning of a new relationship of Z*Net and START. We hope to bring you the news of the Atari community in these pages each month from now on.

For more information, contact Z*Net at P.O. Box 59, Middlesex, NJ 08846, or call (201) 968-2024. You can also call our 24-hour Z*Net BBS at (201) 968-8148, or send mail via CompuServe 71777,2140, or GEnie address Z-NET.

From The Z*Net Newswire

★ The hard drive operation problem in the Atari STE computers has been eradicated completely in the new production machines now leaving Sunnyvale. A formal announcement of this is not expected, as Atari never actually admitted that there was a systematic problem. STE owners are still encouraged to have their machines tested with a hard drive (after a backup), as Atari will fix or replace existing machines with no questions asked.

★ Atari UK has reportedly decided to stop shipping machines with TOS versions below 1.4; even new 520STFM machines are to be fitted with TOS 1.4. The latest information from Atari U.S. is that all domestic STs and Megas are still shipping with TOS 1.2 with the exception of units sold as publishing systems with the Moniterm monitor.

★ Word from Germany is that Unix for the TT030 is being delayed in order to release Unix version 4 rather than the present version 3. Version 4 is expected to ship with Open Look, a graphic user interface that is gaining many fans, but some potential TT buyers hope the delay waiting for version 4 does not grow to too long. Atari expects to release the first TT in the United States at Comdex this November, fully outfitted for a $3,000 target price. However, the tabletop version is not scheduled to support expansion to a full Unix machine. The full-blown and expandable "TTX model"in a tower configuration has not been publicly discussed in some time.

★ Former *ST World* magazine owner Richard Tsukiji has admitted that investigation of the "Bob Brodie Fax" incident determined that the fax was sent from the *ST World* offices, but from persons unknown. The fax in question purported to be from Atari Manager of User Group Services Bob Brodie, and urged a boycott of all World of Atari shows. The *ST World* offices were closed and Tsukiji was allegedly out of the state on July 2 when the fax was sent. Tsukiji reportedly suspects that disgruntled former *ST World* employees sent the damaging fax. In July, Tsukiji transferred ownership of the magazine to several employees for the sum of $1, bypassing other employees and editors who had expected to take over the publication. David Small of Spectre Macintosh emulation fame, took part in the investigation and announced that he will no longer write for *ST World* as a result of his findings.

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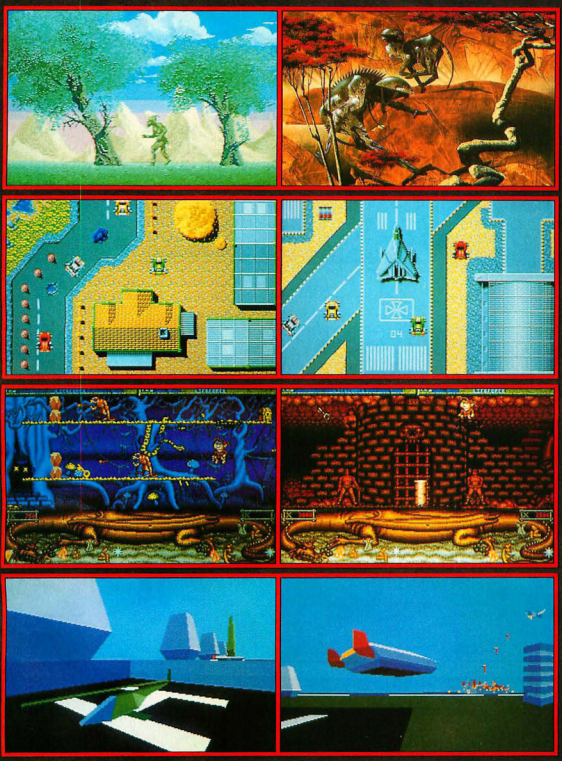

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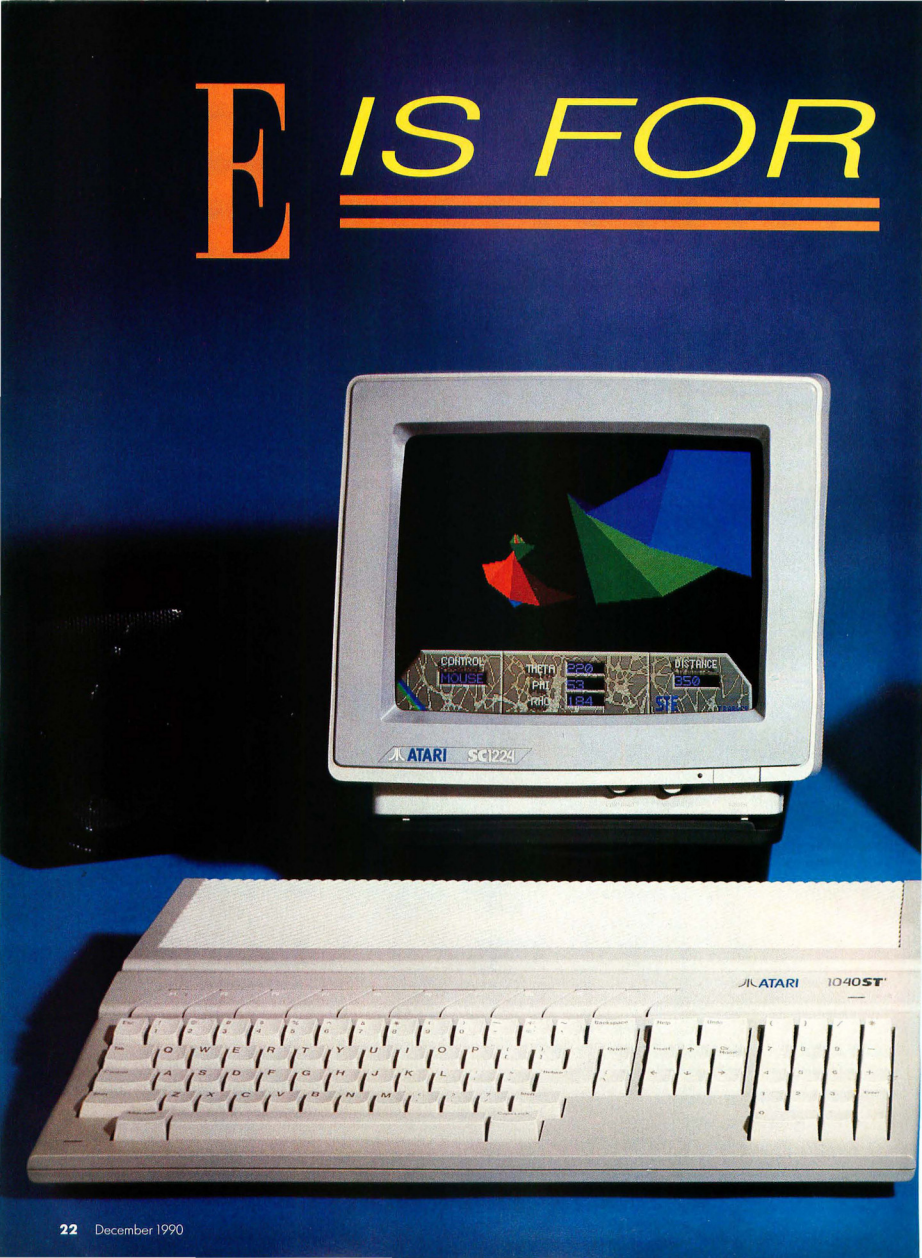
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ENHANCED

The Atari 1040STE, with its 4,096 colors, stereo sound and a host of other improvements, is a welcome addition to the ST line.

The last time Atari Corp. beefed up their ST line of computers was in the fall of 1987. That's when the Mega, with its blitter chip and increased memory, arrived on dealers' shelves. It was considered an important step ahead in Atari's line of computers based on Motorola's 68000 microchip and seemed to hint at more such enhancements in the future. (The Stacy is simply a portable version of the 1040ST.)

Three years later, Atari has released the STE (the E stands for enhanced), a machine similar to the ST in many ways, but with a few significant differences. Whether those differences will be important to you depends on how you use it.

A Quick Look

At first glance, the STE looks exactly like a standard 1040ST. The casing and keyboard are identical to earlier models. A closer look, however, reveals a few external signs of a machine that is internally quite different from its predecessors.

The left side sports two 15-pin ports, into which var-▸

BY DAVID PLOTKIN, HARDWARE EDITOR
ADDITIONAL MATERIAL BY START STAFF • PHOTOGRAPHY BY TODD DELLA BELLA

ious items, including paddles, can be plugged (more on this later). Like the 1040ST, the standard MIDI ports are also on this side, next to the cartridge port (where they'll be blocked by oversized cartridges such as Spectre GCR).

Moving to the back, you'll find most of the familiar ST ports. From left to right there's the modem port, which accepts any RS232 connection; a parallel printer port; a hard-drive port; an external floppy-drive connector; a television connector port (more on this); a monitor port (color or monochrome); two RCA jacks for connecting external speakers; a plug for the internal power supply cord; and a reset button.

On the right side of the STE, you'll find an internal double-sided drive. Underneath the keyboard are two plugs for your mouse and joystick (or two joysticks).

What's New

The two RCA-type jacks (left and right) let you attach external speakers for high-quality sound. These connectors lead to the STE's new sound chip (in addition to the standard Yamaha/GI chip) that supports two-channel stereo output. You can also route the ports' output to speakers or headphones via an amplifier.

By using 9-pin adapters (which do not come with the STE) each of the 15-pin joystick-type ports can accept two standard joysticks. Light guns and paddles can also be attached to the STE through these ports.

The RF modulator jack that lets you use your TV as a monitor is a throwback to the ST's earliest days when these types of connectors were standard. The STE's RF modulator is a very good one; the color image in both medium and low resolution is excellent.

In addition to better quality sound, the STE has enhanced color capabilities. Earlier STs and Megas have a palette of 512 colors, or eight levels each of red, green and blue. The STE now supports 4,096 colors — 16 levels of each color. Though the increase in the palette makes a considerable difference in such applications as paint programs and games, you still only get 16 colors (low resolution) on the screen at a time.

The STE also boasts hardware scrolling, the details of which I'll address shortly. Suffice it to say that scrolling, especially horizontal fine scrolling, is a hassle when you have to do it entirely with software; programmers go crazy "bit-twiddling" to scroll things smoothly horizontally. The STE's built-in hardware scrolling makes things considerably easier for developers.

While not exactly new, the STE contains a blitter chip, which speeds up graphics. The blitter chip is also standard on the Mega and is available as a hardware upgrade on other ST models.

Finally, the STE is able to delay while a hard drive winds up to speed. This is good news to those who have their entire system plugged into one power strip, because it means that the hard drive doesn't have to be powered on separately.

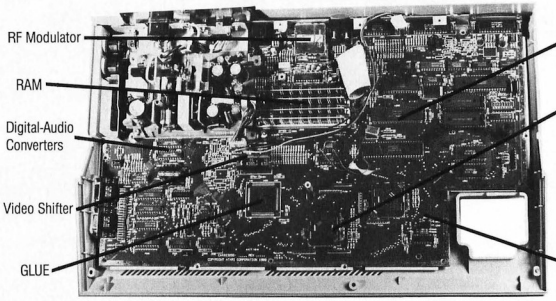
A Question Of Compatability

Atari claims that STE software is compatible with earlier STs and to a certain extent this is true. (See the sidebar on software compatibility.) The actual compatability issue can be divided into two parts — hardware and software. Let's look at hardware first.

Internally, the STE is considerably different from earlier models of the ST. In fact, Atari totally redesigned the motherboard.

For starters, the 68000 microprocessor is now square, not rectangular as in earlier models. This

THE 1040 STE'S MOTHERBOARD



AT A GLANCE

Product:	1040STE
Type:	Computer (hardware)
Company:	Atari Corp. 1196 Borregas Ave. Sunnyvale, CA 94086 (408) 745-2000
Price:	$699
Requirements:	Atari SC1224 color or SM124 monochrome monitor (TV set may be used instead)
Summary:	It may not be an "Amiga killer," but the STE's increased colors, stereo sound and relatively low price make it a good buy.

means that any device that was specifically developed to fit on top of the old 68000 will have to be modified for use on the STE. Some of these devices include PC emulators such as PC Speed and JRI's math coprocessor board.

Video fans will find that the STE includes the necessary circuitry to accept an external genlock so that marrying video to computer images will be much easier to do. It also means a smaller, more affordable genlock (JRI's current model goes for $650). A genlock for the STE is being developed by JRI.

Further hardware modifications to the STE provide some significant advantages. For one thing, the STE is by far the easiest ST to upgrade as far as memory goes. It uses what are called SIMMs (single in-line memory modules), which can be purchased in either 256K or 1MB units and simply plugged in. No more having to buy a kit or send your ST away to have someone else do the upgrade. Yes, you still have to detach the radio-frequency shield, but that's probably the only hassle you'll run into.

Do be careful when plugging in extra RAM. Only certain memory configurations are supported: 512K, 1MB, 2MB and 4MB. All SIMMs must be the same size (i.e, don't mix 256K and 1MB SIMMs) or you get strange results. Usually, the STE thinks it has either more or less memory than it actually does, which may cause the system to crash. Also, keep in mind that any time you open up your ST, you may be violating your warranty.

The software compatibility issue is a bit rockier. Each version of TOS starting with 1.0 (original 520 and 1040), 1.2 (Mega), and 1.4 (Stacy/Mega) has introduced some glitches in existing software and sent developers scrambling madly to patch their programs. However, the TOS in the STE (1.6) is considerably different from earlier versions, for reasons which we shall address shortly. TOS 1.6 is big —256K, as opposed to the earlier 192K ROMs. As a result, most programs which did not follow Atari's programming guidelines and "broke the rules" by making direct hardware calls to ROM routines are going to fail simply because the ROM routines are not where they once were. Extensive testing by European sources shows that less than a quarter of the available games run on the STE. Games tend to break the rules all the time, usually in the interests of speed. However, even Atari's Microsoft Write failed to run on the STE, so it isn't just the game writers who are guilty of not following the developer guidelines.

Let's Get Technical

The STE's enhancements will please most programmers and hardware developers. Let's take a technical look at the STE's features.

The two new 15-pin ports are both read and write. Each port can have two joysticks connected to it (by using 9-pin adapters), giving the STE a total potential of six joysticks, if you also use the normal joystick and mouse ports. The 15-pin ports can also accept a pair of paddles each, and the first port can accept a light gun or light pen. Because these ports can be read from as well as written to, they provide the potential for connecting external devices (such as test equipment) easily.

As intimated above, the STE's video is quite a bit different. It supports four bits of color resolution for each main color (red, green and blue), with the least significant bit added above the old most significant bit to remain compatible with the ST. The STE's screen can be *located* at any word boundary, instead of having to be on a 256-byte boundary as with the STs.

A special set of memory addresses support hardware scrolling and special effects. The first, called HSCROLL, contains the pixel offset to the pixel in the first word of screen memory that will be displayed in the upper left corner of the screen. By varying this number, a pixel-by-pixel scroll of the screen can be achieved for the first word of screen memory.

The next memory location is termed VBASELO and is the low byte of the video display base address. Thus, to achieve smooth horizontal scrolling using the STE, merely vary HSCROLL a bit at a time, until the edge of the first word in screen memory is reached, then reset HSCROLL to zero and increment VBASELO by one. Of course, you'd want to do this during the vertical blank interrupt to avoid having a screen that jumps like a skittish horse. If this sounds vaguely familiar, it's exactly the way hardware scrolling was implemented on the old 8-bit Ataris. Some good ideas don't go away.

Of course, to scroll horizontally, you need data to scroll over, and ►

Atari 1040STE Specifications

Processor: Motorola 68000 microprocessor, 32-bit internal, 16-bit external

Operations: Built-in TOS operating system with GEM desktop

Systems Clock: 8MHz

Internal RAM: 1MB (can be expanded to 4MB)

Drive: Fully integrated CPU, keyboard and disk drive (3.5-inch double-sided, double-density)

Mouse: Two-button

Sound: 8-bit digital stereo sound

Graphics: Co-processor blitter chip Hardware-based smooth scrolling

Color: 4,096-color palette

Ports: MIDI, two analog joystick, parallel, RS232C serial, floppy, DMA hard disk, ROM, mouse

Weight: 9.5 pounds

Size: 2.75 x 18.75 x 11.5 inches

that's where the third memory location, LINEWID, comes in. This tells the STE the number of extra words of data (beyond that required for an ordinary ST at the same resolution) that represent a single line of data. Old 8-bit programmers (like me) must admit this is easier than rewriting the entire display list!

Vertical scrolling is easier than horizontal — simply adjust the video base address by the length of one line and everything will move up or down. If you manage this during a horizontal blank (while the screen is partially drawn), the effect is a "split screen," where the data shown on the screen can be from two or more non-contiguous blocks of memory. This was hard to do on the old 8-bit, because not only didn't you have much time (a horizontal blank is very short), but you had to mess with the whole display list. On the STE, you only need modify three addresses, and you have 144 machine cycles to do it (the STE is quite fast in this regard).

The stereo DMA sound is set up to play 8-bit digitized samples. That is, a set of numbers from -128 to 127 (representing the displacement of the speaker from the rest position) are stored in memory. These are fetched during the horizontal blank, fed through a digital-to-analog converter at one of several preset sampling rates (from 6.25 kHz to 50 kHz), filtered to smooth the sound and sent to the volume/tone controller and thence to the RCA jacks. Unfortunately, the sampling rates provided are quite limited. There are two channels (left and right) and also a mono mode where both signals are sent to both plugs. Sound from this chip is also mixed into the standard ST audio output to the monitor. Further, the Yamaha/GI sound chip can also be mixed to the jacks.

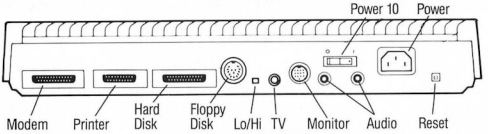
The New TOS

The TOS which is built into the STE is version 1.6, and it's considerably different from earlier versions. As mentioned earlier, it's bigger, and as we've already seen, this difference in size can wreak havoc with programs. But why is it bigger? Basically, the answer is that with TOS 1.6, Atari is trying to write an operating system that is "processor independent," that is, one that can run equally well on a 68000 or a 68030. In fact, TOS 1.6 even has a section of memory called the "cookie jar," with values in this area called "cookies." These values reflect which CPU (i.e., 68000 or 68030), which shifter chip and which sound hardware is active. They also reflect what the machine type is and other machine-dependent values. There's even an address for an ACSI transfer buffer, necessary only on the TT.

One of the problems that Atari ran into with TOS 1.6 goes back to the days when they tried desperately to cram TOS into 192K of ROM. In order to save space, they ignored Motorola's development guidelines for the 68000 series of chips and used what is known as a trap instruction reserved by Motorola to call AES functions. This call could be made with a two-byte instruction (beginning with F, hence the reference in literature to "line F" calls). On the other hand, the "proper" way to get the job done was with a JSR (jump to subroutine) which takes six bytes. Everything was fine with the 68000, but with the 68030, Motorola decided to use their reserved trap instruction for coprocessors such as a math chip. Suddenly, Atari's handy-dandy, space-saving way of calling AES broke, and Atari had to come up with a better way to do the job and that was by using the JSR, which takes up lots more room.

Another way the new TOS is different is in handling the stack. When a Motorola CPU processes a trap-exception routine, it goes about it by placing the return address to the main routine on the stack. After the exception has processed, this address can be retrieved and the main routine re-entered. Since the 68000 uses 16-bit words, and the 68030 uses 32-bit words, there's an extra word on the stack when using a 68030, and the new TOS must check the processor it's running on and compensate for this. With a few other changes this added up to more code, and thus a bigger (and better) TOS in ROM.

STE BACK PANEL PORTS



Market Positioning

The STE's place in the Atari lineup is a little murky at this writing. It appears that the STE will replace the 520 and 1040 STs, but not the Megas, which have the expansion bus the STE lacks. (*Editor's Note*: Atari is reportedly developing a Mega STE.) If you're considering buying a new ST, the STE might be a good choice if you need the extra capabilities. However, realize that there's no rush by developers to produce software that exploits these new features, and if you're an avid game player or PC emulator user, you have the compatibility issue to contend with. Atari has no trade-in deals for present ST owners looking to upgrade to the STE. ►

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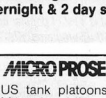

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Data Manager $49
Desktop Publisher $84
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UNISON WORLD
Fonts & Borders $23
Print Master Plus $25
P. M. + Art Gallery 1+2 ... $19

VIRGIN/MASTERTRONICS
Clue $25
Double Dragon 1 or 2..$25 Ea
Excaliber ..... Call
Monopoly ..... Call
Offroad ..... Call
Risk $25
Scrabble $25
Scrupples $25
Super Off-Road ..... Call
Wonderland ..... Call

MARK WILLIAMS
C Source Debugger $44
Mark Williams C $119

PRODUCTIVITY SOFTWARE
1st Word Plus V3.14 ..... $65
dB Man 5.0 w/ compiler . $189
Degas Elite $39
ISD Calamus $199
Page Stream $129
ST Host Adapter $97
Turbo St. V1.B $33
Universal Item Selector .. $14
Word Perfect $149

ACCESSORIES
Tony Severa Hint Disks .. Call
Hintbooks Available .... Call
Bonus 3½ DSDD.... $9.99 Bx.
Sony 3½ DSDD..... $13 Bx.
Sony DSDD Color..$13.50 Bx.
Disk Case (Holds 45) .. $6.88
Disk Case (Holds 110) .. $8.88
Disk Drive Cleaner 3½ .. $4.88
Wico Bat Handle Joystick..$17
Wico Ergostick Joystick .. $18
GTS 3½ 100X Drive $159
GTS 3½ 100 Drive $169
DVT Hard Drive Backup..$139
IMG Scan $65
Big Mouse Pad 8½ × 11 .. $7
Maxx Control Yoke $69

1B COMPUTERS — *ON SALE!*
1B Back-Up $14.88
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1B 5½ DS Drive $188.88

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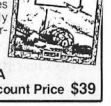

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Dungeon Master $25
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INFOCOM
Battletech $32

INTRACORP
Miami Vice $25
Superman: Man of Steel .. $25
Trump Casino Gambling..$25

LDW
Power Spreadsheet $95

MEDALIST/MICROPLAY
3D Pool $23
Dr. Doom's Revenge $25
Honda RVF $23
M1 Tank Platoon $39
Midwinter $25
Stunt Track Racer $25
Weird Dreams $25

MELBOURNE HOUSE
G. Norman Shark Attack ..$25
War in Middle Earth $32
World Trophy Soccer $25

Out Run $32
Space Harrier $32
Super Star Ice Hockey ... $32
Thunder Blade $32

ORIGIN
Autoduel $25
Omega $32
Quest For Clues Book 2 .. $19
Space Rogue $32
Times of Lore $25
Ultima 3 ..... $25
Ultima 4 ..... $39
Ultima 5 ..... $39
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STE COMPATIBLE PROGRAMS

The following programs have been run successfully on the 1040 STE. Please note that this is not a comprehensive list of every single program that works on the STE. Programs not listed here may or may not work in the STE; be sure to test before you buy!

The list is in two parts; first is a list of popular commercial software, second is a list of START programs. START back issues may be purchased by calling (800) 234-7001.

Commercial Software

Games
- Battle Chess
- Brataccas
- Chessmaster 2000
- Dr. Doom's Revenge!
- F-15 Strike Eagle
- Fiendish Freddy
- *Flood*
- Gauntlet II
- Goldrunner
- Heroes of the Lance
- Quest for Glory
- The Hunt for Red October
- Imperium
- Indiana Jones and the Last Crusade
- MIDI Maze
- Leisure Suit Larry Goes Looking for Love
- Manhunter: New York
- Manhunter: San Francisco
- Obliterator
- Paperboy
- Space Quest II
- Space Quest III
- Typhoon Thompson
- Ultima II

Word Processors/DTP
- 1st Word Plus 2.02
- Calamus 1.09
- Fleet Street Publisher 2.0
- Pagestream
- Wordflair 1.0
- WordPerfect 4.1
- Word Writer 1.0

Graphics
- CAD-3D 2.0
- Cyber Paint 2.0
- DEGAS Elite
- Easy-Draw 2.22
- Spectrum 512
- Touch-Up 1.5

Other
- PHASAR 4.0

Programming Tools
- GFA BASIC 3.50
- HiSoft BASIC 1.23
- Lattice C 3.03
- Laser C 1.1
- Mark Williams C 3.0.9
- True BASIC 2.0

START Programs

Special Issue Number Two
- The Cartoonist
- MIDIView
- Ear Trainer

Special Issue Number Three
- CardSTak
- The Director
- Lock & Key
- Wall Street

Special Issue Number Four
- Naval Battle
- Discovery Maps
- Guitar Solo
- Slider
- Byte Mechanic
- Speed

Summer 1986
- MIDI Sequencer
- Digital Magnet

Fall 1986
- Xlisp
- Adventure

Winter 1986
- Near Synthesizer Quality Mail Call

Spring 1987
- MacroPix
- Printmake
- Raytrace

Summer 1987
- The aSTronomer
- Command Line Interpreter
- Flicker
- MIDI SAVE

Fall 1987
- Pixel Pro
- Grapher
- START Calc

Winter 1987
- STARTKey

Spring 1988
- Retirement Calculator
- Mortgage Calculator
- G-Prolog
- Battle for the Throne

Summer 1988
- The Traveler
- Igor
- Creation!
- Klondike Solitaire

October 1988
- Vocabularian
- ST Microscope
- Brickworks
- Disk Certifier

November 1988
- Audio-Video Sequencer
- ST SciPlot
- Pro Calendar
- Meg-A-Minute

December 1988
- Wombats II
- Santa BBS
- Discovery Construction Set

January 1989
- GFA BASIC 2.0
- Spanish Mastery
- Slither

February 1989
- Dah-Ditter
- Moon Calendar
- Kamikaze Chess
- Killer Chess
- VCR Organizer

March 1989
- Seurat
- Assembled Saucers
- ST Coloring Book

April 1989
- Poker Solitaire

May 1989
- Space Wars 2400
- GFA Object
- Instant File Translator

June 1989
- GFA Vector
- Match Quiz ST ST
- Pinochle

July 1989
- Babel
- ST Theremin
- START Arcade

August 1989
- Pogo
- File Search
- Stumbling Blocks

September 1989
- Avecta I: Ebora
- Seven Skulls
- Slither Screen Editor
- Cinko

October 1989
- CAD-3D to DynaCADD Convertor
- Schedule Maker
- ST Softguide
- Boingo

November 1989
- RezRender
- Julia
- Final Approach Controller

December 1989
- GFA Companion
- Attack!
- Word Puzzle Designer

January 1990
- CAD-3D to DXF Convertor
- Mystic Realm
- Score ST

February 1990
- Chaos
- Crunch Time Football
- A.I. Doctor

March 1990
- CAD-3D 1.0
- Mountain Solitaire
- Spinwheel

April 1990
- ST Writer Elite 3.6
- PHASAR 3.0
- Super Jackpot Slots

May 1990
- *InfoBase ST*
- Styzor's Contest
- Flu Virus Killer

June 1990
- Bugs!
- Crossword Creator
- Wordle
- Warrior ST
- Fun Pages

July 1990
- Gilbert's Challenge
- Super Conductor
- AlterTune

August 1990
- Cardmaster
- Metamorphosis
- Beginning Blitter

October 1990
- NOTE: Disk labeled September
- Anatomy etc.
- Preschool KidProgs
- START Selector
- Intermediate Blitter

November 1990
- Advanced Blitter
- Galactic Merchant
- Make It Move

By the way, if you do own a "regular" ST, be aware it is not possible to modify the hardware so that it is like the STE — the machines are just too different. It is possible to upgrade an ST to 4,096 colors by using JRI's ST 4096C board. Some STE graphics software may not recognize the added colors, however.

Final Thoughts

Some puzzling questions concerning the STE's so-called enhancements have to be asked.

1.) Why was so much effort put into redesigning the motherboard while little was put into redesigning the casing and keyboard? Present ST owners have been complaining about their keyboard's "mushy" feel for years and having to lift the CPU to attach and detach joysticks and mice is a hassle.

2.) Why increase the palette to 4,096 colors, but still display only 16 colors at a time? Artists would love to have even just 32 colors on the STE screen.

3.) Why add hardware scrolling, but not an overscan mode? Desktop-video production — multimedia — has been called the computer application of the 1990s, and the ability to display a screen without borders is going to be essential in this market.

4.) Why not include an expansion bus, like the Mega? The advantages, such as the ability to attach a Moniterm monitor, are numerous.

It's clear that Atari had the computer games market in mind when designing the STE. Not only are there extra joystick ports, but the hardware scrolling, extended color and stereo sound mean better looking and sounding games. This ST-as-game-machine angle has worked very well in Europe; perhaps Atari feels this formula will work in the United States just as well. ■

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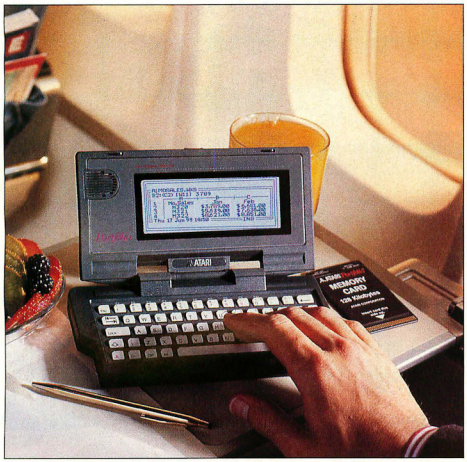

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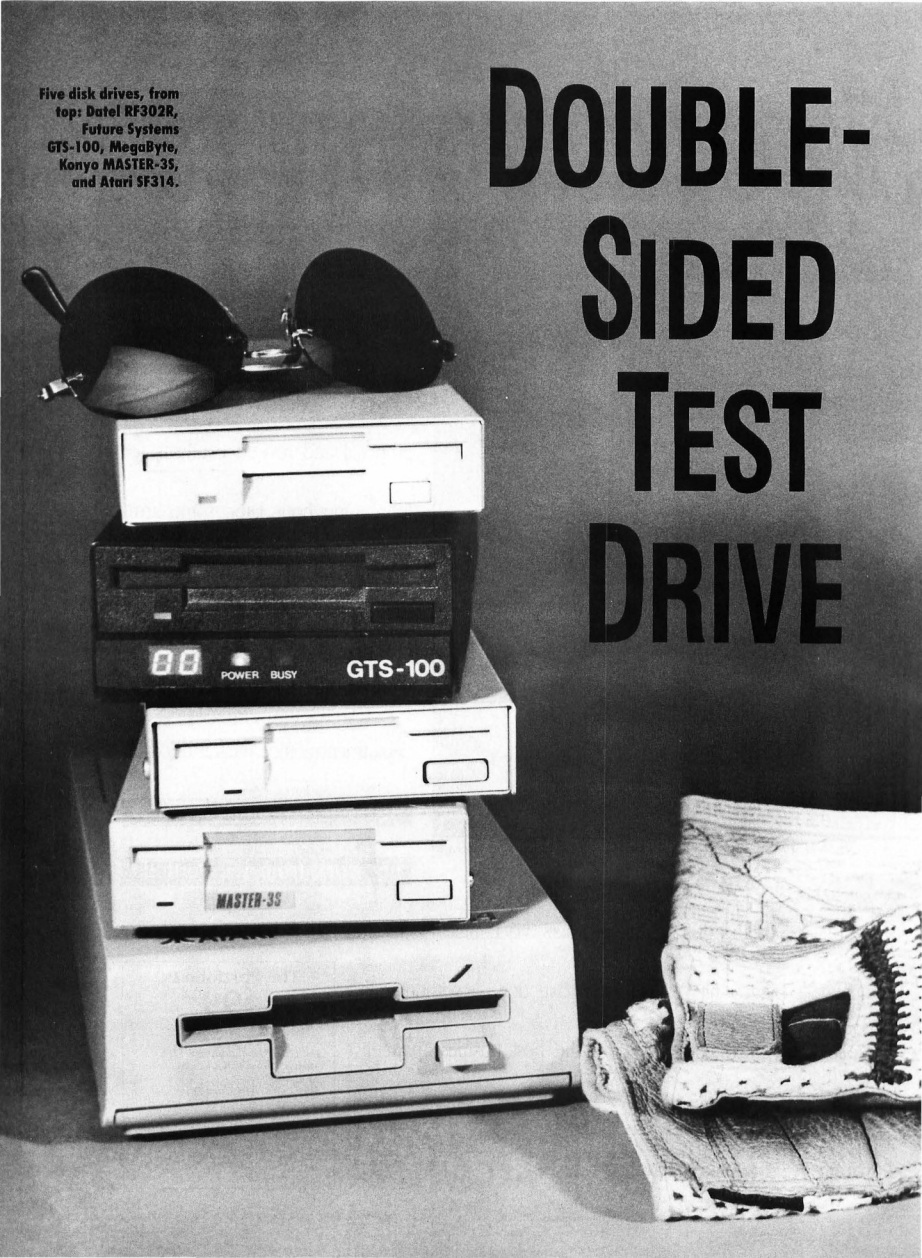

Five disk drives, from top: Datel RF302R, Future Systems GTS-100, MegaByte, Konyo MASTER-3S, and Atari SF314.

DOUBLE-SIDED TEST DRIVE

Five Floppy Systems Compared

BY JAMES BURTON

Technical Editor

Yes, it's time to upgrade that single-sided floppy drive! Way back when the 520ST was introduced, a single-sided drive, the SF354, was all that was available. These days, however, all the STs and Megas come equipped with double-sided drives, and more and more software is being released only on double-sided disks. In fact, next month the START disk goes double-sided,

If you're itching to upgrade to the de facto standard, but need a few clues on what to choose, here are the results of our test laps around the 720K tracks.

Similarities

All of these drives are external, which means they connect to the ST with a cable. With the exception of the MegaByte, which we'll discuss later, all of these drives have a separate power supply, which means more cables to clutter your workspace. Each drive has a busy light, which glows when writing to or reading from the drive.

Atari SF314

The largest drive of the units reviewed here, the Atari SF314 has a suggested retail price of $199.00. The plastic case of the SF314 is styled to match the ST computer, a bonus to those concerned with aesthetics. The SF314 has everything that should be considered standard on an external drive, including a port for daisy chaining a second drive to the system.

Datel RF302R

The Datel RF302R, costing $159.95, is much smaller than the Atari SF314. In fact, its tan-colored metal case is barely larger than the drive mechanism. Like the Atari drive, it has an On/Off switch in the back of the unit. But it does not have a daisy-chain port, which relegates it to being the B: drive in a two-drive system. Also, the data cable is permanently attached; a bad cable means sending the whole drive for service.

GTS-100

Future Systems' GTS-100 is a sharp-looking drive with a power-on indicator and a LED readout which displays the track being accessed, as well as the familiar busy light. While I question the typical user's need for a track-number display, the power light is a welcome addition. The black-matte metal case is taller than the Datel's in order to accomodate the LED display. This drive is definitely the best-looking of the lot, and also the most expensive, costing $269.00. (Future Systems also sells the $239.00 GTS-100X, a ST-colored drive without a LED track display. It wasn't available for review.)

MASTER-3S

The MASTER-3S from Konyo International looks very much like the Datel drive. The MASTER-3S, however, has a standard connector, so you can replace the cable if it fails. It also sports a daisy-chain connector, making it suitable as either an A: or B: drive. The MASTER-3S sells for $169.00; the MASTER-3SD, $189.00, displays the track number.

MegaByte

The MegaByte drive from MegaByte Computers is almost the twin of the Datel RF302R. Approximately the same size as the Datel, it also lacks a removable cable and a daisy-chain connector, plus, it does not have a power switch.

The unique thing about the MegaByte drive is that it draws its five volts of power via a cable attached to the ST's joystick port. This arrangement leaves your joystick port unusable, unless you have a connector which allows you to ►

TODD DELLA BELLA

plug two joysticks into one port. Another option is to buy the external power supply from MegaByte, which costs $19.95. The drive itself has a price of $139.95, making it the least expensive drive in this comparison.

Performance

To most users, performance is the deciding factor when shopping for hardware. In this case, however, the performance of all these drives is pretty much equal. I wrote and read a 32K test file with each of these drives, timing the operation in two hundredths of a second. The results (see the comparison chart) are close enough that speed need not be an issue in comparing these drives.

These units also are highly reliable. The START staff uses these drives every day, and the only complaint we have is that the MegaByte will sometimes fail to read the disk directory after a new disk has been inserted and the [Escape] key pressed to refresh the Desktop window listing its contents.

Going Double

Remember, the START disk will have a double-sided format beginning with the January 1991 issue. Single-sided drives cannot read ►

Products Mentioned

SF314, $199.00. Atari Corp., 1196 Borregas Ave., Sunnyvale, CA 94089 (408) 745-2000.

RF302R, $159.95. Datel Computers, 3430 E. Tropicana Ave. #67, Las Vegas, NV 89121 (800) 782-9110.

GTS-100, $269.00; **GTS-100X**, $239.00. Future Systems Inc., 21634 Lassen St., Chatsworth, CA 91311 (818) 407-1647.

MASTER-3S, $169.00; **MASTER-3SD**, $189.00. Konyo International, 1073 North Batavia St., Suite B, Orange, CA 92667 (714) 633-1026.

MegaByte, $139.95; **optional power supply**, $19.95. MegaByte Computers of North Texas, 909 Melbourne, Hurst, TX 76053 (817) 589-2950.

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ASK DR. DISK DRIVE

A Troubleshooting Guide

I keep getting the error message that my drive "is not responding." I've checked the connections, but it won't read the disk. What's wrong?

To determine if the problem is with the drive or a disk, put another disk that you know is good into the drive and try to open it. If its window opens on the Desktop, then the problem is with the first disk. The disk is probably damaged or unformatted.

(NOTE: some commercial games with heavy copy protection are not readable from the Desktop. They must be auto-booted. Also, if your drive is single-sided, you won't be able to read a double-sided disk.)

If none of your disks will open, then the problem is with the drive or the computer. To test an external drive, make sure it is switched on — it can be hard to tell if the drive is on — and double check all connections. If that doesn't solve the problem, borrow a friend's drive and hook it up. If his drive works on your machine, your drive is the culprit. If his drive won't work, suspect your ST, with a bad FDC (Floppy Disk Controller) chip or circuitry the most likely cause of your problem.

In either case, or if your internal drive is bad, you should take your ST or drive for servicing at an authorized Atari dealer. Do not attempt to fix it yourself.

I've tried chaining three disk drives to my ST. The first drive works fine, but not the second or third.

The ST can access only two floppy drives. When you chain a third drive to your computer, it tries to access it whenever you access the second drive, and vice versa. Very confusing. Remove the third floppy drive.

Sometimes I get "garbage" on the Desktop window when I open a disk.

The most likely cause is a dirty or worn read-write head. Purchase a 3 1/2-inch disk-drive cleaning kit from your dealer and follow the instructions to clean your drive. If the problem persists, the head may be worn out, and will need to be replaced. Hair or other debris sucked into the mechanism will interfere with the head, too. Open the slot on your drive and use some tweezers to remove the hair, but do not use force and do not touch the read-write heads. If you're not sure what you're doing, take it to someone who does.

How often should I clean my drive?

Not often. Too much use of the cleaning disk may wear out the read-write heads. One cleaning every two or three months is all you need, unless your workspace is particularly dirty.

When I try to save something, I get a message that the disk "is physically write protected."

Write protection prevents data on a disk from being accidently erased or overwritten. If the sliding tab on the upper-left corner of the disk is open, such that the hole is uncovered, then the disk is write protected and cannot be written to or formatted. Slide the notch down to unprotect the disk.

It's possible to protect a single file from being erased or changed by highlighting the file on the Desktop, then choosing Show Info from the File menu. Click on Read Only, then OK. This file is now protected. To unprotect it, choose Read/Write from the Show Info menu.

Can my disk drive read disks from other computers?

The Atari ST drive can read 3 1/2-inch disks formatted on IBM PCs and compatibles. The Macintosh and Amiga disks use different formats, however, so the ST cannot read them. If you have the appropriate emulator, however, you can read and run programs from other computers.

My drive won't read disks from my friend's ST.

Either your drive or your friend's drive is spinning at the wrong speed. ST drives should spin at a rate of 300 rpm. If a disk is formatted at a slower or faster speed, a drive operating at the correct speed may not read it, and vice versa.

An easy way to determine if your drive is working at the correct speed is to load programs from a commercially-produced disk. If your drive has problems loading programs from such disks, which are always produced at 300 rpm, but has no problem with disks formatted on your computer, then you need to take your drive to your dealer to have its speed adjusted. There are public-domain programs available for testing drive speed, too. Check with your user group.

What, exactly, is the difference between a single-sided and double-sided drive?

Very simply, a single-sided drive only has one read-write head, and it can access only one side of a disk placed inside it. Such a drive can format a disk so that it can hold 357376 bytes of information (using the standard Desktop formatter.) A double-sided drive has two read-write heads, one that can access each side of a disk. A double-sided disk can hold 726016 bytes of data. Single-sided drives cannot read double-sided disks, but double-sided drives can read single-sided disks.

What kind of drive do I have?

You can tell if you have a double-sided drive by attempting to format a disk double-sided. A double-sided drive will be able to format the disk, but a single-sided drive will whir for a while, then an error message will appear on the screen saying "An error has occurred during Format. . ." This happens because the ST attempts to access a non-existent read-write head.

such a disk.

We strongly recommend you upgrade your system to double-sided drives, and not just so you can use the START disk. Double-sided is fast becoming the standard in the ST community, and more software is being released solely in this format.

Upgrading is easy. Compare price and features and pick the double-sided drive that's best for you! ■

TEST DRIVE RESULTS

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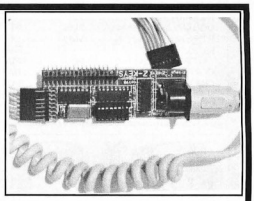

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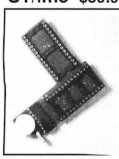

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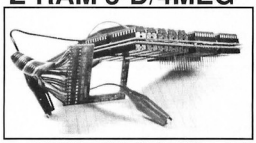

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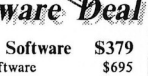

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Dodge student drivers! Hurdle hour-long lines! Overcome outrageous expenses!

Navigate through 3D mazes of paperwork and bureaucrats as you try to register your vehicle.

Will you be able to outsmart the eyechart when the clerk puts the patch over your good eye?

TAKE THE DRIVING TEST.

Mike Guttormson
Vista, Calif.

Incomprehensible digitized voice directions simulate the challenge of understanding a real official's instructions. Avoid small children and animals. Parallel park in tight spaces.

This is an action-packed adventure game requiring quick wits, flawless strategy and lightning fast reflexes.

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Considered by every film critic to be among the top 10 greatest films of all time — now a great role-playing game with fantastic arcade action!

First build your newspaper empire. Then manipulate a youthful Orson Welles with your joystick as he tries to put his private zoo full of unruly animals in their cages. Ride Rosebud, the sled, down the perilous hillside for bonus points.

Allen Whipps
Grand Rapids, Mich.

Available for play on monochrome monitors only, because we won't stoop to crass commercial colorization of the classics!

Second Prize

Jim Cirile
Van Nuys, Calif.

ENSIGN EXPENDABLE

You are Expendable, new security officer on a Galaxy-class starship, replacing another ensign whose name, coincidentally, was also Expendable.

You are doomed to die. Your goal is to postpone the inevitable for as long as possible, possibly even turning you character into a "recurring bit part." When the Captain announces his landing party's complement, you can choose to: A) flee and hide. Try to elude the other security officers for as long as possible; B) take over the ship (a remarkably easy feat); or C) immediately join the landing party and attempt to dodge well-placed enemy spears, lasers and freak natural disasters, while armed only with a non-functional weapon and dead-slow reflexes.

Every seven minutes survived earns you one "Commercial Break." Accumulate six Commercial Breaks and you earn the right to beam back to the ship, probably to die in the next episode's pre-credits sequence. But maybe not...

Third Prize

MR. VICE PRESIDENT

Neil Osterweil
Newton Centre, Mass.

The superpowers are teetering on the brink of Armageddon, the Mideast situation is about to explode, world financial markets are collapsing — and you can't find a fourth for golf.

In this shockingly realistic simulation you are the vice president of the United States. Your job is tough, but you don't quail at the challenges before you.

Meet insignificant foreign dignitaries! Attend state funerals and supermarket openings! Wait around for the president to die!

Requirements: Color monitor, dark suit, white shirt, red tie

Estimated Playing Time: 8 years

Honorable Mentions

MESSY HEAD WOUND WITH BRAINS ALL OVER THE PLACE

John Studmuphin, an American soldier who could have won the Vietnam War single-handedly if the pansies in Washington hadn't restricted his supply of exploding arrows, heads back to the jungle to rescue his platoon/family/weight machine, depending on the difficulty level.

There he encounters North Vietnamese troops, generators hooked up to sensitive parts of his body and a new political reality, all of which he responds to with large-caliber machine-gun fire.

The game comes to a dramatic conclusion when the player-controlled Studmuphin must fight off a testosterone overdose.

— Greg Knauss, La Jolla, Calif.

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— Ryan Hughes, Vernon, British Columbia ►

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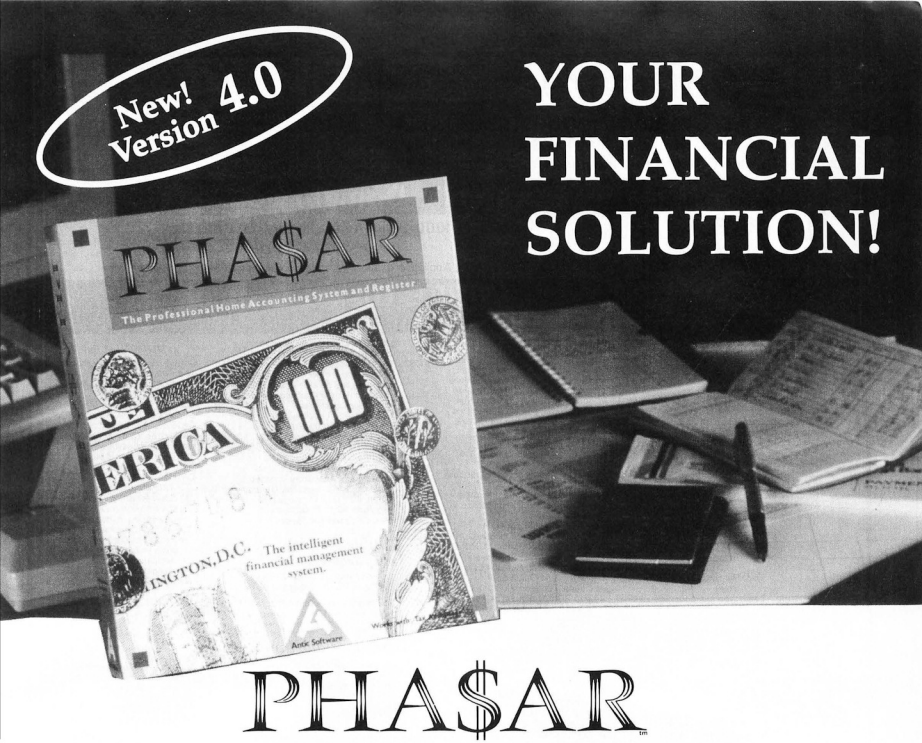

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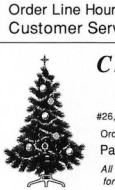

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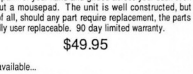

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Staff Favorites

BY AMY H. JOHNSON
Associate Editor

Over the years the START staff has read just about anything we could get our hands on regarding our favorite subject: the computer business. Here we present a list of titles which we recommend for your permanent collection.

Cuckoo's Egg
Clifford Stoll, Doubleday $18.95

What began as a 75-cent accounting discrepancy ended this year with the espionage conviction of three West German crackers. Man-on-the-spot Stoll is the real-life technosleuth who tracked them along a twisted path through science labs, telephone networks, defense contractors and American military computers — without a single car chase or blazing gun.

Hackers
Steven Levy, Dell $4.50

Back in the days when BASIC, brains and plastic baggies nearly guaranteed big bucks, people like Apple's Jobs and Woz and Sierra On-Line's Roberta and Ken Williams reaped the financial rewards of being in the vanguard of the personal computer revolution. *Hackers* chronicles their rise, from their vacuum-tube roots at MIT to their heyday at the West Coast Computer Faire.

The Media Lab
Stewart Brand, Penguin $20.00 (hb), $10.00 (pap)

MIT's present is America's future. Wander the halls of the university's Media Lab, where applications such as personalized videotext newscasts, intelligent animation and virtual reality are being researched by some of the most innovative thinkers in the country. As Brand observes, "It's a fair sign you're doing something interesting when both the Defense Department and the artists want it."

Soul of a New Machine
Tracy Kidder, Atlantic Monthly Press $16.95 (hb), Avon $4.95 (pap)

Kidder won a Pulitzer Prize and started a journalistic trend with this you-are-there portrait of the Data General Eagle computer project. With a fine eye for the praiseworthy and punishable within the human psyche, Kidder captures the spirit and drive of the engineers and businesspeople playing the high-stakes hardware game.

West of Eden
Frank Rose, Penguin $19.95

Neither Steve Jobs nor John Sculley appear as the hero in this unsparing tale of the mid-1980s power struggle for control of Apple Computer. Rose has unerringly focused on the one company which represents the "Power to the People" philosophy which fueled the personal-computer industry, and chronicles the corporation's transition from Jobs' brash entrepreneurism to Sculley's market-driven caution.

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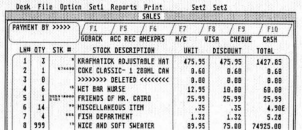

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"Every revolution was first a thought in one man's mind."
Ralph Waldo Emerson, *Essays*

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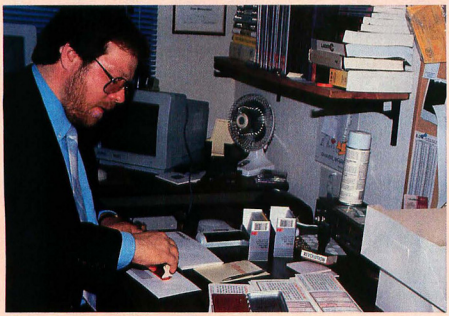

Donald Thomas

Revolutionary Leader Donald Thomas Fights To Promote Atari In America

BY E. J. KOCH

There's a war going on in the United States, and if you're an Atari computer user, you're part of it." Thus reads the opening line of *The Revolution Handbook*. "By being united," writes Donald A. Thomas, the manifesto's author, "we cannot be ignored."

This call to arms — spread over electronic networks, discussed within user groups, printed in newsletters, stamped on letters — marks a campaign, single-handedly fathered by Thomas, to inexpensively promote Atari computers in the United States. The stocky, bearded redhead with the physique of a linebacker began recruiting other Revolutionaries in September 1989 when his frustration with Atari U.S.'s lack of stateside advertising peaked. Additionally, he was worried about Atari computers disappearing altogether in this country, and the effect that would have on sales at Artisan Software, the ST software company he owns.

Atari Corp. And The Revolution

Thomas alludes to lack of funds being the main reason why Atari President Sam Tramiel has, to date, opted not to actively promote Atari computers in America. However, says Thomas, "if you awoke in France or Germany, you'd see an Atari market, rather than one dominated by IBM or Macintosh, the way it is in this country." Atari

Corp. boasts numerous subsidiaries abroad, of which Atari U.S. is just one.

The company is close-mouthed regarding Thomas' efforts. Sam Tramiel refused to comment, but offered Thomas as his spokesperson regarding The Revolution. Tramiel is in the strange position of having his customers usurp his business plans. On one hand, any publicity the Revolutionaries generate supposedly benefits his sales, but on the other hand, he's being pressured to spend advertising money where the consumers, not the company owners, think best. And to top it all off, he is Thomas' boss. Thomas works for Atari U.S. as a Computer Marketing Manager.

So for Thomas, Atari absorbs his life: days spent at Sunnyvale, Calif., helping customers who have problems with their Portfolios, Atari's pocket-sized DOS portable; nights and weekends at home in Manteca, Calif., leading The Revolution from an office bulging with four STs. Thomas hopes that Atari will, in time, offer its support for his after-hours efforts. Meanwhile, although he doesn't have a lot of money to throw into a promotional campaign, he keeps The Revolution alive with energy, public-relations knowledge and experience, and imagination.

The Revolution Handbook

The Revolution's methods are inexpensive and unique. Funded primarily by profits from Thomas' Artisan Software company and Revolution members' donations, the grassroots campaign operates a weekly schedule of activities published in *The Revolution Handbook*, a 32-page pamphlet sent to every Revolutionary, along with an official membership card, an Atari pin, a decal and a rubber stamp proclaiming "Join The Revolution — Use an Atari Computer." *The Handbook* instructs Revolutionaries to use this stamp on *all* their outgoing mail and to stamp it only in red ink.

The first half of *The Handbook* describes the movement, and the attitude that Thomas wants to pervade the actions and statements of Revolutionaries. Declarations like "Never participate under an alias to boost representation" and "One individual can destroy the efforts of all of us by participating with wrongful actions or under false pretenses" permeate the document. These can be interpreted as either humorous or militant. But Thomas insists they are self-protective and are intended to avoid the dissemination of misinformation about Atari. He adds, "I like to sustain a high degree of integrity."

The latter half of *The Handbook* is devoted to a weekly calendar of ideas for educators, celebrities, computer widows and widowers, software publishers, computer dealers, systems operators and other authoritative Atari users, including president Tramiel.

Most of the calendar items are realistic, like joining and supporting local user groups and Atari dealers. Some, however, like writing George Bush on President's Day to enlighten him about the existence and capabilities of Atari computers, sound outrageous and appear to have little effect.

The Roseanne Barr Show was targeted for a similar letter-writing campaign in late January 1990. According to the show's public relations coordinator, such letters would probably be forwarded to Barr herself, but Cathy Spears, Barr's personal assistant, explains that any letters from Revolutionaries were probably considered criticism, not fan mail, and therefore not sent to Barr. After a morning spent asking around, she called me back and said, "No one seems to know what you're talking about." Furthermore, Spears says it is highly unlikely there was any correlation between The Revolution and the "Roseanne" episode in which she lost her job due to computer illiteracy.

In "The Ultimate Challenge" during mid-July, Revolutionaries were encouraged to write PepsiCola Company and request the creation of a commercial with Michael Jackson "in an environment that promotes The Revolution." When asked how the company responded to this letter-writing campaign, Gary Gerdemann, PepsiCola's manager of public relations, responds, "When did this happen?" Gerdemann says he "couldn't find anybody with any knowledge of receiving any letters or anyone who had ever heard of the Revolution."

When I told Thomas about the lack of response to Revolutionary letters, he said he "hoped that maybe one of the letter-writing campaigns would pan out," and that he feels the updated *Revolution Handbook* will rekindle the Revolutionaries' flame. He explains that the original *Handbook* "had to have some degree of controversial concepts for people to talk about," but the soon-to-be-released revision should give a new "level of legitimacy" to the campaign with its seven new chapters geared toward computer-phobes, its California-tailored calendar and its slick paperback cover. Thomas is so certain the second edition will roll, he took out a loan to finance the book.

The second edition will be sent to Atarians who are "joining The Revolution in droves," Thomas boasts. He estimates that current membership numbers in the thousands.

And according Bob Brodie, Atari Manager of User Group Services, Revolutionaries really are writing letters regularly, as suggested in *The Handbook*, to Atari President Sam Tramiel. Tramiel channels letters he►

receives to the appropriate department head for response, and, invariably, the letters from frustrated Atarians end up in Brodie's "In" box. (*Editor's Note*: Once in a while the START editorial offices do receive correspondence with the Revolution stamp affixed on the envelope.)

"There are dog owners in this world and there are breeders. We are the breeders."

Some Revolutionaries Of Note

Brodie describes Atarians, many of whom are now Revolutionaries, as "fanatical" and "brand loyal." Thomas assesses Atarians, himself included, thusly: "There are dog owners in this world and there are breeders. We are the breeders."

These top breeders may live as close as next door or as far away as New Zealand. But no matter where a potential Atarian lives, Thomas adamantly believes that once consumers buy Atari computers, they, too, will become devotees, like Trekkies, of a specific product.

But Thomas believes Atarians have a serious problem: They closet themselves where the public never sees them. Says Thomas, "We need to emerge as proud and satisfied users of our valuable systems." He contends that computer shows should be held in shopping malls and other heavily-populated places, where computer users are, "not in Holiday Inns."

So Thomas' troops take up the fight to bring Ataris to the public eye. His youngest revolutionary, 11-year-old Christopher Haag from Livonia, Mich., is from a family of Atarians. Haag's 14-year-old brother Charles R. and his father, Charles H., are also devotees. Chris and Charles became interested in Atari computers and, eventually, in The Revolution, through their father. Son Charles seems disgruntled at the lack of recent Revolution activity. Apparently, the letters that are usually available for downloading from bulletin boards and sending to the likes of Sam Tramiel and others to encourage the promotion of Atari computers haven't been online for "about four months." Haag does stamp all his outgoing letters with the "Join the Revolution" slogan, though.

Sixty-five year old Lee Ellis, a retired journalist living in Indio, Calif., first read about The Revolution in an Atari publication and thought it was a great marketing idea. "Atari's the best kept secret in the United States," he says, gloating with love for his computer. This dedicated Atarian says he does write letters boosting his favorite pastime on a regular basis. Recently, he read a column by syndicated financial-columnist Sylvia Porter in the business section of his local paper. Perturbed by her comment alluding to software for IBMs and Macintoshes being the only "serious" software available, Ellis wrote to Porter explaining the capabilities and low cost of Ataris. He also suggested she enlighten her readers to the existence of Atari's ST. Recalling an incident when he phoned a Mac dealer for a price quote, he compares buying a Mac — where the cost of a keyboard is additional — to buying a used car and being asked, "Did you want tires or a steering wheel with that?"

Bob Thomas & Associates

Contrary to popular belief, however, Atari has hired a public-relations agency to promote its computers. Danielle Morris, of Bob Thomas &

THE REVOLUTION ON DISK

Your how-to manual for Revolutionary tactics, *The Revolution Handbook*, is on disk in the FREEWARE folder.

Double-click on the archive file REV_ARC.PRG and choose Extract when the dialog box appears. Select a destination disk and three files will un-ARC directly onto that disk.

You can either run the README.PRG, which automatically loads HANDBOOK.DOC (make sure README.PRG, HANDBOOK.DOC and HANDBOOK.LGO are in the same folder), and use its viewing commands to read the manifesto at your leisure, or you can double-click on HANDBOOK.DOC and read it from the Desktop.

You also can download *The Revolution Handbook* from GEnie and CompuServe.

NOTE: This software is copyrighted by Artisan Software, and is freely distributable. START assumes no responsibility for the performance of this program.

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The Revolution Handbook has been completely revised and is now available in hard-copy form. If you subscribe to START and think The Revolution is a good idea, Artisan Software will you give you $5 off the *Handbook's* regular $14.95 price. To receive your discount, send the address label from any issue of START and a check or money order for $9.95 to:

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You'll also receive a membership card, an Atari decal, an Atari lapel pin and a "Join the Revolution" stamp.

Associates (no relation to Donald Thomas), says the agency campaign team is currently promoting the Lynx and is planning its soon-to-be-released Atari business-computers promotion. While Morris is not at liberty to discuss what the campaign will entail or when it will commence, she did state that the agency is "all for anything (Donald) Thomas is doing" and that the ad agency neither supports nor opposes The Revolution.

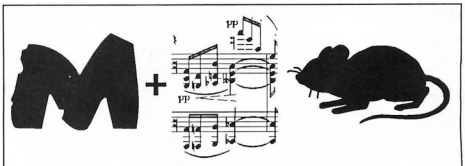
Donald Thomas says the new ad campaign isn't enough to convince Atarians that the company has changed its near-legendary reputation for an apathetic and defeatist attitude toward marketing its wares in this country. There doesn't seem to be any pressure from the company for the PR agency to hasten the publicity process. While many Atarians believe the answer is to just run a few commercials, Thomas, a former ad man, points out that it's not that simple. He's well aware that Ataris are priced considerably lower than their competitors and that Atari's budget doesn't allow for advertising comparable to that of IBM or Apple. Thomas also sees that Atari's smaller user base doesn't enable the company to finance publicity that would flood the market. "A million dollars won't take you very far in a national TV and newspaper publicity campaign," sighs Thomas.

A Labor Of Love

Thomas knows computer users invest heavily in their hardware and software, so, afraid that their favorite computer could vanish, hardly noticed, Atarians are supporting Thomas' Revolution to promote their favorite machine. Thomas adds that he isn't masterminding The Revolution or selling software in order to make a lot of money. "The only way I could own a sizeable company would be to sell IBM or Macintosh software," he explains. "But I believe in the Atari system so much I don't want to do that. I want to focus on this one system."

The Revolution has begun and continues to make its mark. Thomas has seen dealers advertising in various Atari computer journals endorsing his campaign, and says requests for "Join The Revolution" stamps are rising. After a daily commute of three to four hours, Thomas works evenings and weekends on The Revolution. The ultimate Atarian explains, "It's fun for me. I'm a hobbyist who's built his business around his pleasure. I'm not a warped individual who's out of the blue. I'm an enthusiast faced with a corporation that hasn't been able to turn its (business) luck around." He sighs deeply, and despite his exhaustion, swears, "I don't love the computer because I work at Atari. I work at Atari because I love the computer." ■

E. J. Koch is a San Franciso Bay Area-based freelance writer.



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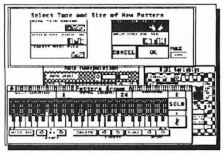

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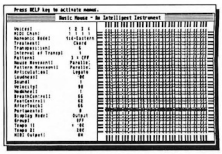

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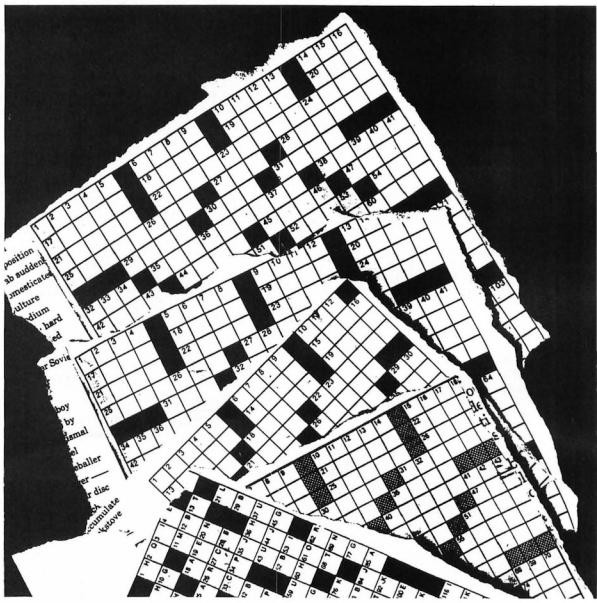
Fill-It-In

A Reverse Crossword-Puzzle Generator

Remember the popular Crossword Creator published in the June 1990 issue? At the risk of starting a trend, we present another puzzle creator — with a twist.

BY CAROLYN ROGERS



Imagine a crossword puzzle without clues. Sounds impossible to solve, doesn't it? Okay, we'll fill in one of the words and leave you the rest. What? Still can't solve it? Fine, we'll give you a list of all the words that go into the puzzle. Now, maybe, just maybe, you can fill it in!

The Fill-It-In Concept

This program generates and prints Fill-It-In word puzzles, which are similar to crossword puzzles except you get a list of words instead of clues. Working from the key word, you fit the remaining words into the puzzle. To help you, the words are grouped according to the number of characters they contain, so if you need a three-letter word that ends with 'T,' you only have to look in the three-letter section to find one.

Creating A Puzzle

From your backup START disk, double-click on FILL_ARC.PRG and choose Extract when the dialog box appears. Use the file-selector to choose your destination disk and four files will un-ARC to that disk.

To play Fill-It-In, make sure PUZZLE.PRG and PUZZLE.RSC are in the same folder, then double-click on PUZZLE.PRG. Now we're ready to make puzzles.

How It Works

The main screen presents nine option buttons:

Load Old List: Loads a saved puzzle list into memory. A list has the extension .LIS.

Create New List: Select this to enter a new list of between four and 80 puzzle words. Be sure to hit the [Caps Lock] key, as the form requires uppercase words. The following keys are used for editing the form:

[Up arrow] — moves up one field

[Down arrow] — moves down one field

[Right arrow] — moves right one character

[Left arrow] — moves left one character

[Backspace] — removes character to left of cursor

[Delete] — deletes character to right of cursor

[Escape] — clears field

After finishing, choose FINISHED to save the list, or ABANDON to abort. If you save the list to disk, you must give the file the extension .LIS.

Load Old Puzzle: Load a saved puzzle into memory. Puzzle files have the extension .PUZ.

Generate Puzzle: Generates a puzzle using the word list currently in memory. After showing you the completed puzzle, you are given the option of printing it.

This function uses the standard GEM screen dump (the same routine that is called when you choose Print Screen from the Desktop) so if the puzzle doesn't print properly, you may need to adjust your printer settings by exiting the program, then selecting Install Printer from your Control Panel accessory. Choose the Pixels/Line setting that isn't currently highlighted.

Next, you are asked if you want to save the puzzle to disk. Be sure to give the filename a .PUZ extension. If you don't like the word distribution of the puzzle, simply run the Generate Puzzle option again. Generally, about one-half of an 80 word list is used in the puzzle.

Print Puzzle Key: Displays on the screen the master key to a generated puzzle. You have the option of printing the key.

AT A GLANCE

Program:	Fill-It-In
Type:	Puzzle generator
Requirements:	512K, medium or high rez
Arcfile:	FILL__ARC.PRG
Files:	PUZZLE.PRG STARTREK.LIS PUZZLE.RSC STARTREK.PUZ
Language:	Modula-2

Print Puzzle: Displays the current puzzle in memory on the screen and asks if you want a screen dump. Following the screen dump, a list of the selected words is printed. Be sure to generate or load a puzzle first or strange things may happen.

Save Current Puzzle: Choose this to save your completed puzzle to disk. Be sure to give the filename a .PUZ extension.

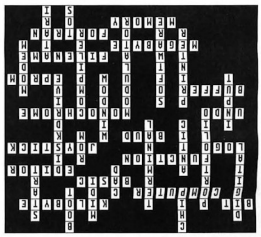
Edit Current List: After loading a saved list or creating a new one, you may edit the list using this option. See the CREATE NEW LIST item above for a description of the editing keys.

Exit Program: Returns to the Desktop.

Beam Me Up

Before you create your own Fill-It-In puzzle, try solving one first. Load STARTREK.PUZ, then print it out. One nice thing about Fill-It-In is that you don't have to be familiar with the words in the list to solve the puzzle. You just need the skill to recognize where they go. ■

Carolyn Rogers was, until recently, a programmer for Uncle Sam. She wrote "An Introduction to Modula-2" in the September 1989 issue.



ON DISK

ZOT

Find The Magic Chalice, Save The Kingdom

BY BRUCE GRAVES

Zot is an action game written in the spirit of several classic video games, such as Pitfall, Jumpman, and Miner 2049'er. The hero, Alex, is on a quest to recover the magical Chalice of Prosperity. He must run, jump, climb and ride his way through eleven different screens while avoiding monsters, zappers and deadly falls.

The Story Of Zot

Long ago, the evil wizard Zot stole a magical chalice from King John. Though closely pursued, Zot managed to escape to his castle in the hills where magical guardians protected him. His pursuers gave up hope of recovering the chalice and went home.

Unfortunately, without the chalice, John's power dwindled and his kingdom fell into ruin. Soon, only a small village remained, and the villagers hoped that someday someone would recover the chalice and restore their prosperity.

One day a rumor reached the villagers, bolstering their hopes. Zot was dead, but the chalice remained, hidden in the darkest corner of his castle. It wasn't unguarded, however. Zot's creatures continued to protect their dead master's most valuable possession.

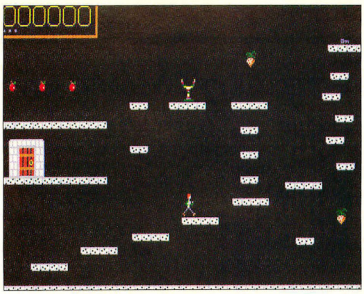
A Challenge

As John's only living descendant, you, Alex, have been chosen to recover the chalice. The village elders travel with you to Zot's castle, but once you step inside, you are alone. The gate slams behind you. The only way out — alive — is to find the chalice.

Getting Started

To begin your quest, double-click on the archive file ZOT_ARC.PRG and choose Extract when the dialog box appears. Select a destination disk and the files for Zot will be un-ARCed directly onto that disk.

To start the game, double-click on ZOT.PRG from the Desktop. All Zot's data files must be in the same directory as ZOT.PRG. Make sure you have a joystick plugged into port 1 (the mouse is in port 0). Zot's title screen will appear shortly. To start the game, press [P] or the joystick fire button. Pressing [Spacebar] pauses the game, and [Escape] will return you to the title screen at any time. Press-



Alex searches for the Chalice of Prosperity, blocked on every level by Zot's guardians.

ing [Q] at the title screen will return you to the Desktop.

Ready For Action

You control Alex with the joystick. Moving the joystick left or right causes Alex to run in that direction. Pressing the fire button causes Alex to jump up in the air. If you hold the joystick left or right while pressing the button, Alex jumps in that direction. If Alex is on a ladder, moving the joystick up or down causes him to climb or descend. Alex can also jump or move slightly from side to side while on a ladder.

There are eleven levels in the castle. On each level there are important objects which Alex can pick up by running or jumping into them. Some objects only give you points. Other objects, however, also give Alex the power to dispel Zot's guardians by touching them. It will be clear when Alex has this power.

To complete a level, Alex must first retrieve the key that unlocks the door to the next level and then move to the door.

You begin the game with four lives, including the current one. The number of extra lives is indicated by the blue dots in the score box. An extra life is awarded after every 10,000 points.

Who Knows What Evil Lurks. . . ?

There are plenty of dangers in the castle. Alex must avoid touching any of the guardians when he doesn't have the special power. If he is careful, though, he can jump over most of them. There are also some objects which Alex shouldn't touch; these you can discover for yourself. Finally, Alex can only survive falls of a short distance. Again, have fun discovering how far is "short."

More Tips

Alex can walk on the stone floors and on top of the score box. Note, however, that some of the floors have disintegrated over the years. Look closely and you'll see treacherous holes. Also, Alex doesn't have to gather every object on a screen in order to advance to the next one. Some objects are just a challenge and a chance for more points. ■

Bruce Graves is a lieutenant in the U.S. Army Signal Corps, stationed at Fort Carson, Colo. This is his first program for START.

AT A GLANCE

Program	Zot
Type	Game
Requirements	512K, low or medium rez, joystick
Arcfile	ZOT__ARC.PRG
Files	A1VSEG32.SPX NUMBERS.SPS APLAT.SPS RARROW.SPX ASPIN.SPS RTHERO.SPS BIG99.SPS SKULBONS.SPS BSPIN.SPS SMALLNUM.SPS CUP.SPS UGH.SPS DARROW.SPS UPARROW.SPS F1.SPX VTHERO.SPS FALL.SPS ZAP.SPS HSURF1.SPX ZOT.BIN LARROW.SPX ZOT.NEO LFHERO.SPS ZOT.PAL LIFEDOT.SPX ZOT.PRG
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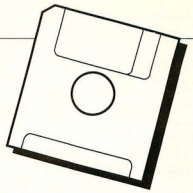

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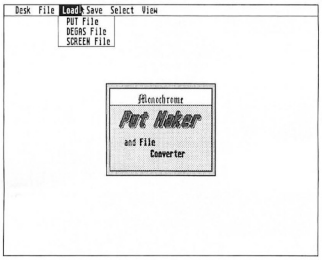
ON DISK

MONOCHROME PUTMAKER

GFA BASIC Tool Goes High-Rez



Monochrome Putmaker is the high-resolution version of a color graphics utility that appeared in the November 1988 issue of START. It makes adding pictures to your GFA BASIC 2.0 or 3.0 programs a snap. Simply draw your monochrome artwork with an easy-to-use program like DEGAS, then run Putmaker to clip the picture and PUT it in your program. The graphics file PUTMAKER.PUT used to jazz up Putmaker's title screen is a perfect example.

MONOCHROME UPDATE BY
THOMAS HOPPER

ORIGINAL PROGRAM BY
A.L. HUBBARD

How It Works

Putmaker will load uncompressed DEGAS .PI3 images, and GFA BASIC PUT and SCREEN files. You then define a rectangular area of an image using the GEM-style rubberband box and save it to disk as a GFA BASIC PUT file to use in your own programs. Finally, you can save a picture back to disk in any of the three formats, making Monochrome Putmaker a graphics file converter as well!

Once you have your picture on disk, you use two related GFA BASIC commands to manipulate and store the block of graphic screen data as a bit pattern in a string variable.

**GET X0,Y0,X1,Y1,A$** reads a rectangle from the screen and stores it in A$. X0 and Y0 are the coordinates of the upper left-hand corner; X1 and Y1 are the lower right-hand coordinates.

PUT X0,Y0,A$,[mode] draws the bit pattern back on the screen, with the upper left-hand corner of the block's location specified by X0 and Y0. The optional mode parameter indicates the graphics mode, typically used to define how the block interacts with the background. (See your GFA BASIC manual for details.)

Running The Program

To run Putmaker, double-click on the archive file MONO__ARC.PRG on your backup START disk. Choose Extract when the dialog box appears, then use the file selector to choose a destination disk. Three files will un-ARC to that disk.

To see an example of what Putmaker can do, double-click on

AT A GLANCE

Program:	Monochrome Putmaker
Type:	Programmer's utility
Requirements:	512K, high rez
Arcfile:	MONO__ARC.PRG
Files:	MONOMAKR.PRG TRIAL.P13 MONOMAKR.PUT
Language:	GFA BASIC 2.0

PUTMAKER.PRG, then load the picture file TRIAL.PI3 into the workscreen. From the Select menu, choose PUT Area and then use the mouse to "rubberband" a section of the picture. Choosing PUT File from the Save menu will save that screen section to disk as a PUT file.

To load the PUT file into your own program, simply BLOAD the file into a string and then PUT the bit pattern wherever you want it. For example, this is how Putmaker loads its own title screen:

```
Mainscreen$=Space$(9926)
    ! Set up string variable
Bload "MONOMAKR.PUT",Varptr(Mainscreen$)
    ! Load the PUT
Put 206,125,Mainscreen$
    ! Then PUT it to the screen
```

Menu Options

Here's a quick run down of Putmaker's menu options. Putmaker is definitely user friendly and needs few directions.

Desk

About Monomaker: Copyright and version information.

File

Introduction: A reminder of the program's capabilities.
Credits: Credit for the original Putmaker.
QUIT: Exits the program.

Load

PUT File: Loads a GFA BASIC PUT-format file.
DEGAS File: Loads a DEGAS .PI3-format file.
SCREEN File: Loads a GFA BASIC SCREEN-format file.

Save

PUT File: Saves the selected block in GFA BASIC PUT format.
DEGAS File: Saves the whole screen in DEGAS .PI3 format.
SCREEN File: Saves the whole screen in GFA BASIC SCREEN format.

Select

PUT Area: Lets you select an area of the workscreen to save or view as a PUT file.

View

Selected PUT: Displays the PUT area previously selected.
WORKSCREEN: Displays the workscreen.
Free Memory: Displays available system memory.
Disk Space: Displays amount of free disk space on a selected drive. ■

Thomas Hopper lives in Michigan, where he attends Alma College and studies physics and philosophy. This is his first program for START.

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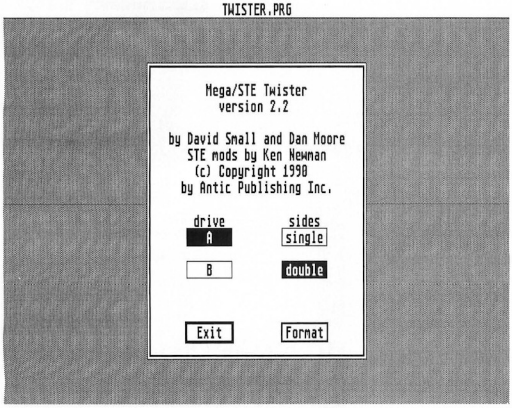
TWISTER

Extended Formatter Updated For The STE

STE UPDATE BY KEN NEWMAN



Twister is easy to use. Simply choose the drive, the number of sides, then Format.

Here it is again. Twister, which can format a single-sided disk to 400K, or a double-sided disk to 800K, originally appeared in the Spring 1987 START. In this latest and greatest version, Twister works with the entire line of ST computers, from the 520 to the STE. Besides the code to handle the STE, Ken Newman added features which verify the format and improve error-checking.

How To Twist

You'll find TWISTER.PRG on your START disk. It is not archived, so simply copy it to your utilities disk, then double-click on the program file to run it.

Choose the disk to format (A or B), then choose the number of sides to format (single or double.) Click on Format to format the disk; Exit quits.

If the disk is write-protected, or not in the drive, you will get an error message. You will also be told if the disk cannot be formatted; such a disk is probably damaged and shouldn't be trusted, even if you can format it with another program. Your choice to format a disk will not be verified, however, so make sure the right disk is in the drive be-

fore you hit that Format button!

Twister increases the storage capacity of your disks by formatting them with ten sectors per track, instead of the normal nine. Twister also speeds up disk-access time by using a twisted, or "interleave" format, reducing the time required for the head to locate and step to the next track.

How To Copy

The Twister format is completely compatible with all STs, and is very reliable. However, using GEM's DISKCOPY (dragging one drive icon to the other to copy a disk) will not work with twisted disks because GEM doesn't check for and copy the extra sector. To make a backup of a twisted disk, you should open a window for the disk you want to copy, highlight all the files, then drag them over to a blank disk. Remember, if the blank disk is GEM formatted instead of twisted, you'll need another disk to hold the extra data stored on the twisted original.

To copy onto a twisted disk, open a window for your blank, twisted disk, then drag the icon of the disk you want to copy into the blank window.

Unlike the previous versions of Twister, this one has its resource file imbedded within the program. The TWISTER.RSC file which had to accompany earlier versions is not needed. ■

Ken Newman, a native of Toronto, has a master's degree in computer science. This is his first program for START

AT A GLANCE	
Program:	Twister
Type:	Utility
Requirements:	512K, any rez
Arcfile:	un-ARCed
File:	TWISTER.PRG

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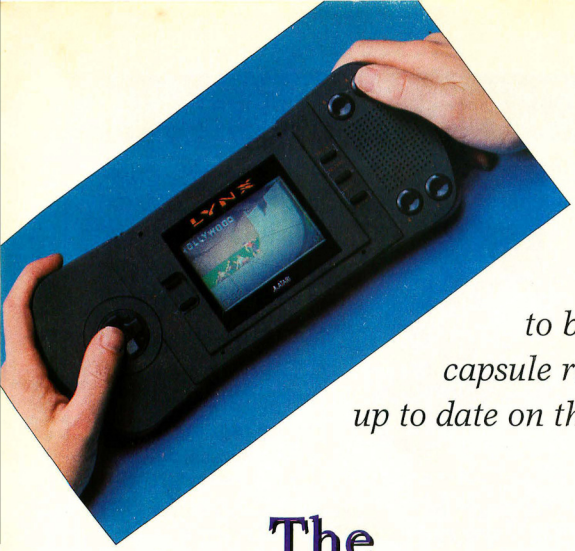


Whether you own a Lynx or are tempted to buy one, the following capsule reviews will bring you up to date on the "state of the Lynx."

The *Lynx Collection*

BY CLAYTON WALNUM

Blue Lightning

In Blue Lightning, you take to the skies in a top-secret combat jet and attempt to complete nine wartime missions. Your objective in Mission 1, Dog Fight, is to cruise the blue, blasting down any enemy that crosses your sights, while in Mission 2, Bombing Run, you must destroy enemy emplacements on the ground. Other missions have you maneuver your screaming jet through tight canyon walls, deliver secret documents to hidden airstrips, and fly nighttime bombing runs.

The 3D perspective is dazzling, with missiles and jets coming at you with such realism, you want to duck. It's especially magnificent when you blast an enemy at the last second and fly through the debris. One thing's for sure: The Lynx's built-in scaling features are used to the max in Blue Lightning. Luckily, the gameplay is as good as the graphics, making this a must-have game for every Lynx owner.

AT A GLANCE	
Game:	Blue Lightning
Type:	Flight simulator
Price:	$34.95
Summary:	A dazzling 3D perspective makes this awesome flight simulator a must-buy.

California Games

In this West Coast-contest collection, you compete in four beachside sports: BMX Bike Racing, Surfing, Half-Pipe Skateboarding and Foot Bag.

The BMX event, in which you race your bike over hills, cliffs and other obstacles, is the star, with lots

AT A GLANCE	
Game:	California Games
Type:	Arcade action
Price:	Included with every Lynx
Summary:	This excellent collection of high-action games is made especially great by the fact that they're "free."

of action and stunts. The surfing competition is also a blast, mostly because you can easily perform outrageous tricks like triple spins, cutbacks and "catching air" high above the waves. The foot-bag competition is a pleasant diversion, but how long can you bounce a bean bag without getting fidgety? Half-pipe skateboarding, with its difficult controls, is a frustrating event that'll give you sore thumbs and a sour disposition.

All told, California Games isn't a bad package, especially since it comes free with the Lynx.

Chip's Challenge

If there's one game that will sell Lynxes, Chip's Challenge is it. As Chip, you must search over 140 mazes, gathering computer chips as you go. A multitude of tools, traps, devices and monsters make each puzzle a visual and intellectual delight. Ice floors slide you out of control. Fire traps fry you to a frazzle. Force floors drag you screaming to destinations unknown.

Some of the tools and devices include keys, which open color-coded doors; dirt blocks, which may be pushed around to make bridges or to set off traps; water shields, which let you walk over water; teleport squares, which zap you instantly to another location; and one-way walls, which turn solid when you walk through them. Chip's Challenge will give you a serious case of gamer's grin.

Electrocop

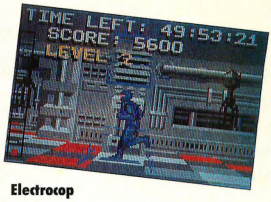
Adventure lovers will drool over Electrocop, which drops you into a large, 12-level fortress through which you must battle in order to rescue the president's daughter from the crafty Criminal Brain. Each level contains one or more doors that lead to other levels — not always in the expected order. Even expert explorers will need time to find the best path to the Criminal Brain.

Another game drawn in 3D perspective, Electrocop's outstanding graphics feature long hallways and rooms packed with robot walkers; python machines that pop up from the floors; virus robots hopping from tile to tile, leaving death in their wake; and mines and stingrays floating in the air. To add to the fun, computer consoles throughout the game offer data files and programs to desperate detectives in need of help.

Gates of Zendocon

Gates of Zendocon is the obligatory, horizontally-scrolling, outer-space shoot-em-up. A game with limited depth, play consists of cruising each of the over 50 universes, searching for exits and blasting anything that moves. To assist in the destruction, four friendly alien weapons — flying eyeball, death arising, cosmic destroyer and sonic dart — will, when you find them, automatically attach to your ship, and boost your firepower.

Although Gates of Zendocon makes little use of Lynx's scaling ►



Electrocop

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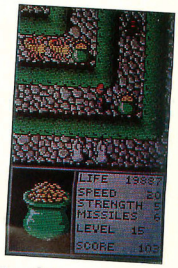

Gauntlet

Gates of Zendocon

Slime World

AT A GLANCE	
Game:	Chip's Challenge
Type:	Strategy action
Price:	$34.95
Summary:	This challenging action puzzle will give you a severe case of gamer's grin.

AT A GLANCE	
Game:	Electrocop
Type:	Action adventure
Price:	$34.95
Summary:	Outstanding graphics and sound coupled with a few surprises.

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AT A GLANCE	
Game:	Gates of Zendocon
Type:	Shoot-em-up
Price:	$34.95
Summary:	Got to have a token shoot-em-up. This is it.

AT A GLANCE	
Game:	Gauntlet, The Third Encounter
Type:	Maze
Price:	$39.95
Summary:	Tricky obstacles like illusory walls make this dungeon diversion as much a treasure hunt as a shoot-em-up.

AT A GLANCE	
Game:	Klax
Type:	Brain teaser
Price:	$39.95
Summary:	This Tetris-like brain challenger has awesome sound and gameplay.

abilities, this blastathon is populated with more varieties of cosmic crawlies than can be described here. In addition, a variety of obstacles, such as falling crystals and floating space junk, will keep galactic gun jockeys busy on the control pad. Gates of Zendocon is recommended for shoot-em-up fans only.

Gauntlet, The Third Encounter

Fans of previous Gauntlet adventures will be pleased with Gauntlet, The Third Encounter. In this sequel, adventure addicts can choose an alter ego from eight characters — each with unique attributes — and then descend into the multilevel dungeons in a quest to recover the legendary Star Gem. The game's difficulty varies with the character chosen.

Although The Third Encounter is basically a shoot-em-up, spells and other special items take the game a step beyond that genre. Moreover, tricky obstacles like illusory walls make this dungeon diversion as much a treasure hunt as a shooter. The display is vivid and imaginative and the gameplay fast and smooth. Most everyone will enjoy this magic-filled fantasy.

Klax

Klax, a vaguely Tetris-like puzzle contest, has already captivated the video-game world. As such, it's a guaranteed hit for the Lynx. Although more visually appealing than Tetris, Klax's gameplay, which is based on colors rather than shapes, is similar: colored blocks flip-flop down a conveyor. You must catch the blocks before they

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fall and stack them in bins in such a way as to align three or more identically colored blocks, thus forming a klax. The klax blocks then vanish and those above settle into the vacated space.

Once you start playing Klax, a maniac with an Uzi won't be able to tear you away. Not only are the graphics clean and vivid, the music is darn near good enough to dance to and the digitized sound effects and speech are astonishing for such a small unit.

Ms. Pac-Man

Anyone not familiar with this all-time classic has been living on the moon. Sure enough, galloping gourmets once again have a chance to conduct Ms. Pac-Man through a series of mazes, gulping dots and fruit and playing tag with four pesky ghosts.

AT A GLANCE	
Game:	Ms. Pac-Man
Type:	Maze
Price:	$39.95
Summary:	Everyone's favorite arcade game translates very nicely to the small screen.

The original four mazes are included, but with a quick keystroke, 21 new, super-tough mazes can be dumped onto the screen for your dietary pleasure. In the new mazes, lightning bolts, which can be scooped up to provide a burst of speed, appear intermittently, adding yet another twist to the venerable Pac-Man theme.

Paperboy

A shrewdly disguised shoot-em-up, Paperboy has you peddling your bike down city streets, tossing newspapers and avoiding obstacles. To complete a level, you must throw a paper onto the porch or into the paper box of each paying customer. What? Some jerks didn't subscribe? Try giving free samples — through their windows!

AT A GLANCE	
Game:	Paperboy
Type:	Arcade action
Price:	$39.95
Summary:	This arcade classic is really just another shoot-em-up without the shooting.

After completing a street, you take on the paperboy training course, where you flip papers at targets and guide your bike over obstacles.

Winning Paperboy means keeping your subscribers happy for an entire week. Paying customers who ►

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AT A GLANCE

Game:	Roadblasters
Type:	Race-car simulator
Price:	$39.95
Summary:	Like shoot-em-ups, every game system needs a token car-racing simulation.

don't receive their paper — or who get a broken window — will cancel their subscriptions. Too many cancellations and you're out of a job.

Boasting well-rendered graphics and convincing sound effects, Paperboy offers Lynx lovers hours of newspaper nonsense.

Roadblasters

Every video-game system needs a car-racing game, and, for the Lynx, Roadblasters fits the bill quite nicely, combining standard racing with heaps of action. Not only must you stay on the road, you must also wipe out your opponents. To this end, your car comes equipped with a laser. Occasionally, your alien partners provide additional weapons, as well as defensive items, including cruise missiles, electro shields and nitro injectors.

Roadblasters boasts 50 levels of play, and while the early levels are easy to complete, only a demon racer will make it to the end. If you liked Roadblasters on another system, you won't be disappointed in the Lynx version.

AT A GLANCE

Game:	Todd's Adventures in Slime World
Type:	Action adventure
Price:	$39.95
Summary:	Wonderfully gross.

Todd's Adventures in Slime World

One of the grossest games ever, Todd's Adventures in Slime World features a planet full of green, yellow and red slime — not to mention boogers. Yep, boogers. Slime World's six, lengthy, underground mazes contain more monsters than a Clive Barker film, all of them anxious to coat you with yucky slime and stomach-churning boogers. Luckily, there are water pools in which to wash it off and slime shields to protect you.

Each of the adventures has a different objective. For example, in adventure #1, you must search for the cavern exit, while in adventure #4, you must get out of Slime World before it melts. In adventure #5, you must solve each room's arcade-type puzzle. Combine all of the above with hidden rooms, secret doors

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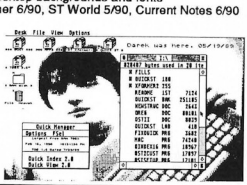

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AT A GLANCE

Game:	Xenophobe
Type:	Action adventure
Price:	$34.95
Summary:	Complicated controls and mediocre graphics make this shooter a so-so offering.

and slippery, sticky, bouncy, moving slime floors, and Slime World comes up a guaranteed hit.

Xenophobe

In Xenophobe, your task is to exterminate aliens who have overrun nine space stations. Although your primary objective is to eradicate the aliens, you also can pass a level by surviving past the time limit, or by using the station's self-destruct code.

In this shooter, you maneuver from room to room, taking elevators to higher or lower levels, blasting aliens and gathering equipment. The graphics in some rooms are more detailed than in others, and, in general, aren't as impressive as those in Electrocop, a similar game. Also, the complicated controls take some getting used to.

Zarlor Mercenary

The newest member of the Lynx collection, Zarlor Mercenary, is guaranteed to leave your trigger thumb bruised. In this futuristic shooter, you blast not only everything that moves, but everything that doesn't: ships, buildings, monsters, even people. To keep your flier on the cutting edge, 12 special upgrades can be found during battle or purchased at the end of a level. These include wing cannons, super shields, invisibility, lasers, back shooters and side shooters.

AT A GLANCE

Game:	Zarlor Mercenary
Type:	Shoot-em-up
Price:	$34.95
Summary:	This blastathon will please any Lynx fan with a thirst for destruction.

You'll need those upgrades, too. Swarms of alien craft, all firing at once, pepper the air with shots. As you struggle to destroy the attacking aliens and blast the ground targets, you'll begin to understand what people mean by the term "control pad ache." This blastathon will please all players with a thirst for destruction. ■

Clayton Walnum is the former editor of ST-Log. He is currently preparing a book on the Lynx for Hayden Books.

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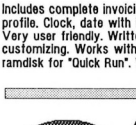

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OF AIRPLANES, ALIENS AND ADVENTURES

In Which Bernstein Crosses Swords, Knauss Crosses Time And Griffey Crosses Space

Blue Angels: Formation Flight Simulation

REVIEWED BY WOLF GRIFFEY

The U.S. Navy's Blue Angels are noted the world over as one of the best of the best when it comes to formation and single aircraft acrobatic flying. Accolade offers an excellent simulation of that and more in the program Blue Angels: Formation Flight Simulation.

How about whipping a Diamond Roll from the slot position over the Boston skyline? Just take the seat in the number four aircraft, follow your lead bird to the entry point and be precise in your control inputs. Stay on the dime in power, turns, altitude and timing.

Accolade's Blue Angels

Take The Pilot's Seat

How do you get on the team's pilot list? Simply load the program, which comes on one disk, and pass the off-disk entrance exam, a code wheel included with the package.

The main attractions are the F/A-18 Hornet and the Blue Angels flight routines from three types of airshows: High, Low and Flat. You'll also find a Spectator mode, and Simulator, Practice Maneuvers, Simulate Airshow, Practice Airshow and Airshow (the real thing) options.

Inside the cockpit, three displays give you coordinates, performance evaluations, radar, or help. The evaluator screen has a red and green plane overlay; keep the green plane on top of the red and you're looking at an error-free flight. The help screen shows the keystrokes needed to perform the maneuvers, with time and position info, to make your flight picture perfect.

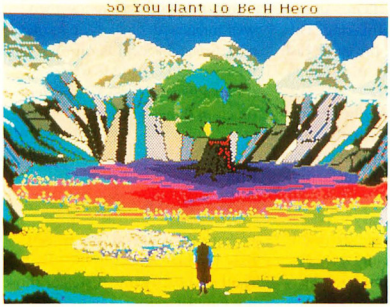
Outside, you get a view of the Blues at work, as you have never seen them before. Zoom in close or check it out from flight position.

Take Control

Now it's time to climb into the Simulator, pick the position and maneuver you want, and start practicing.

The ideal is to get the moves and timing down pat. Wire-frame flight-path boxes help keep you on target. You can run the autopilot awhile, watch a few times and memorize the instrument readings.

Later, when going through the paces by yourself, you will find that the Stop-Time Help feature is a big aide. Stop Time waits for you to



Sierra On-Line's Quest For Glory

Interplay's Future Wars

give the correct control input. Take a couple circuits and you are ready to try it full blown. Use the third help option, Real-Time Help, and those moves begin to become natural. Half speed and quarter speed, are also available, so don't worry! As you progress, you can turn them all off and increase the difficulty.

After each completed manuever, or, later, a completed show, you can get an evaluation of your airwork. That means error points and displays of the entire job, including replays to see what worked and didn't. Honest, hard work on these single manuevers leads to putting them all together for an entire simulated airshow in the trainer.

Take A Real-Time Ride

Practice may make perfect, but sooner or later, you've got to put your skills on the line. Go for it. This where the real thrill is. You'll be surprised how good it feels to make the pilot's list.

AT A GLANCE

Game:	Blue Angels Formation Flight Simulation
Type:	Flight simulator
Company:	Accolade 550 S. Winchester Blvd. Suite 200 San Jose, CA 95128 (408) 985-1700
Price:	$49.95
Requirements:	512K, color monitor
Summary:	An excellent alternate to the usual combat scenarios.

Quest For Glory

REVIEWED BY HARVEY BERNSTEIN

Things are not going well for the sleepy town of Spielburg. Not only have monster attacks increased, but a roving band of brigands has made travel outside of town downright foolhardy. Even worse, the evil ogre Baba Yaga placed a curse on town patriarch Baron Stefan. Now his son has disappeared while fighting the brigands, and a who-knows-what has carried off his daughter. What the town needs desperately is a hero — and guess who gets to fill those shoes?

Quest For Glory, originally released by Sierra On-Line as Hero's Quest, seamlessly and entertainingly meshes the character development and skill building of role-playing games with the problem-solving framework of the traditional adventure. This is one of those rare games that has replay value.

At the start of the game, you choose a skill group: fighter, magic user or thief. What makes Quest for Glory unique is the way your profession determines what problems you face. For example, when confronted with an item hidden up a tree, a mage casts a fetch spell, a fighter throws rocks, while a thief uses climbing skills.

In addition, there are areas in the game, as well as characters, that are only accessible to certain professions. This variety makes you want to come back and play again as a different character. Even though the plot line and most of the challenges are constant, there are always surprises.

As has been the case with Sierra's previous releases, the graphics are excellent, particularly the animated characters you meet along the way. Conversation with other characters ►

AT A GLANCE

Game:	Quest For Glory
Type:	Role-playing adventure
Company:	Sierra On-Line P.O. Box 485 Coarsegold, CA 93614 (800) 326-6654
Price:	$59.95
Requirements:	512K, color monitor
Summary:	You'll enjoy it as much the second time you play it as the first.

is much more important in this game than previous titles; there is a pretty convoluted plot to unravel.

This is not to suggest that Hero's Quest is a perfect game. I found the arrow-key controls used in combat sluggish. When playing as a thief, far too much time is spent running away from adversaries. Also, if you are playing with a single-drive system, be prepared to do a lot of disk swapping. Those graphics come at a price.

Aside from these minor quibbles, Quest For Glory is highly recommended. The humor, storyline and replay value make this a classic, particularly for fans of Sierra's other adventure series. A sequel is in the works, and I await it eagerly.

Future Wars

REVIEWED BY GREG KNAUSS

Future Wars begins with you washing windows, working "at what, believe it or not, is your full-time job." From this ignoble beginning you will travel thousands of years through time and circle the planet to save the Earth from alien invaders in this immensely enjoyable graphics adventure, the first import from France's Delphine Software.

The emphasis in the last sentence should be on the word "graphics." Dark monasteries, destroyed cities and, in the opening scene, a glass skyscraper are all excellently drawn and occasionally breathtaking. This is the one area where the game easily outshines it's adventuring competitors.

Unfortunately, while the graphics in Future Wars are superb, they are also very, very small. An object you need at the beginning of the game — while obvious if you're looking for it — is incredibly easy to pass over if you're not paying attention: It's only two pixels wide.

I liked the game's interface. Future Wars uses a point-and-click system with enough prose for detailed explanations. By way of comparison, it is halfway between Lucasfilm's mouse-intensive Indiana Jones style and Sierra On-Line's text-heavy King's Quest method.

Unfortunately, the text itself is often overly dramatic — multiple exclamation points abound — and the use of punctuation and quotation marks is sloppy and inconsistent. Furthermore, at any point you're limited to six verbs with which to communicate, resulting in fractured English ("Operate rubble" to dig in the rubble, for instance). However, overall communication with the program is easy.

Future Wars, of course, has a few other problems. The thing most likely to annoy more seasoned adventurers is the immaturity of the puzzles. While some situations are clever, others are nonsensical, the sort of things that anyone can see are obviously puzzles: Why is there a monk's habit hanging on a tree branch? Why is there a rope lying in the forest? Why is there a faucet on the wall? These jarring instances removed me from the game and made me think "Oh, well, how can I use that?"

Despite these minor points Future Wars is a lot of fun. It smoothly combines excellent graphics with a simple-to-use interface. If some of the prose is less than elegant and some of the puzzles are less than well-integrated, chalk it up to inexperience and accept Future Wars for what it is: an enjoyable way to spend a few days and an excellent omen of things to come.

AT A GLANCE

Game:	Future Wars
Type:	Graphics adventure
Company:	Interplay Productions 3710 S. Susan, Suite 100 Santa Ana, CA 92704 (714) 549-2411
Price:	$49.95
Requirements:	512K, color monitor, double-sided drive
Summary:	This maiden offering is a winner; expect more and better in the future.

Risk

REVIEWED BY WOLF GRIFFEY

Perhaps some of you, like myself, have fond memories of the Parker Brothers board game Risk. For those not familiar with it, simply put, each player starts out with armies stationed in countries around the world, then everyone tries to wipe out every other player's armies and conquer Earth. Dice rolls determine your success or failure, so luck, plus some strategic planning are needed.

This computer version is as good as the original board game. The interface is easy to learn and easy to use, but playing against another person means swapping seats in front of the computer, a common irritation with board-game conversions. On the other hand, if the computer is your opponent, it's almost ludicrously simple to out-strategize it since it always chooses Australia to defend. ■

Harvey Bernstein lives in San Francisco. Wolf Griffey is a former military pilot. Greg Knauss is trying hard not to grow up.

AT A GLANCE

Game:	Risk
Type:	Board-game conversion
Company:	Virgin Mastertronic 18001 Cowan, Suite A Irvine, CA 92714 (714) 833-8710
Price:	$39.99
Requirements:	512K, color monitor
Summary:	Competent translation with a few irritations introduced in the process.

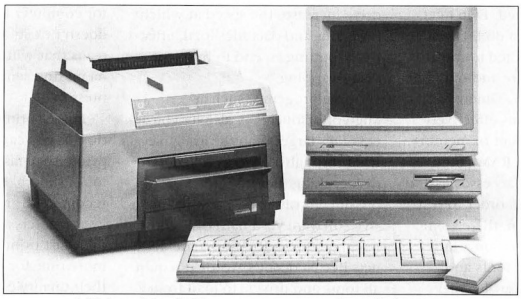
FINE TUNE FOR FINE PRINT

Improving Your DTP System

BY DAN FRUCHEY

Desktop Publishing/Word Processing Editor

I am often asked for my ideas on what makes an ideal desktop publishing system. The truth is that when coupled with a printer, any ST or Mega system can adequately perform DTP. However, if you do use one of the simpler systems, you'll have to make compromises in quality and publishing power that may not fulfill your needs or expectations.



A high-end Atari DTP system costs approximately $6,000.

What exactly are your DTP needs? Does your present system adequately fulfill its role? What, if anything, can you do to get more out of your system without starting from scratch? Let's take a look at the hardware and software required to create a DTP system. We'll also discuss a few changes you can easily make to your existing system to gain more publishing power. For now, we'll avoid some of the more specialized equipment, such as scanners and Postscript emulators, and focus on the basics.

How Does Your DTP System Measure Up?

Some users insist that the only possible hardware configuration for a "true" DTP system consists of a Mega 4, a hard disk and a laser printer with the latest page-layout software and commercial fonts. Unfortunately, not every ST owner has $6,000 to shell out for such a system, and only a small percentage of the people who go to this extreme will ever use their system to its full potential. With careful planning and a little practice, documents created on a 1MB system with a word processor and a dot-matrix printer can look as good or better than documents produced on the "optimum" system described above.

But let's go back to one of our earlier questions — does your current DTP system meet your needs? Changing a single piece of hardware or software may be all that's needed. Adding a paint program, a more flexible font set or another disk drive could breathe new life into a marginal system. Here are a few recommendations that might help.

Hardware

Monitor: Monochrome. Period. There are a variety of reasons for this, but the most important one is the higher resolution available on a monochrome screen. Color monitors show fewer pixels per inch, which means less definition and ►

greater difficulty in aligning page components.

Text is more difficult to read on color monitors and in small sizes characters may be completely indecipherable. Some of the best applications only run in monochrome; a color monitor limits your choices almost immediately.

Monochrome monitors cost about $200 less than their color counterparts and the money saved on the screen is better invested in additional memory, disk drives or software.

Memory: Full-featured DTP programs, like Calamus and PageStream, will not run on a 512K system, so consider 1MB as the minimum RAM you'll need. Don't get me wrong — you can do DTP on 512K, but you're limited to mostly discontinued software and only one page-layout program, Timeworks Publisher ST, that runs effectively on such a small amount of memory.

Even with 1MB of RAM you'll have to disable desk accessories and autoload programs in order to run your DTP application; there's simply no room for them. On a 1MB system, choose your fonts and graphics carefully. You also may need to break documents into several smaller files containing just a few pages. This is more of a nuisance than a restriction, but to reduce the nuisance factor, consider upgrading to 2MB or 4MB.

Unless you own an Atari SLM804 laser printer, 2MB of RAM is more than adequate for DTP. If you do own an SLM804, which grabs 1.2MB of memory right off the top, or you plan to produce long, graphic-intensive publications, the upgrade should be 2.5MB or better.

Disk Drives: A double-sided floppy drive is the better value. Though thousands of ST owners still have them, Atari discontinued single-sided disk drives awhile back. Regardless, many DTP applications are shipped ready to run on single-sided drives, but there are significant exceptions, including some of the top word processing, paint and page-layout programs.

As your DTP needs expand, you'll want more storage capacity. While a second disk drive is a low-cost alternative, a hard drive is the wiser buy. Besides the huge jump in storage capacity, a hard drive increases the speed at which programs and data files load, effectively putting an end to frequent disk swapping.

You don't need a laser printer to create great-looking documents.

Some programs, such as Migraph's Touch Up, also let you access files larger than the available RAM through a process called hard-disk caching. Because of this, it's possible to run more memory-intensive software via a hard disk without having to buy a RAM upgrade. Products like Neocept's WordUp require all fonts and drivers to load from a single location at one time. This means you may need to dump fonts simply because there isn't enough room on your floppy disk, not because you've used all available RAM. Again, a hard disk will solve this problem.

Printer: Contrary to popular belief, you don't need a laser printer to create great-looking documents. Dot-matrix printers produce documents of acceptable quality while still allowing a high degree of flexibility. They're inexpensive, require little maintenance, and, unlike laser printers, can be used on Atari systems with 1MB or less of RAM.

With the introduction of low-priced laser printers such as the Hewlett-Packard Laserjet IIP, prices on dot-matrix printers have tumbled. To make their products even more enticing, manufacturers have added features such as single-sheet feeders and expanded font sets. The result is a good printer that can retail for as little as $180. If you're using a 9-pin printer now, try upgrading to a 24-pin printer for greater quality.

What if you occasionally do need to laser print documents? Check with your local Atari retailer and arrange to purchase print time, or contact your user group for the name of someone willing to do the printing. Plan to pay around a dollar per page plus an hourly rate for computer time. If a local source doesn't exist, there are service bureaus that will print your documents and send them back via express mail.

A laser printer is a wonderful option, if you can afford it. The printers are fast, quiet and output looks superb. For businesses, I don't recommend anything else. Although laser printers are more expensive, their fast print speeds will allow more time for other projects, and their quality can save money on printing costs and attract a wider range of clients. The result is increased profits that balance out the expense.

Software

Although you can create documents with a word processor, document processor or page-layout program alone, there are many programs that will stretch your range of options.

Spell Checker: If your word processor isn't equipped with a spell checker you should purchase a stand-alone program as soon as you can. Poor spelling in a widely distributed publication is unprofessional and limits your ability to effectively reach your audience.

Paint Program: Programs such as DEGAS Elite let you create your own graphics or borrow pieces from existing ones to make unique designs. Make sure the program can create graphics with a single bit-plane; dithered color graphics are simply not as effective.

Draw Program: The only drawing program created exclusively for DTP on the ST is Easy Draw from Migraph. This excellent package creates vector graphics that can be imported into document processors and page-layout programs for high-resolution graphics regardless of screen or printer resolutions.

Accelerator: A stay-resident-in-memory program, such as Quick ST II, speeds up screen activity, particularly redraws, so that moving around a page takes a lot less time. It's particularly effective if your system doesn't have a blitter chip.

Image Cat: This nifty utility from Wiz Works catalogs your clip art so that you can quickly and easily locate graphics. (*Editor's Note:* See Dan Fruchey's review of Image Cat elsewhere in this issue.)

G+Plus: Codehead's GDOS replacement speeds up screen activity and lets you switch programs and ASSIGN.SYS files without rebooting your system.

That's All For Now

Next month we'll begin to examine page formats and other design elements you can use to effectively present your work to your readers. ■

Dan Fruchey owns a Mega 4 and just about every desktop publishing package every written.

Products Mentioned

Calamus, $299.95. ISD Marketing Inc., 2651 John St., Unit #3, Markham, Ontario, Canada L3R 2W5 (416) 479-1991
Easy Draw, $99.95; **Touch Up**, $179.95. Migraph Inc., 720 S. 333rd #201, Federal Way, WA 98003 (206) 838-4677
G+Plus, $34.95. Codehead Software, P.O. Box 74090, Los Angeles, CA 90004 (213) 386-5735
LaserJet IIP, $1,495. Hewlett-Packard Company, 19310 Pruneridge Ave., Cupertino, CA 95104 (800) 752-0900
Image Cat, $24.95. Wiz Works, P.O. Box 45, Girard, OH 44420 (216) 539-5623
PageStream, $199.95. Soft-Logik Publishing Corp., 11131 S. Towne Square, Suite F, St. Louis, MO 63123 (314) 894-8608
Quick ST II, $19.95. Branch Always Software, 14150 N.E. 20th St. #302, Bellevue, WA 98007 (206) 643-9697
Timeworks Publisher ST, $129.95. Timeworks Inc., 444 N. Lake Cook Road, Deerfield, IL 60015 (312) 948-9206
WordUp, $79.95. Neocept Inc., 547 Constitution, Unit A, Camarillo, CA 93010 (805) 482-4446

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Apprentice Software announces

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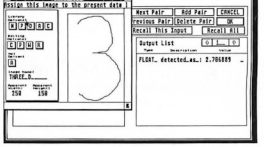
Neural networks are a newly emerging artificial intelligence technology that is being successfully applied to such diverse problems as image and pattern recognition, regression analysis, sales forecasting, chemical reaction product distribution prediction, medical test analysis, airport bomb detection, automatic control, music composition, econometric modelling, modelling of dynamic systems, and others too numerous to list.

The NCS is a full-featured, GEM-based neural network simulation program which permits the user to set up, train, and use arbitrary feedforward back-propagation trained neural networks. To the user, the neural network appears as a "black box" which he can train by "showing" it examples of the correct responses to inputs. After the network has "learned" this training set, the user can create a GEM-based stand-alone application which he may distribute as he chooses without any programming. Sets of examples with which to train the network as well as inputs to the network may be entered as numbers, characters, YES/NO values, and as pixel images. Other features include -- fast integer based arithmetic which utilizes the 68000's single instruction multiply and divide, and fast look-up table threshold functions for faster training, as well as slower but more precise floating point based training -- graphics preprocessing options which reduce image bandwidth and permit faster training and smaller networks - complete manual with examples and an introduction to neural networks.



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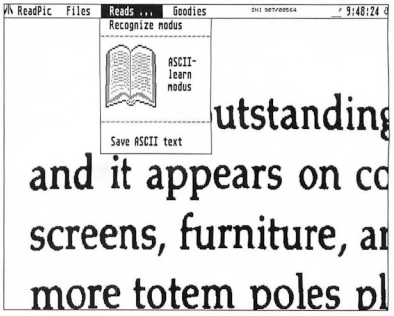
READPIC

Optical Character Recognition Done Right

BY DAVID PLOTKIN
Hardware Editor

Datel's Readpic offers true optical character recognition (OCR). You first scan a character; Readpic then translates it into ASCII text, making it readable in any ST word processor or desktop publishing program.



Optical character recognition (OCR) is a technology that has come a long way in the last few years. Essentially, it lets you move a document from paper into a computer *without* having to type. The document is first scanned to create an image. Unfortunately, this image can't be edited using a word processor, because the file is just random pixels to the computer. Enter the OCR. It attempts to recognize the individual letters in the image, so that the file can be saved as ASCII text. OCRs work via pattern recognition and require large amounts of RAM and expensive software to work.

AT A GLANCE

Program:	Readpic
Type:	Optical character reader
Company:	Datel Computers 3430 Tropicana Ave. # 67 Las Vegas, NV 89121 (800) 782-9110
Price:	$89.95
Requirements:	512K, Geniscan Hand Scanner
Summary:	*OCR software for the ST that really works. Great for large typing chores.*

Readpic To The Rescue?

Readpic, from Datel Computers, uses a very clever algorithm to implement OCR on the ST for any compatible image file. Compatible image files include DEGAS screen files (32K), STAD (a European format, seen in Megamax's Sketch) and .IMG files. The files can come from anywhere, but Readpic lets you scan directly in any of these formats using Datel's Geniscan ST. Having the scanning function built in is very handy.

Readpic has two basic modes: Recognize and Learn. To use Recognize mode you must first load a file, then load a font. Activate Recognize mode to tell the program to translate the image file into text. This can take a while and there is no way to interrupt the process if you notice that the recognition is not very good. When the image has been translated, you can save it as ASCII text. Any characters that were unrecognized are represented in the file as tildes (~) and will have to be added manually with a text editor.

You can also move through the file using Readpic, filling in the characters yourself as you go, before saving the file. A series of onscreen buttons let you move left, right, up

and down through the file. If you find a character that has been incorrectly defined, select the Redefine Symbol to correct the problem. The "special" button gives you access to the entire character set (including characters not available from the keyboard). With this function you can select the proper character with the mouse. Quick Search will find the next unrecognized character.

Recognizing Characters

How well the program recognizes characters depends on many things, including how carefully the scan was made (it should be straight horizontal or vertical), how well formed the letters are and how much random "noise" there is along the edge of the letters. It also depends on how closely the font you are using matches the one in the scanned image. For an image file based on the correct font, the recognition rate can often be 100 percent.

If the recognition rate is poor, even though the scan quality is good, the problem is likely to be that the font in the scan doesn't match the loaded font very closely. To solve this problem, Readpic's Learn mode comes into play. In Learn mode, you step through the text, "teaching" Readpic what each character is. In doing this, you are defining the font so that future scans based on this same font will be more successful. You can define two or more different patterns to be the same letter, to take into account, for example, bold and italics. Once completed, the font can be saved to disk.

There are several parameters that you can adjust in Readpic to increase the recognition rate. Readpic works on a clever but simple principle. Three lines are defined across the bottom and five lines up the side of a character. Basically, the character is recognized by the number of times that it crosses each line. Clearly, if a line's location is near an edge with random noise in the digitization, you'll get inconsistent results. You can also set spacing horizontally and vertically so that the program consistently finds the letters. An editor lets you clean up random pixels in the scan.

Final Comments

The Readpic manual, though translated from German, is good, and suffers from little of the confusing phrasing common to such efforts. The program does refuse to run with Double Click's DC Deskey. Readpic seems to work and could be quite a time saver for people with lots of text to get into their computer. With a little time and effort, you can soon convert digitized images to text easily. ■

FM MELODY MAKER

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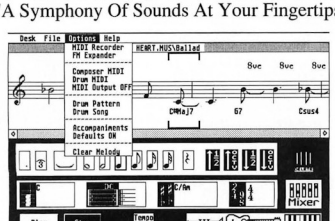

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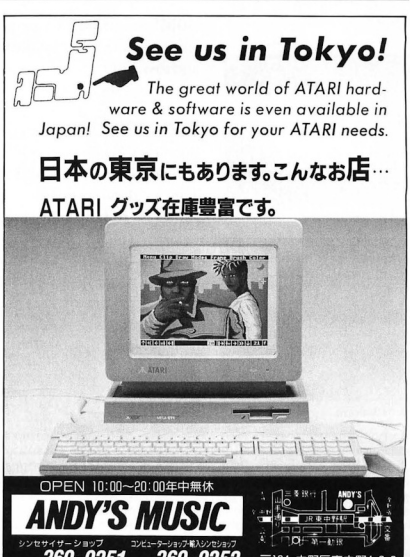
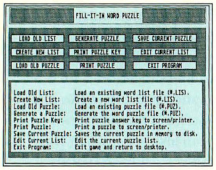
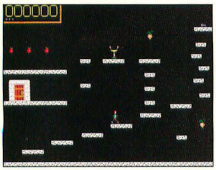
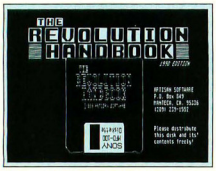




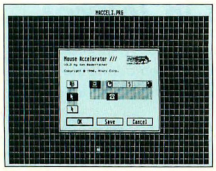
Fill-It-In, page 56



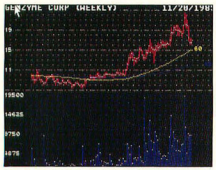
Zot, page 58



The Revolution Handbook, page 50



Mouse Accelerator 3



Stock Technician

Programs On Your START Disk

FILL-IT-IN *By Carolyn Rogers* PAGE 56

START brings you another great word puzzler. Fill-It-In puzzles are like crosswords without clues, in which you search through a list of words and place them into the puzzle. You supply the words; the program generates a puzzle.

MONOCHROME PUTMAKER *By Thomas Hopper* PAGE 62

This monochrome version of the color Putmaker (November 1988) is a valuable tool for GFA BASIC 2.0 and 3.0 users. Create your program screens with a DEGAS-compatible art program, then convert them to the GFA BASIC PUT format.

MEGA/STE TWISTER *By Ken Newman* PAGE 64

Twister, our extended-format utility, now works with STEs! And, of course, this month's START Classic still squeezes more bytes onto ST and Mega floppies.

ZOT *By Bruce Graves* PAGE 58

Return to those thrilling days of yesteryear with the classic search and avoid gameplay of ZOT, who is on a quest to recover a magical chalice.

THE REVOLUTION HANDBOOK *By Don Thomas* PAGE 50

If you want to join the Revolution (see article elsewhere in this issue), your how-to manual, the Revolution Handbook, is on disk in the FREEWARE folder. NOTE: This software is copyrighted by Artisan Software, and is freely distributable. START assumes no responsibility for the performance of this program.

MOUSE ACCELERATOR 3 *By Ken Badertscher, Atari Corp.*

Hiding in your disk's ATARI folder is a gem of a program to speed up your mouse and save your screen. Read MACCEL3.TXT for details. NOTE: The copyright for this program is owned entirely by Atari Corp. START does not support this software.

STOCK TECHNICIAN *By Tumblecraft Software*

Run Stock Technician, a powerful stock analyzer found in the DEMO folder, for a glimpse of the bulls and the bears. Read the file STOKTECH.MAN for details. NOTE: This is a demonstration program copyrighted by Tumblecraft Software. START assumes no responsibility for the performance of this program.

NEXT MONTH! START's Disk Goes Double-Sided!

compatible
not applicable

Archive	Un-ARCed Size	Memory 512K	Memory 1MB	Resolution High	Resolution Med	Resolution Low	Notes
Fill-It-In	FILL__ARC.PRG	48K					
Monochrome Putmaker	MON__ARC.PRG	75K					
Mega/STE Twister	Not ARCed	12K					
Zot	ZOT__ARC.PRG	121K					
The Revolution Handbook	REV__ARC.PRG	270K					Copyright by Artisan Software
Mouse Accelerator 3	MOUSEARC.PRG	19K					Copyright by Atari Corp.
Stock Technician	STOK__ARC.PRG	122K					Copyright by Tumblecraft Software

HOW TO GET START PROGRAMS UP AND RUNNING

1) Write protect your disk.

2) Make a backup copy. We format the disk using TWISTER.PRG (included on this disk) to increase the size of a single-sided disk to 400K. You can back up onto one Twisted, single-sided disk; one double-sided disk; or two GEM-formatted, single-sided disks.

NOTE: TWISTER DOES NOT WORK WITH GEM'S DISKCOPY. To make a backup using GEM's filecopy, open a window for your START disk, then drag the files in the window to the icon representing your backup disk (users of single disk-drive systems will be instructed by GEM to swap disks.)

3) Store the original and use the backup hereafter.

4) Un-ARC the files. We use Double Click Software's DC SEA utility to create self-extracting archive files. To un-ARC a program, simply double-click on the filename.

5) When the dialog box appears, choose Extract.

6) When the file selector appears, choose a destination disk (hard disk, RAM disk or floppy disk) for the uncompressed files. Make sure the destination disk has enough space for the uncompressed files, whose sizes are given in the chart above.

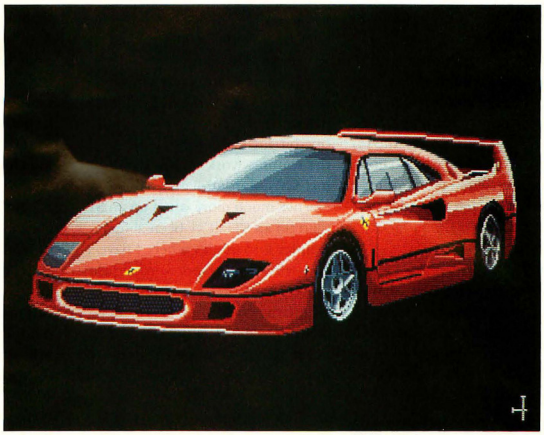
The screen goes blank, then the files are listed as they are extracted, and marked "OK" if the uncompression is successful.

CANVAS

4,096 Colors — At A Cost

BY ANDREW REESE
Graphics Editor

It's nice to finally see 4,096 colors on an Atari monitor, but the gyrations necessary to produce a picture with Canvas are probably more than the average user will put up with.



A new graphics program for the ST? Why, thank you, Mr. Editor, of course I'd love to review it! After all, new graphics programs are what a graphics junkie lives for. But after spending some time with Canvas, Microdeal's 4,096-color graphics program for the ST and STE, I'm not nearly so grateful. It's a program that tries to do too much and falls short in the basic areas of simple design and user-friendliness.

The Manual That Isn't

The first thing I noticed about Canvas was that there was no manual; the program and all of its accompanying files came on one single-sided disk with only a short jewel-box paper liner giving instructions. So, I did what most people do when they get new software — I stuck the disk in my drive and booted it up. After all, the box liner said that "[m]ost options should be fairly obvious as to their operation." With the online help facility touted on the liner, I figured I would have no trouble at all. Well, I was wrong.

I usually love online help. When it's well done, it can be a godsend. But when it's used as a cheap way of avoiding "real" paper documentation — as here — it's lousy. It takes a certain creative mindset to devel- ►

op online help with the proper balance of brevity and verbosity. Just taking any old ASCII file and making it available online is just not enough. Besides, have you ever tried to do tutorials while flipping back and forth from a program to its online help? Don't.

Misusing such common and established filename extenders as .SEQ and .IMG is criminal. I'd stay away from Canvas if for no other reason than to avoid cluttering my hard drive with files of dubious content and parentage.

The "manual" (that's what it's called, so help me) consists of 37 loosely-organized chapters that are accessible at the press of the Help key. Unfortunately, I couldn't seem to persuade Canvas that I had it installed on my hard disk; it continued to look for the manual on Drive A, not a good sign. And the table of contents was half off the screen in monochrome! After fighting with the online help for a few hours, I finally bit the bullet and booted up ST Writer Elite, merged together all of the chapters and reformatted the resulting 100K file from 40 to 80 columns. When I printed it out, at least I had a manual which I could actually use without cussing out loud.

Just A Pretty Face?

On reading through my new manual, I was actually pleasantly surprised at the attempted scope of the program. It runs in all three resolutions and can use the STE's 4,096 available colors. By switching palettes during the horizontal blank period every fourth scanline, Canvas can switch color palettes 50 times a screen and thus display all 4,096 colors on screen in a single image. Think about it, however: If you want to display all 4,096 colors, you have to set the palette switchpoints (called HBLs in Canvas) and define up to 50 separate palettes for a single image. It takes planning and it takes labor — a lot of labor — and, frankly, the results are just not worth the effort.

Although Canvas was written to take advantage of the STE's color palette, it also runs on STs with their one-bit-smaller color palette. All of the features work on STs, but with just 512 colors available. Also, it crashes much more often on an ST than on an STE. I've been able to wander into modes where I have a cursor with no response to mouse or keyboard, and other modes where the cursor follows the keyboard into never-never land. I was never able to pinpoint the exact sequence of inputs that caused these crashes. But I would never trust my artwork (even such as it is) to Canvas without plenty of file saves.

Canvas resembles DEGAS Elite in basic structure, in that the main menu is a right-click away from the work screen and vice versa. But where DEGAS uses a variety of dialog boxes and GEM drop-down menus to set its options, Canvas swaps out a portion of its main menu for the same functions. It's purely a matter of preference.

Another difference between DEGAS and Canvas is that Canvas uses a series of unique input and control conventions and, while they're not bad, they're not always the best. Worse, they aren't intuitive, a cardinal sin among inventive interface designers. (For all of its faults, GEM is still a predictable and stable user interface. Once you learn how a dialog box or radio button works, it works the same in any application.)

You can have as many work screens in Canvas as will fit in memory. On a 1040STE without any accessories, I had 11 available, and on my trusty old 2.5MB ST, I had 69 screens! That's far less overhead than with DEGAS. A major design flaw, however, lets you change screens only from within the Options special menu. Why? I don't know. And there are no keyboard alternatives for swapping screens, one of the design features that makes using DEGAS or Cyber Paint so easy.

3D Disaster

On top of a reasonably capable set of basic commands, 16-year-old British designer John Gymer has grafted an animation toolset and a rudimentary 3D-object creation module. Taking the latter first, my best advice to users is to avoid this difficult and obscure command set. With Antic's Cyber Sculpt and CAD-3D 2.0 still the state of the art in Atari 3D-graphics programs, I don't understand anyone else producing second-rate competitors like Canvas. Canvas asks you to define each line individually, has no facilities for creating graphics primitives and then limits you (thankfully?) to eight, 256-line objects.

Moreover, the 3D functions in Canvas do not include shading or rendering. You can create wireframe objects, rotate, move and place them as you wish, and then paste

AT A GLANCE

Product:	Canvas
Type:	3D draw and paint program
Company:	Microdeal (MichTron) 3285 Lapeer Road W. Auburn Hills, MI 48057 (313) 377-8898
Price:	$29.95
Requirements:	520ST, any rez
Summary:	The fact that it takes advantage of the STE's 4,096-color palette is Canvas' only redeeming feature.

them into your 2D images. That's it. The animation facility is little better. You can set up a series of sprite cels on a single screen and then define the order, speed and sequence with which they are shown. It's helpful if you're creating a game, perhaps, but not for much else.

It takes a certain creative mindset to develop online help with the proper balance of brevity and verbosity. Just taking any old ASCII file and making it available online is just not enough.

File This Away

My last major gripe about Canvas is that it creates a whole new set of filename extensions that are not used in any other program. While Canvas can load and save .PI? and .NEO files, it also uses .CPT (compact picture format), .CNV (Canvas picture format), .SEQ (sequence format — not Cyber Paint's .SEQ compressed animation format), .1CP (one-color fill patterns), .PAT (16-color fill patterns), .LIN (line pattern), .SPR (sprite pattern), .3D (3D object — not compatible with CAD-3D 1.0), .HBL (horizontal blank color sets), .PAL (palette files) and .GRD (grid format). In addition, the GEM .IMG filename extension is used for a raw image file, but without the GEM .IMG file header.

Creating all of these new file types is unnecessary. Misusing such common and established filename extenders as .SEQ and .IMG is criminal. I'd stay away from Canvas if for no other reason than to avoid cluttering my hard drive with files of dubious content and parentage.

The bottom line is obvious: I don't like Canvas and I don't recommend it. It's a very good first commercial effort for a 16-year-old programmer and shows the power of HiSoft's DevPac 2. It looks like a project under development that was modified for the STE and then rushed out the door to claim the title of the first 4,096-color paint program. Too bad, because, like Marlon Brando, it "coulda been a contender." ■

Andrew Reese is the technical publications manager at a major graphics software company. He was the editor of START for two years.

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IMAGE CAT

Graphics Cataloger Is A DTP Godsend

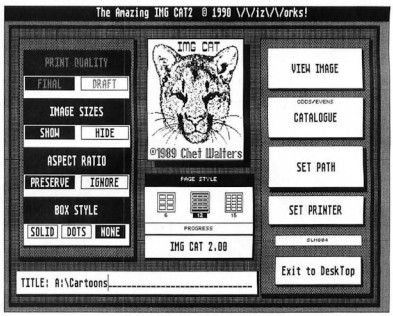
BY DAN FRUCHEY

Desktop Publishing/Word Processing Editor

How many times have you searched for a particular graphic, knowing it exists in your software library, only to give up after sifting through a dozen disks with no success? And when you finally do find the right disk, do you forget what you named that particular graphic? After 20 minutes of fruitlessly loading picture after picture, searching for the right one, you finally give up in frustration.

Does this scenario sound familiar? Well, there's help. Image Cat is a utility package from Wiz Works that locates your graphics files quickly with a minimum of fuss. It's particularly useful to those who use a wide variety of graphics with page-layout programs and document processors.

Image Cat's Main Menu



AT A GLANCE

Product:	Image Cat
Type:	Clip-art database
Company:	Wiz Works P.O. Box 45 Girard, OH 44420 (216) 539-5623
Price:	$24.95
Requirements:	512K, any rez
Summary:	This excellent clip-art cataloger is a godsend to desktop publishers and graphic artists.

Eight Programs In One

Image Cat isn't just a single program. There are actually eight programs and a desk accessory on a single-sided disk. Once run, the installation program asks for your name and then creates a customized version of each cataloging program from data files on the disk.

Although the installation process is primarily designed to reduce piracy, the installed programs display your name on screen once they're loaded, along with a personalized salutation when saving defaults or quitting. I find this form of copy protection refreshing and reasonable. It doesn't interfere with creating backup copies, yet it still requires users to responsibly manage their copies of the programs.

There are three main cataloging programs on the disk, comprising the bulk of the utilities. The Cat programs — Image Cat, Pic Cat and Mac Cat — will print catalogs of picture files which have been saved in Image (.IMG), normal DEGAS (.PI?), compressed DEGAS (.PC?), NEOchrome (.NEO), Tiny (.TNY, .TN?) and MacPaint (.MAC) formats.

While each Cat program has distinctive features, they're essentially designed to operate in the same way. I'll first discuss Image Cat, the program after which the utility collection is named, and then make a few comments on the other Cat programs that will help you identify their individual merits.

Image Cat

Image Cat is designed to print image (.IMG) graphics in catalog format. This extremely flexible utility lets you select a variety of page-layout options that make locating and using graphics easier.

Image Cat does not use GEM drop-down menus or windows, but it does make use of the mouse, file-selector box and a series of alert-box menus. Actually, complete conformity to the standard GEM interface would slow down program use and in its present form, Image Cat simply doesn't need windows or drop-down menus. Most options are accessed by selecting the appropriate button combinations and, since Image Cat is highly configurable, it's usually only necessary to indicate the location of pictures before printing begins.

Image Cat can print six, 12, or 15 graphics per page. The program can display any message you choose at the top of each page including disk names, file locations and copyright notices. Pages are automatically numbered and the program can display the name and pixel size of each picture for easier selection and identification. A dotted or solid line can be placed around each graphic to clearly delineate the area defined in each picture along with its contents. Pictures can be printed using their actual aspect ratio or enlarged to fit the dimensions of the space they have been assigned on the catalog page. Image Cat contains a built-in viewing utility so you can see individual graphics before printing them. A stand-alone version of this utility is also included on the disk in desk-accessory and program versions. Image Cat can automatically search through folders on your disk drives to find picture files. This lets you keep your files sorted without having to load them all into a single location for printing.

Image Cat will access a wide variety of printers using either draft or final-print modes for output. It currently supports the Atari SLM804 laser printer, the HP Deskjet, HP Laserjet and compatibles, and Epson-compatible 9- or 24-pin dot-matrix printers.

Pic Cat

Pic Cat is identical to Image Cat except that it is designed to print DEGAS, NEOchrome and Tiny format pictures in all resolutions. The program contains an adjustable dithering function that lets you convert color graphics to grey scales for greater detail in black-and-white printouts. Pic Cat includes a sort feature that lets you define the types of pictures printed and the order in which they are placed on the page.

Image Cat is actually eight programs in one.

Mac Cat

Mac Cat is especially useful to Spectre GCR owners. The cataloging program lets you print a collection of pictures designed for the Macintosh. Other than this difference, Mac Cat works the same as Image Cat.

Supplemental Utilities

The Image Cat disk includes several supplemental utilities that make the cataloging programs more useful. These include a desk accessory that lets you view image graphics before using them, a shareware program that will print an index page for your clip art along with the size of graphics in inches or centimeters, and another shareware program that helps you locate files on hard disks and floppy drives.

Impressions

All of the programs in the Image Cat package are self explanatory and quite easy to use. Each utility complements the others and brings added versatility that increases the usefulness of the entire package. My only wish is that the utilities be included in one program. When indexing pictures in a variety of formats it is necessary to switch utilities frequently and, although a utility called the CatsPaw Dispatcher speeds up the process, it is still time consuming to shift back and forth between six individual programs. Additionally there are a few options available in only one of the Cat programs, such as the sorting option used by Pic Cat, that would be better shared by each program.

I spoke to Chet Walters, Image Cat's author, about future versions of the program. He told me that the current utility set is being expanded to include cataloging features for GEM vector graphics and the icons used by NeoDesk and DC Desktop.

A Godsend

Image Cat allows full access to your clip-art library without the hassle. It's a godsend to any desktop publisher or graphic designer and it can save you many hours of work. Even if you own a relatively small clip-art collection, Image Cat is well worth the price. ■

Dan Fruchey is START's Word Processing/Desktop Publishing Editor. He was recently married and lives in Rohnert Park, Calif.

UNIVERSAL ITEM SELECTOR III

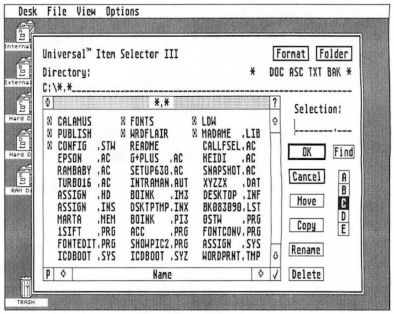
A Must-Have Utility Gets Even Better

BY DAVID PLOTKIN
Hardware Editor

Editor's Note: In the October 1990 issue of START we inadvertantly omitted the second page of our Universal Item Selector III review. We reprint it here in its entirety and apologize for any inconvenience we may have caused our readers.

The Universal Item Selector is probably one of the most utilized products ever developed for the ST. It is an invaluable substitute for the inadequate file selector native to the ST's operating system. Not only is UIS easier to use, it increases the functionality of the machine. UIS III gives you more and I wouldn't be without it.

Almost any disk action can be accomplished through Universal Item Selector III. A special option lets you show 36 files on screen at one time.



AT A GLANCE

Product:	Universal Item Selector III
Type:	Utility
Company:	Application and Design Software 909 NW Starlite Place Grants Pass, OR 97526 (503) 476-0071
Price:	$24.95
Requirements:	512K, any rez
Summary:	A must-have utility that's gotten even better.

Installing UIS III

UIS III goes into your AUTO folder. It is then summoned — superceding the default selector box —whenever your programs call for a file selector. The package also includes a version of UIS that you can install as a desk accessory. This accessory is compatible with Codehead's MultiDesk. UIS III, itself, is compatible with virtually all ST software, though it must be installed before Codehead's Maxifile in the AUTO folder for some of Maxifile's functions to work properly.

The Visual Difference

At first, UIS III looks like any other selector box. It presents the files in a scrollable box, with the usual selection and directory lines. This is, however, where the similarities end.

First, you can modify the file mask. A mask is the criteria a file must meet for it to appear in the scrollable box. This mask is normally *.*. With UIS III, you can drag a file to the top shaded bar to change the mask to match your file. You can also place a file on the selection line and double-click on the name or extension to change it to an asterisk.

The contents of the selection line can then be dragged to the shaded bar. So, you can set a file mask without ever typing a single character.

Universal Item Selector adds a number of enhancements to earlier versions.

Other new options involve the directory line. Backing out the directory path is as simple as double-clicking on the directory you want. Say, for example, you have a path such as D:WORDFLAIR/DOCUMENTS/LETTERS, and you want to back out to D:WORDFLAIR. All you do is double-click on WORDFLAIR in the directory line. You can also back out to the root directory by clicking on the drive letter.

UIS III also supports Quickpath, a system that lets you set up 10 paths, which you activate with the mouse or function key. Select a Quickpath to place that path on the directory line and jump to it instantly.

UIS III adds two wide modes to the body of the selector box. The first shows all the information for the standard 12 files, plus their time and date; the other shows 36 files. The font size can be varied as well, providing 64 file names (in the 36 mode) on a color monitor and 128 filenames on a monochrome screen. These can be somewhat hard to read, but are very useful for multi-file operations.

To select a file, click on it. To select multiple files, you can [Shift]-click on each file, lasso a group, or hold the right button and left-click on each file. As you add files to the selection group, the total number of bytes is shown at the bottom of the file-selector box.

Move, Copy or Delete a file by dragging it to the appropriate button. You can also put a mask (such as "*.DOC") on the selection line and drag that to the button for the function you want to use. In this mode, even Rename works, which lets you change the extension or name of all files that meet the selection-line criteria. For copying, you can turn off the Name Conflict warning.

Extra, Extra

Besides the normal file-selector functions, UIS III lets you create a folder, format a disk (which offers sub-options), retrieve information on a file or folders, change the attributes of a file and touch the file to update its time/date stamp to the current time and date.

You can print the current directory, print a directory that includes the highlighted files/folders only, or print the contents of a file. When printing the contents of a file, you can choose to print to the printer or show the file on the screen, scrolling either line by line or one screen at a time. There is even a search function to locate displaced files.

You can move the selector box around the screen, just like a regular GEM window. And UIS III provides a cold or warm reset function consistent with TOS 1.4.

Universal Praise

The Universal Item Selector III is an indispensable utility. With its many enhancements over earlier versions, it is well worth the price, and the upgrade policy ($5 with UIS II) is more than fair. The small manual is excellent and a great improvement over earlier versions. This is one of those pieces of software that, once you've tried it, you don't know how you ever lived without it. ■

Contributing Editor David Plotkin is a chemical engineer for Chevron U.S.A.

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On Disk: Noise Doodling; Address Book; Auto Dialer; Label Printer;St; Writer Secrets.
Reviewed: Mark Williams C. ; Menu+.

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On Disk: The aSTronomer: Text Compression and Huffman Coding with Personal Pascal: Flicker Animation Program; MIDISAVE.
Reviewed: Word Writer ST; Data Manager ST; Swiftcalc ST; Five BASICs compared

SPECIAL ISSUE #2

Features: Drawing and Painting Programs Overview Desktop Video; How to Set Up Your own MIDI Studio; Rock' n' Roll with Atari; Shopping List of Music Hardware.
On Disk: The Cartoonist; MIDI View; Ear Trainer.
Reviewed: Synth-Droid; Xsyn Patch Editors; Music Studio and Music Construction Set.

SPRING 88

Features: Earthquake; Upgrading Your ST; Dave Mason Interview.
On Disk: Home Budgeting; Exploring Prolog; 1987 Tax Template; Battle for the Throne.
Reviewed: Personal Finance Programs; Desk Accessories Compared.

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On Disk: Vocabularian; Brickworks; ST Microscope.
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On Disk: AVS; Sciplot; Appointment Calender.
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Reviewed: Monitern's Viking Monitor; DynaCaDD; Five Hard Drives Compared; Ricoh PC Laser 6000.

JANUARY 89

Features: Editor's Choice.
On Disk: GFA BASIC 2.0; Spanish Mastery, STARTKey Revisited; Slither.
Reviewed: GFA BASIC 3.0; Creator and Notator.

FEBRUARY 89

Features: Thanks for all the Fish; ST: 1999.
On Disk: Dah-Ditter; Moon Calendar; Kamikazee Chess, Killer Chess; VCR Organizer.
Reviewed: Atari's Planetarium; Robtek's Skyplot; Mirage Sample Editor's.

MARCH 89

Features: Three Artists Who Use the ST; Software Rental.
On Disk: Seurat Draw and Paint Program; Assembled Saucers; ST Coloring Book.
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BEGINNER'S BLUES

I am a brand-new beginner with an 800XL. I've been teaching myself, and some ANTIC back issues have been more than helpful. Can you suggest any other back issues that might help me? Specifically, how do I use DOS 2.0 and 2.5? I have a manual for DOS 3, but no disk — how can I get one? How can I get the basic AtariWriter? Also, can you recommend a Home Finance/Small Business program for me?

R. Hudgins
Birmingham, AL

For help with DOS 2.0, see the February 1988 issue's "First-Time Atari Users Handbook." DOS 3 was a real turkey — toss out that manual and forget it. For commercial software, the best remaining sources are the mail-order advertisers in recent issues of ANTIC.

Various home finance programs have run in ANTIC, but most are not as powerful as larger commercial programs such as Turbobase from MicroMiser and Business Manager from Reeve Software, two titles you might still be able to track down. Still, you might check out the November, 1986 "Personal Finance" issue's "Budget dataBASE" and "V-Graph" programs. Also, we ran "Checkbook Balancer" in October, 1987 and of course "Budgetizer" in the October/November 1989 issue.

— ANTIC ED

POWER MANAGER

I recently purchased the model CP290 Powerhouse interface and X-10 BSR modules as described in your August, 1988 articles "BSRK"and "Power Manager X-10." I tried to reach Terrific Corp. to get the cable and PowerManager software mentioned in the article, but they've apparently gone out of business. Is there any way I can get the cable and software I need for my Atari?

Bob Avenmarg
Maple Heights, OH

For a while, Antic Software was selling the PowerManager as part of the "Antic Arcade," our attempt to make discontinued software from other publishers available to 8-bit users. The Arcade has been discontinued, but Antic Software still has a limited number of PowerManager sets available (Catalog #TH0029). You get manual, disk and cable for $24.95. Call (800) 234-7001 for credit card orders.

If you have an Atari 850 interface you can hook up the IBM-PC version of the Powerhouse through your own modem cable. Then you can use the software from the August, 1988 Monthly Disk as described in the "BSRk" article.

REEVE RAVES

I was pleased to see the start of the interview with Alan Reeve in the April/May issue. I have had the Diamond Cartridge since it was first released, and have enjoyed using it, but have been disappointed in the lack of support it has received since.

The Diamond OS could bring about a rediscovery of the 8-bit computer, sparking programmers' imaginations. I am not an experienced assembly language programmer, but have tried using the early programmers kit. One program is a menu demo and the other will load graphic 8 pictures. Both of these can be found in the CompuServe libraries, if you're curious.

Kevin Packard
Grand Island, NY 14072

PRINT SHOP PROBLEMS

I own an Atari 800XL, a 1050 disk drive and an Atari XMM-801 printer. I recently purchased the program Print Shop, but when I try to print my chosen design all I get is garbage. Can you tell me how to get Print Shop to work with the hardware I have?

Kerry Gannon
Fulham Gardens, Australia

Unfortunately, Print Shop came out before the XMM-801 did, and the printer is just not compatible. Check the back of your Print Shop box (or the Print Shop setup option) to see a list of printers that will work with Print Shop. You might consider getting an Epson-compatible printer (the industry standard). You'll find that most software these days assumes you have an Epson-compatible printer. The only drawback is that to get an Epson-compatible to work with your Atari you will need an interface such as an Atari 850 or the P:R: Connection from ICD.

— ANTIC ED

XF551 CONFUSIONS

I just purchased an XF551 disk drive (my old 1050 drive died). I thought it was a double-sided drive, but the manual says it's single-sided. Even the old trick of the extra notch on the disk, which worked with the 1050, will not work with the XF551. How can you actually write to side 2 of a disk?

Les Brado, Jr.
Groveland, NY

The manual is misleading, but when the XF551 first came out the DOS it needed to format double-sided disks hadn't been finished yet. Now, with either Atari DOS-XE or ICD's SpartaDOS X you can format true double-sided disks. See the March 1989 issue for an in-depth review of both these DOSes that explains just exactly what each can do for you.

— ANTIC ED

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This device brings the power and flexibility of larger systems to your 8-bit. The **Multiplexer** is a device (actually a collection of modules) that allow up to 8 Ataris to read and write to the same drive (typically a hard disk), printer, and talk to each other. One "master" computer (any 8-bit) is equipped with the master **Multiplexer** interface. Then up to 8 "slave" computers can hook up to the master, each running their own slave interface. The "common" peripherals (things that are to be shared) are connected to the master computer. On each slave, all disk and printer I/O is routed through the master, so no drives are needed on them. The master computer can be configured in any manner you wish - you can for example have certain peripherals "local" to the slave, or routed to a different number on the master. Under development is a BBS system that will make full use of this device, allow log up to 8 users to be using the system at the same time! A multiuser chat mode is a feature of this program, however, you do not NEED the program to run a BBS with the **Multiplexer** (but be warned that not all BBS programs will run concurrently). All slaves are independent, and do not need to have the same program running on them. This system is excellent for BBS SysOps, because you can be using your hard disk(s) while still running your BBS uninterrupted! Another example is in a classroom situation, or anywhere a disk needs to be shared by different people. This is an EXCELLENT programming/debugging tool as well! The **Multiplexer** price is $199.95 for a master and two slave units (plus $5 S/H/I). Additional slave units are $99.95 each.

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Hard Drive Systems include drive, Black Box, a zero RF power supply controller, cables DOS and assorted HD software. All systems are wired, preformatted and have sample programs on them. Attach to your computer and BOOT! No hassles! We have systems available from 5 meg to 1GB meg. Prices start as low as $399.95!

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HOT SOFTWARE

Daisy Dot III, Diamond Paint, Express!, SuperFrogs FunSpeller and Track Stack

DAISY DOT III

Letter-quality printing from your dot-matrix

Review by Chester Cox

You can easily spend thousands of dollars on printers and computers in an effort to get really professional-looking printouts. Or you can just send $25 for a copy of Daisy Dot III and produce similar results with a cheap dot-matrix printer and your faithful 8-bit Atari.

Daisy Dot's previous versions have already had their share of praise. In the June 1988 ANTIC, Charles Cherry enthusiastically called Daisy Dot II excellent, far better than he'd thought possible. Daisy Dot III is Roy Goldman's most extensive and user-friendly version yet.

Like its predecessors, Daisy Dot III creates letter-quality print in several varieties of fonts, even if your dot matrix printer doesn't normally support letter-quality fonts. Now Daisy Dot III adds new features making the program easier to use, including support for more printers. In addition to Epson compatibles, you can use Daisy Dot III with Star Gemini, Atari XMM801, C.Itoh/NEC and Mannesmann-Tally 9-pin printers. The font editor, already used by many to create new fonts, is better and easier to use.

Best of all, Daisy Dot III now lets you use files saved normally with almost any Atari word processor. With earlier versions of Daisy Dot you had to first create your document with a word processor, then save the file in ASCII format by "printing to disk". This determined the overall shape of your document. Daisy Dot III simplifies your job by reading any normally saved file and printing it out with the margins you specify in the configuration file. Daisy Dot III handles the word-wrap, character spacing, centering and other features for you, through commands you place in the text using your favorite word processor.

As before, Daisy Dot works best when you can go back and forth between it and your word processor. For real speed, a word processor that can be loaded from DOS, like TextPro, has a distinct advantage, since you don't need to reboot to go back and forth. In fact, Roy Goldman will sell you the latest version of TextPro, with complete documentation on disk, for an additional $5.

Two versions of Daisy Dot come on disk, one for use with SpartaDOS and the other for Atari DOS 2.5. You must RUN a BASIC configuration program to set your printer drivers, margins, paper size and the drive you want to use. The fastest configuration I've seen combined SpartaDOS and a large RAMdisk (128K), with TextPro and Daisy Dot III loaded into the RAMdisk. However, Daisy Dot III worked fine on a venerable 800 with 48K, slowed only by disk access.

You can no longer print pictures with the program, however. Daisy Dot III bypasses any picture calls, going for straight text with lots of fonts instead.

The 50-page manual includes clear instructions on setting up your configuration file, and thorough instructions on how to embed commands in your text file, with plenty of printed examples. Actually printing your text is easy — run Daisy Dot III, select a font when requested, and type in the name of text file to be printed. You can print a straight text file (with no formatting commands) in the font of your choice without ever embedding a single code, but the manual tells you how to get such effects as block left, block right, centered text, hanging indents, tab settings, reset margins, headers, footers, underlines, hard spaces — and of course, how to mix multiple fonts on one page, or even on one line.

Daisy-Dot III is a copyrighted shareware program. The full, registered version is available from author Roy Goldman for $25, and includes the font editor with seven fonts on the main disk, plus a sec-

ond disk containing another 44 near-letter-quality fonts, most of them using proportional spacing (for that typeset look). A freely distributable version of Daisy-Dot III with fewer features will be available on GEnie and CompuServe and may be distributed by some users groups.

For creating a polished, desktop publishing look on your Atari, Daisy Dot III is the best program available, and at a very low price. Note that author Roy Goldman is attending college and may not be able to respond quickly to specific questions. However, his family will still mail out packages promptly upon your order being received.

DAISY DOT III $25
Roy Goldman, 2440 South Jasmine Street, Denver, CO 80222.
Requires at least 48K memory, DOS 2.5 or SpartaDOS.

DIAMOND PAINT

Best drawing software for the 8-bit Atari?

Review by Chester Cox

Diamond Paint is a program for the Diamond graphic operating system (ANTIC, June/July 1990), that lets you use an ST mouse to create your 8-bit works of art. The $79.95 package includes the Diamond cartridge, which gives you an icon-and-menu based interface for your 8-bit Atari. If you're tired of the jagged edges you get when you draw with a joystick, Diamond Paint and an ST mouse may be exactly what you're looking for.

As a drawing program, Diamond Paint has all the features we've come to expect from programs like the old Micro-Illustrator and Blazing Paddles. In addition, it adds some very handy features. The ability to cut and paste is standard in the 16-bit world, but it's something new for your 8-bit. To my knowledge, Diamond Paint is the only paint program for the 8-bit Atari that allows users to cut out smaller portions of a screen and save them to disk as clip art. The documentation is unclear on this process, but a little experimentation showed me how to save clipped art to disk. Once you clip a portion of art, you need to click on the disk icon, ABORT back to the main menu bar, then SAVE the clip art to disk.

Diamond Paint will also compress picture files, saving valuable disk space. If you've upgraded your Atari, Diamond Paint can take advantage of that extra memory, keeping your workscreen in memory so you can load additional clip art into it. You can use different fonts for any text entry, making for some nice poster combinations.

Diamond Paint's ability to cut and paste is something new for your 8-bit.

The manual doesn't always cover features in sufficient detail, but Diamond's simple operation and useful menus make it relatively easy for users to explore and learn. The manual also includes a number of screen shots that help clarify some of the less-clear instructions.

Best of all, Diamond Paint's picture quality is unmatched. You can use any input device — there are drivers for joysticks, trackballs, and touch tablets — but you'll get very fine detail with an ST mouse. An included image of a Frazetta painting demonstates the tiny details possible with Diamond Paint.

Diamond Paint is a winner, it's worth the price of the entire Diamond set by itself.

DIAMOND PAINT $79.95
Reeve Software, 29W 150 Old Farm Lane, Warenville, IL 60555. (312) 393-2317. Includes Diamond Cartridge and Programmer's Kit.

EXPRESS!

Cartridge Version 1.12 Ultimate telecommunications software for Atari 8-bit.

Review by Theodore DiVito

Soon after I purchased an Atari XEP80 card for my Atari computer, I started looking seriously for a telecommunications program that would take advantage of the XEP80's abilities to give me an 80-column terminal viewing mode. I read that Express 3.0, a well-known public domain terminal program by Keith Ledbetter, allows such a setup. I tried Express 3.0 for a while, but found it had limited compatibility with the XEP80's 80-column screen. It also lacked some file transfer protocols I wanted, in particular Y-modem, which I use frequently.

Fortunately, Keith Kedbetter has now put out an improved version of Express! on a ROM cartridge, instantly bootable. The package includes a 42-page manual. I popped the cartridge on top of my SpartaDOS X and R-time 8 cartridges. The Express! 1.12 cartridge allows piggy-backing another cartridge on top, so I added BASIC XE for good measure, making a total of four stacked cartridges.

I was more than pleased when I tried out my Express cartridge. Not only did it allow full telecommunications with my CTS Datacom 2400 bps modem, but it worked with my XEP80 as well. I linked up to some of my favorite boards and tested the program out. It worked great.

Among its notable features, Express! 1.12 allows transmission speeds up to 19,000 baud, use of a capture buffer with up *to 512K (provided* you have the extra memory and aren't using it for a RAMdisk), a ►

built-in SpartaDOS-type shell, and complete configurations for any type of configurable modem. You can use subdirectories if your DOS allows them. Ten file-transfer protocols are allowed, including Y-modem, Y-modem batch, L-modem batch, Windowed Xmodem, SEAlink, Xmodem, Xmodem CRC-16, ASCII, and soon to come Z-modem as a file loaded from the DOS shell. Features such as expanded miscellaneous buffers, changeable screen colors, 50-entry dialing menus and autodialing are also supported.

This original version of Express! had a few minor bugs, including some screen glitches with the XEP80. I have one monitor linked to my XEP80 for 80-column viewing, and another monitor hooked to my computer. Express! allows you to turn off the 40-column screen for faster transfers at very high transmission rates, but this initial cartridge would drop characters when I shut the 40-column screen off.

Fortunately, these bugs were completely fixed in version 1.12. This version of Express! puts all environment information onto a 40-column screen, and leaves on terminal mode on an 80-column screen, if using an XEP80. If not, everything appears on your 40-column screen. I talked to Keith Ledbetter at the Washington DC Atarifest in October, 1989. He demonstrated that Express! works well with a hard disk. One item I'd like to see added to the Express! Cartridge 1.12 is a "print dialing list" option. This is the one useful item I've found that was available on Express! 3 and not on the Express! Cartridge 1.12.

The cartridge also has one quirk that can be avoided. You can accidentally lock up your system if you try to by-pass the Express! cartridge by holding down the [OPTION] key while booting. Some, but not all, cartridges can be accessed this way. The only safe way to lock out the Express! cartridge is to run Express! first, then select "Run Piggy-Back Cart" from the menu bar. Express! will bring you back to DOS, where you should select the "Run Cartridge" option to get to your piggy-backed BASIC.

Express! 1.12 has just about all the features I could want for my 8-bit telecommunications. Its biggest limit lies in the DOS you use, so get the best you can. I strongly recommend ICD's SpartaDOS X.

Express! 1.2 has just about all the features I could want for 8-bit telecommunications.

EXPRESS! 1.12 (Cartridge) $69.95
Orion Micro Systems, 2211 Planters Row Drive, Midlothian, VA 23113. (804) 794-9437. See also Orion Micro Systems SIG on GEnie, or their own BBS, (804) 379-4156.

SUPERFROGS FUNSPELLER
(and SuperFrogs minus spelling too)

Review by Chester Cox

SuperFrogs invites you to play a frog with an occasional super power. The type of power depends on which of the seven different games you choose. In "Star1000," for instance, your frog has photon charges and the occasional shield. Your frog hops about the screen, avoiding those "nasty trees" and grass. Your objective is to either blast targets, eat things or avoid things, and sometimes you must do all three.

SuperFrogs is advertised as seven different games with "over 10,000 variations." Some of the variations include different playfields, handicaps, timing options, and a nice "autoplay" mode where your Atari plays the game and you can bet on a specific frog to win.

At first glance, the screen looks pretty dull and movement is jerky. Yes, SuperFrogs is written in good old Atari BASIC, and the Player-Missile frogs have that familiar stiffness in their movement. Even so, after awhile you'll really get into the game and find yourself enjoying it.

Still, it's hard to justify even a $10 price tag for a game which doesn't match the smoothness of many type-in BASIC games. It's also irritating to be unable to use a modified drive at full speed. If you don't slow down your high- speed drive, a buzzer sounds and the words "GIVE US A BREAK" appear onscreen. It seems odd that UltraBasic felt it necessary to copy-protect such an inexpensive BASIC program.

SuperFrogs FunSpeller

If SuperFrogs was something of a disappointment, SuperFrogs FunSpeller is a surprisingly successful program. It looks, feels and plays just as primitively as SuperFrogs, but its objectives are so entirely different that I can forgive these flaws.

Now your frog's objective is to grab letters to either spell words or to practice the alphabet. Word categories include states, capitols, sports, names, elements, and food. Each list holds 50 words, for an impressive total of 750 words. Nor are you limited to the 15 lists included. You can create up to 40 of your own lists, or "word-sets," with as many as 20 words each.

Depending on the level, players search mazes for the letters of the alphabet in order, or for the letters of words from a chosen list. Words to be found are flashed briefly on the screen. Other games, called "Tree Traps," offer a froggy variation on Hangman.

As with SuperFrogs, movement is klunky and the graphics are spartan,

but FunSpeller does not aim at an audience of experienced gamers. My test subject, also known as one of my daughters, was scoring low Bs on her spelling tests. We had studied with her and drilled her on her lists of spelling words with no improvement. When FunSpeller came in, we installed each week's spelling words in the program. After six weeks of "playing" with FunSpeller, my daughter's grades have gone up to a consistent 98-100%.

That's really all the recommendation you need for SuperFrogs FunSpeller. It does what it's supposed to do, and does it with minimal difficulty at a low price. Children — or anyone with spelling difficulties — can improve their spelling with SuperFrogs FunSpeller.

SUPERFROGS $10
SUPERFROGS FUNSPELLER $10
UltraBasic, Inc., 10 East 10th St., Bloomsburg, PA 17815. (717) 784-4545. 48K disk, requires Atari BASIC and joystick.

TRACK STACK

Easy-loading 15 machine language programs on one disk

Review by Chester Cox

There's already a number of utilities that let you load and run machine language programs from a disk, and SpartaDOS comes with a colorful menu selection program for this purpose. Track Stack provides an inexpensive utility that lets you "stack" a number of machine language programs on one disk. Depending on the size of your programs, up to 15 can be put on one disk. Track Stack only works with machine language programs that can be loaded from DOS. BASIC, ACTION! and AVUE programs will not be read properly. (Many ANTIC programs can be loaded from DOS, even though the instructions tell you to rename the file AUTORUN.SYS. This is one way to keep from having a lot of disks around with only one AUTORUN program on them. — ANTIC ED)

The extra, subtle features of Track Stack make it attractive enough to be worth its low price. These features include the menu with a bar across the bottom of your screen indicating the approximate time it will take to load and run a program. You can also name your "stacked" programs more fully. Instead of the eight-character limit of AtariDOS filenames, you can give your files any title, up to 20 characters each. This feature alone is valuable for anyone who feels frustrated by the eight-character limit.

The documentation could use some work. Nowhere in the manual does it indicate how to make a Track Stack disk, though it does tell you to add programs to the Track Stack disk. Trying a blank formatted disk didn't work. Only when I actually inserted the original master disk would it permit programs to be added. It seems you must duplicate the master disk every time you want to make a new "stacked disk."

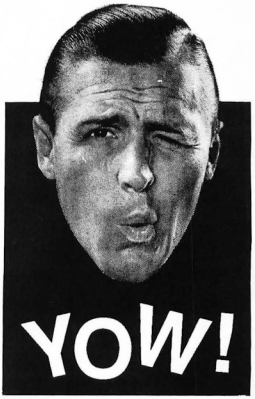
With a properly written manual or a quicker way to make a Track Stack disk, I'd strongly recommend Track Stack to users group librarians or anyone who collects a lot of machine language programs that can be loaded from DOS. Still, it's a nice, low-priced utility which can save space and provide fully descriptive titles for your programs. ■

TRACK STACK $10
UltraBasic, Inc., 10 East 10th St., Bloomsburg, PA 17815. (717) 784-4545. Requires at least 48K memory, joystick and Atari BASIC.

Chester Cox is a U.S. Air Force Sergeant who is an active 8-bit supporter.

Theodore DiVito is studying Astrophysics at the University of Maryland.

"FOR $22.95 I *COULD* RENT TEN FELLINI FLICKS, BUT . . .



. . . I'D RATHER BE PLAYING *PONDERING ABOUT MAX'S!*"

Here's just a few of the reasons why:

• P.A.M.'s fast-paced arcade action pushes my 64K Atari 8-bit to its limits. The animation and sound are more advanced than what I've seen in most 16-bit games.

• It features great music by Howard Jones—*without* annoying subtitles.

• I'm still discovering new screens and tricks after playing for over two months.

To get your own copy of Pondering About Max's just mail a check or money order for $22.95 to:

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KEY WHIZZER

Is It A Game — Or A Typing Tutor?

BY JIM ROGERS

Improve your knowledge of keyboard layout and your typing skills with this engaging maze game, a delightful cross between a typing tutor and Pac-Man. This BASIC program works with all Atari 8-bit computers with a minimum 48K.

Improve your knowledge of keyboard layout and your typing speed with Key Whizzer. This entertaining game mixes arcade maze-chase action with a typing tutor, for lots of educational fun. You travel around the maze by typing the letter which lies in the direction you wish to move (you're an asterisk) while avoiding the enemy "at" signs (@). In the process, you'll develop a reflexive knowledge of the keyboard that will speed up your typing, whether you're a touch-typist or use the old "hunt-and-peck" method.

Getting Started

Type in Listing 1, WHIZZER.BAS, check it with TYPO II, and SAVE a copy to disk. When you RUN Key Whizzer the maze appears. The program pauses briefly, while loading its machine-language routines. Then it asks, "PLAY? Y/N." Press [Y] for yes, and the game begins with letters filling the maze. You are the pink asterisk in the lower center of the maze, surrounded by blue letters. To move, simply type the letter next to you in the direction you want to go. As you cross over each letter, it turns purple.

Your task: change all the letters to purple, while avoiding your relentless pink enemies. Four of them chase you, dogging your tracks faster and faster as you finish each maze. Let one catch you, and you lose a life.

The sound effects and the keyboard control are handled by vertical blank interrupt machine language routines. Another M/L routine handles player positioning. With the help of speedy machine language, the keyboard control should be fast enough for the fastest of speed-typers. ■

Listing on page 109

Jim Rogers lives in Marion, OH. This is his first appearance in ANTIC.

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LOTTO PICKS

Your Atari Picks The Numbers For Any Lottery Game

BY MATTHEW J. W. RATCLIFF

Now you can play any lottery with numbers generated by your Atari — and see your odds of winning with any number of bets. This versatile BASIC program works on any 8-bit Atari computer with a minimum 48K.

Whenever the Missouri Lotto jackpot approaches 10 million dollars, I get the "lottery fever" and buy a few tickets. Knowing the odds (several million to one), I seldom play. Still, the vision of becoming a multi-millionaire is enough to send me to the grocery store to play every now and then.

Selecting lottery numbers can be a difficult task. Even though no group of numbers is any more likely to win than another, some people have systems, based on family members' birth dates, aniversaries, and the like. Others like to pick random numbers in hopes of being more likely to match up with the "randomness" of the lottery machine.

One week I let the lottery computer make random picks for me on 10 plays. It turned out that I didn't match a single number for that week's drawing in any of the 10 plays. The next time I played, just for fun, I used my Atari computer to generate 10 random numbers and played those. One game matched three of six. There wasn't any money in it, but it made me feel my Atari was a bit more lucky (or maybe just more genuinely "random") than the lottery machine's picks.

Most computers generate random numbers with a mathematical algorithm that takes a very large prime number and starts dividing it, giving the remainder as your random number. The sequence varies based on a "seed," usually provided by the computer's system clock. The numbers aren't really random at all, but actually part of a very long, repeatable series of numbers. In contrast, the Atari home computer uses an electronic "white noise" generator to create random numbers. This device is the sum of many different signals, and at any point in time sampling it will create a very "random-looking" number.

Thanks to this feature of your Atari, this Lotto Picks program will give you just about the most random numbers you can get from a computer. It's the way I like to play the lottery, and I hope it works for you too. If you're not interested in gambling, you might find it interesting simply to pick numbers and then watch the drawings, without actually playing, to see how often your Atari hits the mark. Studying the odds calculated by Lotto Picks might prove educational to those of you studying probability and statistics in school — and maybe convince you to keep your money in your pocket instead of lining the state's coffers.

Getting Started

Type in Listing 1, LOTTO.BAS,

check it with TYPO II, and be sure to SAVE a copy to disk.

When RUN, Lotto Picks presents the main menu, where you can set the minimum, maximum, and total lottery numbers to choose. You can easily adjust the many options and settings to play any lottery numbers game. To change any of the settings shown, simply press the letter shown beside that setting, then type in a new number or value, and press [RETURN].

When you have the settings you want, press [A] to pick your lottery numbers. The program will immediately generate the required number of random numbers and display them. Once you have numbers displayed, a small menu allows you to enter [P] to print the picks, [A] to select again, or [M] to return to the main menu. If you want to print all your picks you must press [P] after each one.

The current minimum number is 1, as shown next to menu option B. If your lottery starts with a different number (some start with zero), press [B] and type a new value. To save yourself of changing the value every time you run the program, you can change the value of PMIN in line 70 of the program, and SAVE it to disk. Similarly, to change the maximum possible number, use option C, or change the value of the variable PMAX in line 70 of the program, and SAVE the changed program to disk. (The current maximum lottery number is 48, the value for the Missouri State Lottery.)

Option D lets you set the total of numbers to be picked at a time. For most lotteries, six numbers are selected for a game. Some states, however, have different games with variations on the total to select. Here in Missouri we have Lotto, which lets you pick 6 numbers out of 48; PICK3 (3 of 30, 0 to 9 for each digit); and Lotto America (6 of 54). Adjust the PCNT variable in line 70 to make a permanent change.

Select option E to allow or disallow duplicate numbers. In most lottery games you pick a group of 6 different numbers from a pool of 48 or more. Other smaller games (which are easier to win) allow you to pick a group of 3 or more numbers, each from digits zero through 9, for example. In this case, you may pick duplicate numbers.

Playing the Odds

A counter at the top of the main menu helps you keep track of your picks. Press [G] to reset this counter. This number appears on your printouts, next to your picks. It is also used to determine your odds of winning when you use option H, Calculate Odds. The more times you play in a single drawing, the greater your chances of winning.

Based on the various options for a game, including whether or not duplicates are allowed, your odds of winning are calculated and displayed. Selecting 6 numbers from a 69 possible different numbers results in odds of nearly 110 million to one. In the unlikely case there are 70 or more possible numbers the calculations will result in a floating point overflow — in other words, the Atari computer simply cannot calculate your odds with that many numbers.

Odds for single plays are shown on the back of virtually all lottery tickets. Lotto Picks keeps track of the total number of picks you have made since starting the program. When odds are calculated, they are displayed for one play and for the total number of plays for which you have selected numbers (assuming none of the plays are identical). Due to the Atari's low precision floating point math (only 6-byte single precision, as compared with 12-byte double precision of most other computers), your odds may not exactly match those printed on your lottery tickets, but there should be only a small error.

If you are picking a number from 0 to 9, duplicates allowed, and you choose 3 numbers, then your odds of winning are 1 in 1000. Why? Because duplicates are allowed, there are 10 ways to pick the first number (0 through 9), 10 ways to pick the second, and 10 ways to pick the third, or: 10 * 10 * 10 = 1000.

When selecting a small set of unique numbers (no duplicates) from a larger pool, your odds are calculated differently. If you are picking 6 numbers from 40, your odds are not 1 in 40 to the 6th power (something like one in 4 billion — which would be your odds if duplicates were allowed!). When you pick your first number, then you have one of 6 chosen. There are 5 left to choose, and there are 39 numbers from which to select your next number. There are 38 ways to pick the third, 37 to pick the fourth and so on. The calculations work out to the following equation:

One chance in 40!/6!*(40-6)! = 3,262,622

continued on page 112

TYPING SPECIAL ATARI CHARACTERS

The Atari Special Characters and the keys you must type in order to get them are shown below:

For [CONTROL] key combination, *hold down* [CONTROL] while pressing the next key. For inverse [CONTROL] [A] through [CONTROL] [Z], press the [◪] key—or [⅄] on the 400/800—then *release* it before pressing the next key. (Press [◪] or [⅄] again to turn off inverse.) For [ESC] key combinations, press [ESC] and then *release* it before pressing the next key.

Carefully study the chart above and pay close attention to differences between lookalike characters such as the slash key's [/] and the [CONTROL] [F] symbol [◪].

NORMAL VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
♥	CTRL ,	♣	CTRL S
♦	CTRL A	♠	CTRL T
♣	CTRL B	♥	CTRL U
♠	CTRL C	♦	CTRL V
♥	CTRL D	♣	CTRL W
♦	CTRL E	♠	CTRL X
♣	CTRL F	♥	CTRL Y
♠	CTRL G	♦	CTRL Z
♥	CTRL H	♣	ESC ESC
♦	CTRL I	♠	ESC CTRL -
♣	CTRL J	♥	ESC CTRL =
♠	CTRL K	♦	ESC CTRL +
♥	CTRL L	♣	ESC CTRL *
♦	CTRL M	♠	CTRL .
♣	CTRL N	♥	CTRL ;
♠	CTRL O	♦	SHIFT =
♥	CTRL P	♣	ESC SHIFT CLEAR
♦	CTRL Q	♠	ESC DELETE
♣	CTRL R	♥	ESC TAB

INVERSE VIDEO

FOR THIS	TYPE THIS
↑	ESC SHIFT DELETE
↓	ESC SHIFT INSERT
←	ESC CTRL TAB
→	ESC SHIFT TAB
↑	⅄CTRL .
↑	⅄CTRL ;
↑	⅄SHIFT =
↖	ESC CTRL 2
←	ESC CTRL DELETE
→	ESC CTRL INSERT

TYPO II AUTOMATIC PROOFREADER

TYPO II automatically proofreads **Antic**'s type-in BASIC listings. Type in the listing below and SAVE a copy to disk or cassette. Now type GOTO 32000. At the prompt, type in a single program line **without the two-letter TYPO II code at the beginning**. Then press [RETURN].

Your line will reappear at the bottom of the screen. If the TYPO II code does not match the code in the magazine, then you've mistyped your line.

To call back a previously typed line, type [*], then the line number, then [RETURN]. When the completed line appears, press [RETURN] again. This is how TYPO II proofreads itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000. To remove TYPO II from your program, type LIST "D:FILENAME",0,31999, then [RETURN], then NEW, then ENTER "D:FILENAME", then [RETURN]. Now you can SAVE or LIST your program to disk or cassette.

Don't type the TYPO II Codes!

```
WB 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLO
   SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "↖":POSITION 11,1:? "TYPO II"

EM 32050 TRAP 32040:POSITION 2,3:? "Type
   in a program line"
HS 32060 POSITION 1,4:? " ":INPUT #2;LINE
   $:IF LINE$="" THEN POSITION 2,4:LIST B
   :GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL(LIN
   E$(2,LEN(LINE$))):POSITION 2,4:LIST B:
   GOTO 32060
TH 32080 POSITION 2,10:? "CONT"
MF 32090 B=VAL(LINE$):POSITION 1,3:? " ";
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
ET 32120 ? "↖":POSITION 11,1:? "TYPO II
   ":POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
QR 32140 POSITION 2,16:INPUT #3;LINE$:IF
   LINE$="" THEN ? "LINE ";B;" DELETED":G
   OTO 32050
VV 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=
   ANS+(C*ASC(LINE$(D,D))):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:? CHR$(HCODE);CHR$
   (LCODE)
VG 32220 POSITION 2,13:? "If CODE does no
   t match press RETURN and edit line a
   bove.":GOTO 32050
```

LOTTO PICKS

Your Atari Picks The Numbers For Any Lottery Game

Article on page 102

Don't type the TYPO II Codes!

LISTING 1

```
GA 1 REM LOTTO PICS
TQ 2 REM BY MATTHEW RATCLIFF
YP 3 REM (c)1990, ANTIC PUBLISHING, INC.
OO 10 REM LIST"D:LOTTO.LST"
KP 20 REM SAVE"D:LOTTO.BAS"
OZ 30 ZERO=0:UNO=1:MPX=32:REM MPX=max pic
   ks
JU 40 GRAPHICS ZERO
BK 50 FALSE=ZERO:TRUE=UNO
II 60 DIM PICKS(MPX),WORK$(80)
CN 70 PMIN=UNO:PMAX=48:PCNT=6:DUP=FALSE:T
   PICKS=0
HM 80 GOSUB 2020:? :? :TRAP 1070
GA 90 ? "(A) Pick lotto #'s."
GJ 100 ? "(B) Minimum lotto #: ";PMIN
LC 110 ? "(C) Maximum lotto #: ";PMAX
HY 120 ? "(D) Total Picks    : ";PCNT
HE 130 ? "(E) Duplicate #'s  : ";
5B 140 IF (DUP) THEN ? "YES":GOTO 160
FN 150 ? "NO"
QE 160 ? "(F) Form feed printer."
BG 170 ? "(G) Reset picks count."
PP 180 ? "(H) Calculate odds"
AF 190 ? "(Q) Quit program now."
KE 200 POKE 752,ZERO:? " (type letter & p
   ress RETURN) ";
PH 210 INPUT WORK$:IF (LEN(WORK$)=0) THEN
   200
MY 220 IF WORK$(UNO,UNO)<>"B" THEN 280:RE
   M Min lotto #
AR 230 TRAP 230:? "Current min lotto pick
   # = ";PMIN
YO 240 ? "New minimum ";:INPUT PMIN
MR 250 IF PMIN<ZERO THEN ? "* too small *
   ":PMIN=ZERO:GOTO 230
5M 260 IF PMIN>=PMAX THEN ? "* TOO BIG *"
   :PMIN=PMAX-UNO:GOTO 230
UV 270 GOTO 410:REM Duplicates test
PI 280 IF WORK$(UNO,UNO)<>"C" THEN 350:RE
   M Max lotto #
OO 290 TRAP 290
DG 300 ? "Current max lotto pick # = ";PM
   AX
CN 310 ? "New maximum ";:INPUT PMAX
MQ 320 IF PMAX<=PMIN THEN ? "* too small
   *":PMAX=PMIN+UNO:GOTO 290
WE 330 IF PMAX>999 THEN ? "* TOO BIG, max
    lotto # = 999 *":PMAX=999:GOTO 290
UQ 340 GOTO 410:REM Duplicates test
KW 350 IF WORK$(UNO,UNO)<>"D" THEN 490:RE
   M Total picks
NM 360 TRAP 360
TA 370 ? "Current total lotto picks = ";P
   CNT
GZ 380 ? "How many #'s to pick ";:INPUT P
   CNT
MK 390 IF PCNT<UNO THEN ? "Minimum picks
   = 1":GOTO 360
TG 400 IF PCNT>MPX THEN ? "Maximum picks
   = ";MPX:GOTO 360
GD 410 IF PCNT<=(PMAX-PMIN+1) THEN 80
BZ 420 IF DUP=TRUE THEN 80
JO 430 DUP=TRUE:? "* WARNING * Duplicates
    enabled."
HH 440 ? "Current range of Min-Max number
   s"
CH 450 ? "won't allow non-duped numbers"
NP 460 ? "for ";PCNT;" selections."
KT 470 ? "Press RETURN to continue ";:INP
   UT WORK$
SN 480 GOTO 80
IE 490 IF WORK$(UNO,UNO)<>"E" THEN 520
DM 500 IF DUP THEN DUP=FALSE:GOTO 410
NW 510 DUP=TRUE:GOTO 80
HT 520 IF WORK$(UNO,UNO)<>"A" THEN 550
SE 530 GOSUB 1120
5G 540 GOTO 80
SN 550 IF WORK$(UNO,UNO)<>"H" THEN 850
LE 560 GOSUB 2020:? "Odds..."
BO 570 IF DUP THEN ? "Duplicates allowed.
   ..":GOTO 700
WI 580 ? "No duplicates..."
LV 590 REM Pick 'P' numbers from a pool
FZ 600 REM of 'n' numbers.  Total combos:
XW 610 REM n!/r!(n-r)!, where '!' represe
   nts
GE 620 REM factorial (e.g. 4!=4*3*2*1=12)
AK 630 NF=PMAX-PMIN+UNO:DF=NF-PCNT:RF=PCN
   T:INX=NF-UNO
PN 640 NF=NF*INX:INX=INX-UNO:IF INX>UNO T
   HEN 640:REM NF!
VK 650 INX=DF-UNO
UL 660 DF=DF*INX:INX=INX-UNO:IF INX>UNO T
   HEN 660:REM DF!
AK 670 INX=RF-UNO
GL 680 RF=RF*INX:INX=INX-UNO:IF INX>UNO T
   HEN 680:REM RF!
VN 690 ODDS=NF/(DF*RF):GOTO 750
PV 700 ODDS=PCNT:INX=ODDS-UNO
KV 710 FOR I=UNO TO PCNT-UNO
YP 720 ODDS=ODDS*INX
WJ 730 INX=INX-UNO
GF 740 NEXT I
ZB 750 ? "Pick ";PCNT;" numbers from ";PM
   AX-PMIN+1
VK 760 ? "possible.  Your odds of winning
   "
IH 770 ? "are 1 in ";:GOSUB 2190
VE 780 ? "per pick.  Good LUCK, you'll ne
   ed it!"
ZE 790 IF TPICKS=ZERO THEN 830
XL 800 ? "For ";TPICKS;" plays, your odds
   "
IB 810 ODDS=ODDS/TPICKS
HY 820 ? "are 1 in ";:GOSUB 2190
NN 830 ? :? "Press (RETURN) ";:INPUT WORK
   $
SJ 840 GOTO 80
GM 850 IF WORK$(UNO,UNO)<>"Q" THEN 980
LT 860 ? CHR$(125);
TX 870 TRAP 32767
PD 880 ? "Thank you for using Lotto Picks
   "
BY 890 ? "by Matthew J. W. Ratcliff"
VF 900 ? "(c) Antic Publishing, 1990":?
RV 910 ? "<       Gamble at your own risk!
   >"
```

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26.	**January 1986:** Atari Products are Back-Appoint ment Calendar, Dungeion Master's Apprentice
27.	**March 1986:** Practical Application-Lunar Lander Constructor, Lie Detector
28.	**April 1986:** Computer Mathematic-Fractal Zoom, 3-D Fractals

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32. **August 1986**: Online Communications-Ultrafont, Floppy Filer
33. **September 1986:** Weather-WEFAX Decoder (8-Bit/ST, BASIC Tracer
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38. **February 1987:** Word Proessing-SF Fogger, Electric Charlie!
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40. **April 1987:** -Designer Labels, Taxman
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45. **September 1987:** Work/Play-Mighty Mailer, Maximillian B.
46. **November 1987:** Pratical Applications-Critical-Path Projects, WYSIWYG Cassettes
47. **Jaunuary 1988:** Sixth Annual Shoppers Guide-GFA Basic Converter-Best Type-in Database
48. **February 1988:** ST Scan Reviewed-Animation Moviemaker- Transputer
49. **March 1988:** 2nd Generation video game machines-Graphic Adventure Creator
50. **April 1988:** Video Desktop Atari- XL/XE Virtuoso Animator-ST Cyber
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53. **July 1988:** Newsroom Atari-New CompuServe Commands- Write in Campaign
54. **August 1988:** X-10 Control-XE Game System-Cartridge Classics
55. **September 1988:** Atari Goes Hollywood-Video Title Shop-PC vs. ST & C64
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57. **November 1988:** 8-Bit Memory Upgrades-8-Bit Power Tools-Lightspeed C
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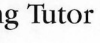
```
PL 920 ? "<  But if you WIN with Lotto Pi
   cks >"
CK 930 ? "<we DO get a share of the winni
   ngs!>":?
QA 940 FOR I=UNO TO 200:NEXT I
VI 950 ? "HEY! We're just kidding!"
MG 960 ? :? "The end":FOR I=15 TO 0 STEP
   -0.15:SOUND 0,60,10,I:NEXT I
QM 970 END
55 980 IF WORK$(UNO,UNO)<>"F" THEN 1020
EH 990 TRAP 1000:OPEN #UNO,8,ZERO,"P:":GO
   TO 1010
Q5 1000 ? "Printer not ready. Press RETUR
   N ";:INPUT WORK$
RR 1010 ? #UNO;CHR$(253);CHR$(12);:CLOSE
   #UNO:GOTO 80
BZ 1020 IF WORK$(UNO,UNO)<>"G" THEN 1040
RJ 1030 TPICK5=0:GOTO 80
VC 1040 ? "Unexpected input, press RETURN
   "
LV 1050 ? "to continue ";:INPUT WORK$
SJ 1060 GOTO 80
SU 1070 ? "Unexpected error - ";PEEK(195)
   
UY 1080 ? "at line ";PEEK(186)+256*PEEK(1
   87)
IN 1090 IF PEEK(195)=11 THEN ? "Floating
   point error. Odds probably":? "Too lar
   ge to compute!!"
VM 1100 ? :? "Press RETURN to continue ";
   :INPUT WORK$
RW 1110 GOTO 80
MF 1120 ? "generating new data...";
LN 1130 FOR I=UNO TO PCNT
ED 1140 PICK=INT((PMAX-PMIN+1)*RND(ZERO)
   )+PMIN
EU 1150 IF PICK>PMAX THEN 1140
CH 1160 IF PICK<PMIN THEN 1140
VK 1170 IF DUP THEN 1340
FG 1180 IF I=UNO THEN 1340
MU 1190 J=UNO
GW 1200 IF PICK5(J)=PICK THEN 1140
FG 1210 J=J+UNO:IF J<I THEN 1200
HW 1220 REM No duplicates allowed, then
YB 1230 REM insert data sorted to make
N5 1240 REM it easier to read and transcr
   ibe
ZF 1250 REM to lotto pick card:
MD 1260 J=UNO
JD 1270 IF PICK<PICK5(J) THEN K=J:GOTO 13
   00
EP 1280 J=J+UNO:IF J<=I-UNO THEN 1270
RD 1290 GOTO 1340
CW 1300 J=I
GF 1310 PICK5(J)=PICK5(J-UNO):J=J-UNO
JU 1320 IF J>K THEN 1310
H5 1330 PICK5(K)=PICK:GOTO 1350
QT 1340 PICK5(I)=PICK
JB 1350 ? "";
FN 1360 NEXT I
OG 1370 ?
EC 1380 TPICK5=TPICK5+UNO
B5 1390 GOSUB 1620
XC 1400 ? :? "(P)rint picks, (A)gain, (M)
   ";
UW 1410 INPUT WORK$:IF LEN(WORK$)=ZERO TH
   EN 1410
XO 1420 IF WORK$(UNO,UNO)<>"P" THEN 1580
XA 1430 TRAP 1440:OPEN #UNO,8,ZERO,"P:":G
   OTO 1450
J5 1440 ? "Can't open PRINTER for output"
   :? "Press RETURN key ";:INPUT WORK$:GO
   TO 1400
RZ 1450 ? #UNO;"Pick set # ";:WORK$="
UU 1460 NUM3=TPICK5:GOSUB 2140:REM PRINT
   FORMAT 3 DIGITS
VC 1470 IF DUP THEN ? #UNO;"DUP5-OK";:GOT
   O 1490
RE 1480 ? #UNO;"NO-DUP5";
KZ 1490 ? #UNO;" - ";
LM 1500 FOR I=UNO TO PCNT
EX 1510 NUM3=PICK5(I)
IZ 1520 IF I<PCNT THEN WORK$=",":GOTO 154
   0
IH 1530 WORK$=""
AI 1540 GOSUB 2140
FO 1550 NEXT I
OI 1560 ? #UNO:CLOSE #UNO
PP 1570 GOTO 1400
ZP 1580 IF WORK$(UNO,UNO)<>"A" THEN 1600
PL 1590 GOTO 1120
AQ 1600 IF WORK$(UNO,UNO)<>"M" THEN GOTO
   1400
5G 1610 GOTO 80
YP 1620 GOSUB 2020
HU 1630 REM Show Pick5 Subroutine:
TN 1640 REM PICK5(I) - array of values
CT 1650 REM PMIN - minimum allowed pick
FY 1660 REM PMAX - maximum allowed pick
UF 1670 REM PCNT - total picks
PO 1680 REM WORK$ - Working string
CY 1690 REM PINX - Lotto pick index
TU 1700 WIDTH=3:REM Field width
ZG 1710 REM Center lotto #'s on screen
HK 1720 REM if LEFT<2 then WRAP IT
DQ 1730 MY=7:PINX=UNO:TCNT=PCNT
C5 1740 MCNT=TCNT
YX 1750 LEFT=(38-(TCNT+UNO)*WIDTH+UNO)/2
JI 1760 WRAP=FALSE
XO 1770 IF (LEFT<2) THEN LEFT=2:WRAP=TRUE
   :MCNT=8
YY 1780 POSITION LEFT,MY:? "";
KM 1790 FOR I=UNO TO MCNT
ZL 1800 FOR J=UNO TO WIDTH
ZH 1810 ? "=";
FW 1820 NEXT J
FW 1830 IF (I<MCNT) THEN ? "";
KY 1840 NEXT I:? "";
LJ 1850 POSITION LEFT,MY+UNO:? "";
KF 1860 FOR I=UNO TO MCNT
XB 1870 J=INT(PICK5(PINX))
HI 1880 IF (J<100) THEN ? " ";
ID 1890 IF (J<10) THEN ? " ";
UL 1900 ? J;"";
KG 1910 PINX=PINX+UNO
FN 1920 NEXT I
HR 1930 POSITION LEFT,MY+2:? "";
KB 1940 FOR I=UNO TO MCNT
AC 1950 FOR J=UNO TO WIDTH
ZY 1960 ? "=";
GN 1970 NEXT J
HN 1980 IF (I<MCNT) THEN ? "";
KJ 1990 NEXT I:? "";
AE 2000 IF (WRAP=TRUE) THEN MY=MY+4:TCNT=
   TCNT-8:IF (TCNT)ZERO) THEN GOTO 1740
AD 2010 RETURN
AA 2020 ? CHR$(125);:POKE 752,UNO:POKE 71
   0,2
ER 2030 ? "  ";
   "
OH 2040 ? "       Lotto Picks,by Mat*Rat
   "
UC 2050 ? "       (c) 1990,Antic Publishing
   "
VN 2060 ? "  ";
   "
BG 2070 ? "       Total Picks: ";
GQ 2080 ? TPICK5;
IU 2090 IF TPICK5<10 THEN ? " ";
MZ 2100 IF TPICK5<100 THEN ? " ";
AF 2110 ? "  ";
GD 2120 ? "  ";
   "
AL 2130 RETURN
AR 2140 ? #UNO;NUM3;WORK$;
UT 2150 IF NUM3<10 THEN ? #UNO;" ";
JF 2160 IF NUM3<100 THEN ? #UNO;" ";
AX 2170 RETURN
DV 2180 REM Print odds formatted output
SU 2190 CNT=UNO:LEADING=ZERO:LIMIT=100000
   000:TODD5=ODD5
NN 2200 GOSUB 2240:LIMIT=LIMIT/10
MH 2210 IF LIMIT>UNO THEN __200
AT 2220 ? INT((TEMP+5)/10):REM Last digit
    with roundoff
AN 2230 RETURN
OB 2240 TEMP=TODD5/LIMIT
RB 2250 IF TEMP>UNO THEN LEADING=UNO:? IN
   T(TEMP);:GOTO 2280
GU 2260 IF LEADING THEN ? "0";:GOTO 2280
EK 2270 ? " ";
SI 2280 TEMP=INT(TEMP)*LIMIT:TODD5=TODD5-
   TEMP
EB 2290 CNT=CNT+UNO:IF CNT=4 AND LEADING
   AND LIMIT>=1000 THEN ? ",";
HX 2300 IF CNT=4 THEN CNT=UNO
AJ 2310 RETURN
```

KEY WHIZZER

Is It A Game — Or A Typing Tutor

Article on page 100



LISTING 1

```
5E 1 REM KEY WHIZZER
PT 2 REM BY JIM ROGERS
YP 3 REM (c)1990, ANTIC PUBLISHING, INC.
KK 100 GOTO 4000
FH 290 REM -- LETTER PATTERN --
KR 300 FOR I=0 TO 399
TP 310 IF PEEK(5+I)=67 THEN 340
O5 320 X=INT(RND(0)*26)+33:IF X=PEEK(5+I-
   40) OR X=PEEK(5+I-2) OR X=PEEK(5+I-21)
    OR X=PEEK(5+I-19) THEN 320
VR 330 POKE 5+I,X
GB 340 NEXT I
ZJ 350 RETURN
SQ 900 REM -- SCREEN SET UP --
FY 1000 RESTORE 1100:K=0
JO 1010 FOR I=0 TO 92:FOR T=67 TO 0 STEP
   -67:READ A:FOR J=0 TO A-1:POKE 5+K,T:K
   =K+1:NEXT J:NEXT T:NEXT I
II 1100 DATA 21,5,2,4,2,5,2,1,3,1,2,1,2,1
   ,2,1,3,1,2,1,1,1,14,1,1,2,1,1,1,1,1,1,1,
   1,1,1,1,1,1,1,2,3,1,1,1,6,1,1,1
QU 1110 DATA 3,2,1,1,1,1,1,2,1,2,1,2,1,1,
   1,1,1,2,1,1,1,1,10,1,1,1,1,2,1,1,1,1,1
   ,1,1,4,1,1,1,1,1,1,1,2
MP 1120 DATA 1,1,1,1,1,1,1,4,1,1,1,1,1,1,
   1,2,1,1,1,3,1,1,4,1,1,3,1,1,2,1,2,1,2,1,
   4,1,2,1,1,2,1,1,2,1,8,1,2
TO 1130 DATA 1,1,2,1,1,1,2,1,6,1,2,1,1,1,
   2,18,2,1,1,1,4,1,2,1,4,1,1,1,2,1,1,14,
   1,1,2,1,4,1,6,1,4,1,2,18,21,1
AF 1300 RETURN
VZ 2900 REM -- VBI ROUTINE --
CJ 3000 FOR A=1536 TO 1780:READ B:POKE A,
   B:NEXT A
GT 3001 DATA 104,160,11,162,6,169,7,32,92
   ,228,96,72,138,72,152,72,173,251,6,208
   ,39,165,203,56,233
JN 3002 DATA 20,133,205,165,204,233,0,133
   ,206,173,252,2,141,254,6,160,0,32,71,6
   ,160,19,32,71,6
HI 3003 DATA 160,21,32,71,6,160,40,32,71,
   6,32,148,6,104,170,104,168,104,76,98,2
   28,177,205,141,253
NL 3004 DATA 6,41,127,56,233,33,201,26,17
   6,62,170,189,206,6,205,254,6,208,53,15
   2,72,160,0,173,255
VN 3005 DATA 6,24,105,161,145,203,142,255
   ,6,104,24,101,205,133,203,165,206,105,
   0,133,204,169,202,145,203
UC 3006 DATA 169,255,141,254,6,141,252,2,
   169,8,141,252,6,173,253,6,201,128,176,
   2,230,207,96,169,0
WO 3007 DATA 172,252,6,192,0,240,5,169,12
   1,206,252,6,141,0,210,185,232,6,141,1,
   210,96,104,160,0
TX 3008 DATA 104,170,104,24,101,88,133,20
   5,138,101,89,133,206,177,205,41,127,56
   ,233,33,170,189,206,6,141
EA 3009 DATA 254,6,32,71,6,96,63,21,18,58
   ,42,56,61,57,13,1,5,0,37,35,8,10,47,40
   ,62
EI 3010 DATA 45,11,16,46,22,43,23,0,163,1
   64,164,164,165,166,165,164,198,199,200
   ,199
KM 3100 POKE 1787,1:XX=USR(1536)
AH 3300 RETURN
AP 3800 ? "M":? "    MEN ";MEN;"
   SCORE ";T5:RETURN
OB 3900 REM -- MAIN ROUTINE --
BR 4000 GRAPHICS 1:POKE 708,136:POKE 709,
   26:POKE 710,100:POKE 53768,0:POKE 5377
   5,3:S=PEEK(88)+PEEK(89)*256
5Z 4010 DIM E(4),R(4),D(4),F(4),TB(4),N$(
   1):RESTORE 4800:FOR I=0 TO 3:READ A:TB
   (I)=A:NEXT I
NV 4020 MEN=0:POKE 752,1:SKILL=3:? :? "
         KEY WHIZZER":GOSUB 1000:GOSUB
   3000
M5 4030 IF MEN<>0 THEN 4060
AX 4040 ? "PLAY? Y/N ":INPUT N$:IF N$="Y"
    THEN MEN=5:T5=0:? "M":GOTO 4050
FW 4045 END
HH 4050 POKE 1787,1:SKILL=SKILL+1:GOSUB 3
   00:POKE 207,0:L5=0:GOSUB 6000:POKE 178
   7,0
CC 4060 GOSUB 3800
YW 4070 RESTORE 4900:FOR I=0 TO 3:READ A:
   E(I)=A:R(I)=PEEK(5+E(I)):READ B:D(I)=B
   :READ C:F(I)=C:NEXT I
ZU 4110 T=PEEK(207):IF L5<>T THEN T5=T5+(
   T-L5)*10:L5=T:GOSUB 3800
GN 4120 IF L5=194 THEN XX=USR(1708,289):G
   OTO 4050
YV 4130 M=PEEK(203)+PEEK(204)*256-5:MV=IN
   T(M/20):MH=M-(MV*20)
YW 4140 GOSUB 5000
LB 4150 IF GOTCHA THEN MEN=MEN-1:FOR I=0
   TO 3:POKE 5+E(I),R(I):NEXT I:GOTO 4030

PB 4200 GOTO 4110
VH 4800 DATA 1,-1,20,-20
WP 4900 DATA 21,0,147,38,1,152,361,0,247,
   376,1,252
EW 4990 REM --ENEMY MOVEMENT--
OM 5000 GOTCHA=0:FOR I=0 TO 3:GOSUB 5300
PT 5010 IF ABS(EH-MH)<SKILL AND ABS(EV-MV
   )<SKILL THEN F(I)=M:GOTO 5030
NX 5020 IF E(I)<>F(I) THEN 5040
MX 5025 F(I)=INT(RND(0)*400):IF PEEK(5+F(
   I))=67 THEN 5025
AF 5030 GOSUB 5300
CX 5040 Q=D(I):IF FV(>EV AND D(I)<2 THEN
   Q=2+(FV<EV)
YW 5050 IF FH(>EH AND D(I)>1 THEN Q=0+(FH
   <EH)
ST 5060 P=PEEK(5+E(I)+TB(Q)):IF P(>67 AND
    P>224 THEN D(I)=Q:GOTO 5090
PI 5070 P=PEEK(5+E(I)+TB(D(I))):IF P=67 O
   R P=224 THEN D(I)=PEEK(53770)/64:P=PEE
   K(5+E(I)+TB(D(I)))
IA 5090 IF P=202 THEN GOTCHA=1:XX=USR(170
   8,289):POKE 1788,12:GOTO 5100
II 5100 IF P(>67 AND P(>224 THEN POKE 5+E
   (I),R(I):E(I)=E(I)+TB(D(I)):RM=PEEK(17
   91):R(I)=P:POKE 5+E(I),224
HB 5180 NEXT I:RETURN
RM 5300 FV=INT(F(I)/20):FH=F(I)-(FV*20):E
   V=INT(E(I)/20):EH=E(I)-(EV*20):RETURN
LW 6000 H=INT((5+209)/256):POKE 204,H:POK
   E 203,(5+209)-(H*256):POKE 1791,162:XX
   =USR(1708,289):RETURN
```

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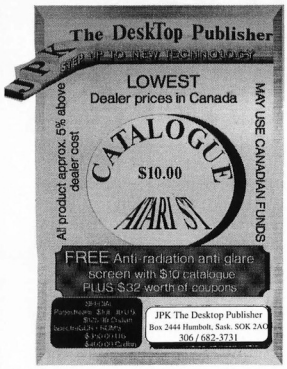

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LOTTO PICKS

Continued from page 103

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6! = 6 * 5 * 4 * 3 * 2 * 1 = 720

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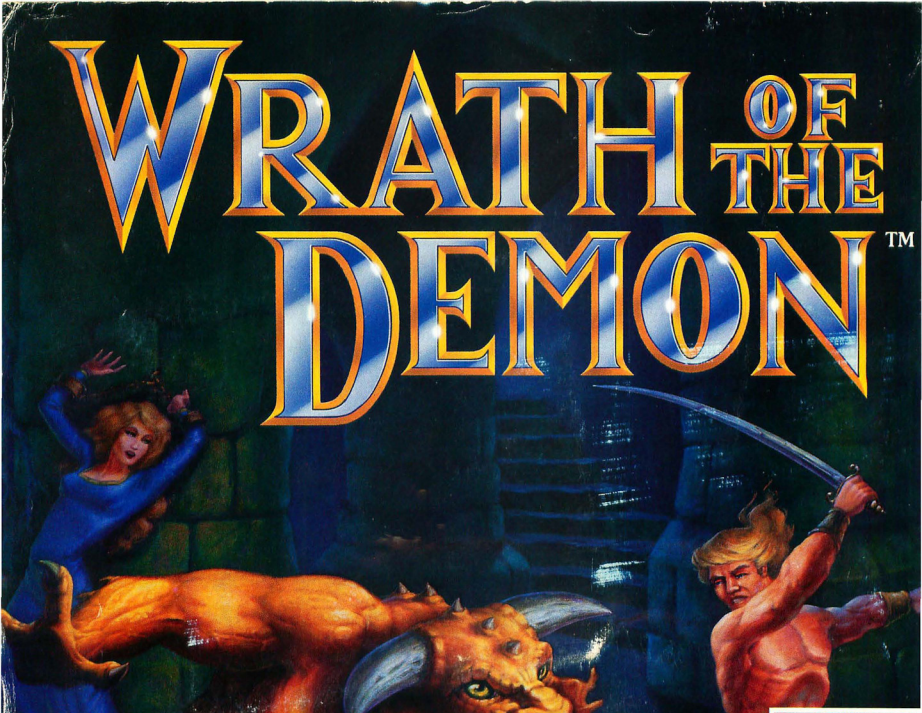

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