

Disassembler
Disk
Bonus

U.S.A. \$3.95 CANADA \$4.95
NOVEMBER 1988
VOLUME 7, NUMBER 7

Anttic[®]

The **ATARI** Resource

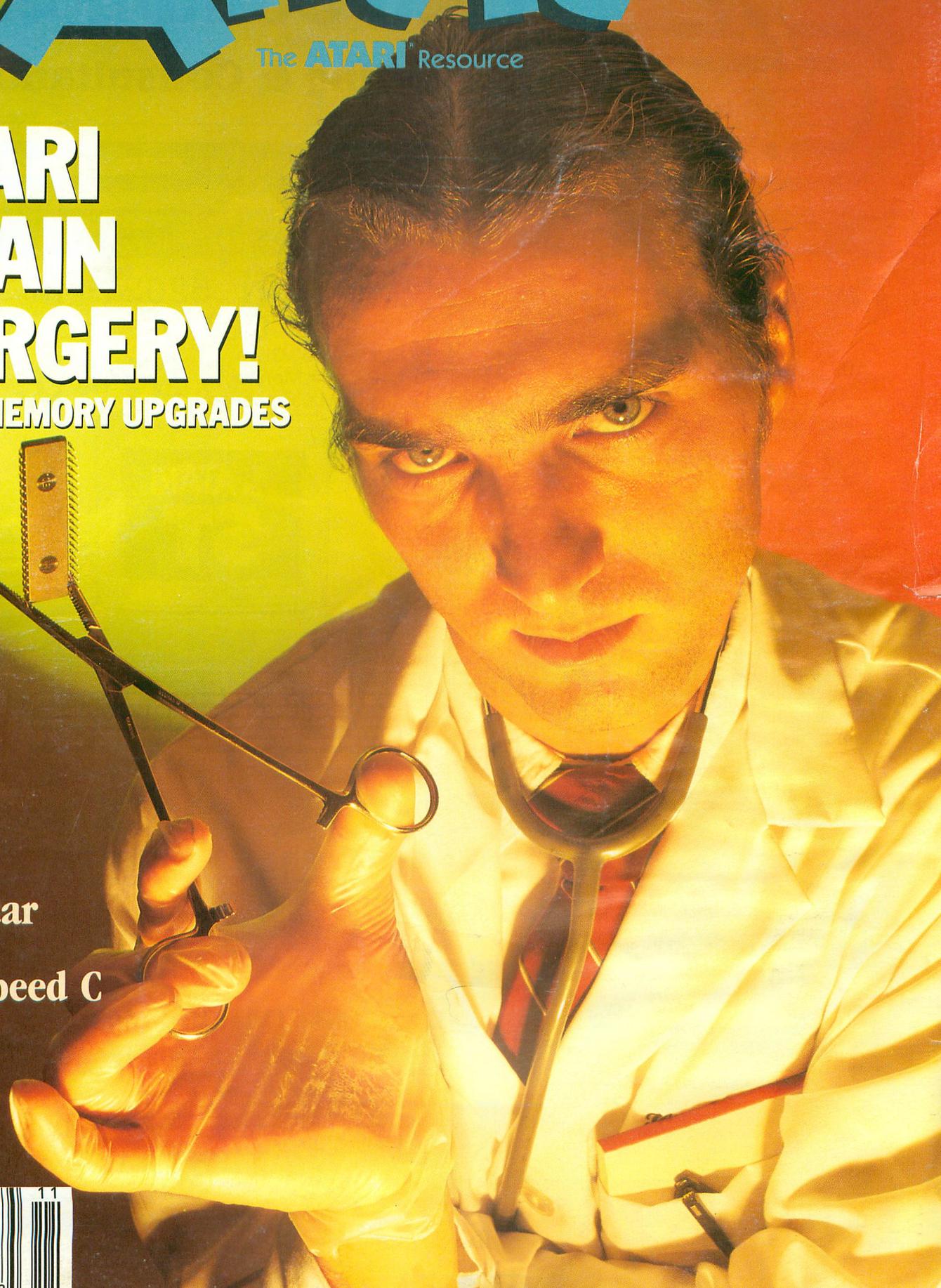
ATARI BRAIN SURGERY!

8-BIT MEMORY UPGRADES

8-Bit
Power
Tools

Pocket
Memo
Calendar

Lightspeed C



LycO Computer Marketing & Consultants

Since 1981

Air orders processed within 24 hours.

Great Value

Panasonic
Office Automation **OA**

*The easier
the better!*

1091i Model II

- 192 cps Draft
- 32 cps NLQ

\$189.⁹⁵

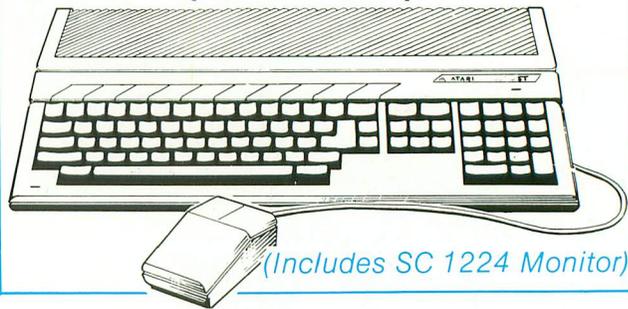


Great Performance Great Price

ATARI 520ST-FM
COLOR SYSTEM

- Built in 3.5" Drive
- 512 Color Monitor
- Fast 8 Mz. Processor

\$749.⁹⁵

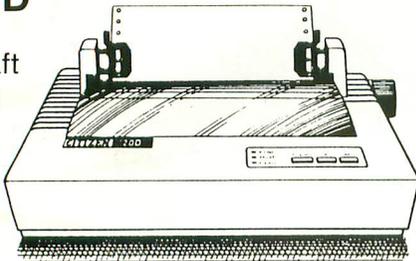


(Includes SC 1224 Monitor)

CITIZEN **\$149.⁹⁵**

120-D

- 120 cps Draft
- 25 cps NLQ
- IBM, Epson Compatible



PRINTER PAPER

1000 Sheet Lazer	\$16.95
1000 Mailing Labels	\$8.95
200 Sheets OKI 20	\$8.95
Transparent Labels	\$4.95
Banner Paper 45' Roll	\$10.95

PRICE GUARANTEE

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

TO ORDER, CALL TOLL-FREE: 1-800-233-8760

New PA Wats: 1-800-233-8760

Outside Continental US Call: 1-717-494-1030

Hours: 9AM to 8PM, Mon. - Thurs.
9AM to 6PM, Friday — 10AM to 6PM, Saturday

For Customer Service, call 1-717-494-1670,
9AM to 5PM, Mon. - Fri.

Or write: LycO Computer, Inc.
P.O. Box 5088, Jersey Shore, PA 17740

**Don't Miss Our Other Value
Packed Pages In This Issue!**

Please Note: • full manufacturers' warranties • no sales tax outside PA • prices show 4% cash discount; add 4% for credit cards • APO, FPO, international: add \$5 plus 3% for priority • 4-week clearance on personal checks • we check for credit card theft • sorry, compatibility not guaranteed • return authorization required • due to new product guarantee, return restrictions apply • price/availability subject to change • prepaid orders under \$50 in Continental US, add \$3.00

1-800-233-8760

SOFTWARE DISCOUNTERS OF AMERICA



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

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

ABACUS BOOKS

- ST Disk Drives \$19
- ST Gem Prog. Ref. \$15
- ST Graphics & Sound... Call
- ST Internals \$15
- ST 3-D Graphics \$19
- ST Tricks & Tips \$15
- ACADEMY
- Typing Tutor ST \$23
- ACCESS
- Leader Board Golf & Tourn. Disk (D) \$9.88
- Leader Board Golf & Tourn. Disk #1 ST \$16
- Tenth Frame ST \$25
- Triple Pack: BH1, BH2, Raid Over Moscow (D) \$14
- ACCOLADE
- Bubble Ghost ST \$23
- Hardball ST \$25
- Mini Putt ST Call
- Pinball Wizard ST \$23
- Test Drive ST \$25

ACTIVISION

- Cross Country
- Road Race (D) \$9.88
- Ghostbusters (D) \$9.88
- Music Studio ST \$33
- Music Studio (D) \$23
- Pitfall/Demon Attack (D) \$9.88
- AEGIS
- Animator ST \$44
- Art Pak#1 ST \$19
- AMERICAN EDUCATION
- Biology (D) \$12
- Grammar (D) \$12
- Science (D) Call
- U.S. Geography (D) \$12
- U.S. History (D) \$12
- Vocabulary (D) \$12
- World History (D) \$12
- ANTIC
- A-Chart Prime ST \$25
- A-Chart ST \$19
- Base Two ST \$39
- Cyber Paint 2.0 ST \$49
- Cyber Studio ST \$59
- Flash ST \$19
- Phasar 3.0 ST \$59
- Spectrum 512 ST \$44
- 3D Breakthru ST \$25

ARTWORX

- Bridge 5.0 (D) \$19
- Bridge 5.0 ST \$23
- Linkword French (D) \$16
- Linkword French 1 or 2 ST \$19 Ea.
- Linkword German (D) \$16
- Linkword Russian ST \$19
- Linkword Spanish (D) \$16
- Linkword Spanish ST \$19
- Strip Poker (D) \$21
- Strip Poker 2 ST \$25
- Female Data Disk 1(D) \$14
- Male Data Disk 2(D) \$14
- Female Data Disk 3(D) \$14
- Female Data Disk#4 ST \$14
- Female Data Disk#5 ST \$14

AVANTE GARDE

- PC Ditto ST Call
- BATTERIES INCLUDED
- Degas Elite ST \$39
- Thunder: Writers Assistant ST \$26
- BRODERBUND
- Karateka (D) \$9.88
- Loderunner (D) \$9.88
- Print Shop (D) \$26
- Print Shop Graphics Library#1, #2, #3 (D) \$16. Ea.

- P.S. Companion 64K (D) \$23
- Super Bike Challenge ST \$14
- CENTRAL POINT
- Copy 2 ST \$23
- CINEMAWARE
- Defender of the Crown ST \$33
- S.D.I. ST \$33
- DATA EAST
- Ikari Warriors ST \$25
- Karnov ST \$25
- Lock On ST \$25
- Platoon ST Call
- Speed Buggy ST \$25
- DATASOFT
- Alternate Reality: The City (D) \$19
- The City ST \$26
- The Dungeon (D) \$26
- Battle Droidz ST Call
- Bismarck ST \$26
- Cosmic Relief ST \$23
- Global Commander ST \$26
- Hunt for Red October ST \$32
- Tomahawk 64K (D) \$21
- Video Title Shop 64K (D) \$21

- Roadwars ST \$21
- Rockford ST \$21
- Scrabble ST \$26
- Scruples ST \$26
- Star Fleet 1 ST \$35
- EPYX
- Ballblazer 64K (D) \$6.88
- Battleship ST Call
- Boulder Dash Const. Kit (D) or ST \$14
- California Games ST \$33
- Champ. Wrestling ST \$14
- Dive Bomber ST Call
- Dragonriders of Pern (D) \$6.88
- Final Assault ST \$33
- Impossible Mission 2 ST. \$33
- Metrocross ST \$16
- Pitstop 2 (D) \$6.88
- Spy vs. Spy 3: Arctic Antics (D) \$14
- Street Cat ST \$16
- Summer Games (D) \$14
- Technocop ST Call
- Temple Apshai Trilogy (D) \$14
- Temple Apshai Trilogy ST \$14

- Rambo XI \$29
- US Doubler: with Sparta DOS \$49
- without Sparta DOS \$29
- INTERSECT
- Interlink ST \$25
- Revolver ST \$33
- ISD
- Masterplan ST \$59
- ST Account 2.0 ST \$89
- Vip Professional ST \$95
- IDW
- Basic Compiler 2.0 ST \$59
- Club Backgammon ST \$23
- Vegas Craps ST \$23
- Vegas Gambler ST \$23
- MASTERTRONIC
- Action Biker (D) \$4.88
- Chopper X ST \$14
- Ninja (D) \$4.88
- Ninja Mission ST \$14
- Speed King (D) \$4.88
- The Last V8 (D) \$4.88
- Vegas Poker & Jackpot(D) \$4.88

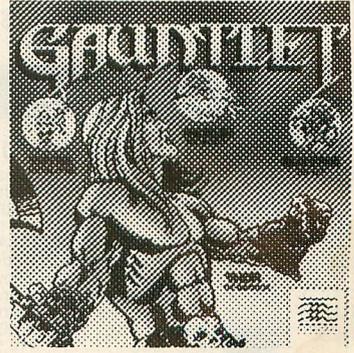
- MICROPROSE
- F15 Strike Eagle (D) \$23
- F15 Strike Eagle ST \$25
- Gunship ST \$33
- Silent Service (D) \$23
- Silent Service ST \$25
- MINDSCAPE
- Balance of Power ST \$33
- Blockbuster ST \$25
- Bop & Wrestle 64K (D) \$19
- Captain Blood ST \$33
- De Ja Vu ST \$33
- *Deeper Dungeons (D) \$16
- Gauntlet ST \$33
- Gauntlet 64K (D) \$23
- Harrier Combat Sim. ST. \$33
- Indiana Jones & The Temple of Doom ST \$33
- Infiltrator 64K (D) \$19
- Into the Eagle's Nest ST \$25
- Paperboy ST Call
- Road Runner ST \$33
- Shadowgate ST \$33
- Super Star Hockey ST \$33
- Uninvited ST \$33

- The Pawn ST \$19
- Universal Military Simulator ST \$33
- SCORPION
- Foundations Waste ST \$25
- SIERRA
- Black Cauldron ST \$25
- King's Quest 1, 2, or 3 ST \$33 Ea.
- Leisure Suit Larry ST \$25
- Mixed-Up Mother Goose ST \$19
- Police Quest ST \$33
- Space Quest 1 or 2 ST \$33 Ea.
- Winnie the Pooh ST \$16
- SIMON & SCHUSTER
- Star Trek ST \$25
- SOFTREK
- Turbo ST \$33
- SPRINGBOARD
- Certificate Maker ST \$25
- C.M. Library#1 ST \$19
- Newsroom 64K (D) \$33
- SSI
- Advanced Dungeons & Dragon: Heroes of the Lance ST \$26
- Phantasia 1, 2 or 3 ST \$26
- Queston 2 ST \$32
- Rings of Zilfin ST \$26
- Roadwar Europa ST \$29
- Roadwar 2000 ST \$26
- Stellar Crusade ST \$39
- War Game Const. Set (D) \$19
- War Game Const. Set ST \$23
- Warship ST \$39
- Wizard's Crown (D) or ST \$26
- SUBLOGIC
- Flight Sim. 2 (D) or ST \$33 Ea.
- F.S. Scenery Disks Call
- Jet ST \$33
- THREE SIXTY
- Dark Castle ST \$25
- Warlock ST \$23
- THUNDER MOUNTAIN
- Tau Ceti: The Lost Star Colony ST \$9.88
- Ton Gun ST \$9.88
- Winter Challenge ST \$9.88
- Wizball ST \$9.88
- TIMEWORKS
- Data Manager ST \$49
- Desktop Publisher ST \$87
- D.P. Clip Art ST Call
- Partner ST \$33
- Swiftcalc ST \$49
- Word Writer ST \$49
- UNISON WORLD
- Art Gallery: Fantasy ST \$19
- Art Gallery 1 or 2 ST \$19 Ea.
- Print Master Plus ST \$25
- P.M. Fonts & Borders ST \$23
- VERSASOFT
- dB Man V4.0 ST \$149
- MARK WILLIAMS
- C Source Debugger ST \$44
- Mark Williams C ST \$119
- WORD PERFECT
- WP Word Processor ST \$199
- ACCESSORIES
- Animation Station (D) \$49
- Bonus 5 1/4 SS, DD \$4.99 BX
- Bonus 5 1/4 DS, DD \$5.99 BX
- Compuserve Starter Kit \$19
- Disk Drive Cleaner \$6.88
- Dow Jones Starter Kit \$19
- Epyx 500 XJ Joystick \$14
- Indus GT Drive Call
- Supra Hard Drive Call
- Wico Bat Handle \$17
- Wico Ergostick \$19



Gauntlet

This is it. The game everybody's been waiting for. Gauntlet, the most successful arcade game of all time has come home.



Atari ST \$33
 Atari XL/XE \$23

DAVIDSON

- Math Blaster (D) \$32
- Spell It (D) \$32
- Word Attack (D) \$32
- ELECTRONIC ARTS
- Software Classic Series: Archon 2 (D) \$9.88
- Lords of Conquest (D) \$9.88
- Movie Maker (D) \$9.88
- Music Const. Set (D) \$9.88
- Pinball Const. Set (D) \$9.88
- Seven Cities of Gold (D) \$9.88
- Super Boulder Dash (D) \$9.88
- ELECTRONIC ARTS
- Alien Fires ST \$26
- Arcticfox ST \$14
- Bard's Tale ST \$32
- Chessmaster 2000 (D) \$26
- Chessmaster 2000 ST \$29
- Empire ST \$32
- Lords of Conquest ST \$14
- Marble Madness ST \$26
- Mavis Beacon Teaches Typing ST \$32
- Music Const. Set ST \$32

- Winter Games ST \$14
- World Games ST \$14
- EQUAL PLUS
- Financial Plus ST \$129
- FORESIGHT
- Dratrix ST \$119
- FTL
- Dungeonmaster ST \$25
- Dungeonmaster Hints \$9
- Oids ST \$23
- Sundog ST \$23
- GAMESTAR
- Champ. Football ST \$25
- GRIBNIF
- Neo Desk ST \$19
- HIGH-TECH EXPRESSIONS
- Astro-Grover (D) \$6.88
- Award Ware (D) \$9.88
- Big Bird's Spc. Delivery (D) \$6.88
- Ernie's Magic Shapes (D) \$6.88
- Print Power (D) \$9.88
- Sesame St. Print Kit (D) \$9.88
- *All Hi-Tech req. 64K!
- ICD
- PR Connection \$59

MICHTRON

- Airball ST \$25
- Airball Const. Set ST \$16
- GFA Artist ST \$49
- GFA Basic Book ST \$25
- GFA Basic Int. ST Call
- GFA Basic Compiler ST \$39
- GFA Companion ST \$33
- Golddrunker 2 ST \$25
- Int'l. Soccer ST \$25
- Juggler ST \$33
- Karate Kid 2 ST \$25
- Leatherneck ST \$25
- Master CAD ST \$129
- Slayton ST \$25
- ST Replay \$69
- Stuff ST \$25
- Tanglewood ST \$25
- Time Bandit ST \$25
- Tune Up ST \$33
- MICROLEAGUE
- Baseball (D) \$25
- Baseball 2 ST \$39
- Box Score Stats (D) \$16
- General Manager (D) or ST \$19
- 1987 Team Data (D) or ST \$14

- *Requires Gauntlet!
- NEOTRON
- Fontz ST \$23
- Word Up ST \$49
- OMNITREND
- Breach ST \$25
- Breach Scenario Disk ST. \$16
- Universe 2 ST \$33
- ORIGIN
- Autoduel (D) or ST \$25
- Moebius ST \$25
- Ultima 3 (D) or ST \$25
- Ultima 4 (D) or ST \$39
- PROGRESSIVE
- Superbase Professional ST \$189
- PROSPERO
- First Word Plus ST Call
- QMI
- Desk Cart ST \$69
- RAINBIRD
- Black Lamp ST \$19
- Carrier Command ST \$29
- Guild of Thieves ST \$29
- Jinxer ST \$25
- Starglider 2 ST \$29

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

*Please Read The Following Ordering Terms & Conditions Carefully Before Placing Your Order: Orders with cashiers check or money order shipped immediately on in stock items! Personal & Company checks, allow 3 weeks clearance. No C.O.D.'s! Shipping: Continental U.S.A.-Orders under \$100 add \$3; free shipping on orders over \$100. AK, HI, FPO, APO-add \$5 on all orders. Canada & Puerto Rico-add \$10 on all orders. Sorry, no other International orders accepted! PA residents add 6% sales tax on the total amount of order including shipping charges. CUSTOMER SERVICE HOURS: Mon-Fri. 9 AM-5:30 PM Eastern Time. REASONS FOR CALLING CUSTOMER SERVICE—412-361-5291 (1)Status of order or back order (2)if any merchandise purchased within 60 days from S.D.of A. is defective, please call for a return authorization number. We will not process a return without a return auth. #1 Defective merchandise will be replaced with the same merchandise only. Other returns subject to a 20% restocking charge! After 60 days from your purchase date, please refer to the warranty included with the product purchased & return directly to the manufacturer. Customer service will not accept collect calls or calls on S.D.of A.'s 800# order lines! Prices & availability are subject to change! New titles are arriving daily! Please call for more information. NEW, MORE CONVENIENT ORDER LINE HOURS: Mon-Thurs. 9:00 AM-7:00 PM Fri. 9:00 AM-5:30 PM Sat. 10:00 AM-4:00 PM Eastern Time.

American Techna-Vision

For Orders Only - 1-800-551-9995
CA. Orders / Information 415-352-3787

"Providing 8 Bit support with one of the Worlds largest inventories of Atari replacement parts"

- No surcharge for VISA/MasterCard
- Your card is not charged until we ship

800 4 PIECE BOARD SET

Includes Main Board, Power Supply Assembly, CPU Module and 10K Revision B Operating System Module. All boards are new, tested and complete with all components. **\$28.50**

1050 MECHANISM

Factory fresh TANDON mechs. make difficult repairs a snap. Units are complete with Head, Stepper, Spindle motor, belt etc. Just plug in, no difficult alignments or adjustments required. **\$47.50**

XL/XE POWER SUPPLY PACK

800XL, 600XL, 130XE, 65XE, XE GAME SYSTEM **\$35.00**

130XE KEYBOARD

Complete Replacement Keyboard Assembly, Just Plug In. Also for 65XE **EACH**

SOFTWARE

Pac-Man Cartridge \$4.00
Deluxe Invaders Cart. ... \$4.00
Journey to the Planets ... \$4.00
Dig Dug Disk \$9.95
Pole Position Disk ... \$9.95
Choplifter Cart. \$10.00
Silicon Warrior Cart. ... \$12.50
Springer Cart. \$5.00
Fun with Art Cart. \$10.00
Donkey Kong Cart. \$5.00
Eastern Front Cart. \$10.00
PILOT Language Cart. ... \$17.50
Cut & Paste W.P. Disk ... \$17.50
DropZone Disk \$12.50
Edt/Asm Cart. w/o man. ... \$15.00
Home filing manager. \$7.50
Clowns & Balloons Disk ... \$7.50
Musical Pilot Ed. Disk. \$5.00
Chambers/Zorp Disk. \$5.00
Pathfinder Disk. \$5.00
Match Racer Disk. \$5.00
Encounter/Questar Disk. ... \$5.00
Baja Buggies Disk. \$5.00
Com*putation Disk ... \$5.00
Stratos Disk \$9.95
Fractions Tutorial Disk. ... \$5.00
Decimals Tutorial Disk. ... \$5.00
Reading Skills Disk \$5.00
Fun in Learning Disk. \$7.50
Fun in Numbers Disk. ... \$7.50
Honey Craze Math (D) ... \$7.50
The Factory Disk \$20.00
Gorf Cart. 800/400 \$4.00
Atlantis Cart. 800/400 ... \$4.00
Wombats Adventure (D) ... \$5.00
MAC-65 O.S.S. \$59.95
ACTION O.S.S. \$59.95

400 3 PIECE BOARD SET

Includes Main Board, Power Supply Assembly and CPU Module. All boards are new, tested and complete with all components. **\$19.50**

400 Membrane Keyboard \$12.50

CROSSCHECK GAME

A strategy Crossword game from DataSoft. Sharpen your wits with this exciting game that provides the ultimate challenge for crossword and word-game fans. Allows up to four players or teams to compete. Clues vary from easy to difficult, making Crosscheck a game the whole family can play. Works with all 8 bit Atari. 48K DISK **\$12.50**

POWER PACKS

Exact replacement transformer for 800/400, 1050, 810, 1200XL, 850, XF551 and 1020 units. Replaces older "weaker" units. Atari part #CO17945. **\$14.50**

800 10K "B" O.S. Module

Older 800 units need the revision "B" Operating system to run newer software. Type the following peek in BASIC to see which revision you have. PRINT PEEK(58383). **\$9.50**

If the result is 56 order now!

XL 40 PIN LSI CHIP SET

A Complete set of 40 Pin Large Scale Integrated Circuits for your 800XL, 600XL or 1200XL computer. Great for quick repairs! Set contains one each of the following: CPU, GTIA, ANTIC, PIA AND POKEY. **\$16.95**

PROGRAMERS REFERENCE GUIDE

While written for the 800, this out of print manual has tons of hard to find programming information that applies to all 8 bit Atari computers. A must for the serious programmer! **\$14.95**

494 PAGES

800/400 MODULES

NEW PARTS COMPLETE WITH IC'S

\$9.50 EACH

- 800 Main Board
- 800/400 CPU with GTIA
- 800 10K "B" O.S. Module
- 400 Main Board
- 400 Power Supply Board

CX853 16K Ram Module \$14.50
800 Power Supply Board \$14.50

INTEGRATED CIRCUITS

\$4.50 EACH

- CPU CO14806
- POKEY CO12294
- PIA CO14795
- GTIA CO14805
- ANTIC CO12296
- CPU CO10745
- PIA CO10750
- CPU CO14377
- DELAY CO60472
- 2600 TIA .. CO10444
- PIA CO12298
- CPU 6507
- PIA 6532
- RAM 6810
- CPU 6502B

1050 O.S. ROM \$13.50
2793 1050 FDC \$19.50
1050 5713 STEP DRIVER .. \$5.25
CO21697 - Use CO12296 except on 130XE
CO11299C 810 ROM \$10.00

REPAIR MANUALS

SAMS Service Manuals for the following units contain schematics, parts listings, labelled photographs showing the location of checkpoints and more! A special section gives oscilloscope and logic probe readings allowing you to narrow the malfunction down to a specific chip or transistor!
800, 800XL, 130XE, 400, 1025 and 1050 \$19.50 each
520ST Service Manual. \$37.50

MISC. HARDWARE

13 Pin Serial I/O Cable ... \$5.95
1050 Track 0 Sensor ... \$8.50
Paddle Controllers (Pair) .. \$6.50
1030 Power Pack \$9.50
Fastchip for 800/400 ... \$15.50
800 256K Upgrade w/o Ram. ... \$89.95
Supra 2400 Baud Modem. ... \$159.95
SlickStick Joystick ... \$7.95
850 or PR Modem Cable \$14.50
850 or PR Printer Cable \$14.50
P:R: Connection \$65.00
Printer Interface \$39.95
I/O 13 Pin PC mount ... \$4.50
I/O 13 Pin Plug Kit \$4.50
ST 6' Drive Cable \$14.00
820 Printer Mechanics. . \$9.50
Joystick Extension Cable \$5.00
30 Pin Cartridge Socket. . \$4.50
810 Door Latch Assy. \$15.00
1027 Transformer CALL
U.S. Doubler \$29.95
ST Modem Cable \$14.50
ST Drive connector plug. . \$6.50

COMPUTER BOOKS

Hackerbook \$5.00
Inside Atari Basic \$5.00
Atari Basic Ref. manual. ... \$5.00
How to 6502 Program. ... \$5.00
Programmers Ref. Guide \$14.95
Basic-Faster & Better ... \$22.95
Assembly Language Guide \$19.95
XE Users Handbook \$17.95
XL Users Handbook \$17.95
Advanced Programming ... \$19.50
Write Your Own Games. ... \$5.00
Mapping the Atari \$18.50

SERIAL I/O CABLE

High Quality, 13Pin \$5.95

MAC-65 CARTRIDGE

6502 Machine language Macro-Assembler. First class tool for serious programmers. ... \$59.95

ATARI 850 INTERFACE

Bare PC Board with parts list and crystal \$7.50
Board & all plug in IC's ... \$39.50

PR: CONNECTION

Serial/Parallel Interface for connecting modems and printers. \$65.00

BASIC CARTRIDGE

Exact replacement for 800/400/1200XL \$15.00

EPROM CARTRIDGES

16K Eprom Board with case. Specify dual 2764 or single 27128 style. Gold contacts. \$6.95

- DATASOFT DISKS -

Great Prices - Great Software

Mercenary Disk \$12.50
The Goonies Disk \$12.50
Conan Disk \$12.50
Saracen Disk \$9.95
Crosscheck Disk \$12.50
Never Ending Story (D) \$12.50
Gunslinger Disk. XL/XE \$9.95
Letter Wizard Work Processor with Spell-Checker. (D) \$32.95

600XL 64K UPGRADE

Easy to install internal modification allows 600XL to run disk drive and all 800XL software. Includes all parts and detailed instructions. Soldering required to install 3 jumpers. ... \$29.95

SERVICE RATES

Flat Service Rates below include Parts & Labor, 60 Day Warranty.
800 Computer ... \$49.50
850 Interface ... \$39.50
810 Disk Drive ... \$69.50
1050 Disk Drive .. \$75.00
800 Keyboard only. \$25.00

Include \$7.00 return shipping and insurance. Include \$4.00 shipping for 800 keyboard repair only.

CALL TOLL FREE
1-800-551-9995
IN CALIF. OR OUTSIDE U.S.
CALL 415-352-3787

AMERICAN TECHNA-VISION

Mail Order: 15338 Inverness St., San Leandro, Ca. 94579
Repair Center: 2098 Pike Ave., San Leandro, Ca. 94577

Terms: NO MINIMUM ORDER. We accept money orders, personal checks or C.O.D.s. VISA, Master/Card okay. Credit cards restricted to orders over \$20.00. No personal checks on C.O.D. - Shipping: \$4.00 shipping and handling on orders under \$150.00. Add \$2.25 for C.O.D. orders. In Canada total \$6.00 for shipping and handling. Foreign shipping extra. Calif. residents include 7% sales tax. All items guaranteed 30 days from date of delivery. All sales final..

Prices subject to change without notice. Send SASE for free price list. Atari is a reg. trademark of Atari Corp.

SUPER DISK BONUS! —Antic Disassembler
PLUS 2 DISK EXTRAS . . .
—Deluxe Adventure Creator
—Lightspeed C Fractals

Antic®

The **ATARI** Resource



Mystery at the Birthday Party. Page 28



Flower Garden. Page 40

Cover Photography:
Georgia Solkov
Model: Dwight Been

Antic—The Atari Resource (ISSN 0745-2527) is published monthly by Antic Publishing. Editorial offices are located at 544 Second Street, San Francisco, CA 94107. ISSN 0745-2527. Second Class Postage paid at San Francisco, California and additional mailing offices. POSTMASTER: Send address change to **Antic**, The Atari Resource, P.O. Box 1919, Marion, OH 43306. Subscriptions: One year (12 issues) \$28. Canada and Mexico add \$8, other foreign add \$12. Disk Edition (12 issues with disks) \$59.95, all foreign add \$25. (California residents add 6½% sales tax for disk subscriptions. Editorial submissions should include text and program listings on disk and paper. Submissions will be returned if stamped, self-addressed mailer is supplied. **Antic** assumes no responsibility for unsolicited editorial material. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher. **Antic** is a registered trademark of Antic Publishing, Inc. An Information Technology Company Copyright ©1988 by Antic Publishing. All Rights Reserved. Printed in USA.

FEATURES

NOVEMBER 1988, VOL. 7, NO. 7

- 20 **DR. BRILLIANT'S INCREDIBLE ATARI BRAIN TRANSPLANTS**
by Lee Brilliant, M.D. All about 8-bit memory upgrades
- 26 **RAMDISK SENTRY** by Glenn Smith
Save your files—re-install without re-formatting *Type-In Software* 
- 28 **MYSTERY AT THE BIRTHDAY PARTY** by Neal Engelow
Family fun with your Atari—no programming required
- 31 **SUPER SIEVE** by Denis DeVries
Prime numbers found lightning-fast *Type-In Software* 
- 33 **DOC PRINT-PRO** by Roland Fetzer
Onscreen documentation printed minus garbage
- 35 **8-BIT TOOLBOX** by Charles Cherry and Chester Cox
The Mouse, Disk Emulator, Print Buffer, 8-Bit Projects Book, Picture Plus
- 39 **LOTTOPIK** by Dr. John Ferguson
Pick the winning numbers with your Atari *Type-In Software* 
- 40 **FLOWER GARDEN** by Allan Moose and Marian Lorenz
Instant "rose equation" graphics for 8-bit *Type-In Software* 
- 44 **LIGHTSPEED C** by Matthew Ratcliff Move up to high-level programming
- 47 **PRINT SHOP SHAREWARE BONANZA** by Charles Cherry
Icon Printer, Video Jukebox and four more. . .

DEPARTMENTS

- GAME OF THE MONTH
- 14 **DIMENSION WIZARDS** by Bernard Crozier *Type-In Software* 
- FEATURE APPLICATION
- 16 **PERSONAL POCKET CALENDAR** by Jim Hodny *Type-In Software* 
- SUPER DISK BONUS**
- 27 **ANTIC DISASSEMBLER** by David Kibler
EXTRA SUPER DISK BONUS
- 34 **DELUXE ADVENTURE CREATION KIT** by Stephen Stout
- 18 **PRODUCT REVIEWS** Calc Magic, Spell Magic, RAMbrandt

SOFTWARE LIBRARY

- 65 SEVEN EASY-TO-TYPE LISTINGS

ST RESOURCE

- 50 **STELLAR CRUSADE** by Steve Panak ST vs. PC Review
- 54 **ST NEW PRODUCTS**
- 55 **TEDDY BEAR MATH** by Stephen Everman and Paul Pratt
ST Disk Bonus: Bouncing Bruin Teaches Addition
- 58 **ST GAMES GALLERY**

- 10 **I/O BOARD**
- 11 **NEW PRODUCTS**
- 63 **SHOPPERS MARKET**
- 78 **CLASSIFIED ADS**
- 79 **ADVERTISERS INDEX**
- 80 **TECH TIPS**

Antic

James Capparell
Publisher
John Taggart
Associate Publisher

EDITORIAL

Nat Friedland
Editor
Charles Jackson
Technical and Online Editor
Gregg Pearlman
Assistant Editor
Heidi Brumbaugh
Programs Editor
Carolyn Cushman
Editorial Coordinator

ART

Linda Tapscott
Creative Services Director
Gregory Silva
Art Director
Jim Warner
Associate Art Director
Georgia Solkov
Photo Editor
Julianne Ososke
Collateral Printing Coordinator
Kate Murphy
Advertising Production Coordinator

CIRCULATION

Manny Sawit
Director
Amber Lewis
Subscription Coordinator
Dennis Swan
Distribution Coordinator

ADVERTISING

Phoebe Thompson
Western Region (408) 356-4994
Michael Mooney
MidWest Region (312) 679-1100
John Garland
Eastern Region (617) 749-5852
Gail McCall
Sales Coordinator (415) 957-0886

ANTIC PUBLISHING, INC.

James Capparell
President and Chairman of the Board
Donald F. Richard
Richard D. Capparella
Directors
Lee Isgur
Advisor to the Board
John Taggart
Associate Publisher
John Cady
Controller

GENERAL OFFICES

(415) 957-0886
544 Second Street, San Francisco, CA 94107
Credit Card Subscription and Catalog Orders
(800) 234-7001 Visa or Mastercard Only
Dealer Sales (800) 234-7123

SUBSCRIPTION CUSTOMER SERVICE

(800) 347-6969
Antic, P.O. Box 1919, Marion, OH 43306

EDITORIAL

Antic Readers Speak



The July 1988 **Antic** Editorial Survey revealed some significant shifts among our readers' concerns—even though the overall picture of a "typical" **Antic** reader remains much the same as was first seen in the September 1985 survey. (Results of that previous survey were published in the January 1986 **Antic**.)

The main difference between the 1988 and 1985 surveys seems to be that now the pendulum swung back towards the majority of readers being primarily interested in **Antic's** own ready-to-use programs—both type-ins *and* disk bonuses. Back in 1985, the most important parts of the magazine for a majority of readers appeared to be reviews and new product information.

Here are some of the numbers that led to this conclusion—50.3% of readers counted in the survey said they wanted more type-in programs and 52.9% wanted more disk-only bonus programs. But only 28.1% called for more non-program articles. Looking at the most popular specific categories, a solid 52% wanted more new product information while 48.5% wanted more product reviews. But an even higher 68.1%, wanted more type-in practical user programs (55.8% called for more disk-only practical programs) while 67% wanted more type-in utility programs (55% voted for more disk-only utilities).

In general, readers want more—or at least the same amount—of just about everything they find in **Antic**. The two glaring exceptions are ST coverage (52.6% want less) and Atari-unrelated coverage (52% want less). And as we promised in last month's editorial about the early survey trends, the magazine has already taken a number of steps to give you more pages of Atari 8-bit programs and news—plus a monthly double-sided disk packed exclusively with 8-bit material.

Just as in 1985, the 1988 prototype **Antic** reader is an intermediate (66.1%) BASIC programmer (93.9%) who owns an Atari XL/XE computer (58.5%) with a disk drive (87.4%), printer (84.2%) and modem (57%). An ST plus an 8-bit Atari is owned by 10.8%, and additional computer brands—primarily PC compatibles—are also owned by 10.8%.

There now seem to be a number of splits emerging between various elements of the **Antic** readership. Most markedly, there is a highly vocal division between readers who want either less or more game programs. In the type-in action/arcade game category, 32.2% wanted less and 37.1% wanted the same amount as now—wanting more was in third place with 26.9%.

Special thanks go to two Atari users groups, MACE of Michigan and APES of Louisiana, who sent in mass responses from their members. The 1988 survey compilation program was written by Technical/Online Editor Charles Jackson (who also wrote the 1985 compiler). Editorial Coordinator Carolyn Cushman compiled the results.

Antic would like to thank the 343 readers who responded to the 1988 editorial survey, a turnout that was hardly any less than the 1985 participation.

Nat Friedland

Nat Friedland
Editor, **Antic**

Tramiel Write-In Overview

In the May 1988 Sixth Anniversary issue of *Antic*, we asked readers to send letters to Atari's chairman of the board, Jack Tramiel.

In the following weeks we received 54 photocopies of consumer letters and 43 copies of replies from Atari. About 65% of the reader letters provided store addresses and phone numbers. Atari generally replied to these letters that a nationwide dealer network was being established.

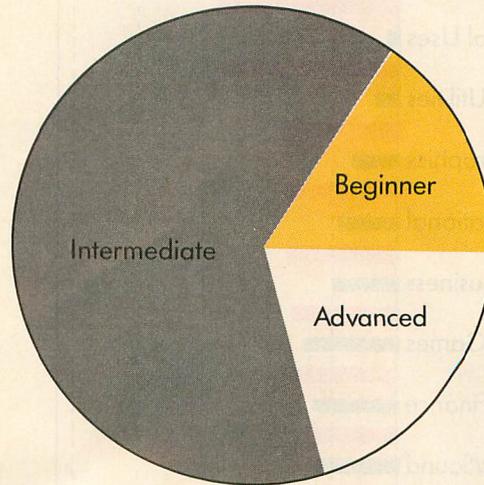
The other most frequent topic, appearing in 46% of the consumer letters, was a list of the Atari equipment owned by the writers. About 40% of the responses from Atari included a list of available 8-bit merchandise; 35% said that the suggestions or information provided by the consumer were being forwarded appropriately; and 33% simply thanked the consumers for their suggestions.

Comments in the reader letters ranged widely—from "You don't care" and "Deliver what you promise" to praises of "Great job."

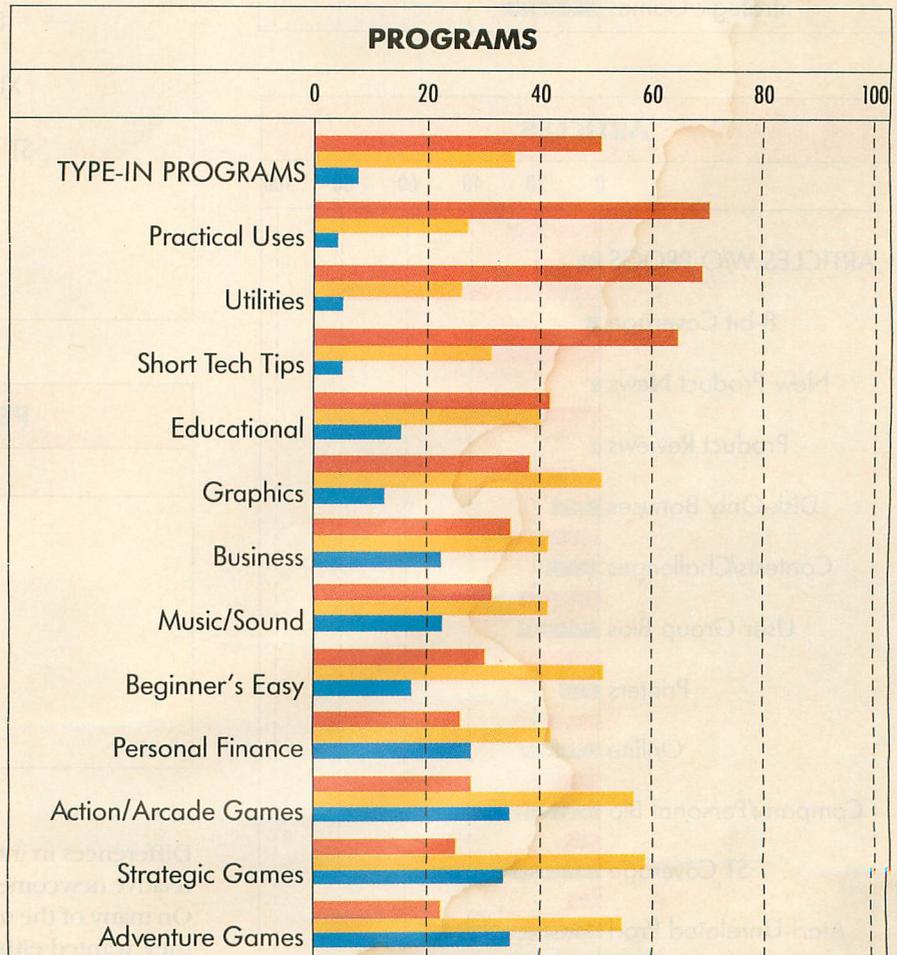
Unfortunately, the *Antic* readers who took the trouble to write letters could have been more specific in telling Tramiel what they really want. Few of the writers actually discussed what would influence them to buy more Atari products, or even specified something that they wanted to buy. From this, *Antic* has learned that next time we try a campaign like this, we must try to make it clearer to readers that better results might be obtained by telling Atari *how* you use your equipment to help you, as well as just listing what you own.—GREGG PEARLMAN

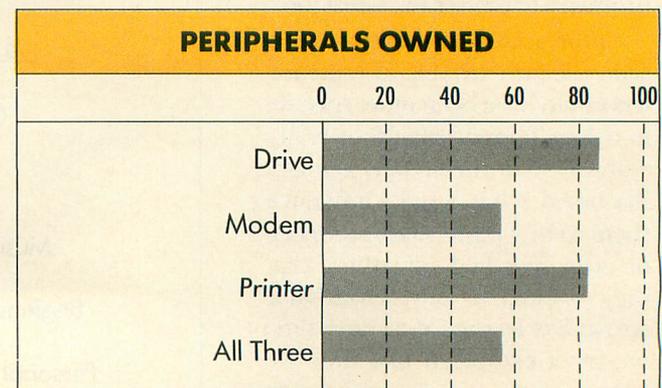
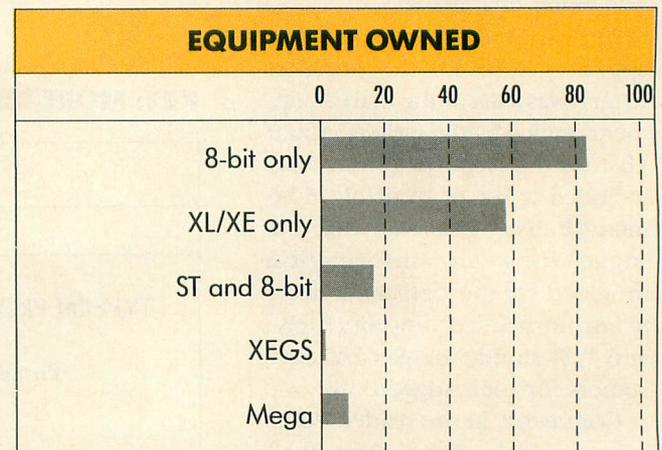
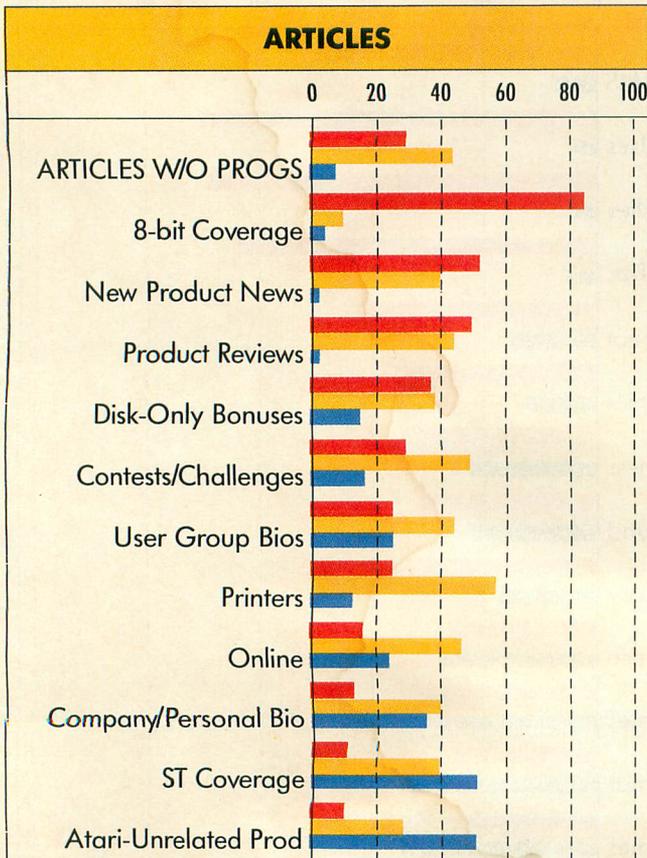
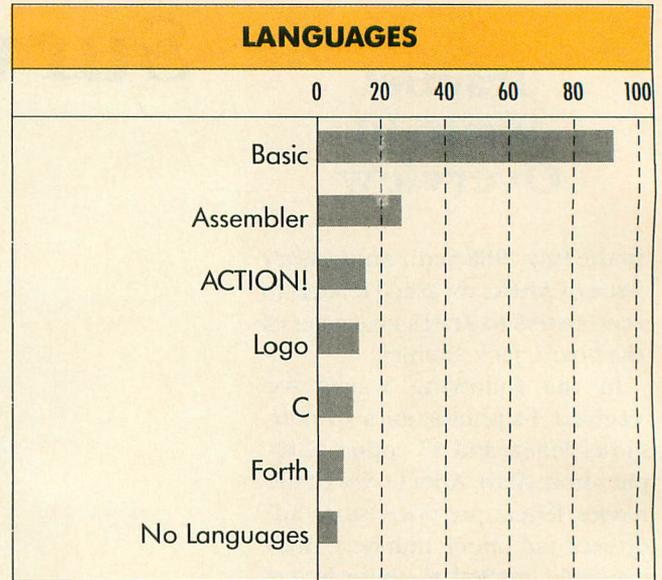
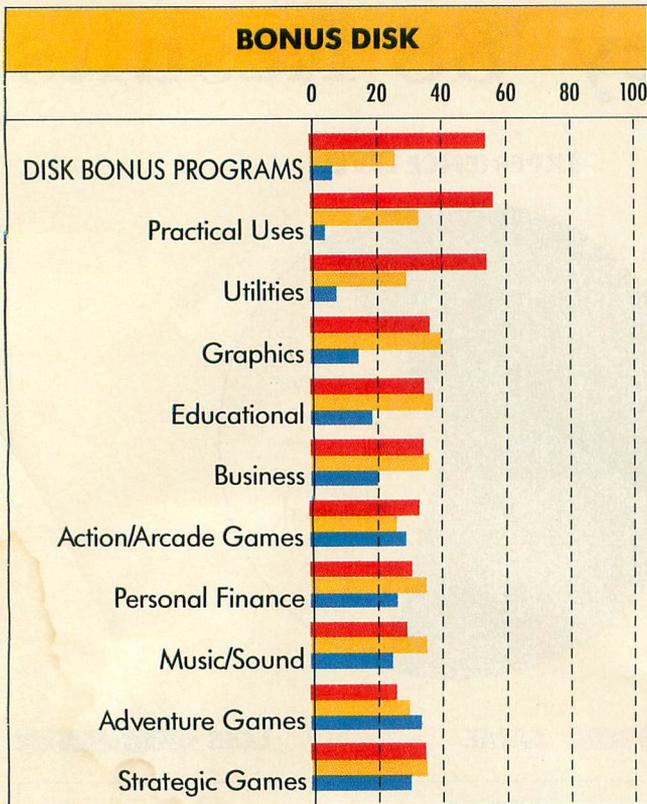
Survey '88 Results

EXPERIENCE LEVEL



KEY: MORE (Red) SAME (Yellow) LESS (Blue)





Differences in interests between longtime Atari users and relative newcomers were shown in the write-in comments. On many of the *same* topics, different readers wrote in that they wanted either more coverage or less coverage. ▲

B&C Computer Visions

3257 Kifer Road
Santa Clara, CA 95051
(408) 749-1003



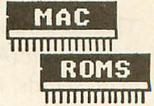
STORE HOURS
TUE - FRI 10am - 6pm
SAT - 10am - 5pm
CLOSED SUN - MON

NEW!! 1050 SUPER ARCHIVER CHIP \$69.95

8-BIT INTEGRATED CIRCUITS			
\$3.50 EACH OR 3.00 IN QTY OF 10			\$12.00 EACH
ASSEN REV A	800 CPU 6502	RAM 6810	ASSEM REV B
BASIC REV A	810 ROM C	POKEY	XE GATE ARRAY
MPU 6507	800 ANTIC	PIA 6502	XL ANTIC
PIA 6532	OS ROMS (499B-599B)		VCS TIA 444
			BASIC REV C
\$4.50 EACH OR 4.00 IN QTY OF 10			850 ROM B
1771 FDC	XL CPU 14806	GTIA	FREDDIE
1050 ROM	XL/XE MMU	XL DELAY	XL/XE OS

RUN MAC SOFTWARE ON YOUR ST

MAGIC SAC	119.95
TRANSLATOR	279.95
MAC ROMS	39.95
PRT DRIVERS/FINDER	44.95



NEW PRINTED CIRCUIT BOARDS WITH PARTS			
800 MAIN WITH CHIPS	10.00	800 10K O/S	10.00
800 16K RAM	10.00	800 POWER	5.00
810 SIDE WITH D/S	15.00	800 CPU W/GTIA	10.00
810 ANALOG	10.00	810 POWER	15.00

COMPUTERS & INTERFACE			
ATARI 800	100.00	MPP-1150 INTERFACE	54.95
ATARI 800XL	119.95	MPP-1151 INTERFACE	74.95
ATARI 130XE	149.95	ATARI 850	125.00

JOYSTICKS			
ATARI SPACE AGE	14.95	WICO 3-WAY	29.95
ATARI STANDARD (2)	12.00	WICO BAT HNDL	22.00
ATARI TRAK BALL	25.00	NUMERIC KEYPAD	19.95
EPYX 500 JOYSTICK	19.95	ST MOUSE	45.00

DIAGNOSTICS			
1050 DIAG. DISK	20.00	810/1050 DIAG. CART	25.00
SALT 800XL CART	25.00	SALT 400/800 CART	25.00
5-1/4" ALIGNMENT	40.00	3-1/2" SS ALIGNMENT	50.00

HAPPY ENHANCEMENT VER. 7.1 810 OR 1050 - \$99.95

MISCELLANEOUS			
400/800 POWER PACK	10.00	800 KEYBOARD	40.00
800/810 POWER PACK	15.00	800XL KEYBOARD	25.00
KLM 400/800 POWER PACK	5.00	130XE KEYBOARD	35.00
1030 POWER PACK	10.00	520ST KEYBOARD	75.00
800XL/XE POWER PACK	20.00	1040ST KEYBOARD	85.00
2600 POWER PACK	5.00	314/354 POWER	35.00
520ST POWER PACK	50.00	1040 POWER PCB	75.00

ST INTEGRATED CIRCUITS			
DISK CONTROLLER WD1772	25.00	DMA CONTROLLER	26.00
PHOTO COUPLER PC900	2.95	MMU	28.00
YAMAHA SOUND CHIP	10.00	VIDEO SHIFTER	26.00
6850 ACIA	3.95	GLUE CHIP	28.00
68000-8 CPU	27.00	68901 MPF	16.00
KEYBOARD CHIP	15.00		

DISK DRIVES			
ATARI 810	140.00	(130.00)	ATARI XF551
ATARI 810 on Plate	100.00	(90.00)	199.95
ATARI 810 W/HAP	220.00	(210.00)	INDUS GT
B&C 810	140.00	(120.00)	225.00

PRICES IN BRACKETS DO NOT INCLUDE I/O OR POWER PACK

ATARI XE GAME MACHINE \$139.95
INCLUDES MISSILE COMMAND, FLIGHT SIMULATOR II, BUG HUNT, LIGHT GUN, JOYSTICK, BASIC, AND 64K OF MEMORY WITH A REMOVEABLE KEYBOARD. ADD A DISK DRIVE AND PRINTER FOR A COMPLETE HOME COMPUTER SYSTEM!

WE CARRY A FULL LINE OF CARTRIDGES FOR THE XE GAME MACHINE.



DE RE ATARI \$10.00

FIELD SERVICE MANUALS	
ATARI 400/800, 810	25.00 EACH
ATARI 800XL, 850, 1025, 1050	20.00 EACH
SAMS 800, 800XL, 130XE, 1050	19.95 EACH
SAMS 520ST	35.00

SUPER SPECIALS

RECONDITIONED ATARI MERCHANDISE

All merchandise has been tested and reconditioned and is in like-new condition except where noted. 30 day warranty.

ATARI TRAK BALL \$9.95 SPICE UP THE ACTION IN YOUR ARCADE GAMES!	ATARI SPACE AGE JOYSTICK \$5.00	1020 COLOR PLOTTER/PRINTER \$29.95 40 Columns wide Includes paper and color pen set	600XL (64K) \$59.95 Upgraded to run newer 64K software - includes Basic & power supply	ATARI BOOKKEEPER \$14.95 - NO BOX (\$19.95 WITH RECON KEYPAD) \$24.95 - IN BOX (29.95 WITH RECON KEYPAD)
400 (16K) COMPUTER \$29.95 48K UPGRADE KIT \$25.00	1030 MODEM WITH EXPRESS! \$29.95 GET ONLINE TODAY	800 (48K) COMPUTER \$79.95 INCL. BASIC CART & MANUAL	NUMERIC KEYPAD \$7.95 INCL HANDLER DISK USE WITH BASIC & BOOKKEEPER	DISKETTES AS LOW AS 20 CENTS 10 FOR \$4.00 100 FOR \$29.95 1000 FOR \$200 MOST ARE UNNOTCHED WITH OLD SOFTWARE

SHIPPING INFORMATION - Prices do not include shipping and handling. Add \$5.00 for small items (\$8.00 Min. for Canada). Add \$8.00 for disk drive. Calif. res. include 7% sales tax. Mastercard and Visa accepted if your telephone is listed in your local phone directory. Orders may be pre-paid with money order, cashier check, or personal check. Personal checks are held for three weeks before order is processed. C.O.D orders are shipped via UPS and must be paid with cash, cashier check or money order. International and APO orders must be pre-paid with cashier check or money order. \$20.00 minimum on all orders. All sales are final - no refunds - prices are subject to change. Phone orders accepted TUESDAY THROUGH FRIDAY from 10:00 am to 6:00 pm PST.

We carry a complete line of ATARI products and have a large public domain library. Write or call for free catalogue. (408) 749-1003 TUE - FRI 10AM - 6 PM

PRICES SUBJECT TO CHANGE WITHOUT NOTICE - ALL SALES ARE FINAL

CODEMAKER FIX

There is a minor problem with *Text Screen Codemaker* (**Antic**, July 1988). As the program stands, it adds an increment to the line number (LN), even if there's a blank line. For example, if you set the line number to begin at 100 with an increment of 10, but you start your text on line 5, the first line number of your source code will be 140.

To correct this problem, remove the LN=LN+IN from line 20255 and add it to line 20275, so the new lines read:

```
20255 FOR Y=0 TO 22:C=Y*CC+1
20275 LN=LN+IN:GRAPHICS
0:POSITION LM,4: LN;
```

Gary Golaszewski
Nanticoke, PA

COLDSTART

In your June 1987 *Tech Tips* you published a USR call—USR(52487)—which ostensibly causes a coldstart reboot. I assume this works only on an XL or XE, because it makes my trusty 800 crash, leading me to believe that the published call is illegal.

Clay Halliwell
West Plains, MO

Thanks for letting us know. It turns out that the statement X=USR(52487) was a misprint! The correct statement is X=USR(58487) which refers to COLDSV, the coldstart entry point.—ANTIC ED

SEGA CREDIT

Matthew Ratcliff would like to credit Paul Wilson of the St. Louis Atari Computer Enthusiasts for the Sega Light Gun modification discussed in his *First Look Inside the XE Game System* (**Antic**, August 1988). The correction to the modification is needed. The Sega gun's trigger contains a normally-closed switch. The XEGS requires replacement with a normally-open switch which should be easily found at Radio Shack stores. To exchange the switches, follow the instructions in the article.—ANTIC ED

GUAM'S NOT FOREIGN!

I live in Guam. Recently I ordered software from a mail order company, that advertises in **Antic**. But instead of software, the company sent back my order along with the message that "international and APO orders must be prepaid with U.S. money order."

Guam *isn't* international! It's a United States Territory, specifically included in the United States domestic postal coverage. The civilian residents of Guam are not foreigners. My address is neither an APO or FPO address. It's a normal, domestic United States Post Office box number in a place where U.S. law applies. At least I've never had any trouble when ordering from The Catalog.

For trivia buffs, I want to mention that there are at least three other sovereign nations now included in the United States domestic postal system, as well as two Commonwealths and three Territories. Nations: Republic of the Marshall Islands, Federated States of Micronesia and Republic of Palau. Commonwealths: Puerto Rico and the Northern Mariana Islands. Territories: United States Virgin Islands, American Samoa and Guam.

Richard Davis
Agana, Guam

NEWSROOM COMPATIBLE?

I have an old Atari 800 that has been upgraded to 288K. Can I use Springboard Software's Newsroom on my machine, or, if not, can the program be modified?

Ben Brockman
Las Vegas, NV

Sorry, it's not a matter of memory SIZE that prevents Newsroom from working on the Atari 800—it's because of different memory LOCATIONS used in the XL/XE models, and we don't know of any modifications. But by the way, Springboard says they are still working to overcome the incompatibility problems with the Atari 850 interface reported by some users.—ANTIC ED

BAD SIGNAL

If you happen to want to simulate bad television reception, type in the following short program:

```
10 CHBAS=756:SDMCTL=559:CRSINH=752
20 X=PEEK(CHBAS):Y=PEEK(SDMCTL):? CHR$(125):POKE SDMCTL,0:POKE CRSINH,1
30 POKE CHBAS,212
40 FOR I=2 TO 37:FOR J=2 TO 21:POSITION I,J:?"A":NEXT J:NEXT I
60 POKE CHBAS,212:REM START IT!
70 POKE SDMCTL,Y:FOR I=1 TO 5000:NEXT I:?"CHR$(125):POKE CHBAS,X:POKE CRSINH,0
```

Douglas Blackwell
Scarborough, Ontario
Canada

ATARI MAGAZINE

In your editorial in the July, 1988 issue of **Antic**, you state that "At this writing, **Antic** is the only magazine covering all Atari computer models every month." In West Germany we have the German-language Atari Magazin for all Atari computers. It was first published in January 1987 as a bi-monthly, but since March 1988 it has been published monthly.

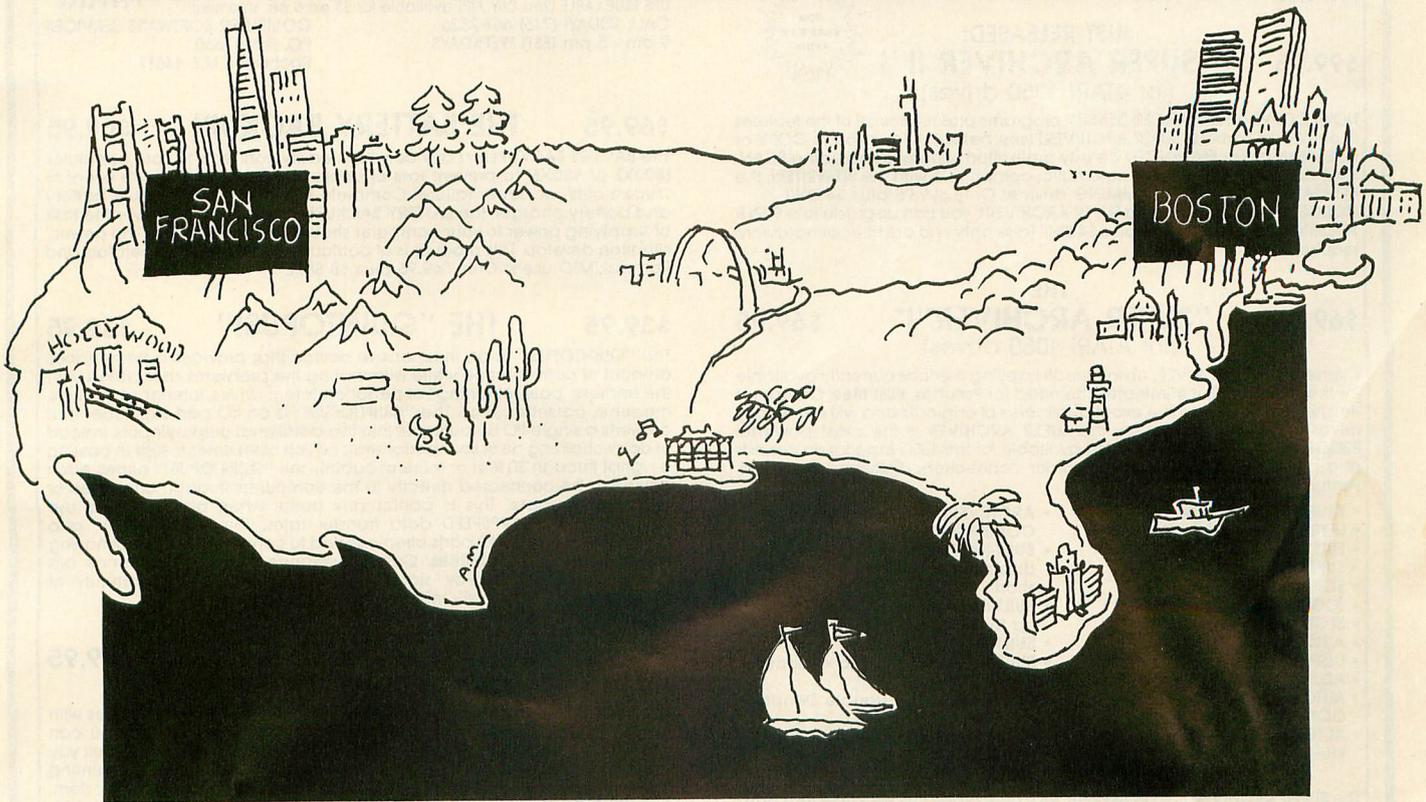
Hans Christian Boas
Hannover-Muenden
West Germany

It was just about "At this writing" that Atari Magazin went monthly. Thanks for updating us.—ANTIC ED

Antic welcomes your feedback, but we regret that the large volume of mail makes it impossible for the Editors to reply to everyone. Although we do respond to as much reader correspondence as time permits, our highest priority must be to publish I/O answers to questions that are meaningful to a substantial number of readers.

Send letters to: Antic I/O Board, 544 Second Street, San Francisco, CA 94107.

COMPUTER FAIRES INTRODUCE THE UNITED COASTS OF AMERICA.



The Computer Faires—the longest running, largest, most important shows on their respective coasts for professional small systems users.

These knowledgeable enthusiasts can be found only in these two regions of the country. And they can find the products and services they need through programs only Computer Faires offer:

Vertical Market Matching unites specialized sellers and buyers: companies offering systems and software for vertical markets and people involved in finance, medicine, manufacturing, law, education, engineering, construction and other vertical markets.

Product Matching makes it easy for attendees to find exhibitors displaying upgrades, add-ons, and enhancements for key product groups.

And in the Computer Faire Conference sessions, the industry's gurus and insiders share information on the latest techniques and insights.

To be sure you experience the best of both coasts, fill out and send in the coupon immediately, or call (617) 449-6600, extension 5028, to reserve your exhibit space.

UNITE ME WITH THE COMPUTER FAIRES!

- Send me complete information about exhibiting, including brochure, contracts, and floor plans for:
 - Northeast Computer Faire '88
 - West Coast Computer Faire '89
- Have a Sales Representative call me immediately.
- Send me information about attending.

Name _____ Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Type of Business _____

Telephone (_____) _____

Mail to: Computer Faires, 300 First Avenue, Needham, MA 02194.

FA 8/88

THE 11TH NORTHEAST COMPUTER FAIRE

October 27-29, 1988 • Hynes Convention Center • Boston, MA

Co-Sponsored by

0000 The Boston Computer Society

THE 14TH WEST COAST COMPUTER FAIRE

March 17-19, 1989 • Brooks Hall and Civic Auditorium
San Francisco, CA



COMPUTER SOFTWARE SERVICES

PO. BOX 17660, ROCHESTER, N.Y. 14617

ATARI PHONE (716) 467-9326



JUST RELEASED!

\$99.95 "SUPER ARCHIVER II"! (for ATARI 1050 drives)

NOW! COPS all ENHANCED DENSITY programs plus retains all of the features of our World Famous SUPER ARCHIVER! (see below). Allows you to COPY or CREATE single or ENHANCED density protection schemes (including PHANTOM SECTORS!). Completely automatic; compatible with the BIT-WRITER; the ULTIMATE BACKUP/PROGRAMMING device! Only \$99.95 plus \$4 S/H/I! **NOTICE!** If you already own a SUPER ARCHIVER, you can upgrade to a SUPER ARCHIVER II for only \$29.95 plus \$4 S/H/I (disk only - no additional hardware required).

THE

\$69.95 "SUPER ARCHIVER"! (for ATARI 1050 drives) \$69.95

The new SUPER ARCHIVER, obsoletes all copying devices currently available for the ATARI 1050! It eliminates the need for Patches, PDB files, Computer Hardware, etc. Copies are exact duplicates of originals and will run on any drive; without exaggeration, the SUPER ARCHIVER is the most powerful PROGRAMMING/COPYING device available for the 1050! Installation consists of a plug-in chip and 6 simple solder connections. Softwares included. Features are:

- TRUE DOUBLE DENSITY
- ULTRA-SPEED read/write
- FULLY AUTOMATIC COPYING
- SUPPORTS EXTRA MEMORY
- SCREEN DUMP to printer
- TOGGLE HEX/DEC DISPLAY
- SECTOR or TRACK TRACING
- AUTOMATIC DIAGNOSTICS
- DISPLAYS HIDDEN PROTECTION
- ADJUSTABLE/CUSTOM SKEWING
- AUTOMATIC SPEED COMPENSATION
- AUTOMATIC/PROGRAMMABLE PHANTOM SECTOR MAKER
- ARCHIVER/HAPPY ARCHIVER COMPATIBLE
- BUILT-IN EDITOR - reads, writes, displays up to 35 sectors/track short
- BUILT-IN CUSTOM FORMATTER up to 40 sectors/track
- BUILT-IN DISASSEMBLER
- BUILT-IN MAPPER - up to 42 sectors/track
- DISPLAYS/COPIES Double Density HEADERS
- AUTOMATIC FORMAT LENGTH CORRECTION
- SIMPLE INSTALLATION

The SUPER ARCHIVER is so POWERFUL that only programs we know that can't be copied are the newer ELECTRONIC ARTS and SYNFILE/SYNCALC (34 FULL sectors/track). If you want it ALL... buy the "BIT-WRITER"! also... then you'll be able to copy even these programs! Only \$69.95 plus \$4 S/H/I.

\$79.95 "BIT-WRITER"! \$79.95

The Super Archiver "BIT-WRITER" is capable of duplicating even the "uncopyable" EA and SYN series which employ 34 FULL sectors/tracks. "BIT-WRITER" is capable of reproducing these and FUTURE protection schemes of non physically damaged disks. PLUG-IN circuit boards and 4 simple solder connections. The "SUPER ARCHIVER with "BIT-WRITER" is the ultimate PROGRAMMING/COPYING device for Atari 1050's. EXACT DUPLICATES of originals are made! Copies run on ANY drive. Must be used with Super Archiver. Only \$79.95 plus \$4 S/H/I.

\$69.95 "ULTRA SPEED PLUS" \$69.95

Imagine a universal XL/XE Operating System so easy to use that anyone can operate it instantly, yet so versatile and powerful that every Hacker, Programmer and Ramdisk owner will wonder how they ever got along without it! Ultra Speed Plus puts unbelievable speed and convenience at your fingertips. Use ANY DOS to place an ULTRA SPEED format on your disks, boot any drive (1-9) upon power-up, format your RAMDISK in Double Density, activate a built-in 400/800 OS for software compatibility, plus dozens of other features too numerous to mention! Below are just a FEW features you'll find in the amazing OS:

- ULTRA Speed SIO for most modified drives
- ULTRA Speed is toggleable
- Boot directly from RAMDISK
- Special timer circuits not required for 1 or 2 Meg upgrades
- Background colors adjustable
- Reverse use of OPTION key
- Cold-start without memory loss
- Built-in floppy/disk configuration editor (1-9)
- Built in RAMDISK configuration editor (1-9)
- RAMDISK exactly duplicates floppy drive so sector copying and sector editing are now possible
- Built in MINI Sector Copier
- Toggle SCREEN OFF for up to 40% increase of processing speed.
- Toggle Internal BASIC
- Ram resident disk loader program (MACH 40 menu)
- DOUBLE DENSITY RAMDISK capable
- Entire MEMORY test that pinpoints defective RAM chip
- Boot any drive (1-9) upon power-up or cold-start
- Supports memory upgrades up to TWO MEGABYTES
- THREE Operating Systems in one (XL/XE, 400/800, ULTRA SPEED PLUS)

\$29.95 "XF551 ENHANCER!" \$29.95

The XF551 Atari drive is a fine product with one major flaw...it writes to side TWO of your flopping disks BACKWARDS. This causes read/write incompatibility problems with all other single sided drives made for Atari such as Indus. Trak, Rana, Percom, Astra, Atari 1050, Atari 840, etc. Add the XF551 ENHANCER to the new XF551 drive and your problems are over! This device will restore 100% compatibility while retaining original design qualities of Atari's super new drive. The XF551 ENHANCER is a MUST for all XF551 Owners. Installation is simple. Only \$29.95 plus \$4 S/H/I.

DEALER/DISTRIBUTOR/USER GROUP Discount available call for info. PHONE Orders - MASTER CARD, VISA MAIL - Money Orders, Checks

* SHIPPING! Add \$4 for Shipping/Handling/Insurance within the U.S.A. UPS BLUE LABEL (2nd DAY AIR) available for \$3 extra per shipment. CALL TODAY! (716) 467-9326 9 am - 5 pm (EST) WEEKDAYS



COMPUTER SOFTWARE SERVICES
P.O. Box 17660
Rochester, N.Y. 14617

\$69.95 THE BATTERY BACKUP! \$69.95

The BATTERY BACKUP! is a device which easily connects to your computer (800XL or 130XE) to prevent loss of operation or memory in the event of "brown-outs" or power failure! Complete with it's own heavy duty battery and battery charger, the BATTERY BACKUP! will instantly take over the task of supplying power to your computer should a "low power" or "no power" situation develop. This product is of particular interest to BBS operators and Ramdisk/MIO users! Only \$69.95 plus \$8 S/H/I.

\$39.95 THE "QUINTOPUS!" \$39.95

The "QUINTOPUS!" is an inexpensive device that provides a tremendous amount of convenience while eliminating the problems associated with the endless "daisy-chaining" of peripherals (eg: drives, interfaces, printers, modems, cassettes, etc.). The "QUINTOPUS!" is an I/O port expander that converts a single I/O output/input into five additional outputs/inputs. Instead of daisy-chaining all of your peripherals (which often times results in passing a signal through 30 feet or more of cable), the "QUINTOPUS!" allows each device to be connected directly to the computers through only three or four feet of cable. This is particularly useful when attempting to use ULTRASPEED or WARPSPEED data transfer rates. The "QUINTOPUS!" also provides the "extra" I/O ports often needed to connect devices not having daisy-chaining capabilities. Cable resistance and capacitance are greatly reduced thereby significantly improving the opportunity of accurate data transfers! Only \$39.95 plus \$4 S/H/I.

\$59.95 THE "QUINTOPUS!" \$59.95 (with SWITCHABLE PORTS!)

This Deluxe version of the "QUINTOPUS!" has all of the above features with the additional benefits of two SWITCHABLE PORTS! This means you can connect two computers to one printer or two printers to one computer; you can switch in a computer/printer combination and while you're printing out a long document, switch in a second computer to access a modem, disk drive, cassette deck, etc! Switch multiple combinations of peripherals or computers without the hassle or re-arranging I/O cables... simply flip a switch! Only \$59.95 plus \$4 S/H/I.

\$29.95 RAMDISK "WRITE-PROTECTOR!" \$29.95

Hackers, Programmers, or BBS users...if you own a RAMDISK (memory upgrades for your XL or XE computer), think about this: Every disk drive ever manufactured has WRITE-PROTECT capabilities...except your RAMDISK. Without it, your valuable stored data/program file naked, awaiting that one mistake that will wipe out hours, maybe weeks of precious programming efforts. End the fears of accidental formatting or overwriting by installing our universal RAMDISK "Write-Proector!" Works on all memory upgrades up to 2 megabytes. Simple installation. Only \$29.95.

LIMITED SPECIALS!

Previously we listed these products under our FIRESALE ad but many of our customers feared that the software items might be smoke or water damaged. They're NOT! All of the items listed below are BRAND NEW...only their literature or packing may have slight cosmetic imperfections. All items are fully warranted! Quantities are limited! No rainchecks!

	NORMALLY	LIMITED SPECIALS
1. PILL (without case)	\$ 70	\$ 19
2. SUPER PILL (without case)	80	22
3. XL FIX ROM	70	19
4. ULTRA MENU/DOS	30	19
5. DISKCRACKER (Newest version)	50	19
6. ELECTRONIC PHANTOM SECTOR MAKER DELUXE	60	35
7. RICHMANS 80 COLUMN WORD PROCESSOR	60	29
8. MIRACLE (Disk only Version of Impossible)	70	19
9. IMPOSSIBLE for 800 or 800XL	150	69
10. XL MATE	30	15
11. COMPACTOR	30	15
12. KLONE II (Generic HAPPY backup)	100	75
13. SILENCER	30	19
14. BLACK PATCH (MASTER)	50	25
15. BLACK PATCH DATA DISKS 1 & 2	20	10

*Order 5 items or more and we will pay the freight!

These SPECIALS are for C.S.S. customers only - NO DEALER DISCOUNTS - NO RAINCHECKS - LIMITED QUANTITIES

NEW PRODUCTS

Return the favor. When you call a manufacturer or supplier about a product you've seen advertised or otherwise mentioned in ANTIC, please tell them so. This will help us to continue to bring you the latest information about products that will make your Atari computer an even more valuable investment in the future.

—ANTIC ED

NAPOLEON IN RUSSIA II, GRAPHICS COMPANION

(entertainment software)
(Datasoft) Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(800) 245-4525
48K disk

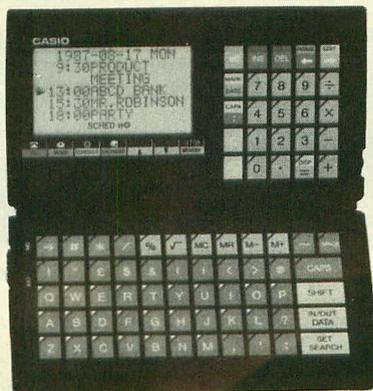
Graphics Companion II (\$19.95) is an advanced version of Graphics Companion that's designed for use with Video Title Shop. With a VCR, a video camera, your Atari and these two packages, any home video production can be given a real shot in the arm. Companion II includes six new character fonts plus new clip-art for school, business, sports, outdoors, holidays and more. Borders can surround entire background "canvases" or just a few words of text. All of these new features can be used with the Video Title Shop scroll, fizzle, fade, cycling and paint functions.

Napoleon in Russia—Borodino 1812 (\$24.95), received an **Antic** rave review when it was first released by Krentek as Borodino! This outstanding wargame recreates the pivotal battle which led to the overthrow of Napoleon.

CASIO SF-4000

(electronic diary)
Casio, Inc.
570 Mt. Pleasant Avenue
P.O. Box 7000
Dover, NJ 07801
(201) 361-5400
\$109.95.

The Casio SF-4000 is a "digital diary"



with a large, six-line LCD screen that displays any full month from 1901 to 2099. The schedule display indicates month, date, day and year. You can enter names, phone numbers, schedules, appointment notes, etc., into the SF-4000's 32K memory. The search function gives you six different ways to retrieve and store information in seconds. The SF-4000 also functions as a full-featured calculator with independent memory, percentage, square root and full-floating decimal. The SF-4000 is 5/8x3 X 5 inches, weighs six ounces and operates on three lithium batteries.

ADVANCED RACING SYSTEM

(handicapping software)
Software Exchange
2681 Peterboro Road
P.O. Box 5382
West Bloomfield, MI 48033
(313) 626-7208
\$64.95, 48K disk

Use your Atari to handicap thoroughbred, harness, quarter-horse and greyhound (\$74.95) racing. These **Advanced Racing System** packages use past performance data including race length, post position, speed ratings and variant, times, odds, class, positions at the 1/8, 1/2, 3/4, stretch and finish positions. At most, you'll enter 17 data items per horse or dog to perform the statistical analysis for forecasting the outcome of a race. These systems are claimed to have 70% to 80% success.

THE CONVERTER

(print utility)
No Frills Software
800 East 23rd Street
Kearney, NE 68847
(308) 234-6250
\$19.95, 48K disk

The Converter lets you convert Print Shop, Newsroom and Hi-Tech's AwardWare and Print Power icons in the following directions—Print Shop to Hi-Tech, Print Shop to Newsroom, Hi-Tech to Newsroom. The Converter also lets you enhance your Print Shop icons to improve their appearance for the "larger format" picture programs.

JUMPSTART

(hardware)
Logic One
P.O. Box 18123
Cleveland, OH 44118
\$16.95, Atari XL/XE

Jumpstart lets you restart your XL or XE at any time without interrupting power. At the touch of a button, you can release any lockup or crash, or stop games or programs for an instant reboot. Jumpstart requires no tools or soldering.

MONTY PLAYS SCRABBLE

(electronic game)
Ritam Corp.
P.O. Box 921
Fairfield, IA 52556
(515) 472-8262
\$99.95

If you can't get enough of high-powered Scrabble competition, **Monty Plays Scrabble** (\$99.95) is a Scrabble-only game with a 24,000-word vocabulary that's expandable to 56,000 words with two Advanced Vocabulary Modules that cost \$29.95 each.

New Products notices are compiled by the Antic staff from information provided by the products' manufacturers. Antic welcomes such submissions, but assumes no responsibility for the accuracy of these notices or the performance of the products listed.

When you want to talk Atari

XL/XE HARDWARE

INTERFACES

ICD	
P:R Connection	61.99
Printer Connection	41.99
Supra	
1150	39.99
1151 (1200 XL)	40.99
Xetec	
Graphix Interface	38.99
Atari	
850 Interface	109.00

COMPUTERS

CMO PACKAGE EXCLUSIVE



Atari 800XL & XF551 Disk Drive

w/5 Undocumented ROMS Asteroids,
Defender, Missile Command, QIX, Star
Raiders

\$279

Atari	
800XL	89.99
130XE	139.00

XL/XE ENHANCEMENTS

Axlon 32K Mem. Board (400/800) ..	19.99
Atari 80 Column Card	79.99

MODEMS

Atari	
SX212 300/1200 (ST)	89.99
XMM301	42.99

Anchor

VM520 300/1200 ST Dir. Con.	119.00
----------------------------------	--------

Avatex

1200 HC	89.99
2400	159.00

Supra

2400 Baud XL/XE or ST	169.00
2400 Baud (no software)	149.00

MONITORS

Magnavox	
CM8505 14" Composite/RGB/TTL ..	199.00

ST HARDWARE



ATARI 520 ST FM RGB/Color System **\$789**

Includes: 520 ST FM with 3 1/2" drive,
mouse & 1224 color monitor.
SM124 Monochrome Monitor ... 179.00
SM1224 RGB Color Monitor ... 329.00

**Call For Current Information
On The Entire ST Line!**

DRIVES

Atari	
ST 314 DS/DD	219.00
XF551 Drive (XL/XE)	179.00
SHD204 20 Meg Hard Drive	599.00



Supra 30 Meg Hard Drive **\$689**

I.B.	
5 1/4" 40 Track (ST)	219.00
5 1/4" 80 Track (ST)	279.00

I.C.D.

FA*ST 20 Meg	629.00
FA*ST 30 Meg	869.00
FA*ST Dual Hard Drives	Call

Indus

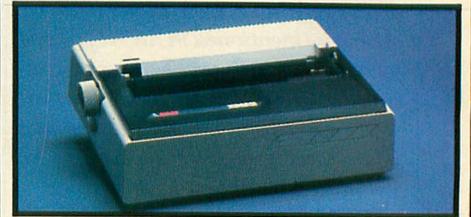
GTS 100 3 1/2" DS/DD (ST)	199.00
GT 1000 5 1/4" DS/DD (ST)	209.00
GT Drive (XL/XE)	189.00

Supra

FD-10 10MB Removable Floppy w/SCSI	899.00
20 Meg Hard Drive (ST)	579.00
20 Meg Hard Drive (XL/XE)	689.00

PRINTERS

Atari	
1027 LQ XL/XE	129.00



Atari XDM121 LQ (XL/XE) **\$189**

XM-M801 XL/XE Dot Matrix	199.00
XM-M804 ST Dot Matrix	199.00
XDM 121 Letter Qlty. XL/XE	209.00

Brother

M-1109 100 cps Dot Matrix	169.00
M-1509 180 cps Dot Matrix	389.00
HR-20 22 cps Daisywheel	339.00

Citizen

120D 120 cps Dot Matrix	149.00
180D 180 cps Dot Matrix	179.00
Premier-35 35 cps Daisywheel ..	549.00

Epson

LX-800 150 cps, 80 col	189.00
Hi-80 4 pen plotter	269.00
FX-850 264 cps, 80 col	Call
FX-1050 264 cps, 132 col	Call
LQ-500 180 cps, 24-wire	Call
LQ-850 330 cps, 80 col	Call
LQ-1050 330 cps, 132 col	New

NEC

P2200 pinwriter 24-wire	379.00
P5200 pinwriter 24-wire	599.00
P5300 pinwriter 132 col	799.00

Okidata

Okimate 20 color printer	129.00
ML-182 + 120 cps, 80 column ..	229.00
ML-320 + 300 cps, 80 column ..	379.00
ML-390 + 270 cps, 24-Wire ..	539.00

Panasonic

KX-P1080i 144 cps, 80 col	169.00
KX-P1091i 194 cps, 80 col	199.00

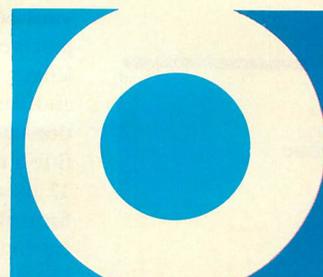
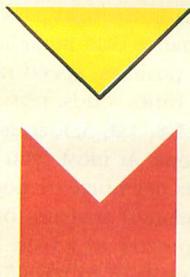
Star Micronics

NX-1000 140 cps, 80 column ..	179.00
NX-15 120 cps, 132 column ..	319.00

Toshiba

P321-SL 216 cps, 24-wire	499.00
--------------------------------	--------

WE SHIP 90%
OF ALL ORDERS
WITHIN 24 HOURS



SELECT FROM
OVER 3000
PRODUCTS

COMPUTER MAIL ORDER

.....you want to talk to us.

XL/XE SOFTWARE	ACCESSORIES	ST SOFTWARE
Access Leaderboard Golf 13.99 Accolade Hardball 19.99 Atari Atariwriter Plus 35.99 Filemanager 11.99 Music Painter 11.99	MD1-M SS/DD 5¼" 8.49 MD2-DM DS/DD 5¼" 8.99 MF-1DDM SS/DD 3½" 11.99 MF2-DDM DS/DD 3½" 18.49 Sony MD1D SS/DD 5¼" 6.99 MD2D DS/DD 5¼" 7.99 MFD-1DD SS/DD 3½" 11.99 MFD-2DD DS/DD 3½" 17.99 Allsop Disk Holders Disk File 60-5¼" 9.99 Disk File 30-3½" 9.99 Curtis Emerald 39.99 Safe Strip 19.99 Universal Printer Stand 14.99 Tool Kit 22.99 ICD BBS Express (ST) 52.99 Sparta DOS Construction Set 28.99 US Doubler/Sparta DOS 47.99 Real Time Clock 48.99 Rambo XL 29.99 US Doubler 28.99	Dataeast Speed Buggy 24.99 Electronic Arts Gridiron Football/Auto Duel. (ea.) 26.99 Isgur Portfolio 119.00 Firebird Silicon Dreams 19.99 The Sentry/Tracker (ea.) 12.99 Infocom Beyond Zork 34.99 Metacomco ISO Pascal 59.99 Microprose Gunship 28.99 F-15 Strike/Silent Service (ea.) 24.99 Miles Software ST Wars 24.99 Mindscape Road Runner 36.99 Mark of the Unicorn PC Intercom 79.99 Mark Williams C 119.00 Paradox Wanderer (3D) 24.99 Progressive Computer Graphic Artist 1.5 119.00 Psygnosis Barbarian/Deep Space (ea.) 25.99 Soft Logik Corp. Publishing Partner 54.99 Strategic Simulations Questron II 37.99 Sublogic Flight Simulator II 33.99 Timeworks Swiftcalc/Wordwriter (ea.) 45.99 Partner ST 29.99
 <p>LOOSE/UNBOXED XL/XE ROM CARTS \$349 ea. or 5 for \$1499 Includes: Space Invaders, Star Raiders, Missile Command, Asteroids, Pac Man, Galaxian, Defender, Qix</p> <p>Atari Program Exchange Misc. Programs (cassettes) at 1.99</p> <p>Broderbund Graphics Library I, II, III 14.99 Printshop 26.99</p> <p>Datasoft Alternate Reality (City) 23.99 221 Baker St. 20.99</p> <p>Electronic Arts Auto Duel 29.99</p> <p>Firebird Guild of Thieves 19.99 Silicon Dreams 19.99 Jewels of Darkness 19.99</p> <p>Microprose Top Gunner 16.99 F-15 Eagle Strike 21.99 Silent Service 22.99</p> <p>Origin Systems Ultima 4 36.99</p> <p>Roklyn SPECIAL Anti-Sub/Journey to Planet ... (ea.) 3.99</p> <p>Strategic Simulations Colonial Conquest 24.99 Gemstone Warrior 11.99</p> <p>Sublogic Scenery Arizona 14.99</p> <p>X-Lent Typesetter 22.99 Printshop Interface 21.99</p>	<p align="center">ST SOFTWARE</p>  <p>ACCOLADE Bubble Ghost \$2899</p> <p>Abacus PC Board Designer 119.00</p> <p>Access Leaderboard Golf 22.99</p> <p>Activision Hacker II 28.99</p> <p>Antic CAD 3-D 29.99</p> <p>Avant Garde PC Ditto 59.99</p> <p>Batteries Included Degas Elite 37.99</p>	 <p>TIMEWORKS Desktop Publisher \$7999</p> <p>Word Perfect Corp Word Perfect 4.1 179.00</p>

In the U.S.A. and in Canada

Call toll-free: 1-800-233-8950

Outside the U.S.A. call 717-327-9575, Fax 717-327-1217
 Educational, Governmental and Corporate Organizations call toll-free 1-800-221-4283
 CMO, 101 Reighard Ave., Dept. B6, Williamsport, PA 17701



OVER 350,000 SATISFIED CUSTOMERS • ALL MAJOR CREDIT CARDS ACCEPTED • CREDIT CARDS ARE NOT CHARGED UNTIL WE SHIP

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

Dimension Wizards

Two-player challenge from Trinidad. By Bernard Cozier

The gods have adjourned after casting the warring colonies of black and white soldiers into a state of suspended animation and scattering them across 20 different dimensions. You and your opponent—wizards both—must press your joystick buttons to begin teleporting soldiers from your own colony back into a more familiar dimension.

Type in Listing 1, DIMWIZ.BAS, check it with TYPO II and SAVE a copy before you RUN it. If you have trouble typing the special characters in lines that appear throughout the program, don't type them in. Instead, type in Listing 2, check it with TYPO II and SAVE a copy.

When you RUN Listing 2, it creates these hard-to-type lines and stores them in a file called LINES.LST. To merge the two programs, disk users LOAD "D:.BAS" and then ENTER "D:LINES.LST." Be sure to SAVE the completed program before you RUN it.

Wizard 1 is the white cursor, Wizard 2 is the black. Two joysticks are required. After both buttons have been pressed, a sound will indicate teleportation to another dimension.

The site of a previous battle will appear onscreen, with one to four dead warriors from each colony and four to nine "frozen" soldiers.

Vital statistics for Wizard 1 are displayed at the top of the screen. The



Dimension Wizards is a challenging fast-action game for two players. Dodge the lightning bolts of your opponent while you desperately strive to teleport back home soldiers who were banished from an Earth war by displeased ancient gods. This BASIC program works on 8-bit Atari computers with at least 48K memory. A disk drive and two joysticks are also required.

same information categories are displayed at the bottom of the screen for Wizard 2. These include the score, remaining strength of the wizard, the number of lives each must save and

the current "charge" of your lightning bolt which you'll fire against your opponent, hoping to nail him for 50 points.

Each wizard must try to touch his

soldiers, whether they're dead or just frozen, thus returning them to their own dimension. Touching a dead warrior gives you 15 points and touching a live one gives you 30.

TRICKS FOR WIZARDS

After all the soldiers of one color have been returned to their home dimension, their wizard teleports to the battlefield in the next of the 20 dimensions. The other wizard must follow soon if he doesn't want to lose more men to the enemy.

Reaching your men isn't easy. Standing in your way are members of the opposing colony, frozen in place. You've got to move them out of the way, but the tremendous power of your touch will kill them. The problem here is that this decreases the number of lives your opponent must save. But at least you get 15 points—the war still goes on back in your home dimension, and every enemy

you kill helps toward your goal of winning.

Your opponent might not appreciate your wanton slaughter of his men, so he may get back at you by firing lightning bolts. A hit gives your op-

Teleport soldiers back into a more familiar dimension.

ponent 50 points and decreases strength on both sides. However, even though your wizard can float above the obstacles, your lightning bolts can't pass through—so your opponent can hide behind the obstacles.

BOLTS OF DEATH

By touching a Pedestal of Power or a Shrine of Strength, you can increase (by twos) your lightning bolt charge to 9 and your strength to 99. This can help you prolong the game. Or you can bring a quick end to the game by firing extra-strength lightning bolts.

But after each bolt is fired, your charge drops back to 1, so try not to accumulate and waste Pedestals of Power unless you're deliberately preventing your opponent from using them.

When you reduce your opponent's strength to zero, the game is over. The number of teleportations is tallied up, and whoever teleported the most is the winner. So even if you kill your opponent, you could still lose. ▲

Bernard Cozier is the first Antic author from Trinidad, West Indies.

Listing on page 67

Coming in December 1988

ANTIC

Super '88
Contest Winners
Best Programs & Articles
Top Joysticks
for the Atari

DISK BONUS:

*Antic Music Processor
—a spreadsheet of sounds*

"The most useful program for the Atari since Print Shop!"

FORMS GENERATOR

for the Atari 800, 800XL, 65XE, 130XE

Designed by Jeff Brenner, columnist for *Computer Shopper* magazine, of "Applying The Atari" fame, and author of book and magazine articles in *COMPUTE!*, *ANALOG* and others.

LOOK WHAT YOU CAN DO WITH FORMS GENERATOR: Purchase merchandise by mail? Next time, send a customized purchase order form! Does your home or business ever need statements, invoices, proposals, job work orders, gift certificates, etc.? No problem! Use *FORMS GENERATOR's* scrolling spreadsheet-style screen to design almost any form to suit your exact needs. What you see on-screen is what you get on paper! Use the text mode with any 80-column printer, or the high-res graphics mode with the Epson, Gemini/Star, Okidata, Panasonic or Prowriter for remarkably realistic forms. BUT THAT'S JUST THE BEGINNING: Once you've designed a form, you can program *FORMS GENERATOR* to make all calculations automatically! Imagine: after you enter quantities, descriptions and prices, *FORMS GENERATOR* moves about the form calculating extended prices, subtotals, and even the sales tax! Like magic! (Sample invoices included). You can also use *FORMS GENERATOR* for record keeping, since you can save filled forms to disk!

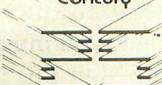
Read what our customers have written: "Excellent... easy to use and ran perfect (ly)..." T.W. Wetherfield, Connecticut; "I was most impressed with your *FORMS GENERATOR* program..." J.E. King, South Carolina; "Love it!" C.R. Cortland, Ohio.

Our "down to planet Earth" price: Only \$23.95 (product #ATA611).

For C.O.D. Orders CALL (516) 932-5330
Or send coupon below.

Send coupon to:

Twenty-Fifth
Century™



Software Division
Dept. AT 1
234 Fifth Avenue
Suite 301
New York, NY 10001

YES! Please rush me *FORMS GENERATOR* (product #ATA611) with complete documentation, 90-day free replacement warranty, full customer service support and 20-page Atari software catalog. I am enclosing \$23.95 + \$2.74 (for first class shipping and handling.)

Check/Money Order enclosed C.O.D. (add \$2.50)
 MasterCard Visa

Name _____

Address _____

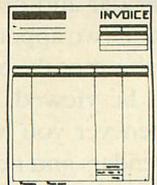
City _____ State _____ Zip _____

Card No. _____ Exp. Date _____

Signature _____ Phone # _____

New York State residents add 8% sales tax.

*The Print Shop and Atari are registered trademarks of Broderbund Software and Atari Corp., respectively. — Prices and availability subject to change without notice.



Personal Pocket Calendar

Wallet-size appointment monthly. By Jim Hodny

Personal Pocket Calendar creates handy appointment calendars and datebooks that are just the right mini-size to carry around conveniently.

Personal Pocket Calendar creates a pocket-size 4.5×5 inch monthly calendar and diary that will remind you of two appointments for each day of the month. Your reminder notes can be viewed, changed or deleted whenever you wish. Entire monthly calendars and notes can be stored on disk, reloaded, viewed onscreen, or printed on just about any Epson-compatible printer.

After you print a mini-calendar, it can be cut out and carried in a wallet or purse. On the calendar grid, you'll see each appointment or memo marked with an asterisk (*) on the date square. The complete memos or appointment notes are compactly printed alongside the calendar. *(If you enjoy the convenience of Personal Pocket Calendar, you'll probably also like Appointment Calendar, a January 1986 Antic program that prints full-page monthly calendars showing your appointment notes inside the day squares. —ANTIC ED)*

Type in Listing 1, APNTCAL.BAS, check it with TYPO II and SAVE a

copy before you RUN it.

GETTING STARTED

If you have a printer other than an Epson or compatible, you may need to change lines 860, 880, 890, 910, 920, and 960 (which turns double-wide printing on, then off) to your own printer's codes for these functions. The program contains REMarks explaining which printer function must be changed on each of the above lines. Your printer manual should show the function codes you need.

The main menu has eight selections. Normally you'd get started by pressing the [1] key to select "Create A New Calendar." At the question "Create calendar for what month?" you type a number between 1 and 12, representing your choice from January (1) to December (12). If the number of the month you select has one digit, you must press the [RETURN] key—but this is not necessary if it's a two-digit number.

At the Year prompt, enter a four-digit year, such as 1988. The message

"Creating calendar—please wait" will appear. When the main menu reappears, press [6] to display the chosen month. Then press any key to continue.

Press [4] to save the present calendar to disk and you'll see the words "Saving calendar." When the main menu reappears, press [7] to see that the calendar has been saved to disk and also how many more calendars can be saved to that disk. Then press any key to continue.

MEMO MAKER

To create or edit memos, press [3]. At the question "Appointment for which date?" type any number up to the number of days in that month. At the "Enter appointment/memo" prompt, type any amount of characters up to the limit that fits in the boxed area. Then press [RETURN] and you'll be back at the date prompt. If you type the same date as before, you'll see your current appointment/memo displayed. Type in a second note and press [RETURN].

The date question will appear again, so type the same date. Now you will see both previous appointments/memos. You can only enter two appointments. So if you now type a third one, you will be prompted to select which of the earlier notes to replace. Or you can press [ESC] to go to the main menu. Press [CONTROL] [CLEAR] to delete

1988

JULY

SUN	MON	TUE	WED	THU	FRI	SAT
					1	2
				**		
3	4	5	6	7	8	9
	**	*	*	*		
10	11	12	13	14	15	16
		*	*			
17	18	19	20	21	22	23
			**			
24	25	26	27	28	29	30
*	**	*	**	*		
31						

CJ's

*** Appointments and memos ***

1. 100% Edit, listings due
1. Films & Inserts Due
- 2.
- 2.
- 3.
- 3.
- 4.
- 4.
5. Films Due
5. Transit files
6. Layout Listings
- 6.
7. Ad Copy Due
- 7.

*** Appointments and memos ***

8. Paste-Up Begins
- 8.
- 9.
- 9.
- 9.
- 10.
- 10.
- 11.
- 11.
- 12.
- 12.
13. Cover Art Due
- 13.
14. 50% Boards Due
- 14.
- 15.
- 15.
- 16.
- 16.
- 17.
- 17.
- 18.
- 18.
- 19.
- 19.
- 20.
- 20.
21. 100% Boards Due
21. Cover to Film House
- 22.
- 22.
- 23.
- 23.
- 24.
- 24.
25. Design meeting w/Edit
- 25.
26. Ad Projection Due
26. Start Map
- 27.
- 27.
28. Films Back
28. Start 1/4 page layouts
29. Send Films
- 29.
- 30.
- 30.
- 31.
- 31.

the contents of the current box and try it again. You will be prompted to press [RETURN] when you are done.

Press [6]. Your calendar will be displayed with two asterisks in the date that you chose previously. Press any key to continue.

With your printer turned on, press [5]. The calendar will now be printed with the appointments and memos you listed.

Press [8] to exit the program. You'll be asked if you want to save your current calendar. Since you made some changes to the previously saved calendar, press [Y]. This prompt will also appear when you choose to create or load another calendar with main menu selections [2] and [3]. **A**

Jim Hodny is an elementary school principal from Newfolden, Minnesota. He has owned Atari computers since 1982 and is making his first appearance in Antic.

Listing on page 70

Exact-size sample printout of an Antic production calendar, as made with Personal Pocket Calendar.

GET YOURS FAST

Super Bonus Program!

Found only on the disk, it's too large a type-in program to fit in the magazine.

Plus all 172K of this month's Antic programs on disk. Great 8-bit software without typing!

Phone Toll Free

(800) 234-7001

Phone orders by Visa or MasterCard only

Ask for ADS 1088



Antic
The ATARI Resource

Product Reviews

Calc Magic, Spell Magic, RAMbrandt, reviewed by Stephen Roquemore

SPELL MAGIC

Spell Magic (AP0144) is a spelling checker that was originally designed by Blue Collar Software to work with their Word Magic (AP0130) word processor. However, it will work just fine with files created in AtariWriter Plus, PaperClip, or the word processor in HomePack. Spell Magic has a 34,000-word dictionary and you can add any number of personal dictionaries that each contain up to 10,000 words. With online help screens and simple menus, you can begin using Spell Magic right away.

Spell Magic displays your file in the upper half of the screen while it's doing its thing, so you can check spelling "in context." It will update your personal dictionary automatically while checking. It works with one or two drives and provides word count statistics when done.

I highly recommend Spell Magic to those with the original AtariWriter (which didn't have a spell checker) and HomePak. Owners of early versions of PaperClip who didn't upgrade to the new version with its own spelling checker could also benefit from this little dandy.

RAMBRANDT

RAMbrandt (AP0157), by Bard Ermentrout of the Pittsburgh users group, is a paint program that has been popular for some time. It is subtitled "The Atari Design Studio," and well it should be—with so many features that I can't even list them all. You can use a joystick, KoalaPad or Atari Touch Tablet to create your own works of art. You can even use the

joystick *with* either touch tablet.

RAMbrandt supports the best Atari graphics modes (7, 7+, 9, 10, and 11) except for Graphics 8. Boxes, circles, ellipses, "rubber-band" lines, free-hand plotting, zoom and mirror (vertical, horizontal or *both*) are all avail-

**You
can use
up to 128
colors in *any*
mode and animate
up to 32 frames
at any
speed.**

able, as are fills in solid, pattern, random, and user-defined patterns. You can define your own brushes, plot text with user-defined fonts, define Quilts and Tiles—and paint or fill with any of these.

You can use as many as 128 colors in *any* mode, generate colors in several different ways, animate your pictures up to 32 frames at any speed. In Window Mode, you can rotate, flip, wipe, animate, scale, cut-and-paste, or rubber-stamp all or any part of your picture.

The program provides printer support for Epson, Star/Gemini, NEC, C. Itoh and compatible printers, plus the

Okimate 10 color printer. It will load picture files from Computereyes, Micro Illustrator, Micro-Painter and Movie Maker files. It can even use the 130XE RAMdisk.

If you are at all interested in computer art or graphics, you really can't pass up this little jewel. It even exceeds the capabilities of some similar programs for the ST. I *highly* recommend it.

CALC MAGIC

Calc Magic (AP0177), by Metamorphosis Development, is well-known as a nice little spreadsheet program for 8-bit Atari computers. It requires an Atari XL or XE computer and 64K of memory. It offers the usual capabilities of any spreadsheet, but is quite easy to learn and use. It uses multiple menus like SynCalc, but has a built-in English set of commands that make it a bit easier to work with.

Calc Magic scrolls very quickly and seems to be programmed for quick response to user requests like recalculations. With the built-in "programming language," you can quickly build templates to reduce the amount of typing required. Commands can be selected from pop-up menus. Spreadsheet files can be saved in DIF format for transfer to other spreadsheet or database programs which support DIF files. This program offers a *lot* of power for a *small* price. I highly recommend it to anyone who doesn't need a full-power business-level spreadsheet. ▲

\$19.95 each. The Catalog, 544 Second Street, San Francisco, CA 94107. (415) 957-0886.

Shop Talk



Shopping for holiday gifts?

Make your holiday shopping EASY. Give your friends a subscription to *START*. They'll be able to use their ST in ways they've never dreamed.

Talking ST with your friends?

START gives you complete coverage of the ST scene. News and reviews of the latest and best ST products. Information and programs on MIDI, desktop publishing, business applications, animation, graphics, games, utilities, and more. With the disk programs, you get top-quality software at an outrageously low price!

Mail in the order card now!

CALL TOLL-FREE
(800) 234-7001
VISA/MASTERCARD
ONLY
(7 am-6 pm PST)



Dr. Brilliant's **INCREDIBLE** **ATARI BRAIN** **TRANSPLANTS**

All about
8-bit memory upgrades.
By Lee Brilliant, M.D.

Why *not* an Atari 800 with 256K to 1Mb of useful internal memory? Why not a 512K XL? Or why not put your XE into six-figure RAM with a full megabyte of add-on memory?

Many experienced Atari users seem endlessly fascinated with the potential of beefing up the memory capacity of their trusty 8-bit computers — especially if they are like me and have invested hundreds (if not thousands) of dollars and hours into Atari 8-bit equipment and software.

When **Antic** asked me to try writing the definitive article about 8-bit Atari memory upgrades, I evaluated commercial packages and public domain schematics for every Atari model made. I covered every upgrade product I could find. As a key part of my research, I personally made hardware upgrades on two Atari XLs and three 800 models.

Photo by Georgia Solkov. Model: Dwight Been



AVAILABLE UPGRADES

Upgrades are now available for every Atari computer ever made. But if you own a 400 or a 600XL you should unload it on your kids or your mother-in-law. The 400 and 600XL are harder to upgrade and less flexible because of their small size and lack of a video monitor port.

If you own an Atari 800, there are at least eight public domain upgrades and the commercial Magna Systems RAMcharger you can install. For the 800XL and 1200XL there are three professional upgrades—from Magna Systems, ICD's RAMbo XL and the Newell 256KXL.

For XEs, the only commercial upgrades I know of come from Magna Systems, but there are several in the public domain. New from Innovative Concepts is the RAMdrive + XE-GMI (reviewed in *Antic*, August 1988), which converts the XE Game System into a 128K computer that is 100% compatible with the 130XE.

Sources for commercial upgrades and a tested public domain upgrade are provided at the end of this article. Prices for the commercial products are often subject to some changes because of continuous fluctuations in the prices of memory chips.

The author and *Antic* Magazine are not responsible for any damages which might result when readers carry out electronic construction projects described in this article. Any original factory warranty remaining on your Atari is voided when you open the computer case.

MEMORY BACKGROUND

Before starting to discuss the specific memory upgrades available, we need to introduce some information about the way that the 8-bit Atari handles memory chips.

The most commonly used type of memory chip is Dynamic Random Access Memory (DRAM). DRAM stores information as single bits in micro-miniature capacitors. Think of these chips as paper cups with holes



UPGRADE SOURCES

RAMBO XL

ICD
1220 Rock Street
Rockford, IL 61101
(815) 968-2228.
\$39.95 without RAM chips

256KXL

Newell Industries
602 East Highway 78
Wylie, TX 75098
(214) 442-6612
\$39.95 without RAM chips

MAGNA SYSTEMS

147-05 Sanford Avenue,
Suite 4E, Flushing, NY 11355
(718) 939-0908
\$225 approx.—256K for 800,
plug-in board includes chips
\$195 approx.—256K for XL, in-
cluding chips and installa-
tion(Phone for other RAM
prices)

PUBLIC DOMAIN 800 UPGRADE

800 Plus 256K (Rev. D, Ver. 1.6)
David Byrd
Ad Astra, January/February 1987
(For version with corrected PC
board layout, send stamped self-
addressed return envelope to:
Lee Brilliant, C/O Antic Editor,
544 Second Street, San Fran-
cisco, CA 94107)

in them—over time, the chip will lose its memory unless you keep refilling the capacitors. This process is called *refreshing* and is an important factor in upgrade design and implementa-

Your computer arranges memory bits in a grid of rows and columns which are “decoded” and brought out to address pins on the chips. Each standard RAM is arranged as a single row of bits like 64K X 1—or 256K X 1 in the quarter-megabyte RAM chips. Eight RAM chips together give a one-byte-wide line of memory—64K (or 256K) long. With a little manipulation of address decoding, you can rearrange the memory into any shape you want.

The original Atari arrangement is 64K of memory space in one block, with RAM in the first 48K and the operating system and hardware addresses in the top 16K. Newer Atari computers like the 800XL and 65XE start with a 64K block of RAM having the upper 16K available as RAM or the OS. When two banks of memory share the same address space, you can only select one at a time in a process called *bank selecting*. Any number of banks can occupy the same address space in RAM, but only one at a time. In the 130XE and all upgraded computers, the additional RAM is banked into the second 16K of the address space. (See *Figure 1*.)

ATARI MAPS

Power does not come without a price, however. The Atari's 6502 CPU chip has only 16 address bits to control 64K of address space. To control the additional RAM banks, more address bits are needed. When only the 800 was available, Axlon came out with a 128K upgrade that used \$CFFF (decimal 53247) as a hardware address to control the banks. Current 800 upgrades still continue this tradition.

In the older 8-bit models, the space \$C000 to \$CFFF was unused. But when the newer XLs put RAM there, the Axlon standard had to be dropped. It's a real shame, too, because with the Axlon standard you could access 16 *megabytes* of banked RAM!

When the 1200XL was released,

Atari stole joystick ports 3 and 4 (also called PORTB of PIA, the Peripheral Interface Adapter) and connected them internally to control the extra memory that was banked along with BASIC, the operating system, ROMS, hardware and various LEDs.

Atari removed these LEDs from their plans for the 800XL. This left five of the PORTB pins unused. So when the 130XE was released, Atari assigned four PORTB pins to control the additional memory. Bit 4 of PORTB selects the CPU to work in the extended RAM banks, while bit 5 does the same for the ANTIC chip.

When these bits equal 1, the respective integrated circuit is restricted to the main bank. Bits 2 and 3 select one of the four 16K banks, all of which have the same address of \$4000 to \$7FFF (decimal 16384 to 32767). A 256K computer needs two more bits to select all the banks, but we have only one free in PORTB. All XL upgrades take bit 5 of PORTB from ANTIC to use in bank selecting, so ANTIC can't use extended RAM independently of the CPU.

800 UPGRADES

The Magna Systems one-megabyte RAMcharger received an excellent review in the July 1987 *Antic*. The Magna Systems Axlon-compatible upgrades range from 256K to 1Mb and are super-easy to install on an Atari 800. The Magna RAMcharger is actually a self-contained plug-in board. All you do is take out the two screws holding the top lid covering the factory RAM cards (right behind the cartridge slots). Pull out the middle RAM card and pop in the RAMcharger, making sure it doesn't touch the neighboring cards. Now screw the lid back on and the installation is finished.

I found a few quirks in the RAMcharger's address decoding. The board not only responds to the addresses in Axlon range but also to some zero-page addresses, which might make some programs incom-

patible. Magna can compensate for this by either defeating the bank selecting with a switch or by installing a jumper wire to the ROM board in slot 1.

If you're an Atari 800 do-it-yourselfer, you can make your own 256K quarter-megabyte upgrade from public domain instructions. I personally did two of these and had no problems with the David Byrd up-

I personally made hardware upgrades on two XLs and three 800's

grade listed with this article.

Some users who have built public domain upgrade projects report memory losses because of poor design in the refresh circuits. With the first upgrade I performed, I didn't notice any problems, but I was able to produce memory dropout under certain circumstances. The Byrd upgrade I list did not exhibit any dropout, but it could be that the RAM chips I used have long retention times. In any case, if you build a do-it-yourself upgrade, use the best chips you can find.

MYDOS will configure the 256K upgrades as a 2,000-sector RAMdisk and can recognize a full megabyte on the 800. These upgrades are fully Axlon-compatible and will give you an edge on any program that recognizes Axlon RAM. The problem is that few software products are doing so. For example, Springboard's Newsroom and BASIC XE from ICD/OSS

only work on an XL/XE.

Nevertheless, adding Axlon RAM makes your 800 compatible with Print Shop Companion, and SynFile+ will boot with 288K of free RAM. By contrast, you only get 128K on XE and XL upgrades. For this reason alone, I doubt that I'll ever get rid of my upgraded 800.

XL UPGRADES

The three commercial upgrades—from Magna Systems, ICD's RAMbo XL (reviewed in the July 1986 *Antic*) and the Newell 256KXL—deliver high quality at a low price. I also know of one 256K public domain XL upgrade project that was being sold direct by the author. (*At this writing, Antic could not verify a current address for the PD author. If the information later becomes available, we will print it in I/O.*—ANTIC ED)

Installing an upgrade for the Atari XL requires dismantling the computer, removing the RAM chips and one decoder chip, and making attachments to several other points on the circuit board. All the XL upgrades set up the RAM as a 64K main bank with 12 16K banks in the \$4000 to \$7FFF window.

It is harder to upgrade a computer in which the chips are not socketed—and many 800XLs have their chips soldered in. But while desoldering the original RAM chips makes installation more time-consuming, it's still not too difficult for a person who is reasonably dextrous and has a fair amount of experience in constructing electronics projects.

You can either do it yourself or get manufacturer installation of the ICD RAMbo XL or the Newell 256KXL. But Magna Systems insists on installing all the XL/XE upgrades it sells. The price includes installation and you must send your computer to them.

130XE UPGRADES

Magna Systems and the public domain both offer 320K, 576K and

1088K upgrades for the Atari 130XE. So far there are no commercial programs designed to utilize this extra RAM for anything except a RAMdisk. Unless you really need a RAMdisk larger than 1,600 sectors, I see little use for this much RAM.

The 130XE's additional RAM banks need more control bits than are free in *PORTB*. So you lose the self-test routine (no big deal) with 576K. You lose built-in BASIC with 1088K, but you can get around this by using a cartridge-based BASIC.

COMPATIBILITY?

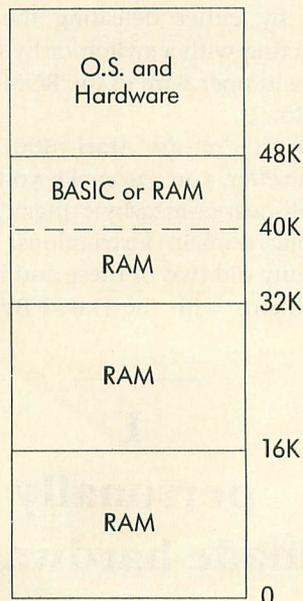
With so many different types of upgrades available, there are some concerns about compatibility. I tested David Byrd's public domain 800 upgrade, RAMbo XL and the Newell 256KXL for compatibility with PaperClip, SynFile+, Print Shop and Print Shop Companion, Typesetter, Newsroom, DOS 2.5 and MyDOS 3.2B.

No matter how much memory is crammed into an Atari 800, it could still not be expected to handle the 130XE-only versions of PaperClip or Typesetter—although it could run the older versions. (There is no 800-compatible version of Newsroom.) On the plus side, an 800 has 160K more RAM with SynFile+ than an XE compatible.

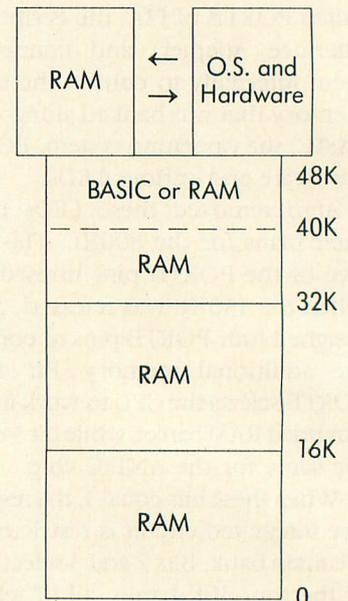
The XL upgrades will run all XE software, and both the RAMbo XL and the 256KXL ran every program I tested. However, RAMbo XL gives you 700 more text lines in PaperClip than Newell. While MyDOS works for all of the upgrades, it must be reconfigured for each one. MyDOS came configured for the Newell, but to reconfigure it for the other upgrades isn't easy because of the unclear manual.

There is one subtle difference between Newell and RAMbo involving the ANTIC chip. All upgrades use pin 5 of *PORTB*, so you cannot independently set ANTIC to the extended RAM or the main bank. This leaves only three options—place ANTIC

ATARI 400/800



ATARI 600XL/800XL/1200XL



permanently in extended bank (undesirable), place it permanently in main bank (like Newell and Magna), or tie it to the CPU so that the CPU and ANTIC are always in the same bank (like ICD's RAMbo).

With the Newell/Magna method, if you try to page-flip the screen through RAM banks, you'll be disappointed. However, you can use the entire main bank RAM space for graphics and the extended banks without fear of "seeing" data on the screen.

RAMbo lets you place multiple screens in banked RAM and flip to them. While there are theoretical advantages to both systems, it actually makes little difference because you rarely place ANTIC into the bank access window. Usually the screen RAM is in the 16K bank above the access window.

I accidentally discovered that with RAMbo you can switch all banks into the window, including the 64K of main RAM. The first bank includes DOS and your programming, the third bank contains BASIC and the last 16K is under the operating system. This can be a real boon to a BASIC programmer. You get 24K of extra

RAM space for graphics or data, besides the 12 banks used by the RAMdisk.

INSTALLATION TIPS

Installation of the 800 public domain upgrade requires you to build a circuit board or "dead bug" installation of four ICs on one of the 16K memory boards, plus some modification to the ROM board. Magna Systems RAMcharger boards are simple to pop into the Atari 800, but you may need to add one extra jumper wire to the ROM board.

All of the 800's chips are plugged into sockets. So are most 1200XL chips and some of the 800XL chips—but not XE chips. Do-it-yourself upgrades usually aren't recommended if the factory chips are soldered to the board, but there are solutions. RAMbo XL is comparatively the easiest to install, requiring only one or two jumpers, one cable to the PIA chip, and removal of the RAM chips and one other IC.

The Newell upgrade calls for five wires to go to PIA and three jumpers elsewhere. Newell should have installed a ribbon cable like the RAMbo to make the five connections to the

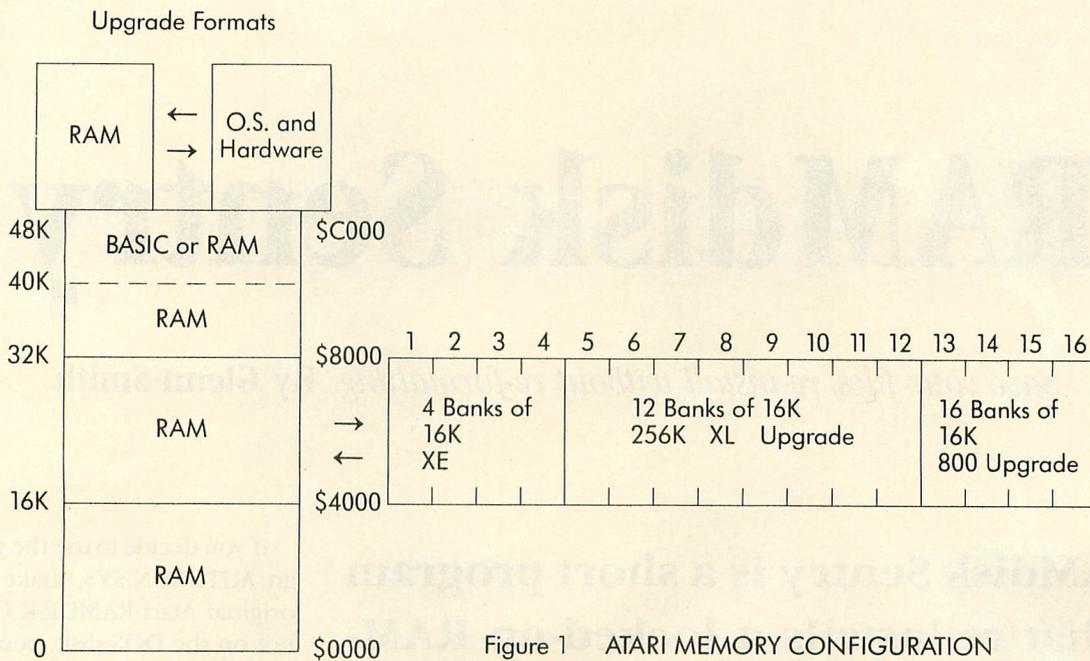


Figure 1 ATARI MEMORY CONFIGURATION

PIA. To make connections to the PIA, you can pry it out of the socket and bend up the pins. I attached a 5-pin piece of a 14-pin IC socket to the end of the ribbon cable to press onto the PIA instead of soldering. If it's soldered in place, you can simply solder right to the side of the pins without removing the IC. The older ANTIC can't refresh the 256K chips, so Newell requires you to replace it if it has an older part number (CO12296 instead of CO21697). The Magna and ICD products don't require this.

If you use a small wattage iron (about 25 watts) and keep soldering times below five seconds, you will not damage anything. If your chips are soldered, you can either desolder them all at once—or use my secret shortcuts!

The only chips you really *must* remove are eight RAMs and one 16-pin IC. The rest of the connections can be "tack-soldered" to the pins on ANTIC, to the circuit board, or to wherever else is necessary.

After chips are removed, they're useless, so you can just cut them out and toss them. Cut the pins close to the plastic body with a pair of fine cutters. Now you can remove each pin

individually, which is easier than 16 pins at once.

Afterward, open the circuit board holes by heating the solder pads until the solder melts. Poke the hole open with a round toothpick or embroidery needle, remove the heat, then remove your probe. When all the holes are open, insert sockets and solder from the bottom *with fresh solder*. When all necessary chips are removed and sockets installed, installation can proceed normally.

New chips retain their memory longer, so when you turn off the computer you must wait as long as 20 seconds to reboot, or you may get strange results. If you are in BASIC, you can POKE 580,1 then press [RESET], or type BYE and press [RESET].

CONCLUSIONS

The 800XL upgrades offer the widest software compatibility. If you need a *large* database, it might be better to upgrade an older 800 for use with SynFile+. One main reason for upgrading an Atari is so it can emulate the 130XE with software that uses the extra RAM. All upgrades mentioned here do that job, but the ICD

gives you PaperClip files with 700 more lines. Expanding a 130XE gains you nothing with commercial software, but if you need a huge RAMdisk for a BBS, contact Magna Systems.

Don't try do-it-yourself memory installation if you have electrophobia. You might be able to get a member of your local users group or school electronics shop to do it for you, if you don't want to pay shipping and installation charges to have your upgrade manufacturer do the work.

The bottom line is this—bare upgrade boards cost about \$40 and right now your cost for 256K worth of chips will be around \$100. Add these prices and you come very close to the cost of a new Atari 130XE. Chip prices are widely expected to fall within a few months, but until then a memory upgrade only delivers a slight cost advantage over getting a new XE. But if you want a larger RAMdisk or larger database files than a standard 130XE supports, then an upgrade may be worth the extra time and money. ▲

Dr. Lee Brilliant is a physician in the San Fernando Valley area of Los Angeles and a well-known Atari 8-bit programmer/author.

RAMdisk Sentry

Save your files, re-install without re-formatting. By Glenn Smith

RAMdisk Sentry is a short program that re-installs a locked-up RAMdisk without formatting it—thus retaining any files that were present in the RAMdisk before rebooting. This BASIC program works on 8-bit Atari computers with disk drive and enough memory to support a DOS 2.5 RAMdisk.

Don't you just hate it when for some mysterious reason you can't access your RAMdisk files? And don't you just hate it *lots* when you save your only copy of a file to your RAMdisk press the [RESET] key and reboot your computer, thereby destroying everything on the RAMdisk? If any of this sounds familiar, read on.

Many of you have noticed by now that when you boot DOS 2.5 with the RAMDISK.COM file present, it always formats the RAMdisk—which may not be what you had in mind. RAMdisk Sentry works automatically when you load it from DOS. It re-installs a RAMdisk without formatting it. This means any RAMdisk files existing before the reboot will remain in the RAMdisk. The RAMdisk Sentry

program also tells DOS whether or not the RAMdisk contains DUP.SYS.

NOTE: RAMdisk Sentry *won't* recover a RAMdisk if you turn off your computer. It works only if the computer remains powered up—and only if you are using Atari DOS 2.5.

GETTING STARTED

Prevent lost RAMdisks. Type in Listing 1, NOFORMAT.BAS, check it with TYPO II and SAVE a copy before you RUN it. The BASIC listing will create a file called RAMDISK.OBJ, which can be loaded from the DOS menu using the L selection, or renamed AUTORUN.SYS. Listing 2, the MAC/65 source code, shows assembly language programmers how the RAMdisk is installed.

If you decide to use the program as an AUTORUN.SYS, make sure your original Atari RAMDISK.COM file is not on the DOS disk, because RAMDISK.COM will format the RAMdisk and erase all the files. If you rename the RAMdisk Sentry file to RAMDISK.COM, it will be executed just like the original, except that it won't format the RAMdisk—and any AUTORUN.SYS will also be executed.

These automatic loading methods work best if you plan to reboot your computer without turning it off. You can do this by returning to BASIC, typing a POKE 580,1 (setting the coldstart flag) and pressing [RESET]. Or you can do it from DOS by typing M (run at address) followed by E477 (the coldstart address). The computer will boot as usual, except that the RAMdisk will still contain all of your files.

I use the reboot method when switching between Turbo BASIC and Atari BASIC. This way, I never have to save my BASIC programs to a floppy disk until I know they work. It also saves time because I load Turbo BASIC from the RAMdisk each time I return from Atari BASIC. I also use it when I somehow manage to destroy DOS and have no choice but to reboot. **A**

Glenn Smith of Grand Junction, Colorado is the author of Class Scheduler from the September 1988 Antic.

Listing on page 73

Antic *Disassembler*

Super tool for assembler explorers. By David Kibler

This month's Super Disk Bonus is a fast, powerful machine language disassembler written entirely in MAC/65 assembler code. Programmers will enjoy the ease with which Antic Disassembler turns binary files into source code listings that can be examined to teach you new techniques.

Antic Disassembler works on 8-bit Atari computers with at least 48K memory.

PROGRAM GUIDE

When I first began programming in machine language, I searched for a disassembler that could do it all. I wanted a software tool that would disassemble binary files and show me the actual source code, so that I could discover those neat little programming tricks used in many public domain programs that were circulating at the time. I also wanted to get a hard copy of the disassembled listing.

But I mostly wanted a program that would do this fast. Well, I never found one, so I wrote Antic Disassembler.

GETTING STARTED

Copy ANTICDIS.EXE from the Antic November 1988 Disk onto another disk which has been formatted with DOS 2 or DOS 2.5. (Make sure this disk has the

DOS.SYS file on it). Finally, rename ANTICDIS.EXE to AUTORUN.SYS.

To start the program, turn off your Atari and place your Antic Disassembler disk in drive 1. Remove all cartridges (XL/XE owners should hold down the [OPTION] key) and turn on your Atari. Antic Disassembler will automatically load and run.

Antic Disassembler gives you three options—disassemble from memory, from a file, or from disk sectors. Simply type in the right number at the Choice> prompt and press [RETURN].

If you're disassembling from memory, the program will ask for the starting and ending memory addresses. This and all other numerical input in the program can be entered as either hexadecimal or decimal values. To enter hex, precede the input with a dollar sign (\$).

If you want to disassemble from a file, the program will ask for the filename. You must enter the device as well as the filename, or you will get an error message. The file will be stored in memory before the actual disassembly, so the size of the file you can disassemble depends upon the amount of memory in your computer.

Finally, when you disassemble from disk sectors, you will be asked

for the beginning sector number, the number of sectors you want disassembled, and the location in memory that you want these to be disassembled from. *This last option* is best used when you know where this code is placed after the computer loads it from the disk. If you don't give Antic Disassembler the correct address here, all direct jumps in the code will be incorrect and the disassembly will be useless.

If you type [P] directly after your choice at the main menu, the disassembly will be printed on your printer and displayed onscreen.

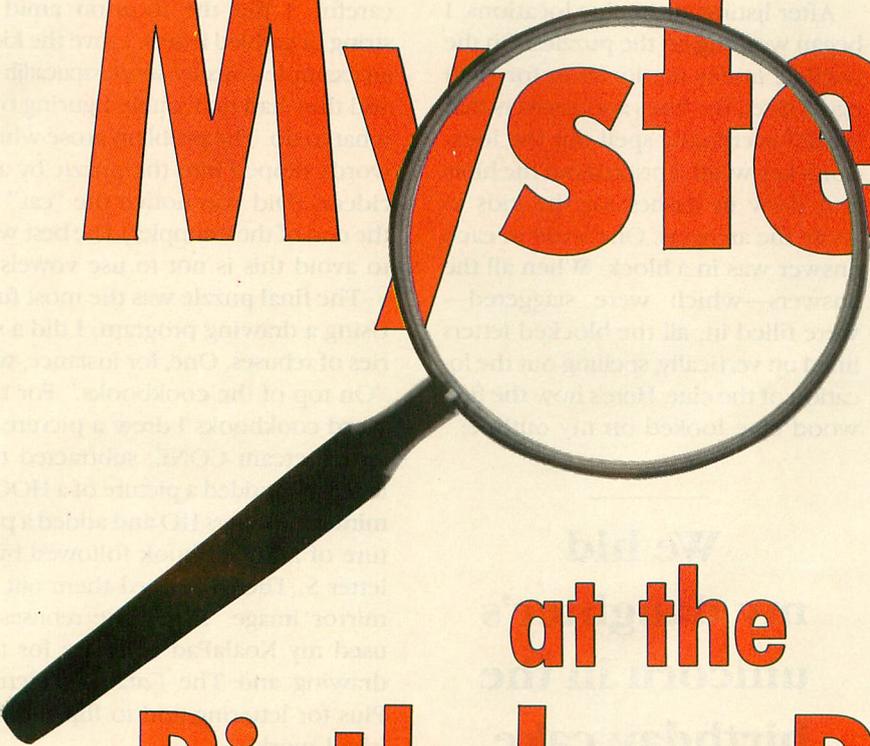
If you type [D], your disassembled listing will be written in a disk file. You need a lot of room on your disk if you choose this option because the output file will become very large quite fast.

When the program is disassembling, you can use the [CONTROL] [1] toggle to pause the output. To stop the output, just press the [START] key. (Makes sense, doesn't it?)

Your November 1988 Antic Disk will be shipped to you within 24 hours after your order is received. This month's disk features Antic Disassembler plus every type-in program from this issue—and two special extra bonus programs, *Deluxe Adventure Creation Kit* and the *Lightspeed C Fractals Demo*. ▲



Mystery



at the Birthday Party

Family fun with your Atari — no programming required.

By Neal Engledow

Recently I was able to kill two birds with one Atari and I thought that **Antic** readers might like to know how I did it. My first problem, a general one shared by all home computer owners, was to justify the time and money the hobby absorbs like a black hole.

Most parents would recognize my specific second problem—My daughter, Asha, wanted to celebrate her ninth birthday by inviting a dozen friends over for a guaranteed good time. One solution would have been to let her guests play with my computer. They undoubtedly would have fought over games and access—and quite likely would have broken my trusty Atari into 64,000 bits.

However, I thought there must be a better way. So I turned to my wife, who never has problems finding things for me to do. She observed that our daughter had been reading children's mystery series books featuring detectives such as Nancy Drew and Encyclopedia Brown, and she suggested a Mystery Party.

Great, I said, thinking once again I had put myself in a position to prove that genius is 1 percent inspiration (hers) and 99 percent perspiration (mine). We decided to take something from Asha's room and hide it. Then we'd put together a series of clues that would lead the kids to that object.

First, I had to make the invitations. Inside each invitation we explained

that the young detectives helping search for the missing treasure would be rewarded with cake and other goodies.

With Print Shop and Print Shop Companion I devised a Sherlock Holmes icon and a question mark border for the cover. This took three times as long as it should have, but I came up with a reasonable facsimile. Of course, I later found a better Sherlock on one of the Print Shop Library disks.

The next step was to figure out what to hide and where to hide it. We chose a small crystal unicorn Asha keeps on her bedside table. My wife cut a hole for it in the bottom layer of the birthday cake. Now we had to

figure out clues that would lead the kids to the cake. That was fairly easy—we hid small bags filled with cake ingredients such as flour, chocolate, sugar and an egg. We hoped the kids would find them, put two and two together and come up with chocolate cake.

The next step was a little harder. We didn't want the kids to scavenge for clues like they would for Easter eggs—we wanted to challenge them. So we designed some puzzles that directed them to the locations of the clues. When the kids arrived, we handed them the first puzzle. They figured it out and found the first clue—attached to which would be another puzzle directing them to the second clue, and so on.

Realizing that 12 detectives working on a single puzzle would be like 12 cooks stirring the soup, we divided the kids into four teams. Each team would have its own set of puzzles and clues. So we hid an egg for team A, an egg for team B, etc.

That meant that we needed 16 puzzles to provide each team with four sets of clues. I thought it would be impossible—especially for someone who can't solve Zork with a clue book. But with the help of an ordinary dime-store variety puzzle book, I came up with four types of puzzles. We used crosswords, scrambled words, a reverse alphabet code and rebuses (combinations of pictures and letters that form words). I created four crosswords, each directing one team to its egg, and four apiece of the other types for the other clues.

As all computer enthusiasts know, when you have gizmos interacting with do-dads it's time to break out the old CPU. I really needed an outliner, but since I don't have one, out came the PaperClip word processor. First, I listed the places where I would hide the clues:

1. The FIREWOOD pile
2. ASHA'S BED
3. The BARBECUE grill

... and so on

After listing all 16 clue locations, I began working on the puzzles. On the outline, under the location for each egg, I listed the hints and answers that would eventually spell out the location's key word. I printed out the hints and drew in dashes for the kids to write the answers. One letter in each answer was in a block. When all the answers—which were staggered—were filled in, all the blocked letters lined up vertically, spelling out the location of the clue. Here's how the firewood clue looked on my outline:

We hid my daughter's unicorn in the birthday cake.

1. FIREWOOD
 - A. Indians hunted it (buffalo)
 - B. Underwater boat (submarine)
 - C. Someone who shoots arrows (archer)
 - D. Birds that honk (geese)
 - E. A bird that hunts (hawk)
 - F. State where oranges grow (Florida)
 - G. Game with clubs (golf)
 - H. Blow out on birthdays (candles)

All the clues in this category had eight letters, so each team would need to put in the same amount of effort.

The second type of puzzle was easier to set up. I gave directions in a reverse alphabet code. (A=Z, B=Y, C=X, etc.) The clues had several words, such as "In the front seat of Mr. Engledow's car."

I found PaperClip's global substitution feature useful with this puzzle, changing words that were used more than once, such as "the" into "gsv."

The third puzzle was easy too, but

like the crossword you have to be careful. I hid the location amid a string of garbled letters. I gave the kids an example—*apxuyliketzhiszpuatljh*—and they had no trouble figuring out what to do. The problem arose when words slipped into the puzzle by accident. (Did you notice the "cat" at the end of the example?) The best way to avoid this is not to use vowels.

The final puzzle was the most fun. Using a drawing program, I did a series of rebuses. One, for instance, was "On top of the cookbooks." For the word cookbooks I drew a picture of an ice cream CONE, subtracted the letters NE, added a picture of a HOOK minus the letters HO and added a picture of an open book followed by a letter S. Then I printed them out in mirror image. To do the rebuses, I used my KoalaPad software for the drawing and The Catalog's Picture Plus for lettering and to flip the finished work.

The birthday party, the real reason for the effort, was a roaring success. The only complaint was that the search wasn't long enough. The kids took about half an hour to figure everything out. If I do another mystery party, I'll add at least two more clue-and-puzzle combinations. The kids had a wonderful time, and despite admonitions that they were not competing, members of each team huddled quietly in isolation while figuring out the puzzles, squealed with glee when they found the solution, and raced to find each clue and puzzle.

As icing on the cake, so to speak, the cost of the entertainment aspect of the party was a little time and a few sheets of fanfold paper. In addition, when my son turns nine in two years, entertainment for his party is in the bag, or at least on the disk. ▲

Neal Engledow is a copy editor at USA Today. He has owned an 800XL for three years and calls himself "an inept programmer always looking for new ways to use the Atari."

Super Sieve

Prime numbers found lightning-fast. By Denis DeVries

Super Sieve is a brief but lightning-fast Sieve of Eratosthenes prime number finder. It tests numbers to see if they are prime and also finds "nth" prime numbers. This BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.

Prime numbers, those unbreakable integers that seem to pop up randomly, have interested mankind for thousands of years. The Greeks first studied them around 200 B.C. Since that time, primes have come to be important in communications and security coding. So they still have practical value as well as historic and aesthetic interest.

The ancient Greek mathematician Eratosthenes—who was also first to calculate the earth's correct circumference—proposed a mechanical sieve to filter prime numbers by sorting out all multiples of those numbers that were not themselves multiples of other numbers. Thus he kept 2 but threw out 4, 6, 8, etc. His sieve then kept 3 and rejected 6, 9, 12, etc.

This "Sieve of Eratosthenes" was an excellent idea but, as so often happens, the visionary inventor found it impossible to build the device with technology available during his lifetime. Today any computer can do the job and a "sieve test" has become the standard benchmark for rating comparative computer speeds. Your Atari 8-bit computer can find any of nearly a 1.5 million prime numbers in a few minutes, usually in just seconds.

SEARCH FOR SPEED

In the past, prime number research on microcomputers has suffered from one or two serious problems. Either the programs used were pretty pokey or they were severely limited by the memory size of the hardware. My SuperSieve program doesn't suffer on either count. It can find any prime number between 1 and 16,777,216 (that's 256 cubed) and put much more expensive machines to shame with its speed. It does so by using a small sieve array (255 bytes) over and over again and doing it with a USR machine language call from BASIC.

I wrote an earlier all-BASIC program that found each prime number and listed it to the screen. On an Atari with the screen turned on, the first million numbers took eight hours to process. This version runs the same data in 41 seconds. Numbers going by that fast are impossible to read so we turned the screen off and got down

the time to under 28 seconds. Super Sieve processes more than 35,700 numbers per second!

One communications use for prime numbers is closely related to computers, specifically the high resolution two-color screens that are common on home machines. The search for extra-terrestrial life requires that we send and receive messages to and from civilizations that we know nothing about. If we draw a two-color picture on a TV screen with dimensions of 317 X 191 pixels—nearly an Atari Graphics 8 size—we can repeatedly send the message picture with confidence that a civilization technically on par with ours could easily figure out that the 60,547-bit signal was, in fact, a 317 X 191 display.

Coding and decoding methods now use products of primes as a key. The message can't be decoded without the two correct primes and large prime numbers are not easily found.

Super Sieve processes over 35,700 numbers in a second.

USING THE PROGRAM

Type in Listing 1, SIEVE.BAS, check it with TYPO II and SAVE a copy before you RUN it. Listing 2, SIEVE.M65, provides the MAC/65 source code for assembly language programmers to study. It is not necessary to type Listing 2 in order to use the program.

SuperSieve will offer you three choices; test a number to see if it's prime, find an "nth" prime number,

or exit the program. Choice 1 brings quick rejects if you try to test *an even* number, or a multiple of five, or something larger than 16,777,213. Any other positive number will be tested.

If your test number isn't a prime, SuperSieve will tell you what the next larger prime number is. Select choice 2 if you want to find the 4th, 97th, 1,400,032nd, or some other prime. Running time depends on the size of your test number.

The attract mode comes on while the screen is off, so you will see various colors during the run. If you delete line 150, SuperSieve *will* test even numbers and multiples of five, telling you what is the nearest larger prime number. ▲

Denis DeVries is an Engineering Manager for the City of Seattle. He debuts in Antic with his first assembler routine.

Listing on page 75

BUY·SELL·TRADE

BUY·SELL·TRADE

BUY·SELL·TRADE

Computer Repeats, Inc.

UNBELIEVABLE DEALS EVERYDAY!

ALL ORDERS PROCESSED IN 24 HRS!

Atari 1040ST



**\$449
NEW**

with trade-in of 130XE, 1050, 1702 Mon., NP-10 Printer, modem
\$CALL for your system

Products - Used

520ST Computer	\$335	1040ST Computer	\$585
SF354 Drive	\$99	130XE Computer	\$119
1200XL Computer	\$59	800XL Computer	\$69
400-16K Computer	\$29	Hayes Smartmodem	\$49
1050 Drive	\$139	Atari 1027 LQ Printer	\$79
Atari 1025 Printer	\$79	Okimate 10 w/PIP	\$99
ATR-8000 64K, Slaves	\$199	Slave Drives from	\$35
Atari 850 Interface	\$69	Commodore 1702	\$135
Koala Touch Tablet	\$35	Software/Books from	\$1

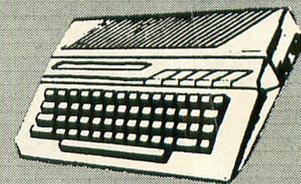
Products - New

520ST FM CPU	\$499	520 ST FM color sys	\$819
512K RAM FM Instl'd	\$249	Atari SF314 Drive	\$219
SM124 mono Monitor	\$159	SC1224 color Mon.	\$325
130XE Computer	\$149	XF-551 Drive	\$179
1802C Color Monitor	\$189	Magnavox 80 Mono	\$99
Avatex 1200HC	\$99	Avatex 2400HC	\$199
Atari SX212 Modem	\$89	Happy Rev. 7.1	\$99
256K upgrades 0k from	\$35	R-Time 8 Cartridge	\$49
Star NX-1000 144cps	\$189	Star NX-2400 24 Pin	\$389

\$Cash for your equipment
Thousands of software & book titles
Plus, MUCH, MUCH MORE!

2017 13th Street Suite A
Boulder, CO 80302

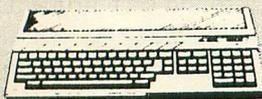
Atari 130XE



**\$65
NEW**

with trade-in of 800XL, 1050 Drive
\$CALL for your system

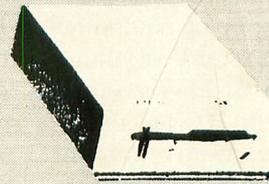
Atari 520ST FM



**\$219
NEW**

with trade-in of 800XL, 1050, 1702, NP-10 Printer, 1200 modem
\$CALL for your system

Atari XF-551



**\$109
NEW**

with trade-in of 1050 Drive
\$CALL for your system

All references to trade-ins assume equipment to be in good working condition. Shipping/handling will be added to all prices. No additional charge for credit cards or COD. Mail order prices shown.
WE CHECK FOR CREDIT CARD THEFT!

1-303-939-8144

24 HR Modem Software Quotes: 1-303-939-8174



Authorized Dealers for
COMMODORE/AMIGA
and ATARI ST/XL/XE
Computers and Accessories.



VISA

MASTERCARD

DISCOVER

AMERICAN EXPRESS

COD

Doc Print-Pro

Onscreen documentation printed
minus garbage. By Roland Fetzer

Have you ever tried to print hardcopies of onscreen documentation that looks fine when displayed in 40-column video but becomes a mess when you print it on paper? The text gets all crammed against the left margin and there are no page breaks. When you separate two sheets of paper, sometimes a line of text is cut in half. Even worse, sometimes there are no provisions at all for printing the screen documentation.

Doc Print-Pro puts in top and bottom margins and page numbers—and it centers the 40-column text. Best of all, it works on any printer, because it has no printer control codes.

Doc Print-Pro also makes it easier for you to read onscreen documentation. When you view a file, the screen displays about 18 text lines at once. Just press any key to scroll to the next screen.

Doc Print-Pro is a short program that makes good-looking printouts of documentation files which were printed to disk with a word processor. Most online text and onscreen text files are formatted this way. However, the program cannot read a normal word processor file.

ABOUT THE PROGRAM

Type in Listing 1, DOCPRINT.BAS, check it with TYPO II and SAVE a copy before you RUN it. If you want Doc Print-Pro to RUN automatically when you insert the disk, SAVE it with

Doc Print-Pro is here to save you from crummy-looking paper copies of onscreen documentation files. This BASIC program works on all 8-bit Atari computers of any memory size, with disk drive.

the filename MENU and copy the AUTORUN.SYS file from any Antic Monthly Disk.

In screen mode, the program opens the disk file in line 240. In line 250 it counts the number of times the buffer is accessed. If that number is 18, then it goes to the scroll routine in line 470.

The print section starts on line 350 and counts how many times the print

buffer is accessed. If it's 57, then it goes to the page-printing routine in line 490 and prints a page number. A

Roland Fetzer has been teaching mathematics for 30 years, and computer science for six years, at Brooklyn junior high schools. He is an original Antic subscriber who owns every issue of this magazine.

Listing on page 74

```

● LIGHTSPEED C FRACTAL GRAPHICS ●
● BY MATT RATCLIFF ●
● Here's everything you need to grow ●
● your own Julia fractal curves using ●
● Ralph Walston's Lightspeed C and your ●
● Atari 8-bit computer. ●
● You'll need MANDEL.COM, ●
● MANVIEW.COM and RUNTIME.DB from this ●
● month's disk. RUNTIME.DB is from ●
● the LIGHTSPEED C support library. It ●
● is automatically loaded whenever you ●
● run MANDEL.COM or MANVIEW.COM. ●
● MANDEL.COM generates the fractal ●
● pictures and MANVIEW.COM displays ●
● them. ●
● Although the Lightspeed C compiler ●
● is fast, MANDEL.COM isn't. Each ●
● image will take at least four hours, ●
● and maybe more than 24, depending on ●
● the colors and number of iterations ●
● chosen, but the results are worth the ●
● wait. ●
● GETTING STARTED ●
● From the DOS menu, choose option ●
● 'L' to load D:MANDEL.COM. When the ●
● program begins, you'll be asked ●
● whether you want to make two-color or ●
● four-color fractal patterns. The ●
● two-color pictures are done in ●
● GRAPHICS B and the four-color ●
● pictures use GRAPHICS 7.5, 8L and 8E ●
● only. The two-color pictures take ●
● longer to generate, since twice as ●
● many points are calculated and ●
● displayed. ●
● ALARM MODE ●
● Next, the program will ask if you ●
● want to use its "alarm" mode. Since ●
● the fractal images take so long to ●
● grow, you are not likely to sit in ●
● front of the monitor until it is ●
● finished. The alarm mode makes it ●
● easy to disconnect your disk drive ●
● from your spare Atari (that's growing ●
● your fractal curves) and attach it to ●
● your primary computer. Once the ●
● fractal curves have been drawn, an ●
● alarm will sound. Now, reconnect the ●
● disk drive. ●
● Finally, follow the menu prompts to ●
● save the image to disk. (PROGRAMS ●
● be sure your disk drive is turned OFF
    
```

```

● LIGHTSPEED C FRACTAL GRAPHICS ●
● BY MATT RATCLIFF ●
● Here's everything you need to grow ●
● your own Julia fractal curves using ●
● Ralph Walston's Lightspeed C and your ●
● Atari 8-bit computer. ●
● You'll need MANDEL.COM, ●
● MANVIEW.COM and RUNTIME.DB from this ●
● month's disk. RUNTIME.DB is from ●
● the LIGHTSPEED C support library. It ●
● is automatically loaded whenever you ●
● run MANDEL.COM or MANVIEW.COM. ●
● MANDEL.COM generates the fractal ●
● pictures and MANVIEW.COM displays ●
● them. ●
● Although the Lightspeed C compiler ●
● is fast, MANDEL.COM isn't. Each ●
● image will take at least four hours, ●
● and maybe more than 24, depending on ●
● the colors and number of iterations ●
● chosen, but the results are worth the ●
● wait. ●
● GETTING STARTED ●
● From the DOS menu, choose option ●
● 'L' to load D:MANDEL.COM. When the ●
● program begins, you'll be asked ●
● whether you want to make two-color or ●
● four-color fractal patterns. The ●
● two-color pictures are done in ●
● GRAPHICS B and the four-color ●
● pictures use GRAPHICS 7.5, 8L and 8E ●
● only. The two-color pictures take ●
● longer to generate, since twice as ●
● many points are calculated and ●
● displayed. ●
● ALARM MODE ●
● Next, the program will ask if you ●
● want to use its "alarm" mode. Since ●
● the fractal images take so long to ●
● grow, you are not likely to sit in ●
● front of the monitor until it is ●
● finished. The alarm mode makes it ●
● easy to disconnect your disk drive ●
● from your spare Atari (that's growing ●
● your fractal curves) and attach it to ●
● your primary computer. Once the ●
● fractal curves have been drawn, an ●
● alarm will sound. Now, reconnect the ●
● disk drive and press the joystick ●
● button to shut off the alarm. ●
● Finally, follow the menu prompts to ●
● save the image to disk. (PROGRAMS ●
● be sure your disk drive is turned OFF
    
```

Same page of screen text printout—with Doc Print-Pro enhanced version at LEFT.

Make your computer
sparkle with Diamond!

The **Diamond Operating System** is here for your Atari XL/XE/GS computer. With the **Diamond OS** your computer will have a complete windowing environment just like the Atari ST(tm). **Diamond** includes icons, windows, drop-down menus, dialog boxes, a mouse pointer, and desk accessories. In fact **Diamond** is so powerful it even breaks the 64K memory barrier and allows for up to 16 Megabytes to be accessed. **Diamond** is the future of the Atari XL/XE/GS computers so now the choice is clear. *Crystal clear. Diamond is truly a Gem!*

Now Available

Diamond OS-

Our powerful Operating System and DeskTop software in one package. This software is required to use other Diamond based programs.

\$29.95

Diamond Paint-

A fantastic painting program that utilizes the Diamond environment. Includes draw, block move, line, k-line, box, circle, and airbrush features and many more. Also accepts Degas (tm) pictures from the Atari ST(tm) and MacPaint(tm) pictures.

\$29.95

Diamond Write-

An amazing word processing program that includes cut and paste, an 80 column display, and a complete spell checker.

\$29.95

Diamond Publish-

A complete Desktop Publishing system! Allows text to flow from column to column, text wrap around graphics, and the creation of multiple page documents.

\$29.95

Diamond Programmer's Kit-

Includes complete documentation for the Diamond environment and includes a resource editor to easily create icons, drop-down menus, and dialogs, and programming samples in both Basic and Assembly language.

\$29.95

To order send either a check or money order or call for COD orders. Please include \$2.50 for shipping.

Reeve Software

29W150 Old Farm Lane
Warrenville, IL 60555
(312) 393-2317

DISK BONUS

Deluxe Adventure Creation Kit

By Stephen Stout

Deluxe Adventure Creation Kit (CREATEDL.BAS) is an enhanced follow-up to my original *Adventure Creation Kit* (Antic, March 1988). It incorporates many suggestions that came from the Creation Contest (October 1988 Disk Bonus) as well as from other users of the first version.

Games made with the original *Adventure Creation Kit* are 100% compatible with this Deluxe version. Both Kit programs run on Atari 8-bit computers with at least 48K memory and a disk drive.

The most significant Deluxe upgrade is that now you can link as many as nine different adventure games into one giant game. It's very simple to do. Just give each adventure the same name with a number between 1 and 9 at the end—such as GAME1, GAME2, GAME3, etc. When you win GAME1, the program will automatically load GAME2, and so on until GAME9. When there are no more games, the program will say "You Won!" and return to the editing menu.

I also added some animated graphics. In the Deluxe Adventure Kit, the graphics don't only scroll as in the original version. Now the water moves, the snake's head and tail shake, etc.

You can now flee from monsters during a battle by pressing the [SPACEBAR], instead of fighting to your sure death. Naturally you will receive *no* bonus Hit Points or Strike Points if you flee, and the monster you were fighting will regain its original strength.

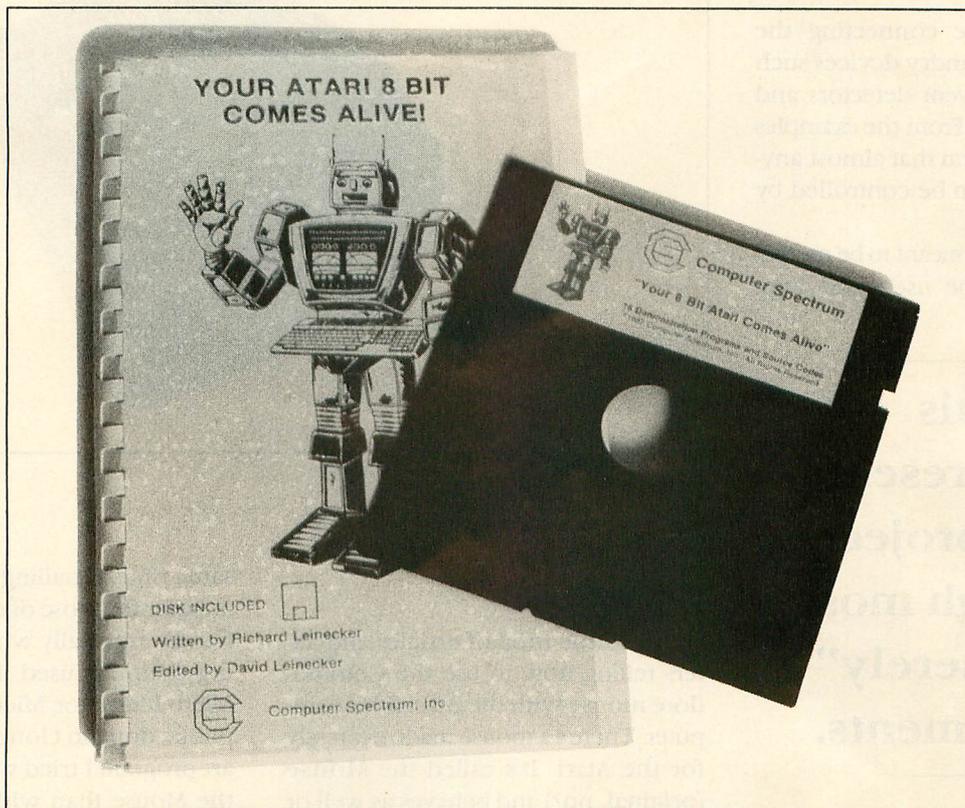
I also added some editing changes: [U]ndo restores the adventure map, erasing the last change you made. [E]rase All clears the current adventure in memory. This replaces the old [RESTART] feature.

[?] (Print) gives you a choice of Epson, ProWriter or Seikosha GP-250X printers. Also, pressing [ESCAPE] aborts printing. Finally, when you kill monsters you don't get as many additional points as before, and you can't get more than 40 Hit Points or 15 Strike Points.

▲

8-Bit Toolhouse

The Mouse, Disk Emulator, Print Buffer, and more.



Your Atari 8 Bit Comes Alive!

ATARI 8 BIT COMES ALIVE!

Did you ever get the urge to open your Atari and attach some esoteric piece of hardware to it? If you're like me, you hesitated due to your inexperience with electronics or your awkwardness with tools.

Your Atari 8 Bit Comes Alive is a 207-page book, with a disk that has 18 BASIC programs plus source code for all the machine language subroutines. This package offers you the chance to experiment with less fear. Though soldering is often required,

no *detailed* soldering is needed. I could just "slop it on" and still have these projects come out right.

When opportunities for damage do exist, the book carefully takes us by the hand and leads us to the desired result. *(Just remember that you void any Atari Corp. warranty left on your computer, as soon as you open up the case.—ANTIC ED)*

Richard Leinecker's book presents lots of projects, although most of them are "merely" of the experiment sort. How often will most of us find a practical use for a home-built oscil-

lator? However, there are a few projects which you can get real use from.

Building your own light pen not only could give you a sense of accomplishment, it can fill a gap left by the lack of available commercial pens. As an added benefit, your home-made light pen can be used in place of the Atari Light Gun (available only with the XE Game System!). The pen you'll build works in Graphics 7, which is a nice drawing mode.

The book starts out assuming you really know *nothing* about elec-

tronics. Detailed definitions and illustrations of basic equipment such as solderless and perforated breadboards are given. Necessary test equipment such as a multimeter and logic probe are defined in clear, understandable English. Schematics, incredibly, are made understandable. Schematics were the one thing which used to lose me almost immediately in electronics before.

Projects include connecting the joystick ports to sundry devices such as door alarms, event detectors and device controllers. From the examples given, it would seem that almost anything electrical can be controlled by your Atari.

This book is not meant to be merely read. It should be used and kept

**This
book presents
lots of projects,
although most
are “merely”
experiments.**

handy during each experiment and project. The sort of experimental kits you wished you could afford as a kid (Remember “Brainiac” and the “33 Electrical Experiments” packages?) are far outclassed by the unsung little Atari which sits upon your desk. All it ever required was the specialized knowledge provided by this outstanding book.—CHESTER COX

\$25.95, 207-page book with 48K disk. Computer Spectrum, distributed by Horizon Computers, 695 S. Colorado Boulevard, #10, Denver, CO 80222. (303) 777-8080.



The Mouse

THE MOUSE

I'm a little tired of articles and letters telling how to use the Commodore mouse with the Atari 8-bit computer. There's a mouse made expressly for the Atari. It's called the **Mouse** (original, no?) and behaves as well or better than the Commodore mouse.

Just as the Commodore mouse does, this Mouse acts like a joystick. Plug it into either joystick port and start using it. A true mouse (such as the ST's) scrolls across your screen in an entirely different, smoother manner. The pixel-by-pixel jumping of a joystick seems a bit jerky in comparison. Knowing the limitations enables us to use the Mouse for tasks at which it works best.

Its best use is, as you might have guessed, with drawing programs. RAMbrandt works delightfully with it. As a matter of fact, RAMbrandt permits you to use the Mouse (in place of a joystick) *and* a touch tablet at the

same time. Detailing with the Mouse is easier for those of us with unsteady hands, especially when the magnifying option is used. Blazing Paddles, Micro Illustrator, Micro-Painter and its public domain clone—in fact, every art program I tried works better with the Mouse than with a joystick.

Not all games work well with the Mouse. Playing Star Raiders with it is sheer suicide! But games which require instant locations are much more fun. Missile Command becomes almost winnable, Chessmaster becomes simpler. Software which has an interface similar to GEM works very well. Ogre, Gunslinger, Phantasie, and Lords of Conquest seem to have been *made* for the Mouse. XLEnt's First Word Processor is the only WP that takes advantage of the Mouse, a feature I wish PaperClip had.

The Mouse looks pretty much as you'd expect a mouse to look—palm-sized, sloped in the middle, two buttons that each read just like a single

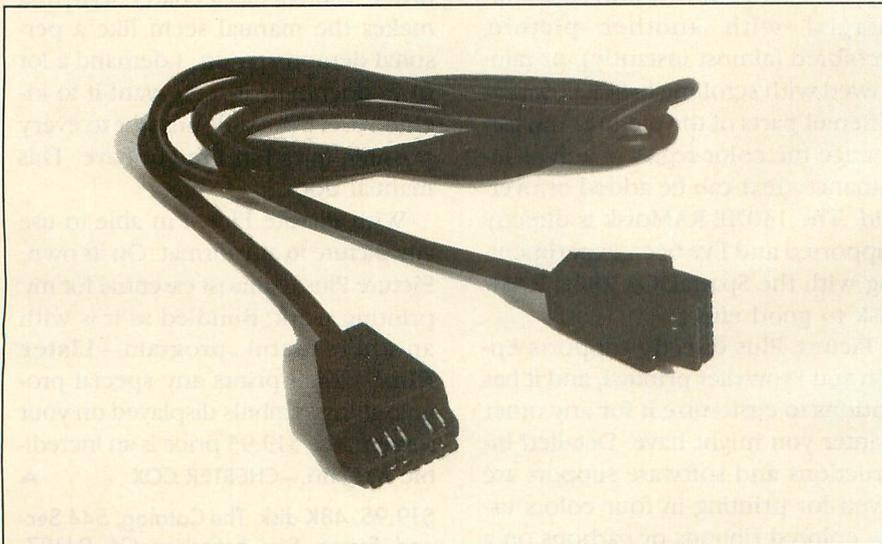
joystick button. It's all in XE gray color and very sturdy. My Mouse has been dropped a few times since Christmas and I've taken it apart to check it out. The rolling ball is exactly the same as the ST mouse ball. In fact, I switched them a few times with no changes in performance.

A mouse seems to be relatively expensive. IBM users pay up to \$200 for theirs. So we get off cheap with the

Just as the Commodore mouse does, The Mouse acts as a joystick.

\$59.95 price tag (frequently discounted to \$49.95). It makes drawing with your 800/XL/XE downright pleasant.—CHESTER COX

\$59.95. Horizon Computers, 695 S. Colorado Boulevard, #10, Denver, CO 80222. (303) 777-8080.



Cable used by Disk Emulator and Print Buffer

DISK EMULATOR

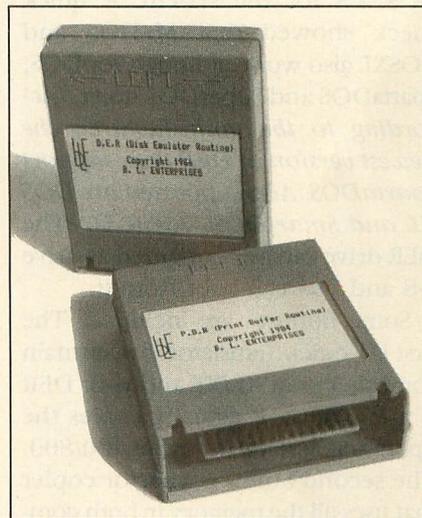
Many Atari owners have more than one 8-bit computer. Some, like me, couldn't bring themselves to sell their faithful (and high-priced) old 800s when they bought an XL or XE. Others found used machines for less than \$100 and couldn't pass up the bargain. Now B.L. Enterprises has come up with ways for you to put those extra Ataris back to work! **PBR**—Print Buffer Routine—turns your second computer into a printer buffer of just under 40K. **DER**—Disk Emulator Routine—turns it into a RAMdisk.

PBR is a very workable printer buffer. The file you print goes quickly into the buffer and your computer thinks the printing is finished—so you and the computer can go on to other tasks. Meanwhile, the buffer continues sending your information to the printer. Multiple files can be chained for sending to the buffer and will be printed in succession.

Through no fault of the manufacturer, PBR is inconvenient to set up for use. The Print Buffer Routine consists of a disk for the first computer, a cable to connect the machines through their joystick ports, and a cartridge for the second computer.

Difficulties arise because the first Atari must be told to send the printer data out of the joystick port instead of the SIO port.

This configuration requires a small chunk of code to be squeezed somewhere into the main computer. If the main computer is an XL or XE, you can run the Translator or FIX-XL (not included). That frees 4K memory to hold the code. Then you boot your printing program. This should work with almost all software, but you have



Disk Emulator and Print Buffer cartridges

to boot three disks to get there. If your main computer is an 800 or 400, the process may be even more complicated and the system will be incompatible with more software.

PBR has several special features. With the console keys on the second computer, you can send a form feed, a single line feed, or a double line feed. You can also abort the printing and clear the buffer. It would be nice to also have commands that pause and restart the printing, print multiple copies and abort printing without clearing the buffer.

DER, the Disk Emulator Routine is much easier to use. Just plug in the special SIO cable (the DER computer must be last on the daisy chain). Then insert the cartridge in the DER com-

puter to turn it into a solid-state disk drive. It's much faster than a regular drive, but because it's limited by the 19,200 baud rate of the SIO port, it's slower than a built-in RAMdisk.

A 48K computer gives you 293 sectors of RAMdisk space, a 64K computer gives you 403 sectors and a 128K computer gives you 914 sectors. The best part of this RAMdisk is that it retains its information when you turn off the main computer—but not if you turn off the DER computer.

B.L. Enterprises recommends Atari DOS 2.5 for the system. A quick check showed that MyDOS and DOSXL also work, although TopDOS, SpartaDOS and SuperDOS don't. (*According to the manufacturer, the newest version of DER does support SpartaDOS. Also supported are DOS XL and SmartDOS.*—ANTIC ED) The DER drive can be configured as drive 1-8 and you can boot from it.

Some bonuses are included. The first is a quick Translator if your main computer is an XL/XE and your DER is a 400/800—it actually copies the operating system from the 400/800. The second bonus is a sector copier that uses all the memory in both computers. The final bonus is a routine to move DUP.SYS and MEM.SAV to the DER drive.

B.L. Enterprises has hinted that since DER is programmable from the main computer, future software upgrades (like a RAMdisk printer buffer) may be forthcoming.

Both products work as advertised and increase your system's productivity. DER gets an enthusiastic recommendation, PBR a more reserved one. If PBR fits your work style, you'll love it, otherwise you may find the setup routine annoying.

Finally, can you use both of these products at the same time? Yes. . . if you have three computers.—CHARLES CHERRY

\$39.95 each. PBR and DER both require two 48K Atari computers and one disk drive. B.L. Enterprises, P.O. Box 7881, Louisville, KY 40207.

PICTURE PLUS

You must like nice pictures in vibrant colors—after all, you own an Atari 8-bit computer. Undoubtedly, if you enjoy drawing on an Atari, you have your favorite art program. However, there are those great pictures done with other art programs—which your program can't read.

Picture Plus is a package of utilities by Chet Walters. It loads at least eight different kinds of picture files and will then save to any of the eight types. It's one of the few products which will load light pen files.

Picture Plus also enables you to manipulate a picture in strange and ar-

With Picture Plus, I'm able to use any picture in any format.

cane ways while it's in your Atari's memory. The picture can be rotated, flipped upside-down, moved about, merged with another picture, recolored (almost instantly), or rainbowed with scrolling bright colors at different parts of the picture. You can change the color registers and/or luminance. Text can be added or overlaid. The 130XE RAMdisk is directly supported and I've been experimenting with the SpartaDOS 256K RAMdisk to good effect.

Picture Plus directly supports Epson and Prowriter printers, and it has options to customize it for any other printer you might have. Detailed instructions and software support are given for printing in four colors using colored ribbons or carbons on a normal dot-matrix printer. There is

also an option to switch to low-res graphics on your printer and create huge posters.

Three extra programs are included on the Picture Plus disk. One, PICLOAD.BAS, can be added to your homemade BASIC programs to load Micro Illustrator or Micro-Painter pictures, distinguishing between the two. EXPAND.BAS converts any font on disk to double its original width. Most useful (okay, most fun!) is PICSHOW.BAS, a slide-show program which loads and displays any Micro-Painter or Micro Illustrator pictures with a time delay of your choosing. It can rainbow your pictures, add a gong to let you know when they change, even permit you to switch disks in the middle of a run. With little effort, I changed the program to read files from a RAMdisk, saving my drive during displays.

A word should be said about the documentation. All of The Catalog's 5 1/4 inch disks have the documentation included on the disk with a utility for printing it on paper. Too often the manuals are obscure or skimpy. This, happily, is a major exception—the programmer actually writes a good manual! One read-through and you will be able to access any feature of Picture Plus with no difficulty. All commands are arranged in a logical order. Walters has a chatty style that makes the manual seem like a personal demonstration. I demand a lot from documentation. I want it to include every possible answer to every possible question I might have. This manual does.

With Picture Plus, I'm able to use any picture in any format. On its own, Picture Plus is almost essential for my printing work. Bundled as it is with another useful program—**Lister Plus**, which prints any special programming symbols displayed on your screen), the \$19.95 price is an incredible bargain.—CHESTER COX ▲

\$19.95, 48K disk. The Catalog, 544 Second Street, San Francisco CA 94107. (800) 234-7001.

LOTTOPIK

Pick the winning numbers

with your Atari. **By Dr. John Ferguson**

U*se the Atari's random number generator to create ready-to-use lists of Lotto number choices. Your odds against winning may still be impossible, but at least you won't need to agonize over which numbers to pick. This BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.*

Win millions! The dream is wonderful, even if the odds are nearly impossible. . .

. . . Nevertheless, most states now have their Lotto games, and playing them has become a national pastime. Playing is easy, but choosing "lucky" numbers can really be agonizing. People play "favorites," birthdays, ages, addresses, telephone numbers, hunches, or just close their eyes and point.

One thing is for sure—any set of numbers is just as likely to win as any other. The people running lotteries go to great lengths to ensure this. On the other hand, prizes are divided among those that choose the same winning numbers, so your best chance of winning—remote as that may be—is to pick numbers other people don't. Such numbers have an equal opportunity to win, but pay more.

The question is, what are those less-used numbers? How do you avoid all the psychological biases that lead to picking numbers that are too popular? The obvious answer is to match the way the lottery numbers are cho-

sen in the first place—use a purely random system. The catch is that picking numbers randomly, even with your own ping-pong balls, is not very easy.

However, your Atari computer has a built-in function that generates pseudo-random numbers. LottoPik is a short BASIC program designed to pull these numbers out of the computer and display them for you in an easy-to-read, printable format.

So get lucky. Type in Listing 1, LOTTOPIK.BAS, check it with TYPO II and SAVE a copy before you RUN it.

WHAT LOTTOPIK DOES

Actually there are a number of useful steps that LottoPik carries out for you. Of course, it first must calculate a random integer within the correct range. Then LottoPik does this five more times to create the set of six numbers in the Lotto format. It also makes sure that none of the six numbers are duplicates.

Making it easier to read and transfer the numbers, LottoPik sorts and displays them in ascending order. The

program also uses a string function to convert the numbers into a consistent two-digit form, just to keep things neat. Since a Lotto card usually lets you play as many as five games at once, the program repeats the above steps five times and displays all the numbers needed to complete a single card. To display another full set of numbers, press [RETURN]. Finally, LottoPik lets you print the results, using a simple driver that should work with any printer.

Choosing "lucky" numbers can be agonizing.

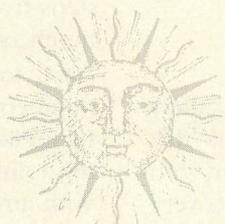
LottoPik is very easy to use. But before you RUN it, change the variable X in line 5 and make it equal to the highest number which can be chosen in your state's Lotto.

I haven't won yet, but I have had my money's worth of fun. I hope you have better luck. **A**

Dr. John Ferguson is a marine biology professor at Eckerd College in Florida. An expert on starfish, he published Beer Party Atari in the May 1985 Antic.

Listing on page 77

F L O W E R G A R D E N



INSTANT "ROSE-EQUATION" GRAPHICS

USE THE CLASSIC MATHEMATICAL
"ROSE EQUATION" TO CREATE AN ENDLESS
VARIETY OF FLOWERLIKE IMAGES FOR
SCREEN DISPLAY OR PRINTOUT.
THE BASIC PROGRAM WORKS ON 8-BIT
ATARI COMPUTERS WITH AT LEAST
32K DISK OR 24K CASSETTE.

BY ALLAN MOOSE AND MARIAN LORENZ





Major advances in computer graphics have been achieved during the past 20 years and we sometimes forget that a simple line drawing program based on a mathematical function can produce pictures of unexpected beauty. This article demonstrates how to grow a flower garden of graceful symmetric designs with your Atari.

The popular Cartesian coordinate system identifies a point on a plane by giving its distances from two perpendicular axes. These axes are usually labeled X and Y.

Perhaps less well known is the polar coordinate system. This system locates a point by giving its distance from the center of the coordinate system, plus an angle. For example, a fighter pilot crying out "enemy at six o'clock, nine miles out" is using a form of polar coordinates. The distance here is nine miles and the angle is 180 degrees (six o'clock).

The distance, usually labeled r for radius, is the distance from an origin, O. The angle, often labeled Theta (Θ) or Phi (Φ), is the angle between the horizontal axis and a line drawn from the origin (O) to the point (P). See Figure 1.

The rose equation, $r = R * \sin(n)$, is one of the most popular illustrations of polar coordinates.

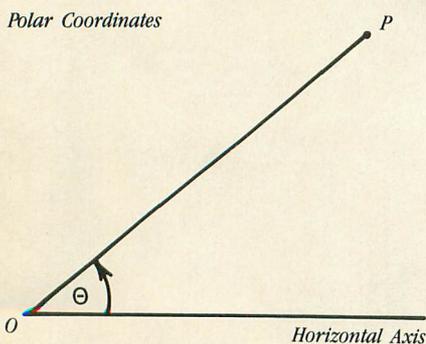
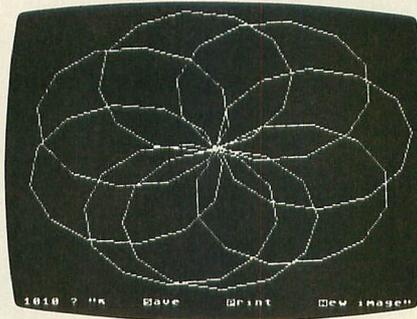


FIGURE 1



In this equation, R is a constant that determines the size of the graph and n is an integer. A graph of this equation has n petals if n is an odd integer and $2n$ petals if n is an even integer. Figure 2 shows the graph if $R = 80$ for $n = 2$ and $n = 3$.

The program accompanying this article draws polygons inside an n -petaled rose. This program is ideal for experimentation and you will find yourself spending hours "growing flowers."

GETTING STARTED

Type in Listing 1, FLOWERS.BAS, check it with TYPO II and SAVE a copy before you RUN it. When RUN, the program will ask you to type values for N and Alpha (the angle increment). Then your Atari will draw your flower.

When it's done, type [S] to save your flower as a Micro-Painter-compatible disk file called "D:PICTURE" — the program doesn't save

to cassette, sorry. Type [P] to print your flower with any Epson-compatible printer, or type [N] to erase your flower and begin a new one.

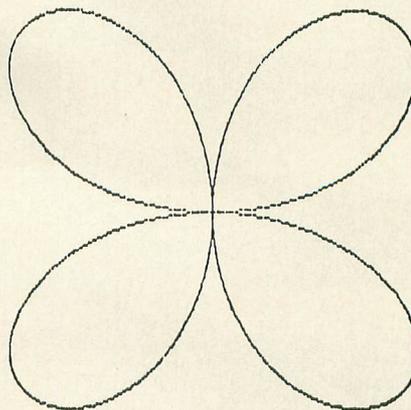
HOW IT WORKS

1. Type in values for N and Alpha.
2. Next, the program initializes Count, Countstop, Delta and Deltainc. Countstop is a value that stops the program when the figure is completed. Delta is an "angle monitor." It prevents the program from drawing degenerate figures made from a single point or just a few lines. Delta insures that the ending point meets the starting point. Otherwise, the program continues drawing.

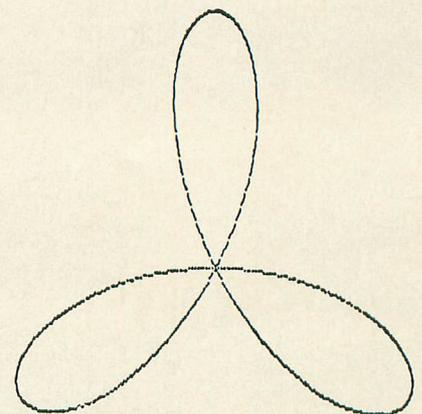
3. Now the program gets the starting point for a drawing sequence. It sets the angle $\text{Theta} = \text{Delta}$, computes the points $\text{Phi} = \pi * (\text{Theta}) / 180$ and $R = \text{Radius} * \sin(N * \text{Phi})$. Finally it converts these polar coordinates (Phi , Theta) to rectangular coordinates and stores the result in $Xold$ and $Yold$.

4. Next, add Alpha to Theta. If Theta is greater than or equal to 360 replace Theta by Modulo (Theta) to keep its value between 0 and 359. An explanation of Modulo is given later in the article.

5. Compute $N * \text{Theta}$. Reduce it by Modulo 360 and store the result in Phi. Compute $R = \text{Radius} * \sin(\text{Phi})$.



$R=80 \ n=2$



$R=80 \ n=3$

FIGURE 2

Lightspeed C

Move up to high-level programming. By Matthew Ratcliff

Most serious Atari 8-bit users learn BASIC and *many* try assembly language, but the trend in the computer industry and education is toward high-level languages such as Pascal, C and Ada. The current language of choice for the Atari ST and most other personal computers is C. If you're ready to move up to the structured programming world of C, for just a small investment, **Lightspeed C** (\$34.95) is just your speed.

Floating-point is slightly quirky in Lightspeed C.

This C compiler comes on several disks and includes Lightspeed DOS as well as support files for SpartaDOS. A runtime library is required for SpartaDOS, but it's integrated with Lightspeed DOS. Everything you need to create an executable C program is provided with the compiler, linker and optimizer. You can use the C program editor (CEDIT) to create your own programs or develop them with an editor of your choice.

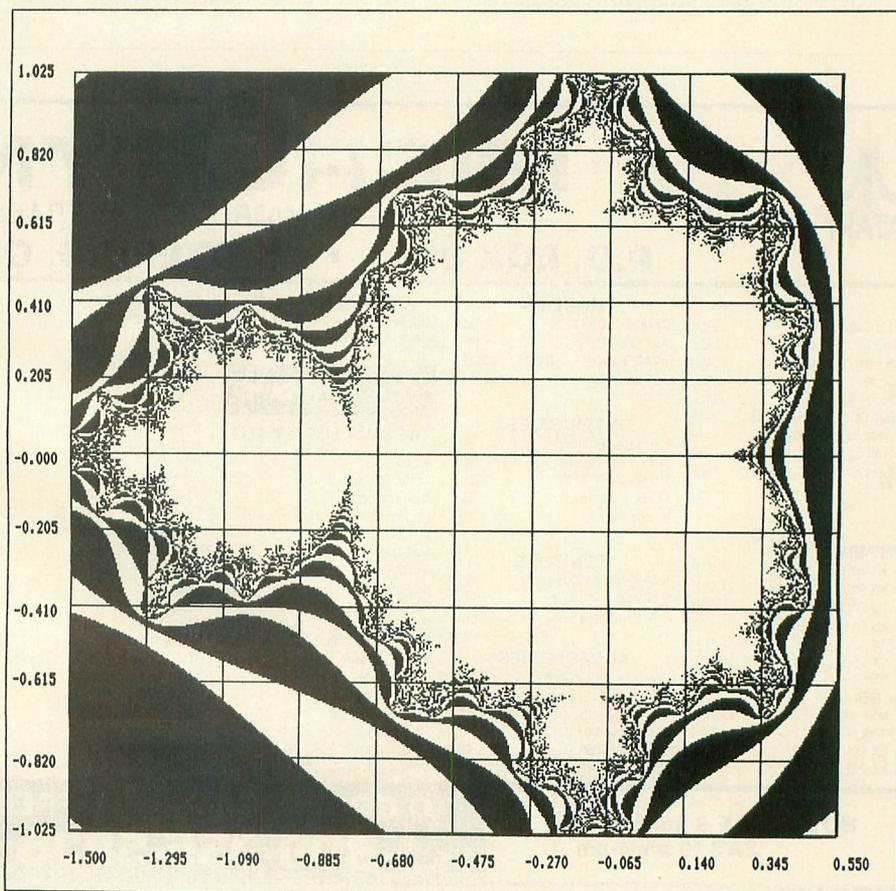
Lightspeed C supports floating-

point and trigonometric functions and provides many other features, such as a fast graphics package, that you would not expect to find in such an affordable program.

Floating-point is rather quirky in Lightspeed. All your variables must be

declared as six-character strings instead of "float" values. For example, in standard C we would declare and multiply two floating-point numbers as follows:

```
float x, y, z;  
x = 1.75;
```



1. Complete Mandelbrot Set, generated with a Lightspeed C program.

```

y = 3.45;
z = x * y;
printf("%f TIMES %f is %f\n", x, y,
z);

```

Here's how you do it in Lightspeed C:

```

char x[6], y[6], z[6];
atof(x, "1.75");
/* Ascii to floating-point */
atof(y, "3.45");
/* conversion */
fmul(x, y, z);
printf("%f TIMES %f is %f\n", x, y, z);

```

I had few problems using Lightspeed C to create a sophisticated fractal generation program, which is floating-point intensive. The listings for this fractal demonstration are bonus files on this month's Antic Disk, details are explained at the end of the article.

The biggest problem with floating-point in Lightspeed is there is no support for floating-point compares (in IF and WHILE statements). It takes some unusual string manipulation techniques to handle the job.

INTEGRATED ENVIRONMENT

The most impressive feature of Lightspeed C is its totally integrated programming environment—if you use the C editor. CEDIT is virtually identical to the editors in MAC/65 and BASIC XL in that you use line numbers for referencing, and auto-entry is supported. From here, the power of Lightspeed becomes apparent.

Pressing [BREAK] to exit the auto-entry mode invokes the Lightspeed syntax checker. The code you just entered is immediately checked for syntax errors, saving you valuable time

in debugging compile errors. The syntax checker isn't smart enough to check for multiple line statements, however, occasionally reporting bogus errors. For example, the following would result in a syntax check error with an "unbalanced parenthesis" indication:

```

1200 x = ( (a + b)
1210 * (c + d) );

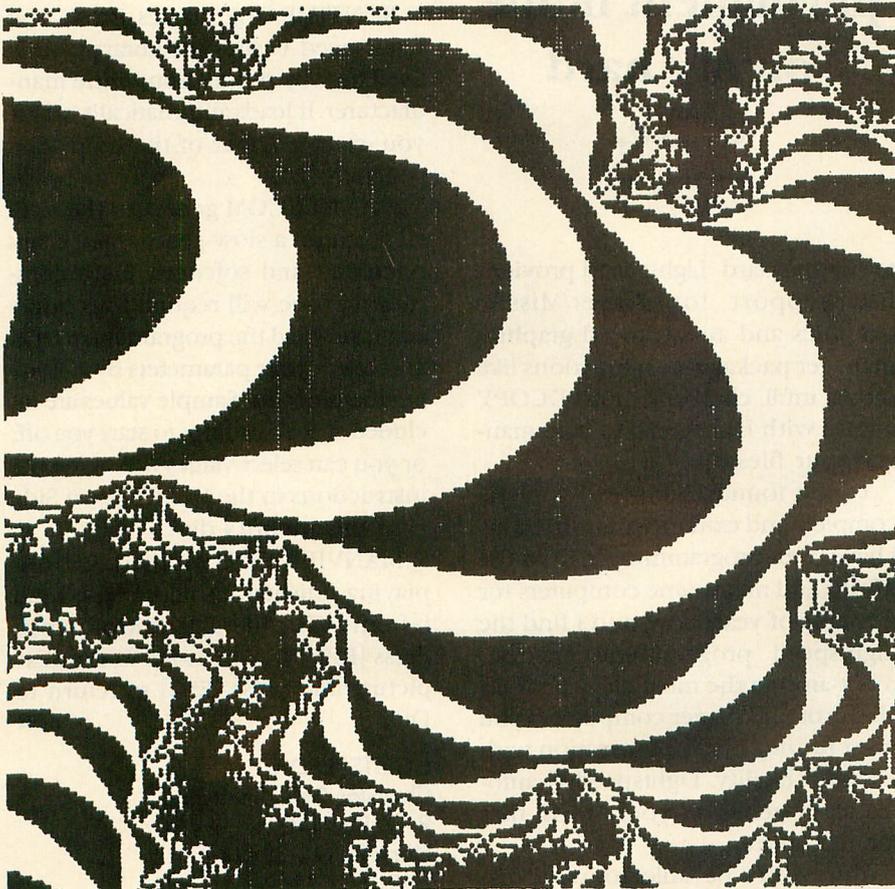
```

The code above is correct, however, and won't generate a compile error. This is not a bug in the syntax checker, just a limitation in that it only checks syntax by physical lines and not logical lines.

Line numbers are used only for reference. CEDIT lets you list a code block to the display and then use the cursor keys to perform full-screen editing. If new code needs to be inserted, the auto-entry mode simply asks for the line to follow with new code. You need not worry about running out of line numbers while inserting either, since CEDIT will take care of this automatically. This is an improvement over MAC/65 or BASIC XL, which force you to stop code entry, renumber, and then continue inserting.

Once your source code is complete, you can save it to disk or compile it with auto-save. CEDIT uses Lightspeed DOS and SpartaDOS to full advantage, simulating batch-command files. You can specify compilation of your source code, automatically followed by LINK (the linker) and RUN. If there's an error during compilation, enter the drive number containing CEDIT. Control will go back to CEDIT, with the errant line displayed as well as a descriptive error diagnostic. If no errors occur, the intermediate file is LINKed and then RUN.

Use the FASTER utility to optimize a compiled file. According to the documentation, FASTER can be part of the compile, link and run command line. This confuses Lightspeed, however, and the linker attempts to link your program with FASTER.CCC



2. Extreme close-up of the image on the opposite page.

and create a FASTER.COM file, thus trashing your FASTER utility. Generally I just compile, link and run until the program is fully debugged. Then I run FASTER separately. After optimization, relinking results in a smaller, faster program.

Using a RAMdisk or a hard disk speeds up the whole process considerably. Running Lightspeed C from floppies works just fine, but it's rather slow. You cannot compile directly to memory as you can with ACTION! or MAC/65.

SpartaDOS users will need RUNTIME.OBJ on the same disk as the .COM file created by the linker. When the .COM program is executed, the runtime support library is retrieved from disk automatically. You can put the runtime and executable files on disks with Atari DOS 2.0 or 2.5, or with just about any other DOS disks, and run them if the LOMEM doesn't conflict with the memory requirements of the Lightspeed files. Memory use is reported by the LINKer program.

THE MANUAL

The Lightspeed C manual is well-written and complete, except for the notable lack of an index. All other C manuals I've used have a full alphabetic list of the functions supported. Lightspeed has a handy command summary—by category—in the middle of the manual. (It should have been printed on the inside cover for quicker access.)

Kernighan and Ritchie's C Programming Language is considered the standard for all C compilers. Lightspeed C measures up quite nicely, considering the 8-bit's memory limitations and a low-tech microprocessor like the 6502. Appendix A of the Lightspeed C manual covers all its differences and shortcomings relative to the Kernighan and Ritchie standard—a very honest and useful reference.

If you want to get into the more advanced features of C, such as structures, unions and multidimensional

arrays, forget it. Lightspeed C can't handle them. This is its most significant limitation.

Lightspeed C makes the transition from BASIC to C painless with equivalent functions for PEEK, POKE, GRAPHICS and more. The most-used procedure of C has to be printf—print formatted output. Lightspeed supports it fully, including output of floating-point numbers.

If your application is too large to fit in memory, it can be broken up into separate modules. Lightspeed C lets you chain between programs, with a command line DOS such as SpartaDOS or their own Lightspeed DOS.

File input/output conforms closely

Lightspeed C has found a permanent home on my hard drive.

to the standard. Lightspeed provides full support for Player/Missile Graphics and an advanced graphics manager package with functions like mbox, mfill, circle and more. DCOPY comes with Lightspeed to help manage your files.

I have found Lightspeed C to be complete and extremely user-friendly. I have been programming in C on the ST, PC and mainframe computers for a couple of years now, and I find the Lightspeed programming environment among the most elegant. With all the other "bigger computers" you must *manage* your file creation with a MAKE facility. Lightspeed C automatically generates your MAKE files for the linker.

You won't be able to write extremely large applications in Light-

speed without a lot of chaining, since its smallest runtime library is over 7K. Lightspeed C is a welcome relief from the tedium of assembly language programming and chaos of developing large BASIC programs.

Lightspeed C has found a permanent home on my hard drive and is currently my 8-bit language of choice for utilities and graphics development. Try it—you'll love it.

DEMOS ON DISK

To grow your own fractals you will need MANDEL.COM, MANVIEW.COM and RUNTIME.OBJ from this month's Antic Disk. A complete fractal picture is also on the November 1988 disk. Choose selection 5 from Side A of the Antic Disk to read complete operating instructions. And for full explanation of how fractal images are created on your computer, see the April 1986 *Computer Mathematics* issue of *Antic*.

RUNTIME.OBJ comes from the Lightspeed C support library and is used here by permission of the manufacturer. It loads automatically when you execute either of the other two programs.

MANDEL.COM generates the fractal pictures, a slow process with any computer and software. Each completed image will require four hours or more. Load the program from DOS and select your parameters by following the prompts. Sample values are included at each prompt to start you off, or you can select values following the instructions in the HELP file on Side B of this month's disk.

MANVIEW.COM is used for displaying finished fractal images. Load it from DOS and follow the prompts. Press [RETURN] to move to the next picture and press [ESC] to return to DOS. ▲

LIGHTSPEED C
Clearstar Softechnologies
P. O. Box 140
Harrells, NC 28444
(919) 532-2359
\$39.95, 48K disk

Print Shop

Shareware Bonanza

Charles Cherry reviews
Icon Printer, Video Jukebox and four more...

If you produce useful products at reasonable prices and make them easy to use, I'll write raves for you. One 8-bit Atari programmer who qualifies is Chris Wareham of Shepherd Software. You may recall my enthusiasm for his Billboard giant-banner program in the February 1988 *Antic*. Well, Chris has followed that up with another six interesting shareware and public domain offerings.

The most significant are **Icon Printer** and **Video Jukebox** (\$10 each), utilities for Broderbund's ever-popular **Print Shop**. **Icon Printer** prints 49 icons per page. It dumps an entire disk of icons to your printer automatically, complete with names, in disk order or alphabetical order. As a bonus, **Icon Printer** lets you rename icons. Like all of Chris' programs, the user interface is clean and simple.

Icon Printer is set up for Epson FX printers and compatibles, but can be modified to support almost any printer. Even if you only use **Print Shop** rarely, you need a program like this.

There are lots of utilities for **Print Shop** icons, but **Video Jukebox** is the first I've seen that addresses the program's **Screen Magic** capabilities. Basically, it converts **Micro-Painter** and **Micro Illustrator** screens to **Screen Magic** format and back, meaning that you can capture **Screen Magic** kaleidoscopes for your paint programs and add fancy **Print Shop** lettering to your

microscreens.

Video Jukebox does other things that are less useful but more fun. It displays pictures while running the Atari rainbow in the background—incidentally dramatic with the **Print Shop** kaleidoscopes. The rainbow can be changed by pressing any key combination, producing more variations than I thought possible.

Video Jukebox can play music while the picture is displayed, affecting the speed of the rainbow in strange ways. The overall effect can be amazing. **Pokey Player**, the excellent public domain program, is used to produce the music and is included on the disk along with 34 songs. I would say that the easy-to-use **Video Jukebox** is another must-have for **Print Shop** junkies and a very useful tool for people who want **Print Shop** fonts in their microscreens.

F-15 Construction Set (\$7) lets you design new flight maps for **MicroProse's F-15 Strike Eagle**. It requires the original game and is a little tough to set up. But after you've got it working, you can easily modify the existing missions, save them and play them. There are a few restrictions such as not having more targets than the original mission, but you get enough flexibility to keep up with world events.

DO-Disk (\$7) is the only clunker in the batch. It's basically a sector *reader*—not a sector editor—that lets

you search for a character string, or map (trace) the files. The results can be printed either onscreen or on the printer. But **DO-Disk** can't change the data on the disk, it can't even display the data in hexadecimal format. Any decent sector editor will run rings around **DO-Disk**.

Interestingly, **DO-Disk** includes a "mini" sector editor—L. Fogassy's public domain **Modify Utility**. It's more useful than the **DO-Disk**, and together they're almost a complete system. Still, you'd be better off with a full-featured sector editor.

The final product is a public domain nutrition tracking program, **Eat Well, Live Long, Prosper!** (\$5), based on a public domain BASIC program by Vance Houston and translated into **ACTION!** You enter your statistics (age, weight and sex), and then **Eat Well** asks what you ate (or plan to eat). You choose your answer from a list of almost 500 items (you can add to the list).

Try the programs. If you like them, send the money to Shepherd Software. All of them, even the **DO-Disk**, are easily worth the low price. Do yourself a favor and introduce yourself to Chris Wareham's work. By the way, the latest version of **Billboard** (\$10) is much easier to configure for various printers. ▲

48K disk. Shepherd Software, 1215 West Jackson, Spearfish, SD 57783.

THE CATALOG™

presents

8
•
B
i
t

Software



Antic Software
544 Second Street
San Francisco, CA 94107

More titles than ever before

ENTERTAINMENT

- ASTROLOGY** - Create astrological charts easily just by entering birthdate and birthplace coordinates. Requires Atari Basic. (APO167)\$15.95
- ATARIORACLE** - The electronic OUJI board. Requires Atari Basic. (APO138)\$15.95
- BLUE TEAM BRIDGE** - Tournament level computerized bridge simulation. (APO178)\$15.95
- BUMPOMOV'S DOGS** - A two-player game. (APO112)\$12.95
- BURGERS** - A game for young children. (APO109)\$12.95
- CHOP SUEY** - Action-packed martial arts competition simulation. (APO162)\$15.95
- COLOSSUS CHESS 3.0** - A variety of simulation modes available. Requires 48K RAM. (APO161)\$15.95
- COLOURSPACE** - A "visual synthesizer." (APO167)\$15.95
- CRIBBAGE AND SEVEN CARD STUD** - Two-for-One card games. (APO173)\$15.95
- DIGGERBONK** - Great fun for kids of all ages. (APO107)\$12.95
- DOG DAZE DELUXE** - Excellent 3D effects. (APO111)\$12.95
- DRAGON'S QUEST** - A fast and fantastic graphic adventure game. Requires Atari Basic. (APO139)\$15.95
- GALAHAD AND THE HOLY GRAIL** - Designed by one of Lucasfilm's top game programmers. (APO110)\$15.95
- KING TUT'S TOMB AND CONSTRUCTION SET** - Forty-eight different tombs, or build your own. (APO149)\$15.95
- KLONDIKE SOLITAIRE AND SEVENS (FAN TAN)** - Classic strategy card games. (APO174)\$5.95
- LORD OF THE ORB** - Rescue the Living Orb of Fortune. (APO103)\$15.95
- MARS MISSION II** - Explore life beyond the vertical caverns of Mars. (APO120)\$15.95
- OMAR** - A chess, checkers and chinese checkers combination game. (APO140)\$12.95
- PHOBOS** - Destroy the Martian Command Center. (APO119)\$15.95
- PUZZLER** - An infinite number of on-screen puzzles. (APO150)\$12.95
- RAID ON GRAVITRON** - A point-of-view space battle with outstanding 3D effects. (APO121)\$12.95
- SARATOGA** - This is "the" war simulation of the American Revolution. (APO104)\$15.95
- SNARK HUNT** - An APX Award winner. Requires Atari Basic. (APO105)\$12.95
- SPACE WAR** - A two-player galactic shoot-out. (APO101)\$12.95
- TAXICAB HILL** - A delightfully chaotic game. (APO137)\$15.95
- WEAKON** - Enter the amazing world of inner space. (APO122)\$15.95
- XTAL (CRYSTAL)** - Mission: to destroy a planet-threatening ion radiation storm. (APO158)\$15.95

PRODUCTIVITY

- CREATIVE PROCESS 1.8** - An indispensable outline processor. (APO151) ..\$19.95
- DEEP BLUE C COMPILER AND MATHLIB** - The all purpose ST language and math library. (APO188)\$19.95
- FLOATING POINT PACKAGE AND EXTENDED D.D.T. (EXDDT)** - A powerful combo for assembly language. (APO189)\$19.95
- INTERLISP/65 2.5** - A subset of the standard "INTERLISP" dialect of LISP. (APO191)\$19.95
- RAMBRANDT** - The ultimate paint software on two disks. (APO157)\$19.95
- SPELL MAGIC** - Check documents generated by other word processing programs, and in context with the document display feature. (APO144)\$19.95

TELECOMMUNICATIONS

- BACKTALK 1.2** - The Atari becomes a communications droid with the macro command feature. (APO154)\$19.95
- CHAMELEON CRT TERMINAL EMULATOR 4.03** - One terminal becomes five in a matter of minutes. Requires 48K RAM. (APO113)\$19.95

EDUCATION

- EARTH VIEWS** - An electronic globe with a variety of map formats and views.
(APO141)\$19.95
- MAPWARE** - Add maps to your programs. 9,000 pairs of coordinates available.
Requires Atari Basic. (APO134)\$19.95
- MEMOREASE+** - Learn to memorize efficiently and quickly. (APO163)\$19.95
- ORBIT: A TRIP TO THE MOON** - On board computer, graphic display control panel
and variable Earth and Lunar views. Requires 48K RAM. (APO168)\$15.95
- SPACE BASE** - A must for telescope owners. Requires 48K RAM.
(APO142)\$19.95
- SPEEDREAD+** - Learn to read faster with less effort. Requires 48K RAM.
(APO164)\$19.95

UTILITY

- BASIC VIEW** - A must for all programmers. (APO192)\$19.95
- DISK SCANNER** - A complete disk editor for single and double density drives.
(APO145)\$5.95
- ENHANCED POKEY PLAYER** - Input and edit music. Tutorial included. Requires
Atari Basic. (APO147)\$15.95
- THE ENHANCEMENT DISKS** - B/Graph's utilities. Requires Atari Basic.
(APO190)\$19.95
- ENVISION** - Create stand-alone pictures or produce Basic and Assembler Source
Codes. Requires Atari Basic, MAC/65, SynAssembler, Epson-compatible printer.
(APO185)\$19.95
- GRAPHIC SHOP** - Use most Atari picture files for Print Shop signs, banners,
letterheads, etc. Requires Print Shop. (APO156)\$19.95
- PICTURE PLUS 3.0 AND LISTER PLUS 1.5** - The complete graphic utility set.
Requires 48K RAM and Atari Basic. (APO179)\$19.95
- PRINTER DRIVER CONSTRUCTION SET** - Make AtariWriter compatible with every
printer. Requires AtariWriter. (APO131)\$19.95
- SCREEN PLOT** - Print color micro-screens on most plotters. (APO135)\$5.95
- SHERLOCK 1050** - Restore crashed disks with the trace option feature.
(APO155)\$19.95
- SOLID OBJECT MODULE** - Create 3D objects easily. Requires 48K RAM and
RAMbrandt. (APO182)\$15.95

PUBLIC DOMAIN

- PHOTO GRAPHICS** (PD0017)\$10.00
- ANTIC FORTH** (PD0020)\$10.00
- THE FIX XL** (PD0026)\$10.00
- CROCKFORD'S WHIMSY** (PD0033)\$10.00
- VT100 TERMINAL EMULATOR** (PD0037)\$10.00
- CUES EDPACK #1** (PD0044)\$10.00
- CUES EDPACK #2** (PD0045)\$10.00
- HEAVY METAL ART** (PD0060)\$10.00
- ASTRONOMY & METEOROLOGY** (PD0063)\$10.00
- 130 XE ARTSHOW** (PD0065)\$10.00
- DOS 4.0** (PD0067)\$10.00
- 130 XE HI-RES DESIGNER** (PD0070)\$10.00
- RAMBRANDT COLLECTION** (PD0073)\$10.00
- STEVE DONG'S GALLERY** (PD0074)\$10.00
- 1030 EXPRESS** (PD0081)\$10.00
- 850 EXPRESS** (PD0082)\$10.00
- MPP EXPRESS** (PD0087)\$10.00
- TEKTRONICS 4010 GRAPHICS TERMINAL EMULATOR** (PD0083)\$10.00

All software listed works with Atari XL and XE systems.

HOW TO ORDER BY MAIL

Send check or money order to: Antic Software, #ML8A, 544 Second Street, San Francisco, CA 94107. \$20.00 minimum order. Please include \$3.00 shipping and handling per order. California residents please add 6.5% sales tax.

**ORDER
TOLL
FREE**

**24 HOURS A DAY
800-234-7001
VISA or MASTERCARD ONLY**

Today!

ST Resource

The guide to ST game software

November 1988



Stellar Crusade

ST vs. PC Reviewed by **Steve Panak**

I've been waiting for this one. Ever since I reviewed Interstel/EA's Empire, the premier space wargame for the ST, I've waited for someone with the guts to try and top it. And while SSI has achieved this lofty goal—at least in some aspects—with **Stellar Crusade**, this simulation is particularly demanding. Only seasoned, committed generals need apply.

This intermediate-to-advanced-level game simulates, in great detail, an expansionist policy in a galactic arena. The most advanced level of play has two competitors (one can be the unforgiving computer) first exploring and then colonizing star systems. Slowly the players build up to the degree of economic strength necessary to control the entire star cluster.

Mineral-rich planets become mining colonies, while those with good soil will feed the millions of workers you enslave in your war machine factories. After you obtain a few choice planets, you'll start designing your star ships,

arming them with varied offensive and defensive weapons. Group the star ships into fleets, led by commanders of your choice. The ultimate goal is nothing less than galactic domination. Good luck.

Stellar Crusade's complexity level demands a warning label, as I realized upon my first load. A veteran of hundreds of games in three computer formats (Atari 8-bit, ST and PC), I rarely have *any* trouble learning to play a game. Yet I couldn't even succeed in starting to play Stellar Crusade on its first load.

BEAUTIFUL GRAPHICS

Graphically, Stellar Crusade is beautiful. The main display contains a map of the galaxy, while an intuitive command interface lets you examine each star system to check its manpower and production levels. Of course, your information is only as good as your last contact—you might have lost the system to enemies by now.

The generous manual attempts to

explain the operation of this complex game, but be prepared to invest a substantial amount of time learning to play. PC and ST versions play identically, and both can be copied to a hard drive. To help you test the waters

Graphically beautiful, with an intuitive command interface

without drowning, some of the introductory scenarios support only battle and/or exploration phases, leaving the full game, with its complex economic phase, to the all-encompassing Long Campaign. If you

get through this one, you're ready for anything.

PC AUTO-MODE

The PC version supports all IBM-compatible graphics modes, with Hercules monochrome being the closest in resolution to the ST. Installation is a snap because Stellar Crusade automatically selects the correct graphics adapter as it loads. Note that a stock 8088-based PC slows play with its lengthy screen updates. At least an 8 megahertz machine is recommended, along with a mouse.

Overall, I recommend Stellar Crusade, but with this caveat: It's tough to learn, demanding to play and requires a substantial commitment of time. However, if you make that commitment, you won't find a more detailed outer space simulation on this planet, or any other.

\$54.95, color (\$49.95, IBM). Strategic Simulations Inc., 1046 N. Rengstorff Avenue, Mountain View, CA 94043. (415) 964-1353.

NEW HACK BACK Special OFFER

The Alpha Systems HACK BACK contains all our finest products for making Back-up copies, Analyzing, Understanding and Protecting your Atari programs. It comes complete with Atari Protection Techniques (Book and Disk I), Advanced Protection Techniques (Book and Disk II), The Chipmunk, The Scanalyzer, The Impersonator and Disk Pack 1000. Worth over \$150. Get them all for the special price of **Just \$99.95**

Atari Software Protection Techniques Vol I & II

These Book and Disk packages detail the most advanced copy protection methods in use today. They guide you through the methods used to create the protection as well as the copying techniques to get around them. They include information on Phreaking • Hacking • On-line security • Black boxes • Self-destructing programs • Pirate bulletin board systems • Logic bombs • New piracy laws • Hardware data keys • Weak sectoring (Phantom, Fuzzy and unstable sectors) • Overfilled tracks • CRC errors • Bank Select cartridges and MUCH, MUCH MORE. The disks include automatic program protectors, Protection Scanners, directory hiding and more.

BOOK I and DISK I \$24.95
BOOK II (Advanced protection) and DISK II \$24.95
Special Offer, Order both sets for Only \$39.95

CHIPMUNK

Automatic Disk Back-Up System. Make perfectly running unprotected back-up copies of hundreds of the most popular Atari programs. Chipmunk's sophisticated programming Automatically finds and **REMOVES copy protection** from most Atari programs. Back-up even heavily protected programs with ease. Finally, a back-up system that needs no special hardware or skills.

(If you need a full list of what Chipmunk copies, call or write for our free catalog) **\$34.95**

Scanalyzer Automatically scan & analyze commercial programs. Unlock programming secrets and learn from the masters! **\$29.95**

Impersonator Cartridge to Disk back up system. Create running back-up copies of any cartridge (up to 16K) **\$29.95**

NEW CHEAT

Get more from your games with CHEAT. Tired of spending days trying to beat a game? Tired of getting stuck just when you need another life? Cheat is an innovative new product that gives you the chance you need to beat your favorite games. Cheat works with hundreds of Atari games to give you unlimited lives or power. End the frustration and get hours more enjoyment from your games. (Call or write Alpha Systems for our free catalog with a full list of the programs that work with Cheat) **ONLY \$24.95**

BASIC TURBOCHARGER

NOW for the first time a BASIC programmer can get the power, flexibility and incredible speed of machine language. BASIC TURBOCHARGER is a **book and disk package** that contains over 150 ready to use machine language routines. Complete instructions show how to add them to your own BASIC programs to get these features and more: • Smooth Scrolling • Player/Missile control • Load & Save Picture files • Sorting and Searching • Special Effects Graphics • Incredible Speed • Much, Much More • Over 150 programs. You've heard of the power of Assembler, now harness it for your own needs. **\$24.95**



24 HOUR HOTLINE **216-374-7469**
VISA & MASTERCARD, ORDER BY PHONE, OR SEND MONEY ORDER TO:

ATARI 8-BIT POWER

ALPHA SYSTEMS is constantly innovating to provide more power for your 8-bit Atari

NEW PARROT II

An All New Parrot sound digitizer for your Atari. Parrot II is a sophisticated new hardware device that plugs into your joystick port. Parrot II has two inputs, one for a microphone and one for a powered source such as a tape player, radio or Compact Disk.

The Powerful Parrot II software lets you record sounds into your computer and play them back on any Atari. Parrot II turns your computer's keyboard into a musical instrument with nine different sounds covering three octaves each. The sounds can be anything, a dog's bark, a piano, a complete drum set, a symphony or your own voice.

Parrot II lets you modify the sounds on a graphic display to create brand new sounds and special effects. Best of all, the sounds and voices can be put into your own programs that can be used on any standard Atari. Explore the world of digital sound and music. **ONLY \$59.95**

Pre-Recorded Sound Disk More pre-recorded sounds for Parrot **\$4.95**
PARROT II Demo Disk (Does not require Parrot to run) **\$5.00**

NEW POP-N-ROCKER

a fast paced, multi-player trivia game that mixes questions with real songs (digitized) with Parrot). Be the first to identify the songs and answer the music trivia questions. *Pop-N-Rocker* comes with three data disks and lets you add new questions so it will never get old. You can use a Parrot Sound digitizer to add new songs too! Use any kind of music from Rock to Classical to Nursery Rhymes. A new concept in entertainment and a perfect add-on for Parrot. **\$24.95**

COMPUTEREYES & MAGNIPRINT II +

Turn your computer into a digital portrait studio. This complete package lets you **capture, save & print** digital images from your **Video Camera, VCR or TV**. COMPUTEREYES hardware plugs directly into your joystick ports for easy use. Print your picture on a 6 foot poster! **\$119.95**

ComputerEyes camera system

Comes complete with everything above, plus a black and white video camera and connecting cable. **\$329.95**

Graphics 9 Software - Add a new dimension to your COMPUTEREYES pictures - captures images in 16 shades of grey. **\$12.00**

Magniprint II +

Easily the most powerful print program available today. Print graphics from almost any format in hundreds of shapes, sizes, and shades. Supports **color printing** and lets you create **giant posters**. Magniprint II+ lets you stretch and squeeze, invert, add text, adjust shading and much more. Works with EPSON, NEC, Citoh, Panasonic, Gemini, Star, XMM801, and compatible printers. (850 interface or equivalent required) **\$24.95**

Graphics Transformer

Now you can combine the most powerful features of all your graphics programs. Create print shop icons from a Koala pad picture, from a photo digitized with ComputerEyes, or any picture file. Graphics Transformer lets you **Shrink, Enlarge and Merge** pictures for unequalled flexibility. **\$22.95**

YOUR ATARI COMES ALIVE

SAVE MONEY Finally an alternative to buying expensive computer add-ons. Your Atari Comes Alive shows you how to **build them yourself**. This "How-To" **book and disk package** gives you complete step by step instructions and programs needed to build and control these exciting devices and MORE:
 • Light Pen • Light & Motor Controllers • Alarm Systems • Voice Recognition • Environmental Sensors • Data Decoders • More than 150 pages. **Your Atari Comes Alive** **\$24.95**



GIANT WALL SIZED POSTERS.

ALPHA SYSTEMS 1012 SKYLAND DRIVE MACEDONIA, OH 44056 **FREE BONUS:** DELUXE SPACE GAMES (3 games on a disk) Free with any order of 3 or more items. Include \$3.00 s/hp & hldg (US Canada) Ohio res. add 5 1/2% sales tax. Foreign orders add \$8.00 s/hp & hldg. Call or write for free catalog. Customer Service Line (216) 467-5665 M-F 9-3.

Mon - Fri 9 am - 9 pm CST
Sat 11 am - 5 pm

Your ATARI 8-BIT STORE that's as close as YOUR PHONE
Since 1982

Mon - Fri 9 am - 9 pm CST
Sat 11 am - 5 pm

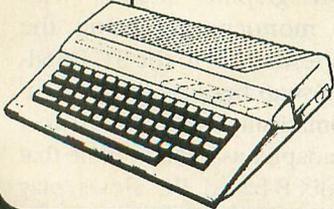
ANT-II-8

800-558-0003

ComputAbility
Consumer Electronics

800-558-0003

130XE COMPUTER
\$149.00



**XF551 DISK DRIVE
DOUBLE DENSITY**

\$179 **NEW**

**80 COLUMN WORD
PROCESSING PACKAGE**
FOR XE/XL COMPUTERS
XEP-80 COLUMN & ATARI WRITER 80
BOTH FOR
\$109 **NEW**

**XDM-121 Letter
Quality Printer**
W Built in Interface
12 CPS-Daisy Wheel
\$199

**AVATEX 1200 HC
MODEM & P. R.
CONNECTION**
With ATARI Modem Cable
\$169

**MISCELLANEOUS
HARDWARE**

PR Connection	62.95
US Doubler	49.95
Animation Station	59.95
Atari XM 301 Modem	CALL
Supra 1150 Interface	CALL
850 Interface	CALL
Graphic AT Interface	39.95
Avatex 1200HC	CALL
Avatex 1200E	CALL
Avatex 2400 HC	CALL

star☆

**NEW NX-1000
PRINTER**
•144 CPS-Draft •30CPS-NLQ
•NLQ In 10 & 12 Ptc
•6 Built-In Fonts
ONLY
\$175

Panasonic

**NEW 1080i - II
PRINTER**
Now at 144 CPS
ONLY

\$169

Panasonic

**NEW 1091i - II
PRINTER**
Now at 192 CPS
ONLY

\$199

star☆

**NEW NX-1000
RAINBOW**
New Low Cost
COLOR Printer
ONLY

\$239

ACCESSORIES

Anti-Glare	
Screen	19.95
Blank Disk	CALL
Disk Notcher	5.95
Dust Covers	CALL
6 Way Surge	
Protector	19.95
Monitor Cable	9.95
Printer Stand	14.95
Swivel/Tilt Monitor	
Stand	19.95
Teakwood Disk	
Holders	19.95
Printer Ribbons	CALL
Modem Cable	14.95
Printer Cable	14.95
1000 Sheet Printer	
Paper	21.95

ELECTRONIC ARTS

NAPOLEAN IN RUSSIA	18.95
Age of Adventure	10.95
Bismark	20.95
Cheesmaster 2000	25.95
Chokomauga	23.95
Mavis Beacon	26.95
Movie Maker	10.95
Musio Construction	10.95
Lords of Conquest	10.95
Pinball Construction	10.95
Ogre	25.95
One on One	10.95
Reading Destruction	10.95
Rommel/Tobruk	28.95
Starfleet 1	33.95
Super Boulder Dash	10.95
7 Cities of Gold	10.95

DATASOFT

Alternate Reality/ City	20.95
Alt Reality/Dungeon	26.95
Bismark	20.95
Video Title Shop	20.95
Video Title Graphic Comp 2	14.95

XLENT SOFTWARE

MegaFont II	18.95
Xlent Word Processor	18.95
Page Designer	18.95
Megafiller	18.95
Picture Disk	14.95
PS Interface	18.95
Rubber Stamp	18.95
Typesetter	21.95

SSI

Battle of Antietam	32.95
Computer Ambush	39.95
Eternal Dagger	25.95
Gettysburg	39.95
Kampfgruppe	39.95
Kampfgruppe Scnerio Disk I	14.95
Mech Brigade	38.95
Penzer Grenadier	25.95
Phantase 1 or 2	26.95
Rebel Charge	32.95
Shiloh	25.95
Sons of Liberty	25.95
USAAF	39.95
Wargame Constr. Set	19.95
War in Russia	52.95
Warship	39.95
Wizard's Crown	25.95

10 Little Robots	18.95
1986 Team Disk For MLB	14.95
1987 Team Disk For MLB	14.95
80's World Series For MLB	14.95
70's World Series For MLB	14.95
Ace of Aces	18.95
All Star Roster Disk	14.95
Apsahl Trilogy	14.95
Aterwriter Plus	39.95
Award Ware	10.95
Blazing Paddles	22.95
Bop'n' Wrestle (64K)	19.95
Boulder Dash Const. Kit	12.95
Champ. Loderunner	19.95
Cycle Knight	16.95
Deeper Dungeons/Gauntlet	17.95
Demon Attack/Pitfall	10.95
Electronic Checkbook	14.95
Electronic Data Manager	14.95
Fleet System 2	39.95
Flight Night	10.95
Flight Simulator 2	33.95
Fraction Action	18.95
Gauntlet (64K)	22.95
General Mgr. MLB	19.95
Guitar Wizard	18.95
Hardball	18.95
Home Planetarium	27.95
Infiltrator	19.95
Jupiter Mission 1999	32.95
Leaderboard DuoPak	10.95
Linkword German	29.95
Linkword Italian	29.95
Linkword Spanish	29.95
Love Note Maker	10.95
Masterype	25.95
Math Blaster	32.95
Micro League Baseball	25.95

MISCELLANEOUS

MLB Boxcore/Stat	14.95
Net Worth	25.95
News Room	31.95
Pitfall	10.95
Pitstop II	10.95
Print Driver Const. Set	16.95
R Time 8 Cart	54.95
Race Car Arithmeto	18.95
Scan Disk #11	17.95
Sparta Dos	29.95
Sparta Tools	22.95
Spy vs Spy 3	12.95
Spell It	32.95
Splnaker	CALL
Splitfire 40	23.95
Splitfire Ace	19.95
Strip Poker	21.95
SuperHuey	16.95
Summer Games	12.95
Synfile	32.95
Temple of Asphal Trilogy	12.95
Triple Pak	14.95
Trailblazer	19.95
Universe	32.95
Video Title Shop	20.95
Video Vegas	20.95
Word Attack	32.95

MICROPROSE

Crusade In Europe	25.95
Conflict In Vietnam	25.95
Desolon In Desert	25.95
F-15 Strike Eagle	22.95
Kennedy	
Approach	16.95
Silent Service	22.95
Top Gunner	18.95

BRODERBUND

AutoDuel (64K)	34.95
Bank Street Writer	32.95
Graphic Lib 1,2, or 3	16.95
Keraleka	19.95
Print Shop	28.95
Print Shop Companion	22.95
Ultima III	25.95
Ultima IV	38.95

OPTIMIZED SYSTEMS

Action	CALL
Basio Xe	CALL
Basio XL	CALL
Mao 65 XL	CALL

ACTIVISION

Cross Country Race	11.95
Hacker	11.95
Musio Studio	22.95
Ghostbusters	11.95

**We Carry Hundreds of
Programs for the
ATARI 400/800/XE/XL
If You Don't See it Here
CALL**

JOYSTICKS

(NOTE: Prices good when with any other purchase)

Wico Super 3-Way	19.95
Unite Joystick	5.95
Starfighter	8.95
Tao 3	10.95
SIRK Stick	7.95
Epyx 500XJ	12.95

Mon-Fri 9am-9pm CST
Sat 11am-5pm



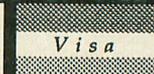
Order Call Toll Free

800-558-0003

Since 1982
ComputAbility
Consumer Electronics

P.O. BOX 17882, MILWAUKEE, WI 53217
ORDER LINES OPEN
Mon.-Fri. 9AM-9PM CST Sat. 11AM-5PM. CST
TELEX NUMBER 9102406440
(ANSERBACK = COMPUT MIL W U)

No surcharge for
MasterCard or Visa



Inquiries, or for Wisc. Orders

414-357-8181

Mon - Fri 9 am - 9 pm CST

Your ST STORE that's as close as YOUR PHONE

Mon - Fri 9 am - 9 pm CST

Sat 11 am - 5 pm

Sat 11 am - 5 pm

ANT - 11 - 88

800-558-0003

Since 1982
ComputAbility
Consumer Electronics

800-558-0003

ST HOST CONTROLLER ADAPTOR CALL FOR PRICES

Table with 2 columns: Product Name (e.g., PANASONIC 10801-II), Price (e.g., 160)

SPECIAL CASIO HT-700 MIDI KEYBOARD \$169.95

Table with 2 columns: Product Name (e.g., STAR MICRONICS NX-1000), Price (e.g., 175)

SUPRA 20 MEG HARD DRIVE SCSII ONLY I/O Port \$569 NEW

INDUS GTS 100 3F-314 Compatible Disk Drive DOUBLE SIDED/1 MEGABYTE STORAGE \$189

SUPRA FD-10 10 Megabyte Removable Only \$829 NEW

Cyber VCR Compatible Sony 8mm Video Equipment Call for the lowest prices

PC Ditto Package Includes PC Ditto ST/PC 5 1/4" Disk Drive \$279

ST MODEM PACKAGE AVATEX 2400 MODEM ST MODEM CABLE FLASH V1.5 TELECOM PACKAGE \$189

We Have What You Need For Your ST

MICHTRON product list including Airball, Airball Construction Kit, Animator, etc.

ST ADVENTURES product list including Alternate Reality, Aphel Trilogy, Autoduel, etc.

ST EDUCATIONAL product list including 1st Letters and Words, AB - Zoo, Adv. of Binbad, etc.

ANTIC product list including 3D Break-Thru, 3D Developer's Disk, 3D Fort Package 1 or 2, etc.

ST ARCADE product list including '96 Team K For MLB, 3-D Hoopster, Academy, etc.

ST ARCADE product list including Outrun, Paper Boy, PinBall Wizard, etc.

ST PRINT UTILITIES Art Gallery 1, 2, or 3, Award Maker, Certificate Maker, etc.

ST DATABASES Data Manager 8T, DB Man 4.0, Regent Base 1.1, etc.

EPYX Art & Film Director, Battle Ship, Boulder Dash Kit, etc.

ST GRAPHICS 1st Cadd, 3-D Graphics, Advanced Art Studio, etc.

ST UTILITIES Back Pak, Desk Cart, Electro Calendar, etc.

ST ACCESSORIES Anti-Glare Screen, Drive Master, Dustcovers, etc.

ST TELECOMM 220 8T, OMI 888 8T, BBS Express, etc.

MUSIC Acap, CZ Android, CZ Patch, etc.

ST LANGUAGES Laser C, LDW Basic 2.0, Mark Williams C, etc.

DISKETTES 3.5" 88/DD (10PK), 3.5" 88/DD (10PK), etc.

ST WORD PROC. 1st Word-Plus, Fontz, Microsoft Write, etc.

ABACUS Abacus Books, Assembler, Becker Text, etc.

DESK TOP PUB. Desk Top Publisher, Partner Fonts 1 or 2, etc.

TAITO Albon, Arkanoid, Bubble Bauble, etc.

ST LANGUAGES Laser C, LDW Basic 2.0, Mark Williams C, etc.

ST UTILITIES Back Pak, Desk Cart, Electro Calendar, etc.

ST ACCESSORIES Anti-Glare Screen, Drive Master, Dustcovers, etc.

ABACUS Abacus Books, Assembler, Becker Text, etc.

TAITO Albon, Arkanoid, Bubble Bauble, etc.

ST LANGUAGES Laser C, LDW Basic 2.0, Mark Williams C, etc.

ST UTILITIES Back Pak, Desk Cart, Electro Calendar, etc.

ST ACCESSORIES Anti-Glare Screen, Drive Master, Dustcovers, etc.

ABACUS Abacus Books, Assembler, Becker Text, etc.

ST UTILITIES Back Pak, Desk Cart, Electro Calendar, etc.

No surcharge for MasterCard To Order Call Free 800-558-0003

MasterCard P.O. BOX 17882, MILWAUKEE, WI 53217 ORDER LINES OPEN Mon-Fri 9am-9pm CST Sat 11am-5pm

Since 1982 ComputAbility Consumer Electronics

VISA No surcharge for Visa Telex Number 9102406440 (ANSERBACK - COMPUT MILW WI)

For Technical Info, Order Inquiries, or for Misc. Orders 414-357-8181

ORDERING INFORMATION: Please specify system. For fast delivery send cashier's check or money order. Personal and company checks allow 14 business days to clear. School P.O.'s welcome. C.O.D. charges are \$3.00. In Continental U.S.A. include \$3.00 for software orders and 15% shipping for hardware minimum \$5.00. MasterCard and Visa orders please include card #, expiration date and signature. WI residents please include 5% sales tax. HI, AK, FPO, APO, Puerto Rico and Canadian orders, please add 6% shipping, minimum \$6.00. All other foreign orders add 18% shipping, minimum \$18.00. All order shipped outside the Continental U.S.A. are shipped first class insured U.S. mail. If foreign shipping charges exceed the minimum amount, you will be charged the additional amount to get your package to you quickly and safely. All goods are new and include factory warranty. Due to our low prices all sales are final. All defective returns must have a return authorization number. Please call (414)357-8181 to obtain an RA# or your return will not be accepted. Prices and availability subject to change without notice.

ST NEW PRODUCTS

By GREGG PEARLMAN, *Antic Assistant Editor*

FIVE FROM TAITO

Operation Wolf is a commando-style attack adventure from Taito Software, the people who brought you Space Invaders back in those primordial ooze days of the late 1970s. Operation Wolf features arcade graphics, copious sound effects and multiple levels of play—as do all of Taito's new games.

Renegade pits you against tough street thugs as you strut around the dangerous part of town. Your only weapons are your wits and your karate know-how as you decimate gangs of punks, whacking them into submission and leaving them twitching on the ground, pleading for mercy (which you won't show them).

Fire pits, flaming swords and underground realms abound in **Rastan**. In this magical land of excitement and power, you can live the death-defying life of a mythical warrior with mythical powers. In **Alcon**, the action is on a much larger scale—an interplanetary war. You'll be firing lasers or homing missiles and dropping bombs as you battle against deadly aliens.

Bubble Bobble is somewhat less violent than the rest of the Taito line. Here, Bub and Bob are on the run from Evil Beasts in this 100-screen entry based on the chuckle-inducing arcade game.

\$39.95 each, color. Taito Software Inc., 267 West Esplanade, North Vancouver, BC, Canada V7M1A5. (604) 984-3344.

DIVE BOMBER

It's 1941. The German battleship Bismarck has just sunk Britain's HMS Hood, killing 1,400. The British Admiralty has rushed its best torpedo bomber pilots to the carrier Ark Royal in the Atlantic. Their mission—destroy the Bismarck.

As a World War II flying ace, keep on the lookout for German U-Boats and E-Boats as well as fighter planes as you head towards the Bismarck. You'll be flying blind—there are no landmarks. You may eventually need to choose between rescuing your home carrier from attack, or destroying your target.

\$49.95, color. Epyx (U.S. Gold), 600 Galveston Drive, P.O. Box 8020, Redwood City, CA 94063. (415) 366-0606.

WARSHIP

Warship is a World War II tactical war-game set in the Pacific theater. This SSI game features the Pensacola, Exeter, Kirishima and just about every other warship that fought in the Pacific from 1941 to 1945. You can choose from 79 classes of warships or modify ship data to create your own battleships. Four scenarios are included—three historical and one hypothetical—but you also can create your own maps and scenarios. Your ST keeps track of every hit and calculates damage based on factors such as armor strength and hit location. Flooding, fire and other damage are also major factors.

\$59.95, color. Strategic Simulations Inc., distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. (800) 245-8525; in California, (800) 245-4525.

POSITRONIC TRIO

GradePlus gives teachers a complete, easy-to-use, productive gradebook system for \$25 dollars. **Test Maker**, also \$25, lets you create and save tests that you've designed and formatted.

On the technical side, the **SeaChest** Library (\$14.97) is a complete C language library for beginners and experts alike.

Positronic Software, distributed by Megabyte Computers, 109 W. Bay Area, Webster, TX 77598. (800) 255-5786.

DATA EAST TRIO

Here are more arrivals from Data East, the people who brought you Platoon and Speed Buggy:

You'll pilot your jet fighter to battle against enemies based on land, sea and in the air as you soar into the third dimension in **Lock-On**. In **Ikari Warriors**, you and a partner engage in guerilla warfare in jungles, rivers and ruins. And finally, **Karnov**, the fire-breathing Russian, must fight his way past a plethora of strange monsters as he seeks the lost treasure of Babylon.

\$39.95 each, color monitor required. Data East USA Inc., 470 Needles Drive, San Jose, CA 95112. (408) 286-7074.

THUNDER MASTER

The world is on the brink of disaster. War and conflict devastate humanity and you must restore order before the Earth is destroyed by a full-scale nuclear war. Toward that end, you've been trained to operate the ultimate fighting machine—the **Thunder Master** death car.

Test your skills in three levels of six conflicts ranging from guerillas to global war. The Thunder Master is equipped with a V-16 triple-turbo engine and tetra-nuclear propulsion missiles. A second player can activate the Thunder Cloud magnetic levitation unit and provide sandwiches.

\$39.95. Titus, 20432 Corsico Street, Chatsworth, CA 91311. (818) 709-3693.

THIS IS RED FOUR

An Atari coin-op hit has returned to its roots. In Broderbund's **Star Wars** (\$39.95), you'll take the part of Luke Skywalker as you pilot an X-Wing fighter through the trench in your quest to destroy the Empire's Death Star.

In **Downhill Challenge** (\$29.95), a 3-D interactive ski racing simulation, you'll choose from downhill, slalom, giant slalom and jumping events, each of which has separate runs for beginners, intermediate and advanced skiers.

Color. Broderbund Software, 17 Paul Drive, San Rafael 94903-2101. (415) 392-3200.

NOT A PENNY MORE

Adapted from Jeffrey Archer's bestselling book, **Not a Penny More, Not a Penny Less** is now an interactive text software adventure in which you, Stephen Bradley, lead a team attempting to recover \$1 million from a swindler. You'll breeze through Monte Carlo, London, Ascot, Wimbledon and Oxford as you track down the loot.

\$39.95, color. Simon and Schuster, Western Plaza, New York, NY 10023. (212) 373-8882.

New ST product notices are compiled from information provided by the products' manufacturers. Antic assumes no responsibility for the accuracy of these notices or the performance of the product.

DISK BONUS

Teddy Bear Math

Bouncing Bruin Teaches Addition

By Stephen Everman & Paul Pratt

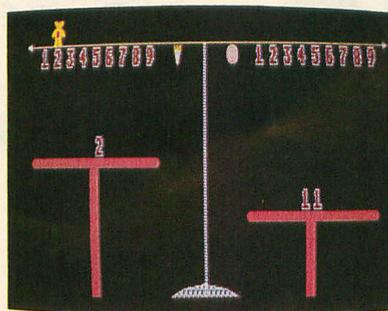
A cute, bouncy Teddy Bear does a fine job of teaching younger children how to add, in this month's special ST Disk Bonus. Teddy Bear Math was written in GFA BASIC and runs in medium resolution only, requiring a color monitor.

Teddy Bear Math is the *fifth* Pratt and Everman ST game published in this magazine just since March 1988. It showcases the prolific team's smooth, colorful, professional-quality game creation. When the flashy title screen gives way to the main playing screen, you'll see two scales—each scale "weighing" a number. Two sets of numbers from 0 to 9 are at the top of the screen, a complete set above each scale.

With a joystick or the [ARROW] keys, move Teddy until he's standing over a number. Then push the stick down (backwards), or press the [DOWN-ARROW] key. Teddy will jump up and down on your chosen number until he dislodges it for a graceful descent onto the scale.

If the sum of the numbers on both scales are equal, then the scales balance and Teddy will leap for joy. If not, then you'll have to try again. And if there's too much of a difference between the scales, you'll "tilt."

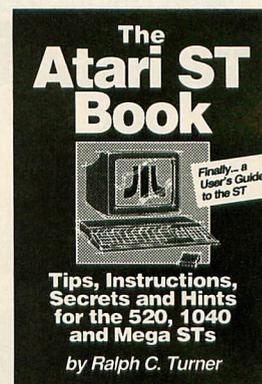
The object of Teddy Bear Math



is to come up with the right answer in as few moves as possible. The program calculates how many numbers are required for balancing the scales in the fewest additional turns. When the child gets the right answer, game difficulty is automatically increased. After a wrong answer, the game automatically picks easier numbers. That's how Teddy Bear Math continually stays within the difficulty range of each individual child.

There are *two* versions of this ST bonus on the Antic Monthly Disk. You can use TEDMATH.PRG even if you don't own the GFA BASIC programming language. Or for the original GFA BASIC source code, run TEDMATH.BAS. For instructions on how to transfer Teddy Bear Math to an ST disk, read the Linkline HELP file on Side B of the Antic Monthly Disk. Select main menu choice 5 to get to the HELP menu. ▲

ST ATARI BOOK



Reviewed By GREGG PEARLMAN

Ralph Turner's **Atari ST Book** isn't just a rehash of the ST owner's manual. It's an informative, understandable, often interesting collection of "tips, instructions, secrets and hints for the 520, 1040 and Mega STs." Best of all, it's mostly for the *user*, not the programmer—although the programmer might learn a thing or two as well.

The 159-page book appears to have been desktop-published, and in some places the proofreaders didn't do their job. But for the most part, *The Atari ST Book* is useful, although the \$16.95 price might rub you the wrong way.

The 17 chapters cover subjects including RAMdisks, file management, the DESKTOP.INF file and the control panel, cold and warm boots, public domain software, word processors and chess. Someone new to the ST world could find this book invaluable, and it wouldn't hurt an expert user to keep a copy lying around. ▲

\$16.95. Index Legalis, P.O. Box 1822-7, Fairfield, IA 52556. (515) 472-2293.

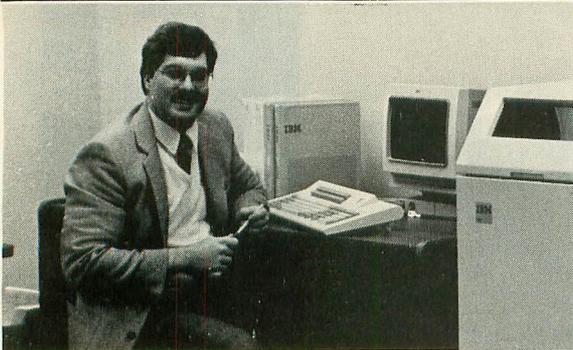


Since 1981

Lyco Computer Marketing & Consultants

Air orders processed within 24 hours.

Lyco Means Total Service.



Mark "Mac" Bowser, Sales Manager

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

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

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

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

Lyco Computer stocks a multimillion dollar inventory of factory-fresh merchandise. Chances are we have exactly what you want right in our warehouse. And that means you'll get it fast. In fact, orders are normally shipped within 24 hours. Free shipping on prepaid orders over \$50, and there is no deposit required on C.O.D. orders. Air freight or UPS Blue/Red Label shipping is available, too. And all products carry the full manufacturers' warranties.

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

TO ORDER, CALL TOLL-FREE: 1-800-233-8760
New PA Wats: 1-800-233-8760

Outside Continental US Call: 1-717-494-1030

Hours: 9AM to 8PM, Mon. - Thurs.
9AM to 6PM, Friday — 10AM to 6PM, Saturday

For Customer Service, call 1-717-494-1670,
9AM to 5PM, Mon. - Fri.

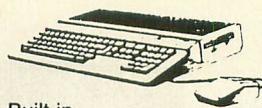
Or write: Lyco Computer, Inc.

P.O. Box 5088, Jersey Shore, PA 17740



PLEASE NOTE: • full manufacturers' warranties • no sales tax outside PA • prices show 4% cash discount; add 4% for credit cards • APO, FPO, international: add \$5 plus 3% for priority • 4-week clearance on personal checks • we check for credit card theft • sorry, compatibility not guaranteed • return authorization required • due to new product guarantee, return restrictions apply • price/availability subject to change • prepaid orders under \$50 in Continental US, add \$3.00

ATARI® 520 ST-FM Computer



- Built-in Drive
- ☆ Limited Quantity

ONLY \$459⁹⁵

ATARI® 520 ST-FM Color System

Internal drive included

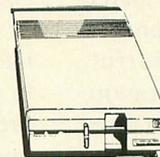


\$749⁹⁵

INDUS

GTS-100

- Atari ST Drive
- 3.5" DSDD



\$195⁹⁵

ATARI® 130 XE System

System Includes:

- 130 XE Computer
- 551 Drive



\$299⁹⁵

Call For More ATARI Hardware Information.

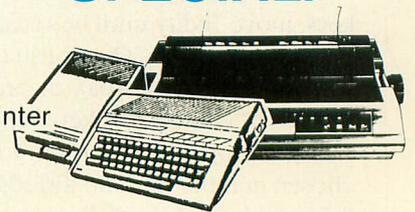
BACK TO SCHOOL SPECIAL!

ATARI®

System Includes:

- 130 XE Computer
- 551 Drive
- Seikosha SP-180AI Printer

ONLY \$459⁹⁵



HEADSTART COLOR SYSTEM

- plug in and use immediately
- IBM-XT compatible
- 2-360K Drives
- Free 1-year limited warranty



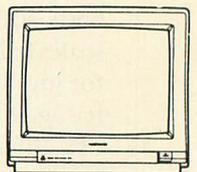
\$989⁹⁵

• Hi Res color monitor included!

MAGNAVOX

CM-8502

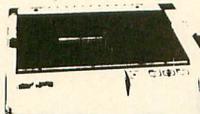
- Composite Color
- Green Text Switch
- Speaker



• Suggested Use 130 XE

\$179⁹⁵

1-800-233-8760



NX-1000

- 144 cps Draft
- 36 cps NLQ
- EZ Font Panel Control

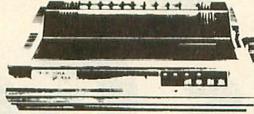
\$165^{95*}

w/cable purchase

NX-1000 Rainbow Color Printer \$225.95

SEIKOSHA

SP-180AI



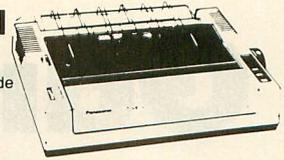
- 100 cps Draft
- 20 cps NLQ
- Std, Par, and IBM Graphics Compatible

\$125⁹⁵

Quantities Limited

Panasonic
Office Automation **OA**

1080i Model II



- 150 cps Draft Mode
- NLQ Mode
- Friction & Tractor Feed

\$159⁹⁵

(2-Year Warranty)

PRINTERS



NX-1000	.....	\$165.95*
NX-1000 Color	.....	\$225.95
NX-15	.....	\$289.95
NR-10	.....	\$319.95
NR-15	.....	\$419.95
NB-15 24 Pin	.....	\$669.95
NX-2400	.....	\$309.95
NB24-10 24 Pin	.....	\$399.95
NB24-15 24 Pin	.....	\$545.95
Laser 8	.....	\$1759.95
ND-15	.....	\$349.95
NL-10	.....	\$149.95

**w/cable purchase*

Toshiba

321SL	.....	\$489.95
341 SL	.....	\$659.95
P351 Model II	.....	\$899.95
351 SX 400 cps	.....	\$979.95

SEIKOSHA

SP 180Ai	.....	\$125.95*
SP 1200Ai	.....	\$159.95
SP 1200AS RS232	...	\$159.95
SL 80Ai	.....	\$329.95
MP5420FA	.....	\$999.95
SP Series Ribbon	.....	\$7.95
SK3000 Ai	.....	\$349.95
SK3005 Ai	.....	\$445.95
SPB 10	.....	\$CALL
SL 130Ai	.....	\$599.95

** Quantities Limited*

BROTHER

M1109	.....	\$159.95
M1509	.....	\$335.95
M1709	.....	\$439.95
Twinwriter 6 Dot &		
Daisy	.....	\$899.95
M1724L	.....	\$619.95
HR20	.....	\$345.95
HR40	.....	\$559.95
HR60	.....	\$649.95

EPSON

LX800	.....	\$184.95
FX86E	.....	\$329.95
FX286E	.....	\$424.95
EX800	.....	\$399.95
LQ500	.....	\$339.95
LQ2500	.....	\$789.95
GQ3500	.....	\$LOW
LQ850	.....	\$525.95
LQ1050	.....	\$699.95



Attention Educational Institutions:

If you are not currently using our educational service program, please call our representatives for details.

Panasonic
Office Automation **OA**

1080i Model II	.....	\$159.95
1091i Model II	.....	\$189.95
1092i	.....	\$299.95
LQ500	.....	\$375.95
1595	.....	\$419.95
3131	.....	\$289.95
3151	.....	\$459.95
KXP 4450 Laser	.....	\$1649.95
1524 24 Pin	.....	\$529.95

CITIZEN

120 D	.....	\$149.95
180 D	.....	\$169.95
MSP-10	.....	\$259.95
MSP-40	.....	\$289.95
MSP-15E	.....	\$335.95
MSP-50	.....	\$399.95

OKIDATA
AN OKI AMERICA COMPANY

Okimate 20	.....	\$129.95
Okimate 20 w/cart	.....	\$189.95
180	.....	\$219.95
182	.....	\$209.95
182+	.....	\$225.95
183	.....	\$239.95
292 w/interface	.....	\$449.95
293 w/interface	.....	\$585.95
294 w/interface	.....	\$819.95
393	.....	\$955.95
Lazer 6	.....	\$CALL
390	.....	\$479.95
391	.....	\$649.95
320	.....	\$345.95
321	.....	\$445.95

Interfacing available for IBM C 64, Apple and Atari

ATARI

Access:

Triple Pack	.....	\$11.95
Leader Board Pack	.....	\$9.99

Activision:

Music Studio	.....	\$19.95
Solid Gold Vol. #1	.....	\$10.95

Batteries Included:

Paperclip 80 Col	\$31.95
------------------	-------	---------

Broderbund:

Print Shop	.....	\$25.95
Print Shop Compan.	.....	\$22.95
Graphic Lib. I, II, III	.....	\$13.95
Bank St. Writer	.....	\$27.95

Electronic Arts:

Pinball Con Set	.....	\$8.95
Lords of Conquest	.....	\$8.95
Starfleet I	.....	\$32.95
Chess Master 2000	.....	\$25.95
Music Con Set	.....	\$8.95
Super Boulderdash	.....	\$8.95
One on One	.....	\$8.95

Microleague:

Microleag. Baseball	.....	\$22.95
General Manager	.....	\$16.95
Stat Disk	.....	\$13.95
'87 Team Disk	.....	\$13.95

Microprose:

Conflict in Vietnam	.....	\$22.95
F-15 Strike Eagle	.....	\$19.95
Kennedy Approach	.....	\$13.95

ATARI ST

Access:

Leader Board	.....	\$22.95
Tournament #1	.....	\$11.95
10th Frame	.....	\$22.95

Activision:

Champion. Baseball	.....	\$22.95
GFL Football	.....	\$22.95
Music Studio	.....	\$27.95
GBA Basketball	.....	\$22.95
Beyond Zork	.....	\$28.95
Zork Trilogy	.....	\$27.95

Broderbund:

Superbike Challenge	\$11.95
---------------------	-------	---------

Electronic Arts:

Arctic Fox	.....	\$25.95
Starfleet I	.....	\$32.95
Chess Master 2000	.....	\$25.95
Gridiron	.....	\$32.95
Marble Madness	.....	\$23.95

Epyx:

Sub Battle Simulator	.....	\$22.95
World Games	.....	\$22.95
Wrestling	.....	\$11.95
Winter Games	.....	\$11.95

Firebird:

Pawn	.....	\$13.95
Starglider	.....	\$25.95
Golden Path	.....	\$11.95
Guild of Thieves	.....	\$25.95
Tracker	.....	\$11.95

ATARI ST

Microleague:

Microleague Baseball	.....	\$33.95
General Manager	.....	\$16.95
Wrestling	.....	\$25.95

Microprose:

Silent Service	.....	\$22.95
F-15 Strike Eagle	.....	\$24.95
Gunship	.....	\$28.95

Strategic Simulations:

Phantasie	.....	\$22.95
Phantasie II	.....	\$22.95
Wargame Con. Set	.....	\$19.95
Phantasie III	.....	\$22.95

Sublogic:

Flight Simulator II	.....	\$30.95
Scenery Disk	.....	\$14.95

Timeworks:

Wordwriter ST	.....	\$44.95
Partner ST	.....	\$27.95
Data Manager ST	.....	\$44.95

Unison World:

Art Gallery 1 or 2	.....	\$14.95
Print Master	.....	\$19.95
Fonts & Borders	.....	\$17.95
Art Gallery Fantasy	.....	\$13.95

We stock over 3,000 software titles!

Monitors

Magnavox:

BM7652	.....	\$79.95
BM7622	.....	\$79.95
7BM-613	.....	\$79.95
7BM-623	.....	\$79.95
CM8502	.....	\$179.95
CM8505	.....	\$199.95
9CM-053	.....	\$CALL
CM8762	.....	\$245.95
8CM-515	.....	\$259.95
CM9043	.....	\$CALL
8CM-873	.....	\$499.95

Joysticks

Winner 909	.....	\$24.95
Wico IBM/AP	.....	\$29.95
Lipstick Plus	.....	\$14.95
Kraft KC III Ap/PC	.....	\$16.95
Kraft PC Joystick Card	.....	\$27.95
Kraft Maze Master	.....	\$8.95
I Controller	.....	\$13.95
Epyx 500 XJ	.....	\$13.95
Slik Stick	.....	\$6.95
Black Max	.....	\$10.95
Boss	.....	\$11.99
3-Way	.....	\$19.99
Bathandle	.....	\$16.75

Modems

Avatex:

1200e	.....	\$65.95
1200i PC Card	.....	\$65.95
1200p	.....	\$89.95
1200hc Modem	.....	\$79.95*
2400	.....	\$149.95
2400i PC Card	.....	\$139.95

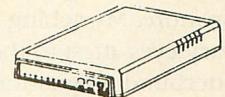
**w/cable purchase*

Hayes:

Smartmodem 300	.....	\$139.95
Smartmodem 1200	.....	\$279.95
Smartmodem 2400	.....	\$419.95

Avatex™

1200E



\$65⁹⁵

Join the thousands who shop Lyco and Save

ST Games Gallery

Typhoon Thompson, Bubble Ghost, Speed Buggy, and more.



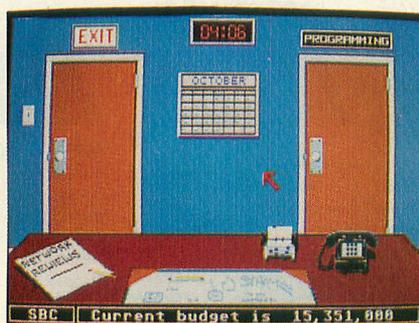
Typhoon Thompson



Bubble Ghost



Road Runner



Prime Time

TYPHOON THOMPSON

Occasionally, a game comes along that has it all—graphics, animation, sound, playability and that certain addictiveness that keeps you coming back for more. My aching shoulders and bleary eyes attest to the fact that the Broderbund programmers famed for *Choplifter* have done their job well, with the new **Typhoon Thompson**.

It had seemed that Broderbund

wasn't going to enter the ST market, which made me sad. But if **Typhoon Thompson** is a sample of what to expect from this publisher, then I'll say, "Take all the time you need, Broderbund." It's that good.

Here's the story: a spacecraft has been lost in the far reaches of the galaxy. At first, it was thought that all aboard were lost, but a faint signal indicates that an infant survived the crash. Several rescue teams headed for

the planet where the ship crashed. But they were never heard from again. Thus, it has fallen on your shoulders to rescue the infant, known as the "sea child" because it is being imprisoned by sea sprites on a planet which is virtually all ocean.

As the game begins, your alter ego, Typhoon Thompson, is literally "dropped off" near the crash site. This opening sequence should not be missed—it gives a taste of what's to come. To get around on the watery planet, Typhoon uses a sled that looks like a tire with rocket engines. The left mouse button activates the weapons, while the right button increases the sled's speed by firing the jets.

The sled can even submerge to avoid enemies. Some weapons require both buttons, but learning to fly the sled is not difficult. Typhoon isn't armed, but after he meets the friendly spirits of the planet, they give him a laser cannon. After each level, the spirits provide more powerful weapons, which will be needed as the action intensifies.

The spirits need four Earthly relics before they'll free the baby. At the beginning of each level, you'll be told which object to retrieve. Then you use your direction finder to locate the sea sprite village. Each village consists of a central cylinder surrounded by small islands, each of which houses several sprites—and warlike sprites they are, too. As you approach the islands, the

sprites sally forth to do battle. They are equipped with awesome weapons, including a variety of ships which will attempt to shoot you down.

There are two ways to lose this game. First, you can run out of lives. Many enemy ships have weapons that will vaporize poor Typhoon. The most horrible is probably the bubbles, which envelop him, let him struggle for a while, when dissolve him.

The other way is to run out of sleds. Some enemy ships will puncture or suck up the sled, dumping poor Typhoon in the water. He must then swim back to the spirits to get another sled—if there are any more. Making it even tougher to survive are some particularly diabolical enemies which emanate force fields, making it very hard to control the sled.

When battling the sea sprites, your objective is to shoot down the ships. This dumps the stunned sea sprites in the water, where you can swoop down and pick them up. Wait too long, and the sprite recovers and starts swimming away like a hyperactive seal—the graphics effects must be seen to be believed.

You can't grab a sprite when it's swimming. You must either give up or stun it again with your laser cannon. If the sprite makes it back to the island, it's safe, and will soon return in another ship. In the upper levels, it gets far more difficult to retrieve the sprites because you'll be attacked from all sides. Careful strategy then comes into play, as there are ways to limit the number of sprite ships that pursue you.

Once you capture all the sprites in a village, the distraught sprite king will appear, and you can trade his captured subjects for the object you require. Then you return to the spirits to get more powerful weapons, such as flash bombs, sprite magnets and freeze bombs, before moving on to the next level.

There is so much I like about this game. The graphics are incredible,

with the smallest detail painstakingly rendered. From the multiple opening sequences to the horror on the sprite king's face when Typhoon holds up the wiggling bag of his subjects—the king's eyes actually bug out—this game is a graphic marvel. Of course, great graphics don't make a game, but they sure help.

Typhoon Thompson is among the most playable games I ever encountered. By the fourth game, I could survive for 20 to 30 minutes and achieve good scores. This is encouraging and

Typhoon Thompson is among the most playable games I ever encountered.

keeps you coming back for more. I wish there was a "Save Game" feature, because a good game can last quite a while. High scores are saved to disk, although you can remove the scores from disk if you want. Finally, you can *win* this game. I haven't done it yet, but I've come very close, and probably by the time you read this, I will have managed it, because I am not giving up.

Lastly, to any pirates out there, this game is *good*. It is certainly worth buying. It's also the first major ST game effort by Broderbund and if you steal it, it may well be their last. Don't spoil things for the rest of the ST community by being a jerk and putting this game on your pirate board.—
DAVID PLOTKIN

\$34.95, color. Broderbund Software, 17 Paul Drive, San Rafael, CA 94903. (415) 492-3500.

BUBBLE GHOST

Bubble Ghost is an amusing and addictive strategy/arcade game featuring excellent graphics and sound, along with an admirably original and non-violent storyline. This French import is a delight to play because it's so full of surprises. You control a ghost who is doomed to wander the halls of a 35-room mansion forever—unless he can successfully move a bubble through all the rooms. Each room is loaded with obstacles and some very tight passages. The bubble pops if it touches anything, and the ghost gets *angry*—one of the better effects in the game.

The ghost can be rotated clockwise with the left mouse button and counter-clockwise with the right button. To move the bubble, you press the [SHIFT] key to make the ghost blow on it. The closer your ghost is to the bubble, the harder he blows the bubble. Also, the direction in which the ghost is facing affects the direction the bubble will be blown. Duration of the airflow is also important.

You begin with five bubbles, periodically gaining extra bubbles for various successes along the way. The obstacles include candles, needles, knives and scissors, as well as some unidentifiable (but still deadly) bubble-poppers. It takes ingenuity and critical timing to get the bubble past obstacles, and even seasoned arcade gamers will be challenged by this little gem. Each room has a timer, and you get bonus points for getting through the room before time runs out.

The hidden surprises in each room can be quite useful in your ghost's quest for eternal peace. One example is a candle, which pops the bubble whenever it passes overhead. Not surprisingly, your ghost can blow out the candle.

The graphics are quite good, and the bubble itself is excellent. It shows highlights from the light and "wob-
bles" through the air just like a real

bubble. The sounds of the breath and of a popping bubble (which you will hear all too often) are also realistic.

I highly recommend *Bubble Ghost*. It's imaginative and fun, sometimes letting you compensate for faulty strategy with fast reflexes. But if you're careful and think it through, you can negotiate the rooms of the mansion with your bubble successfully—without once needing the reflexes of a teenager. —DAVID PLOTKIN

\$34.95, color. Accolade, 550 S. Winchester Boulevard, Suite 200, San Jose, CA 95128. (408) 296-8400.

ROAD RUNNER

The main difference between the Road Runner cartoons and Mindscape's unusually fun **Road Runner** game is that in the cartoons, Wile E. Coyote never eats the Road Runner—only the big one. Though the game format doesn't break any new ground, Road Runner is a graphic masterpiece. For example, as in the cartoons, when Wile E. Coyote falls from a high place you can almost hear him sigh as he accepts the fact that it's going to be a long, unpleasant ride down. The little "HELP" sign really adds to his futility.

Perhaps unwisely, Mindscape decided to have the player control the Road Runner. You must dodge Wile E. while inducing him to blow himself up with his arsenal of Acme toys, fall from a plateau, or somehow run in front of a truck or boulder. Along the way, you must grab all the birdseed you find and in the higher levels, every glass of lemonade. There are mines and other perils to avoid—and even without these hazards, the game would be difficult enough because the roads veer crazily and you can see only a small section at a time.

For the most part, you just have to move the stick—in all directions at once, it seems—and press the trigger to jump. Oddly, the Road Runner

never says, "Meep meep." Mindscape should have digitized that sound effect and at least played it at the title screen. The documentation is extremely scanty, but all you really need to know is, "If he catches you, you're through." Road Runner has four basic screens, featuring colorful, multi-level scrolling backgrounds full of the kinds of things you'd expect. Starting at level 5, the scene returns to the level 1 screen, but with more hazards. The action is accompanied by the kind of fast classical music you'd expect in Road Runner cartoons.

One strange thing is that when the coyote catches the Road Runner, he drags him back past the right edge of

In
the cartoons,
the coyote
never wins; in
the game,
he never
loses.

the screen. So if you're careless, you could wind up further back than your last starting point. However, the game doesn't drag you all the way back to the beginning after you run out of lives. If you got past level 1 and if you manage to reach the Short Cut tunnel in the first screen after restarting (it's pretty easy), you'll pick up where you left off.

Each level has two or more sets of hazards. One tough hazard is the cannons in level 3. After you get hit by a cannonball (and you will, you will), sometimes Wile E. Coyote will deposit you directly in front of a cannon which fires as soon as you

move—and your charred carcass will be carried further back. Also, you can still be hit even when the cannonballs seem to miss you by miles.

The battered wooden bridge is also lots of trouble. You can't really tell where you are, so seemingly logical moves tend to send you plummeting.

Is there a joystick made that can stand up to the lightning-fast stick movements required continuously in Road Runner? In reviewing this game I destroyed at least two joysticks. And due to my habit of maintaining a death-grip on the stick, I acquired unbelievable cramps in my hands and arms that lasted for days.

As Warner Bros. cartoon fans know, the coyote never wins. In the computer game he never loses. Wouldn't it make more sense to have the player take on the role of Wile E. Coyote, with all the built-in frustrations blocking the ultimate goal of catching the Road Runner? Put some weapons at his disposal. Perhaps have a mail-order screen before each level so he can send away for the latest weaponry from Acme. Throw in birdseed for Road Runner bait. Maybe there should be a Road Runner II.

If you can get past joystick-related hand cramps and occasionally deceiving graphics, Road Runner should keep you entertained for hours on end. It's just about the most challenging chase game you'll ever see.—GREGG PEARLMAN

\$49.95, color. Mindscape Inc., 3444 Dundee Road, Northbrook, IL 60062. (800) 221-9884; in Illinois, (312) 480-7667.

INTERNATIONAL SOCCER

Soccer fans everywhere should enjoy **International Soccer**, especially its stunning, fluid animation. If the players were choppy and halting in their movements, it would take away from the realistic beauty of the sport.

With this joystick-driven game you can play against a human foe or the computer. You can also choose from

about 100 colors for either team's uniforms. But make sure you can tell the two teams apart, because the program has no built-in safeguards for this.

You can also set the length of the game; wet, dry, or windy weather conditions, day or night. Probably the most difficult part in the first options screen is deciding on the formation. Experimentation is the only answer for players not too familiar with soccer. But otherwise, you'll have no trouble enjoying a good game of soccer, though it's unlikely you'll beat the computer the first time out.

Before the game starts, use the number keys [1]-[9] to set the difficulty of the computer opponent. The program controls the game, acting as a referee to set up throw-ins, corner kicks and goal kicks when needed.

Push the joystick button to kick the ball. How long the button is depressed determines whether the result will be a pass, chip or long shot—for which the joystick must be centered. If the stick is off-center, the player will attempt a tackle of an opponent that has the ball.

You control only one player with the stick and the computer runs the rest of the team. When the player you're controlling doesn't have the ball, you can control a different player by just pressing the joystick button. When the goalie comes into view, you can activate him by pushing the stick toward the goal and then either left or right, depending on the direction in which you want him to dive.

Now to the game's problems. First, the documentation is sparse, ambiguous and devoid of helpful illustrations. Second, there's incessant music and while I could choose which of four songs to play, I couldn't find a way to turn the music off completely. You also need \$10 to buy a backup of this copy-protected disk. Because of the size of the players and the fact that the screen scrolls side-to-side, but not top-to-bottom, this game feels more like Major Indoor Soccer League soccer than the out-

door international variety. There is no feel of the true width of a soccer field.—RICK TEVERBAUGH

\$39.95, color. Microdeal (MichTron), 576 S. Telegraph, Pontiac, MI 48053. (313) 334-8729.

GOLDRUNNER II

Scrolling arcade shoot-em-ups are among the oldest forms of computer entertainment software. There are only two things that can make a new entry stand out from the crowd and **Goldrunner II** has them both.

One factor is flawless execution. After playing this game for several hours

**Enemy
fire won't
destroy you;
it sends you off
in a different
direction—
fast.**

for review purposes (Try telling *that* to my wife when the hedges need trimming), I really can't find fault with the play interface. The graphics are outstanding, and the music lends a certain atmosphere to the game without driving everybody up the wall.

Your goal is to pilot a ship, single-handedly destroy enemy vessels, and recover your captured robot ships. There are many different kinds of enemy ships and this is where the game's solid graphics are especially valuable. At a glance you can tell the differences in the vessels. Sometimes the distinction is made through colors, sometimes by shape and de-

sign. One rescue craft is a certain color when empty, but a different color when carrying a robot ship. Shooting it down when empty is almost useless. But shooting it when it's carrying a robot and then capturing the robot before it falls to the ground is really what the game is about.

The second factor in making a standout scrolling arcade game is giving it a twist. Here, the twist is that enemy fire doesn't destroy your ship. Rather, it sends your vessel off in a different direction—at high speed.

You lose ships by crashing into structures too high to fly over. These structures can be identified with the Local Area Scanner, which also serves to locate enemy ships. Other onscreen displays include the number of ships left, the number of robots on board (dump those off in the landing area at each opportunity), the score for the current platform and the overall score for each platform completed.

The only problem with this entire package is something that Microdeal's documentation isn't worth the paper it's printed on. The manual has only 14 pages and one illustration. It's vague and poorly laid out. There's a nice on-disk demo display of the alien ships, their value and when they should be shot down. But that doesn't help if you need a quick reference in the heat of battle. There's a tutorial key that provides vocal tips throughout the beginning levels. It's almost as if the programmers knew the documentation would be worthless when they put the game together.

The game can be played with joystick, mouse or keyboard, though I found the joystick to be the most natural choice. The function keys can be used to turn on or off the tutorial messages and music, and they simplify the game somewhat.

Goldrunner II is a worthwhile addition to the library of any gamer who yearns for something different for his arcade tastes. If you can survive all the screens that come with the original game, you can buy two additional

scenery disks for \$12.95 that are even more stunning than the originals.—
RICK TEVERBAUGH

\$39.95, color. Microdeal (Michtron), 576 S. Telegraph, Pontiac, MI 48053. (313) 334-8729.

PRIME TIME

Prime Time is a good concept—you're a network programmer trying to schedule a season's worth of inane television programs like "Wheel of Torture." The season lasts from September through July (barring writers' strikes), in this one-player to three-player game. Keeping your job depends on your network's ratings and, more importantly, the amount of money you rake in—each ratings point represents huge sums of money.

Each prospective show has a genre (comedy, drama, etc.), a target audience broken down by age and sex, and ratings for sex and violence content. After establishing your network name, you're given program listings including blurbs, which you can print—helpful if you create a terrific show and want the details for future sessions.

Next comes the front page of *Variety*, with headlines that might provide information about your ratings, hot or cold show formats, and the health of comedian Bob Gelg, host of several comedy specials—if you bought one of his shows and he dies, you'll have to eat the cost. Finally, you'll see the programs ranked in reverse order, which you can also print, as well as the networks' overall ratings.

The highest-rated network during the previous month juggles its schedule first. Each computer-run network is headed by Fred Silverfish, a Michael Nesmith lookalike who tells you what shows his network has bought, cancelled, pushed (advertised heavily), unpushed, etc. The best way to get in touch with the other Freds is to "do lunch."

You must juggle your office sched-

ule. A clock counts down from five minutes—if you take too long, each extra second costs thousands of dollars. Your rolodex has the names of five studios to call when you want to buy or develop a show. Your Network Review folder includes the Show Board, which displays the programming schedules, ratings and rankings for all three networks' shows. (This would be much more useful if you could make a printout.)

Your job depends on your ratings —and how much money you rake in.

There are two doors, marked "Programming" and "Exit." The programming room has shelves for each night, representing the time between 8 and 11 p.m., which hold film cans with the names of your programs. The wider the can, the longer the show. At the top is the "Shelf" shelf, for "shelving" (temporarily halting production) of up to five programs. To cancel a show, drop it in the can—which has a triangular top and a swinging gate to put trash through. The sound effect is excellent.

Perhaps you'll want to push a new show, one that's sagging in the ratings, or even your entire Thursday night lineup. Clicking on Push brings up a list of your shows. Left-click to push or unpush a show, and right-click for rating, ranking and type.

From your office you can phone a

studio and buy a program (and schedule it right away) or develop your own—which takes time, but the results can be satisfying. I derived great satisfaction from the rapid upward progress of my brainchildren, "Leave it to President Cleaver" where The Beav grows up, becomes President and accidentally blows up Kuala Lumpur, and "Nipples!," a drama about life in an infant bottle factory.

After you exit the office, it's time to bid on specials, such as Bob Gelg's shows and the World Series, which can add significantly to your overall ratings. Each season has 15 specials, and your budget dictates your spending limit. The overall bidding process is slow, but the graphics are terrific.

Interesting effects in *Prime Time* include the scrolling credits on the title screen and, especially, the digitized sounds—a blood-curdling scream (courtesy of comedian Sam Kinison) that tells you it's Monday, a receptionist answering the phone at a studio, a cash register, and doors opening and closing. The light switch in your office really does turn the lights on and off. The phone really does ring. And if you want to doodle, that's what your desk blotter is for.

Though *Prime Time* is addictive, it's not perfect. For instance, what I call the "Different World" factor, sandwiching a weak show between two strong ones, doesn't seem to help the weak show in *Prime Time* as much as it does in real life. The game and documentation have several misspellings. And twice *Prime Time* bombed inexplicably.

But this takes nothing away from the overall charm of this challenging game. Its originality, color and humor will keep you busy for hours. And if you can win, the networks probably need your help.—GREGG PEARLMAN

\$39.95, color. First Row Software, 900 E. 8th Avenue, Suite 300, King of Prussia, PA 19406. (215) 337-1500. ▲

Now only \$5.95—Antic Monthly Disk!

**THE AMAZING NEW
VOICE MASTER[®] Jr.**

**Turns your
COMPUTER
into a TALKING
AND LISTENING
SERVANT**

\$39.95



Get speech output and voice recognition in ONE product. Voice Master Jr. is easy

to use with new commands added to BASIC. A music bonus lets you write and compose by whistling the tune! Unlimited uses for fun, education, practical applications. Demo programs included. Price only \$39.95 including software and manual. A Patented price/performance breakthrough!

TO ORDER BY MAIL include \$4 shipping & handling (\$6 Canada, \$12 overseas) per order. Visa, MasterCard phone orders accepted. Available for C64/128 and Atari 800/800XL/130XE. Specify when ordering. 30 day money back guarantee, one year warranty. Other enhanced voice I/O systems are available for Commodore, Apple, and IBM computers.

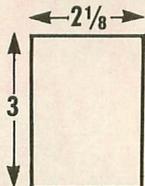


Call or write today for FREE Product Catalog

COVOX INC. (503) 342-1271
675 Conger St., Eugene, Oregon 97402



**SHOPPERS
MARKET
DISPLAY
ADVERTISING**



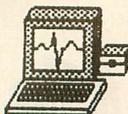
Antic Rates

B/W 1X	450.
B/W 3X	850.
B/W 6X	1525.

**Have your ad displayed
with other industry advertisers**

CONTACT

(415) 957-0886



An incredible simulation

Cardiac Arrest!

Complete with binder
and manual for \$69

There's nothing like Cardiac Arrest! You interpret the history, on-screen EKG, lab data, and vital signs, then give treatment orders in plain English. Doctors and nurses use it to train and certify as ACLS (Advanced Cardiac Life Support) providers, yet the excellent manual allows computer buffs to enjoy it as a challenging medical adventure. Caution: requires brain cells. IBM, Apple II+/c/e, Atari ST, Atari XL/E.

"impressive and amazingly complete" Antic, May 1987
"both highly educational and fun to play" ST World, May 1987

Other software: ACLS Protocols, \$29. EKG Teaching, \$29. CardioQuiz, \$19. Blood Gases, \$24. QuizPlus, \$29. Demo, \$7. Ask about the ACLS Package (includes Cardiac Arrest!) for \$109. Order direct!

Mad Scientist Software

2063 N. 820 W., Pleasant Grove, UT 84062
Visa/MC orders call 801-785-3028

Education by mouse . . .

Quiz Plus

\$29 for Atari ST



QuizPlus is a 100% mouse-driven quiz and tutorial administering program. The PLUS: QuizPlus can mix DEGAS-format graphics into your presentation or quiz.

In minutes, you easily convert your pre-existing quiz or text files for use with QuizPlus, using a standard word-processor. If you want, add a few DEGAS-format pictures or diagrams. Your quiz becomes a colorful computer-education program!

See it at your Atari dealer,
or order direct from:

Mad Scientist Software

2063 North 820 West, Pleasant Grove, UT 84062.

VISA/MC orders call 801-785-3028.



**TIRED OF TYPING?
BUGGED BY DEBUGGING?**

GET ALL THE PROGRAMS WITH ANTIC ON DISK!

MORE THAN 40% OFF REGULAR PRICE!

ANTIC'S MAGAZINE DISK ONLY \$5.95

(plus 2.00 shipping and handling)

FOR SAME DAY SERVICE CALL

(415) 957-0886 between 8am and 3pm

Ask for the DISK DESK.

Use your Visa or Mastercard.

Or send check or money order to:

ANTIC PUBLISHING

544-2ND ST.

SAN FRANCISCO, CA 94107



**Compute
Your
Roots**

The Only Complete
Genealogy Package For
Atari Computer Systems

Compute Your Roots for the Atari ST Systems

Designed for both small and extensive genealogy projects. COMPUTE YOUR ROOTS features:

- * Gem Based
- * Complex Database
- * Fast, multiple field searches
- * LIS Compatible Formats
- * Family Group Sheet
- * Marriage Entry Form
- * Enhanced Data Entry System
- * Automatic Pedigree Lines
- * Note References
- * Pedigree Charts
- * Individual Entry Form
- * Sorted Lists

The program has been specially designed to take full advantage of the Atari ST's power. Its extensive array of tools is available for color/monochrome ST's with at least 512K.

Compute Your Roots for the Atari 8-bit Systems

- * Pedigree Charts
- * Family Group Sheets
- * History Writer
- * Chart Searcher
- * Cut & Paste Pedigree Charts
- * Single & Double Density
- * Simple & Colorful Menus
- * 10 & 15 In. Printouts

COMPUTE YOUR ROOTS comes fully equipped with plenty of genealogy tools. The pedigree chart program has a built-in ultra-fast chart search that searches a chart in less than four seconds. A special cut and paste locations program has also been included. This lets you easily transfer chart information from one chart to another. Just throw in the computer to do all the work.

For Atari 8 bits with 48K, disk drive, basic language, 10 or 15 inch printer.

To Order Compute Your Roots send Check or Money Order to the Below Address
\$37.45 Atari 8 bit version \$39.95 Atari ST version
VISA-MASTERCARD Orders Call 801-483-3357
Wasatch Genealogical Software * 2899 West 7550 South * West Jordan * Utah * 84084

Fill
in
coupon
and
mail
to:

Antic, P.O. Box 1919
Marion, OH 43306

I am also a start subscriber.

New
Address

Name

Address

City

State

Zip

place current mailing label here

Moving?
Don't forget us!

2,064,000 Bytes 1,000 Pages



That's what you get with your holiday subscription to ANTIC magazine and disk!

Here's your double value...



12 issues of ANTIC, the world's best-selling all-Atari magazine. Delivering the most reliable Atari news, reviews and programming support!

12 double-sided disks packed with every 8-bit program in each issue, plus professional quality Super Disk Bonus and lots of extra disk-only software!

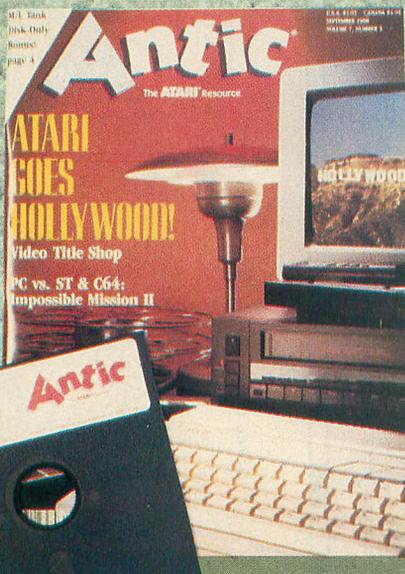
Subscribe now to ANTIC magazine plus disk for only \$59.95, a full 50% savings. And you can still subscribe to ANTIC magazine only for \$28.

Call toll free

800-234-7001

(6 am-6 pm PST.)

MasterCard and VISA Only.



Free!

This Month's Antic Disk **FREE**—when you call toll-free to (800) 234-7001 and order your new or upgraded Antic Magazine/Disk subscription for just \$59.95! VISA or Mastercard only.

SOFTWARE LIBRARY

▶ <i>INSTANT "ROSE EQUATION" GRAPHICS</i> FLOWER GARDEN	67
▶ <i>GAME OF THE MONTH</i> DIMENSION WIZARDS	67
▶ <i>WALLET-SIZE APPOINTMENT MONTHLY</i> PERSONAL POCKET CALENDAR	70
▶ <i>SAVE YOUR FILES—RE-INSTALL WITHOUT RE-FORMATTING</i> RAMDISK SENTRY	73
▶ <i>ONSCREEN DOCUMENTATION PRINTED MINUS GARBAGE</i> DOC PRINT-PRO	74
▶ <i>PRIME NUMBERS FOUND LIGHTNING-FAST</i> SUPER SIEVE	75
▶ <i>PICK THE WINNING (?) NUMBERS WITH YOUR ATARI</i> LOTTOPIK	77
TYPING SPECIAL ATARI CHARACTERS	66
HOW TO USE TYPO II	66

DISK SUBSCRIBERS: Programs for 8-bit Atari computers can be used immediately. Just follow instructions in the accompanying magazine articles. ST Owners: See monthly disk's ST Help File for instructions on how to transfer programs to 3-1/2 inch disk.

DOS COMPATIBILITY: All 8-bit programs published by Antic are tested to work with Atari Disk Operating System (DOS) 2.0S and 2.5—not with the incompatible DOS 3.0. DOS 2.0S is available on each Antic Monthly Disk. Copy the DOS.SYS and DUPSYS files.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the publisher.

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 combinations, *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				INVERSE VIDEO			
FOR THIS	TYPE THIS	FOR THIS	TYPE THIS	FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
☐	CTRL ,	☐	CTRL S	☐	ESC	☐	SHIFT
☐	CTRL A	☐	CTRL T	☐	SHIFT	☐	DELETE
☐	CTRL B	☐	CTRL U	☐	ESC	☐	DELETE
☐	CTRL C	☐	CTRL V	☐	SHIFT	☐	DELETE
☐	CTRL D	☐	CTRL W	☐	SHIFT	☐	INSERT
☐	CTRL E	☐	CTRL X	☐	ESC	☐	CTRL
☐	CTRL F	☐	CTRL Y	☐	CTRL	☐	TAB
☐	CTRL G	☐	CTRL Z	☐	ESC	☐	ESC
☐	CTRL H	☐	ESC ESC	☐	ESC	☐	SHIFT
☐	CTRL I	☐	ESC CTRL -	☐	ESC	☐	TAB
☐	CTRL J	☐	ESC CTRL =	☐	ESC	☐	SHIFT
☐	CTRL K	☐	ESC CTRL +	☐	SHIFT	☐	TAB
☐	CTRL L	☐	ESC CTRL *	☐	CTRL .	☐	CTRL .
☐	CTRL M	☐	CTRL .	☐	CTRL ;	☐	CTRL ;
☐	CTRL N	☐	CTRL ;	☐	SHIFT =	☐	ESC CTRL 2
☐	CTRL O	☐	SHIFT =	☐	ESC	☐	ESC
☐	CTRL P	☐	ESC SHIFT	☐	CTRL	☐	CTRL
☐	CTRL Q	☐	CLEAR	☐	DELETE	☐	DELETE
☐	CTRL R	☐	ESC DELETE	☐	ESC	☐	ESC
		☐	ESC TAB	☐	CTRL	☐	CTRL
				☐	INSERT	☐	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!

```

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

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 ? "K":POSITION 11,1:? "██████████"
":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
UV 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)
UG 32220 POSITION 2,13:? "If CODE does no
t match Press ██████████ and edit line a
bove.":GOTO 32050
  
```

FLOWER GARDEN

Article on page 40

LISTING 1

Don't type the
TYPO II Codes! 

```

BR 10 REM THE FLOWER PROGRAM
NV 20 REM BY ALLAN MOOSE AND MARIAN LOREN
Z
QH 30 REM (c)1988, ANTIC PUBLISHING
LI 50 DIM GRAPH$(200),FN$(16)
QJ 60 ? " PLEASE WAIT..."
RO 80 GOSUB 720
XH 100 REM INPUT & INITIALIZATION
HC 120 ? "Enter N":INPUT N
FJ 130 IF N=0 THEN ? "Must Be Non-Zero"
    ":GOTO 120
CM 140 ?
TY 150 ? " Enter the incremental angle, A
    ALPHA":INPUT ALPHA
BU 170 COUNT=0:DELTA=0:DELTAINC=2
JR 180 COUNTSTOP=180:ASPECT=320/192
PA 200 REM THE MAIN PROGRAM
EP 210 GRAPHICS 24:POKE 710,12:POKE 712,1
    2:POKE 709,2:COLOR 1:DEG
IP 220 THETA=DELTA
UQ 230 R=80*SIN(THETA)
QC 240 OLDX=R*COS(THETA):OLDY=R*SIN(THETA)
    )
PO 250 THETA=THETA+ALPHA
YW 260 IF THETA>=360 THEN GOSUB 450
LJ 270 NTHETA=THETA*N
SV 280 GOSUB 500
GX 290 R=80*SIN(NTHETA)
BQ 300 XNEW=R*COS(THETA):YNEW=R*SIN(THETA)
    )
DF 310 PLOT ASPECT*OLDX+160,90-OLDY
QA 320 DRAWTO ASPECT*XNEW+160,90-YNEW
NE 330 COUNT=COUNT+1
YR 340 IF THETA=DELTA THEN 370
SZ 350 OLDX=XNEW:OLDY=YNEW
OH 360 GOTO 250
EJ 370 IF COUNT=COUNTSTOP THEN 550
XI 380 DELTA=DELTA+DELTAINC
NG 390 GOTO 220
XU 400 REM THE SUBROUTINES
KM 410 REM MOD FUNCTION FOR THETA
YC 450 THETA=THETA-(INT(THETA/360))*360
ZM 460 RETURN
ZK 480 REM MOD FUNCTION FOR NTHETA
OV 500 NTHETA=NTHETA-(INT(NTHETA/360))*360
    0:RETURN
YE 530 REM THE SCREEN DUMP
QW 550 GOSUB 1000
KH 555 IF KEYP=35 THEN GRAPHICS 0:GOTO 12
    0
DF 556 IF KEYP=10 THEN 560
PH 557 GOTO 800
ZA 560 GRAPH$(1)=CHR$(0):GRAPH$(200)=CHR$(
    0):GRAPH$(2)=GRAPH$
MH 570 LPRINT CHR$(27);CHR$(65);CHR$(8)
HD 580 SCRNMEM=PEEK(88)+PEEK(89)*256
WR 590 MEMORY=SCRNMEM+40*191
CQ 600 HIBYTE=INT(ADR(GRAPH$)/256)
TB 610 LOBYTE=ADR(GRAPH$)-HIBYTE*256
EJ 620 POKE 203,LOBYTE:POKE 204,HIBYTE
QY 630 FOR COLUMN=MEMORY TO MEMORY+39
MB 640 DUMP=USR(1536,COLUMN)
NA 650 LPRINT CHR$(27);CHR$(75);CHR$(200)
    ;CHR$(0);GRAPH$
TM 660 NEXT COLUMN
PQ 670 GOTO 550
LK 690 REM M/L SCREEN DUMP ROUTINE
XL 720 RESTORE 760
UZ 730 FOR K=0 TO 43
SK 740 READ ML:POKE 1536+K,ML
HB 750 NEXT K
HQ 760 DATA 104,104,141,15,6,104,141,14,6
    ;160,4,162,192,173,0,0,202,240,24
GU 770 DATA 145,203,200,216,173,14,6,56,2
    33,40,141,14,6
UO 780 DATA 144,3,76,13,6,206,15,6,76,13,
    6,96
ZV 790 RETURN
UR 800 IO=848:CLOSE #1:OPEN #1,8,0,"D:PIC
    TURE":POKE IO+2,11:POKE IO+4,PEEK(88):
    POKE IO+5,PEEK(89)
KZ 810 POKE IO+8,0:POKE IO+9,30:JNK=USR(A
    DR("hhhlllvv"),16)
ZL 820 PUT #1,PEEK(712):FOR X=708 TO 710:
    PUT #1,PEEK(X):NEXT X:CLOSE #1:GOTO 55
    0
BO 1000 GRAPHICS 8+32:POKE 710,12:POKE 71
    2,12:POKE 709,2:POKE 752,1
LU 1010 ? " Save Print New im
    age"
FX 1020 POKE 764,255
KO 1030 KEYP=PEEK(764):IF NOT (KEYP=10 0
    R KEYP=62 OR KEYP=35) THEN 1030
GD 1040 POKE 764,255
OF 1050 GRAPHICS 8+16+32:POKE 710,12:POKE
    712,12:POKE 709,2:RETURN

```

DIMENSION WIZARDS

Article on page 14

LISTING 1

Don't type the
TYPO II Codes! 

```

WA 1 REM DIMENSION WIZARDS
OQ 2 REM BY BERNARD COZIER
QR 3 REM (c)1988, ANTIC PUBLISHING
EY 5 GOSUB 4000:GOSUB 10000:GOSUB 6000:GO
    SUB 2000:GOSUB 3000:GOSUB 7000:GOSUB 5
    000:GOSUB 8000:GOSUB 1000
PS 10 POKE 53278,0:P0$=5H$(PEEK(1547+PEEK
    (1562))) :P1$=5H$(PEEK(1547+PEEK(1563)))
    :I=USR(ADR(CML$)):POKE 53278,0
AB 20 IF PEEK(TW+33)+PEEK(TW+34)=32 OR PE
    EK(TW+113)+PEEK(TW+114)=32 THEN 520
GL 500 I=USR(ADR(CML$)):IF PEEK(A)<>16 AND
    PEEK(B)<>16 THEN 10
CB 510 GOSUB 1000:GOTO 10
ZM 520 GOSUB 9000:GOSUB 8000:GOSUB 1000:G
    OTO 10
QW 530 REM
XH 1000 REM TRANSPORT TO NEW BATTLEFIELD
OT 1005 DMN5=DMN5+1:IF DMN5>20 THEN POP :
    GOTO 520
NV 1010 POKE 559,0:SOUND 2,0,0,0:SOUND 3,
    0,0,0:SOUND 0,25,10,15:SOUND 1,50,10,1
    5
AQ 1020 GOSUB 10500:NP=INT(RND(0)*6)+4:GO
    TO 1050
LF 1030 L=5C+RND(0)*19+RND(0)*380:IF PEEK
    (L)<>0 THEN 1030
AL 1040 RETURN
EU 1050 P0$=BL$:P1$=BL$:FOR I=1 TO NP:GOS
    UB 1030:POKE L,131:GOSUB 1030:POKE L,6
    7:NEXT I:POKE A,NP+16:POKE B,NP+16
SH 1060 FOR I=1 TO RND(0)*6+4:GOSUB 1030:
    POKE L,1:GOSUB 1030:POKE L,2:NEXT I
KQ 1070 FOR I=1 TO RND(0)*3+2:GOSUB 1030:
    POKE L,197:GOSUB 1030:POKE L,198:NEXT
    I
PK 1080 FOR I=1 TO RND(0)*3+2:GOSUB 1030:
    POKE L,132:NEXT I:FOR I=1 TO RND(0)*3+
    1:GOSUB 1030:POKE L,68:NEXT I
BC 1090 POKE 559,62:POKE 53277,3:GOSUB 11
    00:GOTO 1130
RX 1100 POKE 53278,0:FOR I=0 TO 1:GOSUB 1
    150:POKE X+I,N:GOSUB 1160:POKE Y+I,N:N
    EXT I:N1=INT(RND(0)*4)
IY 1110 P0$=5H$(N1*20+1):N2=INT(RND(0)*4)
    :P1$=5H$(N2*20+1):POKE 1562,7*(N1=0)+1
    1*(N1=1)+14*(N1=2)+13*(N1=3)
NJ 1120 POKE 1563,7*(N2=0)+11*(N2=1)+14*(
    N2=2)+13*(N2=3):RETURN
NK 1130 N=PEEK(53252)+PEEK(53253)+PEEK(53
    260):IF N<>0 THEN P0$=BL$:P1$=BL$:GOSU
    B 1100:FOR I=1 TO 10:NEXT I:GOTO 1130
OD 1140 SOUND 0,0,0,0:SOUND 1,0,0,0:RETUR
    N

```

continued on next page


```

CHARGE: 1 *":RETURN
IS 8050 REM
X5 9000 REM GAME OVER
XC 9010 SOUND 2,0,0,0:SOUND 3,0,0,0
DZ 9011 IF PEEK(TW+33)+PEEK(TW+34)<>32 TH
EN 9016
JG 9012 FOR I=1 TO 20:N=RND(0)*16:P0$(N+3
,N+3)=CHR$(PEEK(53770)):SOUND 0,PEEK(5
3770),8,15:NEXT I
NQ 9016 IF PEEK(TW+113)+PEEK(TW+114)<>32
THEN 9019
NY 9017 FOR I=1 TO 20:N=RND(0)*16:P1$(N+3
,N+3)=CHR$(PEEK(53770)):SOUND 1,PEEK(5
3770),8,15:NEXT I
IY 9019 SOUND 0,125,10,10:SOUND 1,250,10,
15:P0$=BL$:P1$=BL$:GOSUB 10500
LD 9020 POSITION 5,1:? #6;"[REDACTED]":? #
6:? #6:? #6
WW 9021 S1=0:N=10000:FOR I=13 TO 17:S1=51
+PEEK(TW+I)-16)*N:N=N/10:NEXT I
RI 9022 S2=0:N=10000:FOR I=93 TO 97:S2=52
+PEEK(TW+I)-16)*N:N=N/10:NEXT I
JN 9023 IF PEEK(TW+33)+PEEK(TW+34)=32 THE
N ? #6;" player one killed":? #6:? #6:
POKE PLAYER,255
SH 9024 IF PEEK(TW+113)+PEEK(TW+114)=32 T
HEN ? #6;"[REDACTED]":? #6:? #
6:POKE PLAYER+1,255
JD 9025 IF S1>S2 THEN ? #6;" player one
wins":? #6:? #6
OY 9026 IF S1<S2 THEN ? #6;"[REDACTED]":? #6:? #6
FE 9027 IF S1=S2 THEN ? #6;" EQUAL SCO
RES":? #6:? #6
HY 9028 ? #6;" TELEPORTED <":DMNS=DMNS
-(DMNS>20):? #6:DMNS;"")
FZ 9030 POSITION 4,18:? #6;"[REDACTED]
AQ 9040 IF PEEK(53279)<>6 THEN 9040
BU 9050 GOSUB 10500:POKE PLAYER+0,0:POKE
PLAYER+1,1:RETURN
IW 9060 REM
FE 10000 REM INTRODUCTION
DT 10001 GRAPHICS 0:POKE 710,132:POKE 712
,132:POKE 752,1?:GOSUB 4020:POKE 756
,CH/256
MY 10005 SOUND 0,125,10,10:SOUND 1,250,10
,15:RETURN
RY 10500 SC=PEEK(88)+256*PEEK(89):FOR I=0
TO 19:POSITION 0,I:? #6;B$:NEXT I:RET
URN

```

LISTING 2

```

EZ 10 REM DIMENSION WIZARDS, LISTING 2
XH 20 REM BY BERNARD COZIER
QH 30 REM (c)1988, ANTC PUBLISHING
EV 40 REM (LINES 10-250 MAY BE USED WITH
OTHER BASIC LOADERS IN THIS ISSUE.
IJ 50 REM CHANGE LINE 70 AS NECESSARY.)
PH 60 DIM FN$(20),TEMP$(20),AR$(93):DPL=P
EEK(10592):POKE 10592,255
WO 70 FN$="D:LINES.LST":REM THIS IS THE N
AME OF THE DISK FILE TO BE CREATED
RD 80 ? "Disk or (cassette)?:POKE 764,25
5
PY 90 IF NOT (PEEK(764)=18 OR PEEK(764)=
58) THEN 90
TH 100 IF PEEK(764)=18 THEN FN$="C:"
UB 110 POKE 764,255:GRAPHICS 0:? " AN
TIC'S GENERIC BASIC LOADER"
MY 120 ? "BY CHARLES JACKSON"
KB 130 POKE 10592,DPL:TRAP 200
PU 140 ? :? "Creating ";FN$:? "...plea
se stand by."
LW 150 RESTORE :READ LN:LM=LN:DIM A$(LN):
C=1
BQ 160 AR$="":READ AR$
YC 170 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
2,255
DM 180 LM=LM-1:POSITION 10,10:? "Countdo
wn...T-";INT(LM/10);" "
BK 190 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
1:NEXT X:GOTO 160
MM 200 IF PEEK(195)=5 THEN ? :? :? "GTOO
MANY DATA LINES!":? "CANNOT CREATE FIL
E!":END
CM 210 IF C<LN+1 THEN ? :? "GTOO FEW DATA
LINES!":? "CANNOT CREATE FILE!":END
UQ 220 IF FN$="C:" THEN ? :? "Prepare ca
ssette, press (RETURN)"
AR 230 OPEN #1,8,0,FN$
PU 240 POKE 766,1:? #1;A$:POKE 766,0
AL 250 CLOSE #1:GRAPHICS 0:? "[REDACTED]

```

```

II 1000 DATA 2054
PN 1010 DATA 0500480480500320650800770360
40049044055056041061034104165212024105
017168165213105000170169007
JG 1020 DATA 0760922282161620001891900062
01001240006189120002157194006232224004
208238162000189234006201004
ZX 1030 DATA 1760911681851940062010052400
22201006240018201007240014201009240025
201010240021201011240017208
UC 1040 DATA 0301890341550500480480510320
65080077036040055057044049053054041061
034198006024125206006157198
LR 1050 DATA 0062212220061440151891980060
56253206006157198006221218006144226185
194006201006240026201014240
LR 1060 DATA 0222010102400182010052400292
01013240025201009240021208032208158176
093189202006056253210006157
WM 1070 DATA 2020062212260061760151890341
55050048048052032065080077036040049053
055044050051052041061034202
OM 1080 DATA 0060241252100061572020062212
30006176226189198006157000208189238006
133203189242006133204189246
JU 1090 DATA 0061332051892500061332061882
02006169000141255006152072172255006177
205141254006104168173254006
OK 1100 DATA 1452032002382550061732550062
21214006208227232034155050048048053032
06508007703604005051053044
ET 1110 DATA 0510490510410610342240042081
54162000189194006201015240003157026006
189006208041001201000240008
HK 1120 DATA 1690281571960061572000062322
24002208224173012208041008201000240008
169028141197006141201006173
GZ 1130 DATA 0132080410042010002400081690
28141196006141200006169000133077076098
228034155052048049049032077
EA 1140 DATA 0790860610650680820400341041
04133241104133240104133213104133212104
133239104133238160000177240
BE 1150 DATA 1452122302122080022302132302
40208002230241198238208234198239016230
096034041155052048050048032
IK 1160 DATA 0730610650680820400340000481
24118094123063028024024126126024024024
024056056016124016010656108
BR 1170 DATA 0000000001362031271871362552
31231129129231231255016056016084254084
016056064048028058030012024
BU 1180 DATA 0280130310600560240720680560
02012056092120048024056176248060028024
018039028034041155053048048
ZI 1190 DATA 0530320730610650680820400341
32209172184006173182006024113207145207
136173183006113207145207200
UY 1200 DATA 1741850061772072010261440140
56233010145207136177207024105001145207
200136202224000208230162409
PP 1210 DATA 0961322091721820061772070562
33001145207164209096132209172182006169
002024113207145207201026144
WX 1220 DATA 0041690251452071642090960340
41155053052050048032077076036040049044
056048041061034104173196006
EA 1230 DATA 2010151440131690001411760061
41005210205176006240017238176006238176
006173176006141004210169140
JP 1240 DATA 1410052101731970062010151440
13169000141177006141007210205177006240
017238177006238177006173177
VZ 1250 DATA 0061410062101691401410072101
73120002201015034155053052051048032077
076036040056049044049054048
TP 1260 DATA 0410610342400121690001410002
10169136141001210208005169128141001210
173121002201015240012169050
JB 1270 DATA 1410022101691361410032102080
07169128141003210162000189198006056233
048133209070209070209070209
AO 1280 DATA 0410022010002400022302091652
09157186006189202006056233046133209034
155053052052048032077076036
UV 1290 DATA 0400490540490440500520480410
61034070209070209070209041002201000240
002230209165209157188006232
MM 1300 DATA 224002208197162000189200062
01030144017201219176013189204006201007
144006201232176002144075169
CX 1310 DATA 0151571960061690001571760061
89132002201000208058188178006177207157

```

continued on next page


```
FJ 380 GET #3,K:IF K<49 OR K>56 THEN 380
LB 390 YN$=CHR$(K):? YN$;:? :? :C=VAL(YN$
) +1:IF C<>2 AND C<>3 AND C<>9 THEN 450

HQ 400 IF CLNDR=IN THEN RESTORE 2820:FOR
X=1 TO M:READ M$:NEXT X:? :? "DO YOU
WANT TO SAVE YOUR":? M$;" " ;Y;
ML 410 IF CLNDR=IN THEN ? " CALENDAR (M$)
(NM$)?":? :GET #3,K:IF CHR$(K)="Y" THEN C=
5:?
YF 420 IF CHR$(K)="Y" AND YN$="9" THEN QU
IT=OFF
TU 430 IF YN$="2" OR YN$="3" THEN NWCAL=I
N
DW 440 IF CLNDR=IN THEN ? "#####";
YD 450 IF C=2 OR C=3 THEN CLNDR=IN:PRNT=I
N
UC 460 IF C>3 AND C<8 THEN IF CLNDR=OFF A
ND PRNT=OFF THEN ? "#####";
HR 470 IF C>3 AND C<8 THEN IF CLNDR=OFF A
ND PRNT=OFF THEN POSITION 5,23:? R5$;:
GET #3,K:GOTO 260
RA 480 IF C=2 OR C=3 THEN C$(1,1)=" " :C$(
1,2)=C$:C$(2)=C$:C$(1)=C$
WG 490 IF C=1 THEN 270
OJ 500 IF C=9 THEN POKE 710,148:END
XF 510 IF C=2 THEN GOSUB 2300:GOTO 260
ZW 520 IF C=3 THEN 590
JZ 530 IF C=8 THEN ? "":POP :CLOSE #2:OP
EN #2,6,0,"D:*CAL":GOTO 720
KW 540 IF C=7 THEN 2090
ZB 550 IF C=6 THEN 830
EJ 560 IF C=5 AND NWCAL=IN OR QUIT=IN THE
N ? :? " #####";
ZD 570 IF C=5 THEN ? :? " #####";
GZ 580 IF C=4 THEN 1510
MW 590 REM LOAD CALENDAR FROM DISK
JX 600 M$="":C=0:M=0:Y=0:LOD=IN:GOSUB 230
0
ZY 610 ? "#####";
HL 620 TRAP 40000:M$=STR$(M):IF M<10 THEN
M$="00":M$(2,2)=STR$(M)
DZ 621 Y$=STR$(Y):D$(LEN(D$)+1)=M$:M$(LE
N(M$)+1)=Y$:D$(LEN(D$)+1)=Y$
IT 625 D$(LEN(D$)+1)="CAL"
KQ 630 TRAP 700:CLOSE #1:OPEN #1,4,0,D$:I
NPUT #1;Y:INPUT #1;M:INPUT #1;DY
WA 640 GOSUB 2640
VI 650 PLACE=1:FOR T1=1 TO 6:INPUT #1;L$:
C$(PLACE,PLACE+186)=L$:PLACE=PLACE+187
:NEXT T1
XO 660 PLACE=1:FOR T1=1 TO 6:INPUT #1;L$:
C1$(PLACE,PLACE+186)=L$:PLACE=PLACE+18
7:NEXT T1
LQ 670 CLOSE #1
LV 680 RESTORE 2820:FOR X=1 TO M:READ M$:
NEXT X:D$="D:X"
RJ 690 TRAP 40000:GOTO 260
DV 700 TRAP 40000:CLOSE #2:OPEN #2,6,0,"D
:*CAL":? "":
SE 710 POSITION 3,1:? "That calendar is n
ot on this disk":CLNDR=OFF
MB 720 POSITION 7,2:? "Months on this dis
k are:"
FP 730 A=2:B=5:POKE 195,0
OW 740 FOR DIR=1 TO 2:INPUT #2,MNAME$
NM 750 IF MNAME$(3,3)="X" THEN MM=VAL(MNA
ME$(4,LEN(MNAME$)-8)):RESTORE 2820:FOR
X=1 TO MM:READ M$:NEXT X
GG 760 IF B=20 THEN A=A+17:B=5
PK 770 DIR=DIR-1:IF MNAME$(3,3)="X" THEN
POSITION A,B:? M$;" " ;MNAME$(LEN(MNA
ME$)-7,LEN(MNAME$)-4):B=B+1
BP 780 IF MNAME$(5,8)="FREE" THEN DIR=2:U
=INT(VAL(MNAME$(1,3))):POSITION 9,21:?
"Room for ";INT(U/19);" calendars."
ZC 790 IF DIR=2 AND A=2 AND B=5 THEN POSI
TION 2,10:? "There are no calendars on
this disk."
UT 800 NEXT DIR
KU 810 D$="D:X":POKE 764,255:POSITION 5,2
3:? R5$;:GET #3,K
OP 820 GOTO 260
DK 830 REM PRINT PRESENT CALENDAR
WG 840 TRAP 1320:POKE 710,228
SB 850 ? :? :? " #####";
BQ 860 CLOSE #7:OPEN #7,8,0,"P":? #7;"#e
":REM OPEN CHANNEL TO PRINTER AND
RESET DEFAULTS
```

```
EZ 870 REM CREATE PAGE 2" BY 3" NEXT TO
A LIKE-SIZED PAGE
HH 880 ? #7;"#C";CHR$(66);:REM SET FORM L
ENGTH IN LINES
AS 890 ? #7;CHR$(15);CHR$(27);"3";CHR$(12
):REM SET COMPRESSED PRINT AND SET
LINE SPACING TO 12 L.P.I.
QQ 900 ? #7;LINES,LINES
XY 910 ? #7;"#51";:REM SET PRINTER SUPERS
CRIPT MODE
EK 920 ? #7;"#U1";:REM EPSON UNIDIRECTION
AL MODE
RE 930 CTR=17-LEN(Y$)/2:FOR X=1 TO CTR:?
#7;" " :NEXT X:? #7;Y$,
QS 940 FOR X=18+LEN(Y$)/2 TO 34:? #7;" "
:NEXT X:? #7;APC$
KP 950 ? #7
YM 960 CTR=17-LEN(M$):FOR X=1 TO CTR:? #
7;" " :NEXT X:? #7;"#W1";M$;"#W0";
IY 970 FOR X=18+LEN(M$) TO 40:? #7;" " :
NEXT X
GL 980 ? #7;C$(7*34+1,8*34)
HA 990 ? #7;BL$,C1$(7*34+1,8*34)
H5 1000 ? #7;" SUN MON TUE WED THU FRI
SAT " ;C$(8*34+1,9*34)
ZB 1010 PLACE=1:FOR T1=1 TO 6
BD 1020 INFO$(PLACE,PLACE+33)=MODLINE$:PL
ACE=PLACE+34
WA 1030 FOR T2=1 TO 4:INFO$(PLACE,PLACE+3
3)=BLINE$:PLACE=PLACE+34:NEXT T2
GR 1070 NEXT T1
IM 1080 INFO$(PLACE,PLACE+33)=MODLINE$
LO 1090 XX=1:FOR Z=71 TO 951 STEP 170:FOR
X=Z TO Z+24 STEP 4:INFO$(X+2,X+3)=DT$(
XX,XX+1)
UX 1100 IF DT$(XX,XX)<>" " THEN D=INT(VAL
(DT$(XX,XX+1))) :GOTO 1130
ON 1110 IF DT$(XX+1,XX+1)<>" " THEN D=INT
(VAL(DT$(XX+1,XX+1))) :GOTO 1130
PU 1120 GOTO 1150
UF 1130 IF C$(D*34-29,D*34-1)<>BL$(1,29)
THEN INFO$(X+69,X+69)="*"
LT 1140 IF C1$(D*34-29,D*34-1)<>BL$(1,29)
THEN INFO$(X+70,X+70)="*"
GE 1150 XX=XX+2:NEXT X:NEXT Z
GZ 1160 ? #7;INFO$(1,34),C$(8*34+1,9*34)
CX 1170 ? #7;INFO$(35,67),C1$(8*34+1,9*34
)
BC 1180 Z=10:FOR X=69 TO 1088 STEP 68
BN 1190 ? #7;INFO$(X,X+33),C$(Z-1)*34+1,
Z*34)
UY 1200 ? #7;INFO$(X+34,X+67),C1$(Z-1)*3
4+1,Z*34):Z=Z+1
LF 1210 NEXT X
PN 1220 CTR=17-LEN(NAME$)/2:FOR X=1 TO CT
R:? #7;" " :NEXT X
SB 1225 ? #7;NAME$;:FOR X=CTR+LEN(NAME$)+
0.5 TO 40:? #7;" " :NEXT X
SD 1230 ? #7;C$(24*34+1,25*34)
UG 1240 ? #7;BL$,C1$(24*34+1,25*34)
HQ 1250 ? #7;APC$,C$(25*34+1,26*34)
XI 1260 ? #7;BL$,C1$(25*34+1,26*34)
GC 1270 FOR X=1 TO 7
YE 1280 ? #7;C$(X-1)*34+1,X*34),C$(X+25
)*34+1,(X+26)*34)
ED 1290 ? #7;C1$(X-1)*34+1,X*34),C1$(X+
25)*34+1,(X+26)*34)
LE 1300 NEXT X
JX 1310 ? #7;LINES,LINES
VG 1320 IF PEEK(195)=138 THEN ? "#####";
PRINTER DOES NOT RESPOND"
CY 1330 IF PEEK(195)=138 THEN POSITION 6,
23:? R5$;:GET #3,K
QP 1340 GOTO 260
CB 1350 REM SAVE CALENDAR TO DISK
WJ 1360 M$=STR$(M):IF M<10 THEN M$="00":M
$(2,2)=STR$(M)
PL 1362 Y$=STR$(Y):D$(LEN(D$)+1)=M$:M$(LE
N(M$)+1)=Y$:D$(LEN(D$)+1)=Y$
HF 1365 D$(LEN(D$)+1)="CAL"
TE 1370 TRAP 1410:CLOSE #2:OPEN #2,4,0,D$
:? "This calendar already exists on th
is":? "disk. Replace #Y#N#?";
UG 1380 TRAP 40000:GET #3,K:IF CHR$(K)<>"
N" AND CHR$(K)<>"Y" THEN 1380
AG 1390 IF CHR$(K)="N" THEN M$=D$(4):D$=D
$(1,3):NWCAL=OFF:QUIT=OFF:CLNDR=IN:GOT
O 260
JK 1400 ? "#####";
NQ 1410 IF PEEK(195)=138 THEN ? "#####";
DISK RESPONSE NOT RESPONDED":POSIT
ION 5,23:? R5$;:GET #3,K:GOTO 1480
WZ 1420 REM "PRINT" CALENDAR TO DISK
DK 1430 TRAP 1460:CLOSE #2:OPEN #2,8,0,D$
:? #2;Y:? #2;M:? #2;DY continued on next page
```

```

JI 1440 PLACE=1:FOR T1=1 TO 6:? #2:C$(PLA
CE,PLACE+186):PLACE=PLACE+187:NEXT T1
TQ 1450 PLACE=1:FOR T1=1 TO 6:? #2:C1$(PL
ACE,PLACE+186):PLACE=PLACE+187:NEXT T1
QD 1460 IF PEEK(195)=162 THEN CLOSE #3:?
"          :? , "          :XIO 33,#2
,0,0,D$:POSITION 5,23:? R5$;:GET #3,K
QQ 1470 IF PEEK(195)=144 THEN ? "
          :POSITION
5,23:? R5$;:GET #3,K
TT 1480 TRAP 40000:D$="D":CLOSE #2
RY 1490 IF YN$="9" THEN END
QH 1500 GOTO 260
XV 1510 REM ENTER/EDIT CALENDAR
AA 1520 TRAP 1520:POKE 82,2:DATE$="":? "
" :STUFF$=BL$(1,31)
FM 1530 ? "Appointment for which date? --
":? :? "Press [RETURN] to return to main me
nu":
EI 1540 GET #3,K:IF K<>27 AND K<48 OR K>5
8 AND K<>155 THEN 1540
MO 1550 IF K=27 OR K=155 THEN POKE 82,2:T
RAP 40000:GOTO 260
HO 1560 ? CHR$(K);:DATE$(1,1)=CHR$(K):CLN
DR=IN
NR 1570 GET #3,K:IF K<>27 AND K<48 OR K>5
8 AND K<>126 AND K<>155 THEN 1570
JW 1580 IF K=27 OR K=155 THEN 1610
LG 1590 IF K=126 THEN ? "L":GOTO 1540
GN 1600 ? CHR$(K);:DATE$(2,2)=CHR$(K)
KC 1610 DATE=INT(VAL(DATE$))
MA 1620 IF DATE<DY THEN ? :? "Only
":DY;" days in ":MO$;" , ":Y$;" :POSIT
ION 5,23:? R5$;:GET #3,K:GOTO 1510
LL 1630 ? "
KB 1640 IF C$(DATE*34-30,DATE*34)<>BL$(1,
31) THEN POSITION 5,10:? "
ZR 1650 IF C$(DATE*34-30,DATE*34)<>BL$(1,
31) THEN POSITION 13,11:? " :MO$;" "
:DATE;" :POSITION 1,14:? "
NG 1660 IF C$(DATE*34-30,DATE*34)<>BL$(1,
31) THEN FOR X=13 TO (X+LEN(MO$)+LEN(D
ATE$)+4:POSITION X,12:? " :NEXT X
LV 1670 IF C1$(DATE*34-30,DATE*34)<>BL$(1
,31) THEN POSITION 5,10:? "
SN 1680 POSITION 3,3:? " :POSITION
3,5:? "
XA 1690 POSITION 2-LEN(DATE$),4:? DATE$;"
":;:POSITION 4,4:? BL$(1,29);" :POSIT
ION 4,4
GN 1700 POSITION 4,14:? C$(DATE*34-30,DA
E*34):POSITION 4,16:? C1$(DATE*34-30,D
ATE*34):POSITION 3,4:? "
YU 1710 POSITION 6,0:? " :POSITION
6,1:? "
LF 1720 FOR X=1 TO 31
CG 1730 GET #3,K:IF X<2 AND (K=27 OR K=15
5) THEN 1510
CI 1740 IF K=125 THEN POSITION 3,4:? BL$(
1,30):X=1:GOTO 1730
BX 1750 IF X=31 AND K<>155 AND K<>126 THE
N 1730
UV 1760 IF K<27 OR K=96 OR K=123 OR K<>12
5 AND K<>126 AND K<>155 AND K<157) THE
N 1730
NF 1770 IF X<2 AND K=126 THEN 1730
RE 1780 IF X>1 AND K=126 THEN X=X-1:POSIT
ION (2+X),4:? " :GOTO 1730
EH 1790 IF K=155 THEN STUFF$=STUFF$(1,30)
:GOTO 1820
NI 1800 POSITION (2+X),4:? CHR$(K):STUFF$
(X,X)=CHR$(K)
LR 1810 NEXT X
IU 1820 IF C$(DATE*34-30,DATE*34)=BL$(1,3
1) THEN C$(DATE*34-30,DATE*34)=STUFF$:
GOTO 1510
KW 1830 IF C1$(DATE*34-30,DATE*34)=BL$(1,
31) THEN C1$(DATE*34-30,DATE*34)=STUFF
$:GOTO 1510
KV 1840 POSITION 3,18:? "
BS 1850 GET #3,K:IF K<48 OR K>50 THEN 185
0
KF 1860 IF K=49 THEN C$(DATE*34-30,DATE*3
4)=STUFF$:GOTO 1880
ZC 1870 IF K=50 THEN C1$(DATE*34-30,DATE*
34)=STUFF$
WI 1880 IF C$(DATE*34-30,DATE*34)=BL$(1,3
1) THEN C$(DATE*34-30,DATE*34)=C1$(DAT

```

```

E*34-30,DATE*34):GOTO 1900
SW 1890 GOTO 1910
GM 1900 C1$(DATE*34-30,DATE*34)=BL$(1,31)
QE 1910 GOTO 1510
OX 2090 REM SHOW CALENDAR
IS 2100 RESTORE 2820:FOR X=1 TO M:READ MO
$:NEXT X
AE 2110 PLACE=35:INFO$(1,34)=" SUN MON
TUE WED THR FRI SAT "
PV 2120 FOR T1=1 TO 6:INFO$(PLACE,PLACE+3
3)=MODLINE$:PLACE=PLACE+34
UL 2130 FOR X=1 TO 2:INFO$(PLACE,PLACE+33
)=BLINE$:PLACE=PLACE+34:NEXT X
GO 2150 NEXT T1
UY 2160 ? " :? , " :Y$:FOR X=1 TO 15-
LEN(MO$)/2:? " :NEXT X:? MO$:?
IM 2170 INFO$(PLACE,PLACE+33)=MODLINE$
BR 2180 XX=1:FOR Z=71 TO 650 STEP 102:FOR
X=Z TO Z+24 STEP 4:INFO$(X+2,X+3)=DT$(
XX,XX+1)
ZG 2190 IF DT$(XX,XX+1)<> " THEN D=INT(VAL
(DT$(XX,XX+1))) :GOTO 2220
RA 2200 IF DT$(XX+1,XX+1)<> " THEN D=INT
(VAL(DT$(XX+1,XX+1))) :GOTO 2220
QF 2210 GOTO 2240
QO 2220 IF C$(D*34-29,D*34-1)<>BL$(1,29)
THEN INFO$(X+35,X+35)="*"
UT 2230 IF C1$(D*34-29,D*34-1)<>BL$(1,29)
THEN INFO$(X+36,X+36)="*"
GE 2240 XX=XX+2:NEXT X:NEXT Z
QK 2250 FOR X=1 TO 650 STEP 34
MH 2260 ? INFO$(X,X+33)
ZC 2270 NEXT X:POKE 764,255
PI 2280 ? R5$;:GET #3,K
UL 2290 POKE 82,2:GOTO 260
RD 2300 REM DETERMINE YEAR AND MONTH
TF 2310 POKE 710,69:M$="":IF LOD=IN THEN
POKE 710,85:? "Load calendar for what
month":GOTO 2330
PG 2320 ? "Create calendar for what month
":
ZN 2330 GET #3,K:IF K<>27 AND K<48 OR K>5
7 THEN 2330
UV 2340 IF K=27 THEN POP:GOTO 260
RS 2350 M$(1,1)=CHR$(K):? M$(1,1);
IJ 2360 GET #3,K
VE 2370 IF K=27 THEN POP:GOTO 260
BZ 2380 IF K<48 OR K>57 AND K<>155 AND K<
>126 THEN 2360
TN 2390 IF K=155 THEN M=INT(VAL(M$)):GOTO
2420
EH 2400 IF K=126 THEN ? CHR$(K);:GOTO 233
0
UQ 2410 M$(2,2)=CHR$(K):? M$(2,2);:M=INT(
VAL(M$))
KR 2420 IF NOT (M<1 OR M>12) THEN 2430
SH 2425 ? :? :? "ONLY 1 - 12, PLEASE":PO
SITION 5,23:? R5$;:GET #3,K:? "
:GOTO 2300
CE 2430 ? :? :? "For what year "
DJ 2440 GET #3,K:IF K<>27 AND K<48 OR K>5
7 THEN 2440
VA 2450 IF K=27 THEN POP:GOTO 260
FT 2460 Y$(1,1)=CHR$(K):? Y$(1,1);
LG 2470 GET #3,K:IF K<>27 AND K<48 OR K>5
7 AND K<>155 AND K<>126 THEN 2470
IC 2480 IF K=126 THEN ? CHR$(K);:GOTO 244
0
TV 2490 IF K=155 THEN Y=INT(VAL(Y$)):GOTO
2620
UN 2500 IF K=27 THEN POP:GOTO 260
IE 2510 Y$(2,2)=CHR$(K):? Y$(2,2);
ZY 2520 GET #3,K:IF K<>27 AND K<48 OR K>5
7 AND K<>155 AND K<>126 THEN 2520
LZ 2530 IF K=126 THEN ? CHR$(K);:GOTO 247
0
TI 2540 IF K=155 THEN Y=INT(VAL(Y$)):GOTO
2620
UC 2550 IF K=27 THEN POP:GOTO 260
LR 2560 Y$(3,3)=CHR$(K):? Y$(3,3);
NZ 2570 GET #3,K:IF K<>27 AND K<48 OR K>5
7 AND K<>155 AND K<>126 THEN 2570
GR 2580 IF K=126 THEN ? CHR$(K);:GOTO 252
0
TX 2590 IF K=155 THEN Y=INT(VAL(Y$)):GOTO
2620
UP 2600 IF K=27 THEN POP:GOTO 260
WU 2610 Y$(4,4)=CHR$(K):Y=INT(VAL(Y$)):?
Y$(4,4)
FK 2620 IF LOD=IN THEN LOD=OFF:RETURN
LZ 2630 ? " :? :? "

```

```

RJ 2640 TRAP 40000: DY$="31283130313031313
0313031"
GB 2650 IF M<3 THEN M=M+12: Y=Y-1
ZC 2660 N=2*M+INT(0.6*(M+1))+Y+INT(Y/4)-I
NT(Y/100)+INT(Y/400)+3
NF 2670 N=INT(CN/7-INT(CN/7))*7+0.05: IF N
=0 THEN N=7
TT 2680 IF M>12 THEN M=M-12: Y=Y+1
DG 2690 DY=VAL(DY$(M*2-1,M*2))
XP 2700 IF M=2 THEN IF (Y/4=INT(Y/4) AND
Y/400<INT(Y/400)) THEN DY=DY+1
JH 2710 RESTORE 2820: FOR X=1 TO M: READ MO
$: NEXT X
JW 2720 FOR X=1 TO 42: DATEMAT(X)=0: NEXT X
: NUM=1: FOR X=N TO DY+N-1: DATEMAT(X)=NU
M: NUM=NUM+1: NEXT X
RQ 2730 XX=1: FOR X=1 TO 42: IF DATEMAT(X)>
9 THEN DT$(XX,XX+1)=STR$(DATEMAT(X)): G
OTO 2750
PG 2740 DT$(XX+1,XX+1)=STR$(DATEMAT(X)): D
T$(XX,XX)=" ": IF DATEMAT(X)=0 THEN DT$
<XX+1,XX+1)=" "
ME 2750 XX=XX+2
MF 2760 NEXT X

```

```

OZ 2770 FOR X=1 TO DY: IF X<10 THEN C$(X*3
4-33,X*34-33)=" ": C$(X*34-32,X*34-32)=
STR$(X): C$(X*34-31,X*34-30)=" "
IS 2780 IF X>9 THEN C$(X*34-33,X*34-32)=5
TR$(X): C$(X*34-31,X*34-30)=" "
MO 2790 NEXT X
XE 2800 C1$=C$
AT 2810 RETURN
NQ 2820 DATA JANUARY, FEBRUARY, MARCH, APRIL
, MAY, JUNE, JULY, AUGUST, SEPTEMBER, OCTOBE
R, NOVEMBER, DECEMBER
AM 2830 REM PERSONALIZE CALENDAR
AC 2840 TRAP 40000: CLOSE #4: OPEN #4,8,0,"
D:NAME":? "What is your name (up t
o 23"? "characters)?";
DL 2850 INPUT #16: NAME$: IF NAME$="" THEN
NAME$=" "
: ? #4
; NAME$: CLOSE #4: GOTO 200
DD 2860 STUFF$(1,1)=" ": STUFF$(25,25)=STU
FF$: STUFF$(2)=STUFF$: NAME$(LEN(NAME$)+
1,LEN(NAME$)+2)="5"
SP 2870 STUFF$(12-LEN(NAME$)/2,12+LEN(NAM
E$))=NAME$: NAME$=STUFF$: ? #4: NAME$: CLO
SE #4: POKE 195,0: GOTO 200

```

RAMDISK SENTRY

Article on page 26

LISTING 1

Don't type the
TYPO II Codes! 

```

VB 10 REM NOFORMAT
KE 20 REM BY GLENN K. SMITH
GD 30 REM (c) 1985, 1988 ANTIC PUBLISHING
EV 40 REM (LINES 10-250 MAY BE USED WITH
OTHER BASIC LOADERS IN THIS ISSUE.
IJ 50 REM CHANGE LINE 70 AS NECESSARY.)
PR 60 DIM FN$(20), TEMP$(20), AR$(93): DPL=P
EEK(10592): POKE 10592,255
QU 70 FN$="D:RAMDISK.OBJ": REM THIS IS THE
NAME OF THE DISK FILE TO BE CREATED
RD 80 ? "Disk or Cassette?": POKE 764,25
5
PY 90 IF NOT (PEEK(764)=18 OR PEEK(764)=
58) THEN 90
TH 100 IF PEEK(764)=18 THEN FN$="C:"
VB 110 POKE 764,255: GRAPHICS 0: ? " AN
TIC'S GENERIC BASIC LOADER"
MY 120 ? "BY CHARLES JACKSON"
KB 130 POKE 10592,DPL: TRAP 200
PU 140 ? : ? "Creating "; FN$: ? "... Plea
se stand by."
LW 150 RESTORE : READ LN: LM=LN: DIM A$(LN):
C=1
BQ 160 AR$="": READ AR$
YC 170 FOR X=1 TO LEN(AR$) STEP 3: POKE 75
2,255
DM 180 LM=LM-1: POSITION 10,10: ? "Countdo
wn... T-"; INT(LM/10); " "
BK 190 A$(C,C)=CHR$(VAL(AR$(X,X+2))): C=C+
1: NEXT X: GOTO 160
MM 200 IF PEEK(195)=5 THEN ? : ? : ? "TOO
MANY DATA LINES!": ? "CANNOT CREATE FIL
E!": END
CM 210 IF C<LN+1 THEN ? : ? "TOO FEW DATA
LINES!": ? "CANNOT CREATE FILE!": END
UQ 220 IF FN$="C:" THEN ? : ? "Prepare ca
ssette, press RETURN"
AR 230 OPEN #1,8,0, FN$
PV 240 POKE 766,1: ? #1: A$: POKE 766,0
AL 250 CLOSE #1: GRAPHICS 0: ? "ADDITIONED"
"
LB 1000 DATA 278
NL 1010 DATA 2552550000002510802382400020
322340800169006133084169004133085032182
080083101116116105110103032
OM 1020 DATA 0851120320650840650820730320
49051048088069032082065077068105115107
032155000169008133085032182
ML 1030 DATA 0800820650770681051151070320
7811111603207011114109097116116101100
033032155155155155155000169
XQ 1040 DATA 01313308503218208001602402362
2922524322916024722523244160155000173
010007009128141010007032224
AD 1050 DATA 00703224108016206416900031570
66003169251157068003169080157069003169
004157074003169000157075003
RE 1060 DATA 0320862281620641890670030480
05169056141063021032241080165020024105

```

```

OO 128197020208252206240002076
1070 DATA 2340801041411990801041412000
80238199080208003238200080173255255240
006032218080076190080173200
XL 1080 DATA 0800721731990800720961620001
42072003142073003160011140066003076086
228032182080125155000096162
QD 1090 DATA 0641690121570660030760862280
68252080005081056058068085080046083089
0831552240022250002000080

```

LISTING 2

```

0100 ; NOFORMAT
0110 ; BY GLENN K. SMITH
0120 ; (c) 1988, ANTIC PUBLISHING
0130 .OPT NO LIST
0140 .OPT OBJ
0150 *= $5000
0160 ;
0170 ; THIS PROGRAM WILL SETUP A
0180 ; RAMDISK AS DRIVE #8. IT WILL
0190 ; NOT FORMAT IT SO ANY PREVIOUS
0200 ; FILES WILL REMAIN INTACT. IT
0210 ; ALSO CHECKS TO SEE IF DUP.5Y5
0220 ; IS PRESENT IN THE RAMDISK.
0230 ;
0240 ROWCR5 = $54
0250 COLCR5 = $55
0260 RTCLOK = $14
0270 CURSOR = $02F0
0280 ICCOM = $0342
0290 ICSTA = $0343
0300 ICBAL = $0344
0310 ICBALH = $0345
0320 ICBLL = $0348
0330 ICBLLH = $0349
0340 ICAUX1 = $034A
0350 ICAUX2 = $034B
0360 SIOV = $E459
0370 CIOV = $E456
0380 DRUBYT = $070A
0390 DINIT = $07E0
0400 DUPDRV = $153F
0410 ;
0420 ; RAMDISK
0430 INC CURSOR ; HIDE CURSOR
0440 JSR CLRS ; CLEAR SCREEN
0450 LDA #86 ; POSITION 6,4
0460 STA ROWCR5
0470 LDA #84
0480 STA COLCR5
0490 JSR PRINT
0500 .BYTE "Setting Up ATARI 130XE
RAMDisk "
0510 .BYTE $9B,$00
0520 LDA #88 ; 8 SPACES OVER
0530 STA COLCR5
0540 JSR PRINT

```

continued on next page


```

SE #2:POKE 752,0:TRAP 40000
TI 410 C=0:C=59-T:FOR K=1 TO C:LPRINT :NE
XT K
AD 420 LPRINT "
      -";P+1;"-"
MC 430 ? :? "----- END -----
      -----":POKE 752,0
DF 440 YN$=""?:? "Do you want to print
another document(Y/N)";:INPUT YN$
XJ 450 IF YN$(1,1)="Y" THEN 160
MJ 460 IF YN$(1,1)="N" THEN 310
IF 470 CLOSE #2:OPEN #2,4,0,"K":GET #2,K
EY:IF KEY=ASC(" ") THEN 480
TA 480 R=0:CLOSE #2:RETURN
NU 490 T=0:P=P+1:?: #2:?: #2:?: #2:?"
      -";P;"-"
TN 500 FOR M=1 TO 6:?: #2:NEXT M:RETURN

```

```

PY 510 CLOSE #2:OPEN #2,6,0,"D1:*.":?: CH
R$(125):?
UL 520 INPUT #2,FILE$:IF ASC(FILE$(1,1))>
47 THEN 540
UH 530 ? FILE$::INPUT #2,FILE$:? " ";FIL
E$:IF ASC(FILE$(1,1))<47 THEN 520
US 540 CLOSE #2:?:? " " FILE$ ON D
ISK D1":POKE 752,0:?:RETURN
TM 550 ? CHR$(125):POSITION 11,10:?">BAD
FILE NAME<":FOR S=1 TO 300:NEXT S:TRA
P 40000:YN$="Y":GOTO 160
EH 1000 IF LEN(K$)>3 THEN IF K$(1,1)="D"
AND K$(3,3)=":" THEN 1050
MZ 1010 IF LEN(K$)>2 THEN IF K$(1,2)="D:"
THEN 1050
QA 1030 D$="D1":L=LEN(K$):D$(4,L+3)=K$:K
$=D$
LV 1050 D$=K$:RETURN

```

SUPER SIEVE

Article on page 31

LISTING 1

Don't type the
TYPO II Codes! 

```

RW 1 REM SIEVE PRIME FINDER
PU 2 REM DENIS DeVRIES
OP 3 REM (c)1988, ANTIC PUBLISHING INC.
PL 5 REM MOVE MEMTOP DOWN
TW 10 POKE 106,144:GRAPHICS 0:POKE 752,1
YP 20 ? :? " SUPER-SIEVE"
ZD 30 FOR I=14592 TO 15016:READ M:POKE I,
M:NEXT I
ZW 40 ? :? "Test a number for prime (1)"
GF 50 ? :? "Find a prime by number (2)"
XY 60 ? :? "Return to BASIC (3)"
TF 70 ? :? "What is your choice number";
FC 80 INPUT Z:POKE 710,148:Z=Z-1
HJ 90 IF Z<0 OR Z>2 THEN 70
HH 100 IF Z=2 THEN 9999
RW 110 ? :? "What is your number":INPUT
NU
YN 120 IF Z=1 THEN 210
ZF 130 IF NU<2 THEN 430
NZ 140 IF NU>16777213 THEN 440
JF 145 REM GET LAST DIGIT
LF 150 NO=NU/10:NO=INT(NO)*10:LAST=NU-NO
PY 160 ON LAST+1 GOTO 180,230,170,230,180
,180,180,230,180,230
MG 170 IF NU=2 THEN C=1:?: CHR$(125):GOTO
310
PD 180 IF NU=5 THEN C=3:?: CHR$(125):GOTO
310
AK 190 ? CHR$(125):?:? "Your number, ";N
U:" is NOT a prime."
QH 200 GOTO 40
YX 210 IF NU=1 THEN Q=2:?: CHR$(125):GOTO
420
PN 220 IF NU>1492967 THEN 440
LG 230 HI=INT(NU/65536):REST=NU-65536*HI
MQ 235 REM SCREEN OFF, ATTRACT ON
FZ 240 POKE 559,0:POKE 71,128
MC 245 TRAP 500
AU 250 X=USR(14592,HI,REST,Z)
DU 260 Q=PEEK(205)+PEEK(206)*256+PEEK(207
)*65536
CY 270 C=PEEK(1542)+PEEK(1543)*256+PEEK(1
544)*65536
YF 280 ? CHR$(125):POKE 77,0:POKE 559,34
BC 290 IF Z=1 THEN 420
NR 300 IF NU<Q THEN 360
HH 305 REM GREEN SCREEN
SK 310 POKE 710,192
ZL 320 ? :? "Your number, ";NU:" is a pr
ime!"
FY 330 ? "It is number ";C:" in the serie
s of"
XX 340 ? "Primes beginning with two."
QS 350 GOTO 40
CH 355 REM RED SCREEN
LB 360 POKE 710,32
YX 370 ? :? "Your number, ";NU:" is NOT
a prime."
DK 380 ? "The next higher prime is ";Q:"
"
GK 390 ? "It is number ";C:" in the serie
s of"
XQ 400 ? "Primes beginning with two."
QL 410 GOTO 40
SY 420 ? :? "Prime number ";NU:" is ";Q:"

```

```

.:GOTO 40
ZL 430 ? "Your number is too small.":?: CH
R$(253):GOTO 40
KE 440 ? "Your number is too large.":?: CH
R$(253):GOTO 40
KU 500 POKE 559,34:POKE 77,0:END
AH 1000 DATA 104,216,169,0,168,153,0,55,1
36,208
AN 1001 DATA 250,153,0,56,136,208,250,153
,0,6
WG 1002 DATA 136,208,250,133,206,133,207,
169,1,153
RC 1003 DATA 0,54,136,208,250,104,104,141
,2,6
EM 1004 DATA 104,141,1,6,104,141,0,6,104,
104
HL 1005 DATA 133,208,169,2,133,205,141,6,
6,160
AB 1006 DATA 1,185,0,54,201,1,240,3,76,20
6
LI 1007 DATA 57,152,24,10,133,205,230,205
,144,9
SX 1008 DATA 169,1,133,206,192,0,208,1,96
,165
TS 1009 DATA 208,208,18,165,205,205,0,6,1
65,206
FL 1010 DATA 237,1,6,165,207,237,2,6,144,
22
EH 1011 DATA 96,173,6,6,205,0,6,173,7,6
XI 1012 DATA 237,1,6,173,8,6,237,2,6,144
DK 1013 DATA 1,96,165,206,201,2,240,65,15
2,24
WI 1014 DATA 101,205,133,203,165,206,105,
0,133,204
UZ 1015 DATA 208,24,169,0,166,203,157,0,5
4,165
UU 1016 DATA 205,24,101,203,133,203,144,2
40,165,206
LB 1017 DATA 101,204,133,204,176,30,165,2
05,174,6
NE 1018 DATA 6,157,0,56,165,206,157,128,5
6,165
BW 1019 DATA 203,157,0,55,165,204,157,128
,55,169
DS 1020 DATA 0,133,204,238,6,6,169,1,153,
0
QU 1021 DATA 54,200,192,0,240,3,76,61,57,
238
LJ 1022 DATA 3,6,160,2,185,0,56,133,205,1
85
RT 1023 DATA 128,56,133,206,169,0,133,207
,56,185
KX 1024 DATA 0,55,233,255,133,203,185,128
,55,233
WK 1025 DATA 0,133,204,208,22,169,0,166,2
03,157
MO 1026 DATA 0,54,165,205,24,101,203,133,
203,165
FP 1027 DATA 206,101,204,133,204,240,234,
153,128,55
NZ 1028 DATA 165,203,153,0,55,200,192,98,
208,190
FQ 1029 DATA 173,3,6,24,105,254,141,3,6,1
73
OD 1030 DATA 4,6,105,1,141,4,6,144,3,238

```

```

ZY 1031 DATA 5,6,160,1,185,0,54,201,1,208
PS 1032 DATA 91,152,24,10,133,205,169,0,1
   05,0
AX 1033 DATA 133,206,165,205,109,3,6,133,
   205,165
IT 1034 DATA 206,109,4,6,133,206,169,0,10
   9,5
SY 1035 DATA 6,133,207,165,208,208,18,165
   ,205,205
RS 1036 DATA 0,6,165,206,237,1,6,165,207,
   237
QU 1037 DATA 2,6,144,22,96,173,6,6,205,0
TJ 1038 DATA 6,173,7,6,237,1,6,173,8,6
AR 1039 DATA 237,2,6,144,1,96,238,6,6,208
UM 1040 DATA 16,238,7,6,208,11,238,8,6,24

TK 1041 DATA 144,5,169,1,153,0,54,200,192
   ,0
QA 1042 DATA 208,148,76,222,57
QH 9999 POKE 106,160:GRAPHICS 0

```

LISTING 2

```

0100 ; SUPER SIEVE!
0110 ; BY DENNIS DEVRIES
0120 ; (c)1988, ANTIC PUBLISHING
0130      *= $3900
0140      .OPT NO EJECT
0150 LOK = $CB      ; LOBYTE K      203
0160 MIK = $CC      ; MDBYTE K      204
0170 LOQ = $CD      ; LOBYTE PRIME 205
0180 MIQ = $CE      ; MDBYTE PRIME 206
0190 HIQ = $CD      ; HIBYTE PRIME 207
0200 LON = $0600    ; LOBYTE TEST  153
6
0210 MIN = $0601    ; MDBYTE TEST  153
7
0220 HIN = $0602    ; HIBYTE TEST  153
8
0230 LOR = $0603    ; LOBYTE R      153
9
0240 MIR = $0604    ; MDBYTE R      154
0
0250 HIR = $0605    ; HIBYTE R      154
1
0260 LOC = $0606    ; LOBYTE COUNT 154
2
0270 MIC = $0607    ; MDBYTE COUNT 154
3
0280 HIC = $0608    ; HIBYTE COUNT 154
4
0290 F = $3600      ; SIEVE 13824
0300 KKL = $3700     ; KK LOBYTE 14080
0310 KKM = $3780     ; KK MDBYTE 14208
0320 PPL = $3800     ; PP LOBYTE 14336
0330 PPM = $3880     ; PP MDBYTE 14464
0340 PLA            ; START @ 14592
0350 CLD            ; CLEAR DECIMAL
0360 LDA #$00
0370 TAY
0380 LP7            ;
0390 STA KKL,Y      ; CLEAR KK TABLE
0400 DEY
0410 BNE LP7
0420 ;
0430 LP8            ;
0440 STA PPL,Y      ; CLEAR PP TABLE
0450 DEY
0460 BNE LP8
0470 ;
0480 LP6            ;
0490 STA LON,Y      ; CLEAR PAGE 6
0500 DEY
0510 BNE LP6
0520 ;
0530 STA MIQ        ; CLEAR Q
0540 STA HIQ
0550 LDA #$01      ; SET F TO 1'S
0560 LPF            ;
0570 STA F,Y
0580 DEY
0590 BNE LPF
0600 ;
0610 PLA            ; GET HIBYTE HIBYT
E
0620 PLA            ; GET HIBYTE LOBYT
E

```

```

0630 STA HIN
0640 PLA            ; GET MDBYTE
0650 STA MIN
0660 PLA            ; GET LOBYTE
0670 STA LON
0680 LDA #$02      ; FIRST PRIME
0690 STA LOQ      ; Q=2
0700 STA LOC      ; C=2
0710 LDY #$01
0720
0730 LP1            ;
0740 LDA F,Y        ; DOES F<Y>=1?
0750 CMP #$01      ; IF SO, HAVE PRIM
E
0760 BEQ WY1
0770 ;
0780 JMP STEP      ; CONTINUE SEARCH
0790
0800 WY1            ;
0810 TYA            ; MAKE Q=Y+Y+1
0820 CLC
0830 ASL A          ; A=Y+Y
0840 STA LOQ        ; Q=Y+Y
0850 INC LOQ        ; Q=Y+Y+1
0860 BCC CHK       ; IF Q<257
0870 ;
0880 LDA #$01
0890 STA MIQ        ; Q>255
0900 CPY #$00
0910 BNE CHK
0920 ;
0930 RTS
0940 CHK            ;
0950 LDA LOC        ; TEST LOBYTE
0960 CMP LON
0970 LDA MIC        ; TEST MDBYTE
0980 SBC MIN
0990 LDA HIC        ; TEST HIBYTE
1000 SBC HIN
1010 BCC NEXT      ; Q<N
1020 ;
1030 RTS            ; Q=>N, DONE!
1040 NEXT          ;
1050 LDA MIQ
1060 CMP #$02      ; BYTE SET?
1070 BEQ CPLUS     ; IF Q>512
1080 ;
1090 TYA            ; MAKE K=Y+Q
1100 CLC
1110 ADC LOQ        ; K=Y+Q, LOBYTE
1120 STA LOK
1130 LDA MIQ
1140 ADC #$00        ; GET CARRY
1150 STA MIK        ; K=Y+Q, MDBYTE
1160 BNE PEEP      ; IF K>255
1170 ;
1180 EF            ;
1190 LDA #$00
1200 LDX LOK
1210 STA F,X        ; F<K>=0
1220 LDA LOQ
1230 CLC
1240 ADC LOK
1250 STA LOK        ; K=K+Q, LOBYTE
1260 BCC EF        ; ELSE ADD CARRY
1270 ;
1280 LDA MIQ
1290 ADC MIK
1300 STA MIK
1310 BCS STEP
1320 ;
1330 PEEP          ;
1340 LDA LOQ
1350 LDX LOC
1360 STA PPL,X      ; PP<C>=Q, LOBYTE
1370 LDA MIQ
1380 STA PPM,X      ; PP<C>=Q, MDBYTE
1390 LDA LOK
1400 STA KKL,X      ; KK<C>=K, LOBYTE
1410 LDA MIK
1420 STA KKM,X      ; KK<C>=K, MDBYTE
1430 LDA #$00
1440 STA MIK        ; RESET K, NEXT LO
OP
1450 CPLUS         ;
1460 INC LOC        ; C=C+1, 97 MAX
1470 STEP
1480 LDA #$01
1490 STA F,Y        ; F<Y>=1
1500 INY
1510 CPY #$00
1520 BEQ R1
1530 ;
1540 JMP LP1        ; GO BACK TO START
R1

```

```

1550 INC LOR ;R=1
1560 LP3 LDY #S02
1570 LDY #S02
1580 LP2 LDA PPL,Y
1590 STA LOQ ;Q=PP<Y>, LOBYTE
1600 LDA PPM,Y
1610 STA MIQ ;Q=PP<Y>, MDBYTE
1620 LDA #S00
1630 STA HIQ ;RESET Q, NEXT LO
1640 OP
1650 SEC
1660 LDA KKL,Y ;K=KK<Y>, LOBYTE
1670 SBC #255
1680 STA LOK ;K=K-255
1690 LDA KKM,Y ;K=KK<Y>, MDBYTE
1700 SBC #S00 ;CARRY BIT?
1710 STA MIK
1720 BNE KK2
1730 ;
1740 EF2 LDA #S00 ;ZERO MULTS. OF Q
1750
1760 LDX LOK
1770 STA F,X ;F<K>=0
1780 LDA LOQ
1790 CLC
1800 ADC LOK
1810 STA LOK ;K=K+Q, LOBYTE
1820 LDA MIQ
1830 ADC MIK
1840 STA MIK ;K=K+Q+CARRY
1850 BEQ EF2 ;MORE ZEROS
1860 ;
1870 KK2 STA KKM,Y ;FILL KK TABLE
1880 LDA LOK
1890 STA KKL,Y
1900 INY
1910 CPY #98
1920 BNE LP2 ;NEXT J
1930
1940 ;
1950 LDA LOR ;R=R+510
1960 CLC
1970 ADC #SFE ;510 LOBYTE
1980 STA LOR
1990 LDA MIR
2000 ADC #S01 ;510 HIBYTE
2010 STA MIR
2020 BCC WY2
2030 ;
2040 INC HIR ;CARRY BIT
2050 WY2
2060 LDY #S01
2070 LP4 LDA F,Y ;DOES F<Y>=1?
2080 CMP #S01 ;IF NOT, GET
2090 BNE STEP2 ;NEXT F<Y>
2100 ;
2110 TYA ;MAKE Q=R+Y+Y
2120 CLC
2130 ASL A
2140 STA LOQ ;Q=Y+Y, LOBYTE
2150 LDA #S00
2160 ADC #S00
2170 STA MIQ ;Q=Y+Y, DONE
2180 LDA LOQ
2190 ADC LOR
2200 STA LOQ ;Q=Y+Y+R, LOBYTE
2210 LDA MIQ
2220 ADC MIR
2230 STA MIQ ;Q=Y+Y+R, MDBYTE
2240 LDA #S00
2250 ADC HIR
2260 STA HIQ ;Q=Y+Y+R, HIBYTE
2270 LDA LOC ;CHECK Q=>N?
2280 CMP LON
2290 LDA MIC
2300 SBC MIN
2310 LDA HIC
2320 SBC HIN
2330 BCC NXT2
2340 ;
2350 ;
2360 ;
2370 ;
2380 ;
2390 ;
2400 ;
2410 ;
2420 ;
2430 ;
2440 ;
2450 ;
2460 ;
2470 ;
2480 ;
2490 ;
2500 ;
2510 ;
2520 ;
2530 ;
2540 ;
2550 ;
2560 ;
2570 ;
2580 ;

```

LOTTOPIK

Article on page 39

LISTING 1

Don't type the
TYPO II Codes! 

```

QA 1 REM LOTTOPIK
TA 2 REM BY JOHN FERGUSON
QR 3 REM (c)1988, ANTIC PUBLISHING
WQ 5 X=49:REM THE HIGHEST NUMBER IN YOUR
GX 10 DIM B(6),Q$(3),P$(30),P1$(30),P2$(5
ND 20 GOTO 320
FR 30 POKE 82,6:? CHR$(125):?
XV 35 ? " LOTTO NUMBERS"
MF 40 ? " 0000 000000"
IJ 50 FOR T=1 TO 5
FA 60 FOR N=0 TO 5:B(N)=-1:NEXT N
NC 70 A=INT(RND(0)*X)+1
GG 80 FOR N=0 TO 5
UP 90 IF A=B(N) THEN 70
NO 100 IF B(N)=-1 THEN B(N)=A:GOTO 70
FQ 110 IF B(5)<>-1 THEN 130
HT 120 NEXT N
CK 130 ?
HD 140 R=0
OP 150 FOR N=0 TO 4
XE 160 IF B(N)>B(N+1) THEN C=B(N):B(N)=B(
N+1):B(N+1)=C
ID 170 NEXT N
XO 180 R=R+1:IF R<6 THEN 150
NM 190 P$=""
OW 200 FOR N=0 TO 5
II 210 P1$=STR$(B(N)):IF LEN(P1$)=1 THEN
P2$=P1$:P1$="" :P1$(2)=P2$
BL 220 P$(LEN(P$)+1)=" ":P$(LEN(P$)+1)=P
1$
HW 230 NEXT N
XZ 240 ? :? P$
CU 250 IF P=1 THEN ? #2,P$:#2
KK 260 NEXT T
DH 270 ? :? :? "More";
RC 280 IF P=1 THEN ? #2:#2:#2:#2
GU 290 INPUT Q$
MR 300 IF Q$="N" OR Q$="NO" THEN POKE 82,
2:#2 CHR$(125):END
QA 310 GOTO 30
EG 320 ? CHR$(125):? :? :POKE 82,2
QB 325 ? " LOTTOPIK"
TP 330 ? :? :? "Do you want the results p
rinted?"
CC 340 ? :? :INPUT Q$:FOR T=1 TO PEEK(20)
:P=RND(0):NEXT T
LA 350 P=0:IF Q$="Y" OR Q$="YES" THEN P=1
LI 360 TRAP 400
RK 370 IF P=1 THEN CLOSE #2:OPEN #2,8,0,"
P:"
ZB 380 IF P=1 THEN ? #2," LOTTO NUM
BER5":? #2:#2
QQ 390 GOTO 30
MM 400 ? :? :? "PRINTER NOT RESPONDING!":
? :? :GOTO 330

```

Antic Classifieds

SOFTWARE, ETC.

Try us for your Atari Public Domain software needs. Good prices, fast service, Write for free catalog. Vulcan Software, PO Box 692 Manassas, VA 22111-0692. (1/89)

COMPREHENSIVE COMIC BOOK SYSTEM! ATARI 8-bit, 48-K, disk drive. Excellent manual! \$19.95. SASE->More infor. BUECO, 3900 Hampton Dr., Anchorage, AK 99504. (11/88)

AMAZING ATARI 8-BIT SOFTWARE!!! Choose from over 240 Public Domain Theme Disks or pick individual programs. Free 55-page Catalog! BELLCOM, Box 1043-A, Peterborough, Ontario, Canada K9J 7A5. (11/88)

FEAR CHALLENGES THE 8-BIT WORLD!! Unbelievable Action!! Figure Eight Auto Racing 400/800/XL/XE 48KRAM \$7.50/Disk/PPD. RASCOM, 22128 Newkirk Avenue, Carson, CA 90745. (11/88)

New NERDS graphics collections for Print Shop(R): BIOLOGY 1&2: Animal, Plant, Micro, more—230 pics: \$15 both. Periodic Table: Chemistry symbols (over 100): \$9. MAPS 1&2: US, Europe, more—230 pics: \$15 Both. Add \$1 P&H SASE for printouts. NERDS, Loeffler, 18 Wendy Dr., Farmingville, NY 11738. (11/88)



Stop overpaying for PD software!!! All 8-bit disks only \$2.00 each, ST only \$3.00. Quantity discounts, great selection. Specify computer. Send large SASE: MWPDS, 890 N. Huntington St., Medina, OH 44256. (11/88)

ATARI ST DISKS. \$4.00 each. 20+ programs per disk. Send \$4.00 for sample disk and HUGE catalog: L. Christoffer, 1806 Patrick Dr., Burlington, WA 98233. (11/88)

PUBLIC DOMAIN SOFTWARE ONLY \$1.99 a disk for the 800/XL/XE. Large library of the best organized disks. Pick from over 200 disks. Large free list. ComputerActive, Box 893-A, Clinton, OK 73601. (11/88)

ATARI 800/XL/XE PUBLIC DOMAIN DISKS. Receive four high quality double-sided disks for only \$8.50! Send money order for 24 hour shipping. Free list. 1ST Byte. Box 130822, Tyler, TX 75713. (12/88)

NEW! AUTOPREP DISK INITIALIZER Ends repeated DOS prompts, saves time. Automatically formats single or dual density, writes your choice of DOS files, RAMDISK.COM and/or AUTORUN.SYS—all without DOS. Specify once, then initialize 10 or 10,000 disks with no more prompts. Fast, accurate for Atari 8-bits, min. 32K, DOS 2.0 or 2.5. Only 14.95+\$2 shipping, check or M.O. (New Yorkers add \$1.05 sales tax.) HELPWAYS, Box H, Rochester, NY 14623. (12/88)

HEY! FANTATSITC 8-bit public domain software. Games. . .productivity. . .utilities. . .communications. . .more. Demo disk, \$3.00; catalog FREE! HOMEMADE, 6011 Hyde Park Circle, Suite 208, Jacksonville, FL 32210. (11/88) Best PD disks/prices—fastest service—FREE bonuses—8-bit/ST. Automatic DISK-A-MONTH program. Full disks less than \$1.50 each. Super sample disk with catalog \$3.50. Specify computer. PATNOR, POB 370782, El Paso, TX 79937. (11/88)

Applications software for your Atari XL/XE or ST! Business, MIDI/Music, Educational, Amateur Radio, Astronomy, more! \$4.00 per disk. SASE for catalog. SPECIFY COMPUTER. KDACED PDware, Box 1646, Orange Park, FL 32067-1646. (11/88)

The New Testaments of the Holy Bible KJV 8-bit and ST. Send SASE for info to: Computers As Tutors, 325 May Court, Mt. Zion, IL 62549. 8-bit Demo Disk \$2.00, ST Demo \$3.00. (12/88)

Public domain Disks: ST \$4.00, 800/XL/XE \$3.00. Largest ST selection. ST Bible on disk \$39.95. Blank disks \$CALL. VISA/MC. FREE Catalog—Call or Write, Specify Computer. BRE Software, 352 W. Bedford, Suite 104-AN, Fresno, CA 93711. (800)622-7942, (209)432-2159 in CA. (2/88)

AAPDS offers PD Software for the 8-bits. For a double-sided demo disk and catalog listing send \$3 to AAPDS, 6-18th Edgemoore, Hutchinson, KS 67502. (12/88)

FREE 8-BIT PD DISK! For your free disk send \$1.00 to cover shipping & handling to: ComputerActive, Box 893-D, Clinton, OK 73601. (11/88)

Jumpstart any XE/XL. Instant reboot any time. Exit any program. Push-button module. \$16.95. Logic One, Box 18123, Cleve., OH 44118-0123. (11/88)

SPHERE OF INTERNMENT — Largescale ADVENTURE Many castles, villages, dungeons, etc., to explore. With map \$25 postpaid. 25 new double-sided, double-density disks, with sleeves, \$14 postpaid. (NOT PD Software) Utilities and other programs available for Atari 8-bit (Specify type). VISA/MC accepted. F.H.S., Rt. 1, Karlstad, MN 56732. Ph. (218) 436-2835. (11/88)

MULTITUDINOUS MUSIC LIBRARIES—This ST PD melodious music library includes BACH to ZEPPELIN in MUSIC STUDIO CONST. SET, EZ TRACK and SID file formats. Includes PD player to play them all! For our Music Set #1 (3 disks including our catalog) rush \$9 plus \$2 shipping to: MARS Merch., Dept 76, 15W615 Diversey Elmhurst, IL 60126-1257. (312)530-0988. (1/89)

12 X-RATED DISKS for the ATARI 800/XL/XE, only \$14.95 + 2.50 S/H. You must send a signed statement of being over 21 with check or money order to: ComputerActive, Box 893-X, Clinton, OK 73601. (11/88)

AGAPE GAMES-5 CHRISTIAN GAMES KINGS GLORY-Arcade like adventure with 26 mazes and a maze maker. BIBLE WORD SEARCHER with 30 puzzles an a puzzle generator. Plus 3 Games that teach the Books of The Bible. For ATARI 8-bit (requires 48K + disk) \$12.95. Daniel Sharpe, GPO 911, Chicopee, MASS 01021. (11/88)

MISCELLANEOUS

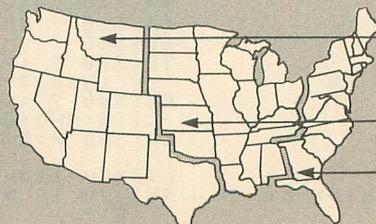
STOP! LOOK! \$4,000/month with computers. Homebased. Proven. No experience/capital. Guaranteed. Free details. MacKenzie, Box 91181-HCC, Pasadena, CA 91109. (11/88)

**YOUR AD COULD
APPEAR HERE**

Advertising Sales

Advertising Sales Director
John Taggart
Antic Magazine
544 Second Street
San Francisco, CA 94107
(415) 957-0886

Address all advertising materials to:
KATE MURPHY
Advertising Production Coordinator
Antic Magazine
544 Second Street
San Francisco, CA 94107



Phoebe Thompson Associates
15640 Gardena Way
Los Gatos, CA 95030
PHOEBE THOMPSON
408-356-4994

The Pattis Group
4761 W. Touhy Ave.
Lincolnwood, IL 60466
MICHAEL MOONEY
312-679-1100

Garland Associates
10 Industrial Park Rd.
Hingham, MA 02043
JOHN A. GARLAND
617-749-5852

BUY

SELL

TRADE

SWAP

Antic Classifieds

Gail McCall, Advertising Sales Coordinator
544 Second Street, San Francisco, CA 94017
Telephone (+15) 957-0886

Name	Company
Address	Phone
City/State/Zip	
MasterCard/Visa Number	Expiration Date
Signature	Issue(s) Ad to Appear
Enclosed is my payment for \$ _____	

RATE: \$1.00 PER WORD—twenty (20) word minimum.

BOLDFACE: Add \$7.50 per line for boldface words or add \$40.00 for the entire ad set in boldface (any number of lines).

STARS: Add \$6.50 for one (1) line of six (6) stars ★★★★★★ at top of ad.

TERMS: Prepayment is required. Check, Money Order, Visa or MasterCard is accepted. Make check payable to Antic Publishing.

FORMS: Ads are subject to publisher's approval and **MUST BE TYPED**. Please underline words to be set in boldface.

GENERAL INFORMATION: Advertisers using Post Office Box numbers in their ads must supply permanent address and telephone numbers. Ad will appear in the next available issue after receipt unless otherwise specified.

DEADLINE: 90 days prior to cover date (e.g., December 1988 closes September 1, 1988—December issue on sale November 1, 1988).

Clip this coupon, attach to typewritten copy and send with remittance to address on the left.

HANDWRITTEN COPY WILL NOT BE ACCEPTED

AN AD IN ANTIC REACHES MORE THAN 100,000 SERIOUS ATARI USERS

Advertisers Index

Be sure to mention ANTIC when contacting these advertisers—all of whom support the Atari 8 bit and ST computer.

This list is provided as a courtesy to our advertisers. ANTIC does not guarantee accuracy or comprehensiveness.

	PAGE NO.
ALPHA SYSTEMS	51
AMERICAN TECHNAVISON	2
ANTIC SOFTWARE	48,49
ANTIC	64
B & C COMPUTERVISION	7
C.M.O.	12,13
COMPUSERVE	I, B.C.
COMPUTER REPEATS	32
COMPUTER SOFTWARE SERVICES	10
COVOX	63
LYCO	I.F.C.
MAD SCIENTIST	63
MICROTYME	44
NORTHEAST COMPUTER FAIRE	9
PSYGNOSIS	B.C.
REEVES SOFTWARE	34
SOFTWARE DISCOUNTERS	1
TWENTYFIFTH CENTURY	15
WASATCH	63

Advertising Deadlines

January 1989

Insertion Orders: October 3
Artwork: October 10
On Sale: Last week of November

February 1989

Insertion Orders: November 2
Artwork: November 9
On Sale: Last week of December

March 1989

Insertion Orders: December 1
Artwork: December 8
On Sale: Last week of January

Tech Tips

USEFUL POKE & PEEK LOCATIONS

- 752 Cursor inhibit: 0=visible, 1=invisible
756 Character base register: In graphics 1 and 2, POKE 756, 226 to get lowercase characters. (Default is 224)
764 Contains value of last key pressed (internal code)
767 Scroll start/stop flag: Toggled by pressing [CONTROL] [1]; 0=Scroll enabled, otherwise disabled
832-847 IOCB0: default device for the screen editor. POKE 838,166 and POKE 839,238 to send all screen outputs to the printer. POKE 838,163 and POKE 839,246 to return to normal
928-943 IOCB6: used for screen display
944-959 IOCB7: used by LPRINT, LOAD, SAVE and LIST
2147,2148 One of two locations used by DOS to store LOMEM
2152,2153 The other DOS pointer to LOMEM
5533 Used by DOS to check for presence of DUP.SYS: Zero means DUP.SYS is not there
40960 USR here to *cold start* the BASIC cartridge
41037 USR here to *warm start* the BASIC cartridge
53277 POKE a 4 here to put paddle and joystick triggers in latch mode; in latch mode, once a trigger is pressed, it stays "pressed" until this location is POKEd with 0
53760 AUDF1: controls the frequency of audio channel one
53761 AUDC1: controls volume and distortion of audio channel one
53762 AUDF2: channel two frequency control
53763 AUDC2: channel two volume and distortion control
53764 AUDF3: channel three frequency control
53765 AUDC3: channel three volume and distortion control
53766 AUDF4: channel four frequency control
53767 AUDC4: channel four volume and distortion control
53768 AUDCTL: master audio channel control byte
54018 PACTL: POKE 52 here to turn the cassette motor on; POKE 60 here to turn the motor back off

- 58454 CIOV: (more commonly known as \$E456) is the entry vector to the central I/O utility in the OS
58460 SETVBV: vertical blank interrupt setup-vector

(This concludes the two-part Carl Evans series which began last month.)

HAGUE'S PAUSE KEY

Install a "pause key" in your BASIC programs, using this short listing by James Hague, author of *Uncle Henry's Nuclear Waste Dump* (Antic, December 1986). After the routine has been installed, holding down [SELECT] and pressing [BREAK] will pause whatever is currently running, be it a BASIC program or machine language subroutine. Press [START] to continue. Also, the [BREAK] key still functions normally alone.

Pause Key must be re-installed after pressing [RESET]. The only things this program can't pause are vertical blank routines and disk I/O.

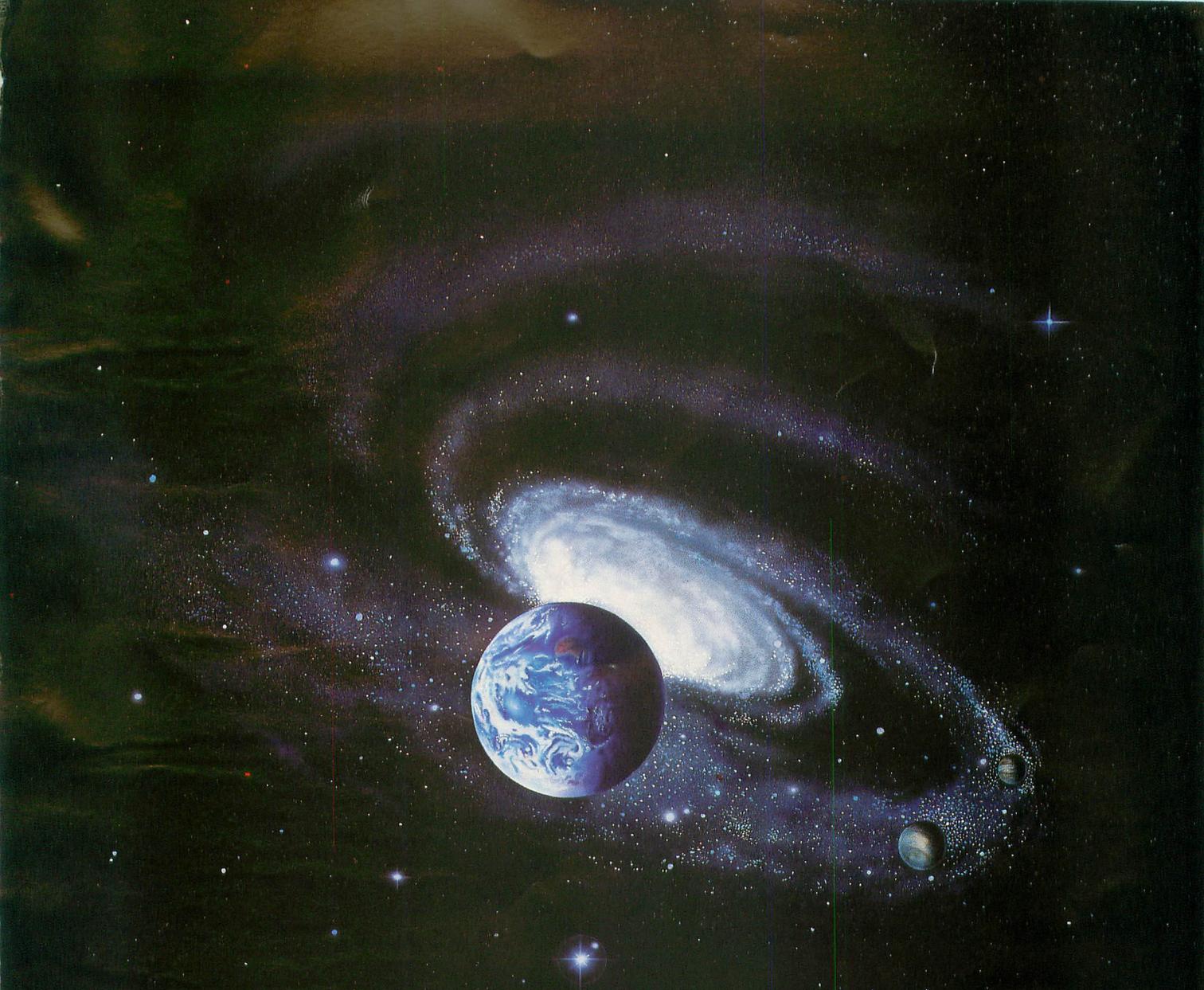
```
10 FOR A=0 TO 16:READ B:POKE 256+A,B:NEXT A
20 IF PEEK(566)<>0 OR PEEK(567)<>1 THEN POKE
273,PEEK(566):POKE 274,PEEK(567)
30 POKE 566,0:POKE 567,1
40 DATA 173,31,208,201,5,208,9,173,31,208,201,6,
208,249,104,64,76
50 ?"ANTIC";:GOTO 50:REM For a quick demo, add
this line.
```

ROTATION

Max Metral, 15, lives in Frederick, Maryland and sends along this routine that draws a rectangle, offsets the next rectangle by a specified increment and repeats the process. What you end up with is a flashy screen display.

```
5 GRAPHICS 8:SETCOLOR 2,0,0:COLOR 1
10 ? "STEP";:INPUT DL
20 FOR I=1 TO 300 STEP DL
40 PLOT I,0:DRAWTO 0,150-INT(I/2):DRAWTO 300-
I,150:DRAWTO 300,INT(I/2):DRAWTO I,0
50 NEXT I
55 END
```

Antic pays \$25 for every original and exclusive Tech Tip submission that we publish. Send your 8-bit or ST disk and printout to: Antic Tech Tips, 544 Second Street, San Francisco, CA 94107. Tech Tips welcomes very short programs that demonstrate the Atari's powers, simple hardware modifications, or useful macros for popular software.



**WELCOME TO COMPU SERVE.
THE LARGEST COMPUTER INFORMATION SERVICE IN THE UNIVERSE.
(AS FAR AS WE KNOW.)**

More people use CompuServe than any other online computer information service on Earth.

Over 380,000 members access hundreds of information, communications and entertainment services online.

Thousands with similar interests and special expertise converge regularly and exchange ideas on an ever-expanding list of special-interest Forums.

They have access to a combination of more financial information, a greater variety of shopping services, and deeper research resources than any other online computer service. Anywhere.

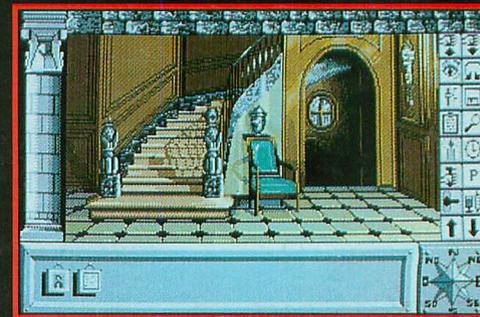
Of course, it's conceivable that there's a service like ours somewhere that could give you more for your money. But you may have to travel a few light-years to find it.

Instead, all you have to do is visit your nearest computer dealer today. To order CompuServe direct, or for more information, write: CompuServe, 5000 Arlington Centre Blvd., Columbus, Ohio 43220. Or call 800 848-8199. In Ohio and Canada, call 614 457-0802.

CompuServe®

AN H&R BLOCK COMPANY

CHRONO QUEST



A CLASSIC ADVENTURE GAME FROM PSYGNOSIS

- ★ FULL ICON CONTROL
- ★ BRILLIANT GRAPHICS
- ★ FIENDISH PLOTS
- ★ A RACE AGAINST TIME
- ★ 4 DISKS ATARI. 3 DISKS - AMIGA
- ★ IBM VERSION - COMING SOON

CHRONO-QUEST

This is the first of a new generation of adventure games from Psygnosis. An adventure game in the classic sense.

Your quest begins in your fathers chateau circa 1920, there you find (or should find) your fathers latest invention; a fantastic time machine. Your father is dead, murdered, you are the prime suspect. A letter left by your father leads you to think the real culprit was Richard, his not so faithful servant. But he has escaped to the future using the time machine . . . who will believe your fantastic story . . . do you believe it?

You will be presented with many objectives; ultimately you will have to travel through time to collect the fragments of magnetic card to drive the Time Machine into the future. There you will have to . . . Meanwhile, the immediate objective is to find the time machine . . . Sorry, a more immediate objective is to find the room with the time machine in it . . . But its dark . . . Very sorry, an even more immediate objective is to be able to see where you are going . . . 3 hours and 250 minutes and even more immediate objectives later, you are standing in the hallway thinking . . . hellpppp!!!!!!

ATARI ST/AMIGA/IBM - \$49.95

Screen Shots are from the ST. version.

Computer Software Service
 2150 Executive Drive
 Addison Illinois 60101
 Toll Free: 1-800-422-4912
 In Illinois: 1-800-331-SOFT

