

ALL 8-BIT
ATARI:
800
XL
XE

U.S.A. \$3.95 CANADA \$4.95
APRIL 1989
VOLUME 7, NUMBER 12

Antic[®]

The **ATARI**[®] Resource



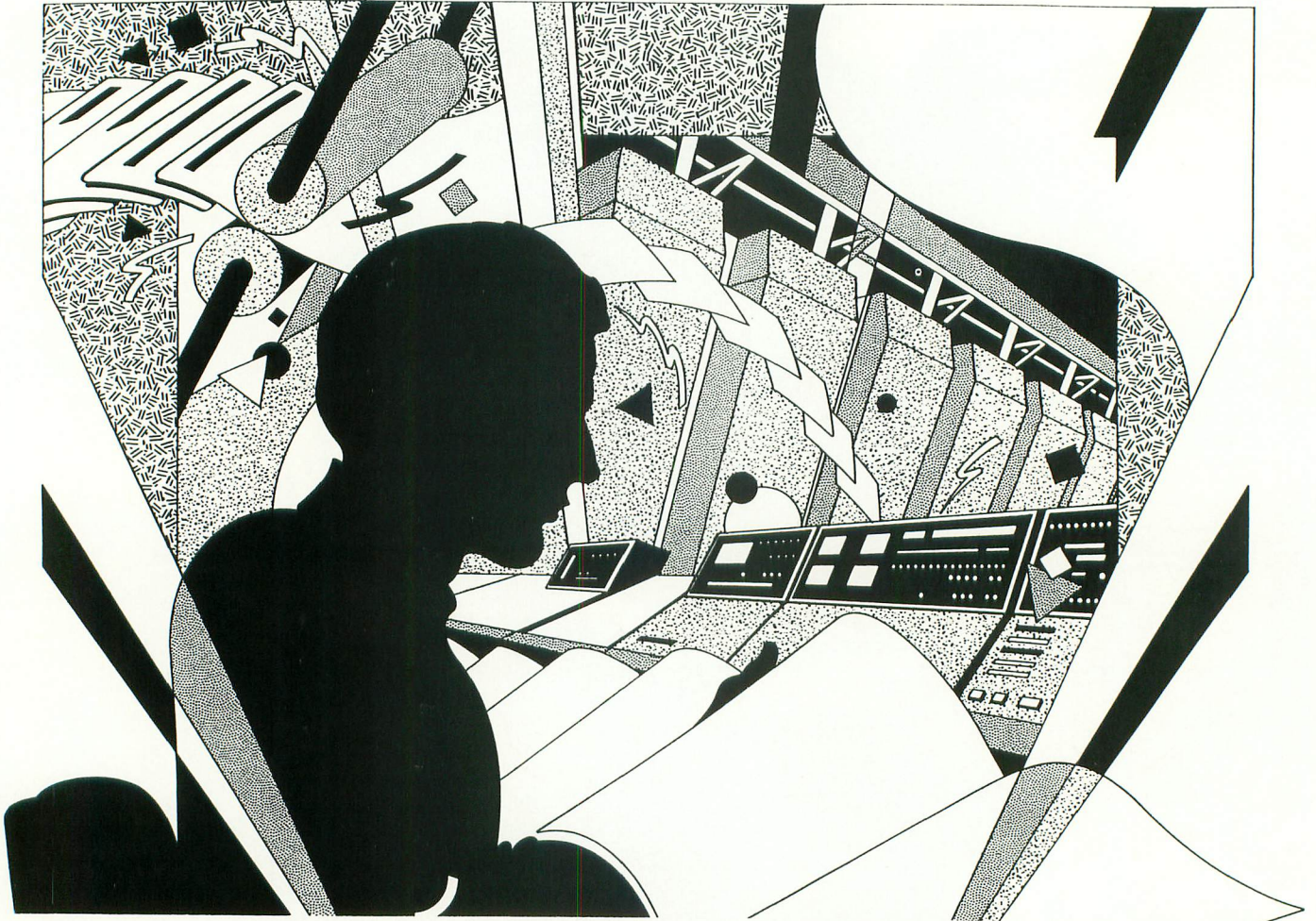
*Get in
the Swim!*

WRITE YOUR OWN ADVENTURE PROGRAMS

'88 Income Tax
Spreadsheet



Fleet Street Publisher 2.0



When it comes to publishing on the ST, no one does it Better than Fleet Street and YOU!

Your wait for a full featured bug-free Desk Top Publishing program ended when you discovered **Fleet Street Publisher 2.0**. Now your publications can have the extraordinary impact that only a Professional Desk Top Publishing program can give them.

You can begin creating impressive newsletters, advertisements, business reports, bulletins immediately with the most advanced Desk Top Publishing program available for the Atari ST. **Fleet Street Publisher 2.0** has the features you want at a price you won't believe (Read about MICHTRON's Special Introductory Offer below!!).

Fleet Street Publisher 2.0 allows such advanced text features as the ability to type directly onto the page, or to load text from any ASCII word-processing file. This includes files

created on IBMs and compatibles. Word processing control codes can be stripped out automatically.

Automatic Hyphenation (by algorithm), paragraph and column justification, text kerning, variable selectable leading, and proportional spacing make text manipulation a breeze. There is also a search and replace feature. Adding to your layout potential are line and box drawing tools that allow multiple line weights and shades. You can even combine these with variable background tones and shadings.

You may utilize the included typefaces in varying sizes from 4 to 216 points with 1 Meg of memory. The package includes a complete library of ready-to-use images, or you can easily import graphic screens and scanned images from other software products. There is also a

Pixel Editor for creating, adapting, and/or touching-up existing art work. A number of printer drivers from postscript to dot matrix printers provide excellent final copies of your finished work.

Now MICHTRON makes an extraordinary offer. We know that many of you have already purchased Desk Top Publishing programs; we also know that you deserve and want the best available. So, until March 31, 1989, if you send us the Copyright page from *any* Desk Top Publishing program manual, we will send a copy of **Fleet Street Publisher 2.0** for only \$50.00, a \$149.95 value for only \$50.00. Don't wait, order your copy today!

**MichTron**
576 S. Telegraph, Pontiac, MI 48053
Orders and Information (313) 334-5700

Antic®

The ATARI® Resource



Adventure Works. Page 28

FEATURES

APRIL 1989, VOL. 7, NO. 12

- 10 NEWEST GAME CARTRIDGES FROM ATARI** by David Plotkin
Desert Falcon, Mario Bros., Ace Of Aces
- 12 8-BIT POWER TOOLS '89** by Charles Cherry
Ultra Speed Plus, TurboWord 80, Laserteller
- 14 BOTTLENECK BREAKER** by Stan Lackey
BASIC profiler speeds up your programs *Type-in Software 42*
- 20 MINIMON** by Joe Kimbrough
PEEK and POKE power from DOS *Type-in Software 35*
- 22 1988 FEDERAL INCOME TAX SPREADSHEET** by Tom Chandler
Antic's annual 1040 SynCalc template *Type-in Software 46*
- 28 ADVENTURE WORKS** by David Woolley
Easy way to program text adventures *Type-in Software 34*

DEPARTMENTS

SUPER DISK BONUS

- 7 ESCAPE FROM DISPOZON: PART II** by Kevin Sherratt
Grand finale of Antic's biggest Disk Bonus

FEATURE APPLICATION

- 8 PERIODIC MADNESS** by Marc LeBeau
Chemistry tutoring from your Atari *Type-in Software 38*

GAME OF THE MONTH

- 17 SHUTDOWN** by Tony Barnes
Escape those killer robots *Type-in Software 43*

SOFTWARE LIBRARY

- 6 Easy-To-Type 8-Bit Listings**
- 33 TYPO II, SPECIAL ATARI CHARACTERS**

- | | |
|-----------------------|-----------------------------|
| 3 EDITORIAL | 50 CLASSIFIED ADS |
| 5 I/O BOARD | 51 ADVERTISERS INDEX |
| 6 NEW PRODUCTS | 52 TECH TIPS |

1 H Hydrogen 1.008			
3 Li Lithium 6.941	4 Be Beryllium 9.012		
11 Na Sodium 22.99	12 Mg Magnesium 24.31		
19 K Potassium 39.10	20 Ca Calcium 40.08	21 Sc Scandium 44.96	22 Ti Titanium 47.90
37 Rb Rubidium 85.47	38 Sr Strontium 87.62	39 Y Yttrium 88.91	40 Zr Zirconium 91.22
55 Cs Cesium 132.9	56 Ba Barium 137.3	57 La Lanthanum 138.9	72 Hf Hafnium 178.5
87 Fr Francium 223	88 Ra Radium 226.0	89 Ac Actinium 227	104 Rf Rutherfordium 257

Periodic Madness. Page 8

American Techna-Vision

For Orders Only - 1-800-551-9995

CA. Orders / Information 415-352-3787

- 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. **\$2850**

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. **\$4750**

POWER PACKS

Exact replacement transformer for 800/400, 1050 810, 1200XL, 850, XF551 & 1020 units. Part #CO17945. **\$1450**

XL/XE SUPPLY

Power Pak for 800XL, 600XL, 130XE, 65XE & XE Game. **\$2500**

WORD PROCESSORS

- PaperClip (Disk) \$29.95
- AtariWriter (Cart.) \$29.95
- Bank Street Writer (D) ... \$17.50
- Cut & Paste (Disk) \$17.50
- Letter Wizard (Disk) ... \$17.50

VISICALC SPREADSHEET

Unleash the computing power of your 8 bit Atari with Visicalc. Compute everything from home finances to high powered financial projections. Hundreds of uses. **\$1995 DISK**

THE BOOKKEEPER AND CX85 KEYPAD

You get both Atari's 8 bit professional bookkeeping system and the handy CX85 numeric keypad for one low price. Packages factory sealed. **\$1995 4 DISK SET**

FLAT SERVICE RATES

1050 DISK DRIVE \$75.00
810 DISK DRIVE \$69.50
850 INTERFACE \$39.50
800 COMPUTER \$49.50
1200XL COMPUTER \$49.50
Flat rates include Parts & Labor, 60 day warranty. Include \$7.00 shipping & insurance

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. **\$1695**

KEYBOARDS

New and complete subassembly. Easy internal replacement.

130XE/65XE \$35.00
800 \$40.00
800XL \$29.50
400 \$12.50

800/400 MODULES

NEW PARTS COMPLETE WITH IC'S

\$950 EACH

- CX853 16K Ram Module
- 800 Main Board
- 800/400 CPU with GTIA
- 800 10K "B" O.S. Module
- 400 Main Board
- 400 Power Supply Board

800 Power Supply Board \$14.50

INTEGRATED CIRCUITS

\$450 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

CO61598 \$20.00 CO21697 \$15.00
CO61991 \$15.00 CO25953 \$9.50
1050 Rom \$13.50 5713 \$5.25
CO61618 \$20.00 CO24947 \$15.00

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
2793 1050 Controller IC ... \$19.50
Paddle Controllers (Pair) .. \$6.50
400 3 Piece Board Set ... \$19.50
Fastchip for 800/400 ... \$15.50
Animation Station ... \$74.95
Rambo XL w/o Ram IC's ... \$39.95
Supra 2400 Baud Modem .. \$157.50
ACE Joystick \$7.95
850 or PR Modem Cable \$14.50
850 or PR Printer Cable \$14.50
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
810 Door Latch Assy. ... \$10.00
1027 Transformer CALL
U.S. Doubler \$29.95
ST Monitor Connector ... \$5.50
ST Drive connector plug ... \$6.50
ST to 5/14" Drive Cable \$23.95

COMPUTER BOOKS

Atari Playground Workbook \$7.95
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 \$21.95
XE Users Handbook ... \$21.95
XL Users Handbook ... \$21.95
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

ANIMATION STATION

Graphics Design Tablet \$74.95

8 BIT SOFTWARE

Cartridges for all 8 bit Atari computers

Millipede Cartridge \$10.00
AtariWriter Cart. \$29.95
Pac-Man Cartridge. \$4.00
Deluxe Invaders Cart. \$4.00
Journey to the Planets Cart. \$4.00
Donkey Kong Cart. \$5.00
Crossfire Cartridge. \$7.50
Springer Cartridge \$7.50
Turmoil Cartridge \$7.50
Choplifter Cart. \$10.00
Zone Ranger Cart. \$12.50
Silicon Warrior Cart. \$12.50
Math Encounter Cart. \$12.50
Learning with Leeper Cart. \$12.50
Up For Grabs Cart. \$12.50
Eastern Front Cart. \$10.00
PILOT Language Package .. \$17.50
Ed/Asm Cart. w/o man. . . \$15.00
ACTION O.S.S. \$59.95
MAC-65 O.S.S. \$59.95

DISK SOFTWARE

PaperClip \$29.95
Visicalc Spreadsheet \$19.95
Bookkeeper + CX85 Keypad \$19.95
Mission Asteroid Disk \$4.00
Frogger Disk \$5.00
Fort Apocalypse Disk \$5.00
Spider Man Disk \$5.00
The Hulk Adventure Disk ... \$5.00
Wizard & The Princess \$5.00
Ulysses & Golden Fleece \$5.00
Human Torch & The Thing \$5.00
Musical Pilot Ed. Disk \$5.00
Con'putation Disk \$5.00
Debug Childware Disk \$5.00
Crystal Raider Disk \$5.00
Dispatch Rider Disk \$5.00
Master Chess Disk \$5.00
Speed King Disk \$5.00
Last V-8 Disk \$5.00
Chambers/Zorp Disk \$5.00
Pathfinder Disk \$5.00
Match Racer Disk \$5.00
Encounter/Questar Disk ... \$5.00
Alien Ambush Disk \$7.50
Wombats Adventure (D) .. \$7.50
Sports Spectacular Disk .. \$7.50
The Gambler Disk \$7.50
Stratos Disk \$7.50
Fun in Learning Disk \$7.50
Fun in Numbers Disk \$7.50
Mind Mazes (Educational) \$7.50
Honey Craze Math (D) ... \$7.50
Dig Dug Disk \$9.95
Repton Disk \$9.95
Rear Guard Disk \$9.95
TechnaColor Dream \$9.95
Freaky Factory Disk \$9.95
Laser Hawk Disk \$9.95
Rocket Repairman Disk .. \$9.95
Cest'e La Ve Disk \$9.95
Womper Stomper Disk ... \$9.95
Tutti Frutti Disk \$9.95
Bug Off Disk \$9.95
Olin Emerald (Jr., Adv.) .. \$9.95
David's Midnight Magic Disk \$12.50
DropZone Disk \$12.50
Castle Wolfenstein Disk .. \$12.50
Beyond Castle Wolfenstein \$12.50
Atlantis Disk \$12.50
Mouse Quest Disk \$12.50
Electronic Drummer Disk \$12.50
Stock Market Game \$12.50
Pirates of the Barbary Coast \$12.50
Nirkerbocker Disk \$12.50
Midway Battles \$14.95
MoonMist Adventure (D) .. \$14.95
Mind Shadow (64K) \$14.95
Sea Stalker (D) \$14.95
Master Typing Tutor \$15.00
Bank Street Writer \$17.50
Cut & Paste W.P. Disk ... \$17.50
SpartaDOS Const. Set ... \$39.50

DATASOFT DISKS

Zorro Disk \$9.95
Saracen Disk \$9.95
Gunslinger Disk XL/XE .. \$9.95
Crosscheck Disk \$12.50
Mercenary Disk \$12.50
The Goonies Disk \$12.50
Conan Disk \$12.50
Never Ending Story (64K) \$12.50
221 Baker Street (64K) .. \$17.50
Letter Wizard W.P. (32K) \$17.50

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.

Antic

James Capparell
Publisher
John Taggart
Associate Publisher

EDITORIAL

Nat Friedland
Editor
Charles Jackson
Technical and Online Editor
Carolyn Cushman
Assistant Editor
Marta Deike
Editorial Coordinator

ART

Jim Warner
Art Director
Dwight Been
Associate Art Director
Marianne Dresser
Design Production Assistant
Georgia Solkov
Photo Editor and Cover Photography
Julianne Ososke
Collateral Printing Coordinator
Kate Murphy
Advertising Production Coordinator

CIRCULATION

Manny Sawit
Director
Amber Lewis
Subscription Coordinator
Dennis Swan
Distribution Coordinator
Denny Riley
Dealer Sales, (415) 957-0886

ADVERTISING

Austin Holian
Sales Rep, (415) 957-0886
Diane Van Arsdall
Sale 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

(415) 372-6002
Antic, P.O. Box 1569, Martinez, CA 94553

EDITORIAL



The following letter from a concerned **Antic** reader in Alaska says it all:

	MAY 1986	NOVEMBER 1988
Advertisers	69	19
Pages	146	80
I/O & HELP Items	11	7
Type-In Listings	10	6
Cover Price	\$ 3.50	\$ 3.95
Disk Subscription	\$99.95	\$59.95

Antic quality remains good, but I worry. Reduced size is not all explained by eliminating ST coverage. Good luck,

*Ken S.
Anchorage, Alaska*

The Atari community also knows very well that **Antic** Magazine remains one of the prime sources of dependable support for the 8-bit line. In recent months, **Antic** greatly expanded the 8-bit Arcade Catalog of hard-to-find software and also established a complete index/library of back issues on CompuServe's ANTIC ONLINE. While others may drop out of the Atari 8-bit market, **Antic** is still finding new ways to serve your needs.

Antic is a business venture that must continue to pay for itself, and we now rely almost exclusively on the support of readers like you—serious Atari 8-bit users who see no reason to abandon your investment in the best 64K personal computer ever made.

Sure, lower advertising revenues have forced some reduction in the size of **Antic** Magazine (although most of the pages cut were ads anyway, not editorial). But each month, both sides of the Antic Disk continue to be packed as full as ever. In fact, the monthly Antic Disk is a better value than ever before—because hobbyist programming for the Atari 8-bit has become much more sophisticated, requiring listings that are far too large and tricky to be printed as type-ins.

COMING HITS

Antic's bank of accepted programs waiting for publication is now filled with outstanding professional-quality Super Disk Bonus titles that you'll be getting in coming months. These major programs include a powerful new desktop publisher, an advanced chemistry tutor, a smart RAMdisk handler, a Player/Missile designer in assembly language, a screen printer for Lode Runner, an I-Ching oracle and some of the hottest assembly language games you've ever seen.

So subscribe now to the **Antic** Magazine/Disk combination! It's the most important \$59.95 you can spend to keep **Antic**—and your trusty 8-bit Atari—working for you.

Nat Friedland

Nat Friedland
Editor, **Antic**

WE'RE BACK!

SAN JOSE COMPUTER, 'THE ATARI STORE', is the largest seller of ATARI products and now we're back in the 8-Bit market to serve you better.

1200XL • 64K RAM
• XE COMPATIBLE **\$49.95**
Reconditioned, 90 day warranty

1025 PRINTER **\$89.95**
Reconditioned, 90 day warranty

COMPUTERS

800 \$69.95
400 \$29.95
600XL \$49.95

Reconditioned, 90 day warranty

MISCELLANEOUS

850 INTERFACE \$89.95
MONO MONITOR \$39.95
TRACKBALL \$9.95
JOYSTICK 20' EXT. \$.99

Reconditioned, 90 day warranty

PRINTERS

825 \$79.95
1029 \$129.95
820 \$39.95

Reconditioned, 90 day warranty

CARTRIDGES FOR 800, XL, XE

TURMOIL \$4.95	TENNIS \$19.98	NECROMANCER \$19.98
PAC-MAN (no box) \$4.95	FINAL LEGACY \$19.98	RESCUE ON FRACTALUS \$19.98
DONKEY KONG (no box) \$4.95	MARIO BROS. \$19.98	BALLBLAZER \$19.98
GOLF (400,800) \$4.95	DONKEY KONG JR. \$19.98	BLUE MAX \$19.98
DEMON ATTACK (400,800)..... \$4.95	JUNGLE HUNT \$19.98	STAR RAIDERS II \$19.98
DELUXE INVADERS \$4.95	MOON PATROL \$19.98	DAVID'S MIDNIGHT MAGIC \$19.98
JOURNEY TO THE PLANETS..... \$4.95	BATTLEZONE \$19.98	ARCHON \$19.98
MATH ENCOUNTER \$7.98	FOOD FIGHT \$19.98	GATO \$24.98
SKY WRITER \$14.95	HARDBALL \$19.98	ACE OF ACES \$24.98
FOOTBALL \$14.95	FIGHT NIGHT \$19.98	LODE RUNNER \$24.98
DEFENDER \$14.95	ONE ON ONE BASKETBALL \$19.98	BARNYARD BLASTER (XE gun) \$24.98
ROBOTRON \$19.98	DESERT FALCON \$19.98	ATARI LAB LIGHT MODULE..... \$29.98
		ATARI LAB STARTER KIT..... \$39.98

DISK SOFTWARE FOR 800, XL, XE

DAVID'S MIDNIGHT MAGIC \$4.98	CROSSCHECK \$4.98	SPIDERMAN \$4.98
ZORRO \$4.98	MOLECULE MAN \$4.98	HULK \$4.98
BANDITS (48K 400,800) \$4.98	CRYSTAL RAIDER \$4.98	VISICALC \$24.98
PROTECTOR II \$4.98	DESPATCH RIDER \$4.98	BOOKKEEPER W/ numeric keypad... \$29.98
CLAIM JUMPER \$4.98	MISSION ASTEROID \$4.98	GET RICH \$39.98

810

DISK
DRIVES

\$129.

8-BIT SERIAL I/O CABLE ... \$5.95

SAN JOSE COMPUTER

T H E A T A R I S T O R E

Sunrise Plaza 640 Blossom Hill Rd. San Jose, CA 95123
(408) 224-8575 • BBS (408) 224-0952

5.25" DISKS
20 CENTS EA.*

QTY.	PRICE
10	\$4.00
100	\$29.95
*1000	\$200

MAJORITY ARE UNNOTCHED
CONTAINING OLD SOFTWARE

SHIPPING: ADD \$5.00 TO ALL ORDERS. AIR AND INTERNATIONAL SHIPPING EXTRA. THAT'S IT.
WARRANTY: 90 DAY WARRANTY ON ALL ITEMS. **TAX:** CALIFORNIA RESIDENTS ADD 7% SALES TAX.
PREPAYMENT: USE VISA, MASTERCARD, MONEY ORDER, CASHIER'S CHECK OR PERSONAL CHECK.
PERSONAL CHECK MUST CLEAR PRIOR TO SHIPMENT. C.O.D.: CASH, CASHIER'S CHECK OR M.O. ONLY.
Prices subject to change without notice. Brand and/or product names are trademarks or registered trademarks of their respective holders.
Ad produced on an ATARI ST.

PRESIDENTIAL UPDATE

With the recent election, readers using *Antic's* copyrighted *Name the Presidents* (October 1987) will want to update the program to include President Bush. They need to add the following lines:

```
115 DIM A$(20):TL=41:G=0
930 DATA 41,GEORGE,CVTI
940 DATA 0,END,END
```

I also invite anybody interested in finding out about the Educators' Atari Club and our large public domain library to write us at P.O. Box 1024, Laytonville, CA 95454.

Peter Loeser
President, EAC
Laytonville, CA

ANTIC MUSIC PROCESSOR

I would be willing to say that *Antic Music Processor* (December 1988, Super Disk Bonus) is your best program of the year, but I have a few questions. First, how do you input lyrics? Also, could you please print the file structure of a saved AMP music file? I would like to write a listing program so I could view the "sheet" of music in its entirety, not just a few lines at a time.

Jay Moore

There currently is no simple way to include lyrics in AMP. For the COMESAIL sample, the author actually went into the data file to add the lyrics the hard way. Unfortunately, that information was unclear in the article. Author Steven Lashower is currently working on a lyric editor for AMP, and as soon as it's available we plan to run it in the magazine. At present, Lashower is the only person who understands the structure of the saved files, but we're passing your excellent idea on to him.

Antic must apologize to would-be contest entrants who were frustrated by their inability to enter lyrics. If you have any lyric-less songs you're proud of, we'd still be glad to look at them and possibly run some on disk in the future.—ANTIC ED

ANTIC DATA-X, REVISION B

Thanks for the Revision B version of the *Antic Data-X* database (December 1988.) I was impressed with the original and think this is a nice improvement. I happily translated my inventory databases right away. (It did take a *very* long time and I thought that perhaps an error had occurred.)

I do have a question about the program, however. When loading the program with BASIC on my 800XL I get an error message in German, with options for "DOS, RUN, ODER LOAD?" (the D, R, L are in inverse.) Typing "R" gets to the friendly database menu. But when I have my Revision C BASIC cartridge stuck in, I get a garbage screen and lock up.

So what is the German menu doing there? Whatever, I do like the program and greatly enjoyed the December issue of *Antic*, particularly the *Antic Music Processor*!

Richard Williams
Pullman, WA

Antic Data-X is written in Turbo BASIC, a programming language developed in Germany. This database program is a run-time version, so you don't need BASIC and should boot the disk without a language cartridge, or holding the [OPTION] key down for an XL/XE. The "FEHLER—2 IN ZEILE 10011 (\$6E69)" you got is simply an error message going back to its roots.—ANTIC ED

BEGINNERS HELP

I just got a used Atari 800XL with a 1050 disk drive and 1030 modem. I got a few diskettes and cartridges, too. My problem is that I don't understand how to use it. I have the Atari owner's manuals. I bought the December 1988 *Antic* and read the whole thing. But I still don't understand what to do with the disk. Could you please print some articles for people like me?

Mrs. Fred Towse
Hot Springs, AR

For a complete beginner like yourself, Antic's First-Time Atari Users Handbook (February 1988) can be very helpful. This article will take you step-by-step through the process of setting up the computer, video (TV) and disk drives. Then using your disk with DOS is discussed.

—ANTIC ED

FANCY GRAPHIC OS

Lately I've seen some ads for ST GEM-like operating environments for 8-bit Ataris, products like Diamond OS, GOE Desktop, Lightspeed Windows, and Screens. I've seen the ST-like environment used in the game OGRE and it's outstanding! How do these products stack up? Why doesn't *Antic* do an in-depth article on these products?

Capt. John Glessner
Kirtland AFB, NM

Frankly, we're waiting to see the cartridge-based versions of some of these systems before we make a final judgement. As it is, the disk-based versions we've seen take up more memory than is practical for most applications on a standard-memory Atari, a problem that could hopefully be solved using cartridges.

—ANTIC ED

TOO BUSY LIGHT

Why do the 1050 disk drives keep spinning the disk for ten seconds after the drive has finished accessing the disk? (That's how long it seems I have to wait for the busy light to go out, anyway.)

Steven White
Harlingen, TX

Believe it or not, the 1050 is trying to be helpful. Physically, it takes a long time for the 1050 to get into position for disk I/O. A built-in function was added to keep the 1050 in ready position a little longer than necessary, just in case your program wants to do more with the disk. Of course, if you just want to remove the disk and go on to something else, the wait is more annoying than useful.—ANTIC ED

ERRATIC MODEM?

I am looking for a 2400 baud modem, so I was happy to see **Antic** review the Worldport 2400 modem in your December 1988 issue. However, the review left me confused. It seems the modem only worked properly for six days, after which it would only work when cool, or at half speed. Yet you consider such a modem to be "dependable, versatile and powerful. . . just as reliable as any standard-sized modem." Why?

I have a used 1200 baud Rixon modem that has worked hundreds of hours, with no problems whatsoever, no matter the time of day or how warm it was. Either something got edited from that review, or I will not trust any of your hardware reviews anymore!

Paul Muehlbauer
New Ulm, MN

The Worldport ran non-stop, batch-uploading huge text files ten hours a day. This is unusually rough treatment for a modem, since the constant transmission of data meant the modem was working every second. Our reviewer, Technical and Online editor Charles Jackson, felt it was the cumulative effect of working without rest that caused problems. Unless you're running a very popular bulletin board, you're not likely to put that sort of constant pressure on a modem. Overall, our reviewer was very impressed by the Worldport, but wanted to give you all the facts.—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.

EDIT8

(sector editor)
Logic One
P.O. Box 18123
Cleveland, OH 44118-0123
\$9.95, 48K disk

Examine and modify the contents of your RAMdisks with **EDIT8**, the safe and easy RAMdisk sector editor. With **EDIT8** you can examine binary, BASIC, text or data files in SpartaDOS 3.2 or Atari DOS 2.5 RAMdisks. The program also includes dual-display and restore features, and works with all upgrades, according to the folks at Logic One. Customize programs and study file structure with this new and creative tool.

OASIS BBS 4.2

(online software)
Z Innovators
1344 Park St., Dept. 187
Stoughton, MA 02072
\$30, requires 2 disk drives and SpartaDOS 3.2D or X.

The newest version of **OASIS BBS** is now out from Z Innovators. Full of external modules, **OASIS BBS** lets you run a bulletin board complete with survey, callers log, trivia game, an Add-A-BBS number module and three different user lists. Included as an ARC file in the package with **OASIS BBS 4.2** is **OASIS.PAL**, a programming aid package.

This disk-based BBS requires at least two floppy drives and SpartaDOS 3.2D or the SpartaDOS X cartridge. (A fully-functional public domain version, **OASIS JR**, is also available.)

Future updates to **OASIS** are in the works, including free updates of the current version, and late in 1989 a completely new version 5. Features planned include built-in ANSI color, YMODEM batch protocol, and a file search module that will include descriptions of files. Message bases will be enhanced with message thread options and an external networking module for the exchange of new messages.

ESCAPE FROM PLANET X

(text adventure)
Covox Inc.
675-D Conger Street
Eugene, OR 97402
(503) 342-1271
\$19.95, 48K disk

Use your Covox Voice Master or Voice Master Jr. to train your computer to recognize your voice alone—then play **Escape From Planet X**, the new voice-controlled text-adventure from Covox. The game is included with the Voice Master Jr. for \$49.95 and is also available separately for \$19.95.

Escape from the Human Research Lab of mad Professor Schism, and then survive the dangers of Planet X, including ocelots, swivel chairs, asteroids and symbolic squid. Co-exist with aliens in peace and harmony, or blast them to pieces—it's all up to you.

HAPPY'S MATH

(educational software)
Bensley Consulting
P.O. Box 301
217 West Walnut
Westfield, IL 62474
(217) 967-5465
\$19.95, 800XL/130XE

Happy's Programs MATH is an easy-to-use program that drills a user in addition, subtraction, multiplication and division. Options include several levels of difficulty, and a "show work" option that requires users to enter the intermediate steps in working out a multiplication or division problem. If you give an incorrect answer, Division will even display the correct work for you.

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.

Escape From Dispozon: II

Grand Finale of Antic's Biggest Disk Bonus. Program by Kevin Sherratt



Kate Murphy

When we left you last month, the Antic Disk contained only Part I of *Escape From Dispozon*. Now, on the entire Side B of this month's Antic Disk you will find the conclusion of the saga—Antic's first two-part Super Disk Bonus. So return with us now to that charming "planet-fill" Dispozon, the garbage dump of the galaxy.

NOTE: Without the objects and information you picked up from last month's disk installment, you have no chance to complete the final solution of the adventure. **You need BOTH the March and April 1989 Antic Disks** in order to attain final victory over the perils of Dispozon.

As hapless star-pilot Havilfad, you must find a way to escape the slimy, greasy, junk-filled shores of Dispozon—before you are fatally poisoned by the toxic smog. Winning the game involves finding and refitting an old abandoned spaceship. With your grumpy companion

droid Iggy, make your way through rubbish, trash and sewage. Fight off grouchy crabs and fierce amoebas, pick up all sorts of yucky stuff and put up with oodles of abuse from the insufferable Iggy, who expects no end of gratitude from a miserable little worm like you!

Hear your faithful companion Iggy say, "What are you doing, Master? Need I remind you that dying can seriously affect your efficiency rating?" or "The trash wall is four stories high and weighs 9 million tons. Whatever ill-advised plan is fermenting in that sordid little brain of yours had best not include me!"

These thrills and more are all yours, on the March and April Antic Disks. *Escape From Dispozon* is a *very* large BASIC text adventure—much too large to run on a single side of a disk. We never ran a program this large before, but *Escape from Dispozon* was too good to pass up.

Start the game by booting Side B of *last month's* March 1989 Antic

Disk. Play the game until Iggy says, "Insert the story disk in Drive 1 and press RETURN."

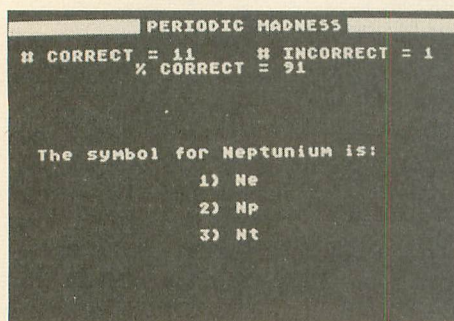
This is your cue to remove the March 1989 Antic Disk and insert Side B of *this month's* Antic Disk. Then press [RETURN] to continue.

Hints for playing *Escape From Dispozon* and a list of acceptable commands were in a Help file last month on the March 1989 disk. To read the Help file or obtain a print-out, select choice 5, HELP.BAS, from the Side A menu.

If you don't have both Antic monthly disks containing *Escape From Dispozon*, you can order them. Your March and April 1989 Antic Disks will be shipped to you within 24 hours after your order is received. Just phone Toll-Free to the Antic Disk Desk at (800) 234-7001. The monthly disks are only \$5.95 each (plus \$2 apiece for shipping and handling) on your Visa or MasterCard. Or mail your check to Antic Disk Desk, 544 Second Street, San Francisco, CA 94107. **A**

Periodic Madness

Chemistry tutoring from your Atari. By Marc LeBeau



Brush up on the elements and their chemical symbols with this three-part quiz based on the periodic table of the elements. This BASIC program works on 8-bit computers with at least 48K, disk or cassette.

Recent studies have shown that the children of the United States are far behind children in other countries in their knowledge of science. This may become a major problem for us in the next century if something is not done soon. Who will discover new cures for diseases? Who will develop the new materials for the cars, rockets, or

even computers of the 21st century?

Periodic Madness may not solve all these problems, but it's a start. By playing with this program, young people can learn about a basic scientific tool while enjoying a challenging game. Chemistry students will find it an excellent way to brush up on the elements and their symbols.

WHY CHEMISTRY?

Chemistry provides a good, general introduction to science. It involves many other disciplines, applying both mathematics and the laws of physics. Chemistry also plays a vital role in the biological sciences—scientists are discovering more and more about the chemical basis of life. From medicines to building materials, chemicals play an important part in our daily lives.

This program has three quizzes based on the periodic table of the elements, one of the first things taught in basic chemistry classes. The periodic table is a primary tool of chemistry, containing a wealth of important information. For example, from the periodic table we can find the symbol used to represent each element.

Most people know that H₂O represents water. Chemistry uses many such formulas to describe the molecules that make up the world around us. These symbols make up a second language that chemists (and other scientists) must understand. Learning to associate "H" with "Hydrogen" is a first step in understanding chemistry.

Another vital piece of information that can be obtained from a periodic table is the atomic mass of each element. Knowing these masses lets chemists calculate how much of a certain element is in a mixture or compound.

GETTING STARTED

Type in listing 1, PERIODIC.BAS, check it with TYPO II and be sure to SAVE a copy before you RUN it.

The program begins by displaying an outline of a periodic table. It will then prompt you for the skill level at which you wish to play. The questions are all multiple choice. Even so, if you're unfamiliar with the periodic table, it would be a good idea to look it over first.

In level one you are given the symbol and must choose the element it stands for. All the answers in level one are actual elements. The only trick questions on this level are those the periodic table provides itself—such as Au for gold, or K for potassium.

Level two goes the opposite way. You are given the element and must choose the correct symbol. Beware: In this section many of the symbols are made up and don't actually represent any elements.

Level three is definitely the hardest. You are given the element's name and must choose (or guess) the correct atomic mass. Even the best chemists will have some trouble with this one! Since the mass is related to the element's position in the table, this will quickly help players learn to visualize the elements' positions in the table.

Questions are presented in random order. Each test will quiz you on *all* the elements. If you miss a question, the program will repeat it until you answer correctly twice.

After you've completed each skill level, you are given a rating based upon the percentage you got right. These ratings range from FANTASTIC to YOU BETTER TRY AGAIN! **A**

Marc LeBeau is a Graduate Assistant at the University of New Haven in Connecticut. With bachelor degrees in both Chemistry and Criminal Justice he is currently working on his masters degree in Criminalistics. This is his first appearance in Antic.

Listing on page 38

PERIODIC TABLE OF THE ELEMENTS

1 H Hydrogen 1.008	2 He Helium 4.003	3 Li Lithium 6.941	4 Be Beryllium 9.012	5 B Boron 10.81	6 C Carbon 12.01	7 N Nitrogen 14.01	8 O Oxygen 16.00	9 F Fluorine 19.00	10 Ne Neon 20.18
11 Na Sodium 22.99	12 Mg Magnesium 24.31	13 Al Aluminum 26.98	14 Si Silicon 28.09	15 P Phosphorus 30.97	16 S Sulfur 32.06	17 Cl Chlorine 35.45	18 Ar Argon 39.95	19 K Potassium 39.10	20 Ca Calcium 40.08
37 Rb Rubidium 85.47	38 Sr Strontium 87.62	39 Y Yttrium 88.91	40 Zr Zirconium 91.22	41 Nb Niobium 92.91	42 Mo Molybdenum 95.94	43 Tc Technetium 98.91	44 Ru Ruthenium 101.1	45 Rh Rhodium 102.9	46 Pd Palladium 106.4
55 Cs Cesium 132.9	56 Ba Barium 137.3	57 La Lanthanum 138.9	72 Hf Hafnium 178.5	73 Ta Tantalum 180.9	74 W Tungsten 183.9	75 Re Rhenium 186.2	76 Os Osmium 190.2	77 Ir Iridium 192.2	78 Pt Platinum 195.1
87 Fr Francium 223	88 Ra Radium 226.0	89 Ac Actinium 227	104 Rf Rutherfordium 257	105 Ha Hahnium 262	106 Un Ununhexium 288	107 Uu Ununseptium 289	108 Uu Ununoctium 290	109 Uu Ununnonium 291	110 Uu Undecium 292
19 K Potassium 39.10	20 Ca Calcium 40.08	21 Sc Scandium 44.96	22 Ti Titanium 47.90	23 V Vanadium 50.94	24 Cr Chromium 52.00	25 Mn Manganese 54.94	26 Fe Iron 55.85	27 Co Cobalt 58.93	28 Ni Nickel 58.71
37 Rb Rubidium 85.47	38 Sr Strontium 87.62	39 Y Yttrium 88.91	40 Zr Zirconium 91.22	41 Nb Niobium 92.91	42 Mo Molybdenum 95.94	43 Tc Technetium 98.91	44 Ru Ruthenium 101.1	45 Rh Rhodium 102.9	46 Pd Palladium 106.4
55 Cs Cesium 132.9	56 Ba Barium 137.3	57 La Lanthanum 138.9	72 Hf Hafnium 178.5	73 Ta Tantalum 180.9	74 W Tungsten 183.9	75 Re Rhenium 186.2	76 Os Osmium 190.2	77 Ir Iridium 192.2	78 Pt Platinum 195.1
87 Fr Francium 223	88 Ra Radium 226.0	89 Ac Actinium 227	104 Rf Rutherfordium 257	105 Ha Hahnium 262	106 Un Ununhexium 288	107 Uu Ununseptium 289	108 Uu Ununoctium 290	109 Uu Ununnonium 291	110 Uu Undecium 292
69 Tm Thulium 168.9	70 Yb Ytterbium 173.0	71 Lu Lutetium 175.0	89 Pr Praseodymium 140.9	90 Nd Neodymium 144.2	91 Pm Promethium 145	92 Sm Samarium 150.4	93 Eu Europium 152.0	94 Gd Gadolinium 157.2	95 Tb Terbium 158.9
101 Md Mendelevium 258	102 No Nobelium 259	103 Lr Lawrencium 260	96 Dy Dysprosium 162.5	97 Ho Holmium 164.9	98 Er Erbium 167.3	99 Tm Thulium 168.9	100 Yb Ytterbium 173.0	101 Lu Lutetium 175.0	102 Hf Hafnium 178.5
109 Uu Ununnonium 291	110 Uu Undecium 292	111 Uu Undecium 293	104 Rf Rutherfordium 257	105 Ha Hahnium 262	106 Un Ununhexium 288	107 Uu Ununseptium 289	108 Uu Ununoctium 290	109 Uu Ununnonium 291	110 Uu Undecium 292
109 Uu Ununnonium 291	110 Uu Undecium 292	111 Uu Undecium 293	104 Rf Rutherfordium 257	105 Ha Hahnium 262	106 Un Ununhexium 288	107 Uu Ununseptium 289	108 Uu Ununoctium 290	109 Uu Ununnonium 291	110 Uu Undecium 292

Newest Game Cartridges From Atari

Ace Of Aces, Desert Falcon, Mario Bros.

Reviewed by David Plotkin

ACE OF ACES

Ace of Aces is a rather complex game in which you need to be both the pilot and crew of a Mosquito fighter-bomber. You'll have your hands full, especially because of the incredibly frustrating control system.

You have the choice of either flying practice missions (dogfights, bomb the train, or bomb the submarine), or real missions which are far more challenging. During the practice mission you are simply placed on target and shoot at the enemy or drop your bombs.

In a real mission, you can choose to fly more than one mission before returning to base. If you can complete all four in one trip and come back alive, then you are the Ace of Aces.

You must equip your plane. If the mission is deep inside Europe, you'll need extra fuel tanks. Next, you decide how many rockets, how much cannon ammunition, and how many bombs to carry with you. The Mosquito has a limited lifting capacity, so you won't be able to take everything you'd like to.

You then begin the flight to your destination, using the map screen. It's best to stay away from weather systems and head straight to your destination.

There are five views you will need to switch between while engaged in a mission. First is the cockpit view,

with all the necessary flight instruments—radar, altimeter, turn and bank indicator, compass, plus an instrument that tells the enemy's altitude.

The view out of the cockpit window is updated smoothly and the plane's control yoke moves at the bot-

In
the heat
of battle I
found myself
switching screens
when I didn't
want to.

tom of the view in response to your joystick. The cockpit view also includes crosshairs for firing the cannons and rockets at enemy fighters and bombers.

Two other views include the left and right engines, where you can adjust the throttle, booster, trim and flaps, as well as control the landing gear. It is also here that you activate the fire extinguisher to put out an en-

gine fire (which is visible out of the window).

The bomb bay view is where you can change weapons (cannon or rocket), switch fuel tanks, open the bomb bay doors and drop bombs. All views include an "intercom", which is a picture of the plane showing what parts are damaged. You can then switch to that view and attempt to correct the situation (e.g., putting out an engine fire).

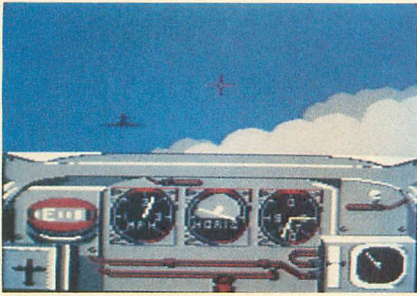
The graphics in *Ace of Aces* are good, but the system for switching screens is terrible. You can use the keyboard (keys 1 through 5), and these work fine. But the problem is that you can also double-press the fire button and move the joystick in certain directions to switch views.

In the heat of battle, I found myself switching screens when I didn't want to—usually resulting in bullet holes in the windscreen and my Mosquito crashing in flames. This happened over and over again. The result is even more noticeable if you have one of those rapid-fire attachments for your joystick!

Because of this flaw in the control system, *Ace of Aces* is very frustrating. This is too bad, because as a battle simulator, it's very good and a lot fun to play.

DESERT FALCON

In *Desert Falcon*, your mission is to guide a giant mystical bird of prey



Ace of Aces

flying over a beautifully detailed scrolling desert.

Viewed in three-quarter perspective, the desert is lined with pyramids, sculptures and towers. For points, you can pick up treasures dropped by marauding grave-robbers. The falcon can land and hop around in the desert, although he is quite vulnerable when he does.

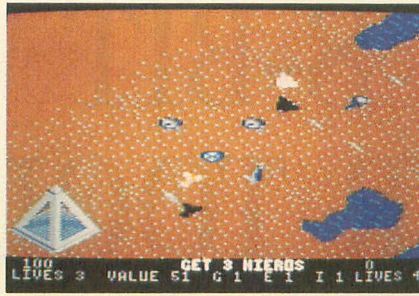
Also to be found in the desert are hieroglyphics. Picking up three of these useful items gives the falcon superpowers, including an "air bomb" which destroys all enemies, invincibility, and lots of points. Some of the so-called superpowers have some drawbacks. In particular, they can limit certain types of movement. Fortunately, the superpowers don't last very long.

The manual describes a wide variety of enemies. Unfortunately, except for some flying triangles, they all looked pretty much alike and it was very hard to tell which enemy was which. However, it really doesn't matter, except for scoring.

Some enemies can only get you when you are on the ground, others are deadly in the air. Running into any enemy creature takes one of the falcon's five lives. Your falcon can also fire forward, destroying any enemy hit by its arrow missiles.

At the end of each section, there is a giant Sphinx. You have to blast it between the eyes while dodging the fireballs it is firing at you. If you manage to hit it the right place, you blast a satisfying hole in its head and proceed to the next stage.

The only difficult thing about Des-



Desert Falcon

ert Falcon is the control scheme for flying the great bird, which takes some getting used to. But before long, you are moving the falcon around the screen smoothly, gathering prizes and blowing enemies to desert heaven. I like this game. It has excellent graphics and is very playable.

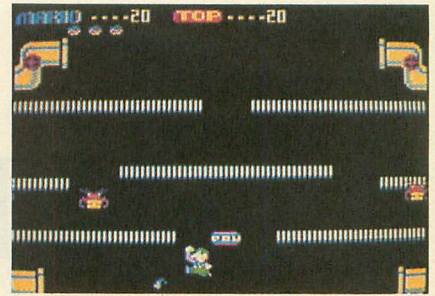
MARIO BROS

Mario Bros. takes you on the continuing adventures of Mario, the unfortunate plumber whose girlfriend was stolen by Donkey Kong. After recovering her from the amorous ape, he returns to his everyday work (with his brother Luigi in the two person version), only to find that their plumbing works are being overrun by all manner of strange creatures.

These creatures include the turtle-like shellcreepers, crab-like sidesteppers, hopping fighterflies, and so on. To eliminate them, Mario must get onto the level BELOW the creature, then jump up (press the joystick button), bumping the level above and flipping the creatures over. He must then jump up to the level the creature is on and kick it off the screen before it can right itself.

As the levels increase, everything gets more difficult. The sidesteppers must be bumped twice to get them to tip over, and they start to move faster after the first bump. The fighterflies hop around, and can only be bumped when they are touching the level.

There is a POW button which can be used three times to flip everything on the screen. There are also bonus rounds where gold coins can be collected for extra points. These coins



Mario Bros.

occasionally show up during regular play as well.

The graphics and animation of Mario Bros. is excellently done. Mario even turns red and loses all his hair when he gets fried by a fireball! But make no mistake—this is a tough game. You won't get past the first few screens for quite awhile. ▲

\$24.95 each, XL/XE with at least 64K memory. Atari Corp., 1196 Borregas Avenue, Sunnyvale, CA 94086. (408) 745-2000.

**Keep
Your
Atari
Alive!**

SUBSCRIBE

**Antic
Disk
Only
\$59.95**

8-BIT POWER TOOLS '89

Laserteller, Ultra Speed Plus, TurboWord 80.

Reviewed by Charles Cherry

LASERTELLER

Laserteller is a fancy-looking checkbook balancing program. Spectacular screen designs give the impression that you're working with some futuristic monster machine. The look makes Laserteller different and fun to use. If you have need for a simple checkbook balancer, Laserteller can do the job, and it will knock the eyes out of your friends with other computers.

Laserteller is not a true home accounting package. You can only review your last eight transactions and there is no record of to whom the payments were made, only the amount of the payment. But it's a quick and easy way to keep your balances up to date.

In practice, Laserteller supports only one checking account and one savings account. But since Laserteller is not copy protected, you could set up different disks for different accounts.

Laserteller also has a handy notepad, a small address book, and an ordering system. It can put these together and print an order for anything you like. I don't order much by mail, but this would be convenient for those who do.

The things I didn't like about Laserteller are minor. The screen designs make the menu selections a bit hard to read, but once you learn them, they're easy. It's nice to be able to print



Laserteller

orders with Laserteller, but it's a little strange not to be able to print the checks. The Laserteller uses Automatic Teller vocabulary, i.e., an expenditure is called a withdrawal instead of a check.

\$17.45, 48K disk. JVB Software, 6538 Hazeltine Ave., Van Nuys, Calif. 91401.

ULTRA SPEED PLUS

A couple of years ago I wrote a review for Ultra Speed, an alternative operating system by CSS for the XL/XE computers. I had used Ultra Speed for less than a month and I wrote a generally favorable review. However, not until Ultra Speed had been in my computer for a little longer did I begin to fully appreciate it. I couldn't live without it. I often regretted not having been more enthusiastic in my review.

Now **Ultra Speed Plus** has arrived from CSS and I can restate my approval more strongly. Quite simply, if you don't have Ultra Speed Plus,

you're using a crippled Atari.

The name Ultra Speed comes from its support for US Doubler and Happy drives. When you're using Ultra Speed with these drives, all transfers take place in the high speed mode.

The "Plus" part of the name comes from some really incredible RAMdisk support. Ultra Speed Plus sets up a RAMdisk in extended memory and lets you renumber it any way you like, even as drive one. There's also a sector copier for quick copies to and from the RAMdisk. You can even boot the computer (instantly) from the RAMdisk.

Exact methods will vary with different DOSes and programs, but since Ultra Speed uses the normal SIO routines, your program should never know it's using a RAMdisk. For instance, I'm writing this review with PaperClip. I can save and load files instantly to the RAMdisk. Since the RAMdisk is drive one, I don't even have to fool with drive numbers in the filename.

When I'm through, I copy the RAMdisk to my US Doubler drive at ultraspeed. All with just a couple of keystrokes. It really brings PaperClip to life, especially when I'm editing together a document from multiple files.

There are other great features in Ultra Speed Plus which make it a necessity even if you don't have extended memory or fast drives. From the key-

board you can: toggle BASIC in or out, turn the screen off (increases computer speed 30%), lock the keyboard, use the arrow keys without [CONTROL], toggle the left margin to 0 or 2, toggle keyboard click and disk I/O sound, and display a higher contrast, easier to read, text screen. Ultra Speed Plus also speeds up the keyboard, my favorite feature.

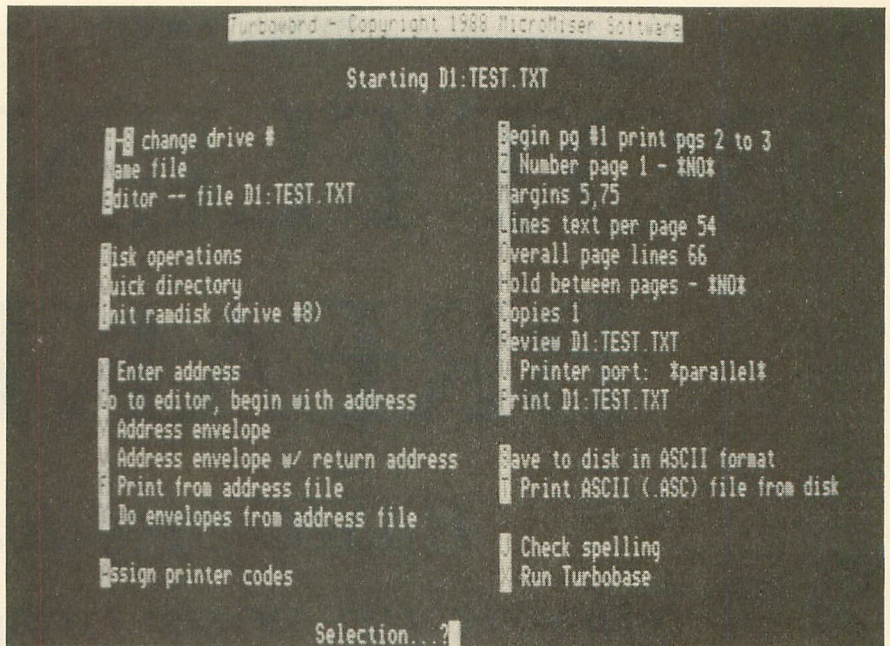
Although my review copy does not have it, the latest versions of Ultra Speed Plus include the Fast Chip floating point package. The arithmetic routines in the Atari are notoriously slow and inaccurate. The Fast Chip, which has been around for years, is an excellent replacement. It is a superb math package, both fast and accurate. It makes the Ultra Speed Plus truly complete. I can't think of anything else I would want in my Atari. But there is more. Ultra Speed Plus actually has three complete operating systems: Ultra Speed Plus, the normal XL/XE OS and a 400/800 OS. You flip between them with a three-position switch. Every program ever written for any Atari should run on one of these systems. Your compatibility problems are over forever.

Even more, Ultra Speed Plus also has a much improved self-test routine, one that really tells you something useful. Of course that leaves the self-test pin on the PIA free to bank-switch some more memory. So, as soon as RAM chip prices come down. . .

Installation is not too difficult if your OS chip is in a socket. There are just a couple of wires to solder and a hole to drill for the switch. If your OS chip is soldered in, I suggest that you get some knowledgeable help. Of course, CSS can install everything for you.

I cannot imagine an Atari XL or XE owner who would not love having the Ultra Speed Plus in his or her computer.

\$69.95, XL/XE, Computer Software Services (CSS), P. O. Box 17660, Rochester, NY 14617. (716) 467-9326.



TurboWord

TURBOWORD

At last! An 80-column word processor for the XEP 80-column adaptor. Ever since Atari announced the XEP80 adaptor, we've waited in vain for AtariWriter 80. Finally someone has moved to fill the gap. Micromiser Software, publisher of the superb TurboBase and TurboBase 80 database/business software, has added **TurboWord** to its line.

The workings of TurboWord will seem a little strange to people used to normal Atari word processors, but not to TurboBase users or those with experience in the MS-DOS world. To get the most out of your system, you need to spend a little time setting things up.

TurboWord is very modular and runs best with a RAMdisk. Like many top-of-the-line programs, it performs best with SpartaDOS (not included). ICD's SpartaDOS lets you use extra memory, directories, and even hard disks. With it you can build your own custom environment. TurboWord also runs under DOS XL and MYDOS, as well as DOS 2.5. I tested it with SuperDOS, but the XEP driver did not work (perhaps a memory conflict).

Of course TurboWord does all the

normal word processing tasks (with the curious exception of search and replace). It also has macros, spell checking, and nice routines for letterheads and addressing envelopes. The program relies on your alertness; it's disconcertingly easy to overwrite a file on the disk. But, if you take the time to understand it, TurboWord is a powerful tool.

The XEP-80 puts out text which is readable on my color monitor, but you'll want a monochrome monitor to do any serious work. TurboWord makes the 8-bit Atari a serious choice for the professional writer.

Micromiser has a long history of excellent customer support and continuing improvements. They added a form feed command for laser printers when I requested it. If TurboWord does not fill your needs, they'll probably fix the software for you. I cannot recommend TurboWord for occasional users, but people willing to invest some effort in learning a high-powered word processor will find a great deal to like. ▲

\$49.95, 48K disk. Micromiser Software, 1635-A Holden Ave, Orlando FL 32809. (407) 857-6014.

BOTTLENECK BREAKER

*BASIC profiler
speeds up your programs.*

Track down those bottlenecks in your BASIC programs with Bottleneck Breaker. By tracking the amount of processing time each program line requires, this BASIC profiler helps you pinpoint the routines that need the most streamlining. Bottleneck Breaker is a set of BASIC programs that work on all Atari 8-bit computers with at least 48K memory and a disk drive.

Programmers spend much time speeding up their programs. The most common streamlining methods include converting slow or heavily-used segments into machine language subroutines, using data tables in place of complicated functions, string equivalencing and a host of other

techniques.

First, though, you have to find the bottlenecks—the slowest routines in your program. This can be difficult in a large program with many GOSUBs and GOTOs. Bottleneck Breaker finds these bottlenecks by identifying the program lines that use the most processing time. Such a “profiling”

system lets you measure and record the performance of each section of your program.

Bottleneck Breaker consists of three programs that work together to analyze your BASIC program *as it is running*. Seconds after your program is done, the profiler's report is ready to be displayed or printed. With this report in hand, tracking down BASIC bottlenecks is as easy as reading a scorecard.

GETTING STARTED

Type in Listing 1, PROFILE1.BAS, check it with TYPO II and SAVE a copy to disk.

Next, type NEW then type in Listing 2, PROFILE2.LST, check it with TYPO II and LIST a copy to disk.

Now, type NEW, then type in Listing 3, PROFILE3.BAS, check it with TYPO II and SAVE a copy to disk.

Finally, type NEW, then type in Listing 4, PROFTEST.BAS, checking it with TYPO II, and SAVE a copy to disk. PROFTEST.BAS is a short BASIC program we'll use to test the profiler. It performs a variety of functions within a time-consuming loop, and is

a good program to start with.

Listing 5, PROFILE.M65, is the MAC/65 assembly language source code for the profiler. You do not need to type it in to use the programs.

Antic Disk owners will find all of these listings on the monthly disk.

YOUR FIRST TIME

Bottleneck Breaker is easy to use. Each program's final screen tells you what to type next. Before using the profiler on your own program, though, you should first try it on the short example program, PROFTEST.BAS. Put a disk containing your profiler programs into the drive and type:

```
RUN "D:PROFILE1.BAS"
```

This program loads the profiler's machine language routine and sets up the POKEY timer interrupt.

Next, LOAD the program to be profiled. For this test case, type:

```
LOAD "D:PROFTEST.BAS"
```

After making sure your program has no lines numbered 1-3 or 31000-31010, type:

```
ENTER "D:PROFILE2.LST"
```

This file adds the necessary commands to start and stop the profiler.

Finally, type RUN. It takes about a minute to clear the counters. Then, your BASIC program will begin.

As your BASIC program runs, the profiler monitors it and updates its counters, which are kept in a separate 8K block of protected memory.

When your program stops, you should see the message: DONE. . .

```
Next: RUN "D:PROFILE3.BAS"
```

If you don't see this message, you *must* type GOTO 31000 at the READY prompt. Otherwise, the profiler will not stop profiling!

Now it is time for the profiler to fetch, analyze and display your results. If your printer is on, you'll automatically get a hard copy of your report.

```
Type: RUN "D:PROFILE3.BAS"
```

This can take some time to RUN, as the data sets can be large. As it runs it reports on its status. When done,

it should print a report similar to the following:

TOTAL COUNTS = 3389			
LINE	COUNTS	PERCENT	CUM PCT
120	2423	71.47	71.47
110	370	10.91	82.38
140	191	5.63	88.01
160	124	3.66	91.67

program line.

The ideal profiling system would

INTERPRETING THE REPORT

The report is sorted by execution speed, with the slowest program lines at the top.

The COUNTS column contains the raw data from the profiler's counters. The PERCENT column tells you what percentage of the processor's time was devoted to this line. The CUM PCT (Cumulative Percentage) column merely keeps a running total of the PERCENT column.

According to this report, line 120 has the biggest bottleneck. This line uses most of the computer's processing time—more than 71 percent of it! If you refer to PROFTEST.BAS, you'll see that line 120 contains a cosine function, which takes quite long time to execute.

Line 110 is the next largest bottleneck. This line contains a division operation, which also takes a long time, but only about one-seventh the time of the cosine function, according to the profile.

Checking the CUM PCT column, see that the four highest lines in the profile consume over 91% of the total processing time.

Note that the profiler uses a statistical method, and will probably never produce exactly the same results twice.

ABOUT PROFILING

A perfect profiling system would not take processing time away from your program, would not need any memory space, and would show how much time was spent executing each

also have a counter for each line in your BASIC program. These counters would keep a record of the number of times each line had been executed.

Finally, the profile would use all of this information to calculate an average of the actual time spent executing each statement.

While Bottleneck Breaker is not a perfect system, it is accurate and reliable enough to measure almost every type of BASIC program.

Since Bottleneck Breaker runs concurrently with the program being profiled, each must have its own share of processing time and RAM. Bottleneck Breaker needs about a 25 percent share of processing time. This means that your programs will RUN about 25 percent slower while they are being profiled.

The profiler also needs 8K of RAM for its counters. If you need to profile a large program that needs this 8K block of memory, you should break it into groups of stand-alone subroutines, LIST each group to disk, then individually profile each group.

Finally, Bottleneck Breaker does not have a counter for each line in your BASIC program. Instead, the profiler has one counter for each range of 10 line numbers. For example, any lines numbered 10-19 would all share counter #11, all lines within the range 20-29 would use #2, and so on.

If you number your program lines in tens (10, 20, 30. . .), as most BASIC programmers do, you'll have one counter for each line. If your program is not numbered in tens—and you

want to assign one counter per line—you must renumber your program. (NOTE: Some BASIC programs won't work if renumbered. Be sure to make a backup of your program *before* renumbering, just in case.)

HOW IT WORKS

Bottleneck Breaker is a collection of three BASIC programs that all work together. The first program, PROFILE1.BAS, POKEs the profiler's machine language (ML) counting and timing routine into memory, just above the counters.

The second program, PROFILE2.LST, is really just five lines of BASIC which are merged into the program to be profiled. These lines control the profiler's ML routine, clear the counters and set the timers.

The third program, PROFILE3.BAS, analyzes the 8K block of counters and displays the results of the profile.

The profiler stores its data in an 8K

block of 16-bit counters. That's enough RAM for 4,096 counters. Since BASIC's maximum allowable line number is 32767 and up to ten lines may share a counter, we'll only need 3,276 counters, or a little more than 6K. The profiler's ML routine sits in the remaining 2K of this block.

THE SAMPLER

The brains of the system is the profiler's ML routine, called "SAMPLER." It is entered on the POKEY Timer One interrupt. SAMPLER is controlled through memory location 40704 (\$9F00), which is used as a flag to start and stop profiling. SAMPLER checks this location whenever it receives the Timer One interrupt, and only proceeds if the value is not zero.

SAMPLER examines your BASIC program more than 250 times per second. During each pass it checks STMCUR (memory locations 138-139, \$8A-\$8B) to determine which line is

being executed, then increments the appropriate counter.

After incrementing the counter, the routine checks for any overflows (the high bit will be a 1). When this happens, typically only after a very long run, SAMPLER is disabled. No further samples are taken, to avoid losing accuracy in the results.

CAUTIONS

Note that the SAMPLER routine uses memory locations 203-208 (\$CB-\$D0). If your program uses these locations, the profiler may produce wrong answers or crash.

You should also be sure that the program being profiled does not use lines 1-3 or 31000-31010. Otherwise, you won't be able to add the program lines which control the Profiler.

Finally, if the profiler tries to sample your program while the BASIC interpreter is moving from one line to the next, a garbage line number will appear in the final report. This happens rarely enough that it does not affect the results in any significant way.

130XE CHALLENGE

As written, Bottleneck Breaker requires 8K of RAM for its counters. *Antic* challenges you to relocate the profiler's counters to the 130XE's alternate memory bank, allowing the profiler to work with larger programs.

The best modification, in the opinion of the *Antic* staff, will receive the winner's choice of any single *Antic* Software product from the *Arcade Catalog*. Entries must be received before May 15, 1989. These become the property and will not be returned. Send your entries to: Bottleneck Contest, *Antic Magazine*, 544 Second Street, San Francisco, CA 94107. **A**

Stan Lackey is a computer hardware engineer at BBN Advanced Computers Inc. in Cambridge, Mass. and a member of the Acton-Boxboro Atari Computer User Society (ABACUS.) This is his first appearance in Antic.

Listing on page 42

COMING NEXT IN MAY '89 ANTIC

VIDEO CASSETTE LABELER

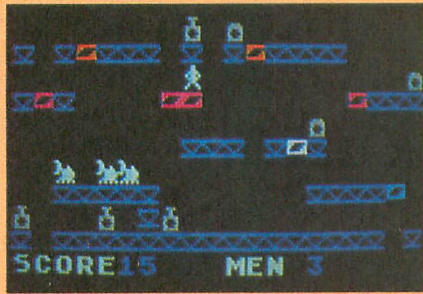
ENHANCING BASIC

SUPER CRIBBAGE GAME

EASY COVOX
SPEECH EDITOR:
DISK BONUS

Shutdown

Escape those killer robots. By Tony Barnes



Shutdown is a challenging fast-action game where you dismantle enemy power stations while evading the alien robots that have taken over. This BASIC program works on all 8-bit Atari computers with at least 48K, disk or cassette.

Trouble is brewing on Xena 5 with a capital "T". Mechanical aliens from an unknown planet have taken over all seven power stations on this world.

You are Jake Retron, an elite trooper in the Galactic Marine Corps and it is your duty to go into these seven stations and shut them down.

It won't be easy because the robots can detect all metals, so you can't

bring in any weapons. Also, the only way to move up and down between platforms is to use the elevators scattered about. The only problem is that the aliens have reprogrammed them so you don't quite know where they'll take you.

GETTING STARTED

Type in Listing 1, SHUTDOWN.BAS,

check it with TYPO II and be sure to SAVE a copy to before you RUN it. If you have any trouble typing in the special characters in lines 21010-21012, 23010-23012 and 30100-30140, 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, LOAD "D:SHUTDOWN.BAS" and then ENTER "D:LINES.LST." Cassette users: CLOAD Listing 1, then insert the separate cassette used for Listing 2 and ENTER "C:". Remember to SAVE the completed program before you RUN it.

To shut down a station you must cut all the power going there. This is done by turning off the many generators scattered about, which you accomplish merely by touching them.

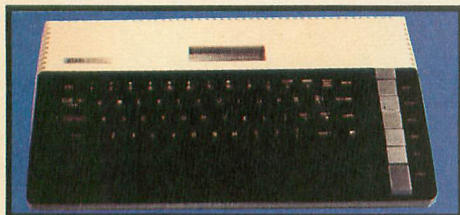
You move Jake by pressing the joystick left or right. Nothing happens when you press the joystick button or move the stick forward and back. To activate a lift all you must do is step onto it. If you get trapped you can restart that level by pressing the [START] key. This loses one of your lives, however. ▲

Tony Barnes was the author of Escape From Hell (June 1988).

Listing on page 43

When you want to talk Atari

XL/XE HARDWARE



CMO SPECIAL

Atari 800XL \$6999

65XE 109.00
130XE 149.00

INTERFACES

ICD

130XE Adapter 18.99
850 To Par Cable 15.99
P:R Connection 58.99
Printer Connection 34.99

Supra

1150 36.99
1151 (1200 XL) 40.99
MicroPrint 28.99

Xetec

Graphix Interface 38.99

Atari

850 Interface 109.00

XL/XE ENHANCEMENTS

Axlon 32K Mem. Board (400/800) . 16.99
Atari 80 Column Card 69.99
I/O Cable 7.99

ICD

BBS Express (ST) 52.99
Sparta DOS Construction Set 26.99
US Doubler/Sparta DOS 45.99
Real Time Clock 46.99
Rambo XL 26.99
US Doubler 26.99

MODEMS

Atari

SX212 300/1200 (ST) 68.99
XMM301 44.99

Anchor

VM520 300/1200 ST Dir. Con ... Special

Avatex

1200 HC 89.99
2400 169.00

Supra

2400 Baud XL/XE or ST 159.00
2400 Baud (no software) 139.00

ST HARDWARE

Call For Current Information
On The Entire ST Line!



**ATARI SM1224
RGB/Color Monitor \$349**

520ST FM RGB/Color System Call
SM124 Monochrome Monitor ... 179.00



CMO PACKAGE EXCLUSIVE

Atari 800XL & XF551 Drive

w/5 Undocumented ROMS Asteroids, Defender,
Missile Command, QIX, Star Raiders
\$259

DRIVES

Atari

ST 314 DS/DD Call
XF551 Drive (XL/XE) 189.00

I.B.

5 1/4" 40 Track (ST) 219.00

I.C.D.

FA•ST 20 Meg 629.00
FA•ST 30 Meg 759.00
FA•ST 50 Meg 939.00
FA•ST Dual Hard Drives Call

Indus

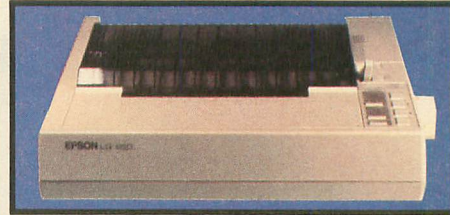
GTS 100 3 1/2" DS/DD (ST) 189.00
GT 1000 5 1/4" DS/DD (ST) 199.00
GT Drive (XL/XE) 189.00

Supra

FD-10 10MB Removable Floppy . 859.00
30 Meg Hard Drive (ST) 649.00
60 Meg Hard Drive (ST) 989.00

CALL FOR DISKETTE SPECIAL

PRINTERS



**EPSON LQ-850
24-Wire, 330 Cps \$499**

ALPS

ASP1000 120cps, 9-Pin 179.00

Atari

1020 Printer, 40 Col. Color 19.99
1027 Letter Quality XL/XE 69.99
XDM121 LQ (XL/XE) 189.00
XM-M801 XL/XE Dot Matrix 189.00

Brother

M-1109 100 cps Dot Matrix 159.00
HR-20 22 cps Daisywheel 339.00

Epson

LX-800 150 cps, 80 col 189.00
FX-850 264 cps, 80 col Call
LQ-500 180 cps, 24-wire Call
LQ-1050 330 cps, 132 col Call

NEC

P2200 pinwriter 24-wire 349.00

Okidata

Okimate 20 color printer 139.00
ML-182 + 120 cps, 80 column . 229.00
ML-390 + 270 cps, 24-Wire 509.00

Panasonic

KX-P1080i 144 cps, 80 col 169.00
KX-P1091i 194 cps, 80 col 189.00
KX-P1124 24-Wire, 192 cps ... 319.00

Star Micronics

NX-1000 140 cps, 80 column ... 169.00
NX-1000 RainBow Color 239.00

Toshiba

P321-SL 216 cps, 24-wire 499.00

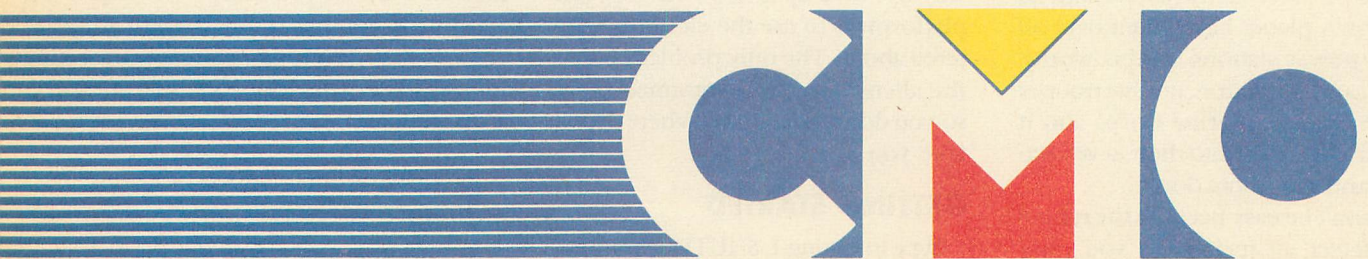
ACCESSORIES

Allsop Disk Holders

Disk File 60-5 1/4" 9.99
Disk File 30-3 1/2" 9.99

Curtis

Emerald 39.99
Safe Strip 19.99
Universal Printer Stand 14.99
Tool Kit 19.99



Your Source for Hardware, Software & Peripherals

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

SPECIALS XL/XE

CLOSEOUTS XL/XE

SPECIALS XL/XE

#AAB822P 822 Printer Paper	\$2.49
#AA14746 T.V. Switch Box	2.49
#AA4010 Tic-Tac-Toe	4.99
#AA4011 Star Raiders	3.99
#AA4012 Missile Command	3.99
#AA4013 Asteroids	4.99
#AA419 Bookkeeper Kit	49.99
#AA4022 Pac Man	4.99
#AA4025 Defender	4.99
#AA4102 Kingdom (Cass.)	1.99
#AA4107 Biorythm (C)	4.99
#AA4112 States & Capitals (Cass.)	1.99
#AA4121 Energy Czar	1.99
#AA4125 Italian (C)	9.99
#AA4126 Speed Reading	2.99
#AA4129 Juggle's Rainbow	1.99
#AA415 File Manager	8.99
#AA4204 1020 Color Pens	1.99
#AA5047 Timewise (D)	3.99
#AA6006 Counseling Procedure	1.99
#AA7102 Arcade Champ (No J. Stk)	6.99
#AA8030 E.T. Phone Home	3.99
#AA8048 Millipede	4.99
#AA9035 Mickey Outdoors	5.99
#AAB5044 Music II Disk	4.99

ROM CARTS (XL/XE) \$2⁹⁹ ea or 5 for \$13⁹⁹



Loose/Undocumented

Choose from: Space Invaders, Star Raiders, Missile Command, Asteroids, Pac Man, Galaxian, Defender, QIX, Super Breakout, E.T., Eastern Front, Robotron.

Rocklyn	
Gorf	2.99
Anti-Sub (Disk)	2.99
Journey to Planet	2.99
Atari Program Exchange	
10 Different Cassettes For	\$11.99

Access	
Leaderboard Golf	13.99
Accolade	
Fight Night	19.99
Hardball	19.99
Atari	
Atariwriter Plus	35.99
Broderbund	
Graphics Library	18.99
Printshop	26.99
Datasoft	
Alternate Reality (City)	23.99
221 Baker St.	20.99
Electronic Arts	
Pinball Construction	15.99
Microprose	
Silent Service	23.99
Top Gunner	14.99
F-15 Eagle Strike	22.99
Origin Systems	
Ultima 4	36.99
Strategic Simulations	
Battalion Commander	25.99
Gemstone Warrior	11.99
Sublogic	
Flight Simulator	34.99

ST SOFTWARE

ST SOFTWARE

ST SOFTWARE

Accolade	
Test Drive	24.99
Activision	
Hacker II/Music Studio (ea.)	28.99
Antic	
Flash	21.99
Avant Garde	
PC Ditto	59.99
Batteries Included	
Degas Elite	37.99
Electronic Arts	
Chessmaster 2000	28.99



Access
Leaderboard Golf \$21⁹⁹

Data East	
Speed Buggy	25.99
Electronic Arts	
Auto Duel	29.99
Epyx	
Divebomber	28.99
Firebird	
Silicon Dreams	10.99
FTL	
Dungeonmaster	28.99
Metacomco	
ISO Pascal	59.99
Michtron	
Leatherneck	27.99
Microprose	
Gunship	28.99
F-15 Strike/Silent Service (ea.)	24.99
Miles Software	
ST Wars	24.99
Mindscape	
Roadrunner	34.99
Mark Williams	
DeBugger	45.99
Paradox	
Wanderer (3D)	24.99

Psygnosis	
Obliterator	27.99
Soft Logik Corp.	
Page Stream	129.00
Strategic Simulation	
Questron II	31.99
Timeworks	
Swiftcalc	46.99
Desktop Publisher	79.99
Unison World	
Printmaster Plus	25.99
WordPerfect Corp.	
WordPerfect	149.00



TimeWorks
WordWriter \$44⁹⁹

In U.S.A.

Call: 1-800-233-8950

In Canada call: 1-800-233-8949 All Other Areas 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. B7, 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 and Maryland residents add appropriate 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.

MiniMon

PEEK and POKE power from DOS.

With this machine language Mini-Monitor you gain the very useful capability of being able to POKE and PEEK from DOS! This BASIC program works on any 8-bit Atari with disk drive.

Seasoned BASIC programmers know how useful the POKE and PEEK commands are. However, when you leave BASIC, you're at the mercy of the DOS menu, restricted to the options it provides.

MiniMon is a machine language mini-monitor that gives you more control over your Atari when you're in DOS. MiniMon gives you emulated PEEK and POKE commands.

Suppose you're tired of your Atari's bland blue and white default colors. In BASIC it's easy enough to POKE different values into the color registers, but in DOS you're stuck with the default colors. MiniMon lets you change these colors from DOS, just as you would in BASIC.

Many XL/XE owners sooner or later find themselves trapped in DOS when BASIC has been disabled by either the [OPTION] key or a machine-language

program. MiniMon lets you enable or disable BASIC at will *without rebooting*.

GETTING STARTED

Type in Listing 1, MINIMON.BAS, check it with TYPO II and SAVE a copy before you RUN it. When RUN, MINIMON.BAS creates a machine language file called MINIMON.EXE and writes it to your disk. *This* is the MiniMon program.

Listing 2, MINIMON.M65, is the MAC/65 assembly language source code for MiniMon. You do not need to type it in to use the program.

To start MiniMon, type DOS to get to a DOS 2.0 or 2.5 menu, then select menu choice L to load D:MINIMON.EXE. MiniMon will load and run automatically.

USING MINIMON

The menu offers three numbered

choices—DOSPOKE, DOSPEEK and EXIT TO DOS.

If you select DOSPOKE, type the value to be POKEd into an address, press [RETURN] and then type the address and press [RETURN]. If you try to enter an illegal value (such as a negative number), MiniMon will ignore it and wait for a valid number. Press [ESC] to exit DOSPOKE and return to the MiniMon menu.

DOSPEEK works like DOSPOKE. Press [OPTION] to return to the MiniMon menu, press [START] to re-run DOSPEEK. The third menu choice simply returns you to DOS.

THINGS TO TRY

To change screen colors in DOS, run MiniMon and select DOSPOKE. Enter 200 at the first prompt and 710 at the second. Your screen will immediately turn green. This would be equivalent to typing SETCOLOR

2,12,8 from BASIC. If you enter 0 and 709, you'll get black text. This would be equivalent to typing SETCOLOR 1,0,0.

To disable BASIC in XL/XE models, put 255 into 54017. Putting 253 into 54017 will enable BASIC. However, a word of caution is in order here.

If BASIC has been disabled by holding down the [OPTION] key, then screen memory has been moved up 32 pages. Some machine language programs also move screen memory. If you put a 253 into location 54017 under such circumstances, you'll get a screen full of garbage.

To handle this situation, you must reposition the display list by following this procedure:

1. Use DOSPOKE to put 160 into location 106. This location, called RAMTOP, gives the total number of available pages of memory.

2. Exit to DOS with MiniMon selection 3.

3. Choose DOS option M, type 2075 and press [RETURN]. This reprints the DOS menu, but it has the same effect as a BASIC GRAPHICS 0 command—it moves the display list and data below the new RAMTOP.

4. Re-run MINIMON.EXE and use DOSPOKE to put 253 into location 54017.

5. Exit to DOS with MiniMon option 3 and use DOS option B to go to BASIC.

HOW IT WORKS

MiniMon bypasses CIO and directly accesses the operating system's "put character" and "Keyboard GET-BYTE" routines for getting and printing characters.

Unfortunately, the 800's OS and the XL or XE's OS place these routines in different locations. So MiniMon must begin by determining what type of computer it's running on and modify itself accordingly.

MiniMon determines what type of computer it's running on by inspecting memory location 64728 (\$FCD8). If this location contains a 162, Mini-

Mon is running on an 800 and must modify itself before continuing. A 76 here denotes an XL/XE, so MiniMon will not modify itself.

(Antic prefers to avoid such potentially dangerous programming practices whenever possible. We discourage readers from writing self-modifying programs or making illegal system calls to the OS, if it can possibly be avoided.—ANTIC ED)

All of the really hard work in MiniMon is done by the floating point routines in the operating system. When you type in a value, say 234, what actually goes into the computer is 50,51,52—the ASCII values for 2, 3 and 4. These three bytes must be converted into one byte containing the integer 234.

First, your Atari converts the ASCII values into floating point form, then converts the floating point number into an integer.

DOSPEEK works the opposite way. The value contained in an address is an integer which must be converted into ASCII for you to read it. Again, it's a two-step process—converting an integer to a floating point value, then changing the floating point value to ASCII.

MiniMon uses all four of these conversion routines—ASCII to Floating Point (beginning at address 55296, \$D800), Floating Point to ASCII (55526, \$D8E6), Integer to Floating Point (55722, \$D9AA), and Floating Point to Integer (55762, \$D9D2).

MiniMon requires only 667 bytes and resides in memory at 13312 (\$3400). It takes up only six disk sectors, and can give you much welcome additional flexibility when using DOS. ▲

Joe Kimbrough is a professor of English from Houston, Texas. He uses his Atari for many tasks, but it does yeoman service as a word processor. This is his first appearance in Antic.

Listing on page 35

Fill in coupon and mail to:

ANTIC, P.O. BOX 1569
MARTINEZ, CA 94553

I am also a start subscriber.

New Address

Name

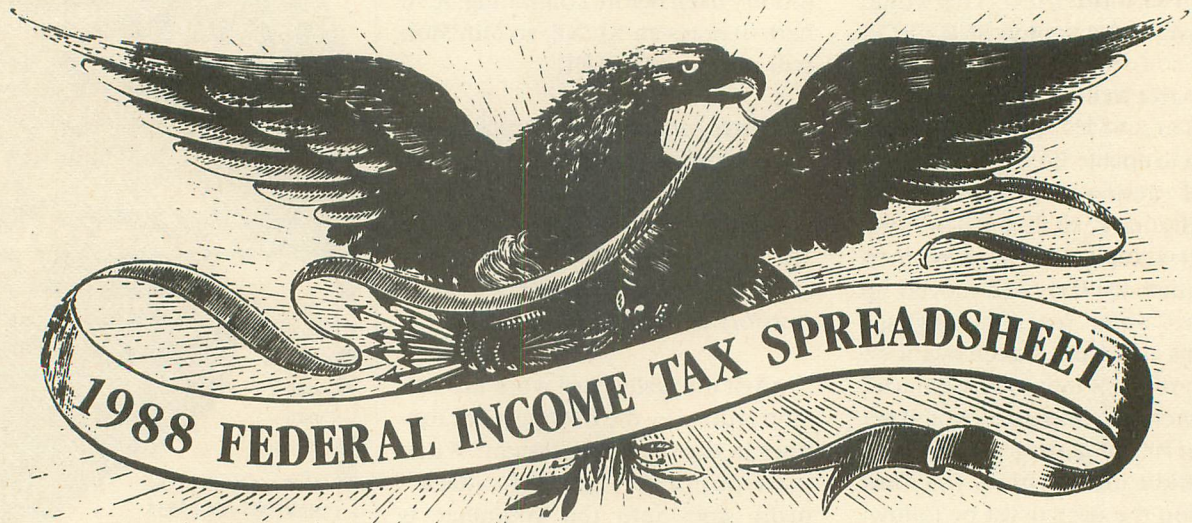
Address

City

State

Zip

place current mailing label here



ANTIC'S ANNUAL 1040 SYNCALC TEMPLATE

Antic's

Annual Federal

Income Tax Spreadsheet

Templates have been among our most popular features. Now you can calculate your 1988 federal income taxes on your 8-bit Atari. Requirements for running the 8-bit Atari template are minimum 48K memory and a disk drive, plus SynCalc spreadsheet software (which unfortunately is no longer being sold by Broderbund). A printer is optional, but you'll need your official Internal Revenue Service 1988 tax instructions and forms.

If April 15 is approaching, it's time to calculate your Federal Income Tax again. But at least you can count on much less hassle when you do the number crunching with your 8-bit Atari, Antic's Annual Income Tax Template, and SynCalc spreadsheet (no longer sold by Broderbund, but perhaps back copies are still available). This IRS tax template will make it simple for you to experiment with various alternative "what if" strategies for minimizing the taxes you owe.

The Annual Antic Federal Income Tax Spreadsheet Template includes fewer forms than in previous years, because of the "simplified" tax law. (For example, there's no more Income Averaging deduction.) So for 1988 you'll get:

- IRS 1040 Long Form
- Schedule A (Itemized Expenses)
- Schedule B (Interest and Dividends)
- 2106 Form (Employee Business Expenses)

We use SynCalc software for the Antic tax templates because SynCalc is still the most widely used 8-bit Atari spreadsheet that will perform income tax calculations. If you don't have a printer, you can just hand-copy the

figures from the screen to your printed IRS forms.

Even if you've never used SynCalc before, you should be able to work through the well-written manual in a few hours and learn enough to use this tax template. But you're leaving yourself open for unnecessary aggravation if you try to start working on the tax template without taking enough time to become adequately familiar with SynCalc.

Please, if you need help with SynCalc, try Broderbund Technical Support at (800) 527-6263—don't phone **Antic**! However, if any last-minute fixes are needed in the template itself, the information will be on CompuServe's ANTIC ONLINE. (Type GO ANTIC when you log onto CompuServe and you'll see any necessary bulletins.)

Please be careful and use common sense in figuring out your tax return. If you doubt the accuracy of the template findings, check with a registered tax preparer. User and programmer errors are always a possibility. **Antic** can't take responsibility for any mistakes made in your tax return as a result of using this template.

TAX SPREADSHEETS

Spreadsheet programs are an ideal tool for preparing tax returns. You type in personal data such as income and deduction amounts, and customized formulas tell the spreadsheet how to compute the tax obligation from your data. Each data element or formula is entered in a "cell" with an address—similar to the lines and columns on the tax form. As your data changes (if you find another receipt, for example), just go to the proper cell, type in that number and press [START]. Your entire tax return will begin to recalculate.

Important: please remember that SynCalc calculates by rows or columns—so this template must be calculated at least *five times*. Press [START] five times after changing any figure.

You'll need the official 1988 Internal Revenue Service tax instructions and forms nearby. There isn't enough Atari memory to duplicate the forms exactly, so abbreviations are used wherever possible. But the template follows IRS line numbers, so you won't get lost.

After you enter the information into the spreadsheet, it calculates every line except the actual tax you owe. Putting all the tax tables into the template would chew up memory and typing time. So when you determine

Spreadsheet programs are an ideal tax tool.

your Net Taxable Income on the template, look up the matching tax obligation in the Tax Table or Tax Schedule in your IRS instruction booklet.

The spreadsheet template can be reused for many different 1988 tax returns if you retain a blank version on disk. Entering a taxpayer's personal data should take about an hour. Save each completed tax template under a different filename.

This long, narrow template consists of 205 rows (out of a possible 255 maximum) by four columns. You *don't* need to type in any schedules or forms that you won't use—the 1040 form will work without them. If you type in template sections that you later decide not to use, just leave those cells blank and they won't become part of the overall calculations for the return.

TEMPLATE TYPE-IN

Antic Disk owners will find this template on the monthly disk under the filename TAX1040.SC. You'll need to boot SynCalc before loading TAX1040.SC.

For the purposes of this article, I must assume that you're familiar with SynCalc. For instance, you should know that pressing [OPTION] starts a command sequence, how to move around within the spreadsheet, etc. Keep your SynCalc manual handy, if you have any doubts.

Format a blank disk for data. Before typing anything in, set the column widths as follows: column A, 4; column B, 35; columns C and D, 9 each.

Set GLOBAL FORMAT to PRECISION 0 (to round off cents to the nearest dollar) and COMMA (to insert commas in numbers like 1,000). To speed up data entry, issue the command GLOBAL RECALCULATE MANUAL. Also, set calculation to ROWS.

In this year's template, the IRS form line numbers are in 4-width column A and the text descriptions are in 36-width column B. The actual figures and formulas are in 9-width columns C and D. While entering titles in column B, set FORMAT JUSTIFY LEFT. When entering the numbers and formulas in columns C and D, set FORMAT JUSTIFY RIGHT, and also right-justify column A.

The template is divided into separate sections, one for each tax form or schedule. Each section has two parts. Part A is the format set-up: titles, labels, etc.—with zeros (0) temporarily standing in for your actual number and formula locations. Part B contains the formulas. I'd suggest starting at cell A1 and working down column A using SynCalc's automatic cursor movement. Then go to column B and enter the titles.

You might consider typing in and testing each section before proceeding to next one. Part A of each section starts with the SynCalc row number. *Don't* type in these row numbers. The tax form line numbers are under the dashes for column A.

Here's a data compression tip: SynCalc uses 16 bytes to store every number. Text entries take only four bytes, plus one byte per character. Unless

Order Toll Free
800-558-0003
 Order Info and WI orders
 414-357-8181

Since 1982
ComputAbility
 Consumer Electronics

Order Toll Free
800-558-0003
 Order Info and WI orders
 414-357-8181

**NEW
 LOWER PRICES**

ST Hardware Specials

**No
 Creditcard
 Surcharge**

**Supra
 30 Meg
 \$649**
 Free delivery in the
 continental USA.

**PC Ditto
 Package**
 PC Ditto
 ST/PC 5.25" Drive
\$279

**Star
 Printers**
 NX-1000 175
 NX-1000 Rainbow 229
 NX-2400 289
 LASER 1795

**Modem
 Special**
 • Supra 2400 baud
 • ST Modem Cable
 • Flash V1.6 Software
\$155

**Panasonic
 Printers**
 1180 NEW NEW Call
 1191 NEW NEW Call
 P1124 NEW 24 pin 329
 Laser Partner 1599

Indus GTS-100
\$189

Accessories
 3.5" Drive Ceaning Kit 9.95
 6 way surge protector 14.95
 Drive Master 34.95
 Monitor Master 34.95
 Mouse Master 34.95
 Mouse House 6.95
 Mouse Pad 8.95
 Tweety Board 49.95
 Video Key 64.95

**Casio Midi
 Synths**
 CPS-101 349
 CT-640 279
 MT-540 209
 MT-240 169

IB 5.25" Drive
\$219

IMG Scanner
\$74.95

you use a number in a calculation, enter it as text. In fact, all form line numbers such as the ones in column A *must* be text. Start each text entry with quotation marks (") or you'll run out of memory.

The last step in Part A is to enter all the zeros. The zeros "hold open" the cells for formulas and values to come later. Most zeros are in columns C and D. As you enter them, use this undocumented tip: the /K command toggles automatic cursor movement on and off. Also, you can move the cursor arrows in a menu without holding down [CONTROL].

Now that the template format is typed in, use Part B of each section for cell formulas. The listing shows each cell address, followed by the entry. *Don't* type the cell addresses (such as C133) shown in the first three or four spaces at the left. Instead, go to that cell and type in the formula, typing over the space-holding zeros en-

tered earlier. A formula element like D122 is not text—type it as +D122 so that SynCalc will know it's a numeric entry. As you enter each formula, protect it with a /FO (FORMULA PROTECT ENTRY) so you won't accidentally write over it.

TIPS & TRICKS

Because this template pushes SynCalc to its limits, you'll need to use some advanced spreadsheet operation techniques in order to get everything working properly. Since SynCalc occasionally wastes a few cells, if you get the famous ERROR 100 NOT ENOUGH MEMORY message, save the file immediately. Now erase the file in memory with the /E# command and then reload the file from disk. This save/erase/load process deletes unnecessary entries.

To squeeze in long cell formulas, don't type spaces between words. Even more importantly, when you

first type in the formulas, leave out words like THEN, ELSE or LOOKUP. Then press [RETURN]. You'll get a SYNTAX ERROR message because of the missing words, but go back and enter those words with the [CONTROL] [INSERT] keys. This lets you put an "illegal" amount of characters into a cell. The final characters will be pushed off the screen, but they're still in memory. (There are limits, of course—don't insert more characters than you need to.)

After you correctly type in the complete spreadsheet template, remember to save a blank copy under a name like BLNK1040 before entering any taxpayer data. Loading that blank file lets you do returns for many different taxpayers—just save each return with a different filename. ▲

Tom Chandler has a degree in finance and is an accountant.

Listing on page 46

BACK ISSUE SALE

Complete Your Atari "Toolkit"

SAVE 25% TO 35%

How To Order:

Simply give the Order Numbers of the issues you want, and include the letter corresponding to the following selections:

- A- magazine & disk**
- B- magazine only**
- C- disk only**

Example: 1A- is for "April 1983, magazine & disk"

If no letters are indicated in your order, we will automatically send you the magazine only (B).

Prices:

	1 To 5 Issues	If you order more than 5 Issues
Magazine & Disk	\$7.00 each	\$6.50 each
Magazine only	\$3.00 each	\$2.75 each
Disk only	\$5.00 each	\$4.75 each

Please include shipping & handling charges:
 1 to 5 issues: \$1 for each issue
 6 and over : \$ 5 plus 50c for each issue over 5.

**FOR ORDERS ONLY CALL TOLL- FREE
(800) 234-7001 (7-5pm PST.)**

MasterCard & Visa Only

Or send your check to: ANTIC BACK ISSUES
 544 Second Street San Francisco, CA 94107
 California residents add 6 1/2% sales tax.

Back Issue Order Form

Order #	Selection A, B, or C	Order #	Selection A, B, or C
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Total Issues Ordered: _____

Total Issues Ordered:	1 to 5	6 & over:	
No. Issues of Sel. A: _____	x \$7 ea.	x \$6.50 ea.	= \$ _____
No. Issues of Sel. B: _____	x \$3 ea.	x \$2.75 ea.	= \$ _____
No. Issues of Sel. C: _____	x \$5 ea.	x \$4.75 ea.	= \$ _____
	Total \$		_____
	Shipping & handling \$		_____
	Amount enclosed \$		_____

Check Enclosed VISA MasterCard

Name _____

Address _____

City _____ State _____ Zip _____

Credit Card # _____

Exp. Date _____

Canada, Mexico and all other foreign add \$1. per issue. Payment in U.S. funds must accompany all foreign orders. California residents add 6 1/2 % sales tax.



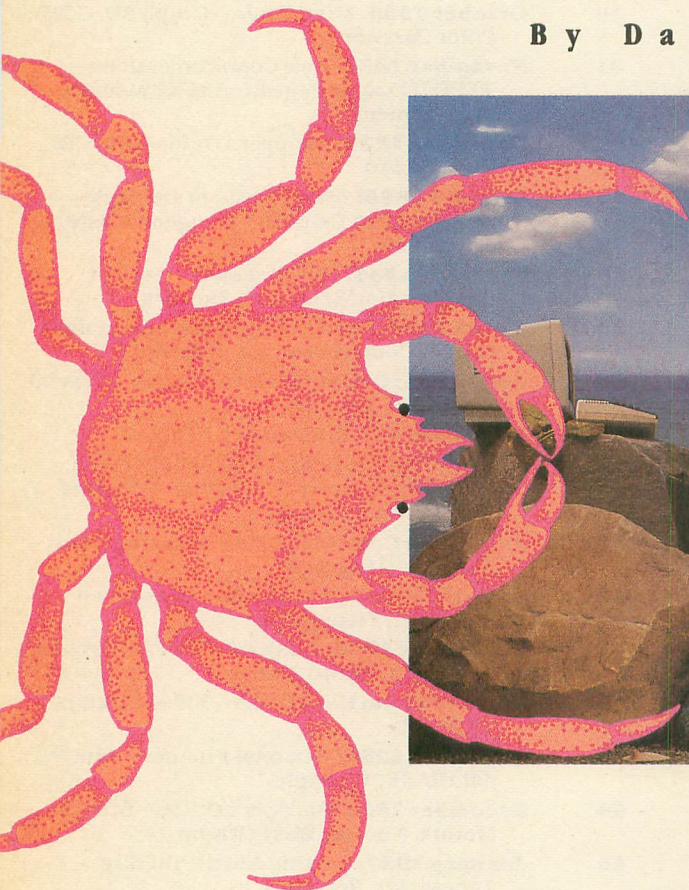
Missing any issues? Looking for those great utilities,
 games, and reviews? You'll find it all right here!
 Copies are limited, so order today!

ORDER #	ISSUE	ORDER #	ISSUE
1	April 1983: Games—3-D Maze, Voyeur (No Disk)	30	October 1985: Mind Tools—Graph 3D, GEM Color Cascade
2	May 1983: Telecomputing—Microids, Tele Chess (No Disk)	31	November 1985: New Communications—TYPO II Double Feature, 130XE Memory Management
3	June 1983: Databases—Stargazing, Dancin' Man (No Disk)	32	December 1985: Shoppers Guide—DISKIO Plus, Box-In
4	July 1983: Adventure Games—Dragonsmoke, Shoot-em-up Math	33	January 1986: Atari Products are Back—Appointment Calendar, Dungeon Master's Apprentice
5	August 1983: Graphics—3-D Fuji, Keystroke Artist	34	February 1986: Printer Power—T-Shirt Construction Set, Forth Escapes
6	September 1983: Education—P/M Tutor	35	March 1986: Practical Applications—Lunar Lander Constructor, Lie Detector
7	October 1983: Sports Games—AutoCassette	36	April 1986: Computer Mathematics—Fractal Zoom, 3-D Fractals
8	November 1983: Sound & Music—Air Raid, Casting Characters	37	May 1986: 4th Anniversary—Digital Gardener, Molecular Weight Calculator
9	December 1983: Buyer's Guide—AUTORUN.SYS, Automate Player/Missiles	38	June 1986: Summer Computing—Weather Wizard, Bomb Squad
10	January 1984: Printers—Pocket Calendars, Screen Dump	39	July 1986: Computer Arts—Amazing Card Shuffler, Grafcon ST
11	February 1984: Personal Finance—TYPO, Gauntlet	40	August 1986: Online Communications—Ultrafont, Floppy Filer
12	March 1984: International Issue—DiskRead, Poker Solitaire	41	September 1986: Weather—WEFAX Decoder (8-bit/ST), BASIC Tracer
13	April 1984: Games—Risky Rescue, Math Wizard	42	October 1986: Hard Disks—Video Stretch, TYPO ST
14	May/June 1984: Exploring XL Computers—Escape from Epsilon, Scroll to the Top	43	November 1986: Personal Finance—Budget dataBASE, V-Graph
15	July 1984: Communications—AMODEM, BASIC Animation Secrets	44	December 1986: Shoppers Guide—Stepper Motors, Nuclear Waste Dump
16	August 1984: Disk Drives—Horseplay, Recall	45	January 1987: Talking Atari—Talking Typewriter, Rebound
17	September 1984: Computer Graphics—Graphics Converter, Olympic Dash (No Magazine)	46	February 1987: Word Processing—SF Fogger, Electric Charlie!
18	October 1984: Computer Learning—Bouncing Ball, Antic 4/5 Editor/Animator	47	March 1987: Dvorak Keyboard, Multi-AUTORUN
19	November 1984: Computer Adventures—Adventure Island, Advent X-5	48	April 1987: —Designer Labels, Taxman
20	December 1984: Buyer's Guide—Infobits, Biffdrop	49	May 1987: 5th Anniversary—A-Rogue, Poker Slot Machine
21	January 1985: Super Utilities—TYPO II, DISKIO	50	June 1987: Animation—Verbot Commander, Citadel
22	February 1985: Finances—Home Loan Analyzer, Drum/Bass Synth	51	July 1987: Print Anything—Ghost Writer, Your Net Worth
23	March 1985: Printers—Kwik Dump, Font Maker	52	August 1987: Atari Muscle—Sideways Spreadsheet, Diamond Dave
24	April 1985: Computer Frontiers—Dot Matrix Digitizer, Speech Editor	53	September 1987: Work/Play—Mighty Mailer, Maximillian B.
25	May 1985: New Super Ataris—Son of Infobits, Arena Racer	54	October 1987: Football Predictor—Antic Prompter (8-bit/ST), Spelling Checker
26	June 1985: Computer Arts—View 3-D, The Musician	55	November 1987: Practical Applications—Critical-Path Projects, WYSIWYG Cassettes
27	July 1985: Computer Challenges—Miniature Golf, Guess That Song	56	December 1987: Print Holiday—P.S. Envelope Maker, Antic Publisher
28	August 1985: Telecommunications—Atari Toons, Pro*Term		
29	September 1985: Power Programming—One-Pass Disk Copy 130, Crickets		

Adventure Works

EASY WAY TO PROGRAM TEXT ADVENTURES.

By David Woolley




A *venture Maker*
is a clear tutorial that

shows new programmers how to create their own text adventures. It includes a short demonstration adventure program which can be easily adapted to your own original adventures.

This BASIC program works on all Atari computers

with at least 32K memory, disk or cassette

 Type-In Software



For a novice programmer, getting adventures from your Atari can be difficult. But with a short overview of the necessary elements, text adventure games can really be written with ease.

This article includes *Escape From Barnaby's Isle*, a simple demonstration adventure designed to illustrate how the pieces of the puzzle fit together—and to provide programming routines and structures that you can adapt for your own adventure creations.

GETTING STARTED

Type in Listing 1, *BARNABY.BAS*, check it with *TYPO II* and remember to *SAVE* a copy before you *RUN* it.

Programming a text adventure is straightforward. The program must *READ* information from a list of *DATA*, display that information, *INPUT* the player's action, then perform that action and display the results. To get an idea of how it all comes together, I suggest you first play *Escape From Barnaby's Isle*.

The object of this game is to escape from the island. The list of commands you can use is very short—*GO*, *GET*, *EXAMINE*, *INFO*, and *USE*. You should be able to solve the game easily.

After you complete the game, *LIST* it on screen and look at it again. The most frequently used variables, strings, and arrays are *N\$(nouns)*, *V\$(verbs)*, *O\$(objects)*, *O(objects carried)*, *F(flags)*, *D\$(descriptions)*, *C\$, X* and *Y*.

WRITE AN ADVENTURE

Writing your own text adventure program will require a lot of thought. First think of a setting and a final objective. The setting might be a haunted house, the English countryside or an alien planet.

The objective is something that the player must do to win the game (just "adventuring" or exploring can get pretty boring). The setting for *Escape From Barnaby's Isle* is a deserted island, and the objective is to leave the

island.

Next, imagine items and locations that fit in with the setting. If the setting is a forest, you might find an axe in a grove of oak trees, or mushrooms by a dead tree stump.

After you create some interesting designs for your game, draw a map of the area in which the game takes place. Familiarize yourself with the world you just created, and then draw what I call a "plot" map.

A plot map is drawn on a graph so that each location can be described by ordered pairs. For instance, in *Barnaby's Isle*, the North Beach location is at (3,5).

The plot map has two axes, based

works. Try being more specific—instead of *USE SPADE*, you might try *DIG HOLE*.

INFO is a one-word command. Normally, a one-word command will cause an error in this program, unless you insert a line telling the program to go elsewhere. This is done at line 111.

Your noun list will probably be much longer. Nouns used in *Barnaby's Isle* are *RAT*, *BOOK*, *CUTLASS*, *APPLE*, *TALISMAN*, *CHEST*, *BOAT*, *TROLL*, *TREE* and *SHACK*. Some objects can be picked up, some can be used and all can be examined.

Whenever a player *GETs* an object, a corresponding variable in the *O()* array is set to 1. You can see how this

The game needs an objective—just exploring can get pretty boring.

on compass points. North and south are on the *X*-axis. East and west are on the *Y*-axis. When the program goes through the *DATA* lines in the routine at lines 15-35, it finds the ordered pairs.

At the start, the player begins at location (3,1), or *X=3* and *Y=1* (see line 10). If the player goes north, the program adds one to the *Y* variable, making it 2. The program then finds the data on location (3,2), the Crossroads.

If the player goes west, the value of *X* increases—eastward, *X* decreases. These calculations occur in lines 115-140.

Now you must draw three lists, one for verbs, one for nouns and one for flags. These lists may vary in length, depending on the size of your game.

Having a variety of verbs in your program adds interest and challenge. *USE* is too general, but I put it in *Barnaby's Isle* just to demonstrate how the subroutine to manipulate objects

works in line 170, part of the *GET* routine:

```
170 IF N$ = "RAT" AND X = 5 AND  
Y = 2 AND O(1) = 0 THEN O(1) = 1:  
GOTO 200
```

Now the program can easily determine if the player is carrying the rat by checking the value of *O(1)*. If he has the rat, *O(1)=1*. Otherwise, *O(1)=0*.

The Flags List, contained in the *F()* array, shows the condition of the flags that might change during the game. These include whether or not a door has been closed or a magic rune has been read. Such things are vitally important to keep track of.

Barnaby's Isle has eight flags. Each may be switched on by placing a '1' into the corresponding slot of the *F()* array. For instance, when you *EXAMINE CHEST*, flag 6 is switched on (*LET F(6)=1*) then the program prints the appropriate response.

Now, whenever you type *INFO*, the

program will check to see if flag 6 is on. If so, the program will display what was inscribed inside the chest.

PROGRAM TAKE-APART

Lines 5-7 contain the title page and determine whether or not to disable the [BREAK] key. Text adventures normally require a lot of typing, so it's always a good idea to disable the [BREAK] key to keep the user from stopping the program with an accidental keypress.

If you *want* to use the [BREAK] key, on the other hand, just hold down the [SELECT] key when you type RUN and [BREAK] will be enabled.

Line 8 sets the graphics mode and changes the background colour to black. Lines 10-12 DIMENSION the strings and arrays to be used.

Lines 15-35. This routine takes the player's current X and Y coordinates and searches through the DATA statements to find the rest of the information for that location. Then it reads the description (D\$), object (O\$), and directions in which the player can travel (N\$).

The DATA lines (10000-10014) are important, so I will show you how they work using the South Beach location as an example. This information for this location is in line 10000:

```
10000 DATA 3,1,SOUTH BEACH.A  
BEATEN TRACK LEADS NORTH.  
TALL CLIFFS LOOM UP ON EITHER  
SIDE., ♥ ,NOOO
```

Here, 3 and 1 are the respective X and Y coordinates of South Beach. The description follows. Here, the description is: SOUTH BEACH. A BEATEN TRACK LEADS NORTH. TALL CLIFFS LOOM UP ON EITHER SIDE.

Next, there is a list of objects found there. If there are no objects, just use a single "heart" character (a [CONTROL][,]).

The object's name and the noun don't have to match exactly. Here, the object's name can simply be the phrase used to describe the object. The noun is the word as found in N\$,

which is the form the player must use. As an example, the object in location (2,3) is described as a MAGIC TALISMAN. To pick it up or use it you must use the specific noun, as in GET TALISMAN.

Finally comes the direction code. This is a short string which shows the directions in which the player can travel. Directions are entered in the order north, south, east, west (NSEW). If the player is not permitted to go in a certain direction, that direction is represented by an O. In

**Your
games
can be
as simple
or as complex
as you're
willing to
make
them.**

the above example, the string NOOO means the player may only travel north. In the string NOEO, however, the player can travel only north and east.

Lines 40-54 display all data about your location. Line 42 jumps to a subroutine at 425 which checks the O() array to see if there is an object at the player's current location, and whether or not the player has that object. If O\$ is one character long, the subroutine renames O\$ to NOTHING. The exception is the apple. There will always be fruit on the apple tree.

Lines 51-54 print all the directions in which the player can travel.

Line 55 prompts the player for the next command, then places that command into A\$. Line 60 jumps to a subroutine at 95 which will break A\$ into two parts—the verb (V\$) and the noun (N\$). Line 111 checks to see if V\$ is INFO, a one-word command. If A\$ contains only one word, the routine RETURNS to avoid an error. Otherwise, it extracts the noun, N\$, to complete the command.

Lines 65-90 direct the program to the correct subroutine indicated by the verb.

Lines 112-130, the GO routine, calculate the player's new position, and then return to 15 to READ new data.

Lines 170-200 contain the GET routine. A player may pick up an object only if *all* of the following criteria are met:

—The object exists and can be picked-up.

—The player is in the same place as the object (their X and Y coordinates match).

—The player has not yet picked it up. (If O(x)=0)

Once picked up, the object's corresponding flag in O() is set to 1.

Some objects that cannot be picked up have specific responses here, too. If the noun is unknown or incorrect, the location is wrong, or the object is already being carried, the bell sounds and an error message is displayed.

Lines 205-207 contain the USE routine, which checks the objects you can USE to make sure they are being carried or are at the current location.

Then, depending on the object in question, a flag might be switched on (as is the case with RAT, BOOK and TALISMAN), or a part of O() is switched off, as in the case of the APPLE. Once the APPLE is USED (eaten) you no longer have it.

The results are then printed, and the program returns to line 55.

Starting at Line 235, EXAMINE is the biggest subroutine, yet it is one of the simplest. It uses all the nouns (some of them more than once) and

is mainly there to give players extra information.

Each object you can pick up is checked twice, once to see if it is being carried, and then to see if the player is in the correct location. Objects that cannot be picked up are checked only once. (The exception is TREE, which must be checked three times to determine which of the three trees is being examined.) The results are then displayed, flags set in some cases, and then the program goes to the prompt WHAT NOW? at 55.

The INFO routine is next, in lines 235-317. It displays a list of all the useful verbs, then a list of all objects held. Finally, it prints a list of clues found by the player, and returns to line 55.

The final part is at 475-520, the old CONGRATULATIONS! or YOU'VE WON! routine, often accompanied by a system of scoring. In Escape From Barnaby's Isle the player gains two points for every flag switched on, and

four points for every object.

ADVENTURE CONTEST

Now that you have some idea of how text adventure games work and have seen how the elements are coordinated, you can start writing your own using this as a guideline. Your games can be as simple or as complex as you're willing to make them. Remember, adventure games are not limited so much by your computer's memory, but by your own imagination.

Antic will publish as disk bonuses the best short adventures created with this program structure. Adventures must be written in standard Atari BASIC and must be able to RUN on a 48K computer. ▲

David Woolley is a student from New Zealand. This is his first appearance in Antic.

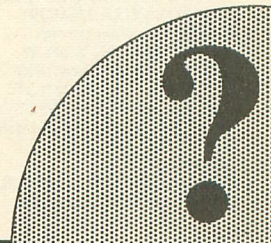
Listing on page 34

HAVE A QUESTION ABOUT YOUR SUBSCRIPTION?

Get an answer fast!

Call
(415) 372-6002

Write:
Antic Customer Service
P.O. Box 1569
Martinez CA 94553



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 dogs 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 unequaled 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**

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 ship & hdlg (US Canada) Ohio res. add 5 1/2% sales tax. Foreign orders add \$8.00 ship & hdlg. Call or write for free catalog. Customer Service Line (216) 467-5665 M-F 9-3.



GIANT WALL SIZED POSTERS.



COMPUTER SOFTWARE SERVICES

P.O. BOX 17660, ROCHESTER, N.Y. 14617

ATARI PHONE (716) 467-9326



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



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

NOW! COPSYS 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).

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

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. Software 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 \$10 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 10 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 810, 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.

\$39.95 RICHMAN'S **\$39.95**
80 Column Word-Processor!

Easy to use, very powerful, and NO ADDITIONAL HARDWARE required! Works with TV or Monitor! This "DISK ONLY" 80 Column Word-Processor is simple to use while offering numerous features such as:

- Completely Menu driven
- Self contained DOS
- Complete Text formatting
- Built in Printer Drivers
- Page numbering
- Justify and Endfill
- High Speed Cursor
- Dictionary
- 80 COLUMNS ON THE SCREEN!
- Insert and Delete
- Search Mode
- View only mode
- Memory Statistics
- Alternate Output
- Change screen Colors, borders, luminesce
- Mouse compatible

One expert has compared 40 domestic and foreign word-processors and concluded that the RICHMAN'S 80 Column Word-Processor is the best! Only \$39.95 plus \$4 S/H/I. (64K required).

\$39.95 THE "QUINTOPUSI" **\$39.95**

The "QUINTOPUSI" 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 "QUINTOPUSI" 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 "QUINTOPUSI" 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 "QUINTOPUSI" 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 "QUINTOPUSI" **\$59.95**
(with SWITCHABLE PORTS!)

This Deluxe version of the "QUINTOPUSI" 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.

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. RICHMAN'S 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

SOFTWARE LIBRARY

TYPING SPECIAL ATARI CHARACTERS

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

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

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

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

INVERSE VIDEO	
FOR THIS	TYPE THIS
	ESC SHIFT DELETE
	ESC SHIFT INSERT
	ESC CTRL TAB
	ESC SHIFT TAB
	CTRL .
	CTRL ;
	ESC CTRL 2
	ESC CTRL DELETE
	ESC CTRL INSERT

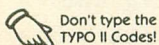
TYPO II AUTOMATIC PROOFREADER

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

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

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

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



Don't type the TYPO II Codes!

```

MB 32000 REM TYPO II BY ANDY BARTON
UM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLO
SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "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
UU 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=
ANS+:NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:? CHR$(HCODE);CHR$
(LCODE)
UG 32220 POSITION 2,13:? "If CODE does no
t match press ██████████ and edit line a
bove.":GOTO 32050

```

ADVENTURE WORKS

Article on page 28

LISTING 1

Don't type the
TYPO II Codes! 

```

VP 1 REM ESCAPE FROM BARNABY'S ISLE
QT 2 REM BY DAVID WOOLLEY
OP 3 REM (c)1988, ANTC PUBLISHING INC.
PM 4 REM (DO NOT RENUMBER THIS PROGRAM!)
RO 5 POKE 1791,PEEK(53279):GRAPHICS 18:?
      #6:? #6:? #6; " ESCAPE FROM
FP 6 ? #6:? #6; " barnaby's isle"
FE 7 FOR QQ=1 TO 4000:NEXT QQ
QX 8 GRAPHICS 0:CLR :POKE 710,0:BRK=PEEK(
      1791)<>5:GOSUB 600
PG 10 DIM A$(100),B$(101),D$(100),O$(50),
      C$(4),V$(50),N$(50),O(5),F(8):X=3:Y=1
UN 12 FOR QQ=1 TO 5:O(QQ)=0:NEXT QQ:FOR Q
      Q=1 TO 8:F(QQ)=0:NEXT QQ
XD 15 FOR QQ=1000 TO 10014
NQ 20 RESTORE QQ
ON 25 READ XX,YY,D$,O$,C$
UI 30 IF XX=X AND YY=Y THEN 37
QZ 35 NEXT QQ
JT 37 IF X=3 AND Y=5 THEN 415
LY 40 ? "N":? :? D$
SS 42 GOSUB 425
SP 45 IF LEN(O$)=1 THEN O$="NOTHING"
AC 50 ? :? "YOU CAN SEE:";O$;".":? :? "UI
      SIBLE EXITS:";
ZS 51 IF C$(1,1)="N" THEN ? "NORTH ";
MG 52 IF C$(2,2)="S" THEN ? "SOUTH ";
MB 53 IF C$(3,3)="E" THEN ? "EAST ";
CB 54 IF C$(4,4)="W" THEN ? "WEST ";
CO 55 ? :? "WHAT NOW";:INPUT A$
XJ 60 GOSUB 95
CM 65 IF V$="GO" THEN 115
JK 70 IF V$="GET" THEN 170
NZ 75 IF V$="USE" THEN 205
XI 80 IF V$="EXAMIN" THEN 235
QX 85 IF V$="INFO" THEN 320
TO 90 ? "YOU CAN'T DO THAT!":GOTO 55
UH 95 FOR QQ=1 TO LEN(A$)
TK 97 TRAP 90
DK 100 IF A$(QQ,QQ)=" " THEN 110
RP 105 NEXT QQ
BI 110 V$=A$(1,QQ-1)
OS 111 IF V$="INFO" THEN RETURN
RQ 112 N$=A$(QQ+1,LEN(A$)):RETURN
MN 115 IF N$="NORTH" AND C$(1,1)="N" THEN
      Y=Y+1:GOTO 15
BM 120 IF N$="SOUTH" AND C$(2,2)="S" THEN
      Y=Y-1:GOTO 15
ZF 125 IF N$="EAST" AND C$(3,3)="E" THEN
      X=X+1:GOTO 15
JS 130 IF N$="WEST" AND C$(4,4)="W" THEN
      X=X-1:GOTO 15
FK 140 ? "YOU CAN'T GO THAT WAY!":GOTO 5
      5
HO 170 IF N$="RAT" AND X=5 AND Y=2 AND O(
      1)=0 THEN O(1)=1:GOTO 200
DM 175 IF N$="BOOK" AND X=3 AND Y=3 AND O(
      2)=0 THEN O(2)=1:GOTO 200
YK 180 IF N$="CUTLASS" AND X=4 AND Y=4 AN
      D O(3)=0 THEN O(3)=1:GOTO 200
EL 185 IF N$="APPLE" AND X=2 AND Y=2 AND
      O(4)=0 THEN O(4)=1:GOTO 200
YO 190 IF N$="TALISMAN" AND X=2 AND Y=3 A
      ND O(5)=0 THEN O(5)=1:GOTO 200
PW 191 IF N$="CHEST" AND X=4 AND Y=4 THEN
      ? "IT'S FAR TOO HEAVY.":GOTO 55
VQ 192 IF N$="BOAT" AND X=3 AND Y=5 THEN
      ? "IT'S FAR TOO HEAVY.":GOTO 55
HU 193 IF N$="TROLL" AND X=3 AND Y=4 THEN
      ? "HE WON'T COOPERATE.":GOTO 55
KD 194 IF N$="TREE" AND (X=4 AND Y=1) OR
      (X=2 AND Y=2) OR (X=2 AND Y=3) THEN ?
      "IT'S FAR TOO BIG.":GOTO 55
XW 195 ? "YOU DON'T KNOW THAT OBJECT!":GOT
      O 55
VJ 200 ? "YOU HAVE NOW GOT THE ";N$;".":G
      OTO 55
IC 205 IF N$="RAT" AND O(1)=1 AND F(1)=1
      AND X=3 AND Y=4 THEN ? "THE TROLL RUNS
      OFF, SCREAMING.":F(2)=1:GOTO 55
JX 210 IF N$="BOOK" AND O(2)=1 THEN RESTO
      RE 1000:READ B$:? B$:F(1)=1:GOTO 55
NV 215 IF N$="CUTLASS" AND O(3)=1 AND X=3
      AND Y=4 THEN ? "IT HAS NO EFFECT!":GO
      TO 55
UX 220 IF N$="APPLE" AND O(4)=1 THEN ? "I
      T TASTES QUITE NICE.":O(4)=0:GOTO 55
WN 225 IF N$="TALISMAN" AND O(5)=1 THEN ?
      "A STRANGE VOICE SAYS:'ROLLIN THE MAG
      ICIAN WAS RIGHT!":GOTO 472
EI 227 IF N$="BOAT" AND X=3 AND Y=5 THEN
      475
NJ 230 ? "YOU CAN'T DO THAT!":GOTO 55
KX 235 IF N$="BOAT" AND X=3 AND Y=5 THEN
      ? "IT LOOKS STURDY ENOUGH TO RETURN YO
      U HOME.":GOTO 55
HF 237 IF N$="AREA" OR N$="LOCATION" THEN
      40
PL 240 IF N$="TROLL" AND X=3 AND Y=4 THEN
      ? "HE LOOKS REAL MEAN AND UGLY.":GOTO
      55
OL 245 IF N$="SHACK" AND X=3 AND Y=3 THEN
      ? "IT HAS 4 EXITS, AND LOOKS PRETTY R
      UN DOWN.":GOTO 55
LB 250 IF N$="TREE" AND X=2 AND Y=3 THEN
      ? "THE OAK TREE LOOKS VERY OLD.CARVED
      INTO IT IS:'U-T-R'.":GOTO 450
MI 255 IF N$="TREE" AND X=2 AND Y=2 THEN
      ? "THE APPLE TREE LOOKS VERY YOUNG.CA
      RVED INTO IT IS:'S-H-A'.":GOTO 455
ZG 260 IF N$="TREE" AND X=4 AND Y=1 THEN
      ? "THE PALM TREE LOOKS VERY STRANGE.CA
      RVED INTO IT IS:'E-E-T'.":GOTO 460
QD 265 IF N$="RAT" AND O(1)=1 THEN ? "IT
      LOOKS QUITE DEAD.":GOTO 55
FC 270 IF N$="RAT" AND X=5 AND Y=2 THEN ?
      "IT LOOKS QUITE DEAD.":GOTO 55
UT 275 IF N$="BOOK" AND O(2)=1 THEN ? "TH
      E COVER SAYS 'ISLE HISTORY'.MANY PAGES
      ARE MISSING.":GOTO 470
YO 280 IF N$="BOOK" AND X=3 AND Y=3 THEN
      ? "THE COVER SAYS 'ISLE HISTORY'.MANY
      PAGES ARE MISSING.":GOTO 470
NL 285 IF N$="CUTLASS" AND O(3)=1 THEN ?
      "IT LOOKS REAL SHARP.":GOTO 55
HJ 290 IF N$="CUTLASS" AND X=4 AND Y=4 TH
      EN ? "IT LOOKS REAL SHARP.":GOTO 55
EO 295 IF N$="APPLE" AND O(4)=1 THEN ? "I
      T LOOKS GOOD TO EAT.":GOTO 55
XU 300 IF N$="APPLE" AND X=2 AND Y=2 THEN
      ? "IT LOOKS GOOD TO EAT.":GOTO 55
FW 305 IF N$="TALISMAN" AND O(5)=1 THEN ?
      "ITS USE IS A TOTAL MYSTERY TO YOU.":
      GOTO 55
OH 310 IF N$="TALISMAN" AND X=2 AND Y=3 T
      HEN ? "ITS USE IS A TOTAL MYSTERY TO Y
      OU.":GOTO 55
HH 315 IF N$="CHEST" AND X=4 AND Y=4 THEN
      ? "INSCRIBED INSIDE IS 'G- TO T-E N-R
      T- BEA-H'.":GOTO 465
CM 317 ? "YOU DON'T KNOW THAT OBJECT!":GOT
      O 55
XF 320 ? :? "COMPLETE LIST OF VERBS"
DC 325 ? :? "GO GET USE EXAMIN INFO"
KL 330 ? :? "LIST OF OBJECTS FOUND":?
KV 335 IF O(1)=1 THEN ? "DEAD RAT,;"
MP 340 IF O(2)=1 THEN ? "BOOK,;"
FB 345 IF O(3)=1 THEN ? "CUTLASS,;"
OJ 350 IF O(4)=1 THEN ? "APPLE,;"
KT 355 IF O(5)=1 THEN ? "MAGIC TALISMAN";
DH 365 ?
ZL 370 ? :? "LIST OF CLUES FOUND":?
ZZ 375 IF F(1)=1 THEN RESTORE 1000:READ B
      $:? "THE BOOK SAYS:";:? B$
    
```

```

KZ 380 IF F<2>=1 THEN ? "YOU HAVE SCARED
    OFF THE TROLL."
UM 385 IF F<3>=1 THEN ? "CARVED ON THE OA
    K TREE IS: U-T-R"
LE 390 IF F<4>=1 THEN ? "CARVED ON THE AP
    PLE TREE IS:S-H-A"
WB 395 IF F<5>=1 THEN ? "CARVED ON THE PA
    LM TREE IS: E-E-T"
WU 400 IF F<6>=1 THEN ? "INSCRIBED INSIDE
    THE CHEST IS 'G- TO T-E N-RT- BEA-H'.
    ."
KX 405 IF F<7>=1 THEN ? "THE BOOK IS CALL
    ED 'ISLE HISTORY'."
OQ 407 IF F<8>=1 THEN ? "ROLLIN THE MAGIC
    IAN WAS RIGHT."
SY 410 GOTO 55
XN 415 IF F<2>=1 THEN 40
ON 420 ? "A TROLL PUSHES YOU BACK!":X=3:Y
    =4:FOR QQ=1 TO 1000:NEXT QQ:GOTO 15
HA 425 IF X=5 AND Y=2 AND O<1>=1 THEN O$=
    "NOTHING":RETURN
HL 430 IF X=3 AND Y=3 AND O<2>=1 THEN O$=
    "NOTHING":RETURN
KC 435 IF X=4 AND Y=4 AND O<3>=1 THEN O$=
    "NOTHING":RETURN
KD 440 IF X=2 AND Y=3 AND O<5>=1 THEN O$=
    "NOTHING":RETURN
ZX 445 RETURN
UF 450 F<3>=1:GOTO 55
VB 455 F<4>=1:GOTO 55
UV 460 F<5>=1:GOTO 55
UR 465 F<6>=1:GOTO 55
UL 470 F<7>=1:GOTO 55
UY 472 F<8>=1:GOTO 55
FL 475 ? :? "***CONGRATULATIONS!***"
EB 480 ? :? "YOU HAVE ESCAPED FROM BARNAB
    Y'S ISLE."
ZS 495 ? "WITH A POINTS SCORE OF:":
HC 500 FOR QQ=1 TO 8:IF F<QQ>=1 THEN SCOR
    E=SCORE+2:NEXT QQ
QY 505 FOR QQ=1 TO 5:IF O<QQ>=1 THEN SCOR
    E=SCORE+4:NEXT QQ
HY 510 TIMES=100/(16+20):PERCENT=SCORE*TI
    MES:PERCENT=INT(PERCENT)
MN 515 ? SCORE;" AND A PERCENTAGE OF ";PE
    RCENT;"%"
NY 520 END
UX 600 POKE 77,0:IF BRK THEN POKE 16,112:
    POKE 53774,112
ZE 610 RETURN
KX 1000 DATA "50 ROLLIN THE MAGICIAN HID
    HIS TREASURE IN THE OLD OAK TREE & WEN
    T TO PROVE TROLLS FEAR OF RATS."
SG 10000 DATA 3,1,SOUTH BEACH A BEATEN TR
    ACK LEADS NORTH.TALL CLIFFS LOOM
    UP ON EITHER SIDE.,N,NOO
AY 10001 DATA 4,1,PALM TREE A LITTLE PALM
    TREE SITS ALONE OVERLOOKING THE C
    LIFF.,N,NOO
KS 10002 DATA 1,2,SINKING S COVE VICIOUS
    ROCKS SURROUND THIS ROUGH COVE.,N,OOEO
YL 10003 DATA 2,2,APPLE TREE A QUIET APRU
    E TREE RESTS IN A CLEARING IN THE SCRU
    B.,APPLE,OOEW
ZV 10004 DATA 3,2,CROSSROADS WHERE THE PAT
    H SPLITS INTO THREE OTHER DIRECTIONS.
    ,N,NSEW
HA 10005 DATA 4,2,ROLLIN S HILL A SMALL P
    EACEFUL HILL RISES UP OUT OF THE GRO
    UND.,N,NSEW
PN 10006 DATA 5,2,OPEN GRAVE A GRAVE HAS
    BEEN DUG HERE BUT THE OWNER IS NOWHER
    E TO BE SEEN.,DEAD RAT,OOOW
FE 10007 DATA 2,3,OLD OAK TREE AN ANCIENT
    OAK TREE RISES OUT OF THE GROUND AHEA
    D.,MAGIC TALISMAN,OOEO
ZD 10008 DATA 3,3,SHACK A FORLORN SHACK S
    TANDS IN A CLEARING BEFORE YOU.,BO
    OK,NSEW
JJ 10009 DATA 4,3,ARNIE S RIVER NEXT TO Y
    OU LIES A LITTLE RIVER.,N,NSEW
YJ 10010 DATA 5,3,WATERFALL A WATERFALL F
    ALLS DOWN FROM HERE TO THE SEA.,N,OOOW
GL 10011 DATA 2,4,WHEAT FIELD WHEAT STALK
    S DANCE MERRILY IN THE SUNSHINE.,N,OOE
    O
TK 10012 DATA 3,4,DEAD MAN S SWAMP A TERR
    IBLE SWAMP LIES HERE TO THE NORTH YOU
    CAN SEE SOMETHING ODD.,N,NSEW
PN 10013 DATA 4,4,DIRT S TREASURE AN OP
    EN CHEST LIES ON THE GROUND.,CUTLASS,
    OSOW
FR 10014 DATA 3,5,NORTH BEACH YOU ARE FIN
    ALLY HERE! A BOAT LIES NEAR THE SHOR
    E.,N,OSOO


```

PEEK AND POKE POWER FROM DOS

MINIMON

Article on page 20

LISTING 1

Don't type the
TYPO II Codes! 

```

CL 10 REM MINIMON
NW 20 REM BY JOE KIMBROUGH
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$(93):DPL=P
    EEK<10592>:POKE 10592,255
EN 70 FN$="D1:MINIMON.EXE":REM THIS IS TH
    E 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:? "COMPLETED"
    ."
MS 1000 DATA 607
NQ 1010 DATA 2552550000522510521732162522
    01162200018169226141142053169164141161
    053169246141143053141162053
IM 1020 DATA 1600001851660530321580532001
    92086208245169021133085169012133084169
    032032158053032139053201049
UR 1030 DATA 2080030760780522010502080030
    76158052201051208222169012141252002096
    160005169000153000005136208
CY 1040 DATA 2501600001852520530321580532
    00192059208245169020133085169001133084
    169032032158053169003133207
GY 1050 DATA 0320440531652042082091652031
    33206169020133085169003133084169032032

```

continued on next page

```

BF 158053169005133207032044053
1060 DATA 1600001652061452030760780521
60005169000153000005136208250160000185
0550540321580532001921002008
FD 1070 DATA 2451690161330851690021330841
69032032158053169005133207032044053169
016133085169004133084169032
CF 1080 DATA 032158053160001772031332121
69000133213032170217032230216173128005
201048208003238243052160000
RN 1090 DATA 1851280052011281440020731282
01252052247053046240008032158053200192
007208235169128141243052160
CF 1100 DATA 0061690321531280051362082501
69155032158053173031208201003208003076
025052201006208242076158052
PG 1110 DATA 1600000321390532010272080051
04104076025052201155240049201126208018
170136169000153000005138192
RZ 1120 DATA 2552402220321580530760460532
01058176214201048144210196207208005169
155076111053032158053153000
OZ 1130 DATA 0052000760460530321580531690
00133242133243169005133244032000216032
210217165212133203165213133
NA 1140 DATA 2040961322050322532422011601
44002073128162000142182002164205096132
205032176242164205096125155
WD 1150 DATA 0320320320320320320320320320
32196207211160208197197203175208207203
197155155155155155127177032
NY 1160 DATA 0680790830800790750691551551
27178032068079083080069069075155155127
179032069088073084032084079
TY 1170 DATA 0320680790831551551270891111
17114032099104111105099101248053154054
058032032155125155080111107
YM 1180 DATA 1010321161041010321051101161
01103101114058155155073110116111032116
104101032097100100114101115
BT 1190 DATA 1150581551551550801141011151
15032197211195032116111032101120105116
155125091080114101115115032
IO 1200 DATA 1972111950321161110320970981
11114116032105110112117116093155155080
101101107032097100100114101
QU 1210 DATA 1151150581551550721111081001
15032110117109098101114058155155155207
208212201207206032077097105
IL 1220 DATA 1100321091011101171551552112
12193210212032032082101045114117110032
068079083080069069075155224
HU 1230 DATA 0022250020000052

```

```

0440 JSR PRINT.CHAR
0450 INY
0460 CPY ##56
0470 BNE LOOP.1
0480 ;
0490 PUTCUR
0500 LDA ##15 ;Place cursor
0510 STA COLCRS
0520 LDA ##0C
0530 STA ROWCRS
0540 LDA ##20
0550 JSR PRINT.CHAR
0560 JSR GET.CHAR ;Get menu choice

0570 CMP #'1
0580 BNE DPE1
0590 ;
0600 JMP DOSPOKE ;Go to DOSPOKE
0610 ;
0620 DPE1
0630 CMP ##32
0640 BNE DPE2
0650 ;
0660 JMP DOSPEEK ;Go to DOSPEEK
0670 ;
0680 DPE2
0690 CMP #'3
0700 BNE PUTCUR
0710 ;
0720 LDA ##0C ;Store keycode
; for EOL in CH for
; auto-[RETURN]
; after going back
; to DOS
0730 STA CH

0740 RTS
0750 ;
0760 DOSPOKE
0770 LDY ##05 ;Clear ASCII
; input buffer

0780 LDA ##00
0790 LOOP.2
0800 STA BUFF1,Y
0810 DEY
0820 BNE LOOP.2
0830 ;
0840 LDY ##00
0850 LOOP.3
0860 LDA DOSPOKE.TEXT,Y ;Print
; DOSPOKE screen

0870 JSR PRINT.CHAR
0880 INY
0890 CPY ##3B
0900 BNE LOOP.3
0910 ;
0920 LDA ##14 ;Place cursor
0930 STA COLCRS
0940 LDA ##01
0950 STA ROWCRS
0960 LDA ##20
0970 JSR PRINT.CHAR
0980 LDA ##03 ;Limit input
; to 3 digits

0990 STA $CF
1000 JSR KEYBD.INP ;Get POKE value
; [ASC->INT]

1010 LDA $CC ;Hi-byte > $FF ?
1020 BNE DOSPOKE ;If not 0, then
; start over.
; Store low byte

1030 LDA $CB
1040 STA $CE
1050 LDA ##14 ;Place cursor
1060 STA COLCRS
1070 LDA ##03
1080 STA ROWCRS
1090 LDA ##20
1100 JSR PRINT.CHAR
1110 LDA ##05 ;Limit input to
; 5 digits

1120 STA $CF
1130 JSR KEYBD.INP ;Get address
; [ASC->INT]

1140 LDY ##00
1150 LDA $CE ;Get stored INT
1160 STA (<$CB),Y ;Put in addr.
1170 JMP DOSPOKE ;Go back

1180 ;
1190 DOSPEEK
1200 LDY ##05 ;Clear ASCII
; input buffer

1210 LDA ##00
1220 LOOP.4
1230 STA BUFF1,Y
1240 DEY

```

LISTING 2

```

0100 ; MINIMON
0110 ; BY JOE KIMBROUGH
0120 ; (c)1988, ANTIC PUBLISHING INC.
0130 AFP = $D800
0140 BUFF1 = $0500
0150 CH = $02FC
0160 COLCRS = $55
0170 CONSOL = $D01F
0180 EOL = $9B
0190 FASC = $D8E6
0200 FPI = $D9D2
0210 IFP = $D9AA
0220 INVFLG = $02B6
0230 KGB = $F2FD
0240 OUTCHAR = $F2B0
0250 PR2 = $34F3
0260 ROWCRS = $54
0270 ;
0280 *= $3400
0290 STARTCODE
0300 LDA $FCD8 ;800 or XL/XE?
0310 CMP ##A2
0320 BNE MAIN.MENU ;If not 800
; then proceed

0330 LDA ##E2
0340 STA OS.MOD.1+1
0350 LDA ##A4
0360 STA OS.MOD.2+1
0370 LDA ##F6
0380 STA OS.MOD.1+2
0390 STA OS.MOD.2+2
0400 MAIN.MENU
0410 LDY ##00
0420 LOOP.1
0430 LDA MENU.TEXT,Y ;Print main
; menu

```

```

1250     BNE LOOP.4
1260 ;
1270     LDY #000
1280 LOOP.5 LDA DOSPEEK.TEXT,Y ;Print
1290         DOSPEEK screen
1300     JSR PRINT.CHAR
1310     INY
1320     CPY #064
1330     BNE LOOP.5
1340 ;
1350     LDA #010 ;Place cursor
1360     STA COLCRS
1370     LDA #02
1380     STA ROWCRS
1390     LDA #020
1400     JSR PRINT.CHAR
1410     LDA #05 ;Limit input to
           5 digits
1420     STA $CF
1430     JSR KEYBD.IMP ;Get address
           [ASC->INT]
1440     LDA #010 ;Place cursor
1450     STA COLCRS
1460     LDA #04
1470     STA ROWCRS
1480     LDA #020
1490     JSR PRINT.CHAR
1500     LDY #000
1510     LDA ($CB),Y ;Get contents
           of address
1520     STA $D4 ;Store 10-byte
           in FR0
1530     LDA #000
1540     STA $D5 ;Put 000 in
           high byte FR0
1550     JSR IFP ;Convert INT->FP
1560     JSR FASC ;Convert FP->ASC
1570     LDA #0580 ;Print ASCII
1580     CMP #030
1590     BNE PR1
1600 ;
1610     INC PR2
1620 PR1 LDY #000
1630 CPJ3 LDA #0580,Y
1640     CMP #080
1650     BCC CPJ1
1660 ;
1670     EOR #080
1680 CPJ1 LDA #02E
1690     BEQ CPJ2
1700 ;
1710     JSR PRINT.CHAR
1720     INY
1730     CPY #07
1740     BNE CPJ3
1750 ;
1760     CPJ2
1770     LDA #080
1780     STA PR2
1790     LDY #06 ;Clear ASCII
           output buffer
1800     LDA #020
1810 LOOP.6 STA #0580,Y
1820     DEY
1830     BNE LOOP.6
1840 ;
1850     LDA #09B
1860     JSR PRINT.CHAR
1870 CHECK.CONSOLE LDA CONSOL ;Check console
           keys
1880     CMP #03 ;Is it OPTION?
1890     BNE CHECK.START
1900 ;
1910     JMP MAIN.MENU
1920 ;
1930 CHECK.START CMP #06 ;Is it START?
1940     BNE CHECK.CONSOLE
1950 ;
1960     JMP DOSPEEK ;Re-run DOSPEEK
1970 ;
1980 ; -----
1990 ; Keyboard Input/ASCII->Integer
2000 ; -----
2010 KEYBD.IMP LDY #000
2020 GET.KEY
2100     JSR GET.CHAR ;Get a key
2110     CMP #01B ;Is it ESC?
2120     BNE CPJ4 ;If not, go on
2130 ;
2140     PLA ;Clear stack of
2150     PLA ;return addr.
2160     JMP MAIN.MENU
2170 CPJ4 CMP #09B
2180     BEQ END.OF.LINE
2190 ;
2200     CMP #07E ;Backspace
2210     BNE CHK9
2220 ;
2230     TAX
2240     DEY
2250     LDA #000
2260     STA BUFF1,Y
2270     TXA
2280     CPY #0FF ; Limit cursor
           travel
2290     BEQ KEYBD.IMP
2300 ;
2310     JSR PRINT.CHAR
2320     JMP GET.KEY
2330 ;
2340     CHK9
2350     CMP #03A ; Is it >9?
2360     BCS GET.KEY ; If so, go back
2370 ;
2380     CMP #030 ; Is it <0?
2390     BCC GET.KEY ; If so, go back
2400 ;
2410     CPY $CF ;Check inp limit
2420     BNE DO.BUFFR
2430 ;
2440     LDA #09B
2450     JMP END.OF.LINE
2460 ;
2470     DO.BUFFR
2480     JSR PRINT.CHAR
2490     STA BUFF1,Y ; Store digit in
           ASCII buffer
2500 ;
2510     INY
2520     JMP GET.KEY
2530 ;
2540     END.OF.LINE
2550     JSR PRINT.CHAR
2560     LDA #000 ;Set up FR0
2570     STA $F2
2580     STA $F3
2590     LDA #05
2600     STA $F4
2610     JSR AFP ; ASC -> FP
2620     JSR FPI ; FP -> INT
2630     LDA $D4 ; Get 10-byte
2640     STA $CB
2650     LDA $D5 ; Get hi-byte
2660     STA $CC
2670     RTS
2680 ;
2690 ; -----
2700 ; I/O ROUTINES
2710 ; -----
2720 GET.CHAR STY $CD ;Save Y
2730 OS.MOD.1 JSR KGB ;Get char
2740     CMP #0A0 ;Inverse video?
2750     BCC NO.INV.VIDEO
2760 ;
2770     EOR #080 ;Fix inv. video
2780 NO.INV.VIDEO LDX #000 ;Disable inverse
           video key
2790 ;
2800     STX INUFLG
2810     LDY $CD ;Restore Y
2820     RTS
2830 ;
2840     PRINT.CHAR
2850     STY $CD ;Save Y
2860 OS.MOD.2 JSR OUTCHAR ;Print char
2870     LDY $CD ;Restore Y
2880     RTS
2890 ;
2900 ; ----- TEXT -----
2910 ;
2920 MENU.TEXT .BYTE "M",EOL
2930     .BYTE "
2940     .BYTE "
2950     .BYTE "
2960     .BYTE "
2970     .BYTE "

```

continued on next page

```

2980 .BYTE "PEEK/POKE",EOL,EOL
2990 .BYTE EOL,EOL,EOL
3000 .BYTE "DOSPoke",EOL,EOL
3010 .BYTE "DOSPEEK",EOL,EOL
3020 .BYTE "EXIT TO DOS",EOL,EOL
L
3030 .BYTE "Your choice: ",EOL
3040 DOSPOKE.TEXT
3050 .BYTE " ",EOL
3060 .BYTE "Poke the integer:",EOL
,EOL
3070 .BYTE "Into the address:",EOL
,EOL,EOL
3080 .BYTE "Press ESC to exit",EOL

```

```

3090 DOSPEEK.TEXT
3100 .BYTE "Press ESC to abort i
nput",EOL,EOL
3110 .BYTE "Peek address:",EOL,EOL
3120 .BYTE "Holds number:",EOL,EOL
,EOL
3130 .BYTE "OPTION Main menu",EOL,
EOL
3140 .BYTE "START Re-run DOSPEEK"
,EOL
3150 *= $02E0
3160 .WORD STARTCODE
3170 .END

```

CHEMISTRY TUTORING FROM YOUR ATARI

PERIODIC MADNESS

Article on page 8

LISTING 1

Don't type the
TYPO !! Codes!

```

KB 2 REM PERIODIC MADNESS
MM 4 REM BY MARC LeBEAU
OS 6 REM (c)1988, ANTIC PUBLISHING INC.
ME 8 REM <DO NOT RENUMBER THIS PROGRAM!!>
RQ 10 GOSUB 950:POKE 764,255:POKE 710,6:P
OKE 752,1:GOSUB 20:GOSUB 100:? "
by MARC LeBEAU":GOTO 30
ZU 20 ? " " : ? " " : PERIODIC MADNES
50 " " : RETURN
YX 30 GOSUB 300:REM PLAY TUNE
SM 40 GOSUB 20
DI 50 ? : ? : ? : ? : ? " CHOOSE
SKILL LEVEL:"
GK 60 ? : ? " 1) SYMBOL ---> NAME
":? " 2) NAME ---> SYMBOL":?
" 3) NAME ---> MASS"
PQ 69 POKE 764,255
CI 70 A=PEEK<764>:IF A=255 THEN 70
BP 75 IF A=31 THEN SL=1:GOTO 400
BQ 80 IF A=30 THEN SL=2:GOTO 400
ET 85 IF A=26 THEN SL=3:GOTO 400
TS 90 GOTO 70
XH 100 REM DRAW PERIODIC TABLE
FF 105 ? " "
" "
RQ 110 ? " "
" "
BC 120 ? " " " " " "
" " " " " "
VE 130 ? " " " " " " " "
" " " " " "
KI 140 ? " " " " " "
" " " " " "
VI 150 ? " " " " " "
" " " " " "
IO 160 ? " " " " " " " " " " " "
" " " " " "
UC 170 ? " " " " " " " " " " " "
" " " " " "
EG 180 ? " " " " " " " " " " " "
" " " " " "
UG 190 ? " " " " " " " " " " " "
" " " " " "
DR 200 ? " " " " " " " " " " " "
" " " " " "
TR 210 ? " " " " " " " " " " " "
" " " " " "
VR 220 ? " " " " " " " " " " " "
" " " " " "
BU 230 ? " " " " " "
QZ 240 ? " " " " " "
NX 250 ? " " " " " "
UJ 260 ? " " " " " "
" " " " " "
UN 270 ? " " " " " "
" " " " " "
UN 280 ? " " " " " "
" " " " " "
FJ 290 ? " " " " " "
" " " " " "
AF 295 RETURN
GB 300 REM MUSIC

```

```

WG 305 RESTORE 370
VP 310 SOUND 0,0,0,0
SC 320 READ PITCH,LENGTH
EC 330 SOUND 0,PITCH,10,8
GL 332 IF PITCH=0 THEN SOUND 0,0,0,0
IW 335 FOR DELAY=1 TO LENGTH
XX 340 NEXT DELAY:IF PEEK<764>=33 THEN 36
0
RJ 344 SOUND 0,0,0,0:FOR DY=1 TO 5:NEXT D
Y
PX 345 IF LENGTH=100 THEN 360
NI 350 GOTO 320
DC 360 POKE 764,255:SOUND 0,0,0,0:RETURN
EP 370 DATA 102,40,76,60,76,65,85,15,68,6
5,85,40,76,65,102,65,0,50
OC 375 DATA 102,40,76,60,76,65,85,15,68,6
5,85,55,76,70,0,75
ER 380 DATA 102,40,76,60,76,65,85,15,68,6
5,85,40,76,65,102,65,0,50
XK 390 DATA 102,65,76,15,76,15,76,65,0,15
,85,65,85,25,76,100
CG 400 REM INITIALIZE
PK 410 DIM Q$(13),A1$(13),A2$(13),A3$(13)
,AZ$(13),OK$(105),OK1$(105)
RS 415 OK1$(1)= "X":OK1$(105)=OK1$:OK1$(2)
=OK1$
UV 420 MARK=0:Y=0:X=0:YES=0:NO=0:PERCENT=
0:OK$(1)= "W":OK$(105)=OK$:OK$(2)=OK$:F
LAG=0
YU 430 QNUM=INT<RND<0>*105+1>:IF OK$(QNUM
,QNUM)= "X" THEN 430
NS 431 PQR=10*(QNUM*3+(SL-3))+1010:RESTOR
E PQR
XR 432 READ MARK,Q$,A1$,A2$,A3$,AZ,Y,X
EQ 435 IF MARK<>SL THEN 430
ZG 440 IF AZ=31 THEN AZ$=A1$
ZU 450 IF AZ=30 THEN AZ$=A2$
DD 460 IF AZ=26 THEN AZ$=A3$
BD 500 REM QUESTION SCREEN
YU 510 POKE 710,2:POKE 709,152
FA 520 ? " " :GOSUB 20
QR 530 ? :? " * CORRECT = ";YES;," * INCO
RRECT = ";NO
QN 540 POSITION 12,4:? "% CORRECT = ";PER
CENT
MW 550 ON SL GOTO 560,570,580
JS 560 POSITION 7,10:? "The symbol ";Q$;"
stands for:"
GR 565 POSITION 14,12:? "1) ";A1$:POSITIO
N 14,14:? "2) ";A2$:POSITION 14,16:? "
3) ";A3$:GOTO 600
ZE 570 POSITION 4,10:? "The symbol for ";
Q$;" is:"
VH 575 POSITION 17,12:? "1) ";A1$:POSITIO
N 17,14:? "2) ";A2$:POSITION 17,16:? "
3) ";A3$:GOTO 600
GZ 580 POSITION 6,10:? "The mass of ";Q$;
" is:"
QN 585 POSITION 16,12:? "1) ";A1$:POSITIO
N 16,14:? "2) ";A2$:POSITION 16,16:? "
3) ";A3$:GOTO 600
PT 600 REM GET ANSWER
XB 605 POKE 764,255

```



```

DK 610 A=PEEK(764):IF A=255 THEN 610
TR 615 IF A=31 OR A=30 OR A=26 THEN 620
OR 617 GOTO 610
WP 620 IF A=AZ THEN YES=YES+1:PERCENT=INT
  ((YES/(YES+NO))*100):GOTO 650
ZM 630 IF A<AZ THEN NO=NO+1:PERCENT=INT
  ((YES/(YES+NO))*100):GOTO 700
HG 650 REM CORRECT ANSWER SCREEN
VI 655 POKE 709,154:POKE 710,6:POKE 752,1
  :? "M":GOSUB 20:GOSUB 100
CX 660 SOUND 0,50,10,8:FOR S=1 TO 100:NEX
  T S:SOUND 0,0,0,0
HD 665 POSITION 14,3:? "XXXXXXXX":OK$(QNUM,Q
  NUM)=CHR$(ASC(OK$(QNUM,QNUM))+1)
YA 667 Q=16-(INT(LEN(AZ$)/2))
AI 668 POSITION Q,5:? AZ$
RH 670 POSITION Y,X:? "X":IF OK$=OK1$ THE
  N FLAG=1
LU 680 FOR DELAY=1 TO 500:NEXT DELAY:IF F
  LAG=1 THEN 800
OO 690 GOTO 430
WA 700 REM INCORRECT ANSWER SCREEN
UZ 705 POKE 709,154:POKE 710,6:POKE 752,1
  :? "M":GOSUB 20:GOSUB 100
QJ 710 SOUND 0,50,6,0:FOR S=1 TO 100:NEX
  T S:SOUND 0,0,0,0
ZD 715 POSITION 14,3:? "XXXXXXXX":OK$(QNUM,Q
  NUM)="V"
XR 717 Q=16-(INT(LEN(AZ$)/2))
ZZ 718 POSITION Q,5:? AZ$
XV 720 POSITION Y,X:? "X"
LY 725 FOR DELAY=1 TO 500:NEXT DELAY:IF F
  LAG=1 THEN 800
OD 730 GOTO 430
EB 800 REM FINAL SCREEN
ZL 810 GRAPHICS 18
ZL 815 ? #6;" % CORRECT = ";PERCENT;"%"
YR 820 IF PERCENT>=80 THEN 850
YL 830 IF PERCENT=60 THEN 860
XO 840 IF PERCENT=30 THEN 870
SM 845 GOTO 880
JM 850 POSITION 6,4:? #6;"XXXXXXXX":GOTO
  900
XY 860 POSITION 6,4:? #6;"XXXXXXXX":GOTO
  900
SQ 870 POSITION 2,4:? #6;"better work har
  der":GOTO 900
CI 880 POSITION 4,3:? #6;"XXXXXXXX"
ED 890 POSITION 5,4:? #6;"XXXXXXXX":POS
  ITION 6,5:? #6;"XXXXXXXX":POSITION 7
  ,6:? #6;"XXXXXXXX":GOTO 900
ZJ 900 GOSUB 300:POSITION 2,8:? #6;"XXXXXXXX"
  "XXXXXXXX"
XE 905 POKE 764,255
HC 910 A=PEEK(764):IF A=255 THEN 910
LZ 920 IF A=43 THEN GRAPHICS 0:RUN
OO 930 IF A=35 THEN POKE 764,255:END
PJ 940 GOTO 910
VE 950 REM BREAK DISABLE
OR 960 POKE 1536,169:POKE 1537,128
JT 970 POKE 1538,133:POKE 1539,77
TF 980 POKE 1540,104:POKE 1541,64
JH 990 POKE 567,INT(1536/256)
ZR 994 POKE 566,1536-PEEK(567)*256
AP 996 RETURN
PQ 1000 REM DATA STATEMENTS
WX 1010 REM MARK.Q$,A1$,A2$,A3$,AZ,Y,X
EV 1020 DATA 1.Ho,Hydrogen,Holmium,Hahnium,
  30,29,18
XK 1030 DATA 2.Chromium,Ch,Cr,Co,30,13,9
NE 1040 DATA 3.Rubidium,65.38,85.47,183.9
  ,30,3,11
US 1050 DATA 1.He,Hydrogen,Helium,Holmium
  ,30,37,3
LR 1060 DATA 2.Zirconium,Zi,Zc,Zr,26,9,11
GB 1070 DATA 3.Gold,197.0,251.50,94,31,23
  ,13
ZB 1080 DATA 1.Sn,Tin,Sulfur,Strontium,31
  ,29,11
MM 1090 DATA 2.Boron,Bo,Bn,B,26,27,5
OZ 1100 DATA 3.Argon,4.003,222,39.95,26,3
  7,7
BI 1110 DATA 1.Si,Sodium,Silicon,Einstein
  ium,30,29,7
EX 1120 DATA 2.Neptunium,Ne,Np,Nt,30,17,2
  0
RN 1130 DATA 3.Fermium,112.4,28.09,257,26
  ,31,20
KZ 1140 DATA 1.U,Xenon,Mercury,Uranium,26
  ,15,20
CC 1150 DATA 2.Zinc,Zi,Zn,Pb,30,25,9
OM 1160 DATA 3.Arsenic,74.92,204.4,39.10,
  31,31,9

```

```

LK 1170 DATA 1.Tc,Thulium,Tellurium,Techn
  etium,26,15,11
UJ 1180 DATA 2.Gold,Go,Au,Gd,30,23,13
FJ 1190 DATA 3.Krypton,83.80,192.2,175.0,
  31,37,9
MW 1200 DATA 1.Au,Astatine,Gold,Silver,30
  ,23,13
IW 1210 DATA 2.Einsteinium,Es,Ei,En,31,29
  ,20
KJ 1220 DATA 3.Curium,152.0,247,145,30,23
  ,20
EL 1230 DATA 1.Lr,Lawrencium,Lanthanum,Tu
  ngsten,31,37,20
KN 1240 DATA 2.Magnesium,Mn,Ma,Mg,26,5,7
JU 1250 DATA 3.Tin,118.7,35.45,9.012,31,2
  9,11
VF 1260 DATA 1.Ni,Nickel,Sodium,Nitrogen,
  31,21,9
LE 1270 DATA 2.Tin,Sn,Ti,Tn,31,29,11
ZD 1280 DATA 3.Hydrogen,4.003,91.22,1.008
  ,26,3,3
GT 1290 DATA 1.Hf,Hahnium,Hafnium,Mercury
  ,30,9,13
AD 1300 DATA 2.Thallium,Th,Tl,Tm,30,27,13
GK 1310 DATA 3.Sodium,47.90,101.1,22.99,2
  6,3,7
EO 1320 DATA 1.Ga,Gallium,Germanium,Gold,
  31,27,9
UJ 1330 DATA 2.Erbium,Er,Eb,Em,31,31,18
XX 1340 DATA 3.Scandium,98.91,44.96,12.01
  ,30,7,9
LO 1350 DATA 1.N.Nickel,Nitrogen,Neodymiu
  m,30,31,5
WK 1360 DATA 2.Phosphorus,P,Ph,Ps,31,31,7
YU 1370 DATA 3.Gallium,69.72,131.3,19.00,
  31,27,9
OR 1380 DATA 1.Dy,Polonium,Uranium,Dyspro
  sium,26,27,18
FR 1390 DATA 2.Selenium,Se,S,51,31,33,9
CT 1400 DATA 3.Niobium,92.91,58.93,207.2,
  31,11,11
LY 1410 DATA 1.Ba,Boron,Beryllium,Barium,
  26,5,13
KD 1420 DATA 2.Gadolinium,Ga,Gd,Ag,30,23,
  18
LC 1430 DATA 3.Antimony,106.4,157.2,121.8
  ,26,31,11
LK 1440 DATA 1.Na,Nitrogen,Sodium,Neon,30
  ,3,7
JG 1450 DATA 2.Nitrogen,Ni,Ng,N,26,31,5
PR 1460 DATA 3.Promethium,200.6,78.96,145
  ,26,17,18
NC 1470 DATA 1.Tm,Thulium,Titanium,Thalli
  um,31,33,18
II 1480 DATA 2.Radium,Rd,R,Ra,26,5,15
ZF 1490 DATA 3.Lutetium,175.0,259,35.45,3
  1,37,18
FN 1500 DATA 1.H,Helium,Hahnium,Hydrogen,
  26,3,3
ZS 1510 DATA 2.Nickel,N,Ni,Au,30,21,9
AF 1520 DATA 3.Thallium,4.003,106.4,204.4
  ,26,27,13
ZE 1530 DATA 1.Ca,Carbon,Calcium,Cadmium,
  30,5,9
HY 1540 DATA 2.Silver,Si,Ag,Su,30,23,11
ZU 1550 DATA 3.Protactinium,132.9,231.0,1
  92.2,30,13,20
JH 1560 DATA 1.Zr,Zinc,Zirconium,Actinium
  ,30,9,11
HN 1570 DATA 2.Iron,Fe,Ir,Pb,31,17,9
RR 1580 DATA 3.Mendelevium,210,258,168.9,
  30,33,20
HD 1590 DATA 1.Nd,Neodymium,Sodium,Neptun
  ium,31,15,18
HM 1600 DATA 2.Fluorine,F,Fl,Fr,31,35,5
XL 1610 DATA 3.Helium,10.81,28.09,4.003,2
  6,37,3
ES 1620 DATA 1.Mn,Magnesium,Mendelevium,M
  anganese,26,15,9
SL 1630 DATA 2.Thorium,W,T,Th,26,11,20
CT 1640 DATA 3.Magnesium,24.31,58.71,35.4
  5,31,5,7
LB 1650 DATA 1.Sr,Strontium,Sulfur,Samari
  um,31,5,11
ZQ 1660 DATA 2.Molybdenum,Mo,Ml,Mv,31,13,
  11
HC 1670 DATA 3.Titanium,55.85,195.1,47.90
  ,26,9,9
YA 1680 DATA 1.Ce,Chlorine,Cesium,Cerium,
  26,11,18
QZ 1690 DATA 2.Potassium,Po,P,K,26,3,9

```

continued on next page

GG	1700	DATA	3, Germanium, 131.3, 72.59, 55.8	JD	8, 31, 5, 5		
BA	5, 30, 29, 9			2250	DATA	1, Xe, Xenon, Uranium, Plutonium	
RJ	1720	DATA	2, Krypton, K, Kr, Ky, 30, 27, 9		, 31, 37, 11		
NL	1730	DATA	3, Molybdenum, 95.94, 44.96, 20.18, 31, 13, 11	GG	2260	DATA	2, Tellurium, T, Tl, Te, 26, 33, 11
NI	1740	DATA	1, Ge, Gallium, Germanium, Gadolinium, 30, 29, 9	LO	2270	DATA	3, Silicon, 12.01, 28.09, 72.59, 30, 29, 7
YF	1750	DATA	2, Osmium, O, Os, Om, 30, 17, 13	WE	2280	DATA	1, Ra, Radium, Radon, Rubidium, 31, 5, 15
HT	1760	DATA	3, Tellurium, 127.6, 178.5, 223, 31, 33, 11	KH	2290	DATA	2, Silicon, S, Si, Sc, 30, 29, 7
SW	1770	DATA	1, F, Iron, Fluorine, Francium, 30, 35, 5	VT	2300	DATA	3, Chromium, 183.9, 95.94, 52.00, 26, 13, 9
WD	1780	DATA	2, Uranium, U, Ur, Un, 31, 15, 20	CG	2310	DATA	1, Pb, Palladium, Tin, Lead, 26, 29, 13
BE	1790	DATA	3, Samarium, 95.94, 150.4, 222, 30, 19, 18	DF	2320	DATA	2, Germanium, Gr, Ge, Gm, 30, 29, 9
DV	1800	DATA	1, Yb, Yttrium, Erbium, Ytterbium, 26, 35, 18	XO	2330	DATA	3, Selenium, 16.00, 32.06, 78.96, 26, 33, 9
PI	1810	DATA	2, Indium, I, Id, In, 26, 27, 11	PP	2340	DATA	1, Ar, Americium, Arsenic, Argon, 26, 37, 7
PH	1820	DATA	3, Hafnium, 78.96, 112.4, 178.5, 26, 9, 13	DJ	2350	DATA	2, Americium, Am, Ar, Ac, 31, 21, 20
KH	1830	DATA	1, Rf, Rutherfordium, Ruthenium, Radium, 31, 9, 15	UQ	2360	DATA	3, Ruthenium, 55.85, 190.2, 101.1, 26, 17, 11
UC	1840	DATA	2, Tantalum, T, W, Ta, 26, 11, 13	DJ	2370	DATA	1, Rh, Rhodium, Rutherfordium, Ruthenium, 31, 19, 11
SA	1850	DATA	3, Lead, 207.2, 118.7, 72.59, 31, 29, 13	AA	2380	DATA	2, Neodymium, Ny, Ne, Nd, 26, 15, 18
YN	1860	DATA	1, Cs, Selenium, Cesium, Copper, 30, 3, 13	VO	2390	DATA	3, Xenon, 131.3, 222, 175.0, 31, 37, 11
YB	1870	DATA	2, Rhodium, Ro, Rd, Rh, 26, 19, 11	TO	2400	DATA	1, Mg, Manganese, Magnesium, Mercury, 30, 5, 7
HR	1880	DATA	3, Uranium, 186.2, 144.2, 238.0, 26, 15, 20	RJ	2410	DATA	2, Holmium, Ho, Hm, Hl, 31, 29, 18
KA	1890	DATA	1, Eu, Erbium, Einsteinium, Europium, 26, 21, 18	ET	2420	DATA	3, Gadolinium, 197.0, 157.2, 247, 30, 23, 18
QS	1900	DATA	2, Lawrencium, Lr, La, Lw, 31, 37, 20	WG	2430	DATA	1, C, Copper, Carbon, Calcium, 30, 29, 5
EH	1910	DATA	3, Nobelium, 35.45, 126.9, 259, 26, 35, 20	FK	2440	DATA	2, Cadmium, Ca, Cd, Cm, 30, 25, 11
YE	1920	DATA	1, Tl, Tantalum, Tellurium, Thallium, 26, 27, 13	YZ	2450	DATA	3, Tungsten, 183.9, 95.94, 52.00, 31, 13, 13
MD	1930	DATA	2, Strontium, St, S, Sr, 26, 5, 11	JG	2460	DATA	1, Cr, Carbon, Curium, Chromium, 26, 13, 9
WT	1940	DATA	3, Lithium, 22.99, 6.941, 1.008, 30, 3, 5	KC	2470	DATA	2, Neon, N, No, Ne, 26, 37, 5
CM	1950	DATA	1, Ti, Tin, Terbium, Titanium, 26, 9, 9	NP	2480	DATA	3, Polonium, 210, 127.6, 78.96, 31, 33, 13
OK	1960	DATA	2, Chlorine, C, Ch, Cl, 26, 35, 7	UB	2490	DATA	1, Co, Copper, Cobalt, Carbon, 30, 19, 9
JA	1970	DATA	3, Aluminum, 26.98, 69.72, 114.8, 31, 27, 7	JL	2500	DATA	2, Sodium, Na, S, So, 31, 3, 7
IO	1980	DATA	1, Ag, Silver, Gold, Argon, 31, 23, 11	FE	2510	DATA	3, Plutonium, 192.2, 244, 150.4, 30, 19, 20
EX	1990	DATA	2, Hahnium, Ha, Hh, Hn, 31, 11, 15	DL	2520	DATA	1, La, Lead, Lanthanum, Lawrencium, 30, 7, 13
FR	2000	DATA	3, Vanadium, 91.22, 50.94, 69.72, 30, 11, 9	ZB	2530	DATA	2, Protactinium, Pa, Pr, Pt, 31, 13, 20
MG	2010	DATA	1, Bk, Bismuth, Beryllium, Berkelium, 26, 25, 20	OY	2540	DATA	3, Rutherfordium, 257, 178.5, 91.22, 31, 9, 15
HG	2020	DATA	2, Cesium, Ce, Cs, Cu, 30, 3, 13	CI	2550	DATA	1, Y, Yttrium, Ytterbium, Tungsten, 31, 7, 11
EV	2030	DATA	3, Technetium, 98.91, 54.94, 14.01, 31, 15, 11	DJ	2560	DATA	2, Copper, Co, Cp, Cu, 26, 23, 9
OV	2040	DATA	1, Cu, Copper, Curium, Cerium, 31, 23, 9	GF	2570	DATA	3, Boron, 10.81, 26.98, 69.72, 31, 27, 5
RG	2050	DATA	2, Lanthanum, La, Ln, L, 31, 7, 13	QC	2580	DATA	1, Np, Neptunium, Niobium, Neodymium, 31, 17, 20
PF	2060	DATA	3, Iodine, 35.45, 79.90, 126.9, 26, 35, 11	VB	2590	DATA	2, Antimony, An, Sb, At, 30, 31, 11
NX	2070	DATA	1, Fm, Francium, Fluorine, Fermium, 26, 31, 20	VB	2600	DATA	3, Phosphorus, 14.01, 30.97, 74.92, 30, 31, 7
DA	2080	DATA	2, Sulfur, S, Su, S1, 31, 33, 7	YU	2610	DATA	1, Be, Berkelium, Beryllium, Bromine, 30, 5, 5
UK	2090	DATA	3, Europium, 195.1, 152.0, 243, 30, 21, 18	JW	2620	DATA	2, Gallium, Ga, G1, Gu, 31, 27, 9
HN	2100	DATA	1, Es, Europium, Einsteinium, Protactinium, 30, 29, 20	AW	2630	DATA	3, Manganese, 186.2, 98.91, 54.94, 26, 15, 9
ZE	2110	DATA	2, Arsenic, Ar, A, As, 26, 31, 9	UD	2640	DATA	1, O, Osmium, Nobelium, Oxygen, 26, 33, 5
RI	2120	DATA	3, Tantalum, 92.91, 180.9, 262, 30, 11, 13	PR	2650	DATA	2, Hafnium, Ha, Hf, Hn, 30, 9, 13
AP	2130	DATA	1, Cl, Calcium, Chlorine, Californium, 30, 35, 7	SA	2660	DATA	3, Bromine, 126.9, 79.90, 35.45, 30, 35, 9
YK	2140	DATA	2, Platinum, Pl, Pt, W, 30, 21, 13	RJ	2670	DATA	1, Ne, Nickel, Neon, Neodymium, 30, 37, 5
IL	2150	DATA	3, Bismuth, 209.0, 121.8, 74.92, 31, 31, 13	CZ	2680	DATA	2, Palladium, Pd, Pl, Pa, 31, 21, 11
DG	2160	DATA	1, W, Platinum, Fermium, Tungsten, 26, 13, 13	MB	2690	DATA	3, Rhodium, 58.93, 102.9, 192.2, 30, 19, 11
QI	2170	DATA	2, Praseodymium, Pr, Pa, Pd, 31, 13, 18	KD	2700	DATA	1, Fe, Fluorine, Iron, Francium, 30, 17, 9
NZ	2180	DATA	3, Neptunium, 145, 237.0, 254, 30, 17, 20	TG	2710	DATA	2, Dysprosium, Dy, Ds, Dp, 31, 27, 18
OV	2190	DATA	1, Nb, Neptunium, Niobium, Nobelium, 30, 11, 11	SG	2720	DATA	3, Cesium, 223, 132.9, 85.47, 30, 3, 13
CM	2200	DATA	2, Aluminum, Al, Am, Sb, 31, 27, 7	MH	2730	DATA	1, S, Sodium, Sulfur, Silicon, 30, 33, 7
EI	2210	DATA	3, Lawrencium, 222, 175.0, 260, 26, 37, 20	LH	2740	DATA	2, Cobalt, Cb, Ct, Co, 26, 19, 9
XJ	2220	DATA	1, Am, Aluminum, Americium, Actinium, 30, 21, 20	GU	2750	DATA	3, Terbium, 158.9, 200.6, 112.4, 31, 25, 18
AP	2230	DATA	2, Lutetium, L, Lt, Lu, 26, 37, 18	YQ	2760	DATA	1, Te, Tellurium, Technetium, Terbium, 31, 33, 11
QG	2240	DATA	3, Beryllium, 9.012, 24.31, 40.0				

AR	2770	DATA	2, Oxygen, O, Ox, Oy, 31, 33, 5
EL	2780	DATA	3, Rhenium, 186.2, 98.91, 54.94, 31, 15, 13
IJ	2790	DATA	1, Ha, Hafnium, Iridium, Hahnium, 26, 11, 15
GT	2800	DATA	2, Bromine, B, Br, Bo, 30, 35, 9
ZX	2810	DATA	3, Astatine, 126.9, 210, 259, 30, 35, 13
SA	2820	DATA	1, Hg, Mercury, Hafnium, Holmium, 31, 25, 13
FM	2830	DATA	2, Yttrium, Yt, Y, Ym, 30, 7, 11
SP	2840	DATA	3, Americium, 243, 152.0, 195.1, 31, 21, 20
VD	2850	DATA	1, Br, Boron, Bromine, Barium, 30, 35, 9
MT	2860	DATA	2, Rubidium, Rb, Ru, Rd, 31, 3, 11
BE	2870	DATA	3, Hahnium, 92.91, 180.91, 262, 26, 11, 15
XW	2880	DATA	1, Os, Osmium, Tantalum, Astatine, 31, 17, 13
EJ	2890	DATA	2, Mendeleevium, Me, Mn, Md, 26, 33, 20
DP	2900	DATA	3, Carbon, 12.01, 28.09, 72.59, 31, 29, 5
SL	2910	DATA	1, In, Indium, Iodine, Iridium, 31, 27, 11
ZY	2920	DATA	2, Iodine, I, Io, Id, 31, 35, 11
YQ	2930	DATA	3, Sulfur, 16.00, 32.06, 78.96, 30, 33, 7
VZ	2940	DATA	1, Zn, Zinc, Zirconium, Nickel, 31, 25, 9
SZ	2950	DATA	2, Rhenium, Re, Rh, Rn, 31, 15, 13
UV	2960	DATA	3, Iron, 55.85, 101.1, 190.2, 31, 17, 9
YU	2970	DATA	1, Se, Scandium, Selenium, Strontium, 30, 33, 9
KE	2980	DATA	2, Berkelium, Be, Bk, B1, 30, 25, 20
SD	2990	DATA	3, Palladium, 59.83, 106.4, 207.19, 30, 21, 11
LO	3000	DATA	1, Kr, Potassium, Molybdenum, Krypton, 26, 37, 9
GB	3010	DATA	2, Actinium, At, Ac, An, 30, 7, 15
WO	3020	DATA	3, Barium, 137.3, 87.62, 40.08, 31, 5, 13
ZR	3030	DATA	1, Pd, Lead, Plutonium, Palladium, 26, 21, 11
GD	3040	DATA	2, Ytterbium, Yt, Y, Yb, 26, 35, 18
FT	3050	DATA	3, Dysprosium, 114.8, 162.5, 204.4, 30, 27, 18
IM	3060	DATA	1, Sm, Sodium, Samarium, Strontium, 30, 19, 18
PY	3070	DATA	2, Tungsten, W, Tu, Tg, 31, 13, 13
MR	3080	DATA	3, Osmium, 55.85, 101.1, 190.2, 26, 17, 13
ZB	3090	DATA	1, Er, Einsteinium, Europium, Erbium, 26, 31, 18
DR	3100	DATA	2, Mercury, Me, Mc, Hg, 26, 25, 13
OK	3110	DATA	3, Radon, 260, 222, 175.0, 30, 37, 13
XU	3120	DATA	1, Pt, Protactinium, Plutonium, Platinum, 26, 21, 13
DV	3130	DATA	2, Hydrogen, Hy, H, Hd, 30, 3, 3
CV	3140	DATA	3, Nitrogen, 12.01, 10.81, 14.01, 26, 31, 5
YT	3150	DATA	1, Li, Lead, Lutetium, Lithium, 26, 3, 5
BF	3160	DATA	2, Vanadium, V, Va, Vn, 31, 11, 9
JB	3170	DATA	3, Chlorine, 19.00, 35.45, 79.90, 30, 35, 7
GU	3180	DATA	1, Cf, Californium, Francium, Mendeleevium, 31, 27, 20
JC	3190	DATA	2, Technetium, Tc, Te, Th, 31, 15, 11
RK	3200	DATA	3, Cobalt, 192.2, 102.9, 58.93, 26, 19, 9
OI	3210	DATA	1, K, Krypton, Praseodymium, Potassium, 26, 3, 9
ZD	3220	DATA	2, Radon, R, Ra, Rn, 26, 37, 13
MX	3230	DATA	3, Silver, 197.0, 107.9, 63.55, 30, 23, 11
AS	3240	DATA	1, Pr, Phosphorus, Promethium, Praseodymium, 26, 13, 18
QH	3250	DATA	2, Bismuth, B, Bm, Bi, 26, 31, 13
JU	3260	DATA	3, Lanthanum, 138.9, 88.91, 44.96, 31, 7, 13
UR	3270	DATA	1, No, Nobelium, Nitrogen, Neptunium, 31, 35, 20
AC	3280	DATA	2, Carbon, Ca, C, Co, 30, 29, 5
QE	3290	DATA	3, Holmium, 254, 164.9, 118.7, 30, 29, 18
DY	3300	DATA	1, Md, Thorium, Thallium, Mendeleevium, 26, 33, 20
ZK	3310	DATA	2, Ruthenium, Ru, Rt, Rn, 31, 17, 11
TT	3320	DATA	3, Iridium, 58.93, 102.9, 192.2, 26, 19, 13
HE	3330	DATA	1, Rb, Rubidium, Radium, Rhodium, 31, 3, 11
OD	3340	DATA	2, Calcium, Ca, Cl, C, 31, 5, 9
LE	3350	DATA	3, Francium, 85.47, 132.9, 223, 26, 3, 15
YC	3360	DATA	1, Ir, Iodine, Iridium, Indium, 30, 19, 13
XN	3370	DATA	2, Scandium, S, Sc, Sa, 30, 7, 9
NJ	3380	DATA	3, Berkelium, 247, 158.9, 112.4, 31, 25, 20
BU	3390	DATA	1, Po, Protactinium, Polonium, Potassium, 30, 33, 13
EA	3400	DATA	2, Polonium, P1, P, Po, 26, 33, 13
MC	3410	DATA	3, Oxygen, 78.96, 32.06, 16.00, 26, 33, 5
IP	3420	DATA	1, B, Beryllium, Boron, Bismuth, 30, 27, 5
KP	3430	DATA	2, Lithium, Li, Lt, Lm, 31, 3, 5
LP	3440	DATA	3, Nickel, 106.4, 58.71, 10.81, 30, 21, 9
WE	3450	DATA	1, Al, Aluminum, Antimony, Holmium, 31, 27, 7
VI	3460	DATA	2, Europium, E, Er, Eu, 26, 21, 18
UP	3470	DATA	3, Strontium, 87.62, 40.08, 24.31, 31, 5, 11
TC	3480	DATA	1, Pm, Promethium, Potassium, Palladium, 31, 17, 18
GU	3490	DATA	2, Titanium, Tt, Ta, Ti, 26, 9, 9
FB	3500	DATA	3, Cadmium, 65.38, 112.4, 200.6, 30, 25, 11
XY	3510	DATA	1, Tb, Lead, Tantalum, Terbium, 26, 25, 18
DD	3520	DATA	2, Terbium, Te, Tb, Tr, 30, 25, 18
IC	3530	DATA	3, Cerium, 50.94, 92.91, 140.1, 26, 11, 18
ZA	3540	DATA	1, Ta, Tantalum, Titanium, Technetium, 31, 11, 13
PD	3550	DATA	2, Lead, Le, Pb, Ld, 30, 29, 13
IU	3560	DATA	3, Erbium, 167.3, 209.0, 126.9, 31, 31, 18
ZJ	3570	DATA	1, Ac, Arsenic, Actinium, Americium, 30, 7, 15
JY	3580	DATA	2, Beryllium, Be, Br, By, 31, 5, 5
RX	3590	DATA	3, Platinum, 58.71, 106.4, 195.1, 26, 21, 13
BV	3600	DATA	1, Rn, Rhenium, Ruthenium, Radon, 26, 37, 13
TP	3610	DATA	2, Niobium, Ni, Nb, No, 30, 11, 11
BA	3620	DATA	3, Radium, 226.0, 137.3, 87.62, 31, 5, 15
SR	3630	DATA	1, Sc, Silicon, Scandium, Silicon, 30, 7, 9
LL	3640	DATA	2, Astatine, As, A, At, 26, 35, 13
QB	3650	DATA	3, Californium, 251, 227, 107.9, 31, 27, 20
JR	3660	DATA	1, Re, Rhenium, Ruthenium, Rutherfordium, 31, 15, 13
SI	3670	DATA	2, Manganese, Mg, Ma, Mn, 26, 15, 9
WN	3680	DATA	3, Fluorine, 19.00, 35.45, 10.81, 31, 35, 5
DP	3690	DATA	1, Cm, Curium, Cadmium, Calcium, 31, 23, 20
RW	3700	DATA	2, Thulium, Th, Tm, Tl, 30, 33, 18
FG	3710	DATA	3, Potassium, 22.99, 39.10, 85.47, 30, 3, 9
GI	3720	DATA	1, Bi, Bromine, Bismuth, Berkelium, 30, 31, 13
AS	3730	DATA	2, Promethium, Pm, Pr, Po, 31, 17, 18
OO	3740	DATA	3, Copper, 63.55, 107.9, 197.0, 31, 23, 9
MM	3750	DATA	1, As, Astatine, Arsenic, Antimony, 30, 31, 9
SU	3760	DATA	2, Fermium, Fe, Fr, Fm, 26, 31, 20
XS	3770	DATA	3, Yttrium, 88.91, 138.9, 227, 31, 7, 11
PQ	3780	DATA	1, Sb, Antimony, Lead, Palladium, 31, 31, 11
KK	3790	DATA	2, Francium, Fr, Fn, Fc, 31, 3, 15
BL	3800	DATA	3, Indium, 26.98, 69.72, 114.8, 26, 27, 11
HB	3810	DATA	1, Th, Thallium, Thorium, Thulium, 30, 11, 20
HV	3820	DATA	2, Barium, B, Ba, Bm, 30, 5, 13
KN	3830	DATA	3, Praseodymium, 231.0, 140.9, 95.94, 30, 13, 18
OY	3840	DATA	1, Cd, Tungsten, Cadmium, Lutetium, 30, 11, 20

continued on next page

UM, 30, 25, 11
 IU 3850 DATA 2, Curium, Cu, Cm, Cr, 30, 23, 20
 FA 3860 DATA 3, Thulium, 168.9, 210, 258, 31, 3
 3, 18
 MJ 3870 DATA 1, Fr, Fluorine, Iron, Francium,
 26, 3, 15
 TV 3880 DATA 2, Helium, He, H, H1, 31, 37, 3
 CF 3890 DATA 3, Actinium, 88.91, 137.3, 227, 2
 6, 7, 15
 YV 3900 DATA 1, I, Iridium, Iodine, Titanium,
 30, 35, 13
 UP 3910 DATA 2, Xenon, X, Xe, Xn, 30, 37, 11
 BB 3920 DATA 3, Einsteinium, 254, 207.2, 164.
 9, 31, 29, 20
 FL 3930 DATA 1, P, Phosphorus, Potassium, Pol
 onium, 31, 31, 7
 YU 3940 DATA 2, Nobelium, No, Nb, N1, 31, 35, 20
 JU 3950 DATA 3, Thorium, 232.0, 260, 180.9, 31
 , 11, 20
 AN 3960 DATA 1, Pu, Plutonium, Protactinium,
 Praseodymium, 31, 19, 20
 VZ 3970 DATA 2, Argon, Ag, Ar, An, 30, 37, 7
 DU 3980 DATA 3, Ytterbium, 79.90, 126.9, 173.
 0, 26, 35, 18
 IS 3990 DATA 1, Pa, Potassium, Palladium, Pro
 tactinium, 26, 13, 20
 WT 4000 DATA 2, Rutherfordium, Ru, Rt, Rf, 26
 9, 15
 NN 4010 DATA 3, Neodymium, 98.91, 144.2, 186.


2, 30, 15, 18
 RZ 4020 DATA 1, V, Iridium, Vanadium, Samariu
 m, 30, 11, 9
 US 4030 DATA 2, Californium, Ca, Cf, Cn, 30, 27
 , 20
 BN 4040 DATA 3, Zirconium, 47.90, 91.22, 178.
 5, 30, 9, 11
 FB 4050 DATA 1, Ru, Ruthenium, Rutherfordium
 , Rhenium, 31, 17, 11
 DU 4060 DATA 2, Plutonium, Pu, P1, Pt, 31, 19, 2
 0
 ZW 4070 DATA 3, Zinc, 26.98, 65.38, 88.91, 30,
 25, 9
 FN 4080 DATA 1, Lu, Lanthanum, Lead, Lutetium
 , 26, 37, 18
 GX 4090 DATA 2, Samarium, Sm, Sa, Sr, 31, 19, 18
 FO 4100 DATA 3, Calcium, 9.012, 24.31, 40.08,
 26, 5, 9
 DL 4110 DATA 1, Mo, Mendeleevium, Manganese, M
 olybdenum, 26, 13, 11
 DP 4120 DATA 2, Iridium, I, Ir, Id, 30, 19, 13
 IX 4130 DATA 3, Neon, 20.18, 39.95, 83.80, 31,
 37, 5
 KB 4140 DATA 1, Gd, Gadolinium, Gallium, Germ
 anium, 31, 23, 18
 QQ 4150 DATA 2, Cerium, Cr, Ce, Cm, 30, 11, 18
 OQ 4160 DATA 3, Mercury, 200.6, 112.4, 65.38,
 31, 25, 13

BASIC PROFILER SPEEDS UP YOUR PROGRAMS

BOTTLENECK BREAKER

Article on page 14

LISTING 1

Don't type the
 TYPO II Codes! 

```
SM 10 REM BASIC PROFILER, PART 1
JH 20 REM BY STAN LACKEY
QH 30 REM (C)1988, ANTIC PUBLISHING
QM 40 X=PEEK(106)-32:REM RESERVE 8K FOR C
    COUNTERS
UN 50 POKE 106,X:POKE 740,X
IP 60 GRAPHICS 0:"Working..."
GT 70 FOR X=40704 TO 40827:REM LOAD PROFI
    LER INTO PAGE 9F
GX 80 READ D:POKE X,D:NEXT X
TH 90 DATA 0,173,0,159,208,2,104,64,152,7
    2,160,0,177,138,133,203,200,177,138,13
    3,204,48,95,169,0
HO 100 DATA 133,205,169,80,133,206,169,0,
    133,207,133,208,160,11,56,165,203,229,
    205,141,122,159,165,204,229
BZ 110 DATA 206,141,123,159,24,48,11,173,
    122,159,133,203,173,123,159,133,204,56
    ,38,207,38,208,70,206,102
WN 120 DATA 205,136,16,216,6,207,38,208,2
    4,165,208,101,106,105,4,133,208,160,0,
    24,177,207,105,1,145
SJ 130 DATA 207,208,15,200,24,177,207,105
    ,1,145,207,16,5,169,0,141,0,159,104,16
    0,104,64,0,0
ZV 140 REM SET UP TIMER INTERRUPT
XY 150 POKE 528,1:REM VTIME1 VECTOR LOW
RC 160 POKE 529,159:REM VTIME1 HI
JD 170 POKE 53761,0:REM VOLUME TO ZERO
JN 180 POKE 53760,255:REM FREQ OF THRT
KI 190 POKE 53769,255:REM TURN ON TIMERS
TW 200 POKE 16,193:REM SET TINT1
QU 210 ? "Done...":? :? "Next":? :? "LOA
    D the program to be profiled":?
ON 220 ? :? "ENTER";CHR$(34);"D:PROFILE2
    .LST";CHR$(34);?
SF 230 ? :? "RUN"
```

```
UN ";CHR$(34);"D:PROFILE3.BAS";CHR$(34
    )
```

LISTING 3

```
US 10 REM BASIC PROFILER, PART 3
JH 20 REM BY STAN LACKEY
QH 30 REM (C)1988, ANTIC PUBLISHING
XI 40 POKE 40704,0:REM STOP PROFILING
AC 100 DIM L(1000),V(1000):REM LINE#, VAL
    UE
MO 110 I=0:TOTAL=0
ET 115 ? "Reading Counters..."
DY 116 X=(PEEK(106)+4)*256
FA 120 FOR J=0 TO 6550 STEP 2
WS 130 REM READ EACH COUNTER
SE 131 K=PEEK(J+X)+256*PEEK(J+X+1)
XE 140 IF K=0 THEN 170
OS 150 REM SAVE ALL NON-ZERO VALUES
QZ 155 I=I+1
DA 160 L(I)=J*S:V(I)=K:TOTAL=TOTAL+K
GP 170 NEXT J
KS 175 MAX=I
IL 180 ? "TOTAL COUNTS = ";TOTAL
DF 185 ? "IN ";MAX;" PROGRAM LINES"
UT 190 ? "SORTING..."
XM 200 REM ROUTINE SORTS ALL ENTRIES
CR 205 FOR J=1 TO MAX
MK 210 FOR I=J TO MAX
OA 220 IF V(I)<V(J) THEN 260
CR 230 REM EXCHANGE L&V VALUES TO SORT
JH 240 X=V(I):V(I)=V(J):V(J)=X
NB 250 X=L(I):L(I)=L(J):L(J)=X
GE 260 NEXT I
QK 265 ? ". ";
GQ 270 NEXT J
NP 300 TRAP 450
BH 390 PF=1
DN 395 ?
NV 400 ? "LINE","COUNTS","PERCENT","CUM P
    CT"
SJ 410 LPRINT "TOTAL COUNTS = ";TOTAL
XG 420 LPRINT
UN 430 LPRINT "LINE","COUNTS","PERCENT","
    CUM PCT"
QF 440 GOTO 480
BH 450 PF=0
```

LISTING 2

```
IZ 1 REM BASIC PROFILER, PART II
    (C)1988, ANTIC PUBLISHING
ZF 2 I=(PEEK(106)+4)*256:FOR J=I TO I+655
    1:POKE J,0:NEXT J:REM CLEAR COUNTERS
JJ 3 POKE 40704,1:REM START PROFILING
YP 31000 POKE 40704,0:REM STOP PROFILING
LH 31010 ? "Done...":? :? "Next":? :? "R
```

```

RC 480 REM PRINT TOP 20 IF TO SCREEN, OR
DG 485 REM TOP 40 IF PRINTER IS ON
GX 490 J=20+20*PF:IF MAX<J THEN J=MAX
AV 500 CUM=0
AR 510 FOR I=1 TO J
BK 520 PCT=V(I)/TOTAL:CUM=CUM+PCT
OE 530 Y=<INT(0.5+10000*CUM)>/100
PP 540 X=<INT(0.5+10000*PCT)>/100
PH 550 ? L(I),V(I),X,Y
LB 560 IF PF THEN LPRINT L(I),V(I),X,Y
GJ 570 NEXT I

```

LISTING 4

```

0100 ; BASIC PROFILER SOURCE CODE
0110 ; BY STAN LACKEY
0120 ; (c)1988, ANTIC PUBLISHING INC.
0150 ;
0160 ; Definitions:
0180 TEMP1 = $CB ; Temps used in
; routines
0190 TEMP2 = $CD
0200 TEMP3 = $CF
0210 STMCUR = 138 ; Pointer into
; user program
0220 RAMTOP = 106
0250 ;
0260 *= $9F00
0270 ;
0280 PROFEN
0285 .BYTE 0 ; Flag to enable
; Profiler
0290 ;
0300 ; SAMPLE is the timer interrupt
0310 ; routine. It takes the current
0320 ; line number, divides it by 10
0330 ; and increments that 16-bit
0340 ; location in the RAM above
0345 ; RAMTOP.
0350 ;
0360 SAMPLE
0365 LDA PROFEN ; Sense enable
0370 BNE SPL1
0375 ;
0380 PLA ; It's off...
0390 RTI ; just return.
0395 ;
0400 SPL1
0401 TYA
0410 PHA ; Must save Y
0420 LDY #0
0430 LDA <STMCUR>,Y ; Get line #
0440 STA TEMP1
0450 INY ; Point to high
0460 LDA <STMCUR>,Y
0470 STA TEMP1+1
0480 BMI EXIT ; Exit if line
; num is neg.
0490 ;
0500 ; Now, divide line number by 10
0510 LDA # <20480> ; Divisor:
0520 STA TEMP2 ; #10, Shifted
0530 LDA # >20480

```

```

0540 STA TEMP2+1
0550 LDA #0
0560 STA TEMP3 ; Clear quotient
0570 STA TEMP3+1
0580 LDY #11 ; Loop count
0590 DIVLP
0595 SEC
0600 LDA TEMP1
0610 SBC TEMP2
0620 STA TEMP4 ; 16-bit subtr,
0630 LDA TEMP1+1 ; ddnd-dvsr
0640 SBC TEMP2+1
0650 STA TEMP4+1
0660 CLC ; Init.
0670 BMI NOBIT ; Shift 0 in
0680 ; dvsr > ddnd
0690 LDA TEMP4
0700 STA TEMP1 ; ddnd > dvsr
0710 LDA TEMP4+1 ; Copy new ddnd
0720 STA TEMP1+1
0730 SEC ; Shift 1 in
0740 NOBIT
0745 ROL TEMP3 ; Shift into
0750 ROL TEMP3+1 ; quotient
0760 LSR TEMP2+1 ; Shift dvsr
0770 ROR TEMP2
0780 DEY
0790 BPL DIVLP ; Loop next bit
0795 ;
0800 ; Result is left in TEMP3.
0810 ; Add that result to RAMTOP.
0820 ASL TEMP3 ; 2x result for
0830 ROL TEMP3+1 ; 2-byte access
0840 CLC
0850 LDA TEMP3+1
0860 ADC RAMTOP ; TEMP3 is now
0870 ADC #4 ; the pointer
0880 STA TEMP3+1 ; into the RAM.
0890 LDY #0
0900 CLC
0910 LDA <TEMP3>,Y ; Get cell to
0920 ADC #1 ; increment
0930 STA <TEMP3>,Y
0940 BNE EXIT ; If inc. to 0,
0945 ;
0950 INY
0960 CLC
0970 LDA <TEMP3>,Y ; incr high
0980 ADC #1 ; half
0990 STA <TEMP3>,Y
1000 BPL EXIT ; Test overflow
1005 ;
1010 LDA #0 ; Stop prof
1020 STA PROFEN ; on overflow
1030 EXIT
1035 PLA
1040 TAY ; Restore Y
1050 PLA ; and A
1060 RTI ; End of SAMPLE
1065 ;
1070 TEMP4
1075 .WORD 0 ; Temp used in di
; vision

```

ESCAPE THOSE KILLER ROBOTS

SHUTDOWN

Article on page 17

LISTING 1

```

RQ 2 REM SHUTDOWN
UK 4 REM BY TONY BARNES
OS 6 REM (c)1988, ANTIC PUBLISHING INC.
PQ 8 REM (DO NOT RENUMBER THIS PROGRAM!)
KS 10 GRAPHICS 18:POKE 559,0:GOSUB 21000:
GOSUB 20000:POKE 756,152:GOSUB 23000
FP 20 DIM A$(20),X(2),Y(2),D(2)
RX 25 FOR T=0 TO 2:X(T)=0:Y(T)=0:D(T)=1:N
EXT T
FW 30 GOTO 10000
OG 100 FOR X=10 TO 2 STEP -0.5:POSITION X
-1,TY: ? #6;A$(X,X);:POKE 708,PEEK(20)
UE 110 POSITION 20-X,TY: ? #6;A$(21-X,21-X
):SOUND 0,42,6,X:SOUND 1,X,0,X

```

Don't type the
TYPO II Codes!

```

PA 115 NEXT X:SOUND 0,0,0,0:SOUND 1,0,0,0
:RETURN
GM 120 FOR X=2 TO 10:POSITION X-1,TY: ? #6
; " ";:POSITION 19-X,TY
IB 130 ? #6;" ";:POKE 708,PEEK(20):SOUND
0,42,6,X:SOUND 1,X,0,X
PE 135 NEXT X:SOUND 0,0,0,0:SOUND 1,0,0,0
:RETURN
OB 200 EN=EN+1:IF EN>2 THEN EN=0
LL 205 COLOR 32:PLOT X(EN),Y(EN):X=X(EN)+
D(EN):LOCATE X,Y(EN),Z
KH 210 IF Z>0 AND Z<8 THEN 2000

```

continued on next page

```

MU 215 IF Z<>32 THEN X=X<EN>:D<EN>=-D<EN>
:COLOR 27:PLOT X,Y<EN>:RETURN
FW 220 LOCATE X,Y<EN>+1,Z:IF Z=32 OR Z=47
THEN X=X<EN>:D<EN>=-D<EN>:COLOR 27:PL
OT X,Y<EN>:RETURN
OS 225 COLOR 8+2*(D<EN>=-1):X<EN>=X:PLOT
X<EN>,Y<EN>:RETURN
MX 1000 ST=PEEK<632>:POKE 77,0:GOSUB 200:
IF PEEK<53279><>7 THEN 2000
UU 1002 IF ST>11 THEN COLOR 7:PLOT X1,Y1:
X=X1:GOTO 1020
NN 1005 COLOR 32:PLOT X1,Y1:X=X1+(ST<8)*(<
X1<19>-(ST<8>)*(X1>0))
OC 1010 LOCATE X,Y1,Z:IF Z=158 THEN 1050
RJ 1015 IF Z<>32 THEN X=X1
ZJ 1020 LOCATE X,Y1+1,Z:IF Z=32 OR Z=47 T
HEN 2000
XF 1025 IF Z>170 AND Z<175 THEN 1100
AL 1027 IF ST>12 THEN 1000
PV 1030 WL=WL+1:IF WL>3 THEN WL=0
KO 1035 X1=X:SOUND 3,100,8,6:IF ST<8 THEN
COLOR 1+WL-2*(WL=3):PLOT X1,Y1
ZH 1040 IF ST>8 THEN COLOR 4+WL-2*(WL=3):
PLOT X1,Y1
RL 1045 SOUND 3,0,0,0:GOTO 1000
RA 1050 FOR T=15 TO 0 STEP -3:SOUND 0,50,
10,T:SOUND 1,T+INT<RND<0>*10>,10,T
LN 1055 NEXT T:COLOR 159:PLOT X,Y1:5C=5C+
5:POSITION 5,11:? #6;5C
TF 1060 MAX=MAX-1:POKE 708,112+(MAX*2):IF
MAX<0 THEN 2100
DA 1065 GOTO 1000
EQ 1100 X1=X:SOUND 0,47,2,4:SOUND 1,162,1
0,4:IF Z<>173 THEN 1150
SN 1105 LOCATE X1,Y1-1,Z:IF Z=47 THEN 112
0
XT 1110 COLOR 32:PLOT X1,Y1+1:Y1=Y1-1:COL
OR 7:PLOT X1,Y1:COLOR 173
DD 1115 PLOT X1,Y1+1:GOSUB 200:GOTO 1105
SU 1120 Y1=Y1-1:COLOR 32:PLOT X1,Y1+1:PLO
T X1,Y1+2:Y1=Y1-1:COLOR 7
YW 1125 PLOT X1,Y1:COLOR 186:PLOT X1,Y1+1
:FOR T=4 TO 0 STEP -0.3
SN 1130 SOUND 0,47,2,T:SOUND 1,162,10,T:N
EXT T:X=X1:GOTO 1000
US 1150 IF Z<>174 THEN 1200
ZT 1155 LOCATE X1,Y1+2,Z:IF Z=47 THEN 117
0
LK 1160 COLOR 32:PLOT X1,Y1:Y1=Y1+1:COLOR
7:PLOT X1,Y1:COLOR 174
KQ 1165 PLOT X1,Y1+1:GOSUB 200:GOTO 1155
SN 1170 COLOR 32:PLOT X1,Y1:Y1=Y1+1:COLOR
7:PLOT X1,Y1:COLOR 186
XS 1175 PLOT X1,Y1+1:FOR T=4 TO 0 STEP -0
.3:SOUND 0,47,2,T:SOUND 1,162,10,T
AX 1180 NEXT T:X=X1:GOTO 1000
XA 1200 IF Z<>171 THEN 1250
FH 1205 LOCATE X1-1,Y1+1,Z:IF Z=47 THEN 1
220
TS 1210 COLOR 32:PLOT X1,Y1:PLOT X1,Y1+1:
X1=X1-1:COLOR 7:PLOT X1,Y1:COLOR 171
EO 1215 PLOT X1,Y1+1:GOSUB 200:GOTO 1205
KW 1220 COLOR 32:PLOT X1,Y1:PLOT X1,Y1+1:
X1=X1-1:COLOR 7:PLOT X1,Y1:COLOR 186
XF 1225 PLOT X1,Y1+1:FOR T=4 TO 0 STEP -0
.3:SOUND 0,47,2,T:SOUND 1,162,10,T
AK 1230 NEXT T:X=X1:GOTO 1000
LQ 1250 LOCATE X1+1,Y1+1,Z:IF Z=47 THEN 1
270
UK 1255 COLOR 32:PLOT X1,Y1:PLOT X1,Y1+1:
X1=X1+1:COLOR 7:PLOT X1,Y1:COLOR 172
EE 1260 PLOT X1,Y1+1:GOSUB 200:GOTO 1250
IB 1270 COLOR 32:PLOT X1,Y1:PLOT X1,Y1+1:
X1=X1+1:COLOR 7:PLOT X1,Y1:COLOR 186
XU 1275 PLOT X1,Y1+1:FOR T=4 TO 0 STEP -0
.3:SOUND 0,47,2,T:SOUND 1,162,10,T
AZ 1280 NEXT T:X=X1:GOTO 1000
YC 2000 COLOR 32:PLOT X1,Y1:X1=X
WC 2005 POSITION 0,11:? #6;"XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX":FOR T=100 TO 255 STEP 5
OO 2010 SOUND 0,T,10,5:SOUND 1,T,12,5:POK
E 709,PEEK<20>
LK 2015 COLOR 7+2*(T/3=INT<T/3>):PLOT X1,
Y1:NEXT T
EI 2020 FOR I=0 TO 3:SOUND I,0,0,0:NEXT I
:MN=MN-1:IF MN>0 THEN 4000
KZ 2025 FOR T=0 TO 255 STEP 5:SOUND 0,T,1
0,T/25:SOUND 1,T+1,10,T/25
UX 2030 FOR I=708 TO 711:POKE I,T:NEXT I:
NEXT T
BU 2035 COLOR 91:FOR T=0 TO 250 STEP 10:5
OUND 1,T,2,4:SOUND 0,T,0,4
GS 2040 PLOT 0,T/25:DRAWTO 19,T/25:NEXT T

```

```

: SOUND 0,0,0,0:SOUND 1,0,0,0:GOTO 1000
0
GN 2100 FOR T=0 TO 15:SOUND 0,T,8,2:FOR I
=708 TO 711:POKE I,T:NEXT I:NEXT T
LN 2105 RESTORE 2150+20*(RND<0>*2>1)
PI 2110 READ P1,P2,DR:SOUND 1,P1,10,10:50
UND 2,P2,10,10
BY 2115 FOR T=0 TO DR*5:NEXT T:IF P2<>193
THEN 2110
FB 2125 FOR T=15 TO 0 STEP -1:SOUND 0,T,8
,T:FOR I=708 TO 711:POKE I,T:NEXT I
OH 2130 NEXT T:5C=5C+10*5CR:5CR=5CR+1:IF
<5CR=4 AND LVL=0> OR 5CR=8 THEN 3000
RV 2135 SOUND 1,0,0,0:SOUND 2,0,0,0:GOTO
4000
NB 2150 DATA 64,162,4,96,162,4,64,162,4,9
6,162,4
QH 2155 DATA 81,162,4,108,162,4,81,162,4,
108,162,4
RB 2160 DATA 136,182,16,144,182,32,144,19
3,32
JI 2170 DATA 47,64,4,0,0,2,64,81,4,0,0,2,
81,96,4,96,153,16,108,144,4
BX 2175 DATA 0,0,2,108,144,4,144,193,16
WU 3000 POSITION 0,11:? #6;"XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX":POKE 708,114:POKE 710,52
QU 3005 SOUND 2,0,0,0:FOR T=10 TO 2 STEP
-1:COLOR 219:PLOT 0,T:DRAWTO 19,T
TO 3010 SOUND 0,200,2,10-T:SOUND 1,100,8,
10-T:NEXT T
HV 3015 FOR T=0 TO 10:COLOR 32:PLOT 19,T:
DRAWTO 16-3*(T<2),T:PLOT 13,T
PV 3020 DRAWTO 11*(T>5),T:PLOT 8,T:DRAWTO
0,T:SOUND 0,200,2,10-T
BA 3025 SOUND 1,PEEK<53770>,8,10-T:NEXT T
:COLOR 64:PLOT 0,10:DRAWTO 19,10
BN 3030 SOUND 0,0,0,0:SOUND 1,0,0,0:POKE
711,6:A=PEEK<560>:B=0
OR 3035 FOR T=5 TO 0:FOR I=0 TO 20:SOUND
0,PEEK<53770>,8,5:POKE 560,A+RND<0>*1
SR 3040 B=NOT B:COLOR 252+2*B:PLOT 8,9:P
LOT 11,9:COLOR 253+2*B
KU 3045 PLOT 9,9:PLOT 10,9:NEXT I:COLOR 3
2:PLOT 9,T:PLOT 10,T:NEXT T
MN 3050 IF LVL=0 THEN LVL=1:GOTO 3080
TW 3055 FOR T=2 TO 0:FOR I=0 TO 20:SOUND
0,PEEK<53770>,8,8:POKE 560,A+RND<0>*1
ID 3060 B=NOT B:COLOR 252+2*B:PLOT 8,9:P
LOT 11,9:PLOT 13,9:PLOT 16,9
KY 3065 COLOR 253+2*B:PLOT 9,9:PLOT 10,9:
PLOT 14,9:PLOT 15,9:NEXT I
XZ 3070 COLOR 32:PLOT 14,T:PLOT 15,T:NEXT
T
QQ 3080 POKE 560,A:FOR T=8 TO 0 STEP -0.5
:SOUND 0,PEEK<53770>,8,T:NEXT T
YY 3085 5C=5C+100:COLOR 32:PLOT 0,9:DRAWTO
0,19,9:IF 5CR<8 THEN 4000
QB 3100 TY=0:A$="XXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX":GOSUB 100:POKE 709,14:POKE 710,50
US 3105 FOR T=100 TO 255:SOUND 0,T,10,T/2
5:SOUND 1,T,2,T/25:NEXT T
KC 3110 SOUND 0,0,0,0:SOUND 1,0,0,0:LVL=0
:5C=5C+100:5CR=1:MN=MN+1:GOTO 4000
WE 4000 POKE 712,148:POSITION 0,0:? #6;"
:POSITION 5,5:? #6;"GET READY"
FR 4005 POKE 708,14:FOR T=0 TO 200:NEXT T
AQ 4010 POKE 559,0:POKE 712,0:POKE 710,40
:POKE 709,172:POKE 711,10:POKE 708,0
ZX 4015 POSITION 0,11:? #6;"score";5C:POS
ITION 10,11:? #6;"men";MN
WQ 4020 POSITION 0,1:ON 5CR GOSUB 4100,41
60,4220,4280,4340,4400,4460
JU 4025 POKE 559,34:FOR T=112 TO 112+(MAX
*2) STEP 0.1:POKE 708,T:NEXT T
OG 4030 FOR T=50 TO 100:SOUND 0,T,10,5:50
UND 1,T+2,10,5:NEXT T
QW 4035 SOUND 0,0,0,0:SOUND 1,0,0,0:X=X1:
GOTO 1000
GI 4099 REM (" " IS [ESC] [CTRL] [TAB] )
CB 4100 ? #6;" [ ] [ ] ";
SJ 4105 ? #6;" e e e e e e e e e e e e ";
AW 4110 ? #6;" ";
KX 4115 ? #6;" e e e e / / / / e e e e ";
CT 4120 ? #6;" ";
KD 4125 ? #6;" / e e e e e e e e ";
GJ 4130 ? #6;" ";
EW 4135 ? #6;" e e e e e e e e e e e e ";
WX 4140 ? #6;" [ ] [ ] e e ";
EG 4145 ? #6;" e / e e e e e e e e e e e e ";
HK 4150 MAX=6:X1=9:Y1=9:FOR T=0 TO 2:D<T>
=1:X<T>=3:Y<T>=7:NEXT T
BN 4155 RETURN
SD 4160 ? #6;" e ";

```



```

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$="C:" THEN ? :? " Prepare ca
ssette, press [RETURN]"
AR 230 OPEN #1,8,0,FN$
PV 240 POKE 766,1: ? #1:A$:POKE 766,0
AL 250 CLOSE #1:GRAPHICS 0: ? "
"
JN 1000 DATA 527
LU 1010 DATA 0500490480490480320680760730
36061034072173000001238000001141010212
201000208010169072141024208
OS 1020 DATA 1410102121040642010012080101
69108141024208141010212104064201002034
155050049048049050032068076
GO 1030 DATA 07303604005204904106103420800
10169136141024208141010212104064169000
141000001169168141024208141
ZO 1040 DATA 0102121040640341550500510480
49048032068073077032067072036040050048
041058067072036061034104162
PL 1050 DATA 0041600001772051452032002082
49230206230204202208242096034058071079
083085066032051048049048048
ZP 1060 DATA 1550500510480490500320770790
86036061034104104133241104133240104133
213104133212104133239104133
SI 1070 DATA 2381600001772401452122302122
08002230213230240208002230241198238208
234198239016230096034058077
ZA 1080 DATA 0790860690610650680820400770
79086036041155051048049048048032082068
067036040049044054048041061
BG 1090 DATA 0340120120240560900240360660
12012024028024024048016012012024028090
024036066048048024056090024
BY 1100 DATA 0360660480480240560240240120
08048048024028090024036066024024060090
060024036066003006038126034
UU 1110 DATA 1550510480490480480320820680
67036040054049044049050048041061034251
248124170000136221119042000
BD 1120 DATA 0000001920961001262230310620
85000255225195135255000000000000255225195
135255000000000000255225195135
XT 1130 DATA 255000000000002552251951352550
000000000000000000000000000034155051
048049051048032082068067036
DF 1140 DATA 0400490500490440490540480410
61034000255225195135255000000024036066
036060126255102060024024126
XU 1150 DATA 10206610212600000000601261020
66102126000255129066036024255000034155
051048049052048032082068067
MR 1160 DATA 0360400490540490440500480480
41061034255153153255255153153255001000
064010000220246184181079212
ZT 1170 DATA 0552152352022391280000020800
00059111029173242043236235215083247034
058082069084085082078032155

```

ANTIC'S ANNUAL 1040 SYNCALC TEMPLATE

1988 TAX SPREADSHEET

Article on page 22

LISTING 1

- | | |
|---------|---|
| A4 1 | A53 - |
| A5 2 | A54 41 |
| A6 3 | A55 42 |
| A7 4 | A56 43 |
| A8 5 | A57 44 |
| A11 6 | A58 45 |
| A13 7 | A59 46 |
| A14 8 | A60 47 |
| A15 8a | A61 - |
| A16 9 | A62 48 |
| A17 10 | A63 49 |
| A18 11 | A64 50 |
| A19 12 | A65 51 |
| A20 13 | A66 52 |
| A21 14 | A67 53 |
| A22 15 | A68 - |
| A23 16a | A69 54 |
| A24 17a | A70 55 |
| A25 18 | A71 56 |
| A26 19 | A72 57 |
| A27 20 | A73 58 |
| A28 21a | A74 59 |
| A29 b | A75 60 |
| A30 22 | A76 61 |
| A31 23 | A77 - |
| A32 - | A78 62 |
| A33 24 | A79 63 |
| A34 25a | A80 64 |
| A35 25b | A81 65 |
| A36 26 | A82 = |
| A37 27 | A85 1a |
| A38 28 | A86 b |
| A39 29 | A90 2 |
| A40 30 | A91 3 |
| A41 - | A92 4 |
| A42 31 | A93 - |
| A43 = | A94 5 |
| A44 32 | A95 6 |
| A45 33a | A96 7 |
| A46 34 | A98 8 |
| A47 35 | A99 - |
| A48 36 | A100 NOTE: NEW RULES APPLY TO HOME MORTGAGE |
| A49 37 | A101 INTEREST DEDUCTION. SEE BOOKLET. |
| A50 38 | A102 9a |
| A51 39 | A103 b |
| A52 40 | |

A104 10
 A105 11
 A106 12a
 A107 b
 A108 13
 A109 -
 A110 14
 A111 15
 A112 16
 A113 17
 A114 -
 A115 18
 A116 -
 A117 19
 A118 -
 A119 20
 A120 21
 A121 22
 A122 23
 A123 24
 A124 -
 A125 25
 A126 -
 A127 26
 A128 =
 A130 1
 A131 2
 A137 3
 A139 4
 A145 6
 A146 7
 A147 8
 A148 9
 A149 =
 A151 PART I
 A152
 A153 1
 A154 2
 A155 3
 A156 4
 A157 5
 A158 6
 A159 -
 A160 7
 A161 8
 A162 9
 A163
 A164 -
 A165 10
 A166 11
 A167 12
 A168 13
 A169 -
 A170 14
 A171 15
 A172 16
 A173 17
 A174 -
 A175 PART II
 A176 1
 A177 2
 A178 3
 A179 4
 A180 5
 A181 6
 A182 7
 A183 8
 A184 9
 A185 10
 A186 11
 A187 12
 A188 13
 A189 14
 A190 15
 A191 Section C - Actual Expenses
 A192 16
 A193 17
 A194 18
 A195 19
 A196 20
 A197 21
 A198 22
 A199 Section D - Depreciation of Vehicles.
 A201 V 1
 A202 V 2
 A203 =
 B2 1988 Income Tax Spreadsheet: Form 1040
 B3 Filing Status
 B4 Single
 B5 MARRIED FILING JOINT.
 B6 MARRIED FILING SEPARATE RETURN.
 B7 HEAD OF HOUSEHOLD.
 B8 QUALIFYING WIDOW(er) w/dependent child
 B9 Enter filing status number here
 B11 Enter total number of exemptions.

B13 Wages, salaries, tips, etc.
 B14 TAXABLE interest income (attach Sched B if > \$400)
 B15 Tax-exempt interest income.
 B16 Dividend income. (attach Sched B if > \$400)
 B17 Taxable refunds of state and local income taxes.
 B18 Alimony received.
 B19 Business income (loss)(attach Sched C)
 B20 Capital gain (loss)(attach Sched D)
 B21 Capitalgain distributions not on line 13
 B22 Other gains (losses)
 B23 Total IRA distributions
 B24 Total Pensions & annuities
 B25 Rents, royalties, etc (attach Sched E)
 B26 Farm income (attach Sched F)
 B27 Unemployment compensation.
 B28 Social security benefits
 B29 Taxable amount, if any
 B30 Other income
 B31 TOTAL INCOME (Add lines 7 through 22).
 B32 -----
 B33 Reimbursed employee business expense.
 B34 Your IRA deduction
 B35 Spouse's IRA deduction
 B36 Self-employed health insurance deduction
 B37 Keogh retirement & SEP deduction
 B38 Penalty on early withdrawal of savings
 B39 Alimony paid
 B40 Add lines 24 - 29. TOTAL ADJUSTMENTS.
 B41 -----
 B42 Subtract line 30 from 23. ADJUSTED GROSS INCOME.
 B43 =====
 B44 Amt from line 30 (adjusted gross income)
 B45 Add # of boxes checked and enter here
 B46 ITEMIZED DEDUCTIONS
 B47 Subtract 34 from 32.
 B48 Multiply \$1950 by the number of exemptions.
 B49 TAXABLE INCOME. Subtract line 36 from 35.
 B50 Enter tax from table, rate sched, or Form 8615 etc.
 B51 Additional taxes from Form 4970 or Form 4972.
 B52 Add lines 38 and 39.
 B53 -----
 B54 Credit for Child Care Expenses.
 B55 Credit for elderly/disabled.
 B56 Foreign tax credit.
 B57 General business credit
 B58 Credit for prior year minimum tax
 B59 Add lines 41 through 45
 B60 Subtract line 46 from 40.
 B61 -----
 B62 Self Employment Tax (Sched SE).
 B63 Alternative minimum tax.
 B64 Recapture taxes
 B65 Social security tax on tips.
 B66 Tax on an IRA or qualified retirement plan
 B67 Add lines 47 through 52. This is TOTAL TAX.
 B68 -----
 B69 Federal income tax withheld.
 B70 1988 estimated tax pmts.
 B71 Earned income credit.
 B72 Amt paid with Form 4868.
 B73 Excess social security tax.
 B74 Credit from Federal tax on fuels.
 B75 Regulated investment company credit.
 B76 Add lines 54 through 60. TOTAL PAYMENTS.
 B77 -----
 B78 If line 61 > line 53 enter amount OVERPAID.
 B79 Amount of line 62 to be REFUNDED TO YOU.
 B80 Amt of line 62 to be applied toward '89.
 B81 If line 53 > line 61 enter AMOUNT YOU OWE.
 B82 =====
 B84 SCHEDULE A
 B85 Drugs, doctors, dentists care expenses
 B86 Other (hearing aids, dentures, etc)
 B87 _____
 B88 _____
 B89 _____
 B90 Add lines 1a and 1b.
 B91 Multiply 1040 line 32 by 7.5%
 B92 Subtract line 3 from line 2.
 B93 -----
 B94 State and local income taxes
 B95 Real estate taxes
 B96 Other taxes (include personal property tax)
 B97 -----
 B98 Add lines 5 through 7. Enter total here.
 B99 -----
 B100 NEW RULES APPLY TO HOME MORTGAGE
 B101 ST DEDUCTION. SEE BOOKLET.
 B102 Home mortgage int. pd to financial inst.
 B103 Home mortgage int. pd to individuals.
 B104 Deductible points
 B105 Deductible investment interest
 B106 Personal interest you paid.

continued on next page

B107 Multiply 12a by 40%
 B108 Add lines 9a through 11 and 12b.
 B109 -----
 B110 Contributions by cash or check.
 B111 Other than cash or check.
 B112 Carryover from prior year.
 B113 Add amounts on lines 14 through 16.
 B114 -----
 B115 Casualty or theft loss(es).
 B116 -----
 B117 Moving expenses.
 B118 -----
 B119 Unreimbursed employee business expenses.
 B120 Other expenses
 B121 Add the amounts on lines 20 and 21.
 B122 Multiply 1040 line 32 by 2%.
 B123 Subtract line 23 from line 22.
 B124 -----
 B125 Other
 B126 -----
 B127 Add lines 4,8,13,17,18,19,24, and 25.
 B128 =====
 B129 SCHEDULE B
 B130 Interest income from seller-financed mortgages.
 B131 Other interest income: _____
 B132 _____
 B133 _____
 B134 _____
 B135 _____
 B136 _____
 B137 Add amounts on lines 1 and 2.
 B138 -----
 B139 Dividend income: _____
 B140 _____
 B141 _____
 B142 _____
 B143 _____
 B144 _____
 B145 Capital gain distributions.
 B146 Nontaxable distributions
 B147 Add lines 6 and 7.
 B148 Subtract line 8 from line 5.
 B149 =====
 B150 FORM 2106: EMPLOYEE BUSINESS EXPENSES
 B153 Vehicle Exp. from Part 2 line 15 or 22
 B154 Parking fees, tolls, bus, train, etc.
 B155 Travel exp. while away from home.
 B156 Bus. exp. not in line 1 through 3.
 B157 Meals and entertainment.
 B158 Add lines 1 through 5.
 B159 -----
 B160 Unreported reimbursements for expenses.
 B161 Subtract line 6 from line 7.
 B162 Add both amounts on line 8.
 B163 (YOU MUST MANUALLY ADD line 9 TO AMOUNT on 1040 line 7).
 B164 -----
 B165 Subtract line 7 from line 6.
 B166 Reported reimbursements for expenses.
 B167 Enter the smaller of line 10 or 11.
 B168 Add both amounts on line 12.
 B169 -----
 B170 Subtract line 12 from line 10.
 B171 Enter 20% of line 14 Column B.
 B172 Subtract line 15 from line 14.
 B173 Add both amounts on line 16.
 B174 -----
 B175 I
 B176 Date vehicle was placed in service.
 B177 Total mileage during 1988.
 B178 Miles on line 2 for business.
 B179 Percent of business use.
 B180 Avg daily round trip commute distance.
 B181 Miles on line 2 for commuting.
 B182 Other personal mileage.
 B183 Have another vehicle for personal use ?
 B184 Is personal use allowed on company vehicle ?
 B185 Do you have evidence to support deduction ? Is it written ?
 B186 Enter smaller of line 3 or 15,000 miles.
 B187 Subtract line 11 from line 3.
 B188 Multiply line 11 by 24 cents.
 B189 Multiply line 12 by 11 cents.
 B190 Add lines 13 and 14.
 B191 n C - Actual Expenses
 B192 Gas, oil, repairs, insurance, etc.
 B193 Vehicle rentals.
 B194 Value of employer-provided vehicle.
 B195 Add lines 16 through 18.
 B196 Multiply line 19 by % on line 4.
 B197 Depreciation from Section D, col. F.
 B198 Add lines 20 and 21.
 B199 n D - Depreciation of Vehicles.
 B200 (d) Depreciation Deduction
 B203 =====

C4 3000
 C5 5000
 C6 2500
 C7 4400
 C8 5000
 C9 here
 C10 0
 C23 0
 C24 0
 C28 0
 C32 -----
 C33 0
 C34 0
 C35 0
 C36 0
 C37 0
 C38 0
 C39 0
 C41 -----
 C43 =====
 C45 0
 C53 -----
 C54 0
 C55 0
 C56 0
 C57 0
 C58 0
 C61 -----
 C68 -----
 C69 0
 C70 0
 C71 0
 C72 0
 C73 0
 C74 0
 C75 0
 C77 -----
 C80 0
 C82 =====
 C85 0
 C89 0
 C90 @SUM(C85:C89)
 C91 0.075*D44
 C93 -----
 C94 0
 C95 0
 C97 0
 C99 -----
 C102 0
 C103 0
 C104 0
 C105 0
 C106 0
 C107 0
 C109 -----
 C110 0
 C111 0
 C112 0
 C114 -----
 C116 -----
 C118 -----
 C119 0
 C120 0
 C121 @SUM(C119:C119)
 C122 C120*0.02
 C124 -----
 C125 -----
 C126 -----
 C128 =====
 C131 _____
 C132 _____
 C133 _____
 C134 _____
 C135 _____
 C136 _____
 C138 -----
 C139 _____
 C140 _____
 C141 _____
 C142 _____
 C143 _____
 C144 _____
 C145 0
 C146 0
 C149 =====
 C151 COLUMN A
 C152 Non-Entrnmt
 C153 0
 C154 0
 C155 0
 C156 0
 C157 ///////////////
 C158 @SUM(C153:C157)
 C159 -----
 C160 0
 C161 C158-C160
 C162 ///////////////
 C163 -----
 C164 -----
 C165 C158-C160
 C166 0
 C167 @MIN(C166:C165)
 C168 ///////////////
 C169 -----
 C170 C165-C167
 C171 ///////////////
 C172 C170
 C173 ///////////////
 C174 -----
 C175 VEHICLE I
 C176 ___/___/___
 C177 0
 C178 0
 C179 (C178/C177)*100
 C180 0
 C181 0
 C182 0
 C183
 C184
 C185
 C186 0
 C187 C178-C186
 C188 C186*0.24
 C189 C187*0.11
 C190 @SUM(C188:C189)
 C191 Vehicle 1
 C192 0
 C193 0
 C194 0
 C195 @SUM(C194:C192)
 C196 (C195*C179)/100
 C197 0
 C198 @SUM(C196:C197)
 C199
 C200 (e) Sec 179
 C201 0
 C202 0
 C203 =====

Antic Classifieds

SOFTWARE, ETC.

COLOR PRINT GRAPHICS LIBRARY DISKS for The Printshop create unique two color designs. Requires color ribbons. Two disk set \$11.95, plus \$2 S & H for 8 bit. SASE for information. WJA SOFTWARE, 26 HUNTERS Lane, Hendersonville, NC 28739



BATTERY BACKED UP RAMDISK. Never lose your memory. Boot from Ramdisk! No installation. Ramdisk cartridge plugs into Atari 400/800 or XL/XE. 32K \$99.95, 64K \$129.95, 192K \$249.95 Certified check, Money order, VISA accepted. CANOE COMPUTER SERVICES, 11006-155 St. Edmonton, AB, T5P-2N3 Phone (403) 437-4619

SUBWAY VIGILANTE AN ALL NEW 8-bit Graphic Adventure. \$35 Send to Damon Johnson 63 Morningside Ave #25, New York, New York 10027(4/89)



Save money on ATARI 800/XL/XE public domain and Shareware software! Over 250 Theme Disks. Every disk guaranteed! Fast dependable world-wide service. Write for your Free descriptive Catalog. BELLCOM, Box 1043-A, Peterborough, Ontario, Canada K9J 7A5 (4/89)

STOP! LOOK! \$4,000/month with computers. Homebased. Proven. No experience/capital. Guaranteed. Free details. MacKenzie, Box 91181—JCC, Pasadena CA 91109 (4/89)

Your Ad Could Appear Here

FOR A CATALOG AND DEMO DISK OF ONE OF THE LARGEST 8-BIT LIBRARIES AVAILABLE, PLEASE SEND \$3.00 TO: AAPDS 6-18TH EDGEMOORE HUTCHINSON, KS 67502 (4/89)

EARN MONEY-EXCELLENT EXTRA INCOME! Free details please send a Large Self-addressed Stamped Envelope to: Computerized Data Ltd Rt. 3, Box 472, Dept A, Excelsior Springs, Mo. 64024 (4/89)

SI gives you MORE for LESS! Our SUPERIOR ATARI P-D Theme Collections average 35 programs (7¢ each!)/ D-S 8-bit disk and 27 files (14¢ each!)/ ST disk. Shipping FREE. Send for MLX GAMES' GREATEST HITS (Most Popular SI title) for 8-bit/\$3.00 or ST/\$4.00—receive our newest Catalog FREE! Catalog alone (specify system)/ \$2.00. SOFTWARE INFINITY, 642 East Waring Avenue, State College, PA 16801 (4/89)

Public Domain Software—ST \$4/Disk, 800/XL/XE \$3/Disk. Largest ST Selection. The Atari ST Book \$16.95. Fast Service, Visa/Mastercard, FREE Catalog — Specify Computer. BRE Software, 352 W.Bedford, Suite 104-A, Fresno, CA 93711.(800) 622-7942. (209) 432-2159 in Calif.(4/89)

BEST OF THE 800/XL/XE PUBLIC DOMAIN Selected, corrected, grouped, and instructions. Free Catalog. Steve Peters, 12 Erie Street, Terryville, NY 11776(4/89)



Stop overpaying for P.D. 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 (4/89)

Discount Software/Hardware for ATARI 8-bit & ST. 30% below retail Atari 130XE \$145, Supra 20meg-ST \$579, ATARI XF551 disk drive \$175, Anchor 2400 baud modem \$159, Star NX-1000 color \$239. Send \$1 for 20 page catalog with over 500 titles. Specify computer type. MULTI VIDEO SERVICES, Box 246, E.Amherst, NY 14051 Phone 716 688-0469 after 6 pm (4/89)

SI's Fantastic Selection of packed ATARI 8-bit (D-S)/ST PD Theme Disks is Far SUPERIOR to all other collections we've seen—TRY US! Send for MLX GAMES'GREATEST HITS (our Most Popular title), plus SI's newest catalog, for 8-bit/\$3.00 or ST/\$4.50. Catalog alone (specify system)/\$2.00. SOFTWARE INFINITY, 642 East Waring Avenue, State College, PA 16801 (4/89)

MGL COMPUTER WHOLESALERS BUY-SELL-TRADE Used 8 Bit Computers, Software, Diskdrives, Modems, Printers and accessories. Huge Public Domain Library. Low Prices-30 day Warranty. Call 717-267-3205 or 267-2865, or 762-6967 For Prices and Complete List (4/89)

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 (7/89)

SynFile+ UTILITY PROGRAMS. Print file layout, create and save reports, undelete records, alter look-up tables, etc. \$19.95 plus \$2.00 P&H. Send large SASE for more info. SFP, 4 Forest Drive, Palmyra, VA 22963 (5/89)

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 (4/89)

Advertisers Index

	PAGE NO.
ALPHA SYSTEMS	31
AMERICAN TECHNAVISON	2
B & C COMPUTERVISION	IBC
COMPUTABILITY	24,25
COMPUTER MAIL ORDER	26,27
COMPUTER SOFTWARE SERVICES	32
MICHTRON	IFC
MICROTYME	49
PSYGNOSIS	BC
SAN JOSE COMPUTER	4

Advertising Deadlines

June 1989

Insertion Orders: February 28
 Artwork: March 7
 On Sale: Last week of April

July 1989

Insertion Orders: March 30
 Artwork: April 6
 On Sale: Last week of May

August 1989

Insertion Orders: May 1
 Artwork: May 8
 On Sale: Last week of June

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 **ADS389**

Antic
The **ATARI** Resource

BUY

SELL

TRADE

SWAP

Antic Classifieds

544 Second Street, San Francisco, CA 94017
Telephone (415) 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

Tech Tips

HERTZ GENERATOR

BY LARRY NOCELLA

BASIC's SOUND command gives you a range of five octaves. HERTZ.BAS uses 16-bit sound and the POKEY clock to increase this range to *nine octaves*.

Sounds and musical notes are made of sound waves. These waves have frequencies which can be measured in cycles per second, or Hertz. The pitch of a note is proportional to the frequency of its sound wave. Musicians are familiar with 440 Hertz, the frequency of the standard "Concert A." Middle C is 261.63 Hertz.

POKEY is a digital I/O chip that controls sound, among many other things. By adjusting POKEY's Audio Control register (AUDCTL) you can link together BASIC's four five-octave voices into two clearer nine-octave voices.

There is a clock in POKEY that continuously pulses to synchronize all computer functions. This clock pulses at 1,790,000 cycles per second, or 1.79 MHz (megaHertz). To generate the A at 440 Hertz, you tell your Atari to pulse every Nth clock pulse to get 440 pulses per second.

To find N, divide the number of clock pulses per second by the frequency of the note desired. For the A above, N equals 1,790,000 divided by 440, or 4068. Actually, N is approximately 4068.1818, but POKEY can't count a fraction of a pulse.

Since your Atari divides N by two before sending a sound pulse, your program must double N before using it (see line 470).

The program is simple to use. At the prompt, choose one or two voices, then type the desired frequency for each voice. Press [START] to RUN the program again and try more sounds, or press [OPTION] to end the program.

The highest frequency this program can generate is 1.79 MHz (or 1,790,000 Hertz), sending out one sound pulse for every clock pulse. Unfortunately, the human ear can only detect up to about 31,000 Hz.

The lowest sound the program generates has a frequency of 14 Hz. A lower number (13) would require a sound pulse every 68,000 clock pulses, but the 16-bit sound counter of the Atari can only go as high as 65,535 (the largest number you can represent in 16 bits).

On these super low notes, you can hear the difference between the pulses, like when you stick your tongue between your lips and blow. PLBPLBPLBT!

See Jerry White's *16-Bit Soundpower* (Antic, September 1985) for more ways to use 16-bit sound from BASIC.



Don't type the
TYPO II Codes!

```

KV 100 REM HERTZ GENERATOR
VM 130 REM INIT
IM 140 GRAPHICS 0:LO=14
ON 150 AUDCTL=53768:CLOCK=1790000
II 160 ADF1=53760:AUDC1=53761
RE 170 ADF3=53764:AUDC3=53765
ZY 180 REM INIT POKEY FOR SOUND
QN 190 FOR I=0 TO 3:SOUND I,0,0,0:NEXT I
HN 200 REM COMBINE, CLOCK 1.79MHZ
XX 210 POKE AUDCTL,120:? CHR$(125);
YI 220 REM EVEN VOICES = VOLUME 8
NA 230 POKE AUDC1,160:POKE AUDC1+2,168
QK 240 POKE AUDC3,160:POKE AUDC3+2,168
JX 250 REM START PROGRAM
NB 260 TRAP 260
ET 270 ? :? "One or two voices (1-2)? ";
JQ 280 INPUT #16,VOC:IF <VOC>=1 AND <VOC
<>2 THEN 270
RB 290 TRAP 44444
KJ 300 REM MAIN LOOP
NA 310 IF VOC=1 THEN X=1:GOSUB 450:VH1=HI
F:VL2=LOF:V1=HERTZ/2:VH3=0:VL4=0:GOTO
340
DQ 320 IF VOC=2 THEN X=1:GOSUB 450:VH1=HI
F:VL2=LOF:X=2:V1=HERTZ/2:GOSUB 450:VH3
=HIF:VL4=LOF:V2=HERTZ/2
IN 330 REM MAKE SOUND
QT 340 POKE ADF1,VH1:POKE ADF1+2,VL2
YF 350 POKE ADF3,VH3:POKE ADF3+2,VL4
PR 360 ? :? :? "Voice #1 generating ";V1;
" hertz."
GN 370 IF VOC=2 THEN ? :? "Voice #2 gener
ating ";V2;" hertz."
KT 380 REM END PROGRAM
KP 390 ? :? "Press [START] to RUN again"
UC 400 ? :? "Press [OPTION] to end...";
JU 410 IF PEEK<53279>=6 THEN 190
IK 420 IF PEEK<53279>=3 THEN ? :? "END
":END
NE 430 GOTO 410
HW 440 REM INPUT HERTZ
CN 450 TRAP 450:? :? "Hertz to generat
e ( ";LO;" - ";CLOCK;" ) ";? "for voic
e #";X;" ->";
ZW 460 INPUT #16,HERTZ:TRAP 44444:IF <HER
TZ<LO> OR <HERTZ>>CLOCK THEN 450
SA 470 HERTZ=HERTZ*2
JP 480 GOSUB 500:RETURN
BC 490 REM CALCULATE Nth CYCLE
UJ 500 N=INT<CLOCK/HERTZ>
GR 510 LOF=INT<N/256>:HIF=N-<256*LOF>
ZF 520 RETURN

```

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.

B&C ComputerVisions

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



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

800/LX/XE SOFTWARE ALL TITLES ON DISK

ENTERTAINMENT		COMPUTE YOUR ROOTS ... 35.95
ALIANTS	26.95	COMPUTER GOURMET
ALT. REALITY CITY... 26.95		FAMILY FINANCE
ALT. REALITY DUNGEON... 26.95		HOME ACCOUNTANT
BEYOND CASTLE WOLF... 14.95		HOME FILING MANAGER... 6.95
BISMARCK	26.95	HOMEPAK
BRUCE LEE	17.95	LETTER WIZARD
CASTLE WOLFENSTEIN... 14.95		NEWSROOM (1050 - 64K) .. 44.95
DALLAS QUEST	7.95	NEWS STATION
D-BUG	7.95	NEWS STA. COMPANION... 26.95
GAUNTLET (64K)	31.50	PRINT POWER (1050) ... 13.50
DEEPER DUNGEONS... 22.50		PROOF READER
GUNSLINGER	26.95	PUBLISHING PRO
HARD HAT MAC	7.95	SYNCALC
KARATEKA	13.50	SYSCALC (130XE)
KORONIS RIFT	13.50	SYNTREND (130XE)
LAST V-8	8.95	THE LOTTO PROGRAM
MONTEZUMA'S REVENGE... 14.95		TIMEWISE
MOUSETRAP	17.95	TURBOWORD/80 COLUMN
NINJA	8.95	REQUIRES XEP80... 44.95
O'RILEY'S MINE	9.95	VIDEO TITLESHP (64K) .. 26.95
RESCUE ON FRACTALAS... 13.50		GRAPHICS COMPANION... 17.95
SPEEDKING	8.95	VISICALC
SPIDERMAN	7.95	
SPITFIRE 40	31.50	ART
STOCKMARKET	22.50	ANIMATION STATION ... 89.95
STRIP POKER	26.95	BLAZING PADDLES
THE HULK	7.95	
TOMAHAWK (64K)	26.95	EDUCATION
TOP GUNNER	17.95	BUZZWORD
ZAXXON	13.50	HEY DIDDLE (AGE 3-10) .. 9.95
		MASTER TYPE
		PLANATARIUM
		TOUCH TYPING
		CBS (AGE 3-6):
		ASTROGROVER
		BIG BIRD SPEC DELIVE .. 8.95
		ERNIE'S MAGIC SHAPE .. 8.95
		DESIGNWARE:
		MATHMAZE (6-11) ... 35.95
		MISSION ALGEBRA (13+) 35.95
		SPELLICOPTER (6-11) .. 35.95
		TINK TONK (AGE 4-6):
		ABC'S
		COUNT AND ADD
		SMART THINKER
		SPELLING
		SUBTRACTION
		THINKING SKILLS
		ALL 6 TINK TONKS... 39.95
		WEEKLY READER (PRE-SCHOOL):
		STICKY BEAR SHAPES .. 26.95
		STICKY BEAR NUMBERS .. 26.95
		STICKY BEAR ABC'S .. 26.96
		STICKY BEAR OPPOSITE 26.95
SPORTS		
FIGHT NIGHT	17.95	
LEADERBOARD	13.50	
MICROLEAGUE BASEBALL... 35.95		
MUSIC		
MUSIC CONSTRUCTION SET 13.50		
VIRTUOSO	29.95	
PROGRAMMING		
BASIC XL	53.95	
BASIC XL TOOLKIT	26.95	
BASIC XE	71.95	
KYAN PASCAL	62.95	
LIGHTSPEED C	35.95	
LOGO	19.95	
MAC/65	71.95	
MAC/65 TOOLKIT	26.95	
PILOT	19.95	
PRODUCTIVITY		
ATARIWRITER+	39.95	
BANK STREET WRITER... 14.95		
CELEBRITY COOKBOOK ... 26.95		

800/LX/XE SOFTWARE ALL TITLES ON CARTRIDGE

ENTERTAINMENT		SKY WRITER	14.95
ALIEN AMBUSH	9.95	SLIME (400/800).....	9.95
ACE OF ACES .(XL/XE) .	24.95	SPACE INVADERS	14.95
ARCHON	19.95	STAR RAIDERS	5.00
ASTEROIDS	15.95	STAR RAIDERS II	19.95
ATARI TENNIS	9.95	SUPER BREAKOUT	9.95
BALL BLAZER	19.95	TRACK & FIELD	24.95
BARNYARD BLASTER		WIZARD OF WOR.....	5.00
(REQ. LIGHT GUN)...	24.95		
BATTLEZONE	19.95		
BLUE MAX	19.95	SPORTS	
CAVERNS OF MARS	14.95	FIGHT NIGHT	19.95
CENTPEDE	14.95	FOOTBALL	14.95
CHICKEN	9.95	HARDBALL	19.95
CHOPLIFTER	14.95	ONE ON ONE (XL/XE) ... 19.95	
CLAIM JUMPER (400/800) 9.95		TRACK & FIELD	24.95
CLOUDBURST	9.95		
DAVIDS MIDNIGHT MAGIC 19.95		PRODUCTIVITY	
DEFENDER	14.95	ATARIWRITER	19.95
DESERT FALCON	19.95	MICROFILER	22.50
DIG DUG	19.95		
DONKEY KONG	5.00	EDUCATION	
DONKEY KNOG JR. 19.95		MATH ENCOUNTERS	9.95
EASTERN FRONT (1941) 19.95		FISHER PRICE (PRE SCHOOL):	
E.T. PHONE HOME	9.95	DANCE FANTASY	8.95
FINAL LEGACY	19.95	LINKING LOGIC	8.95
FOOD FIGHT (XL/XE) ... 19.95		LOGIC LEVELS	8.95
FROGGER	14.95	MEMORY MANOR	8.95
GALAXIAN	19.95		
GATO	24.95	SPINNAKER (AGE 3-10):	
GORF (400/800)	5.00	ALF IN COLOR CAVES .	9.95
GYRUSS	14.95	ALPHABET ZOO	9.95
JOURNEY TO PLANETS .. 9.95		DELTA DRAWING	9.95
JOUST	19.95	KIDS ON KEYS	9.95
JUNGLE HUNT	19.95	KINDERCOMP	9.95
KABOOM!	14.95	(AGE 7 - ADULT):	
LODE RUNNER	24.95	ADVENTURE CREATOR ... 9.95	
MARIO BROS. 19.95		FRACTION FEVER	9.95
MILLIPEDE	19.95		
MISSILE COMMAND	5.00		
MOON PATROL	19.95		
MR. COOL	9.95		
MS. PAC MAN	19.95		
NECROMANCER	19.95		
PAC MAN	5.00		
PENGO	19.95		
POLE POSITION	19.95		
POPEYE	14.95		
Q-BERT	14.95		
QIX	14.95		
RESCUE ON FRACTALAS . 19.95			
RETURN OF THE JEDI .. 14.95			
ROBOTRON:2084	19.95		



ATARI XE GAME MACHINE \$139.95

Includes Missile Command, Flight Simulator II, Bug Hunt, light gun, Joystick, BASIC programming language, and 64K of memory with detachable keyboard. Add a diskdrive and printer for complete home computer system!!



SUPER SPECIALS

RECONDITIONED ATARI MERCHANDISE - 30 DAY WARRANTY



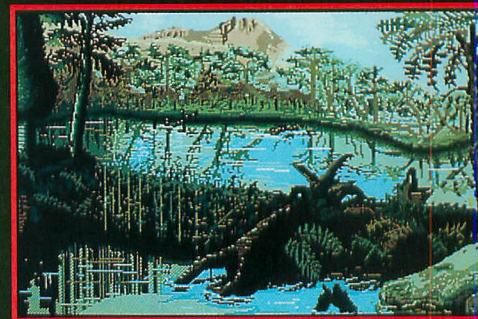
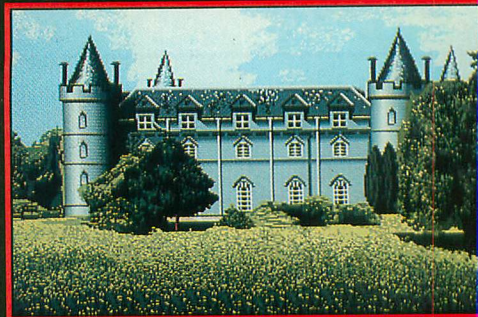
BOOKS ONLY DE RE ATARI 10.00 ATARIWRITER 10.00 DOS 2,5 12.95 BASIC REF. 5.00 LOGO 10.00 BOOKKEEPER 10.00	ATARI SPACE AGE JOYSTICK \$5.00 GREAT GIFTS!	800 (48K) COMPUTER \$79.95 INCLUDES BASIC	ATARI 820 PRINTER 40 COLUMNS DIRECT CONNECT NO INTERFACE REQUIRED \$39.95	1010 PROGRAM RECORDER \$29.95 410 PROGRAM RECORDER - NO WARRANTY \$9.95	1030 MODEM WITH EXPRESS! \$24.95 GET ONLINE TODAY!
ATARI TRACKBALL \$9.95 SPICE UP THE ACTION IN YOUR ARCADE GAMES!!	400 (16K) COMPUTER \$29.95 48K UPGRADE KIT \$25.00	1020 COLOR PRINTER/PLOTTER \$29.95 40 COLUMNS WIDE INCLUDES PAPER AND COLOR PEN SET	ATARI NUMERIC KEYPAD \$7.95 INCLUDES HANDLER DISK -	ATARI BOOKKEEPER \$14.95 - NO BOX (19.95 WITH KEYPAD) \$24.95 - IN BOX (29.95 WITH KEYPAD)	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

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

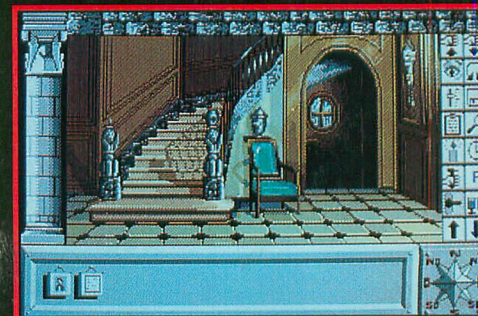
This is the first of a new generation of adventure games from Psygnosis. An adventure game in the classic sense.

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

