

**ATARI
ST
Special
Section**

U.S.A. \$3.50
CANADA \$4.50

Antic[®]

The **ATARI[®]** Resource

NOVEMBER 1985

VOLUME 4, NUMBER 7

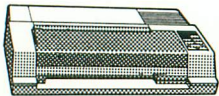
NEW COMMUNICATIONS

**Ian Chadwick Maps 130XE
Shortwave Radio Atari
Universal Graphics Filemaker
TYPO II With Everything
ST Hookup For IBM Disks**



INSIDE: 8 Type-In Programs

Lyco Computer Marketing & Consultants



SG-10 \$212.00

AXIOM

GP550AT (Atari).....	222
GP550CD (C-64).....	222
GP700AT (Atari).....	439
GP700AP (Apple).....	439
ELITESCD (C-64).....	229

C. ITOH

8510Ap+.....	299
1550P.....	437
1550BP.....	437
1550EP.....	437
1550BCD.....	469
F10-40.....	859
F10-55.....	1039
7500AP.....	204
7500AR.....	244

TOSHIBA

P1340.....	557
P351.....	1286

SAVE ON THESE IN STOCK PRINTERS

CARDCO
32K BUFFER..(C-64).....59

CORONA
LP300 Laser Printer.....2686
200361 Toner Cartridge.....89

EPSON
FX85 (New).....333
LX80.....212
FX185 (New).....464
LX90 (New).....226
SQ2000 (New).....1555
JX80.....467
Homewriter 10.....193
CR-20-Atari.....153
CR-220-C-64.....153
DX-10 (New).....207
DX-20.....297
HS-80 (New).....288
LQ1500P.....975
LQ1500S.....1039
RX-100.....356
FX-100+.....CALL

CITIZEN
MSP-10.....287
MSP-15.....447
MSP-20.....447
MSP-25.....563
Sheetfr (10/20).....189
Sheetfr (15/25).....199

OKIDATA
Okimate 10.....CALL
Okimate 20.....CALL
182.....214
192.....348
193.....563
92P.....349
93P.....565
84P.....645
92 Imagewriter.....349
*IBM versions also

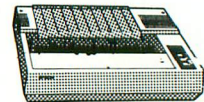
BROTHER
HR-15XL-P.....359
HR-15XL-S.....359
HR-35P.....839
HR-35S.....839
2024L-P.....949
M1009-P.....189

JUKI
Juki 6100.....347
RS232 Serial Board.....55
6100 Tractor.....119
6100 Sheet Feeder.....209
Juki 6300.....757

LEGEND
880.....196
1080.....222
1380.....262
1385.....296

DIGITAL DEVICES
16K BUFFER.....75
32K BUFFER.....89
64K BUFFER.....125

DIABLO
D25.....549
630API.....1599
630ECS.....1759
D801F.....2395
P32CQ1.....699
P38.....1749
C150.....999



1091 \$233.00

PANASONIC
1091.....233
1090.....183
1092.....373
1093.....426
3151 Letter.....426
4K Buffer.....65

SILVER REED
EXP400.....249
EXP500.....295
EXP550.....399
EXP770.....749

STAR MICRONICS
SG-10.....212
SG-15.....373
SD-10.....336
SD-15.....442
SR-10.....483
SR-15.....583
Powertype.....303
SB-10.....CALL
SG-10C-64 (NEW).....CALL

MONITORS

<p>TAXAN 115 12" Green Composite...CALL 116 12" Amber Composite...CALL 121 12" Green TTL.....135 122 12" Amber TTL.....145 220 14" Color Composite.....259 410 12" RGB Hi Res IBM.....329 420 12" RGB Super Hi Res IBM.....409 440 12" RGB Ultra Hi Res.....555 Tilt Stand.....35</p>	<p>SAKATA SG1000 12" Green.....99 SA1000 12" Amber.....109 SG1500 12" Green TTL.....119 SA1500 12" Amber TTL.....129 SC100 13" Color Comp.....209 SC200 13" RGB.....389 STSI Tilt Stand.....29</p>	<p>NEC JB-1260 Green.....95 JB-1201 Green.....135 JC 1215 Color.....235 JC 1216 RGB.....375 JC1460 Color.....265 JB-1205 Amber.....139</p>	<p>AMDEK 300 Green.....118 300 Amber.....128 310 Amber IBM.....155 Color 300 Audio.....234 Color 500 Composite.....369 Color 600.....397 Color 700.....495 Color 710.....569</p>	<p>ZENITH ZVM 122A Amber.....75 ZVM 123G Green.....75 ZVM 124 Amber IBM.....129 ZVM 131 Color.....275 ZVM 133 RGB.....389 ZVM 135 Composite.....449 ZVM 136 Hi Res Color.....589</p>
	<p>PANASONIC DT 1300 RG1 composite.....247</p>	<p>PRINCETON GRAPHICS MAX-12 Amber.....185 HX-12 RGB.....465 SR-12 RGB.....595</p>	<p>X-TRON Comcolor I Composite Green.....177</p>	<p>TEKNIKA MJ-10 Composite.....179 MJ-22 RGB.....255</p>

MODEMS

HAYES
SMARTMODEM 300.....133
SMARTMODEM 1200.....377
SMARTMODEM 1200B.....347
SMARTMODEM 2400.....598
MICROMODEM IIE.....135

ANCHOR
Volksmodem.....55
Volksmodem 12.....186
Mark 12.....229

MICROBITS
MPP100E (ATARI).....75

DRIVES

INDUS
Atari
199

INTERFACING

AXIOM
AT846 (Atari).....65

ATARI
850 Interface.....109

DIGITAL DEVICES
ApeFace XLP (Atari).....49
U-Print A (Atari).....54
U-CALL RS232 (Atari).....37

CARDCO
C/?AT (Atari).....49

DISKETTES

SKC (Box 10)
(Qty) 10 100 500
5 1/4" SSDD.....13.75 12.99 11.99
5 1/4" DSDD.....15.75 14.99 14.25

ELEPHANT (Box 10)
5 1/4" SSDD.....13.50 12.99 11.99
5 1/4" SSDD.....14.99 13.99 12.99
5 1/4" DSDD.....16.99 15.99 14.99
Premium SSDD.....15.95 14.95 13.95
Premium DSDD.....17.95 16.95 15.95

MAXELL (Box 10)
5 1/4" MD-1.....16.75 15.75 14.75
5 1/4" MD-2.....22.99 21.99 20.99

ATARI SOFTWARE

<p>ATARI 800XL.....CALL 130XE (NEW).....CALL 520ST (NEW).....CALL 1050 Drive.....165 1010 Recorder.....42 1020 Printer.....55 1025 Printer.....159 1027 Printer.....179 850 Interface.....109</p>	<p>ATARI SOFTWARE (NEW) Codewriter.....35.75 Filewriter.....20.75 Reportwriter.....20.75 Menuwriter.....20.75 Home Integrator.....19.75 Small Bus Inventory.....11.75 Salesman Expenses.....11.75 Accs Rec/Pay.....11.75 Retail Invoice.....11.75 Final Legacy.....15.75 Adventure Writer.....18.75 Star Voyager.....11.75</p>	<p>MICROPROSE (Atari) Kennedy Approach.....21.75 Crusade in Europe.....24.75 Decision in Desert.....24.75 Solo Flight.....20.75 Nato Commander.....20.75 Spitfire Ace.....18.75 F-15 Strike Eagle.....20.75 Hellcat Ace.....18.75</p> <p>SUB LOGIC (Atari) Flight Simulator II.....32.75 Night Mission Pinball.....20.75</p>	<p>BRODERBUND (Atari) The Print Shop.....28.95 Graphics Library.....18.95 Graphics Library II.....19.50 Bank St. Writer.....42.75 Whistler's Brother.....18.95 Spelunker.....18.95 Stealth.....24.95 Serpent's Star.....24.95 Mask of the Sun.....24.95</p>
--	---	--	--

TOLL FREE 1-800-233-8760



TO ORDER



CALL TOLL FREE
800-233-8760
Customer Service 1-717-327-1825

or send order to
Lyco Computer
P.O. Box 5088
Jersey Shore, PA
17740

RISK FREE POLICY

In-stock items shipped within 24 hours of order. No deposit on C.O.D. orders. Free shipping on prepaid cash orders within the continental U.S. Volume discounts available. PA residents add sales tax. APO, FPO, and international orders add \$5.00 plus 3% for priority mail service. Advertised prices show 4% discount for cash, add 4% for MasterCard or Visa. Personal checks require 4 weeks' clearance before shipping. Ask about UPS Blue and Red label shipping. All merchandise carried under manufacturer's warranty. Free catalog with order. All items subject to change without notice.

BUILD 'EM!

Spin, turn, respond to sound!

ROBOTS!



Robots! Smart toys! Discover the new age of Robotics. A gift for the educator, executive or intelligent teen on your holiday list. Learn the latest in this new science. Each kit is designed to teach you something different about robotics. Beautifully detailed schematics and easy-to-follow instructions in simple-to-understand language—NO TECHNICAL JARGON! A perfect project for your family.



MOVIT 916, "Peppy" Peppy is a tiny but vivacious robot, equipped with a two-way sensor which responds to both obstacles and sound. When the sensor located in front comes into contact with a wall or other obstacle or hears a loud noise, such as a hand clap, it will automatically turn to the left. (Sensor/control PC board ready assembled.) \$23.50

MOVIT 918, Memocon Crawler This robot runs as per the program you input by means of the key board. The key board has 5 different switches, forward, to the right, to the left, pause, sounds a buzzer and lights up (beams). This robot employs a sequence function static RAM 256X4 bit memory. \$69.95 (Apple II interface is extra, part #MC-AP, \$37.50)

MOVIT 912, Avider Avider is a robot with an excellent brain that moves continuously avoiding any obstacles in its path. \$39.95

MOVIT 935, Circular Super-Mechatronics remote controlled robot with a hand-size 1-channel control box. This model's two large wheels roll the robot smoothly and silently in any direction. All movements are perfectly controlled by the remote control box. \$64.95



Send coupon to ADD-ON Systems, 524 Second Street, San Francisco, Ca. 94107

Name _____
(please print)

Address _____

City _____ State _____ Zip _____

Check or money order enclosed payable to ADD-ON Systems.

Bill my credit card. VISA MasterCard

Credit Card No. _____ Expiration Date _____

Signature _____

Please send me the items checked below.

QUANTITY	ITEM	PRICE EACH	TOTAL EACH
	MOVIT 912		
	MOVIT 916		
	MOVIT 918		
	#MC-AP		
	MOVIT 935		
Subtotal of all items			
California residents add 6.5% sales tax			
Shipping & handling charge			\$5.00
TOTAL			

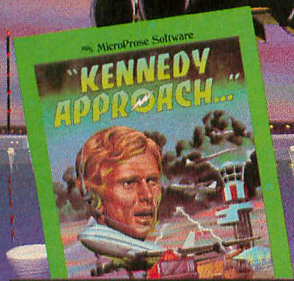
Credit Card Orders Only
Call TOLL FREE
(800) 227-1617 ext. 133
(800) 772-3545 ext. 133 (inside CA)



"KENNEDY APPROACH..."

NEW SIMULATION
SPEAKING SIMULATION
See and Hear All the Action!

"...This is UA 236... Emergency Fuel... one zero minutes!!!..."



Commodore-64 Screen Picture

Voice Communications coming in from all directions!! 20 Aircraft in the pattern, and now you have an EMERGENCY!! As "Kennedy Approach", YOU are in charge!! It's your job to get all these aircraft and passengers on the ground or on the way safely!! You'll really be glad when this shift is over!!

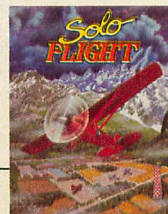
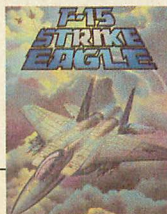
"Kennedy Approach" is the first "Speaking Simulation" that allows you not only to control the exciting action in the skies around some of our busiest airports but also to hear and communicate with the simulation aircraft using computer generated speech. Fast action, great aircraft control simulation, and outstanding graphics and sound make "Kennedy Approach" a must addition to your simulation software library!! SEE YOUR LOCAL RETAILER for "Kennedy Approach". Available for Commodore-64 and Atari computers for suggested retail of only \$34.95. For more information on all MicroProse products call or write.

CESSNA and MICRO PROSE
present the
Great American
LEARN TO FLY A REAL AIRPLANE
Contest

**\$30 OFF COUPON AND
FREE FLYING LESSONS!!!**

You get a coupon worth up to \$30 towards a Cessna "Discovery Flight" in every flying simulation product box — Plus you can win a complete flight training course from Cessna. Details in every box, or see your local dealer.

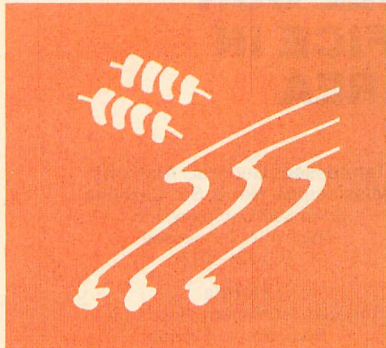
Experience the reality of these other great simulations from MicroProse:



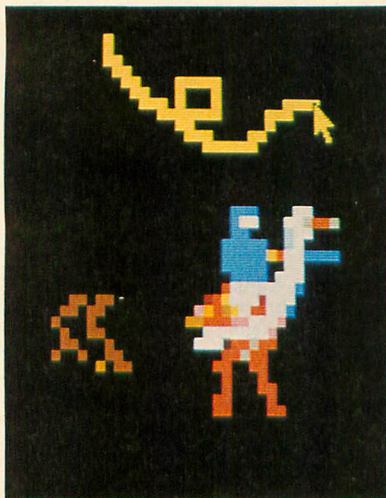
MICRO PROSE
SIMULATION • SOFTWARE

**The Action is Simulated —
the Excitement is REAL!!!**

120 Lakefront Drive Hunt Valley, MD. 21030
301-667-1151



XE's extra 64K 28



Prepare to joust 20



Dueling vampires 49

FEATURES

TYPO II DOUBLE FEATURE by Jack Powell and Andy Barton	26
Everything you wanted in a program proofreader	TYPE-IN SOFTWARE
130XE MEMORY MANAGEMENT by Ian Chadwick	28
How to use the XE's extra 64K	TYPE-IN SOFTWARE
RAPID GRAPHICS CONVERTER by Charles Jackson	33
Now . . . universal picture file compatibility	TYPE-IN SOFTWARE
RADIO ATARI CALLING by Gigi Bisson	36
Ham satellites, slow scan video, repeater stations, and more . . .	
RADIO MODEMS AND SOFTWARE by Bill Marquardt	38
RTTY on your Atari	
MORSE CODE RECEIVER by Charles Jackson and Steve Stuntz	41
Atari dots and dashes, 70 words per minute	TYPE-IN SOFTWARE
KYAN PASCAL REVIEW by Ray Cole	44
True Pascal for Atari, at last	

ST SECTION

ST USES IBM DISK FILES by David Small	12
Connect a 5 1/4-inch disk drive	
ST SOUND by Patrick Bass	16
Hearing the AY-3-8910 chip	TYPE-IN SOFTWARE
C.O.L.R. OBJECT EDITOR by Gigi Bisson	20
First ST software in Antic Arcade Catalog	
READER'S FIRST ST PROGRAM by Fred Hatfield	22
Logo spirals, PEEK command	TYPE-IN SOFTWARE

SOFTWARE LIBRARY

TYPE-IN LISTINGS SECTION	51
---------------------------------	----

DEPARTMENTS

GAME OF THE MONTH	
VAMPIRE RATS by Tom Zarbock	49
A Halloween special	TYPE-IN SOFTWARE

ASSEMBLY LANGUAGE	
FAST MOVES by Patrick Dell'Era	70
Speedy cursor and keyboard repeats	TYPE-IN SOFTWARE

I/O BOARD	8	ADVERTISER'S LIST	79
ANTIC ONLINE	10	SHOPPER'S GUIDE	80
ANTIC ARCADE CATALOG	AC1	NEW PRODUCTS	81
PRODUCT REVIEWS	74		

Antic

Publisher
James Capparell
Editorial

Nat Friedland, Editor; Jack Powell, Technical Editor; Charles Jackson, Program Editor; Patrick Bass, ST Program Editor; Gigi Bisson, Assistant Editor; Rebecca Hale, Editorial Coordinator; Ron Luks, Online Editor.

Contributing Editors

Carl Evans, Ken Harms, Jerry White, Suzi Subeck, Anita Malnig.

Art

Marni Tapscott, Art Director; Diane Lindley, Production Supervisor; Linda Tapscott, Ad Production Coordinator; Julianne Ososke, Production Assistant.

Cover Illustration

Bud Thon

Circulation

Les Torok, Manager; Hun-sik Kim, Shipping; Eve Gowdey, Dealer Sales; Brandt/Klingel, Circulation Consultants.

Administration

Clay Selland, Controller; Lorene Kaatz, Credit Manager; Andrew Pope, Retail Service; Brenda Oliver, Accountants Receivable; Griselda Frias, Accounts Payable; Nelly Rodriguez, Data Processing; Fidez Bituin, Clerk Typist.

Marketing

Gary Yost, Director; Lisa Wehrer, Mgr. Product Distribution; Brad Kershaw, Product Specialist.

Advertising Sales

Steve Randall, Harvey Bernstein, Leslie Bouffard, Garland & Associates.

Maria E. Chavez, Receptionist

General Offices

& Catalog Customer Service
(415) 957-0886

Subscription Customer Service
(614) 383-3141

Antic, P.O. Box 1919, Marion, OH 43306

Advertising Sales (415) 661-3400

Garland & Associates (617) 749-5852

Credit Card Subscriptions & Catalog Orders

outside California (800) 227-1617 ext. 133

inside California (800) 772-3545 ext. 133

November 1985, Volume 4, Number 7

Antic—The Atari Resource is published twelve times per year by Antic Publishing. Editorial offices are located at 524 Second Street, San Francisco, CA 94107. ISSN 0745-2527. Second Class Postage paid at San Francisco, California and additional mailing offices. **POSTMASTER:** Send address change to **Antic**, P.O. Box 1919, Marion, OH 43306.

Editorial submissions should include program listing on disk or cassette, and text file on media and paper if text was prepared with a word processor. Media will be returned if self-addressed stamped mailer is supplied. **Antic** assumes no responsibility for unsolicited editorial material.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher.

Antic is an independent periodical not affiliated in any way with Atari Corp. ATARI is a trademark of Atari Corp. All references to Atari products are trademarked and should be so noted.

Antic is a registered trademark of Antic Publishing, Inc.

Copyright ©1985 by Antic Publishing.
All Rights Reserved. Printed in USA.

FOR THE ATARI®

CENTER NEAREST YOU PLEASE CALL OUR SALES OFFICE IN YOUR AREA

New England

Bellavance, Fassler, Iarrobino, Inc.
Needham, Maine
617-449-3910

Upstate New York

Seeber Sales Corp.
Latham, New York
518-785-4523

Metro New York, North New Jersey

The Spieler-Weiss Group, Ltd.
Spring Valley, New York
914-352-2502

**South New Jersey,
East Pennsylvania, Delaware**

R. K. Marketing
Havertown, Pennsylvania
215-446-6400

Maryland, Washington, Virginia

Alexander & Samet
Rockville, Maryland
301-251-9300

**South Nevada, Arizona,
New Mexico, El Paso**

Mountain Micro Markets
Scottsdale, Arizona
602-998-4357

Washington, Oregon

Barnsley-Weis Associates
Yakima, Washington
509-248-7250

No. California, No. Nevada

New-West Companies
Mountain View, California
415-940-6033

Southern California

Tri West Marketing, Inc.
Culver City, California
213-390-8591

**Tennessee, Georgia, Alabama,
Mississippi, No. & So. Carolina**

John Lee Company, Inc.
Nashville, Tennessee
615-321-5012

Florida

Intratec Technology Rep.'s Inc.
Boca Raton, Florida
305-393-1925

**W. Pennsylvania, W. Virginia,
Ohio, Kentucky**

Incom Marketing, Inc.
Columbus, Ohio
614-451-5146

**Minnesota, North Wisconsin,
North Dakota, South Dakota**

Continental Merchandisers, Inc.
St. Paul, Minnesota
612-645-6441

**South Wisconsin, North Illinois,
Michigan, Indiana**

Hawthorn Marketing, Inc.
Buffalo Grove, Illinois
312-541-8846

**Missouri, Kansas, S. Illinois,
Nebraska, Iowa**

Sound Marketing Associates
St. Louis, Missouri
314-644-2400

**Texas, Oklahoma, Arkansas,
Louisiana, Mississippi**

Miller & Associates
Richardson, Texas
214-437-5733

**Utah, Idaho, Colorado
Wyoming, Montana, Alaska**

Schreyer Associates, Inc.
Salt Lake City, Utah
801-483-1331

Hawaii

SCS Co., Inc.
Honolulu, Hawaii
808-845-9937

ATARI®

Power Without the Price



AMERICA

WE BUILT IT FOR YOU

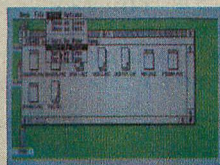
THE ATARI 520ST

"We promised.
We delivered.
With pride,
determination,
and good old
ATARI know how."
Sam Tramiel,
President,
ATARI CORP.

No other computer we know of has been awaited with such anticipation, has received so much national and trade press, and has been so unanimously acclaimed — as the remarkable 520ST.

And for good reason. Its development represents a bold, new standard in personal computing power.

The 520ST simply obsoletes all current personal systems — even those costing thousands of dollars more.



Beneath its full stroke 94-key keyboard is an operating environment so intelligent that it puts you in command almost at once. It's that easy.

Graphic symbols quickly identify available functions. Menus appear just by aiming

the mouse. Point to a specific operation, click the mouse and instantly you are able to develop full color charts, recall files from within folders, and so much more.

And when you combine 524,288 bytes of RAM with ATARI's custom circuits and the horsepower of a 68000 microprocessor, you own a powerful computer that delivers crisp, high resolution images with incredible speed.

With a monochrome monitor your 520ST displays 640 x 400 pixels of extremely high resolution clarity. Select a color monitor and you are able to create beautiful graphs and diagrams from a palette of 512 vivid colors.



Power to grow. An array of expansion ports allow you to easily customize your 520ST. There are standard serial and parallel interface ports for connecting printers and telecommunications equipment,

MIDI connectors to interface with music synthesizers and keyboards, and 3.5 inch floppy disk, cartridge and joystick ports. There is also a hard disk port with the lightning communications speed of 1.33

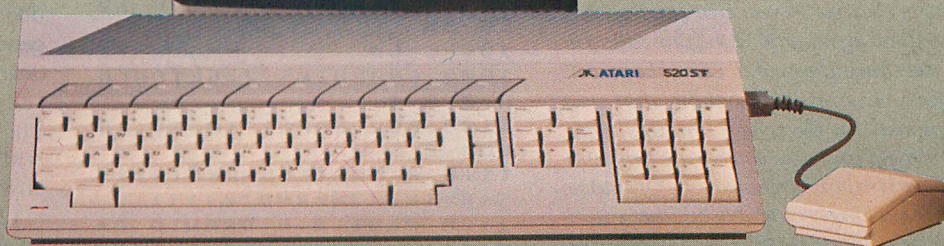
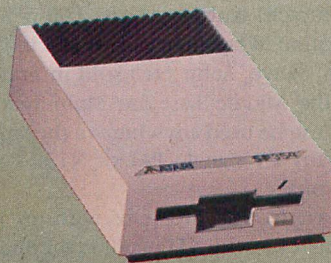
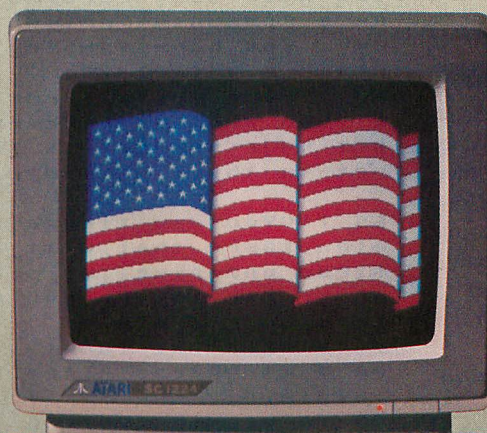


Megabytes per second. ATARI 520ST systems are available now.

When it comes to state-of-the-art technology ...don't settle for less. And when it comes to price ...don't pay a penny more.

For the dealer nearest you call 408/745-2367.

Or write to:
ATARI Corp.
Customer Service
1196 Borregas Ave.
Sunnyvale, CA 94086



The New
ATARI®
Power Without the Price

\$799⁹⁵

*plus state and local taxes where applicable.

SYSTEM INCLUDES: 520ST Personal Computer, Monochrome Monitor, Mouse Controller, 3.5 inch Disk Drive, TOS™ - The Operating System Disk, ATARI Logo™ Language Disk
With full color monitor: \$999.95*

i/o board

DISKIO 2.5?

Ever since you printed "DISKIO" (*Antic*, January 1985), I've been using it on all my disks and loving it. However, now I'm converting all my disks to DOS 2.5 and DISKIO is not compatible. I'd hate to give it up. Is there some way to remedy this situation?

Brian Patroliia
Marshfield, MA

You're in luck. We asked the author about this and Dr. Oppenheim told us that although he was now too busy to adapt the program himself (he's a nuclear medicine physician) he would send us the source code. We then contacted Patrick Dell'Era, author of the assembly language updates Fader II (Antic, May 1985) and Picture Show (Antic, April 1985), as well as this issue's Fast Moves. Patrick accepted the challenge and we expect to see his all-new DISKIO in next month's Antic.—ANTIC ED

GRAPHICS ADDITION

When I use Graphics Mode 11+32, there are a number of unwanted streaks and dots near the bottom of the screen. Other graphics modes have similar streaks. How can they be eliminated without losing whatever the +32 is intended to retain?

Nelson E. Sommer
Orchard Park, NY

Each time you make a regular GRAPHICS call from BASIC, your screen RAM is cleared so you can start with a fresh slate. If you add 32 to your call, you tell the computer not to clear the screen buffer. As a result, anything that was previously on the screen remains there. The streaks and dots you see are probably leftover Graphics 0 characters. Of course, they're no longer readable because you're now in a mode with higher resolution.

If you want to experiment with this, try filling a Graphics 2 screen with letters. Now type GRAPHICS 1+32, and you'll see your letters shrunken down to Graphics 1 size. (Above them will be the original Graphics 2 display list.) Now, type GRAPHICS 3+32 and the letters become

a screen of colored dots. Finally, type GRAPHICS 2+32 to get right back where you started.—ANTIC ED

SHORTEST GAME

We came across this I/O submission behind a desk, while cleaning out a work station in the editorial department. Dated March 10, 1984, it's from John Pershing and Kevin O'Neil, of Falls Church, Vermont. They've probably forgotten all about it by now. Well, we're going to publish Minefield anyway—because it's the shortest code we've ever seen for a game.—ANTIC ED

```
10 REM MINEFIELD
20 REM BY PERSHING AND O
'NEILL
30 REM ANTIC PUBLISHING

40 ? "K":? :? :? :POKE
752,1
50 ? "      In MINEFIELD
you have just escaped fr
om a Communist Prison c
amp. You havestumbled o
nto a minefield ";
60 ? "and must      escap
e! You may interscreen
but your object is to
get to the right edge."

65 ? "You may fire a st
olen laser that will de
stroy one pixel of a mi
ne. Be thrifty for you on
ly have 5 shots."
70 ? "Best of luck!"
80 ? :? "Press START to
begin."
90 IF PEEK(53279) <> 6 TH
EN 90
100 C=60
1000 GRAPHICS 7:SETCOLO
R 2,0,0
1100 FOR BOX=1 TO 65:CO
LOR 2
1110 A=INT(145*RND(0))+
5:B=INT(70*RND(0)+1)
1120 PLOT A,B:DRAWTO A+
5,B:DRAWTO A+5,B+5:DRAW
TO A,B+5:DRAWTO A,B
1130 NEXT BOX
1200 N=40:COLOR 1
1210 FOR X=0 TO 158:POK
E 752,1
1215 SOUND 0,N+INT(RND(
0)*5)+1,12,5
1220 PLOT X,N
```

```
1230 IF STICK(0)=14 THE
N N=N-1
1235 IF STICK(0)=13 THE
N N=N+1
1240 LOCATE X+1,N,POO:I
F POO=2 THEN 2000
1241 IF N=79 THEN N=1
1242 IF N=0 THEN N=78
1243 IF STRIG(0)=0 AND
0<=4 THEN 3000
1250 NEXT X
1260 ? "YOU FINISHED!!"
:C=C+20:R=R+1
1270 ? "PRESS FIRE BUTT
ON":0=0
1273 ? "YOU FINISHED ";
R;" ROUND(5)"
1275 SOUND 0,0,0,0
1280 IF STRIG(0)=1 THEN
1280
1290 GOTO 1000
2000 FOR I=29 TO 243:SO
UND 0,I,8,10:NEXT I
2010 ? "YOU COMPLETED "
;INT(X/158*100);"% OF M
INEFIELD"
2020 GOTO 1270
3000 G=X
3010 COLOR 1:PLOT G,N
3015 SOUND 1,G,10,5
3020 LOCATE G+1,N,KO:IF
KO=2 THEN 3050
3030 G=G+1:IF G=158 THE
N 3050
3040 GOTO 3010
3050 COLOR 0:PLOT X+1,N
:DRAWTO G+1,N
3055 SOUND 1,0,0,0
3060 0=0+1:G=0:COLOR 1:
GOTO 1250
```

VIDEO OVERSEAS

I have some good news for Atari users who (like myself) work overseas. The newest generation of Japanese television sets (JVC, Sharp, Sanyo, Sony, etc.) sold in Europe and the Middle East are Multi-System. They can be used anywhere in the world with any TV signal—PAL or NTSC—and any voltage.

I have had no problems with my JVC 7-System TV which I bought in the Middle East. I used it for one year in Saudi Arabia with an Atari 800XL I bought in Holland. Then I brought the JVC back to the U.S. where I have been using it with my new Atari 130XE.

Virgil Cooper
Duncan, OK

i/o board

COLOR PRINTERS

I need help and recommendations from you and your readers. I want to buy a color printer for my school to use in our art classes to dump pictures created with the KoalaPad. Is there a printer you would recommend? What software would be best to use with this?

William Brooks
Princeton, MA

Our last review of a color printer, the Okimate, was in the April, 1985 issue. In our next issue we are reviewing the Radio Shack Color Ink Jet Printer. Color graphics dump software is not exactly plentiful for the Atari, and you should check the availability of this software carefully before purchasing any color printer.—ANTIC ED

MODEMS OVERSEAS

Can I use my modem here in West Germany to call up a stateside BBS?

Karl Stephens
West Germany

I am planning to buy a modem. As direct connect modems are not used here in Switzerland, I will have to buy a 300 baud acoustic modem. Is it possible to become a member of CompuServe's SIG*Atari. Can I log onto all those numbers you printed in your February 1985 issue (200+ Atari BBS List)?

Eric Lewis
Bern, Switzerland

We get many letters like these from our overseas readers. Telecommunications between overseas and stateside bulletin boards is only limited by the clarity of your phone signal. If you have an acoustic modem, you're more likely to pick up outside noise.

But the U.S./Europe connection is easy now because individual telephone companies throughout Europe have agreed on a standard for digital communication lines. It's called the "X.25 Network."

A high quality 1200 baud data line can be accessed from most major cities simply by dialing a local number. From there you need only hook into Tymnet or Telenet, and then into the information service you wish to access.

The only difficulty is that you must have an account with the local PTT (Postal, Telephone and Telegraph) organization in the country from where you are calling. These are government owned, except for the one in the U.K. And they can be troublesome to deal with. You may have to wait some time to get the service you want, and you may find yourself paying quite high first-time connection fees. Patience is the best approach.—ANTIC ED

SHORT STORM

Here's a thunderstorm to sync with video or film. Would you please print it for your sound-effect buffs?

Alphonso Carioti
Fort Lauderdale, FL

```
2 REM THUNDER STORM
4 REM BY ALPHONSO CARIO
TI
6 REM ANTIC PUBLISHING
10 GRAPHICS 0:POKE 752,
1
15 POKE 16,64:POKE 5377
4,112
20 POSITION 12,4:? "LIS
TEN TO THE RAIN"
30 POSITION 4,6:? "PRES
S THE ■■■■■■■■■■ FOR T
HUNDER!"
40 POSITION 3,8:? "PRES
S ANY OTHER KEY FOR RAI
N AGAIN"
50 POSITION 14,11:? "DO
N'T GET WET!!!"
100 FOR X=0 TO 245:SOUn
D 0,X,0,ABS(15-(X/8))
110 POKE 712,X:POKE 710
,X:POKE 709,X+10
120 IF PEEK(764)<>33 TH
EN POP :GOTO 100
125 SCR=PEEK(560)+PEEK(
561)*256+4:K=PEEK(SCR)
127 POKE SCR,K+(X<68)*C
INT(RND(0)*3+1)+38):POK
E SCR,K
130 NEXT X:GOTO 100
```

PICTURE PUZZLER

I would like to be able to use the picture file created by my Atari Touch Tablet to print the picture on paper. However, I have been unable to decipher the format of the picture file. I'd sure appreciate some help.

Robert A. Tims
Jonesboro, AR

Instead of deciphering your Atari Artist new picture file, try Charles Jackson's new Rapid Graphics Converter in this issue. And convert your pictures to MicroPainter format. Now, you can use Kwik Dump by Jerry Allen (Antic, March 1985) to print your pictures to paper.—ANTIC ED

MORE IN STORE

I applaud your editorial campaign urging software companies to produce Atari versions of their popular products. There is, however, an additional problem. Retail outlets refuse to carry a diverse line of Atari software. Toys 'R' Us, K-Mart and Waldenbooks (to name a few) carry a good selection for other computers, but only a minimal selection for the Atari—if they have anything at all. This seems to be as much of a problem as the refusal of developers to develop for the Atari.

Dr. William F. Smith
Bay City, MI

SOUTHERN ADDRESS

The wrong address was printed for Southern Supply Company in the Antic, September 1985 list of mail-order sources of the Atari 1020 Color Plotter. The correct address is 1879 Ruffner Road, Birmingham, AL 35210 and they also have Atari 850 Interfaces for sale.—ANTIC ED



Type GO ANTIC when you log onto **CompuServe** in October. Featured this month on ANTIC ONLINE you'll find a sneak preview of the 1985 ANTIC BUYERS GUIDE, the complete annual roundup of best products available for Atari computers.

Also featured on ANTIC ONLINE in October is an overview of how to use the new Pro-Burner EPROM cartridge burner, or how to make your own EPROM burner.

And don't forget that a complete Antic Arcade Catalog customer service system is now available on ANTIC ONLINE. Follow the Antic Central Menu Prompts to upload your queries for quick email response.

SIGNING UP

If you're not a CompuServe subscriber yet, see your local computer dealer or

phone (800) 848-8199 for information about signing up. Ohio residents phone (614) 457-0802. There is no extra charge for accessing ANTIC ONLINE.

Now ANTIC ONLINE (and SIG * Atari) are also available on the **Delphi** service at a saving of \$6 per hour for 1200 baud access. Phone (800) 544-4005 for information about signing up with Delphi. Massachusetts residents phone (617) 491-3393.

ONLINE NUMBERS

There have been some changes in addresses and phone numbers of commercial online services since **Antic** printed Getting Connected on page 17 of the August, 1985 issue.

BRS After Dark has a new toll-free number, (800) 227-5277. Write for BRS information to 1200 Route 7, Latham, NY 12110.

PLATO's new toll-free number is (800) 328-7104. The mailing address is P.O. Box 1305, McLean, VA 22102. Current rate is \$7.75 per hour for either 300 baud or 1200 baud.

RCA Globcom would like **Antic** readers to know that it is an email and database service which can be accessed worldwide by using an Atari to emulate a telex terminal. We will cover this service in a future issue. Meanwhile you can contact RCA Globcom by phoning (800) 526-3969 or writing 201 Centennial Avenue, Piscataway, NJ 08854.



MPP LIVES ON AS SUPRA

by GIGI BISSON, **Antic** Assistant Editor

Microbits Peripheral Products (MPP), of Albany, Oregon was purchased by Supra Corp.—which is run by Alan Ackerman and John Wiley, the 22-year-old founders of MPP.

Legally, MPP went out of business. Supra bought the Microbits name from the bank that shut down MPP at the end of May and was threatening to liquidate the company's assets.

However, the MPP product line and even the brand name will live on as a Supra subsidiary. Microbits had been the top independent manufacturer of plug-in modems, printer buffers and memory expanders for Atari computers.

WARRANTY CHANGES

Supra will continue to honor the 90-day warranty for all MPP products

sold *after July 1, 1985*, the date when MPP was purchased by Supra Corp. But Ackerman says that for MPP products sold earlier, "Some formerly free warranty work will now have a handling charge." Warranty repair charges vary according to the product's retail price and range from \$15 to \$35.

It will also be harder for users to get through to the customer service department. "Be patient," Ackerman says, "There aren't as many phone lines as before."

The new Supra customer service phone number is (312) 967-9081. New product orders may be placed at (312) 967-9075. The company has moved to smaller quarters at 1133 Commercial Way, Albany, OR 97321.

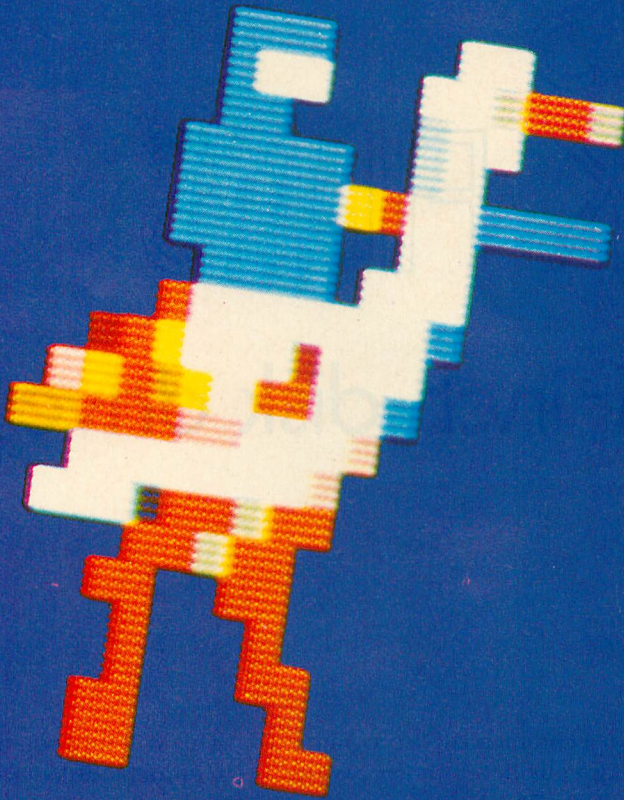
Ackerman and Wiley paint MPP as yet another victim of the computer

shakeout. "It's been a tough time for some third-party Atari manufacturers, Ackerman says. "No stores were ordering anything for the old Atari computers. They're all waiting for the 520ST to come out."

Supra still plans to release the new MPP products that were under development this spring. Orders are currently being taken for the MPP 1200A plug-in 1200 baud modem and the MicroNet resource sharing network that will enable up to eight Ataris to share printers and disk drives.

September shipping was anticipated for the MicroPort expansion port. Supra says the announced 10-megabyte \$800 hard disk is still on the way, although delayed. Supra offers a 20% discount for users group purchases.





ST

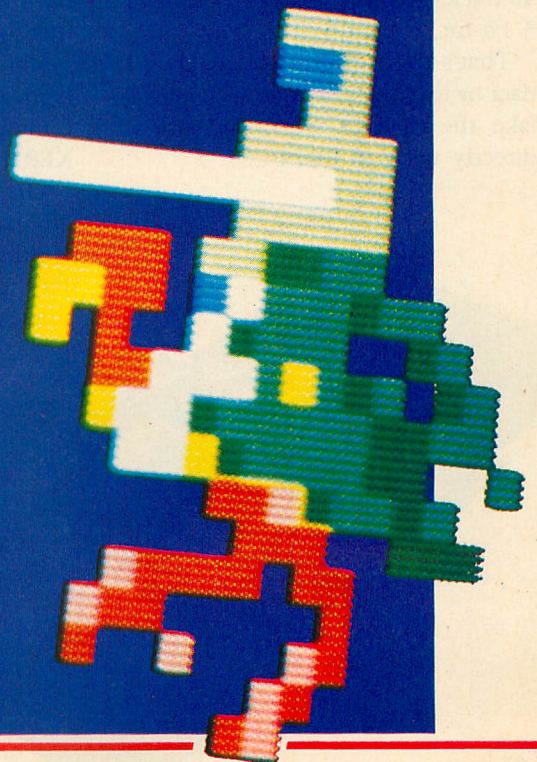
ST USES IBM
DISK FILES . . . 12

ST SOUND . . . 16

C.O.L.R. OBJECT
EDITOR 20

READER'S FIRST
PROGRAMS . . 22

“Prepare to joust,
buzzard bait!”



ST USES IBM DISK FILES

Connect a 5¼-inch disk drive

by DAVID SMALL

You can read and write IBM PC disks on your Atari ST—if you connect a 40-track, 5 1/4-inch disk drive to your 3 1/4-inch disk drive.

That's right, you could generate a data or text file at home on your ST, take the disk to work and use it directly with an IBM PC.

Are you a commercial ST programmer doing your development work on the IBM? (That's the approved method.) With this hookup, you could move files directly into the ST from an IBM disk. It's a lot faster than fooling around with the serial bus and KERMIT.

Or...if you don't need IBM file compatibility for your ST, you can connect a double-sided, 80-track, 5 1/4-inch drive and store 720K on a single disk.

This will save you money because 5 1/4-inch disks and drives are cheaper than 3 1/2-inch disks and drives. Atari is currently charging ST owners \$199 for a single sided (SS) drive and \$349 for a double sided (DS) drive.

Shopping carefully, you can pick up industry-standard 5 1/2-inch drives for under \$150, complete with case and power supply.

But can you use the disk drive from your 8-bit Atari? Not if the drive is an

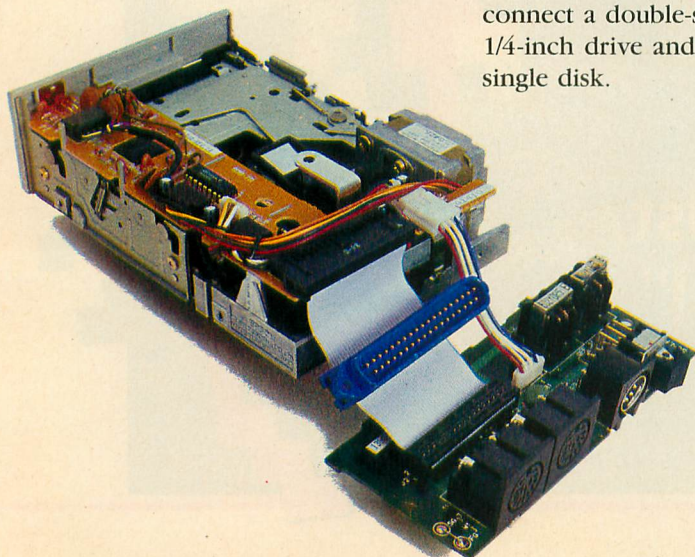


Figure 1: A 40-pin clamp-on connector creates a "tap" when attached to the 34-pin standard ribbon cable within the ST drive.

“Then I plugged the two
DB-40s together . . .
and I had my signals.
Quick and easy.”

Figure 2



810, 1050, or an Atari workalike such as an Indus, Astra, or Rana. However, ATR8000 and Percom drives will work because they are “industry standard” drives that communicate via a standard 34-pin interlace connector. Most drives for the 8-bit Ataris don't use this connector, therefore the ST will not be able to work with them.

THE WARNING

Before actually telling you how to hook up a 5 1/4-inch drive to your ST, we must caution you this is no project for electronics beginners.

While most of the work is mechanical (clamping connectors together, etc.) there is some soldering required. You also need to be familiar with the circuitry of whatever 5 1/4-inch you are using. And debugging your new system can be a frustrating experience.

Not only that, if you open up your ST drive as explained in this article, you'll violate the warranty. Probably you also will not be able to get the drive casing back on unless you cut

a slot in it for the added ribbon cable. 'Nuff said, let's plunge ahead.

WHICH DRIVE?

The 5 1/4-inch drive you add can be either 40-track (for IBM compatibility) or 80-track (for more memory and greater ST compatibility). You can also choose between either a single-sided or a double-sided 5 1/4-inch drive.

I recommend a double-sided drive. There's no good reason to go through the trouble of giving your ST a single-sided 5 1/4-inch drive—unless you have already have one sitting on a shelf and are low on money. Anyway, IBM disks are usually double-sided.

Incidentally, ST hardware is set up to handle only two drives. Atari owners are used to a maximum of four drives, but there is just no way to run more than two drives on the ST.

RIBBONS AND PINS

The standard disk drive connection is either a 34-pin connector in a male/female arrangement, or an edge connector with two rows of 17 pins. In the world of standard disk drives, it is most standard to see a 34-pin ribbon cable with edge connectors clamped onto either end.

Of the 34 pins in the standard industry connector, only about 14 are really used. The Atari ST brings these 14 wires out in a short, thick cable that plugs from the ST into the first disk drive's IN connector. This cable uses a non-standard 14-pin DIN connector, but it carries industry standard signals.

Our goal is to get those signals to a standard 34-pin connector and thus to a standard disk drive.

Why did Atari choose a strange 14-pin connector? Probably two reasons. First, it's been my experience that ribbon cable connectors don't handle abuse well. They fail in a frustrating, intermittent manner—

continued on next page

which spells expense for Atari. Second, ribbon cables make wonderful broadcasting antennas, and the ST had to pass tough FCC tests. The present DIN-connector cables are tough and easily shielded.

Now, theoretically we could put a 34-pin edge connector on one end of a ribbon cable, a 14-pin DIN connector on the other end, and we'd have our disk drive cable. However, in practice I couldn't find a 14-pin DIN connector.

I tried hard. I checked the local Radio Shacks, electronic supply distributors, and so on. No one had even *heard* of a 14-pin DIN connector. Looks like another first for Atari. Right now, the only way I can think of to get this connector would be to order one from Atari . . . and they don't sell the cable as a spare part. Maybe later.

INSIDE THE DRIVE

Therefore, the method I needed to use was to tap directly into the signals inside the 3 1/2-inch ST drive. As we already warned you, this voids your warranty and will probably require you to cut a slot in the drive casing for the new ribbon cable.

If you open up the drive (use a phillips-head screwdriver and a little patience), you'll find that the 14-pin DIN connector expands to (Surprise!) an industry-standard 34-pin ribbon cable.

Of course, it does this *inside* the shielding to prevent radio noise from leaking out. A small circuit board has the two 14-pin connectors (IN and OUT) mounted on it, and it connects to the 34-pin ribbon cable inside the drive.

I put a "tap" from the 34-pin ribbon cable inside the drive to the 34-pin ribbon cable running to my remote 5 1/4-inch disk drive. (See *Figure 1*.) I then used a DB-40, 40-pin male and female clamp-on connector to clamp one side to the ST ribbon cable and the other side to the remote drive's cable. Then I plugged the two DB-40s together. . . and I had my signals. Quick and easy. (See *Figure 2*.)

You don't have to use a DB-40. Any clamp-on connector that covers the first 34 pins will work fine.

KINKY WIRING

And now, we have our disk lines. . . well, not quite. Atari does something kinky with the drive B select signal. It's on pin 6 of the DIN connector, when coming from the ST. But inside drive A it is *switched* from the IN connector pin 6, to the OUT connector pin 5, where it becomes the drive select for drive B.

This means Atari ST drives always listen on pin 5 for select, and the daisy chain scheme gives the proper drive the correct signal. Thus, the two connectors on the back of the ST drive are not interchangeable, like other Atari drives. Plug your ST into the OUT connector and the drive won't work, period.

Therefore we have to jumper from pin 6 of the DIN connector (drive B select) to pin 12 of the ribbon cable (drive B select) to get this signal across. Otherwise it doesn't show up on the 34-pin cable otherwise. This is easy

the drive, it "pulls down" this signal to zero (LOW). When the computer is finished with the drive, it releases the signal and the drive "pulls up" the signal to its original five volts. If two drives are hooked up, only *one* of them may contain pull up circuitry because the computer can only pull down five volts.

Pull-up circuitry is usually contained in a chip in the drive. And now you are at the point where you *must* know enough about your 5 1/4-inch drive to figure out where that chip is.

Since the ST drive A contains all the pull-up termination circuitry we need, we must remove any termination packs from the remote drive. In the case of my Tandon TM-100-2 drive I also needed to deal with the select line termination, since it doesn't go through the resistor pack. I had to clip out resistor R14 from my Tandon to get rid of the added termination.

Special Note: The ST monitor throws out a great deal of magnetism.

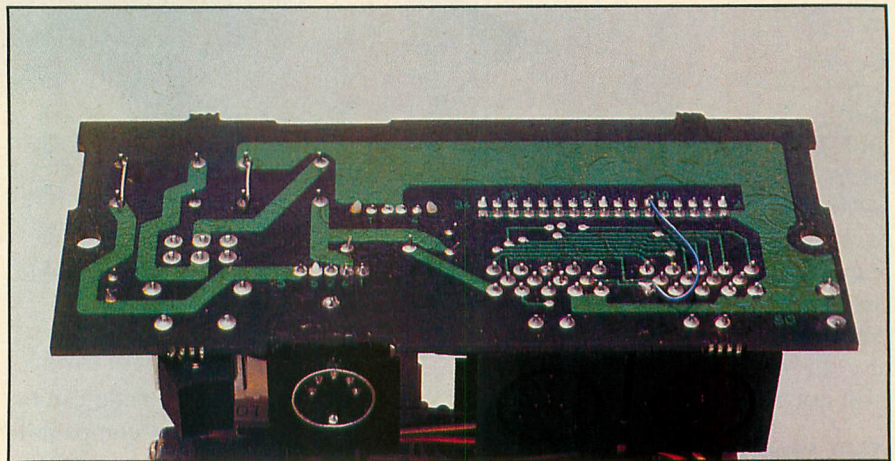


Figure 3: On the bottom of the 3 1/2-inch drive's connector board, a blue jumper wire is soldered from pin 6 of the DIN connector to pin 12 of the ribbon connector.

to do on the bottom of the 3 1/2-inch drive's DIN connector board. (See *Figure 3*.)

Now we need to set the remote drive as drive B. Sometimes it's called drive 1 or drive 2, depending on whether the manufacturer begins numbering drives at 0 or 1.

Time out for a little theory. When a drive is idle, a five-volt signal (meaning HIGH) exists on the BUSY line. When the computer wants to access

If you don't keep your drive at least one foot from the monitor, the disk's heads will pick up the monitor's signals and confuse the read data. You'll immediately notice data errors if you get your drive too close to the monitor. This is a good reason to use a fairly long ribbon cable (3 feet or so) (*We haven't noticed this problem on our in-house development machine. Perhaps 5 1/4-inch drives are more vulnerable to magnetism.* —ANTIC ED.)

ALL DONE

All right, let's assume you have added an 80-track drive. Put the disk in, close the door and turn on the system. Click on drive B, select FORMAT, and format the disk either single-sided or double-sided.

From then on, treat the 80-track drive as an Atari ST drive. Note: 80 track drives have traditionally been persnickety, which is why 40-track drives remain popular. Keep a sharp eye on the drive's alignment. It takes very little misalignment to make a disk that only one 80-track drive in the whole world can read.

If you've added a 40-track drive, you may use it as an ST drive in only a limited fashion. You can't use FORMAT or a track copy, because they'll try to force the drive past its 40th track.

IBM ST

On the other hand, you can put an IBM PC disk in that 40-track drive, and click on the B icon. It'll pull up the disk's directory into folders and "text only" files.

You'll notice on the top of the window an PC-DOS type of "pathname" consisting of multiple (if needed) folders and a file name. GEM simply turns the concept of pathnames into folder icons and moves you through the path by your actions of selecting, opening, or closing a folder.

Of course, you can't run IBM programs because these are written in IBM assembly language, which the ST cannot understand. However, you can freely copy and use text files and the data within them. Furthermore, if you write from the ST to the PC disk, you'll find that an IBM has no trouble

reading what you wrote.

It is a strange feeling for me to see that Atari has chosen IBM disk compatibility. (On rumor claims this particular disk format is used by IBM's yet-to-be-seen PC II computer, which uses 3 1/2-inch disks). For so many years, the Atari system was utterly incompatible with anything else. Now the ST is PC data-compatible. Smart move. It is also very pleasant to be able to transfer data so quickly and easily.

David Small, a professional programmer and longtime Antic contributor, is currently developing ST software for Batteries Included. He and his wife Sandy are co-authors of "Guidebook For Winning Adventurers," reviewed in the September, 1985 Antic.



WHITE HOUSE COMPUTER

P.O. Box 4025, Williamsport, PA 17701

"Where Prices Are Born, Not Raised"

TOLL FREE 1-800-351-3442

PA CALL 1-717-322-7700

— PA Residents FREE Shipping —

MONDAY - FRIDAY 9 AM - 6 PM
VISA & MC ACCEPTED 4%

POLICY: No deposit on COD orders. Free freight on all prepaid cash orders over \$300 in the continental USA. APO & FPO add \$5.00 per hundred. For priority mail add \$8.00 per hundred. PA residents add 6% sales tax. Defective products must have Prior RA number. Schools net 15.

COMPUTERS

800 XL	89.95
130 XE	139.95
520 ST Color RGB Monitor & More	870.95
520 ST Monochrome Monitor & More	749.95

DISK DRIVES

Indus GT	205.95
1050	164.95
Happy 1050	335.95
Happy Enhancer	160.95

MONITORS

TEKNIKA MJ-10 Color	185.95
MJ-22 RGB	265.95

ZENITH

ZVM 122 Amber	82.95
ZVM 123 Green	75.95

AMDEK

300G	119.00
300A	129.00
Color 300	229.00
Color 500	339.00
Color 600	399.00
Color 700	469.00
Color 710	539.00
310A	145.00

XTRON

Comcolor I	189.00
------------	--------

NEC

1201	139.95
1205	139.95
1260	97.95

SAKATA

SC-100	179.00
--------	--------

SOFTWARE

ATARI Proofreader	19.95
Codewriter	42.95
Filewriter	24.95
Reportwriter	24.95
Menuwriter	24.95
Small Bus. Inven.	17.95
Salesman's Expenses	17.95
Accounts Rec/Pay	17.95
The Learning Phone	23.95

BRODERBUND

Print Shop	28.95
Graphics Library I	17.50
Graphics Library II	17.50

SYNAPSE

Synfile	32.95
Syncalc	32.95
Syntrend	27.95

BATTERIES INCLUDED

Paperclip/Spell Pk	69.95
Paperclip	55.95
Homepack	31.95
Consultant	59.95
Bus Card II	119.95
BI 80 Column Card	99.95

PRINTERS

EPSON

RX 80	209.00
RX 100	369.00
JX 80	479.00
FX 85	345.00
FX 185	499.00
LQ 1500 PAR	979.00
LQ 1500 SER	1039.00
LX 80	222.00
Homewriter	209.00
Comrex 220 Atari	199.00
Comrex 220 Comm	199.00
LX 90	245.00
SQ 2000	1525.00
DX 10 Daisywheel	235.00
DX 20 Daisywheel	319.00
HS 80 Letterjet	359.00
CITIZEN	
MSP 10	305.00
MSP 15	450.00
MSP 20	450.00
MSP 25	575.00

OKIDATA

Okimate 10	179.95
182	219.95
84	640.95
192	349.95
193	525.95

STAR MICRONICS

SG-10	214.00
SG-15	379.00
SD-10	345.00
SD-15	450.00
SR-10	485.00
SR-15	585.00
Powertype	307.00

LEGEND

1380	269.00
1385	305.00
1080	229.00
880	199.00

PANASONIC

1090	187.00
1091	237.00
1092	385.00
1093	425.00
3151	455.00

ATARI

XTM 201	99.95
XTC 201	109.95
XDM 121	209.95
XMM 801	169.95
STC 504	139.95
STD 121	219.95
SMM 801	279.95

INTERFACES

850	108.95
U-Print w/port	49.95
U-Print w/16k	69.95
U-Print w/64k	89.95

PRINTER PAPER

2500 Shts LazorEdge	24.95
500 Shts LazorEdge	9.95
1000 Shts LazorEdge	14.95

DISKETTES

SKC Lifetime Warr.	
SS/DD	10.95
DS/DD	14.95

BONUS Lifetime Warr.

SS/DD	9.50
DS/DD	13.50

MAXELL

MD1	15.95
MD2	20.95

MODEMS

MPP 1000E	69.95
Volks 12	179.95
Hayes 300	149.95
Hayes 1200	385.95

SYMPHONIC VHS VCR

\$279.00

ST SOUND

Hearing the AY-3-8910 chip

by PATRICK BASS, *Antic* ST Program Editor

Atari 8-bit computers make music using a chip called POKEY, and control is limited to choosing pitch and volume. Fancy music can be played, but only at great cost in processing time. The Atari 520ST uses a newer sound chip, the AY-3-8910, made by General Instrument Corp. This chip has been used in many Apple II add-on music boards, and it has also been selected for all Japanese computers using the MSX standard.

The AY-3-8910 can play music through as many as three voices at the same time. Each voice has 4,096 different pitches and full control over the ADSR (Attack, Decay, Sustain, Release) envelope.

The chip produces sound by dividing an incoming Master clock frequency by 16, and then by the number stored in the voice's frequency register. Every time the number counts down to zero, that voice's sound output line is toggled, in effect creating an output square wave. A square wave creates a tone similar to a woodwind or reed instrument.

THE REGISTERS

The AY-3-8910 has 16 separate registers, numbered \$00-\$0F. Each register is eight bits wide, but some registers do not use all their assigned bits. These registers are shown in the diagram in *Figure 1*.

In the left column you can see the register number, the middle column shows the register function names, and the right-hand column maps the bit-assignment for each register, numbered from 7 to 0. The last two registers, \$0E and \$0F, are input/output ports and have no bearing on the operation of the AY-3-8910 in making sound.

Registers \$00 through \$05 control the frequency (pitch) of each voice. The six registers are paired off for each of the three voices. Bits 0-7 of the note are in the first register of each pair, and bits 8-11 can be found in bits 0-3 of the second register. The remaining four bits are not used. Thus, each of the three paired note registers form a 12-bit number whose value ranges from zero to 4095.

Given a master clock frequency of 2 megahertz divided by 16, or 125 KHz, and setting *no* bits for highest fre-

quency, we get a highest note of 125Khz divided by zero, or 125,000 cycles per second. If we set *all* the bits in the frequency register, the lowest note is 125Khz divided by 4095, or roughly 30 cycles per second.

We can output either pure tones or "noise." The random noise is also produced through a square wave. The period (width) of this square-shaped pulse of sound affects its tone, and is controlled by register \$06. Five bits of resolution offer a range of 0-31. In effect, this control acts just like the treble/bass tone control on your stereo. Low numbers stored in this register will "brighten" the noise and high numbers will "mute" the noise.

Register \$07 has multiple functions. Looking at the register from the right, bits 0-2 control if voices A, B and C play pure tones. These are needed for music. The bar above TONE means, "This function is active when the bit is a zero, or LO." No bar shows that a one, or HI, is needed. Bits 3-5 control if noise is played through A, B or C. This would be used for explosions, jet planes, etc.

Bits 6 and 7 have nothing to do with sound. They control if the two I/O ports located in registers \$0E and \$0F are input or output ports. Since register \$07 controls your floppy I/O, be sure and save its state before you alter it, or you will surely lose contact with your disk drives.

Registers \$08, \$09, and \$0A have split functions. First, bits 0-3 control the volume of the voice chosen. Four bits of resolution give us a range of 0-15. Zero is off, and 15 is loudest. However, if bit 4, the "M" bit in the diagram, is set to a 1 then the lower four bits are ignored, and volume information is taken from Registers \$0B, \$0C and \$0D, which enables effects such as wah-wah and vibrato.

ADSR ENVELOPE

Registers \$0B and \$0C control how long each stage of the ADSR envelope lasts. These two full registers give 16 bits of resolution, or a range of 0-65535. The incoming master clock frequency here is first divided by 256, then this result is divided by the 16-bit number in registers \$0B and \$0C.

The result is how long each stage of your desired ADSR envelope lasts. "Attack" is how quickly the sound rises from

silence to its greatest volume. "Decay" is the time required for the sound level to fall to a constant level, called the "Sustain," where it continues to play until falling off to silence, or "Release."

Register \$0D allows the programmer to select which section of the ADSR envelope is operating. The upper four bits are unused, but the lower four bits are set to select one of 10 available waveforms. (See Figure 2.) For example, at the bottom of the chart, when all four bits are set, the resulting waveform will start at silence, rise to its greatest volume, then end suddenly and stay silent. The waveform above that (bit pattern 1110) causes the volume of the sound to rise and fall in a repeating pattern.

As previously mentioned, registers \$0E and \$0F are I/O Ports A and B and have nothing to do with sound output. They connect to RS232, floppy, DMA, and parallel ports.

SOUND DEMO

This month's Sound Demonstration program demonstrates how to read and write values to the AY-3-8910. The program is written in the C language. Last month's issue of *Antic* introduced the fundamentals of C programming for the Atari ST computers.

The ST Sound program tracks the mouse as it is moved

around the desktop, and the mouse's X and Y position values are used as notes for Voices A and B respectively. Current results are then printed to the screen with special GEM VDI graphics text calls. The [LEFT-SHIFT] key raises the volume, and the [ALTERNATE] key lowers it. Pressing the left mouse button will exit the program.

PROGRAM TAKE-APART

Since this program is quite similar to the GEM Color Cascade program presented last month, we can skim over the declaration and opening of a workstation. At the top we see a block of `#include` files, which have pre-written definitions in them. Next, a long line of `int`'s, which here act just like initializing a variable in BASIC. Since `int`'s are 16-bit values and the AY-3-8910 registers are eight bits wide we define our notes, `note_lo` and `note_hi`, as `char`'s, or 8-bit values.

We have one function defined in this program, `main()`. The instructions that follow down through `yres = l_out[1]`; say, "Initialize the application (program), get the 'handle,' or ID number, of this window, initialize an input array called `l_intin`, open a workstation, and get the width and height of this window (`xres, yres`)." The `graf_mouse()` (graphics mouse) call changes the

continued on next page

Figure 1

AY-3-8910 REGISTERS

REGISTER		BIT							
		B7	B6	B5	B4	B3	B2	B1	B0
\$00	CHANNEL A FREQUENCY	8 BIT FINE TUNE A							
\$01						COARSE TUNE A			
\$02	CHANNEL B FREQUENCY	8 BIT FINE TUNE B							
\$03						COARSE TUNE B			
\$04	CHANNEL C FREQUENCY	8 BIT FINE TUNE C							
\$05						COARSE TUNE C			
\$06	NOISE PERIOD					5 BIT PERIOD CONTROL			
\$07	VOICE ENABLE	IN/OUT		NOISE			TONE		
		IOB	IOA	C	B	A	C	B	A
\$08	CHANNEL A VOLUME			M	L3	L2	L1	L0	
\$09	CHANNEL B VOLUME			M	L3	L2	L1	L0	
\$0A	CHANNEL C VOLUME			M	L3	L2	L1	L0	
\$0B	ENVELOPE PERIOD	8 BIT FINE TUNE E							
\$0C		8 BIT COARSE TUNE E							
\$0D	ENVELOPE SHAPE/CYCLE					CONTINUE	ATTACK	ALTERNATE	HOLD
\$0E	I/O PORT A	8 BIT PARALLEL PORT A							
\$0F	I/O PORT B	8 BIT PARALLEL PORT B							

mouse form into a pointing finger, which is one of seven pre-defined mouse forms stored inside the computer.

Next come new text functions. The function **vst_effects()** (VDI-Set Text Effects) determines how the letters will be displayed. Choices such as normal, thickened, skewed (italics) and outlined are available. Notice we have defined four types in our variable declarations. The first **vst_effects()** call says, "In window 'handle,' use skewed characters."

Right after that call, on the same line, is a **vst_color()** call (VDI-Set Text Color) which selects the color the text will be printed in. The call **vst_color(handle, BLUE)** says, "In window 'handle,' draw the needed text in color 'BLUE.'" BLUE represents a value previously defined in the #included file "obdefs.h".

On the next line is the GEM call to print a text string to the screen: **v_gtext()** (VDI Graphic Text). The call requires that we tell it which window number to write to, the X,Y co-ordinates where the text will start, and the string itself or its address. So, combining the two lines of instructions above, we wind up printing skewed blue text to cursor position 10, 20.

The next four pairs of lines print the rest of our text in various shapes and colors. We now come to the first call we make to the AY-3-8910 itself.

SOUND CHIP CALL

The GEM call **Giaccess()** (General Instruments Access) takes the form: **result=Giaccess(value, register)**. To write to a register, add 128 to the register number, otherwise the register will be read and a number returned.

When writing, the amount to write is supplied by our program in **value** and when reading, the registers' value is returned in **result**. These first two calls access registers \$08 and \$09, setting voices A and B at an initial volume of eight, or about halfway. Press the [LEFT-SHIFT] key to raise the volume, and press the [ALTERNATE] key to lower the volume. Press the left mouse button to exit.

On the next line we save the number in the port control register in **port_state**, so later when we exit we don't lose touch with the disks. The next line is a **Giaccess()** call that accesses register \$07 and turns on voices A and B so they use pure tones. We use the decimal number 60 here because 60 is the decimal value of the binary bit pattern (00 111 100) used to activate voices A and B.

For bits 0, 1 and 2, bit 2 is voice C. We do not use it, so we set that bit to a one. Bits 1 and 0 are voices B and A, respectively. They are active so we place a zero in their bits. We do not want random noise (bits 3, 4 and 5) in any voice so we set each voice bit to a one. Remember, a bar above means the function is active when LO. The upper two bits, 6 and 7, which control the direction of each I/O port, are not used in our program and are thus relegated to zero.

Next we enter a DO...WHILE loop. In effect, we DO make noise WHILE not told to stop by pressing the left mouse button. The first GEM call and a block of four IF statements questions the keyboard and determines if the [LEFT-SHIFT] or [ALTERNATE] keys are pressed. If so, it

adjusts the volume.

The next two **Giaccess()** calls update the current volume. Now we call **vq_mouse()** (VDI Question Mouse) which answers whether the mouse button was pressed and locates where the mouse is.

X,Y VOICES

The next line sets **x_note** to a value proportional to both the mouse X-coordinate on the screen, and to the range of values the frequency counter can take. We take this value in **x_note** and bitwise break it into an 8-bit LO byte and a 4-bit HI nibble which are put in **note_lo** and **note_hi**. Then we call **Giaccess()** to turn on voice A with the results.

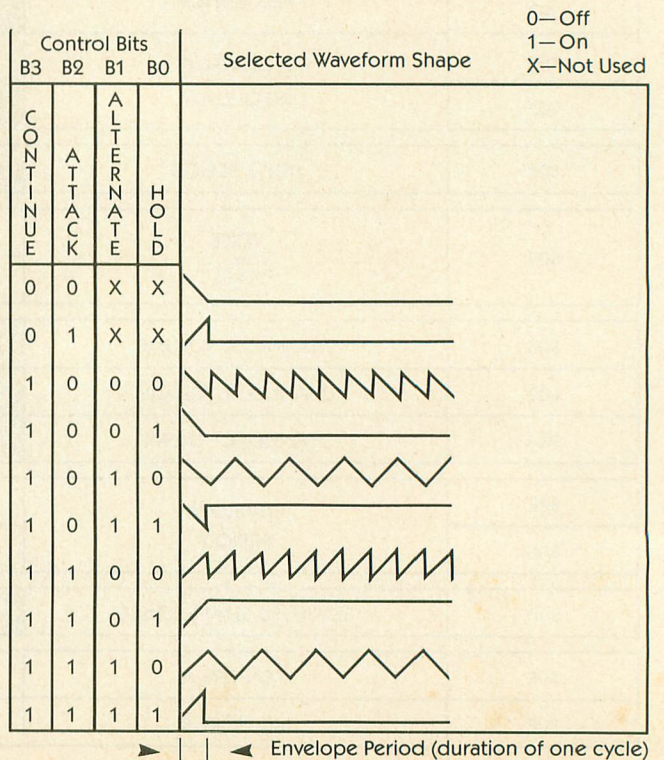
The next block of code does the same for voice B and the Y-coordinate.

The following three blocks of lines print to the screen the values we are using for the frequencies and volume. The variable **number1** is a floating-point variable. It is needed for the line below, which converts a floating-point number to an ASCII string. The call **ftoa()** (float-to-ASCII) reads: "**ftoa**(number to print, buffer to build number in, number of digits to right of decimal point)." The GEM calls **vst_effects()**, **vst_color()** and **v_gtext()** then set the text style and color, and print out the number.

The line that ends the loop tests the value we picked up in the **vq_mouse()** call. If **m_state** is any value greater than zero, the button has been pressed.

To clean up, we make two **Giaccess()** calls. One shuts off the voices by turning the volume all the way down. The second restores the I/O Ports to the way we found them when we walked in. We then perform a standard GEM exit.

Figure 2
REGISTER \$0D WAVEFORM CONTROL



VIP Professional™

For Your Atari ST™

Identical to Lotus 1-2-3™

Except for the Price: \$99.95

The universal dream - to have 1-2-3 power on your Atari ST - has come true. VIP Professional is a program identical in features and commands with 1-2-3. The same spreadsheet analysis, information management and extraordinary business graphics. All combined in one easy-to-learn, easy-to-afford package. What's more, VIP Professional not only has all the features of 1-2-3, you can also type the same keys to do the same things. Or better yet, use a mouse to make it all so much simpler.

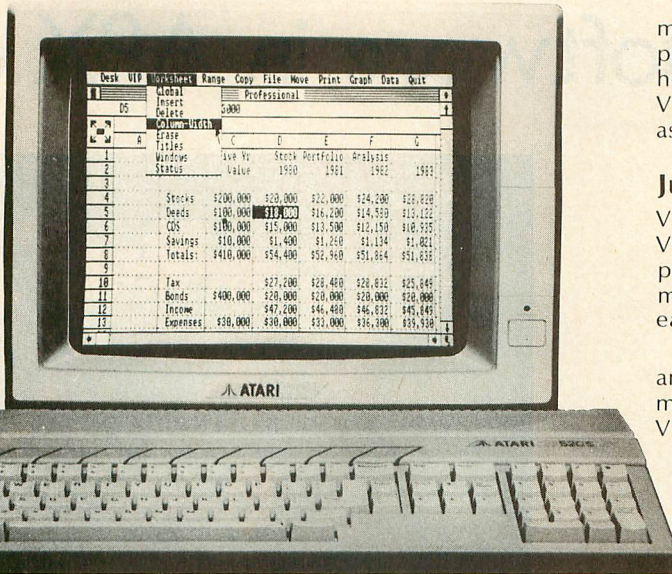
Not Just 1-2-3 in Mouse Clothing

VIP Professional is totally faithful to the 1-2-3 standard. In fact, you can use "1-2-3" files created with Professional with 1-2-3 itself, or with versions of Professional on the Apple //, the Macintosh, the Commodore Amiga, IBM's, even UNIX computers. But like the ST itself, Professional also has the spirit of a daring maverick. Just as the ST outstrips the power and performance of the business computers, VIP Professional meets and out-features Lotus. Compare for yourself:

Feature	VIP	1-2-3
123 Commands	Yes	Yes
123 Graphics	Yes	Yes
123 Database	Yes	Yes
123 Macros	Yes	Yes
123 Files	Yes	Yes
Enhanced Graphs	Yes	No
Uses mouse	Yes	No
Drop-Down Menus	Yes	No
Icons	Yes	No
GEM interface	Yes	No
Multiple windows	Yes	No
Available on ST	Yes	No
Easy to use	Yes	No
Affordable	Yes	No

A New Gem™

VIP Professional is easy to use because it takes advantage of the GEM environment and other elegant features built into the ST. Throw in lots of help, a thoughtful tutorial for the novice, and a thorough reference manual, and you have the



makings of the perfect powerhouse product for the office, school and home. And at the super low price, VIP Professional is as easy to afford as it is to use.

Just a Hint of Things to Come

VIP Technologies is on the move. VIP Professional is the first of several products for your ST under development, all of which will interact with each other. Expect to see soon:

VIP Analysis™-A statistical and analytical tool to integrate and manage information created with VIP Professional or Lotus 1-2-3.

VIP Freelance™-A complete text processor with full formatting capabilities, plus a complete workbench of writer's tools.

VIP Consultant™-A project management program to help design, organize and implement any complex task at hand.

VIP Forethought™-An outline processor useful for organizing any mental activity.

Our software will make your ST investment one of the best you have ever made.

Although VIP Professional will sell for \$149.95 after November 1, as a special introductory offer, you can get this product now for the low price of:

 **\$99.95** 

If Your Dealer is Out of Stock, Order Direct.

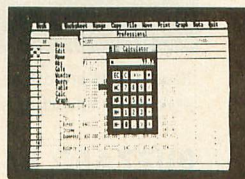
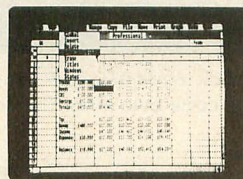
1-800-328-2737

In California call:

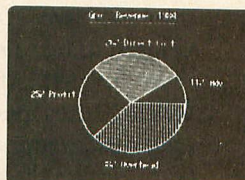
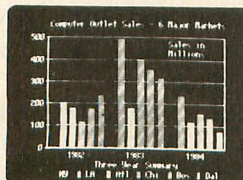
1-800-468-8737

Order Status and Software Questions:

(805) 968-4364



VIP Professional will do your finances, keep your inventory, graph your sales, and a whole lot more.



VIP

Technologies

132 Aero Camino, Santa Barbara, CA 93117

VIP Professional, VIP Analysis, VIP Freelance, VIP Consultant and VIP Forethought are trademarks of VIP Technologies; ATARI and ST are trademarks of Atari Corporation; GEM is a trademark of Digital Research, Inc.; Lotus 1-2-3 is a trademark of Lotus Development Corporation.

©1985 By VIP Technologies

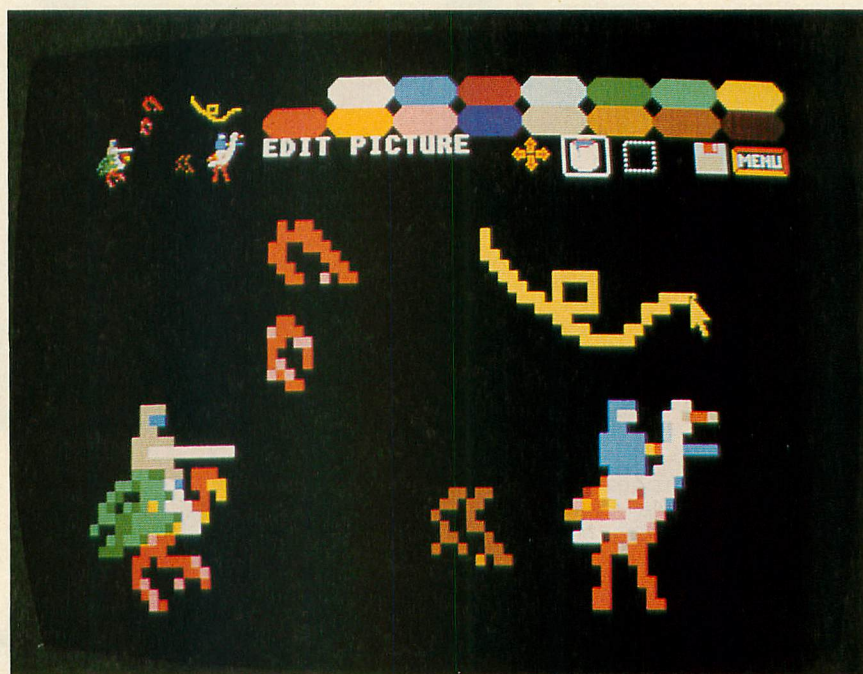
Mail orders: For shipping and handling add \$3 in the U.S. (\$6 Canada; \$20 overseas). California residents add 6% sales tax. COD's and Purchase Orders WILL NOT be accepted. Personal checks will be held for three weeks to clear. All prices are subject to change without notice.

Software Submissions Encouraged

C.O.L.R. OBJECT EDITOR

First ST software in APX catalog

by GIGI BISSON



It's as if you buy a state-of-the-art Ferrari, but you need to re-invent the wheel before you can drive.

And then you need to re-invent the tire.

And then you need to teach yourself how to drive all over again. . .

When you're programming for a machine as raw and unexplored as the Atari 520ST, you can't just plug it in and go—you must start from scratch.

It's a challenge that The Rugby Circle eagerly accepted. Rugby Circle of Bloomfield Hills, Michigan is the software development partnership of Robert Lech, 23 and Troy Dahlman, 19. When they began to adapt a classic arcade videogame to the Atari ST computer, they didn't just have to re-invent the wheel. They had to re-invent the tool kit—in this case, the **C.O.L.R. Object Editor**.

Joust birds are created in Edit Mode of C.O.L.R. Object Editor. Images may be moved to Mural Screen or saved as source code byte array. The actual-size image appears in the upper left

BUZZARD BAIT

The Rugby Circle company is named for the street where both partners used to live. Dahlman and Lech wanted to be "first on the block" to own an ST. After diligent letter-writing, they persuaded Atari to include them among the first 20 software developers allowed the privilege of buying a pre-production ST for \$4,500.

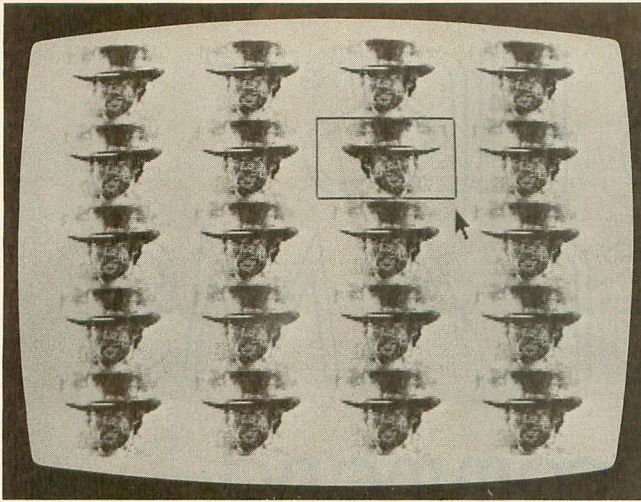
"We figured we were buying time," Troy says. Little did they know how badly they would need that early start.

They plugged in their ST. It blinked to life. Somewhere, deep inside the

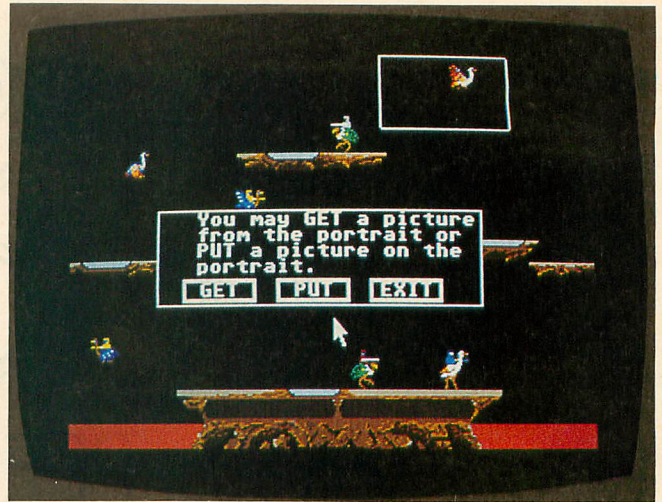
machine were all sorts of treasures—a palette of 512 colors, little birds, symphonies. . . best-selling software waiting to be written. The ST blinked again.

"We took it apart and everything," Bob says. "It looks awfully nice." But they had no software, no graphics tools. Nothing. Their sleek gray plastic desk-top Ferrari was all gassed up with no place to go.

The partners now had a \$6,000 hardware investment to recoup. (They bought a second pre-production ST after Atari lowered the price.) They decided to write a game that would showcase the ST's 16 onscreen colors



Clint's steely gaze is multiplied in Mural Mode. Note the flipped window.



Preliminary Joust screen with birds was created in Edit Mode, then moved panel-by-panel, to Mural Screen.

and high-resolution graphics.

For their first ST project, they chose **Joust**. They had previously adapted it to the Radio Shack Color Computer as "Buzzard Bait." (Joust, the last game generated during Atari's late, great arcade game boom, greeted players with "Prepare to joust, buzzard bait!")

It was hardly a bird-brained idea. After all, these guys are professionals who have been in the business for five years now. (Troy started when he was 14 years old.) They wrote "Mastering the SAT" for CBS Software and other lucrative educational programs for Radio Shack.

ARCADE R&D

Source code for Joust was non-existent, and it took a nationwide telephone search to track down one of the original Joust bird artists. She offered hints on how the graphics were designed—for a price.

Finally, they decided their only resource was the Joust arcade game itself. They entered the exploding, dinging madness of a video arcade. Carrying a camera and a cumbersome screen-shot attachment, they tried to take action photos of dueling knights mounted on ostrich-like birds. But that wasn't the hard part.

"We had enough trouble just trying to find an arcade that still had Joust," Troy recalls with a laugh. Fortunately, they found a surviving game shrouded in an inconspicuous arcade corner. One partner dropped quarters

while the other took pictures. Perhaps they looked like shameless video addicts desperate for clues to master the game.

Meanwhile, back on Rugby Circle, Bob had to teach himself the C programming language. Then the partners were faced with the eternal question: "Which came first, the buzzard or the egg?" Troy wanted to create tiny jousters on a computer that was capable of fine graphic resolution, but had no existing graphics tools. So he needed a sprite editor to create a bouncing bird on a machine that doesn't have sprites. . .

SURPRISE SUCCESS

In the dark ages of computing, before programmers could even start writing programs they had to write development software—a text editor—just to write the program with. This programming tool eventually became the commercial word processors of today.

The Rugby Circle C.O.L.R. Object Editor is the same sort of first-generation product. It's a programming utility, invented by programmers who needed an in-house game development tool.

Rugby Circle decided to send their screens of birds and landscapes to Antic ST Research & Development, just to show us what they were doing.

Nice birds, we said. But we began drooling over the graphics editor. We knew that ST users would need a graphics utility tool right away and

here it was. **Antic** immediately contacted Bob and Troy, and C.O.L.R. became the very first ST product in the Antic Arcade Catalog.

"We never dreamed the graphics editor could be a commercial product at all," Troy says. The game wasn't even finished, and they already had a product—the first commercially available programmers' tool for the ST.

PSEUDO SPRITES

Instead of traditional sprites, the ST uses a specialized command known as a bit block transfer (BitBlit, or Blting). The C.O.L.R. editor generates source code that helps design these bit blocks or "software sprites"—the closest thing to Player/Missiles that the ST has. Yet, with the ST's incredible 68000 microprocessor speed, Player/Missiles are unnecessary. ST developers have reported up to 80 sprites zipping around the screen simultaneously.

The C.O.L.R. editor is a no-nonsense, cursor-based sketching program that uses the GEM interface to automate a cumbersome process. It generates bit-mapped pictures and converts them to disk data files in usable byte-array format.

No cute little paint buckets and pencils here. A palette is set with 16 of the ST's 512 possible colors. The colors are picked up with the mouse and transferred to the image. Four additional 16-color palettes can be set

continued on page 24

READER'S FIRST ST PROGRAMS

Logo spirals, PEEK command

by FRED HATFIELD

When I sat down to read the Wednesday paper, I spotted the long-awaited ad—**Atari 520ST In Stock!** There it was. I'd spent the previous six months tracking the fortunes of Atari distribution through PR announcements in industry publications and occasional mentions in the staid Wall Street Journal. Jack Tramiel had supposedly sent 520ST's to Europe and Canada, but it was hard to believe that I would finally see the fabled "Jackintosh" in reality.

I lost little time getting on the expressway and driving to a suburban computer store that I'd never been to before. A young salesman greeted me as I entered and ushered me to a table where the 520ST was resting comfortably with a (gasp) dark video screen.

"Where's the display?" I asked anxiously.

"Bad news," was the reply. "The power supply was damaged in shipping, so we can't demonstrate it."

Disappointed, I glanced through the technical manual. The intriguing illustrations of high-resolution displays only whetted my appetite some more.

"When will the power supply be replaced?" I demanded. "How soon can I see it in operation?"

"The rep is on the way, but he has a couple of other stops to make first," said the salesman. "And I'm not sure if he'll have a replacement power supply with him."

I could see that I would only frustrate myself further by hanging around. So I left my card and made the salesman swear to phone me as soon as the ST demonstrator was operational.

But I phoned the store the next day, too impatient to wait. The salesman assured me they would have the demonstrator running within a few days. Swell.

I was idly scanning the classifieds when another advertisement jumped out at me—**We Have The 520ST.** This computer store was completely on the opposite side of town and I had enough sense to call first before jumping into my car.

Yes, they had a number of 520STs in stock and a working demonstrator. After an excited drive, there it was—sitting on a desk with a *color* display.

The young lady on duty had not been briefed on how to operate the machine. But she didn't object to letting me sit down at the keyboard and start fooling around.

As I groped with the mouse, another customer and his son showed up to watch. From their comments and suggestions, I realized they had somehow gotten a pretty good idea how to operate the GEM graphic desktop.

So I gave up my seat and asked where they got their advance information. It turned out they'd read step-by-step instructions on how to navigate the desktop in the August,

1985 issue of a magazine called **Antic**.

Careful questioning of the saleslady revealed that she had that particular issue on hand. I immediately acquired that valuable publication. And while I was at it, I figured I might as well go for another \$1,000 and I bought a 520ST color system on the spot.

They threw in a box of 3 1/2-inch disks. I rushed home with my purchases, unpacked everything, connected all the cables and powered up. A gorgeous display of Atari fuji symbols and all the colors of the rainbow flashed across the screen.

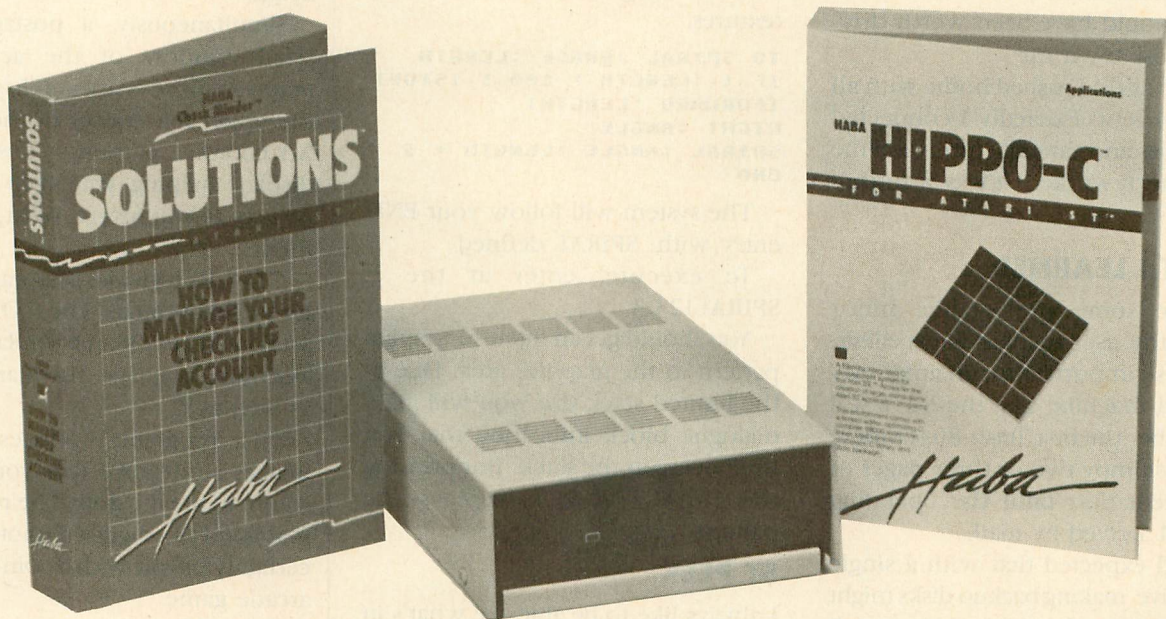
Soon a bell rang, telling me to move the mouse and place the screen cursor on an OK box. I responded and saw the select light illuminate on the disk drive. The disk was being accessed for information. I could hear the head stepping from track to track and the cursor changed to a . . . bumblebee!

Suddenly I was faced with a strange display on the screen. HORRORS! These were not the neat icons and colors I'd seen at the computer store. I repeated the operation in different sequences, but the results were always the same.

I had to drag myself away for a business appointment. When I got home, I tried again. No better luck. It was now after five, but I dubiously tried phoning the store anyway. . .

continued on page 24

YOU'VE GOT THE ATARI 520ST



YOU NEED THESE!

HIPPO-C

A Development System for the Atari 520 ST
A friendly, integrated C development system for the Atari ST. Allows for the creation of large standalone Atari ST application programs. The compiler follows the Kernighan and Ritchie C standard (excluding floating-point). You can combine your own assembly routines with C. It allow allows you to view and modify the assembler output from the compiler.

HABADISK 10 MEGABYTE

Atari 520 ST Hard Disk
The HabaDisk for the Atari 520 ST is a 10 megabyte Winchester plug-in hard disk. HabaDisk stores the equivalent of more than 12 dual-sided 800K diskettes and retrieves information in seconds. A necessity for programming and large application uses.

- Self powered
- High speed (3 msec track-to-track access time)
- Atari compatible (including Atari Desktop, GEM DOS and Mouse)

CHECKMINDER

Personal Money-Management Program for Atari 520 ST

CheckMinder is an inexpensive, simple to use home accounting program designed for those of us who'd like our computer to help us keep track of our money. CheckMinder displays and works with all the objects already familiar to most users: checks, deposits, drafts, checkbook register, etc. It will remind you when bills are due, automatically record payments and deposits, reconcile balances, and generate reports for tax deductible expenses. CheckMinder can automatically arrange your checkbook by number, date, payee, or expense category, and will even print your checks for you too ... all with just a few clicks of the mouse!



Haba Systems, Inc.
6711 Valjean Avenue, Van Nuys, CA 91406
Use these new TOLL-FREE numbers for dealer orders!
(800) HOT-HABA (USA) • (800) FOR-HABA (CA) • (818) 901-8828

FIRST ST PROGRAM

continued from page 22

The owner was there. I explained the stopping point and he said, "Come right out, we'll replace it immediately." He remained open to allow me time to drive across town again. When I arrived, he replaced the system, hooked up my new 520ST and exercised it thoroughly.

As a bonus, the September issue of *Antic* had just arrived with more great information about the ST. That alone would have been worth driving across town for.

Once again I rushed home with all my new loot. Excitedly I connected the cables and carefully turned on the machine. It worked! It was beautiful! Hooray!

WHAT I LEARNED

Despite some predictable minor faults, the user manual is excellent. This is so important for an anxiously awaited machine like the ST. I still remember the first Trash-80s coming with a skimpy two or three pages of documentation until the operating manual arrived by mail.

I had expected that with a single disk drive, making backup disks might follow the much-criticized Macintosh pattern of excessive disk changes. I was pleasantly surprised to find that the display dynamically indicates loading sectors into memory and writing sectors to the new disk. Only two disk swaps! I loved it!

My system came with TOS and Logo disks. BASIC was promised for later. I had trouble getting a program to execute by double-clicking the mouse. This impasse was overcome when I discovered I actually needed to click the File drop-down menu twice—once to open the disk directory and once to open the selected file.

You quickly run up against the limits of the supplied software—an operating system with nothing to operate on and a Logo "sourcebook" that's not enough to get a beginner started programming in this language. However, with some probing and the primitive examples in the booklet, I managed to come up with some minor programs that allowed me to

see how the Control Panel and Graphics settings actually work.

As I became more familiar with the drop-down menus and how they affected the display, I became more adventurous. After all, that's what's exciting about computers, isn't it?

SAMPLE PROGRAMS

The following Logo program draws a spiral pattern in the display area. Try changing the graphics settings for various background colors and line textures.

```
TO SPIRAL :ANGLE :LENGTH
IF ( :LENGTH > 100 ) [STOP]
[FORWARD :LENGTH]
RIGHT :ANGLE
SPIRAL :ANGLE :LENGTH + 3
END
```

The system will follow your END entry with: SPIRAL defined

To execute, enter at the ?:
SPIRAL123 3

You should get an interesting spiral pattern in the graphics area. Due to the limited stack size, you will get a dialogue block indicating that you have overrun the stack. But pressing the [RETURN] key displays the pattern.

ST PEEK

I always like to be able see what's in memory locations of a computer. I thought there must be a way to get the equivalent of a PEEK function. There is a way—the primitive .EXAMINE will do it, although the display is limited to memory locations between \$800 and \$77FFF. Try the following:

```
TO DUMP :START :STOP
IF ( :START > = :STOP ) [STOP]
[MAKE "START :START + 1]
TYPE .EXAMINE :START TYPE [-]
DUMP :START :STOP
END
```

To use, enter DUMP followed by a start address and end the address as shown below: DUMP 491000 491010

That's it for now. I just hope you're having as much fun with your ST as I am with mine.

Fred Hatfield is a computer systems consultant from New Orleans and his ham radio station is K8VDU. This article arrived arrived at Antic less than a week after the September issue started appearing on newsstands.

OBJECT EDITOR

continued from page 20

in memory and called up by pressing a function key.

C.O.L.R. gives you a full-screen 320 x 200 picture space. You can grab any 80 x 40 chunk of the image with the editing drag box and blow it up in "fat bits" on an Edit Screen that fills 90% of the display. Now the fat bits are easily manipulated with the mouse—or with the cursor keys for even finer detail.

Simultaneously, a postage-stamp sized window of the actual bit-mapped sprite is always displayed in the upper left corner of the screen. X,Y coordinates are also constantly on display, helping you keep track of objects as you invert, twist, or copy them.

C.O.L.R. provides a storage buffer for 20 Edit Screens. The C.O.L.R. byte arrays can later be manipulated from assembly language, Forth and BASIC as well as C.

This program produces graphic images so detailed that you have to squint to see the dots. The resolution is as good as a digitized photograph—certainly on par with a coin-operated arcade game.

NIGHTMARE PRAISE

Rugby Circle's words of praise for the ST might give nightmares to Atari executives who are working hard to shake off Atari's "just a you-know-what machine" image.

"I always wanted a computer that could match the quality of arcade graphics and sound, and had a Motorola 68000 chip," says Troy, who until now programmed on the Radio Shack Color Computer. The ST is his dream machine in living color.

"It's not work—it's fun coming home to an ST every night," says Bob, who doesn't get to bring flapping birds to life during his day job as a systems programmer at Birmingham Data Systems.

"A lot of people look down their noses at game programmers," he says. "Well, games are just as difficult to write."

Enough already, we believe you.



kyan

PASCAL

For the Atari

kyan pascal is the most complete package available for learning and using the Pascal language. And now, it's available for the Atari family of computers.

kyan pascal is easy to use, lightning fast, and loaded with features. It's a full Pascal implementation and perfect for both beginning and advanced programmers.

kyan pascal features:

- Optimized Machine Code Compiler;
- Built-In Full Screen Text Editor;
- String-Handling, Chaining, Include File, and Other Powerful Extensions;
- 13-Digit Arithmetic Precision and Full Graphics Support;
- Built-In Assembler (Allows Full Hardware Control); and,
- Tutorial Manual with Sample Programs.

kyan pascal requires 48K of memory and a single disk drive. No additional hardware is necessary. And, it comes with kyan's MONEY BACK GUARANTEE. If not completely satisfied, return it within 15 days for a full refund.

kyan pascal for the Atari \$69.95

(Add \$4.50/copy for handling. \$12.00 outside North America. California residents add \$4.55/copy for sales tax.)

Send Check/Money Order to: **kyan software, Dept. N**
 Call: (415) 775-2923
 MC/Visa Accepted

1850 Union St., Ste. 183
 San Francisco, CA 94123



EXCITING, STRATEGIC, ARCADE ADVENTURE

REQUIRES QUICK WITS and QUICK WRISTS



ATARI 130, 100, 800, 1300
 XL & XE SERIES
 & DISK DRIVE

WHEN YOUR CHIPS ARE DOWN IT'S TIME FOR

BUGRUNNER

29.95 CAN.
 24.95 U.S.A.

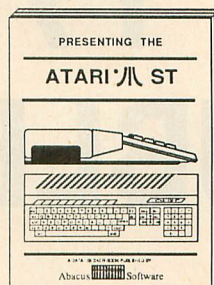
TO ORDER: 1515
 354 WELLINGTON ST.,
 LONDON - ONTARIO, N6A-3N8
 or call (519) 439-5959

Master Card or VISA

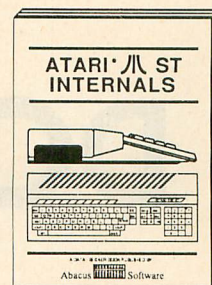
STart

Out right... 

with books from Abacus



An In-Depth Look
 Avail. Now \$16.95



The Insiders' Guide
 Avail. Nov. \$19.95



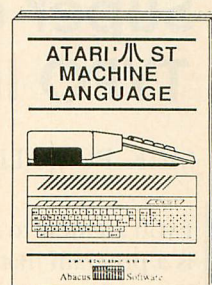
Easy-to-Use Techniques
 Avail. Dec. \$19.95



Especially for the Atari ST
 Avail. Nov. \$19.95



A Step-by-Step Guide
 Avail. Dec. \$19.95

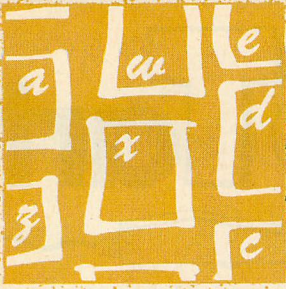


Learn 68000 M/L
 Avail. Dec. \$19.95

Call now, for the name of your nearest dealer. Or order directly from ABACUS with your Mastercard, VISA or AMEX card. Add \$4.00 for postage and handling. Foreign orders add \$8.00 per product. Other software and books coming soon.

Abacus Software

P.O. Box 7211 Grand Rapids, Mi 49510
 Tel. 616/241-5510 Telex 709-101



software

TYPO II DOUBLE FEATURE

A double feature! Two updated enhancements of the TYPO II program typing checker, combining the best ideas contributed by Antic readers. Both BASIC programs will run on all Atari 8-bit computers of any memory size, with disk or cassette. Antic still recommends that newcomers to TYPO II start by typing in and using the simpler original program in this issue's Software Library.

I: Super duper TYPO II 'per

by JACK POWELL

If you are new to **Antic**, TYPO II is a program that finds the exact lines where you made mistakes while typing in BASIC listings from the magazine. You'll see it in each issue, along with instructions, on the third page of the monthly Software Library section.

When **Antic** was preparing to premiere TYPO II in the January, 1985 issue, we spent a great deal of time making the program as simple as possible for beginners. Evidently we succeeded, because **Antic** now gets a lot less letters from readers hav-

ing trouble typing in the printed programs.

At the same time, **Antic** has encouraged advanced programmers to customize TYPO II for their own needs.

Turbo TYPO II (June, 1985) made the program a lot speedier with David McLaughlin's machine language string. In the May, 1985 I/O Board, Patrick Dell'Era added the convenience of automatic line numbering and inverse video TYPO II codes for easier reading. In the April, 1985 I/O Board, Ted Solomon added a subroutine that makes TYPO II delete itself.

And now, we've put the whole shebang together into one customized listing called Super Duper TYPO II 'Per (S.D.T.2.P.)

HOW IT WORKS

There are some special Atari characters in S.D.T.2.P., so type it in carefully and be sure you SAVE a copy before you RUN it. You can't check it with TYPO II. But you can check it with itself—after you type it in. Again, if this is your first time with TYPO II, we recommend you get some practice with the shorter, easier version in this issue's Software Library.

Except for being faster, S.D.T.2.P. works pretty much the same as the original TYPO II. Just type GOTO

32000, then answer the prompt by typing in a program line and pressing [RETURN]. The line will reappear at the bottom of the screen with the two-letter TYPO II code—in inverse video—at the left of the line number.

As with TYPO II, you may press [RETURN] to bring the line back into the editing area, and you may bring up any line by typing an asterisk [*] followed by the line number. But unlike TYPO II, you can also automatically step through the lines you've typed in.

Let's say you want to check S.D.T.2.P. itself. At the prompt, type *32000 to bring line 32000 into the edit area. Press [RETURN] to generate the code for that line. And now, press the plus key [+] followed by [RETURN]. The next program line will automatically appear in the edit window, disappear, then reappear below with its code. Continue to press [+] to go through the entire listing.

ERASER HEAD

You've finished typing in your program, and you want to SAVE it without S.D.T.2.P. Just type ERASE and S.D.T.2.P. will erase itself from memory, leaving only the program you typed in. Alternatively, if you've already pressed [BREAK], you can type GOTO 32250 and accomplish the same thing. Listing on page 58

II: TYPO II code generator

by ANDY BARTON

It's nice to have the line-by-line checkup codes of TYPO II. But it's not always so nice when you need to look up at the screen after each line and check the code.

Especially when you're a fairly experienced programmer, there's a temptation to assume you got the easy lines right and to continue typing ahead without glancing up. Or perhaps your late-night blurry vision may misread an incorrect code. And then when the program crashes, you're stuck with TYPO II's tedious "*line no." option to recheck all the codes.

So for those who like the old way better, here is TYPO II Code Generator. It works much like the original TYPO program. It calculates and prints out all the TYPO II codes and

matching line numbers for any program you have LISTed to disk or cassette.

USING THE PROGRAM

Type in TYPO II Code Generator, check it with TYPO II (or S.D.T.2.P.) and SAVE it on disk or cassette. Note: B\$ in line 55 is the same as B\$ in S.D.T.2.P.

When you RUN the program, it will prompt you to "Choose a file [D:filename]." Type in the device (D:) and filename of a LISTed BASIC program (cassette users, type C:). Then press [RETURN].

Newcomers: a LISTed program is created by using the BASIC command LIST instead of SAVE when storing a program on disk or cassette. The form is: LIST "D:FILENAME" (or LIST "C:").

The filename you give TYPO II Code Generator can be a complete BASIC program or just a portion of one. You may wish to check just a few lines. No problem.

If you're not sure of the file's name, or if you typed an incorrect name, disk owners will be presented with a file directory after pressing [RETURN].

OUTPUT CHOICE

TYPO II Code Generator will now give you a choice of four output devices: Screen, Printer, Disk, or Cassette.

If you choose [S], the codes and line numbers will scroll across your screen. Press [CONTROL] [1] to stop the scroll and [CONTROL] [1] again to continue.

Choose [P] to send the codes directly to your printer.

The [D] choice will write the codes to a disk file much as they look on the screen. You will be prompted for a device and filename. If you don't give your file an extender, TYPO II CODE GENERATOR will supply it with .TYP.

If you select [C] to send your codes to a cassette tape, be sure your machine is set to RECORD.

Listing on page 58



ATTENTION PARENTS!

We are pleased to announce the beginning of a new series of inexpensive disks designed by educators --especially for children.

TINY TOTS

A collection of eight programs enlivened by sound and graphics to help your preschooler learn letters and numbers.

SPANISH PRETERIT

A workbook-type set of drills on past tense verbs in Spanish. Designed to reinforce spelling skills and thoroughly classroom-tested.

Complete documentation; tips to parents included. Only \$12 per disk POSTPAID.

Send check or Money Order to:

ATHENA SOFTWARE



P.O. BOX 2788
Turlock, CA 95381-2788

Allow 3-4 weeks for delivery.
(Calif. residents add 6% tax.)

ELECTRONIC ONE*

THE
LOWEST
PRICES
THE
BEST
SERVICE



ATARI COMPUTER HARDWARE	
ATARI 800XL	88.00
ATARI 1200XL	58.00
ATARI 520ST 3 1/2" Disk DRIVE, R.G.B. COLOR	818.00
DISK DRIVES	
ATARI 1050	148.00
INDUS G.T.	208.00
CENTURIAN 810	158.00

PRINTERS	
STAR SG10	238.00
PANASONIC 1091	238.00
EPSON LX80	238.00
ATARI 1027	178.00
ATARI 1025	148.00
ATARI 1020	38.00
APE FACE INTERFACE	49.99
U PRINT	54.99
U PRINT 16K BUFFER	79.99
ATARI COMPUTER HARDWARE	
TOUCH TABLET	42.99
1030 MODEM	69.99
MPP1000E MODEM	69.99
ATARI LAB STARTER KIT	44.99
TENICKA 13" COLOR MONITOR	198.00
AMDEC 300 COLOR	228.00
SAKATA 13" COLOR	168.00
ATARI KEY PAD	24.99
COMPUSEIVE STARTER KIT	18.99

SPECIAL
**ATARI 130XE
COMPUTER**
129.77

HOW TO ORDER: CASHIER CHECK, MONEY ORDER, MASTERCARD* or VISA* (Add 4% for charge cards) . . . NO PERSONAL CHECKS . . . NO C.O.D.'s . . . SHIPPED U.P.S. **PRICES SUBJECT TO CHANGE.**

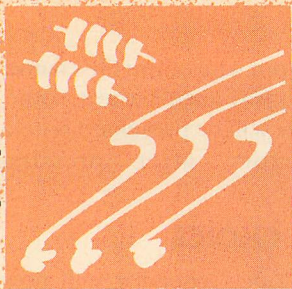
SHIPPING: Prompt one day shipping on in-stock merchandise. Ohio residents add 5.5% sales tax. Add \$3.00 on all orders under \$100.00 . . . Add \$5.00 on all orders over \$100.00.

INTERNATIONAL: Actual freight charge on all orders outside the continental United States including A.P.O.

CALL OR WRITE FOR FREE CATALOG

ELECTRONIC ONE CALL (614)864-9994
P.O. Box 13428 • Columbus, Oh 43213

ATARI COMPUTER SOFTWARE	
ATARI WRITER	29.99
PAPER CLIP	36.99
ACTION	59.99
BASIC XL	54.99
BASIC XE	54.99
LOGO	32.99
MICRO SOFT BASIC II	34.99
CONV. LANGUAGE	14.99
SYN FILE	34.99
SYN CALC	34.99
SYN TREND	26.99
ASSEMBLER EDITOR	19.99
MACRO ASSEMBLER	19.99
PRINT SHOP	27.99
BASIC CARTRIDGE	6.99
CENTPEDE	9.99
RIVER RAID	9.99
PITFALL II	9.99
GAME-STAR BASEBALL	9.99
MINER 2049ER	9.99
BOUNTY BOB STRIKES	29.99
MILLPEDE	9.99
MS. PAC MAN	9.99
PAC MAN	7.99
STAR RAIDERS	7.99
DONKEY KONG	9.99
F15	23.99
ONE ON ONE	23.99



software

130XE MEMORY MANAGEMENT

How to use the XE's extra 64K

IAN CHADWICK

A complete explanation of the extended 64K RAM in the Atari 130XE, by Ian Chadwick, author of Mapping The Atari. Includes a tutorial program showing how to access the extra memory from BASIC. Requires a 130XE computer and intermediate programming knowledge.

If we were stranded on a desert island with nothing but our (solar-powered?) Atari and only one book, we'd have no hesitation in choosing Ian Chadwick's Mapping The Atari. During any programming session at Antic, this comprehensive sourcebook is never more than an arms' length away. Our copy of the familiar white, spiral-bound book is dog-eared and smudged. We were about to order another when Ian told us he just finished revising his classic to include the XL and XE memory locations. At our request, he generously provided this thorough description of the 130XE extended RAM—and how to get at it.—ANTIC ED

Atari has released a computer with 128K RAM, but it may not be exactly what you expected. True, it has 128K RAM available. But it's not entirely available as one large block. Instead, it's switched in and out in 16K blocks by setting and resetting bits in PORTB (54017—\$D301).

Machine language programmers will have no difficulty in bank selecting the extended area fast enough to make it seem that a larger selection of RAM is available—Atari's own DOS 2.5 RAMdisk program does this. BASIC programmers will have to be content with shunting about in 16K blocks.

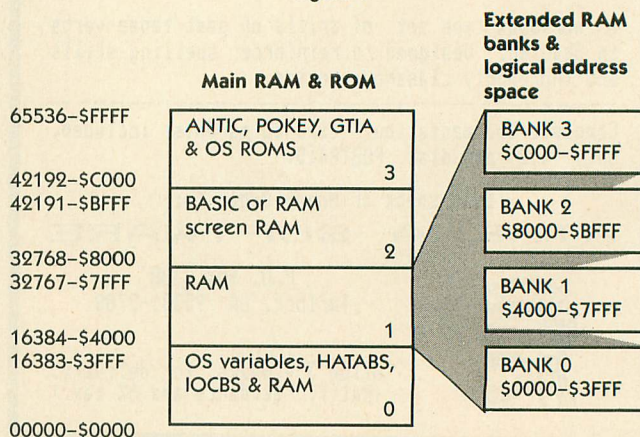
MEMORY MANAGEMENT

Briefly, you can tell either the CPU or the ANTIC chip that a block is available for that chip's use. The CPU can use it for data and variable storage, altered character sets, P/M graphic assemblies, machine language routines and the like. ANTIC uses the banks for graphic screens and display lists. Most BASIC commands—like PRINT and LIST—work in the main bank area and don't write to the extended bank unless you tell the CPU to use an extended bank at the same time ANTIC is using it. (See Figure 1.)

On the other hand, BASIC's clear screen command used in the extended bank will crash the program quite effectively. It disables the screen and keyboard, making it necessary to press [RESET] to recover.

continued on page 30

Figure 1



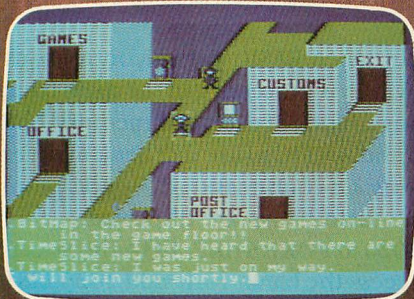
THE CREATION OF A NEW BREED



The GCP Network: More Communications, More Graphics, LESS Hassle!

The GCP City:

The entry to worlds of adventure and challenge.



The Game Floor:

Choose your favorite and match wits with others.



Lords of Space:

Explore and conquer your way to galactic supremacy.



FEATURES: Joystick-driven; no commands to learn! Private mail, bulletin boards, program library, file transfers, automatic logons, User Group support, local phone call access from most cities, no network surcharge. **SYSTEM REQUIREMENTS:** 48K Atari, 1 disk drive, modem.

For more information contact:



**GAMES
COMPUTERS
PLAY, INC.**

112 East Market Street, York, PA 17401 • 717-848-2660 (voice)

\$30.00 signup kit includes software and 5 free hours

\$6.00 per hour; evenings and weekends

This happens because the command clears screen memory to RAMTOP, but gets confused by the bank switching. It clears the extended bank area and then the main bank which follows, erasing the display list and screen in higher RAM as well.

To avoid this, move RAMTOP (location 106) down (for example; POKE 106, 128) while ANTIC accesses the extended bank area, then POKE it back up for the original main bank display. Now if you [BREAK] your program while an extended bank is displayed, [SHIFT] [CLEAR] will only clear the main bank area to 32768. The upper bank area, which was the original screen display, remains intact.

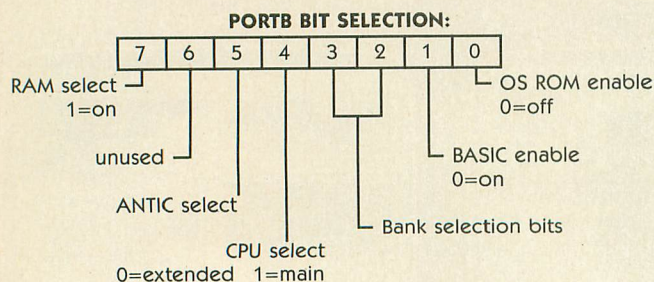
The extended bank has four separate 16K blocks (See Figure 1) which can each be accessed through the main addresses 16384 to 32767 (\$4000—\$7FFF). No matter what the address of the extended bank, you still read and write (PEEK and POKE) to this range, not to the address of the bank itself.

Imagine the extended bank as a collection of four identical ranges, each one individually accessible. The only way to use all four as one large block is by a machine language routine which rapidly selects the proper block, so it seems to be using one larger section. This is best done in vertical blank interrupts.

FREDDIE

Access to any bank is through PORTB. Previously this was the controller for the two additional joystick ports on the Atari 400/800 computers. Now it is the memory manager on the XL and XE models. Bits 2 and 3 select the bank to be accessed, bits 4 and 5 select the processor. (See Figure 2.) Both processors can access the same area at the same time if you set the bits correctly. The memory management chip is called "Freddie."

Figure 2



The key to access is POKEing PORTB with 129, plus the mode times 16, plus the bank times 4. (See Figure 3.) 129 turns off the self-test ROM, and turns on BASIC and ROM. 253 (\$FD) is the default value. Machine language programmers obviously don't need BASIC, so add 131 (\$83) to the formula instead of 129. The sixth bit isn't used in the 130XE, but it may be used in future Ataris. So you can also use 193 or 195 instead of 129, with the same results.

Figure 3

PORTB MEMORY ASSIGNMENT					PORTB BANK ASSIGNMENT			
BIT:		6502 uses	ANTIC uses	MODE No.	BIT:		ADDRESS:	BANK No.
4	5				2	3		
0	0	Extd	Extd	0	0	\$0000-\$3FFF	0	
0	1	Main	Extd	1	0	\$4000-\$7FFF	1	
1	0	Extd	Main	2	1	\$8000-\$BFFF	2	
1	1	Main	Main	3	1	\$C000-\$FFFF	3	

$$\text{POKE } 54017, 129 + (\text{MODE} * 16) + (\text{BANK} * 4)$$

PROGRAM EXAMPLE

Listing 1 demonstrates the extra memory by filling a portion of each extended bank with a value corresponding to the bank number—0 to 3. Main bank 1 (16384 to 32767) is represented by number 4. Type in Listing 1, check it with TYPO II and SAVE a copy before you RUN it.

When you press a console key, the program jumps to a subroutine which POKES the new address of the screen into the display list (DL+4, DL+5) and the screen pointers into RAM (88, 89). Then it POKES the corresponding bank and mode number into PORTB, telling ANTIC to get the screen display from that bank.

The fill routine is slow, but it's not meant to demonstrate speed. Once you've filled the banks, you can usually type GOTO 140 to display the memory again after any modifications. [RESET] doesn't clear the extended banks.

Key:

- [START] Extended 0
- [SELECT] Extended 1
- [OPTION] Extended 2
- [START] [SELECT] Extended 3
- [START] [OPTION] Main 1
- [START] [SELECT] [OPTION] Main 2 (Original screen)

Bank:

The last key selection returns you to the original screen and display list seen when you boot BASIC.

If you press [BREAK] while any of the extended banks are displayed, the system appears to hang. It's not really locked up. Carefully type POKE 54017,253 and you'll get control back.

The problem comes when BASIC passes control back to the screen editor, which is processing in the main bank while you're displaying a block of extended memory. You have to tell both CPU and ANTIC to use that bank in order to use [BREAK] properly. Of course, [BREAK] works properly when any of the main banks are displayed.

Try changing line 1020 to POKE 54017, 193—this selects both processors to access the bank. Now add 1025 LIST 100,200 and type GOTO 160. The zero in an extended bank can use BASIC screen and graphic commands. If you press [BREAK] when this screen is displayed, it displays properly.

CAUTION!

There are several precautions to take!

First, fill all of the banks *before* you fill the main sec-

tion or use it for programming or data. If you are using the CPU (POKEs) to fill the banks while the display routine routes ANTIC to the extended area for the display, you could end up over-writing your own program space.

Try to avoid large strings as well. It's best to load the extended banks with a simple routine first, then fill the main bank with your strings and program.

For example, delete line 1025 and restore line 1020 to its original state. Now, add these lines to your program:

```
132 GOSUB 8500
8500 DIM A$(10000)
8600 A$(1)="A":A$(9999)=A$:A$(2)=A$
8700 RETURN
```

Now, when you press [START] [OPTION], instead of seeing main bank 1 filled with 4's, you see Atari Fuji symbols. You're looking into the heart of A\$!

If the DIM statement appears before the banks are filled, the program generates illogical error messages. (Try adding this code between lines 10 and 20 instead). This is an example of the CPU using one bank of main memory while ANTIC uses a bank of extended memory, both at the same address. This limits your program somewhat. It might mean you have to write a two-part program, the first part being a loader for the extended bank.

Notice the program fills the banks with internal codes rather than ATASCII (see *Mapping The Atari*, page 180). This is because the bank area becomes the screen display, bypassing the ATASCII to internal translation routine. In order to display "A" instead of the graphic symbol, change A\$(1)="A" to A\$(1)="!".

You can use other graphics modes besides GRAPHICS 0 in your displays. Try adding to the original program:

```
4525 GRAPHICS 20:COLOR 1:DRAWTO 20,20
4526 DRAWTO 40,40:DRAWTO 20,20
5000 GOTO 5000
```

However, to display the other screens properly, add a GRAPHICS 0 into the first line of each subroutine, since doing this sets up a GRAPHICS 4+16 display list that won't display anything in the other banks. Another method is to move the entire display list with an associated screen up into the extended area and simply point to the display list instead of the screen memory.

BANK ON THE FUTURE

There are many avenues of exploration open to programmers using the new memory bank. You could write an adventure game with all the rooms entirely in memory, or a scrolling graphics game. You could use the space to store BBS bulletins and sign-on messages.

Since you don't have to use the banks linearly, you could make the main display area the "center" of a game, while "north" would move into one bank—say 3—west into 2, east into 1 and south into 0—all controlled by joystick input. You could use the space to store classic openings

in a chess game, use it as a disk I/O buffer or as a print spooler.

As a RAMdisk, it means fast overlay programs that used to be unbearably slow on the old drives. A RAMdisk can also be used to hold graphic screens for games. The possibilities are limitless. . .

RAMDISK

Atari DOS 2.5 creates RAMdisk #8 on the 130XE. Since the RAMdisk occupies all of the extended bank, you'll have to choose between it and your own programming. You can't have both without problems. With the RAMdisk, DOS 2.5 sets the extended bank as D8: and copies MEM.SAV and DUP.SYS to it. You can use it as a very fast 64K drive with 499 sectors. When you type DOS from BASIC, it jumps to DUP.SYS in the RAM area rather than loading from D1:. You can delete MEM.SAV if you don't need it.

Do you want to use DOS 2.5 and extended memory programming? From BASIC, POKE 5439, ASC("1"). This tells DOS to search for DUP.SYS on drive 1. POKE 1802 with the number of drives in your system. Each bit represents a drive from 1 to 8, so POKE with the total of their binary equivalents. If you have two drives, POKE 1802,3—the value of bits 1 and 2 added together.

Now, type DOS and, from the menu, delete the file RAMDISK.SYS. Then write DOS files back to the disk. This disk will now boot with extended RAM but without a RAMdisk.

ADDENDUM

Devices or programs which load the 400/800 Operating System into the 130XE RAM (such as FIX XL or XL BOSS) can also access the additional 64K and use the RAMdisk! Listing 1 works equally well on my 130XE unadorned or using my XL BOSS to switch in the older 400/800 OS. Of course, once you run it, you wipe out DUP.SYS in the extended memory and eliminate the RAMdisk. So you can't take advantage of both at the same time.

MAPPING THE ATARI (Revised Edition)
COMPUTE! Publications, Inc.
324 W. Wendover Avenue, Suite 200
Greensboro, NC 27408
(919) 275-9809
\$16.95

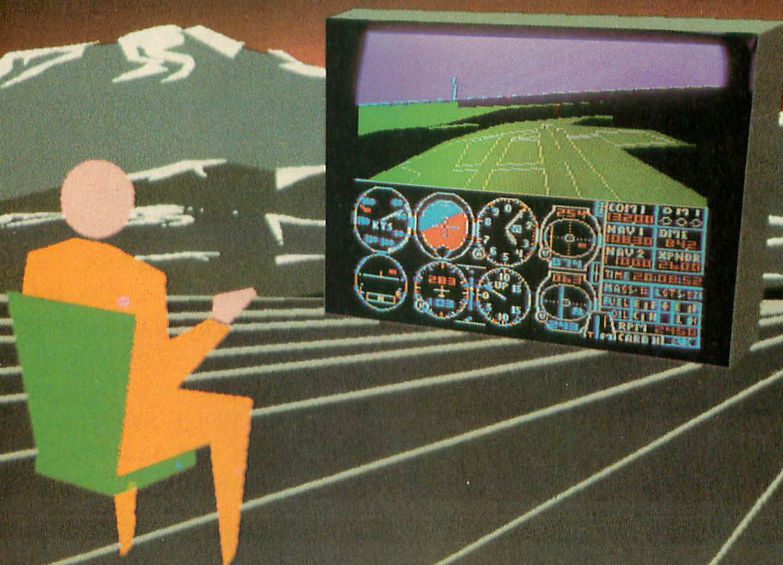
XL BOSS
Allen Macroware
P.O. Box 2205
Redondo Beach, CA 90278
(213) 376-4105
\$79.95

FIX XL
Antic Arcade Catalog
PD026
\$10



Flight Simulator II

For
Atari computers
with 48K memory



Put yourself in the pilot's seat of a Piper 181 Cherokee Archer for an awe-inspiring flight over realistic scenery from New York to Los Angeles. High speed color-filled 3D graphics will give you a beautiful panoramic view as you practice takeoffs, landings, and aerobatics. Complete documentation will get you airborne quickly even if you've never flown before. When you think you're ready, you can play the World War I Ace aerial battle game. Flight Simulator II features include ■ animated color 3D graphics ■ day, dusk, and night flying modes ■ over 80 airports in four scenery areas: New York, Chicago, Los Angeles, Seattle, with additional scenery areas available ■ user-variable weather, from clear blue skies to grey cloudy conditions ■ complete flight instrumentation ■ VOR, ILS, ADF, and DME radio equipped ■ navigation facilities and course plotting ■ World War I Ace aerial battle game ■ complete information manual and flight handbook.

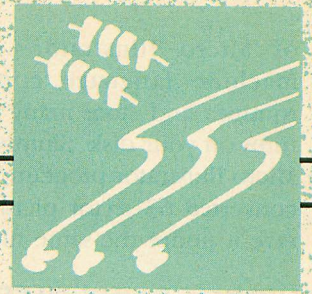
See your dealer . . .

or write or call for more information. For direct orders please add \$1.50 for shipping and specify UPS or first class mail delivery. American Express, Diner's Club, MasterCard, and Visa accepted.

Order Line: 800/637-4983

subLOGIC
Corporation
713 Edgebrook Drive
Champaign IL 61820
(217) 359-8482 Telex: 206995

software



RAPID GRAPHICS CONVERTER

Now . . . universal picture file compatibility

by CHARLES JACKSON, *Antic* Program Editor

Convert your picture files between any commercial Atari graphics software format—in less than 60 seconds. The Rapid Graphics Converter also overcomes many longstanding compatibility roadblocks. This BASIC program works on all 8-bit Atari computers with 48K and a disk drive.

Rapid Graphics Converter is a supercharged version of Easy Graphic Converter which I wrote for the September 1984 *Antic*. This new program lets you switch disk formats of picture files created with the 10 most popular commercial graphics programs for Atari. It does a file conversion in less than 60 seconds and with fewer compatibility hassles than ever before.

The program works with pictures created on the following software:

- Micro Illustrator (all versions)
- Micropainter (Datasoft)
- Fun With Art (Epyx)
- Paint (Atari or Reston)
- Visualizer (Maximus)
- Moviemaker (Reston)

- Graphics Master (Datasoft)
- Atarigraphics (Atari)
- Graphics Machine (ESI)

Note that Micro Illustrator is the software that's provided (under various names) with a wide variety of graphics products including: KoalaPad, KoalaPen, Atari Touch Tablet, Chalk Board PowerPad and Tech-Sketch Light Pen.

Now you can mix and match the best features of virtually all Atari graphics software in a single picture.

For example, you could tape a photo over your video screen and trace it with a light pen program. Then you could fill in color patterns from your touch tablet software. And you could even animate the scene with MovieMaker!

TYPING IT IN

Type in Listing 1, checking it with TYPO II, and SAVE a copy to disk before you RUN it. If you have problems with lines 630, 900–960 and 1220–1250, don't bother to type them in. Listing 2 will create them for you. When RUN, Listing 2 creates a file called LINES.LST which contains these special lines. Now, type NEW, LOAD listing 1, then ENTER

“D:LINES.LST” and SAVE the completed program.

USING RAPID GRAPHICS

After the title screen, you'll see a menu of available conversions. Find the name of the program that you used to create your Source picture, and type in its corresponding number. If you need a disk directory, type a zero.

Type in the filename of your Source picture using the “D:filename” format. To see a directory at this point, type [RETURN] without the filename.

Now type in the menu number and create a different filename for your Destination picture. The conversion begins when you press [START].

EASY ILLUSTRATOR

You don't need to press the [INSERT] or [CLEAR] keys when converting Micro Illustrator pictures—as is required with many “old-fashioned” converters. The Rapid Graphics Converter accepts a compressed Micro Illustrator picture as is.

Micro Illustrator files created by the converter are not compressed—they're always 63 disk sectors long. However, you can still take advantage

continued on next page

of Micro Illustrator's complex machine language compression routines and store many more pictures on your disk. Simply run your Micro Illustrator program, load your converted 63-sector picture and re-save it under the same filename.

HIDDEN PAINT FILES

In some versions of Paint software, picture files cannot be accessed by DOS 2 and BASIC.

If your Paint picture files are stored this way, you can load and save them with the converter's Paint (Reston) option. Select number 5 from the menu.

After selecting 5, you can look at a Paint disk directory by typing [RETURN] at the filename prompt. The converter automatically adjusts its disk directory routines to fit your picture file category.

ANIMATION

You can animate your favorite micro-screens with the converter and MovieMaker. Just convert that favorite screen into a MovieMaker Background file. Then load it into the MovieMaker program.

MovieMaker lets you change pieces of your background screen into shapes which can be animated and

used in your Movie files. For more details, see the Easy Graphics Converter article (*Antic*, September 1984).

Certain graphics products require special filenames, and the converter will not create pictures with illegal filenames.

For example, all Paint picture filenames must have a .PIC extender. All Graphics Machine picture filenames need .SCR extenders. MovieMaker background files must have .BKG extenders. If you forget to type in one of these special extenders, the converter will remind you to include a legal filename.

RESOLUTION SOLUTION

The converter works with pictures drawn in Graphics Modes 7, 8 and 15. Since the pixel size and number of colors available differ among various modes, pictures drawn in one mode may look slightly different when translated into other modes. (See *Figure 1*.)

When picture files are converted from mode 8 (a two color mode) to a mode with more colors, such as four-color mode 15, the converter program adds any necessary default colors. You should also remember

that you'll be sacrificing some of the finer details of your high resolution microscreens when converting them to lower resolution.

Finally, feel free to experiment with the converter. If your favorite drawing program isn't mentioned in the main menu, try converting your files with one of the available options. The length of a picture file may help you decide which conversions to try first.

Picture files which are 62 disk sectors long might be loaded as MicroPainter, Graphics Master or Graphics Machine files. Try the Fun With Art option with picture files slightly longer than 62 sectors.

Micro Illustrator files vary in length from one sector to 63 sectors.

Picture files which are about 31 sectors long might be loaded as Visualizer or Paint (Atari) files.

Programmers wishing to modify the converter should examine the special Break-disable routine in lines 40-70. When you RUN the program normally, the [BREAK] key is disabled. However, if you press the [SELECT] key while typing RUN [RETURN], the [BREAK] key will be enabled, allowing you to halt and examine the program at any point.


Listing on page 59 

Figure 1

Graphics Mode 8 (ANTIC mode F)

One foreground color, one background color.
Screen measures 320 columns by 192 rows.
Software: Graphics Master, Graphics Machine.

Graphics Mode 7 (ANTIC mode D)

Three foreground colors, one background color.
Screen measures 160 columns by 96 rows.
Software: Paint, MovieMaker, Visualizer.

Graphics Mode 15 (ANTIC mode E)

Three foreground colors, one background color.
Screen measures 160 columns by 192 rows.
Software: MicroPainter, Micro Illustrator, Fun With Art,
AtariGraphics.

FREE BONUSES • LOWER PRICES

LotsaBytes offers **QUALITY, QUANTITY, SELECTION, LOW PRICES, FREE BONUSES**, and a **FULL 100% REPLACEMENT GUARANTEE ON DEFECTIVE DISKS**. Our National Public Domain Copy Service searches the most popular magazines, B.B.S., and User Groups libraries to save you **TIME, WORK and MONEY**. Most of our P.D. disks are double-sided, giving you more programming for less money. Our other software titles are discounted up to 50% and more. **GIVE US A TRY AND BECOME ONE OF OUR THOUSANDS OF SATISFIED CUSTOMERS!**

PUBLIC DOMAIN SOFTWARE

<p># 1 GAMES Two full disk sides packed with 25 games including some 'Arcade'. \$ 7.95</p>	<p># 2 UTILITIES 25 Powerful programs to help you get the most out of your Atari. \$ 7.95</p>	<p># 3 AMS MUSIC Listen to your Atari play the 25 songs on these 2 disk sides. Self contained with Player program NOW \$6.95</p>	<p># 4 GAMES 14 better games on two disk sides with some Arcade types. \$ 7.95</p>	<p># 5 EDUCATION Loaded with 28 programs on two disk sides. Fun learning for the entire family. \$ 7.95</p>
<p># 6 AMS MUSIC 25 more all-time favorites to sing along with on two disk sides. With Player Program. NOW \$6.95</p>	<p># 7 GAMES 14 MORE better games on two sides. More Arcade types. \$ 7.95</p>	<p># 8 UTILITIES 17 more power-packed programs to help unleash the full potential of your Atari. \$ 7.95</p>	<p># 9 GAMES Filled on both sides with 17 of the better games around. Arcade type. \$ 7.95</p>	<p># 10 UTILITIES Another assortment of 17 programs that should be in everyone's library \$ 7.95</p>
<p># 11 GAMES Two sides filled with 19 great games. Many Arcade types. \$ 7.95</p>	<p># 12 ADVENTURES 13 fantastic text type adventures for your enjoyment. Two sides. \$ 7.95</p>	<p># 13 EDUCATION 24 entertaining and educational programs for the whole family. Two sides. \$ 7.95</p>	<p># 14 AMS MUSIC The automatic Player lets you listen to another 24 great songs on two sides. NOW \$6.95</p>	<p># 15 UTILITIES Another assortment of 21 fine programs to 'educate' your Atari. \$ 7.95</p>
<p># 16 MUSIC MAJOR Learn the basics of music. Individual or classroom. Plus \$2.00 sor Student Guide. \$7.95</p>	<p># 17 MICRO-TALES Enjoy the action, sound, and music of the NOISY GIANT and CAVE-MAN JOE. 2 sides. \$7.95</p>	<p># 18 CLASSIC GAMES Two sides. Belongs in every collection. \$7.95</p>	<p># 19 CLASSIC UTILITIES 'A' 7.95</p>	<p># 20 CLASSIC UTILITIES 'B' \$7.95</p>

STAR LORDS by Walt Huber

Until the 24th Century man was confined to Earth, the solar system and a few nearby stars. Portals were predicted and soon discovered allowing exploration of the Galaxy. Colonization proceeded rapidly, differences arose, wars were fought, and soon the Galaxy was on the eve of destruction. Peace came in the 27th Century. Disputes were decided by specially trained STAR LORDS commanding unmanned ships and robot satellites duelling in the far reaches of Space. Ultimate victory meant complete control of the Galaxy! You have just completed your training and your ability to create the winning strategy will determine the outcome of the conflict. (Text/graphics). (Complete instructions)

\$39.95 value LotsaBytes price \$12.95

ESI WRITER!

A quality WORD PROCESSOR that outperforms others costing over \$100. It works with almost any printer and is the FASTEST WP you can buy. Features include a built-in HELP SCREEN, JUSTIFICATION, SEARCH, REPLACE, INSERT, PAGE NUMBERING, HEADERS, CENTERING and much more! It can load in other WP files, has friendly messages, and comes with over 50 pages of documentation and tutorials. Works with any Atari, but some configurations will require a translator disk. No printer drivers are required and you can use every feature of your printer. Disk only.

Originally \$49.95 **REDUCED TO \$14.95**

GREAT FUN! SUPER STUD POKER
by Walt Huber

Now you can play hand after hand, against intelligent opponents with infinite patience and the only thing you'll lose is ignorance of the game. There are ten computer opponents of varying skills to choose from and YOU CAN PLAY EIGHT POPULAR STUD POKER GAMES, including Stud, Stud Lowball, Stud HiLo and Hi Chicago. A wild card can be added to the deck also. Anyone care for a friendly game of Poker? Joystick required.

\$29.95 value Only \$12.95

THE ORIGINAL ADVENTURE
by Bob Howell

For all Atari computers. The Original Colossal Cave Adventure faithfully reproduced from the 'main-frames' This is the one that launched the whole Adventure craze of today!

- Two mazes
- 130 rooms
- Deadly Dragons
- Nasty Dwarves
- Tenacious Troll
- The Pirate & More!
- 86 coded hints
- SAVE/RESUME
- 40k disk

Originally \$29.95 **NOW \$12.95**



ADVENTURE! STONEQUEST
by David Strelitz

King Weesey and his subjects lived in great prosperity until the Evil Alchemist stole the GREAT STONE OF PROSPERITY and transported it to his Black Fortress. Unless someone (you?) takes up the Quest and recovers the STONE, King Weesey and his subjects are doomed... You've come to the Castle to try to help, but it won't be easy. There are many traps, pitfalls, and puzzles to solve on the way. Almost everyone you meet will be an enemy and must be out-smarted (or bribed?). Magic is everywhere and in many forms. Will you be strong enough to survive? (Text)

\$39.95 value Only \$14.95

EXCLUSIVE! ADVANCED MUSIC SYSTEM II
by Lee Actor

Allows you to compose and/or copy music with your Atari computer! All new machine code.

- Control over pitch duration, envelope dynamic level, meter, tempo and key.
- 4 independent voices
- 5 1/2 octaves per voice
- Save up to 8200 notes
- Custom DOS
- FULL instructions
- 24K disk

Originally \$29.95 **REDUCED! NOW \$12.95**



BACK BY POPULAR DEMAND! THE ULTIMATE PROGRAMMING UTILITIES!

Tricky Tutorials™ as LOW as \$ 7.95 each
TRICKY TUTORIALSTM originally sold for up to \$29.95 per copy. Each is written in an entertaining style and comes complete with disk and manual (up to 66 pages).

<p>#1 - DISPLAY LISTS Learn to create your own graphics and text modes.</p> <p>#2 - SCROLLING Explains how to move the screen over maps of graphics or text.</p> <p>#3 - PAGE FLIPPING Change the entire screen instantly to another display picture.</p> <p>#4 - BEGINNING ANIMATION Learn to create the illusion of movement using simple shapes.</p> <p>#5 - PLAYER MISSILE GRAPHICS - Create your own 'PACMAN' type game while learning about Collisions, Backgrounds, Players, Scoring, and more.</p> <p>#6 - SOUND & MUSIC Learn a simple way to write music and sound effects on your Atari.</p> <p>#7 - DISK UTILITIES Seven disk tools. FORMATER, INSPECTOR, AUTORUN SYS MAKER, RPM CHECKER, MENU MAKER, DIRECTORY PRINTER & FILES TUTORIAL.</p>	<p>#8 - CHARACTER GRAPHICS Change letter shapes into anything you wish. Includes an editor that makes creating and animating the shapes easy, and a linker that actually writes BASIC code. Complete game included as an example.</p> <p>#9 - GTIA GRAPHICS Use graphics modes 9 to 11 to create 3-D shapes. Place 16 colors on the screen at once, and even digitize pictures using these new modes. Includes a 9 color picture editor.</p> <p>#10 - SOUND EFFECTS 30 simple sound effects like lasers and bombs, and an effects editor. Explains how to combine sounds and graphics, and 16 bit sounds for extended range.</p> <p>#11 - MEMORY MAP TUTORIAL How to control cursor text windows, user keys, joysticks and paddles, tabs, inverse video, upside down letters, break key protection, and 25 more.</p>	<p>#12 - S.A.M. TUTORIAL Learn to make S.A.M. sing, change voice, sound, add graphics, explore phonemes, and change inflection. Requires S.A.M. by Don't Ask.</p> <p>#13 - BASIC TOOLS Adds the following to BASIC: RE-NUMBER, DELETE, TRACE, EXPAND, QUICKREF, AND LISTER.</p> <p>#14 - ADVANCED PROGRAMMING TOOLS Machine language tools used to write commercial programs useable from Basic or Assembly. PLAYER MISSILE MOVEMENT, TIMEDELAYS, SOUND EFFECTS, PAGE FLIPPING, MEMORY MOVEMENT, SPECIAL CHARACTER FONTS, and SAVE FULL GRAPHICS SCREENS (I/O) IN SECONDS.</p> <p>#15 - FANCY FONTS Includes many simple fonts, an editor, and adds a new set of sub-routines you can call to create great displays. Print the fonts out on your printer as you create them.</p>
--	--	--

\$9.95 EACH! CHOOSE 5 OR MORE AT ONLY \$7.95 EACH!

**** FREE BONUSES ****

New Lucky 7 — 11 Bonuses

Don't even ask how we can do it! We've decided to give even more free bonuses for larger purchases. **FOR EACH 3 DISKS PURCHASED YOU MAY CHOOSE 1 FREE! BUT IF YOU BUY 7 DISKS, YOU NOW MAY CHOOSE 3 FREE BONUSES. AND IF YOU BUY 11 DISKS, YOU MAY CHOOSE 5 FREE BONUSES!** Here's a recap: For Each 3 disks you get ONE free. If you buy 7, you get one extra (Buy 7 - get 3). If you buy 11, add two extra (buy 11 - get 5). **WOW!!**

Choose from the following:

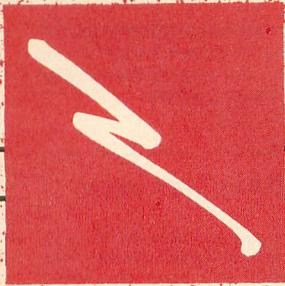
- A XL/XE Translator disk to use most 800 software. (recommended!) or:
- The new DOS 2.5 for 1050 owners (only) now using DOS 3.0 or:
- Any of the LotsaBytes Public Domain disks #1 thru #20.

**** FREE BONUSES ****

TERMS: All defective disks will be replaced free. Write first with details for Return Authorization. All orders are shipped by U.S. Mail. Add \$1.95 shipping and handling for 1 to 5 disks. Add \$2.95 for 6 to 10 disks. Add \$3.95 for 11 to 15 disks. Outside of U.S.A. & Canada add 15% for shipping and handling (Minimum - \$4.00) U.S. Funds ONLY! California residents MUST add Sales Tax. We accept checks and money orders. Sorry, NO Credit Cards or COD. Allow THREE weeks for personal checks to clear our bank. SCHOOL AND GOVERNMENT PURCHASE ORDERS WELCOME!

Sorry, no catalog. We distribute and publish only what we advertise herein.
We encourage software authors to submit their programs for evaluation. We pay competitive royalties on a monthly basis.
Atari is the registered trademark of Atari Corp.

LOTSABYTES
15445 Ventura Blvd., Suite 10G
Sherman Oaks, CA 91413



radio

RADIO ATARI CALLING

*Ham satellites, slow scan video,
repeater stations, and more . . .*

by GIGI BISSON, *Antic* Assistant Editor

Listen to Jack McKirken for a while, and you wonder how amateur radio enthusiasts ever got by *without* personal computers.

"Why should you have to hand-turn your antenna to track a satellite transmission, when your computer can do it?," says McKirken. He's an Ohioan who formerly edited *Ad Astra*, the users newsletter for ham Atarians. "Anything a ham can do, a ham with a computer can do better," he says. "Using the computer to control radio hardware is another job where the Atari shines."

Hook up a short wave radio to your Atari and you could end up with a slow scan television station, a chance to eavesdrop on the space shuttle, and friends all over the world.

You could also end up with an expensive, obsessive, but fascinating hobby. "Oh gosh, ham radio is just as bad as computing," says McKirken with a laugh, "And if you combine the two . . ."

GOOD BUDDIES

They work together as a team, performing feats that neither could do alone. When you combine ham radio and a computer you get (pardon the pun) a computer that likes to show off.

"There are several million hams worldwide. A vast majority of them have computer equipment," says Russell Grockett, chairman of JACE, the Jacksonville, Florida Atari users group. JACE has what is probably the largest and most active amateur radio special interest group (SIG) in Ataridom right now.

Even during simple voice transmissions, hams are increasingly reliant on computers to boost the mileage of their radios by controlling antennas and helping them home in on signals. The computer can figure the maximum or minimum frequencies and decide which is the best radio band to operate on. Hams with computers can even track a moving satellite for the clearest possible signal.

Currently, the most popular use of computerized ham radio is Radio Teletype (RTTY), the ham's equivalent of the computer telecommunications network—without phone bills. Hams with computers upload and download programs, participate in SIGS and operate bulletin board services.

RTTY computing is only as complicated as you let it get. You could start with \$100 in used equipment, or a \$5,000 base station. "Your antenna can be anything from a simple piece of copper wire to massive aluminum

arrays that threaten to cave in the roof of your house," McKirken says.

But hams still insist that no matter how much hardware they accumulate, RTTY is still cheaper than paying through the nose for "online time". At a *peak* speed of 300 baud, however, it's much slower than 1200 baud telecommunications. The other difference between "online" and "on-the-air" is privacy. Anyone with a radio can plug in and listen to ham conversations.

HAM ATARI

It probably comes as a surprise to most people that Atari computers are very popular among RTTY hams. Especially well-liked are the old Atari 800 and 400 models—which were extremely well-shielded against radio interference.

Shielding is important because computers customarily generate lots of radio "noise". This noise can totally jam the sensitive receiver of a nearby ham radio.

The metal casing inside the Atari 800 and 400 prevents interference "leakage." Though the newer XL and XE models do not have this shielding, they also work pretty well with ham radio—a lot better than many other popular brands of computer. (Shield-

ing an XL or XE yourself requires soldering copper sheeting to your main circuit board, or encasing the entire computer in metal. Whether or not you'd need to shield your XL/XE depends on your specific system.)

LICENSE, PLEASE

If you want to operate your own station, instead of merely listening in on other ham transmissions, you must obtain an Amateur Radio License. A Technician Class license requires greater technical knowledge than Novice, the lowest rating. But you don't need to be able to send Morse code any faster, just five words per minute. And a Technician licensee gets many more privileges.

For more information on obtaining a license, contact a local ham radio store. There's also likely to be at least one ham in your local computer users group. If not, contact the American Radio Relay League. (See address at end of article.)

REACHING OUT

Disaster aid has traditionally been very big with hams. During the massive forest fires in California this summer, hams used portable stations to assist firefighters in the field, allowing communication between fire crews who couldn't see each other through the thick smoke.

When power and phone lines are knocked out during a widespread emergency, many battery-operated stations stay on the air and transmit important messages. Through it all, independent, computer-operated repeater stations would keep the communications network going.

Packet communication networks, the hams' version of LANs (Local Area Networks) exist on the east and west coast and will eventually extend across the US according to Grockett.

These packet networks are made up of "repeater stations" that receive a transmission and re-transmit it at

higher power. This can dramatically increase the range of less-expensive ham radios.

Repeater stations are usually computer controlled. Most of them are volunteer projects of ham radio organizations. But usually any licensed amateur is allowed to use the repeater.

Grockett's JACE group and other ham organizations have subsidized seven OSCARS (Orbiting Satellites Carrying Amateur Radio) over the years. AMSAT, an amateur satellite construction group, builds them, and the space shuttle launches them. Anyone with a ham radio and a computer can use the satellites to communicate around the world.

Hams with computers can even listen in on NASA conversations on the space shuttle. The computer helps a radio antenna stay precisely focused on the shuttle as it zips through the atmosphere at 17,000 miles per hour.

SLOW SCAN

The next wave in ham computing is slow scan television. This lets computers send and receive color video pictures over the airwaves. Red, blue and green separations are made of each image (as in a photo negative) and each is sent individually over the airwaves, then reassembled by the computer into a complete picture.

Slow scan lives up to its name, however, at a sluggish eight seconds per picture transmission. (Regular television transmission speed is 30 pictures per second.) The final image has about half the resolution of regular television.

The slow scan technique was used to send the first photographs of space back from the Pioneer—in fact an amateur radio enthusiast developed the technique for NASA back in 1958.

Hams have always been involved with experimental uses of radio, and the computer is bringing new levels

of sophistication to the hobbyist. For example, McKirken is currently collaborating on the development of a commercial program that, when combined with an 850 interface and an ST 980 Yaesu radio modem, will enable any Atari with 32K or more to take complete control of the radio.

The computer will turn the radio on and off, show a graphic s-meter (representation of signal strength) on the screen, and even push the mike to talk. Such programs enable the user to receive and send messages even if they're not home, much the same way as a timer turns your lights on while you're on vacation.

And sometimes the computer is just used as a computer. When hams have contests to see how many countries and people they can reach in a given weekend, computers are used to sort out the mountains of resulting paperwork and compile statistics.

The computer is also used to set up parabolic bases that enable hams to pick up commercial satellite TV transmissions in their back yards.

About the only thing hams don't do with computers is play games—unless you consider the on-air radio chess network.

"The big thing about ham is it has always been and always will be amateur," says Grockett, who, when not operating his computer radio network works for AT&T. "It's not allowed to become a profit-making thing," he says.

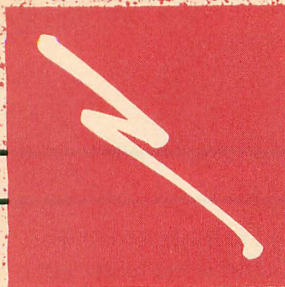
FOR MORE HELP

If you're interested in getting started in ham computing, here are some places to consult for more information:

American Radio Relay League

This 66-year-old, 100,000-member, worldwide organization is the premier resource for anyone interested in getting involved with

continued on page 46



radio

RADIO MODEMS AND SOFTWARE

RTTY on your Atari

by BILL MARQUARDT (N6CBT)

I have been using my Atari 800 as a radio teletype (RTTY) terminal for well over two years with very good results. RTTY is the ham (amateur) radio equivalent of telecommunications networking.

My home is about 50 miles northeast of San Francisco. Several times a week I broadcast back and forth with Larry Johnson (WB6SVS) an Atari ham who lives just south of SF. The farthest I've ever reached *directly* with my Atari radio system was San Jose, a distance of over 100 miles. And of course there are no phone bills for RTTY. . .

RADIO MODEMS

Once you own a well-shielded Atari and a ham radio, your most important piece of equipment is an interface, a sort of "radio modem."

Radio signals are converted by your receiver into audio signals (tones) and fed by cable into the radio modem. The modem translates these tones into data signals that your Atari can understand, and sends it over another cable into the computer. From there, the data can be displayed on the monitor, sent to a printer, or saved to a disk or cassette. When you transmit, your keyboard input goes by cable to the interface and is translated into audio tones for the radio.

MEET KANTRONICS

Antic invited me to review some recent Atari-compatible radio interfaces and software from Kantronics, a Kansas manufacturer that also publishes a \$6-yearly newsletter, "Computers and Amateur Radio." Kantronics is at 1202 E. 23rd Street, Lawrence, KS 66044. (913) 842-7745.

The **Kantronics Interface II** comes with adequate documentation, plus all the cable and connectors you will ever need. It's easy enough to hook up to your Atari and radio, provided that:

1. You can solder well enough to attach the plugs to the cables—or buy the Kantronics software that comes with completed cables.
2. You can understand the meaning of radio jargon such as PTT (Push to Talk).

Like all the other radio modems discussed here, the Interface II requires you to connect a small power supply (that's not included). You can buy an unassembled power pack kit for about \$10.

The Interface II performed flawlessly. Its most unusual feature is a pair of switch-selectable input channels. This option lets you choose between VHF and HF wavelengths by flipping a single switch. The Interface II can

be tuned with a built-in set of LEDs, or you can plug in an oscilloscope unit.

ADVANCED HAMS ONLY

The **Kantronics UTU** (\$199.95) seemed to be as reliable as the Interface II. But it requires an RS-232 serial port—which means you can only use this model with an Atari if you have the 850 Interface Module (See **Antic**, August 1985, page 16.)

The UTU (Universal Terminal Unit) has a built-in ROM that must be accessed with a BASIC program which you'll have to write yourself. The manual offers only a sample program written in IBM BASIC. This is not an interface you can just plug in, it will require some experimentation.

However, the UTU might be the best choice for hams interested in writing their own software, particularly since the built-in ROM allows you to access this device in BASIC. Thus the need for packaged software is eliminated.

MORE MODEMS

Antic also sent me the **RM 1000** by Macrotronics, which is a fantastic piece of hardware. Unfortunately, when I tried to phone some questions to the Turlock, CA manufacturer, I

discovered they were now out of business.

Still, if you ever find an RM 1000 for sale someplace you ought to consider it. It features two LED bar-graphs for tuning both Morse code and radio transmissions, and it excels at rejecting background noise. List price used to be \$239, with 32K disk software for \$59 or cartridge for \$99.

I should mention that my own personal radio modem is the **MFJ RTTY/CW Computer Interface, Model MFJ-1224**. (\$99.95). I have been using this LED-tuned unit for some time and am completely satisfied. I was also pleased to find that it works fine with all the Kantronics software I was testing.

Documentation for my MFJ was a scant few pages, but it was adequate to get me hooked up and running without too much trouble. MFJ Enterprises can be reached at P.O. Box 494, Mississippi State, MS 39762. (601) 323-5869.

SOFTWARE

Just as you need special software to use your Atari with a telecommunications modem, you also need software for your ham radio modem.

Kantronics has three software cartridges that work with any 8-bit Atari. Each package includes a completed

cable for connecting the computer and the modem, so you won't need to do any soldering.

Hamsoft (\$49.95) is the no-frills package. However, current revision AH 2.2 is much improved over the ancient version I have been using in my shack. This software doesn't work with a disk drive. But you can load from cassette as many as 10 frequently used messages (such as your call sign), and then "autodial" them with a single keystroke.

The program is menu-oriented and very easy to use. Morse code can be copied at up to 99 words per minute, and all standard RTTY speeds are supported.

AMTOR

Hamsoft/AMTOR (\$79.95) adds to the basic package the capability to use AMTOR. This is a recent ham mode that contains an error checking protocol resembling XMODEM, but it is only allowed on the high frequency (HF) bands. If you will regularly be using your rig on HF bands, then you probably would like this feature.

AMTOR can't be used by a VHF nut like me. I work exclusively in the "two-meter band" which covers the frequencies from 144 to 148 megahertz (MHz). This is a band of frequencies somewhat above the standard FM

broadcast stations, which use 88 to 108 MHz. One MHz is one million cycles-per-second.

ULTIMATE HAMWARE

Hamtext (\$99.95) is the no-holds-barred version of Kantronics software. I'm so spoiled by testing it for this review that it's hard for me to return it to **Antic** for shipment back to the manufacturer.

The main advantage of Hamtext is that it can handle a disk drive. And it also includes more options than Hamsoft.

Hams can establish their own size limitations on the transmission buffer. Message ports (buffers) use only the amount of memory that the messages actually occupy. This frees the remainder of memory for use as a holding buffer. The buffer can be edited, saved to printer or disk, or viewed onscreen. The operator is thereby free from needing to monitor constantly. I have no hesitation in recommending Hamtext software to anyone who can live without AMTOR.

Bill Marquardt commutes from Fairfield, California to San Francisco for his job with the U.S. Postal Service. He is a member of ABACUS, the San Francisco Atari users group.



Write 80

80 Column Display Word Processor

Main Features of *Write 80*

- NO ADDITIONAL HARDWARE REQUIRED
- Works with either TV or Monitor
- Works with most printers
- Easy to use
- Support Programs now available

Write Mode (figure 1)

- Wraparound
- Auto-center/recenter line
- Right Justify text
- Justify/unjustify text
- Variable line spacing
- Search/Search & Replace
- Block move (cut & paste)
- Full Cursor Movement
- Delete all text
- Overwrite
- Insert/Delete spaces
- Insert/Delete lines
- Tabs (set/clear)
- Backspace
- Move line to top
- Move cursor to top
- Delete to end
- Move cursor to end

Print Plus (figure 2)

- Print Write 80 text files on Epson printer using any font
- Create new computer character & printer font sets that can be used to print out text (figure 2)
- Presently Epson compatible

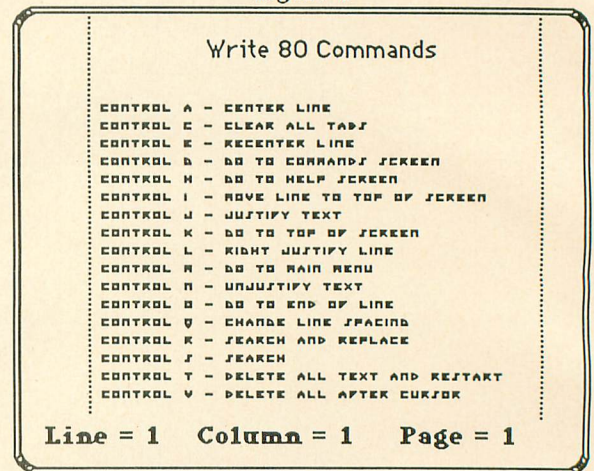
Write 80

\$ 59.95

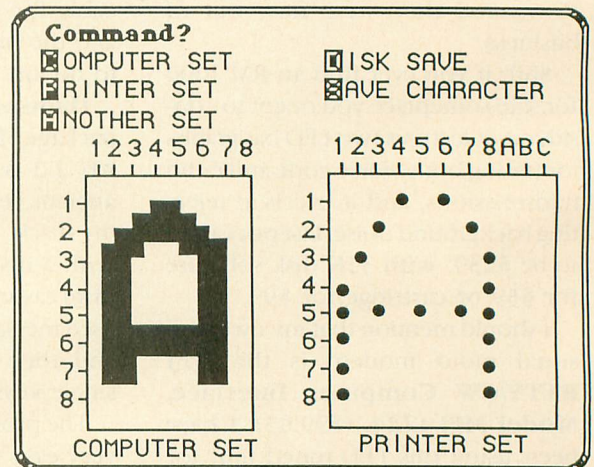
Print Plus

\$ 29.95

figure 1



Write 80 text screen



Print Plus Character Generator
figure 2

See your dealer ...

Call or write for more information.
For direct orders enclose the amount plus \$3 for shipping. Specify UPS or first class mail delivery.
NY State residents add 8% sales tax.
Call 716-634-0578 in NY State

Order Line: 716-634-0578



MTS Software
PO Box 623
Williamsville, NY 14221
(716)-634-0578

Write 80 & Print Plus are available exclusively for the Atari computer (with 48K).
ATARI is a registered trademark of Atari, Corp. All Rights Reserved.
EPSON is a registered trademark of Epson America, Inc.
The MTS Software logo and all software titles are trademarks of MTS Software.

Dealer Inquiries Invited



MORSE CODE RECEIVER

Atari dots and dashes, 70 words per minute

by STEVE STUNTZ

Morse Code Receiver translates Morse code into ASCII values which your Atari displays as letters or numbers. The BASIC listing creates an assembly language program. The assembly language source code is also provided, but you don't need to type it in. This program works with all 8-bit Atari computers, disk or cassette. You'll also need to build a simple, inexpensive interface described in the article.

"Can I interface my Atari 800 with a shortwave transceiver? I know Morse code can be generated, but can it be received and translated back to ASCII? What type of interface is needed, and what are the costs of such equipment?"

*Bill Keaton
Amberst, Ohio*

Connect your Atari to a short-wave radio? Of course! A few dollars for parts, a few hours of soldering and programming, and your Atari can translate Morse code as quickly as 70 words per minute.

The program can also be used for code practice *without* the interface. Send code with a joystick, or by connecting a Morse code key to the joystick port. You will hear the Morse dots-and-dashes beeping and see letters displayed on the screen as you operate the joystick or key.

MORSE SOFTWARE

The program converts Morse code at any speed between 5 and 70 words per minute, and it automatically adjusts to any speed changes.

The decoded messages are shown on the screen in inverse video. The message scrolls upward as it fills the screen, and a word wrap routine prevents words from being split at the end of a line.

Listing 1, CODEWRIT.BAS, is a BASIC program which creates the machine language object file called CODEWRIT.EXE. Type in Listing 1, checking it with TYPO II, and SAVE a backup copy to disk or cassette before you RUN it. **Antic** Disk subscribers use the L command in DOS to load CODEWRIT.EXE from the monthly disk.

The CODEWRIT.EXE file can be copied to another disk and renamed AUTORUN.SYS, so that it starts

automatically when you insert the disk.

Listing 2, CODEWRIT.M65, is the corresponding assembly language MAC/65 source code. You do not need to type in Listing 2 to use the Morse Code Receiver program.

MORSE HARDWARE

You can build the Atari/Radio interface for under \$15. The complete parts list appears at the end of this article.

Assemble the circuit as it appears in *Figure 1*. Note that a 33K-Ohm resistor is connected in series with a 10K-Ohm resistor to duplicate a 43K-Ohm resistor (which was unavailable).

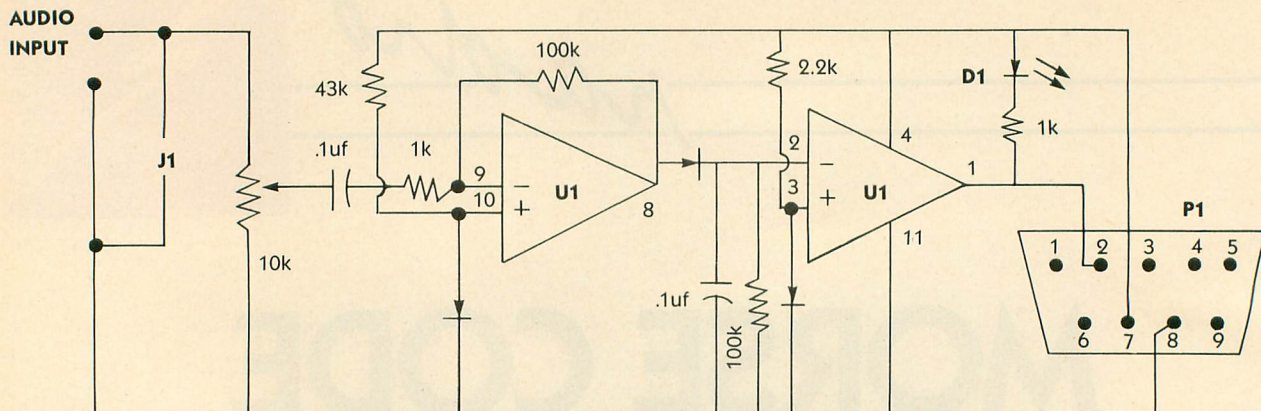
USING THE PROGRAM

To test the program, plug a joystick into Port 1. Quickly pull back on the stick and release it three times. Your monitor should beep three times, and a letter S should appear on your screen.

If you're teaching yourself Morse code, you can continue using the joystick as a Morse code key. Or you can connect a real key to the joystick port as shown in *Figure 2*.

continued on next page

Figure 1
RADIO INTERFACE CIRCUIT



- P1—D-Subminiature Female 9 pin plug Radio Shack 276-1538**
U1—Quad Operational Amplifier LM-324 Radio Shack 276-1711
D1—Green LED Radio Shack 276-022
J1—Earphone Jack

Now you're ready to receive some code. Boot the Morse Code Receiver program. Make sure the interface circuit is connected to joystick port 1.

Find a strong broadcast signal with little background noise. Plug your interface circuit into your radio's earphone jack. Carefully adjust the interface's potentiometer so that the LED blinks on and off in time with the code. In a moment, your Atari will display the decoded message, one letter at a time.

From time to time, the program may misinterpret one or two characters. This occurs because the program is adjusting its timing loop and does not yet have enough information to distinguish dots from dashes.

PROGRAM ANALYSIS

The timing loop (lines 1820-1970 in Listing 2) is controlled with display list interrupts. This loop checks the status of pin #2 of the joystick port. When the computer is receiving a signal (either a dot or a dash), this pin is grounded. Otherwise the pin is open.

The timing loop checks the status of this pin 120 times per second, and stores the number of interrupts occurring between each status change. This value is stored in the timing buffer. Each time the status of pin #2 changes, the number of intervening interrupts is stored in the next

memory location of the timing buffer.

This process continues until all 256 bytes of the timing buffer are used. Then the buffer is cleared and used again.

The CW character loop (lines 2000-2070 in Listing 2) determines if the timing buffer contains useful timing information. If this is so, the routine uses the timing information to begin reconstructing the proper Morse code character.

The program observes the following conventions when handling Morse code timing information:

1. A dot is represented by 0.
2. A dash is represented by 1.
3. A Morse code word is read from right to left.
4. The last 1 encountered when reading from right to left indicates the end of the character.

The routine will continue reading and decoding timing information un-

til it encounters a character space. Then, the program looks up the ASCII equivalent of the decoded character, prints it to the screen and returns for more code.

For example, the letter A (a dot followed by a dash) sent at 18 words per minute causes the computer to store the numbers 8, 24, 24, 36 in the timing buffer.

Then the CW character loop converts those four numbers into one Morse character and finds its corresponding ASCII character to display on the screen.

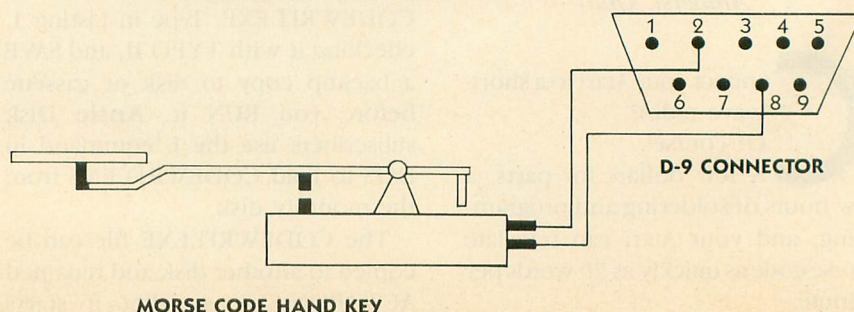
Remember that the program needs a fairly clear signal to operate properly. However, I've managed to copy signals sent from locations all over the world.

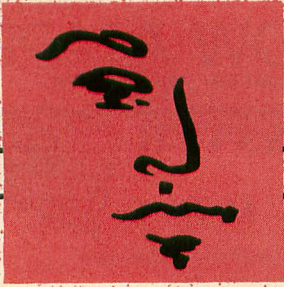
PARTS LIST

D-9 Female Joystick Connector. Radio Shack #276-1538 or equivalent.

continued on page 46

Figure 2
CW HAND KEY CONNECTION





news

KYAN PASCAL

True Pascal for Atari, at last

Reviewed by RAY COLE

Finally there is a Pascal for the Atari that doesn't require two disk drives and a computer science degree! If you're looking for a fast version of Standard Pascal for your single drive Atari, **Kyan Pascal** is the language for you.

Pascal was developed by Professor Niklaus Wirth of Switzerland in the late '60s. Designed as a learning language, Pascal emphasizes structured programming which promotes good programming technique. It has become the first language taught to new students of engineering and computer science.

Those not familiar with Pascal will find it is similar to the ACTION! or C languages. The object code is compiled from text source code. Kyan Pascal includes an editor for source code, as well as the compiler and some extension files.

There are two Pascal "dialects." One was designed for microcomputers at the University of California, San Diego and is accordingly called UCSD Pascal. The other is Standard Pascal. Kyan is Standard Pascal with a few additions and extensions.

FEATURES

Kyan Pascal supports all of the features that make Pascal great—global and local procedures, pointers

for linked lists and binary trees, two-dimensional arrays, arrays of records, variant records, recursion, etc., etc.

In short, it has all the features you would expect from any Standard Pascal on any other computer. And Kyan Software has done Pascal for the Atari at only \$69.95!

COMPILER

The Kyan Pascal compiler is reasonably fast and effective. Unlike UCSD Pascal, Kyan Pascal text files are compiled directly into assembly language. The compiler, in addition to locating errors, produces a complete assembly language listing which you can send to the screen and/or the printer. But unfortunately, there is no way to save this listing to disk for fine tuning.

The assembly language listing is next assembled to produce the object code file which can be run from DOS without Kyan Pascal. (Though you will need to append the library files or at least put them on the same disk.)

The resulting object file has a very rapid run-time. Ten iterations of the Eratosthenes Prime Number Sieve (see "First ST Performance Test," *Antic*, October 1985) ran in about 120 seconds with the screen on. With the screen off, the same program ran in just 80 seconds.

Compare this to the eight and a half minutes it took UCSD Pascal on the Apple IIe, or the eight minutes and 55 seconds it took Atari BASIC to complete the task.

The biggest drawback of the compiler is the 35 seconds it takes to load. If you have a 130XE, you can put the compiler in the RAMdisk and save yourself the half-minute load time. But even at 35 seconds, the resulting speedy object code is well worth the wait!

EDITOR

The Kyan Pascal editor commands are hardly mnemonic and do not take advantage of the familiar Atari screen editor. However, programmers familiar with Wordstar or Turbo Pascal will be right at home. Also, you quickly adjust to the lack of mnemonics because the layout is fairly logical.

Deletions may take getting used to. [SHIFT] [DELETE] wipes out a single character the way you would expect [CONTROL] [DELETE] to work. To delete a line, you have to use [CONTROL] [Y].

A "search and replace" feature is included in the editor, but unfortunately there is no "copy block" command. Also, *the tab key does nothing at all*, and there is no substitute!

In a language like Pascal, where everything is indented, that tab key is sorely missed. If you do any complicated loop nesting, you'll find yourself hitting the space bar about five to ten times before each line.

Because the compiler requires only that the source file be DOS compatible, you might be better advised to use a text editor you're more comfortable with.

ASSEMBLER

Kyan Pascal contains an assembler which can be used to embed machine language routines in the middle of any procedure, function, or main program body. It is also possible—though somewhat cumbersome—to pass information between the ML routines and the Pascal programs, procedures, and functions.

OPERATING SYSTEM

Ideally, an operating system should be so easy to use that you don't notice it exists at all. But Kyan Pascal's operating system is far from ideal.

To load the program compiler, the manual says: Type PC. Actually, you must type D:PC. When the editor prompts you for the name of the file you want to edit, do you type CONSTRUC? No, you have to type D:CONSTRUC.

Every time you access a file from the disk, you must remember to include the device. This is not only silly, it's aggravating. When the compiler asks for the name of the file to compile, you'd better remember to put that D: before the filename, or you'll have to reload the compiler!

There are other inconveniences. You cannot get a disk directory without going to DOS. And if you try to reload the editor after running a program that uses graphics, the computer locks up. Hopefully these glitches will be smoothed out in later releases.

DATA TYPES

Kyan Pascal allows the use of both capitals and lowercase letters for naming variables or writing the program itself. It does not, however, permit underscores. Thus, Variable Name is okay, but Variable_Name is not.

Most of the important data types for variables are supported, including integer, real, char, and Boolean. In addition, Kyan Pascal allows user-defined subrange and enumerated types.

The type, double precision is not a required part of any Pascal and is left out of Kyan Pascal. It is not needed anyway, since this implementation yields an amazing 13 digits of accuracy with regular type real variables!

UCSD Pascal programmers may at first lament the loss of the predefined data type string, since the only way to simulate string variables in Kyan Pascal is by setting up an array of characters. However, a small library of string routines comes with the language and can be included in your programs.

One problem with Kyan strings is the relational operators, "<" and ">." These work only on the first letter of each of the compared strings. For example, suppose Word = 'ANTIC' and FirstWord = 'ATARI', then the line:

```
If Word < FirstWord then
  FirstWord := Word;
```

will *not* set FirstWord equal to ANTIC as we would like. This tends to make sorting tasks a bit more difficult than they should be.

Assignment statements are a little inconvenient too, since all of the character array elements *must* be filled. For example, given the following declarations:

```
Type String: array[1..15] of char;
Var Magazine: String;
```

the assignment statement Magazine = 'Antic' will not work. You must use

Magazine := 'Antic' so that there are exactly 15 characters between the quotes. A readln adds the trailing blanks automatically, and you can truncate them in a writeln by including the function LENGTH in your program and using the length as a field specification. Thus:

```
writeln(Magazine :
  LENGTH(Magazine));
```

will print out all characters up to but not including the first blank. I had to call the company to find this out, though. It's not explained anywhere in the manual.

DOCUMENTATION:

Documentation is, unfortunately, pretty poor. The spiral-bound instruction manual contains many errors, not all of which are typos. And the most serious are those of omission, such as the above-mentioned LENGTH function.

I also disagree with the included sample programs which, I feel, set bad examples for programmers new to Pascal. The programs don't make use of procedures as much as they should, the commenting is weak, and the indenting format is inconsistent.

Of course, the manual does not claim to be a Pascal instruction book and users unfamiliar with the language should definitely purchase a separate book (I recommend *PASCAL: An Introduction To The Art And Science Of Programming* by Walter J. Savitch. Benjamin/Cummings Publishing Company, Inc., 1984.)

EXTENSIONS

Kyan Pascal includes a few extensions to the standard. The ASSIGN procedure permits a crude sort of PEEK and POKE, and PRON and PROFF will redirect writeln output to the printer instead of the screen.

continued on next page

With the command “#i”, you can include procedures from one program into another. With the command “#a” you can insert an assembly language routine. Provisions have been made to allow chaining programs together and passing variable values between chained programs.

GRAPHICS BONUS

Version 1.1 contains a library of graphics routines for the Atari. There are six files which simulate the BASIC commands GRAPHICS, PLOT, DRAWTO, SETCOLOR, POSITION, and LOCATE.

Though the language is fast, it's not quite fast enough to produce arcade quality games. But if you've been writing your games in BASIC you'll find Kyan Pascal to be significantly faster—and easier to use.

Unfortunately, there are no dedicated commands for Player/Missile graphics and no equivalent to the BASIC SOUND statement. And you'll have to write assembly language routines to create these functions in Pascal.

BOTTOM LINE

Kyan Pascal is exactly what it claims to be—a good, solid, fast version of Standard Pascal. And there lies the disappointment. With just a few additions, it could have been so much more.

Its deficiencies lie mostly in the lack of extensions to the Standard. In general, Kyan Pascal is terrific as long as you don't particularly care about writing programs that make use of features that are unique to the Atari.

Nevertheless, Kyan Pascal plus a good book makes a painless way to introduce yourself to Pascal programming. If you are taking a class in Pascal and want to do some work at home, Kyan Pascal is a must. If you use Pascal at the office and want to write programs at home on your Atari, again, Kyan Pascal is the package for you.

Nearly everything that BASIC does without assembly language can be done faster and more easily with Kyan Pascal. At this price, its worth looking into.

This package is available from Kyan Software, 1850 Union Street, #183, San Francisco, CA 94123, (415) 775-2923, on 64K disk, (XL/XE models only) for \$69.95.

(Note: At this writing, Kyan Pascal was only available for XE and XL computers. According to the manufacturer, the 400/800 version will be available within two to three months. If you own an older machine, be sure and contact Kyan before ordering.—ANTIC ED)

Ray Cole is a junior at UCSD, majoring in Engineering. He's been programming in Pascal on his Atari—as well as on minicomputers—for over two years. Ray teaches introductory Pascal classes on Apple computers.



MORSE CODE RECEIVER

continued from page 42

LM-324 Quad Operational Amplifier. Radio Shack #276-1711 or equivalent.

Green LED. Radio Shack #276-022 or equivalent.

Three Silicon Diodes. Radio Shack #276-1620 or equivalent.

10K-Ohm Linear Taper Potentiometer. Radio Shack #271-1715 or equivalent.

Two 100K-Ohm, 1/4 Watt Resistors. Radio Shack #271-1347 or equivalent.

Two 1K-Ohm, 1/4 Watt Resistors. Radio Shack #271-1321 or equivalent.

2.2K-Ohm, 1/4 Watt Resistor. Radio Shack #271-1325 or equivalent.

33K-Ohm, 1/4 Watt Resistor. Radio Shack #271-1341 or equivalent.

10K-Ohm, 1/4 Watt Resistor. Radio Shack #271-1335 or equivalent.

Two 0.1uf Capacitors. Radio Shack #272-135 or equivalent.

14-pin DIP Socket. Radio Shack #276-1999, or equivalent.

Miscellaneous: Radio earphone jack and plug, wire, PC board.

Steve Stuntz is an electrical engineer from Loveland, CO.

Listing on page 54

RADIO ATARI CALLING

continued from page 37

computer-aided amateur radio. ARRL publishes a monthly magazine, is involved with ham education and keeps an eye on FCC regulations:

ARRL

225 Main Street

Newington, Conn. 06111

(203) 666-1541.

Atari Microcomputer Network

This Atari-and-radio users organization is reorganizing after a period of inactivity. They used to publish the Ad Astra newsletter and offered a selection of public domain software. For information or advice, drop in on their international, on-the-air meeting—Sundays at 1600 Universal Coordinated Time (UTC) on frequency 14.325 MHz.

HAMNET

The CompuServe ham radio special interest group welcomes your questions. Just type in GO HOM II after you have logged onto CompuServe.

RTTY Today

This book is a good reference source for beginners and is available for \$8.95 plus \$1.75 postage from:

Universal Electronics

4555 Groves Road, Suite 13

Columbus, OH 43232

(614) 866-4605.

JACE

The Jacksonville, Florida Atari user's group is a good source of public domain ham software. Out-of-state members are invited. Call their 24-hour BBS (FOREM 300/1200 baud) at (904) 733-4515. The sysop is a ham who may be able to answer your questions. Or write: Russell Grockett, 1187 Dunbar Court. Orange Park, FL 32073

Computers and Amateur Radio

This bi-monthly newsletter about using amateur radio with personal computers costs \$6 a year:

Kantronics

1202 E. 23rd Street

Lawrence, Kansas 66044

(913) 842-7745

ATARI 800 COMPUTERS — \$69.00

RECONDITIONED "IN THE FOAM", NEW LOOKING

NOT INCLUDING POWER SUPPLY TRANSFORMER (\$15.00 extra)

- ATARIWRITER, complete — \$29.00
- ATARIWRITER, no box or book — \$12.00
- 820 or 822 Printer, *complete* w/cable and paper, no interface needed — \$39.00
- Special Edition Disk Drive made from ATARI® 810 boards, in custom case — \$189.00
- Special Edition Disk Drive with Happy installed (see ad below) — \$339.00
- Happy Enhancement alone — \$189.00
- DE RE ATARI — \$9.95
- 800 Computer 5 board set ROM, RAM, CPU, MOTHER, SIDE — \$39.00
- PAC MAN, no box, clean new cartridge — \$5.00
- BMC Amber Monitor — \$79.00
- BMC Color Monitor — \$199.00
- Cables, Parts — *Call*
- Double Sided Quad Density Disks, box of ten — \$19.00
- 830 Modem — \$19.00
- Touch Type — \$5.00

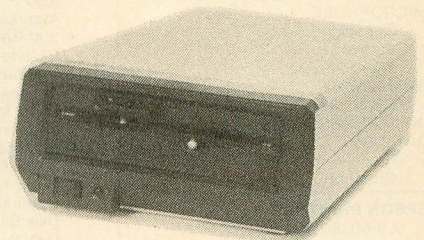
California residents add sales tax
Minimum shipping charge \$5.00

Everything for the ATARI Systems to Parts

SAN JOSE COMPUTER
1844 Almaden Rd. Unit E
San Jose, CA 95125
(408) 723-2025



**YOU CAN'T TELL
A DISK DRIVE
BY ITS COVER!!**



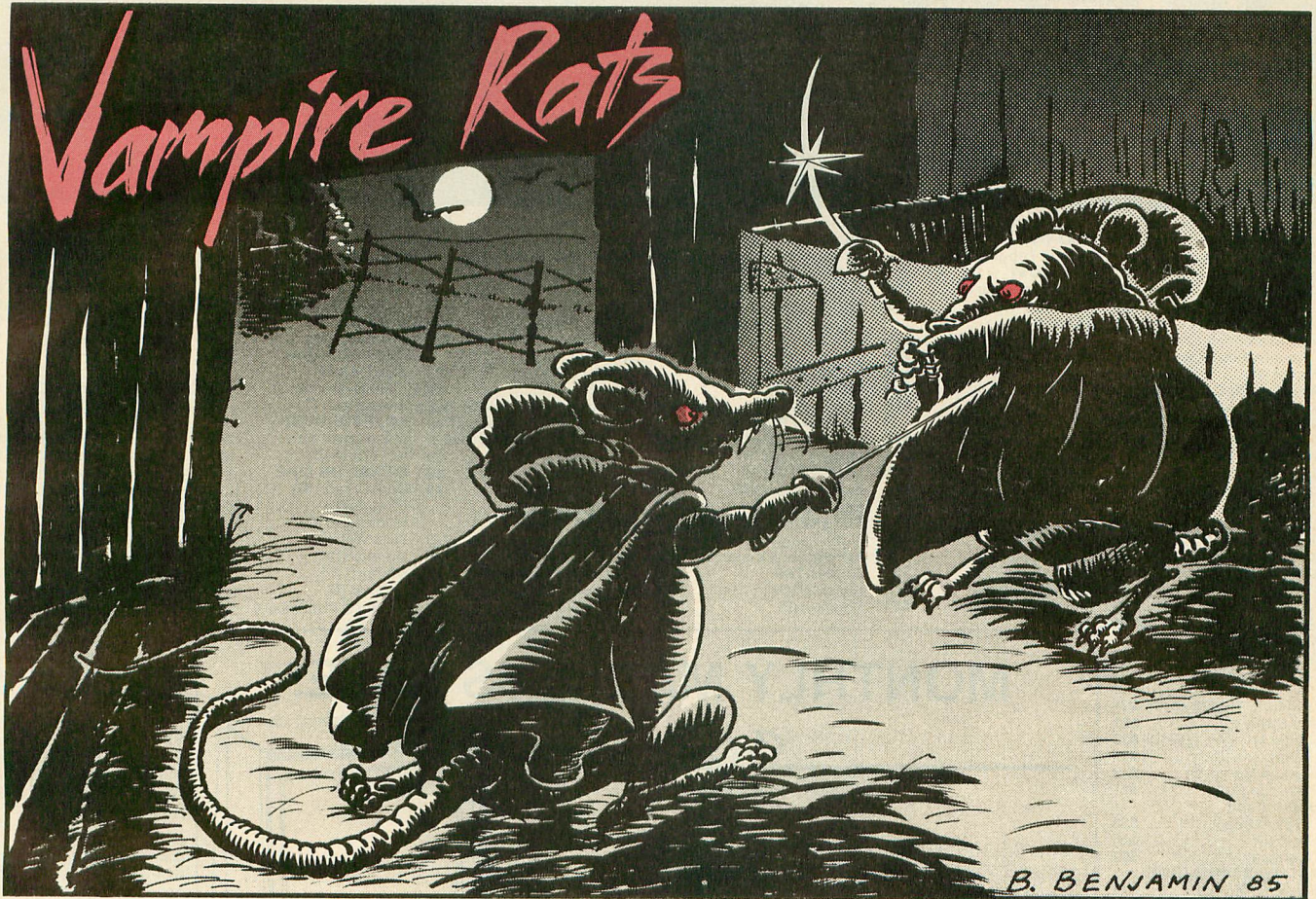
WITH A **HAPPY ENHANCEMENT** INSTALLED THESE ARE
THE MOST POWERFUL DISK DRIVES FOR YOUR ATARI COMPUTER
WARP SPEED SOFTWARE DISK READING AND WRITING 500% FASTER

- HAPPY BACKUP** — Easy to use backup of even the most heavily protected disks
- HAPPY COMPACTOR** — Combines 8 disks into 1 disk with a menu
- WARP SPEED DOS** — Improved Atari DOS 2.0S with WARP SPEED reading & writing
- SECTOR COPIER** — Whole disk read, write and verify in 105 seconds
- 1050 ENHANCEMENT** — Supports single, 1050 double, and true double density
- 810 ENHANCEMENT** — Supports single density

SPECIAL SUGGESTED RETAIL PRICE: Get the HAPPY ENHANCEMENT 810 or 1050 version with the HAPPY BACKUP PROGRAM, plus the multi drive HAPPY BACKUP PROGRAM, plus the HAPPY COMPACTOR PROGRAM, plus the HAPPY DRIVE DOS, plus the HAPPY SECTOR COPY, all with WARP DRIVE SPEED, including our diagnostic, a \$350.00 value for only \$249.95, for a limited time only! Price includes shipping by air mail to U.S.A. and Canada. Foreign orders add \$10.00 and send an international money order payable through a U.S.A. bank. California orders add \$16.25 state sales tax. Cashiers check or money order for immediate shipment from stock. Personal checks require 2-3 weeks to clear. Cash COD available by phone order and charges will be added. No credit card orders accepted. ENHANCEMENTS for other ATARI compatible drives coming soon, call for information. Specify 1050 or 810 ENHANCEMENT, all 1050s use the same ENHANCEMENT. Please specify -H model for all 810 disk drives purchased new after February 1982, call for help in 810 ENHANCEMENT model selection. Dealers now throughout the world, call for the number of the dealer closest to you.

ATARI is a registered trademark of Atari Computer Inc.

HAPPY COMPUTERS, INC. • P. O. Box 1268 • Morgan Hill, California 95037 • (408) 779-3830



by TOM ZARBOCK

In honor of the Halloween season, Antic presents one of the strangest arcade games we have ever published. Join the Vampire Rats as they stalk each other (and any innocent passers-by) in the midnight barnyard. The program for this two-player BASIC game works on all Atari computers of any memory size, with disk or cassette.

This barnyard isn't big enough for Count Ratula and Vampirodent. So they are fighting a duel to the death. Only one mighty Vampire Rat can survive to become... Transylvania's King for a Day!

To enlist in this supernatural free-for-all, type in Listing 1. Check it with TYPO II and SAVE a copy before you RUN it. After the Grade-B horror movie title screen appears, press the joystick button to start the game.

DUELING VAMPIRES

Pushing the joystick forward makes your vampire advance. Moving the stick to the right or left pivots the vampire like an early videogame tank. To turn and move simultaneously, hold down the joystick button as you manipulate the stick. The ominous sound effects for each action are definitely worthy of a cheapo monster movie.

Vampire Rats cannot move backwards. Pulling back on the joystick causes the rat to jump forward. A jumping rat moves faster and can leap over obstacles—but each jump costs the rat some extra "blood energy."

Blood energy levels for both rats are displayed with red bars at the opposite sides of the screen. Vampire Rats slowly lose blood as time passes—unless they can replenish their supply from some of the randomly appearing victims—or from each other.

When blood level becomes dangerously low, the rat darkens in warning. Zero blood level loses the game.

VAMPIRE ATTACK

Vampire Rats cannot move onto a spot that is already occupied, but that doesn't make them any less dangerous. In order to drain an opponent or victim, Vampire Rats must simply be:

- (1) Right next to them.
- (2) Pointed forward at them.

Draining is automatic and does not require pressing the joystick button. Each successful attack is accompanied by a sizzling zap sound.

Good luck, Children of the Night. Don't bump into any garlic wreaths.

Tom Zarbock is a business administration major from San Juan Capistrano, in Southern California.

Listing on page 65



SOFTWARE LIBRARY

Antic type-in listing section includes every full-length program from this issue. Listings are easier to type and proofread, easy to remove and save in a binder if you wish.

▶ **ATARI DOTS AND DASHES, 70 WORDS PER MINUTE**

MORSE CODE RECEIVER 54

▶ **HOW TO USE THE XE'S EXTRA 64K**

130XE MEMORY MANAGEMENT 57

▶ **EVERYTHING YOU WANTED IN A PROGRAM PROOFREADER**

TYPO II DOUBLE FEATURE 58

▶ **NOW . . . UNIVERSAL PICTURE FILE COMPATIBILITY**

RAPID GRAPHICS CONVERTER 59

▶ **ASSEMBLY LANGUAGE**

FAST MOVES 62

▶ **GAME OF THE MONTH**

VAMPIRE RATS 65

▶ **HEARING THE AY-3-8910 CHIP**

ST SOUND 67

TYPING SPECIAL ATARI CHARACTERS 52

HOW TO USE TYPO II 53 ERROR FILE 53

DISK SUBSCRIBERS: You can use all these programs immediately.
Just follow the instructions in the accompanying magazine articles.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the publisher.

Antic program listings are typeset on the Star's SG-10 printer—from Star Micronics, Inc., 200 Park Avenue, New York, NY 10166.

TYPING SPECIAL ATARI CHARACTERS

Antic printed program listings leave a small space between each Atari Special Character for easier reading. Immediately below you will see the way Antic prints all the standard Atari letters and numbers, in upper and lower case, in normal and inverse video.

```

ABCDEF GHI JKLMNOPQRSTU VWXYZ
a b c d e f g h i j k l m n o p q r s t u v w x y z
0 1 2 3 4 5 6 7 8 9
    
```

The Atari Special Characters and the keys you must type in order to get them are shown in the two boxes below. (Squares are drawn around the normal video characters so you can see their positions more accurately, these squares will not appear in listings.)

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

INVERSE VIDEO			
FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
☐	⌘ CTRL ,	☐	⌘ CTRL Y
☐	⌘ CTRL A	☐	⌘ CTRL Z
☐	⌘ CTRL B	☐	ESC
☐	⌘ CTRL C	☐	SHIFT
☐	⌘ CTRL D	☐	DELETE
☐	⌘ CTRL E	☐	ESC
☐	⌘ CTRL F	☐	SHIFT
☐	⌘ CTRL G	☐	INSERT
☐	⌘ CTRL H	☐	ESC
☐	⌘ CTRL I	☐	CTRL
☐	⌘ CTRL J	☐	TAB
☐	⌘ CTRL K	☐	ESC
☐	⌘ CTRL L	☐	SHIFT
☐	⌘ CTRL M	☐	TAB
☐	⌘ CTRL N	☐	⌘ CTRL .
☐	⌘ CTRL O	☐	⌘ CTRL ;
☐	⌘ CTRL P	☐	⌘ SHIFT =
☐	⌘ CTRL Q	☐	ESC CTRL 2
☐	⌘ CTRL R	☐	ESC
☐	⌘ CTRL S	☐	CTRL
☐	⌘ CTRL T	☐	DELETE
☐	⌘ CTRL U	☐	ESC
☐	⌘ CTRL V	☐	CTRL
☐	⌘ CTRL W	☐	INSERT
☐	⌘ CTRL X		

Whenever the CONTROL key (CTRL on the 400/800) or SHIFT key is used, *hold it down* while you press the next key. Whenever the ESC key is pressed, *release* it before you type the next key.

Turn on inverse video by pressing the Reverse Video Mode Key . Turn it off by pressing it a second time. (On the 400/800, use the Atari Logo Key instead.) Note: In the printed listings, inverse characters will be slightly smaller than the normal ones.

Among the most common program typing mistakes are switching certain capital letters with their lower-case counterparts—you need to look especially carefully at P, X, O and 0 (zero).

Some of Atari Special Characters are not easy to tell apart from standard alpha-numeric characters. Usually the Special Characters will be *thicker* than the alpha-nums. Compare the two sets of characters below:

SPECIAL	STANDARD
CTRL F	/
CTRL G	SHIFT +
CTRL N	SHIFT -
CTRL R	-
CTRL S	+

HOW TO USE TYPO II

TYPO II is the improved automatic proofreading program for Antic's type-in BASIC listings. It finds the exact line where you made a program typing mistake.

Type in TYPO II and SAVE a copy to disk or cassette. Now type GOTO 32000. When you see the instruction on the screen, type in a single program line **without the two-letter TYPO II code** at left of the line number. Press [RETURN].

Your line will reappear at the bottom of the screen with a two-letter TYPO II code on the left. If this code is not exactly the same as the line code printed in the magazine, you mistyped something in that line.

To call back any line previously typed, type an asterisk [*] followed (without in-between spaces) by the line number, then press [RETURN]. When the complete line appears at the top of the screen, press [RETURN] again. This is also the way you use TYPO II to proofread 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 [RETURN] (Cassette owners LIST "C:"). Type NEW, then ENTER "D:FILENAME" [RETURN] (Cassette—ENTER "C:"). Your program is now in memory without TYPO II and you can SAVE or LIST it to disk or cassette.

Owners of the BASIC XL cartridge from O.S.S. type SET 5,0 and SET 12,0 before using TYPO II.

Don't type the
TYPO II Codes!

Don't type the
TYPO II Codes!

```
WB 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINES(120):CLOSE #2:CLO
SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "K":POSITION 11,1:? "TYPO II"
EM 32050 TRAP 32040:POSITION 2,3:? "Type
in a program line"
HS 32060 POSITION 1,4:? " ":INPUT #2:LINE
S:IF LINES="" THEN POSITION 2,4:LIST B
:GOTO 32060
XH 32070 IF LINES(1,1)="*" THEN B=VAL(LIN
ES(2,LEN(LINES))):POSITION 2,4:LIST B:
GOTO 32060
TH 32080 POSITION 2,10:? "CONT"
MF 32090 B=VAL(LINES):POSITION 1,3:? " ":
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
```

```
ET 32120 ? "K":POSITION 11,1:? "TYPO II"
":POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
QR 32140 POSITION 2,16:INPUT #3:LINE$ IF
LINE$="" THEN ? "LINE ";B;" DELETED":G
OTO 32050
VV 32150 FOR D=1 TO LEN(LINES):C=C+1:ANS=
ANS+(C*ASC(LINES(D,D))):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:? CHR$(HCODE):CHR$
(LCODE)
VG 32220 POSITION 2,13:? "If CODE does no
t match press RETURN and edit line a
bove.":GOTO 32050
```

ERROR FILE

ATARI 'TOONS

August 1985

The 22nd character in line 1090 of listing 2 is an A. Also, to load non-standard character sets, change NUMBER=1024

in line 1140 to:
NUMBER=2050, and
change line 1150 to:
1150 GOTO 1170.

GUESS THAT SONG

July 1985

The September, 1985 HELP! section contains an easier-reading listing of some of the tougher data lines in Guess That Song.

STAR VENTURE

July 1985

Change line 380 to:

```
380 IF PEEK(53279
)=6 THEN SOUND 0,
0,0,0:GOTO 80
```

MUSICIAN

June 1985

Change line 790 to:

```
790 IF A=54 THEN
POSITION 4,22:? #
6:"song cleared":
GOTO 810
```

And if you're having tempo problems, remove line 1720 and add the following:

```
1715 IF A=14 THEN
TEMPO=-0.25:GOTO
1700
```

```
1720 REM REMOVE T
HIS LINE
```

MANEUVER

April 1985

If you get hearts on the title screen, LIST the program to disk or cassette, type NEW, then ENTER and SAVE it.

FONT MAKER FOR SG-10

March 1985

The July 1985 issue of ANTIC contains a listing which, when merged with FONT MAKER,

makes that program work on the Star SG-10. See the HELP section of that issue for instructions.

CUSTOM PRINT

March 1985


Custom Print has problems printing certain characters using re-defined characters. Change line 5 to:

```
5 CS=PEEK(106)-8:
POKE 106,CS-1:GRA
PHICS 0:DIM CST$(
20):CST$=""
```

MORSE CODE RECEIVER

Article on page 41

LISTING 1

Don't type the
TYPO II Codes! 

```

WM 10 REM CODEWRITER III
PT 20 REM BY STEVE STUNTZ
FW 30 REM (c) 1985, ANTIC PUBLISHING
FD 40 DIM FNS(20),TEMPS(20),ARS(93):CASS=0
EZ 42 FNS="D:CODEWRIT.EXE":TRAP 44:CLOSE #1:OPEN #1,4,0,"D:*.*":CLOSE #1:GOTO 50
KF 44 FNS="C:":CASS=128
MO 50 TRAP 160
BE 60 ? :? "Creating the MORSE CODE RECEIVER":? "machine language program."
GL 100 POSITION 2,4: ? "Working...Please stand by"
LO 110 RESTORE :READ LN:LM=LN:DIM AS(LN):C=1
BI 120 ARS="":READ ARS
XU 130 FOR X=1 TO LEN(ARS) STEP 3:POKE 75,2,255
DE 140 LM=LM-1:POSITION 10,10: ? "[Countdown...T-":INT(LM/10);"] "
SU 150 AS(C,C)=CHR$(VAL(ARS(X,X+2))):C=C+1:NEXT X:GOTO 120
OM 160 IF CASS=128 THEN ? :? :? "Prepare tape, Press [RETURN].":GOTO 180
VE 172 ? :? "Press [START] to write file to disk."
EC 174 IF PEEK(53279)<>6 THEN 174
TW 180 CLOSE #1:OPEN #1,8,CASS,FNS
IT 186 ? :? "Writing to ":FNS
SQ 190 ? #1:AS:
KY 200 CLOSE #1
RS 210 GRAPHICS 0: ? "██████████████████"
JR 1000 DATA 852
IL 1010 DATA 2552550001282511280320381291
69056141002211169001141000211169060141
002211169001141000211173048
ID 1020 DATA 0021331801730490021331811691
30160012145180160028145180169063141000
002169129141001002169255141
RY 1030 DATA 2281321412291321690321412311
32169064141230132169015141232132169000
141241132141234132141235132
HI 1040 DATA 1412361321412371321412381321
41239132141240132169002141233132173223
130133178173224130133179169
BH 1050 DATA 1921410142120321311290761221
282240062080171640841920232080011164085
192039208005160001140241132
WG 1060 DATA 1681890012280721890002280721
52096172241132192001208008032045129160
000140241132096164085192034
FZ 1070 DATA 1440151920392400111691600320
12130164085192039208245096201002208013
160000140000211160047140001
HB 1080 DATA 2100762251281600011400002111
60000140001210096160000140225131185185
130162006032128128238225131
XZ 1090 DATA 1722251311920382082380961650
84252128247129141226131165085141227131
169000133084169002133085096
DI 1100 DATA 1732261311330841732271311330
85169030162006032128128169031162006032
128128096032055129032226128
UF 1110 DATA 0960322501280322261280320131
29096169125162006032128128096072152072
032093129169000133077173000
BN 1120 DATA 2110410022052331322080030760

```

```

89129032109129104168104064172228132177
178205230132240005024105001
HX 1130 DATA 1451780962382281321732331320
32198128073002141233132172228132169000
145178096032198129173237132
EM 1140 DATA 2010012080272382291320320811
30169001077234132141234132201001208006
032169129076168129032233129
QK 1150 DATA 0961732351322010072400212382
35132172229132177178205232132144004056
076194129024110236132096174
LM 1160 DATA 2291322362281322400162322362
28132208015172228132177178205230132240
005169000076229129169000141
ML 1170 DATA 2371320961722291321771782052
32132144024032021130032051248129243130
130172229132177178205231132
FT 1180 DATA 1440080321761281691600320121
30096162006032128128032160128096056110
236132238235132173235132201
AX 1190 DATA 0081760100241102361322382351
32076028130169000141235132096162040189
225130205236132240013232224
DI 1200 DATA 091240030760531301690630760
75130138073128032012130096174238132232
224016240026238238132172229
YZ 1210 DATA 1321771780241092391321412391
32169000109240132141240132076118130032
119130096024110240132110239
PS 1220 DATA 1320241102401321102391321732
39132141230132024110239132173239132141
231132024110239132173239132
AF 1230 DATA 1412321320241102391321732391
32024109231132141231132169000141239132
141240132141238132096032032
ZN 1240 DATA 0671111001011191141051161011
14032073073073032032032032032066089
032083084069086069032083084
RU 1250 DATA 085078084090032281310000000
0000000000000000000000000000000000
0000000000000000000000000000000000
AR 1260 DATA 00000000000000000000000000
0000000000000000000000000000000000
0000000000000000000000000000000000
0034042115104106041063062060
CD 1270 DATA 0560400320330350390470710852
55049255076000006017021009002020011016
004030013018007005015022027
MZ 1280 DATA 0100080030120240140250290192
24002225002000128

```

LISTING 2

```

10 ;CODEWRITER III
20 ;BY STEVE STUNTZ
30 ;(c) 1985, ANTIC PUBLISHING
40 ;
50 * = 58000
55 START
60 MEM = 580
70 VTBASE = SE400
80 SETVBV = SE45C
90 PACTL = SD302
0100 PORTA = SD300
0110 AUDC1 = SD201

```

```

0120 CH = 502FC
0130 CDTMA1 = 50226
0140 ROWCRS = 554
0150 COLCRS = 555
0160 VDSLST = 50200
0170 NMIEN = 5D40E
0180 SDLSTL = 50230
0185 ATTRACT = 54D
0190 MEMINT = 5B4
0200 MEMRX = 5B2
0210 JSR HEAD1
0220 LDA #538
0230 STA PACTL
0240 LDA #501
0250 STA PORTA
0260 LDA #53C
0270 STA PACTL
0280 LDA #501
0290 STA PORTA
0300 LDA 5DLSTL
0310 STA MEMINT
0320 LDA 5DLSTL+1
0330 STA MEMINT+1
0340 LDA #582
0350 LDY #12
0360 STA (MEMINT),Y
0370 LDY #28
0380 STA (MEMINT),Y
0390 LDA #RXLOOP&255
0400 STA VDSLST
0410 LDA #RXLOOP/256
0420 STA VDSLST+1
0430 LDA #5FF
0440 STA POINTRI
0450 STA POINTRO
0460 LDA #520
0470 STA CW5PC
0480 LDA #540
0490 STA CWMAX
0500 LDA #50F
0510 STA CWAVG
0520 LDA #500
0530 STA I23X37
0540 STA HILO
0550 STA NBITS
0560 STA RXCW
0570 STA IAMREDI
0580 STA CTAVG
0590 STA CWTOT
0600 STA CWTOT+1
0610 LDA #2
0620 STA PREVHILO
0630 LDA MRX
0640 STA MEMRX
0650 LDA MRX+1
0660 STA MEMRX+1
0670 LDA #5C0
0680 STA NMIEN
0690 ;
0700 ;SEARCH FOR KEYBOARD CHARACTER
0710 LP1 JSR RXCH
0720 JMP LP1
0730 ;
0740 ; DEVICE HANDLER
0750 GOVEC CPX #6
0760 BNE GOV1
0770 LDY ROWCRS
0780 CPY #23
0790 BNE GOV1
0800 LDY COLCRS
0810 CPY #39
0820 BNE GOV1
0830 LDY #1
0840 STY I23X37
0850 GOV1 TAY
0860 LDA UTBASE+1,X
0870 PHA
0880 LDA UTBASE,X
0890 PHA
0900 TYA

```

```

0910 RTS
0920 ;
0930 ; SCROLL
0940 SCROLL LDY I23X37
0950 CPY #1
0960 BNE SCROL1
0970 JSR HEAD3
0980 LDY #0
0990 STY I23X37
1000 SCROL1 RTS
1010 ;
1020 ; RX WORD WRAP
1030 RXWR1 LDY COLCRS
1040 CPY #34
1050 BCC RXWR9
1060 CPY #39
1070 BEQ RXWR9
1080 RXWR1 LDA #5A0
1090 JSR RXPNT
1100 LDY COLCRS
1110 CPY #39
1120 BNE RXWR1
1130 RXWR9 RTS
1140 ;
1150 ;SET PIN1 AND SOUND
1160 ONOFF CMP #502
1170 BNE OFF
1180 LDY #500
1190 STY PORTA SET PIN1 LOW
1200 LDY #52F
1210 STY AUDC1 TURN SOUND ON
1220 JMP ONOF1
1230 OFF LDY #501
1240 STY PORTA SET PIN1 HIGH
1250 LDY #500
1260 STY AUDC1 TURN SOUND OFF
1270 ONOF1 RTS
1280 ;
1290 ;HEADING
1300 HEAD LDY #500
1310 STY COPYI
1320 CR1 LDA COPYR,Y
1330 LDX #6
1340 JSR GOVEC
1350 INC COPYI
1360 LDY COPYI
1370 CPY #38
1380 BNE CR1
1390 RTS
1400 ;
1410 ;SET CURSOR AT 0,0
1420 HEAD00 LDA ROWCRS
1430 STA ROW
1440 LDA COLCRS
1450 STA COL
1460 LDA #500
1470 STA ROWCRS
1480 LDA #502
1490 STA COLCRS
1500 RTS
1510 ;
1520 ;SET CURSOR AT ORIGINAL POSITION
1530 HEADORG LDA ROW
1540 STA ROWCRS
1550 LDA COL
1560 STA COLCRS
1570 LDA #51E
1580 LDX #6
1590 JSR GOVEC
1600 LDA #51F
1610 LDX #6
1620 JSR GOVEC
1630 RTS
1640 ;
1650 ;KEYBOARD HEADING
1660 HEAD1 JSR HEADCLR
1670 JSR HEAD
1680 RTS
1690 ;

```

continued on next page

```

1700 ;CHANGE SPEED HEADING
1710 HEAD3 JSR HEAD00
1720     JSR HEAD
1730     JSR HEADORG
1740     RTS
1750 ;
1760 ;
1770 HEADCLR LDA #57D
1780     LDX #6
1790     JSR GOVEC
1800     RTS
1810 ;
1820 ; RX INTERRUPT LOOP
1830 RXLOOP = *
1840     PHA
1850     TYA
1860     PHA
1870     JSR CWCOUNT
1872     LDA #0
1874     STA ATTRACT
1880     LDA PORTA
1890     AND #502
1900     CMP PREVHILO
1910     BNE RI1
1920     JMP RI2
1930 RI1 JSR CHANGE
1940 RI2 PLA
1950     TAY
1960     PLA
1970     RTI
1980 ;
1990 ; RX CW COUNT BY 1
2000 CWCOUNT LDY POINTRI
2010     LDA (MEMRX),Y
2020     CMP CWMAX
2030     BEQ RC1
2040     CLC
2050     ADC #501
2060     STA (MEMRX),Y
2070 RC1 RTS
2080 ;
2090 ; DETECT CW CHANGE
2100 CHANGE INC POINTRI
2110     LDA PREVHILO
2120     JSR ONOFF
2130     EOR #502
2140     STA PREVHILO
2150     LDY POINTRI
2160     LDA #0
2170     STA (MEMRX),Y
2180     RTS
2190 ;
2200 ;
2210 ; RX CHARACTER FROM PIN 2
2220 RXCH JSR READY
2230     LDA IAMREDI
2240     CMP #1
2250     BNE RX02
2260     INC POINTRO
2270     JSR COUNTAVG
2280     LDA #1
2290     EOR HILO
2300     STA HILO
2310     CMP #1
2320     BNE RX01
2330     JSR SHIFT
2340     JMP RX02
2350 RX01 JSR FINDCH
2360 RX02 RTS
2370 ;
2380 ; SHIFT ROR BUILD NBITS
2390 SHIFT LDA NBITS
2400     CMP #7
2410     BEQ SHIFT9
2420     INC NBITS
2430     LDY POINTRO
2440     LDA (MEMRX),Y
2450     CMP CWAvg
2460     BCC SHIFT1
2470     SEC ;DASH

```

```

2480     JMP SHIFT2
2490 SHIFT1 CLC ;DOT
2500 SHIFT2 ROR RXCW
2510 SHIFT9 RTS
2520 ;
2530 ; READY TO READ COUNT
2540 READY LDX POINTRO
2550     CPX POINTRI
2560     BEQ READY1
2570     INX
2580     CPX POINTRI
2590     BNE READY2
2600     LDY POINTRI
2610     LDA (MEMRX),Y
2620     CMP CWMAX
2630     BEQ READY2
2640 READY1 LDA #0
2650     JMP READY3
2660 READY2 LDA #1
2670 READY3 STA IAMREDI
2680     RTS
2690 ;
2700 ; FIND CW CHARACTER
2710 FINDCH LDY POINTRO
2720     LDA (MEMRX),Y
2730     CMP CWAvg
2740     BCC FIND09
2750     JSR FINISHCH
2760     JSR LOOKASCI
2770     LDY POINTRO
2780     LDA (MEMRX),Y
2790     CMP CWSPC
2800     BCC FIND09
2810     JSR RXWRA
2820     LDA #5A0
2830     JSR RXPNT
2840 FIND09 RTS
2850 ;
2860 ; PRINT RECEIVED DATA
2870 RXPNT LDX #6
2880     JSR GOVEC
2890     JSR SCROLL
2900 RXPNT1 RTS
2910 ;
2920 ; FINISH RXC2 CHARACTER
2930 FINISHCH SEC
2940     ROR RXCW
2950     INC NBITS
2960 FINISH1 LDA NBITS
2970     CMP #8
2980     BCS FINISH9
2990     CLC
3000     ROR RXCW
3010     INC NBITS
3020     JMP FINISH1
3030 FINISH9 LDA #0
3040     STA NBITS
3050     RTS
3060 ;
3070 ; LOOKUP AND PRINT CHARACTER
3080 LOOKASCI LDX #40
3090 LOOK1 LDA CWCHA,X
3100     CMP RXCW
3110     BEQ LOOK3
3120     INX
3130     CPX #91
3140     BEQ LOOK2
3150     JMP LOOK1
3160 LOOK2 LDA #63
3170     JMP LOOK4
3180 LOOK3 TXA
3190 LOOK4 EOR #580
3200     JSR RXPNT
3210     RTS
3220 ;
3230 ; COUNT FOR AVERAGE
3240 COUNTAVG LDX CTAvg
3250     INX
3260     CPX #16
3270     BEQ COUNTA1

```



```

3200      INC CTAUG
3290      LDY POINTRO
3300      LDA (MEMRX),Y
3310      CLC
3320      ADC CWTOT
3330      STA CWTOT
3340      LDA #0
3350      ADC CWTOT+1
3360      STA CWTOT+1
3370      JMP COUNTA2
3380 COUNTA1 JSR CALCAVG
3390 COUNTA2 RTS
3400 ;
3410 ; CALCULATE AVERAGE
3420 CALCAVG CLC
3430      ROR CWTOT+1
3440      ROR CWTOT
3450      CLC
3460      ROR CWTOT+1
3470      ROR CWTOT
3480      LDA CWTOT
3490      STA CWMAX
3500      CLC
3510      ROR CWTOT
3520      LDA CWTOT
3530      STA CWSPC
3540      CLC
3550      ROR CWTOT
3560      LDA CWTOT
3570      STA CWAUG
3580      CLC
3590      ROR CWTOT
3600      LDA CWTOT
3610      CLC
3620      ADC CWSPC
3630      STA CWSPC
3640      LDA #0
3650      STA CWTOT
3660      STA CWTOT+1
3670      STA CTAUG
3680      RTS
3690 ;
3700 ;ROM DATA
3710 COPYR
3720      .BYTE " Codewriter III      BY

STEVE STUNTZ "
3730 MRX .WORD MEMRX1
3740 CWCHA
3750      .BYTE 0,0,0,0,0,0,0,0
3760      .BYTE 0,0,0,0,0,0,0,0
3770      .BYTE 0,0,0,0,0,0,0,0
3780      .BYTE 0,0,0,0,0,0,0,0
3790      .BYTE $FE,$500
3800      .BYTE $00,$500,$500,$500,$500,$500
3810      .BYTE $6D,$6D,$522,$52A,$573,$568
3820      .BYTE $6A,$529,$53F,$53E,$53C,$538
3830      .BYTE $30,$520,$521,$523,$527,$52F
3840      .BYTE $47,$555,$5FF,$531,$5FF,$54C
3850      .BYTE $00,$506,$511,$515,$509,$502
3860      .BYTE $14,$50B,$510,$504,$51E,$50D
3870      .BYTE $12,$507,$505,$50F,$516,$51B
3880      .BYTE $0A,$508,$503,$50C,$518,$50E
3890      .BYTE $19,$51D,$513
3900      *= CWCHA+$0100
3910 ;
3920 PND = * ; END OF BOOT FILE
3930 ;*=$1000
3940 COPYI *= **1
3950 ROW *= **1
3960 COL *= **1
3970 MEMRX1 = *
3980      *= **$0100
3990 POINTRI *= **1
4000 POINTRO *= **1
4010 CWMAX *= **1
4020 CWSPC *= **1
4030 CWAUG *= **1
4040 PREVHILO *= **1
4050 HILO *= **1
4060 NBITS *= **1
4070 RHCW *= **1
4080 IAMREDI *= **1
4090 CTAUG *= **1
4100 CWTOT *= **2
4110 I23X37 *= **1
4120 RKINDX *= **1
4122      *= $02E0
4124      .WORD START
4130      .END


```

how to use the XE's extra 64K

130XE MEMORY MANAGEMENT

Article on page 28

LISTING 1

Don't type the
TYPO II Codes! 

```

AT 2 REM 130XE MEMORY MANAGEMENT
AI 4 REM BY IAN CHADWICK
FG 6 REM (c) 1985, ANTIC PUBLISHING
ZC 10 ? "*"
QU 15 PRINT "130XE EXTENDED BANK DEMONSTR
ATION"
GY 16 PRINT "BY IAN CHADWICK":PRINT
GE 20 POKE 54017,253:REM DEFAULT VALUE
NZ 30 START=16384:REM FIRST BYTE OF ACCES
5 WINDOW
RE 40 LOOP=0:GOSUB 5000
TI 50 DL=PEEK(560)+PEEK(561)*256:REM STAR
T OF DISPLAY LIST
TJ 60 SC1=PEEK(DL+4):SC2=PEEK(DL+5):REM 5

```

```

TART OF SCREEN RAM
DK 70 SC3=PEEK(88):SC4=PEEK(89):REM SCREE
N POINTERS IN RAM
HQ 130 ? "PRESS A CONSOLE KEY"
ML 135 POKE 53279,8:REM CLEAR CONSOLE KEY
S
ZW 140 IF PEEK(53279)=7 THEN 140:REM TEST
FOR CONSOLE KEY
XR 145 POKE 106,128:REM LOWER RAMTOP
AD 150 IF PEEK(53279)=6 THEN GOSUB 1000:R
EM START
PU 160 IF PEEK(53279)=5 THEN GOSUB 2000:R
EM SELECT

```

continued on next page


```
PU 32280 ? "CLR:POKE 842,12:CONT": :POSITI
ON 2,0:POKE 842,13:END
```

LISTING 2

```
SM 10 REM TYPO II CODE GENERATOR
PY 20 REM BY ANDY BARTON
XO 30 REM (C) 1985, ANTIC MAGAZINE
QW 50 CLR :DIM LINES(120),OUTS(128),FILES
(15),XS(19),AS(17)
YP 55 DIM BS(75):BS="0123456789ABCDEF
GHIJKLMNOPQRSTUVWXYZ0123456789ABCDEF
GHIJKLMNOPQRSTUVWXYZ0123456789ABCDEF
GHIJKLMNOPQRSTUVWXYZ0123456789ABCDEF
OM 60 ? "K":? :? "TYPOII CODE GENERATOR"
NQ 80 ? :? "Choose a file: [Dn:filename 0
R C:] " :? :? :INPUT FILES
CZ 90 TRAP 380:CLOSE #2:OPEN #2,4,0,FILES
RV 100 TRAP 360:INPUT #2:LINES
SF 110 A=ASC(LINES(1,1)):IF A<48 OR A>57
THEN 360
UJ 120 TRAP 40000:? :? "CHOOSE OUTPUT DEV
ICE":? "screen printer disk cas
sette":? :? :? " " : :INPUT OUTS
UF 130 IF OUTS="S" THEN OUTS="E":GOTO 190
VJ 140 IF OUTS="D" THEN ? :? "GIVE [Dn:fi
le name] " : :INPUT OUTS:IF OUTS<>" " THE
N 170
CC 150 IF OUTS<>"P" AND OUTS<>"C" THEN 12
0
PN 160 GOTO 190
MG 170 FOR X=1 TO LEN(OUTS):IF OUTS(X,X)=
"." THEN 190
OZ 180 NEXT X:OUTS(LEN(OUTS)+1)=" .TYP"
MM 190 TRAP 450:CLOSE #3:OPEN #3,8,0,OUTS
:TRAP 40000:IF OUTS="C" THEN OUTS=" " :
OUTS(128)=" " :OUTS(2)=OUTS:? #3:OUTS
MN 200 GOTO 220
PZ 210 TRAP 340:INPUT #2:LINES:TRAP 40000
JT 220 IF LINES(LEN(LINES))=" " THEN LINE
S=LINES(1,LEN(LINES)-1)
YB 230 C=0:ANS=C:ANS=USR(ADR(BS),ADR(LINE
$),LEN(LINES)):ANS=PEEK(1789)+256*PEEK
(1790)+65536*PEEK(1791)
WB 240 CODE=INT(ANS/676)
CS 250 CODE=ANS-(CODE*676)
```


```
YL 260 HCODE=INT(CODE/26)
XF 270 LCODE=CODE-(HCODE*26)+65
VI 280 HCODE=HCODE+65
NS 290 OUTS=CHR$(HCODE):OUTS(2,2)=CHR$(LC
ODE):OUTS(3,3)=" "
EP 300 FOR X=1 TO LEN(LINES):IF LINES(X,X
)=" " THEN 320
LP 310 NEXT X
QD 320 OUTS(4)=LINES(1,X-1)
EZ 330 ? #3:OUTS:GOTO 210
ZL 340 IF PEEK(195)<>136 THEN ? :? "ERROR
- " :PEEK(195):END
DZ 350 ? :? "^^^ FINISHED ^^^":END
UB 360 ? :? FILES:" is not a BASIC Progra
m"
UZ 370 ? "in LIST format.":GOTO 390
UT 380 OUTS=FILES:RTS=390:GOTO 460
WT 390 OUTS="D1:*.*":TRAP 400:IF FILES(1,
2)>"D1" AND FILES(1,2)<"D5" THEN OUTS(
2,2)=FILES(2,2)
IY 400 TRAP 440:? :CLOSE #1:OPEN #1,6,0,0
UTS:? :? OUTS(1,2);" DIRECTORY":?
ZY 410 INPUT #1,AS:IF AS(5,8)="FREE" THEN
? :GOTO 80
ZI 420 XS=AS(3,11):XS(10)=AS(11,17):XS(17
)= " " :IF AS(11,11)<>" " THEN XS(9,9)
="."
QE 430 ? XS:GOTO 410
CJ 440 RTS=80:GOTO 460
TI 450 RTS=120
HY 460 ? :A=PEEK(195):IF A=130 THEN ? OUT
S:" DOES NOT EXIST":? "TYPE [Dn]filena
me":Z=1
SF 470 IF A=138 THEN ? OUTS:" DOES NOT RE
SPOND":Z=1
BE 480 IF A=160 THEN ? "DRIVE NUMBER ERRO
R":Z=1
SX 490 IF A=162 THEN ? "THIS DISK IS FULL
. USE ANOTHER ONE":Z=1
KG 500 IF A=165 THEN ? OUTS:" IS AN INVAL
ID FILE NAME":Z=1
WY 510 IF A=167 THEN ? OUTS:" IS LOCKED":
Z=1
ZT 520 IF A=169 THEN ? "THE DISK DIRECTOR
Y IF FULL. USE ANOTHER DISKE
TTE":Z=1
AH 530 IF A=170 THEN ? "FILE NOT FOUND":Z
=1
ZK 540 IF Z<>1 THEN ? "ERROR- " :A
YP 550 Z=0:? :GOTO RTS
```

now ... universal picture file compatibility

RAPID GRAPHICS CONVERTER

Article on page 33

LISTING 1

Don't type the
TYPO II Codes! 

```
SR 10 REM RAPID GRAPHICS CONVERTER, LISTI
NG 1
KZ 20 REM BY CHARLES JACKSON
FW 30 REM (c) 1985, ANTIC PUBLISHING
LA 40 POKE 65,0:BRK=1:IF PEEK(53279)=5 TH
EN BRK=0
TX 50 GOTO 80
RX 60 POKE 752,1:IF BRK THEN POKE 16,112:
POKE 5374,112
ZX 70 RETURN
```

```
SZ 80 GRAPHICS 2:GOSUB 60:POKE 752,1:POKE
710,112:POKE 712,112:POKE 708,28:POKE
709,12
ZN 90 POSITION 5,2:? #6;"RAPID":FOR X=1 T
O 250:NEXT X
BK 92 POSITION 5,4:? #6;"GRAPHICS":FOR X=
1 TO 250:NEXT X
UZ 94 POSITION 5,6:? #6;"CONVERTER":FOR X
=1 TO 250:NEXT X
```

continued on next page

```

LR 100 ? :? " By Charles Jackson":
FOR X=1 TO 250:NEXT X
CG 105 ? :? " (c) 1985, Antic Publishi
ng";GOSUB 60
JG 110 DIM INS$(15),OUT$(15),MP$(7684),MIS
(7960),AS(5)
ZJ 120 MIS(1)="♥":MIS(7960)=MIS:MIS(2)=MI
S:MP$=MIS:IO=848:AS="♥♥♥♥♥":MAX=10
TO 130 AD=ADR(MP$):ADHI=INT(AD/256):ADLO=
AD-ADHI*256
OA 140 FOR X=1 TO 500:NEXT X:FLG=0
IX 150 TRAP 150:GRAPHICS 0:POKE 710,26:PO
KE 709,2:GOSUB 580:? :? "Type of SOURC
E file";:INPUT SRC
SS 160 SETCOLOR 2,src,10:FLG=src=5
FN 170 IF SRC=0 THEN GOSUB 440:GOTO 150
VF 180 IF SRC>MAX OR SRC<0 THEN 150
NQ 190 ? :? "Filename";:INPUT INS:GOSUB 6
0
HF 200 IF LEN(INS)<2 THEN GOSUB 440:GOTO
190
BG 210 TRAP 210:GOSUB 580:POKE 710,102:PO
KE 709,0:? :? "Type of DESTINATION fil
e";:INPUT DEST
IO 220 SETCOLOR 2,DEST,10:GOSUB 60:FLG=DE
ST=5
RB 230 IF DEST=0 THEN GOSUB 440:GOTO 210
KJ 240 IF DEST>MAX OR DEST<0 THEN 210
II 250 ? :? "Filename";:INPUT OUTS
OZ 260 IF LEN(OUTS)<2 THEN GOSUB 440:GOTO
250
FM 270 IF NOT (DEST=7 AND OUT$(LEN(OUTS)
-3,LEN(OUTS))<>".BKG") THEN 290
TD 280 ? :? "Needs .BKG extender!!!":FOR
X=1 TO 150:NEXT X:GOTO 250
NG 290 IF NOT ((DEST=4 OR DEST=5) AND OU
T$(LEN(OUTS)-3,LEN(OUTS))<>".PIC") THE
N 310
XS 300 ? :? "Needs .PIC extender!!!":FOR
X=1 TO 150:NEXT X:GOTO 250
AU 310 IF NOT (DEST=10 AND OUT$(LEN(OUTS)
-3,LEN(OUTS))<>".SCR") THEN 330
HC 320 ? :? "Needs .SCR extender!!!":FOR
X=1 TO 150:NEXT X:GOTO 250
NG 330 GRAPHICS 0:GOSUB 60:? :? "Insert s
ource disk, press START"
XR 340 IF PEEK(53279)<>6 THEN 340
JE 350 IF SRC=5 THEN POKE 4226,40:POKE 42
29,2:REM RESTON
JZ 360 TRAP 150:CLOSE #1:OPEN #1,4,0,INS:
CLOSE #1:TRAP 40000
GL 370 ON SRC GOSUB 1040,830,1090,1860,18
50,1380,1500,1040,1720,1040
ZF 380 IF SRC=10 THEN MP$(7681,7684)="♥NS
"
YS 390 GRAPHICS 0:GOSUB 60:POKE 710,66:PO
KE 709,12:? :? :? :? "Insert destinati
on disk, press START"
UA 400 IF PEEK(53279)<>6 THEN 400
PY 410 FOR X=14 TO 0 STEP -1:POKE 712,X:N
EXT X:GOSUB 60:TRAP 40000
HJ 420 ON DEST GOSUB 790,630,1200,2000,19
90,1310,1600,1690,1770,2110
UU 430 RUN
TT 440 ? "κ XXXXXXXXXXXX":?
YO 450 REM DISK DIRECTORY
TN 455 IF FLG THEN POKE 4226,40:POKE 4229
,2:REM RESTON
TZ 460 CLOSE #1:OPEN #1,6,0,"D:*. *":FL=0
RS 470 INPUT #1,INS
RT 480 IF INS(2,2)<>" " THEN 520
VA 490 ? " ";INS(2,13);
FR 500 IF FL THEN ?
HM 510 FL= NOT FL:GOTO 470
AX 520 ? :? :?
LH 530 CLOSE #1
VK 540 POKE 764,255:? :? :? "Press any ke
y":? "or RETURN for another directory"
TS 550 OPEN #1,4,0,"K:":GET #1,FL:CLOSE #

```

```

1
HP 560 IF FL=155 THEN 440
MD 570 POKE 764,255:POKE 4226,105:POKE 42
29,1:RETURN
WJ 580 GOSUB 60:? "κ"," (1) Micropainter"
:? ,"(2) Micro Illustrator/Koala"
UM 590 ? ,"(3) Fun With Art":? ,"(4) Pain
t (Atari)"
FY 600 ? ,"(5) Paint (Reston)":? ,"(6) Vi
sualizer"
PR 610 ? ,"(7) Moviemaker":? ,"(8) Graphi
cs Master":? ,"(9) AtariGraphics":? ,"
+(10) Graphics Machine"
ZG 620 RETURN
FU 630 MIS="XXXXXXXXXXXXLXXXX"
VZ 640 REM MP TO MI COMPRESSED
MC 650 IF MP$(7681,7684)="♥NS" THEN MP$(
7681,7684)="♥NS"
WV 660 MIS(18,18)=MP$(7681,7681):MIS(14,1
6)=MP$(7682,7684):MIS(17,17)=" "
RS 670 MIS(19,20)="W+"
YD 680 RESTORE 700:FOR X=21 TO 28:READ A
MG 690 MIS(X,X)=CHR$(A):NEXT X
KU 700 DATA 0,0,155,155,155,155,162,255
VQ 710 FOR COUNT=1 TO 60
FZ 720 A=COUNT*128-99:B=COUNT*127-126
KP 730 MIS(A,A+126)=MP$(B,B+126):MIS(A+12
7,A+127)=CHR$(255)
EU 740 NEXT COUNT
AK 750 MIS(7708,7708)=CHR$(188)
EQ 760 MIS(7709)=MP$(7621,7680)
KJ 770 OPEN #1,8,0,OUTS:? #1:MIS;
HT 780 CLOSE #1:RETURN
IT 790 CLOSE #1:OPEN #1,8,0,OUTS
EE 800 REM KEEP AN MP FILE
OY 810 ? #1:MP$;:CLOSE #1
ZI 820 RETURN
TQ 830 DIM MAIN$(342)
CG 840 REM LOAD AN MI PICTURE
ZV 850 RESTORE 890
PE 860 FOR A=1536 TO 1556
DM 870 READ B:POKE A,B
DM 880 NEXT A
HL 890 DATA 162,16,169,1,157,72,3,169,0,1
57,73,3,32,86,228,48,1,96,104,104,96
ON 900 MAIN$="XXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
FI 910 MAIN$(55)="XXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
EH 920 MAIN$(115)="XXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
ES 930 MAIN$(175)="XXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
UU 940 MAIN$(228)=CHR$(155)
TY 950 MAIN$(229)="XXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
OS 960 MAIN$(291)="XXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
US 970 POKE 88,ADLO:POKE 89,ADHI
OB 980 OPEN #1,4,0,INS:POKE 559,0
OJ 990 A=USR(ADR(MAIN$))
GN 1000 MP$(7681,7681)=CHR$(PEEK(712))
PZ 1010 FOR X=0 TO 2:MP$(X+7682,X+7682)=C
HR$(PEEK(708+X)):NEXT X
YH 1020 CLOSE #1:GRAPHICS 0:POKE 559,34
OE 1030 GOSUB 60:RETURN
NV 1040 CLOSE #1:OPEN #1,4,0,INS
LT 1050 REM GET A MP/GM FILE
OE 1060 POKE IO+2,7:POKE IO+4,ADLO:POKE IO
+5,ADHI:POKE IO+8,4:POKE IO+9,30
NF 1070 JNK=USR(ADR("XXXXXXXXLV0"),16):CLOSE
#1
AX 1080 RETURN
ZN 1090 IO=848:OPEN #1,4,0,INS
OR 1100 REM FWA to MP
BW 1110 AD=ADR(MIS):ADHI=INT(AD/256):ADLO

```

```

=AD-ADHI*256
JK 1120 POKE IO+2,7:POKE IO+4,ADLO:POKE IO+5,ADHI
GG 1130 POKE IO+8,24:POKE IO+9,31
TI 1140 N=USR(ADR("hhhLVL"),16)
NA 1150 CLOSE #1
YG 1160 MP$(1,4080)=MIS(263,4342)
AK 1170 MP$(4081,7680)=MIS(4359,7958)
CK 1180 MP$(7681,7684)=MIS(3,6)
BC 1190 RETURN
GC 1200 MIS="":MIS(1)="":MIS(7960)=MIS:MIS(2)=MIS
OO 1210 REM MP TO FWA
KD 1220 MIS(1,65)="LVL95.PPPNPP-----"
-----
DH 1230 MIS(66,132)="-----N♦-----"
-----
HQ 1240 MIS(133,200)="-----"
-----
GE 1250 MIS(201,262)="-----A/hshht I8Q'QI
IhshheDvqv I8vmt I8Qm_QL_Qvqvqvqvqvqvqv
vvvvvv"
AU 1260 MIS(263,4342)=MP$(1,4080)
VH 1270 MIS(4359,7958)=MP$(4081,7680)
NC 1280 MIS(7959,7960)="♦♦"
HU 1290 MIS(3,6)=MP$(7681,7684)
GP 1300 OPEN #1,8,0,OUTS:? #1:MIS(1,7960)
:CLOSE #1:RETURN
UO 1310 REM MP TO VIS
TN 1320 MIS="♦"
HN 1330 MIS(1,3)=MP$(7682,7684):MIS(4,4)="♦":MIS(5,5)=MP$(7681,7681)
ZY 1340 CNT=7
JM 1350 FOR I=1 TO 166 STEP 2
ZA 1360 MIS(CNT,CNT+39)=MP$(I*40-39,I*40)
: CNT=CNT+40:NEXT I
XC 1370 OPEN #1,8,0,OUTS:? #1:MIS(1,3326)
:CLOSE #1:RETURN
QP 1380 REM VIS TO MP
CY 1390 AD=ADR(MIS):ADHI=INT(AD/256):ADLO=AD-ADHI*256
PQ 1400 OPEN #1,4,0,INS
YK 1410 POKE IO+2,7:POKE IO+4,ADLO:POKE IO+5,ADHI:POKE IO+8,254:POKE IO+9,12
AS 1420 U=USR(ADR("hhhLVL"),16):CLOSE #1
ZX 1430 CNT=7
TW 1440 MP$(7682,7684)=MIS(1,3):MP$(7681,7681)=MIS(4,4)
GU 1450 FOR I=0 TO 198 STEP 2
WQ 1460 MP$(I*40+1,I*40+40)=MIS(CNT,CNT+39)
IY 1470 MP$(I*40+41,I*40+80)=MIS(CNT,CNT+39)
LB 1480 CNT=CNT+40:NEXT I
BI 1490 RETURN
MZ 1500 REM MM TO MP
CE 1510 AD=ADR(MIS):ADHI=INT(AD/256):ADLO=AD-ADHI*256
NZ 1520 CLOSE #1:OPEN #1,4,0,INS
MT 1530 POKE IO+2,7:POKE IO+4,ADLO:POKE IO+5,ADHI:POKE IO+8,16:POKE IO+9,15
NG 1540 JNK=USR(ADR("hhhLVL"),16):CLOSE #1
TW 1550 FOR X=1 TO 3840 STEP 40
YY 1560 NN=2*X-1:MP$(NN,NN+39)=MIS(X,X+39):MP$(NN+40,NN+79)=MIS(X,X+39)
MD 1570 NEXT X
PO 1580 MP$(7681,7684)=MIS(3841,3844)
BK 1590 RETURN
MJ 1600 REM MP TO MM
LO 1610 MIS(1)="♦":MIS(3856)=MIS:MIS(2)=MIS
NW 1620 FOR X=41 TO 7680 STEP 160
CB 1630 NN=X/2-19.5
XD 1640 MIS(NN,NN+79)=MP$(X,X+79)
LZ 1650 NEXT X

```

```

AJ 1660 MIS(3841,3844)=MP$(7681,7684)
VH 1670 OPEN #1,8,0,OUTS:? #1:MIS(1,3856)
:CLOSE #1
BJ 1680 RETURN
JS 1690 REM MP TO GM
WH 1700 CLOSE #1:OPEN #1,8,0,OUTS
RE 1710 ? #1:MP$:"♦":CLOSE #1:RETURN
GF 1720 REM AG TO MP
ZK 1730 GOSUB 1040
KC 1740 MIS="":MIS(1,1)=MP$(7684,7684):MIS(2,4)=MP$(7681,7683)
GI 1750 MP$(7681,7684)=MIS
BF 1760 RETURN
BY 1770 REM MP TO AG
IM 1780 MIS="":MIS(4,4)=MP$(7681,7681):MIS(1,3)=MP$(7682,7684)
GU 1790 MP$(7681,7684)=MIS
WJ 1800 CLOSE #1:OPEN #1,8,0,OUTS
KG 1810 ? #1:MP$
VO 1820 MP$(1)="♦":MP$(7684)=MP$:MP$(2)=MP$
GM 1830 ? #1:MP$:MP$(1,504):CLOSE #1
BB 1840 RETURN
AJ 1850 POKE 4226,40:POKE 4229,2:REM REST ON
QF 1860 REM PAINT TO MP
DC 1870 AD=ADR(MIS):ADHI=INT(AD/256):ADLO=AD-ADHI*256
OX 1880 CLOSE #1:OPEN #1,4,0,INS
VD 1890 POKE IO+2,7:POKE IO+4,ADLO:POKE IO+5,ADHI:POKE IO+8,144:POKE IO+9,12
NC 1900 JNK=USR(ADR("hhhLVL"),16):CLOSE #1
AU 1910 AS=MIS(1,4)
FJ 1920 MP$(1,3200)=MIS(17,3216):MIS="♦":MIS=MP$(1,3200)
MW 1930 FOR X=1 TO 3200 STEP 40
ZA 1940 NN=2*X-1:MP$(NN,NN+39)=MIS(X,X+39):MP$(NN+40,NN+79)=MIS(X,X+39)
MF 1950 NEXT X
VG 1960 MP$(7681,7684)=AS(1,4)
AQ 1970 POKE 4226,105:POKE 4229,1
BP 1980 RETURN
AX 1990 POKE 4226,40:POKE 4229,2:REM REST ON
WC 2000 REM MP TO PAINT
CN 2010 MIS(1)="♦":MIS(3216)=MIS:MIS(2)=MIS
IK 2020 AS=MP$(7681,7684)
KT 2030 FOR X=41 TO 6281 STEP 160
BT 2040 NN=X/2-19.5
WV 2050 MIS(NN,NN+79)=MP$(X,X+79)
LR 2060 NEXT X
XK 2070 MP$=MIS:MIS=AS:MIS(6,16)="e1(D(3(P0nH":MIS(17)=MP$
HJ 2080 OPEN #1,8,0,OUTS:? #1:MIS(1,3216)
:CLOSE #1
AF 2090 POKE 4226,105:POKE 4229,1
AC 2100 RETURN
VZ 2110 CLOSE #1:OPEN #1,8,0,OUTS
QP 2120 ? #1:MP$(1,7680):CLOSE #1:RETURN

```

LISTING 2

```

UH 10 REM RAPID GRAPHICS CONVERTER, LISTING 2
KZ 20 REM BY CHARLES JACKSON
FW 30 REM (c) 1985, ANTIC PUBLISHING
QV 40 DIM TEMP$(20),ARS(93)
UK 45 GRAPHICS 0:POKE 710,230:POKE 709,12:POKE 712,148
HA 50 ? :? "Creating lines:":? :? "630, 900-960 and 1220-1250"
SC 60 ? :? "for CONVERT.BAS"
MS 90 TRAP 160

```

continued on next page

```
PX 100 ? :? :? "Working...please stand by
"
LO 110 RESTORE :READ LN:LM=LN:DIM A$(LN):
C=1
BI 120 ARS="" :READ ARS
KU 130 FOR X=1 TO LEN(ARS) STEP 3:POKE 75
2,255
DE 140 LM=LM-1:POSITION 10,10:? "(Countdo
wn...T-";INT(LM/10);") "
SU 150 A$(C,C)=CHR$(VAL(ARS(X,X+2))):C=C+
1:NEXT X:GOTO 120
HK 160 POKE 710,148:POKE 712,230
TP 165 ? :? :? "Press [START] to write t
hese lines":? "to a disk file named D:
LINES.LST"
ZA 170 IF PEEK(53279)<>6 THEN 170
LW 175 ? :? "(Writing LINES.LST)";
SN 180 OPEN #1,8,0,"D:LINES.LST"
EC 190 ? #1:A$::CLOSE #1
RU 220 GRAPHICS 0:? "██████████"
JT 1000 DATA 834
MB 1010 DATA 0540510480320770730360610342
55128201199026000001002014000040000192
034155057048048032077065073
KN 1020 DATA 0780360610341041620161690071
57066003169232157060003169000157069003
169001157072003169000157073
AU 1030 DATA 0031690001332240320000061652
24201007240013201013240016201026240060
230224024144234034155057049
EM 1040 DATA 0480320770650730780360400530
53041061034165232133234024144244165232
141196002230224032000006165
ZH 1050 DATA 2321411970022302240320000061
65232141198002230224032000006165232141
199002230224032000006165232
MQ 1060 DATA 1412000020241441961690001332
36133034155057050048032077065073078036
040049049053041061034230165
PY 1070 DATA 0881332241332281650891332251
33229032000006192136240094169000133227
165232041128133235165232041
SH 1080 DATA 1271332262080140320000061652
32133227032000006165232133226198226165
235208028032000034155057051
LP 1090 DATA 0480320770650730780360400490
55053041061034006165232133233024144047
198226169255197226208245198
AM 1100 DATA 2271692551972272082372401830
32000006165232133233024144019198226169
255197226208238198227169255
```

```
OU 1110 DATA 1972272082302400341550570520
48032077065073078036040050050056041061
067072082036040049053053041
VW 1120 DATA 1550570530480320770650730780
36040050050057041061034096169002197234
240082240201165233160000145
AL 1130 DATA 2240241690801012241332241690
00101225133225230230169096197230208047
169001197236208024024169001
YZ 1140 DATA 1012281332281332241690001332
36133230101229133229133034155057054048
032077065073078036040050057
YO 1150 DATA 0490410610342250241440172302
36024169040101228133224169000133230101
229133225165235240176208149
VA 1160 DATA 1652331600001452240241690011
012241332241690000101225133225165235240
151208229034155049050050048
AV 1170 DATA 0320770730360400490440540530
41061034254254000121053015112112112078
000080014014014014014014014
GO 1180 DATA 0140140140140140140140140140
14014014014014014014014014014014014014
014014014014014014014014014
KE 1190 DATA 0140140140140140140140140140
140140140140140140140140140140140140140
077073036040054054049051
II 1200 DATA 0500410610340140140140140140
14014014014014014014014014014014014014
014014014014014014014014014
YK 1210 DATA 0140140140140140140140140140
140140140140140140140140140140140140140
000096014014014014014014014
JH 1220 DATA 0140140140140140140140140140
34155049050052048032077073036040049051
051044050048048041061034014
GB 1230 DATA 0140140140140140140140140140
14014014014014014014014014014014014014
014014014014014014014014014
GE 1240 DATA 0140140140140140140140140140
14014014014014014014014014014014014014
014014014014014014014014014
NL 1250 DATA 0140140140140140341550490500
53048032077073036040050048049044050054
050041061034014014014014014
SI 1260 DATA 0650000061041701041410010022
32208003238001002142000002104170104064
169000141000002169000141001
KO 1270 DATA 0021691921410142120760952280
00000000000000000000000000000000000000
0000000000000034155
```

assembly language

FAST MOVES

Article on page 70

LISTING 1

Don't type the
TYPO II Codes!

```
LT 10 REM FASTMOVES, LISTING 1
QB 20 REM BY PATRICK DELL'ERA
FW 30 REM (C) 1985, ANTIC PUBLISHING
BE 70 REM
OD 80 CURSOR=752:OFF=1:KOLOR0=708:KOLOR2=
710:KOLOR4=712:WINDOWSIZE=703
QJ 90 GRAPHICS 0:POKE CURSOR,OFF
MH 100 DISPLAYLIST=PEEK(560)+PEEK(561)*25
6:POKE DISPLAYLIST+7,7:POKE DISPLAYLIS
T+8,12
GL 110 POKE KOLOR0,154:POKE KOLOR2,146:PO
KE KOLOR4,144
OO 120 POSITION 4.2:? "FAST MOVES"
OD 130 POSITION 2.5:? "This program creat
es an AUTORUN.SYS"
UP 140 ? "+file that, when booted, will"
IM 150 ? "+let the cursor control keys mo
ve"
BZ 160 ? "+the cursor much faster than th
e"
YB 170 ? "+standard Operating System does
."
TG 180 POKE WINDOWSIZE,4
QA 190 ? "Mput a formatted DOS 2 or 2.5 d
isk"
HL 200 ? "into drive #1."
MQ 210 ? "Press [STOP] when you are ready.
..."
```

```

UH 220 GOSUB 360
IY 230 TRAP 270:OPEN #1,4,0,"D:AUTORUN.SY
5":CLOSE #1:POKE 710,66
RB 240 ? "This disk already has an AUTO
RUN.SYS"
XG 250 ? "file. Press [F5] if you want
to"
YO 260 ? "write over it.":GOSUB 360:POKE
710,146
UK 270 ? "Writing Fast Moves...";
OO 280 CLOSE #1:OPEN #1,8,0,"D:AUTORUN.SY
5"
CT 290 RESTORE
ER 300 FOR X=1 TO 249:READ A:POKE 708,A:S
OUND 0,A,8,8:PUT #1,A:NEXT X
LB 310 CLOSE #1
TJ 320 ? "The deed is done!"
KR 330 FOR X=1 TO 500:NEXT X
NC 340 N=USR(58487)
OC 350 END
AB 360 IF PEEK(53279)<>6 THEN 360
ZN 370 RETURN
YJ 380 DATA 255,255,124,29,104,30,1,255
GZ 390 DATA 142,143,134,135,138,72,173,9
DU 400 DATA 210,162,4,202,142,125,29,48
OW 410 DATA 22,221,126,29,208,245,141,242

GX 420 DATA 2,141,252,2,169,15,141,124
QW 430 DATA 29,133,77,104,170,104,64,104
NS 440 DATA 170,76,255,255,32,255,255,169

FI 450 DATA 170,133,12,169,29,133,13,169
CY 460 DATA 218,133,10,169,29,133,11,169
RX 470 DATA 40,141,231,2,169,30,141,232
TW 480 DATA 2,169,130,141,8,2,169,29
JV 490 DATA 141,9,2,169,7,162,30,160
NJ 500 DATA 2,76,92,228,169,255,141,8
LM 510 DATA 2,169,255,141,9,2,169,7
AT 520 DATA 174,39,30,172,38,30,32,92
YQ 530 DATA 228,169,255,133,12,169,255,13
3
XI 540 DATA 13,169,255,133,10,169,255,133

CJ 550 DATA 11,76,255,255,173,124,29,240
HR 560 DATA 5,206,124,29,208,25,173,125
BR 570 DATA 29,48,20,173,15,210,41,4
DA 580 DATA 208,13,169,6,205,43,2,176
OI 590 DATA 3,141,43,2,206,43,2,76
KE 600 DATA 255,255,165,10,141,0,30,141
YP 610 DATA 248,29,165,11,141,1,30,141
UT 620 DATA 252,29,165,12,141,171,29,141
VM 630 DATA 240,29,165,13,141,172,29,141
KG 640 DATA 244,29,173,8,2,141,168,29
XT 650 DATA 141,219,29,173,9,2,141,169
LI 660 DATA 29,141,224,29,173,36,2,141
IK 670 DATA 38,30,173,37,2,141,39,30
FG 680 DATA 76,173,29,224,2,225,2,40
IQ 690 DATA 30

```

```

0220 SKSTAT = $D20F ;Keyboard status
0230 KBCODE = $D209 ;Pokey rgstr
0240 CH = $02FC ;Current key--
0250 ; ; KBCODE shadow
0260 CH1 = $02F2 ;Previous key
0270 ATTRACT = $4D ;Attr mode flag
0280 SRTIMR = $022B ;Auto-Repeat tmr
0290 UP = $8E ;Hardware codes
0300 DOWN = $8F ; for key
0310 LEFT = $86 ; pressed
0320 RIGHT = $87 ;
0330 DUMMY = $FF ;Variable byte
0340 ADDR = $FFFF ;Variable word
0350 ;
0380 ;
0390 *= $1D7C ;End of resident
0420 ;
0430 ;
0440 DBOUNCE .BYTE 1
0450 FASTFLG .BYTE $FF
0460 TABLE
0470 .BYTE UP,DOWN,LEFT,RIGHT
0480 FAST.MOVES
0490 TXA ;OS has already
0500 PHA ; saved reg A,
0510 ; ; we also save X
0520 LDA KBCODE ;Get key pressed
0530 LDX #4 ;Then search
0540 ; ; TABLE for a
0550 ; ; match
0560 SEARCH
0570 DEX
0580 STX FASTFLG ;Save index into
0590 ; ; TABLE
0600 BMI NONE ;End of table...
0610 CMP TABLE,X ;Found a match?
0620 BNE SEARCH ;No,keep looking
0630 STA CH1 ;Key is a cursor
0640 STA CH ; control, so
0650 LDA #$0F ; update current
0660 STA DBOUNCE ; and previous
0670 STA ATTRACT ; key pressed,
0680 PLA ; set our delay
0690 TAX ; timer, reset
0700 PLA ; attract mode
0710 RTI ; and go back
0720 NONE
0730 PLA ;No matches so
0740 TAX ; let OS have key
0750 VKEYBD.SAVE = #+1
0760 JMP ADDR ;Addr is modi-
0770 ; ; fied by INIT
0780 ; ; to point to
0790 ; ; OS's handler
0800 ;
0810 ;
0820 ;The addr for REINIT is stored
0830 ;in DOSINI. SYSTEM RESET will
0840 ;come through here and then
0850 ;through INIT2 to re-establish
0860 ;Fast Moves.
0870 ;
0880 ;
0890 REINIT
0890 JSR ADDR ;Address is
0900 ; ; changed to
0910 ; ; DOSINI vector
0920 ; ; by INIT
0930 ;
0940 ;After returning from the
0950 ;DOS initialization, we have to
0960 ;re-establish the vectors in
0970 ;DOSINI, and DOSVEC. In this way
0980 ;we make Fast Moves "persistent".
0990 ;
1000 INIT2
1010 LDA # <REINIT
1020 STA DOSINI
1030 LDA # >REINIT
1040 STA DOSINI+1
1050 LDA # <CALL.DOS continued on next page

```

LISTING 2

```

10 ; FAST MOVES, LISTING 2
20 ; BY PATRICK DELL'ERA
30 ; (c) 1985, ANTIC PUBLISHING
40 ;
0100 ; EQUATES
0110 ;
0120 RUNAD = $02E0 ;Auto run addr
0130 MEMLO = $02E7 ;Lower limit of
0140 ; ; free memory
0150 DOSVEC = $0A ;Addr jumped to
0160 ; ; when DOS called
0170 DOSINI = $0C ;Initialization
0180 ; ; addr for DOS
0190 VVBLKD = $0224 ;dlyd vbi vctr
0200 SETVBV = $E45C ;set vbi
0210 VKEYBD = $0208 ;Keyboard vctr

```

```


1060     STA DOSVEC
1070     LDA # >CALL.DOS
1080     STA DOSVEC+1
1090 ;
1100 ;Move 10 MEM up to create safe
1110 ;Place for Fast Moves.
1120 ;
1130     LDA # <FINIS
1140     STA MEMLO
1150     LDA # >FINIS
1160     STA MEMLO+1
1170 ;
1180 ;Insert Fast Moves into the
1190 ;keyboard service routines.
1200 ;
1210     LDA # <FAST.MOVES
1220     STA VKEYBD
1230     LDA # >FAST.MOVES
1240     STA VKEYBD+1
1250 ;
1260 ;Install our vertical blank
1270 ;routine the safe way, through
1280 ;the OS routine for setting
1290 ;vertical blank routines!
1300 ;
1310     LDA #7
1320     LDX # >VBLANK
1330     LDY # <VBLANK
1340     JMP SETVBV
1350 ;
1360 ;Any call to DOS will vector
1370 ;through here.
1380 ;
1390 CALL.DOS
1400 ;
1410 ;Fisrt, replace the OS keyboard
1420 ;routine.
1430 ;
1440     LDA #DUMMY ;This value is
1450 ; ; is set by INIT
1460 VKEYBD.L = *-1
1470     STA VKEYBD
1480     LDA #DUMMY ;So is this one!
1490 VKEYBD.H = *-1
1500     STA VKEYBD+1
1510 ;
1520 ;Then, re-establish the original
1530 ;vertical blank routine.
1540 ;
1550     LDA #7
1560     LDX VBLANK.1+2
1570     LDY VBLANK.1+1
1580     JSR SETVBV
1590 ;
1600 ;Then DOS initialization and
1601 ;start addresses.
1610 ;
1620 DOSREINI
1630 DOS1 = ++1
1640     LDA #DUMMY ;Dummy values
1650     STA DOSINI ; are changed by
1660 DOS2 = ++1
1670     LDA #DUMMY ; INIT to
1680     STA DOSINI+1 ; restore
1685 DOS3 = ++1
1690     LDA #DUMMY ; DOSINI and
1700     STA DOSVEC ; DOSVEC
1705 DOS4 = ++1
1710     LDA #DUMMY ;
1720     STA DOSVEC+1
1730 ;
1740 ;Now we can go safely to DOS.
1750 ;
1760 DO.DOS.V
1770     JMP ADDR ;Addr changed by
1780 ; ; INIT to show
1790 ; ; DOSVEC
1800 ;
1810 ;Vertical Blank Interrupts
1820 ;vector through here. We check
1830 ;to see if a key is being held
1840 ;down. If so, then we determine
1850 ;if it is a cursor control key.
1860 ;If so, then we make it repeat
1870 ;more quickly than OS does.
1880 ;
1890 VBLANK
1900     LDA DBOUNCE ;Debounce logic
1910 ; ; in use?
1920     BEQ VBLANK.3 ;No, make next
1930 ; ; test
1940     DEC DBOUNCE ;Yes, subtract 1
1950 ; ; from timer
1960     BNE VBLANK.1 ;If DBOUNCE<>0,
1970 ; ; all done
1980 VBLANK.3
1990     LDA FASTFLG ;Equals SFF if
2000     BMI VBLANK.1 ; not cursor ctl
2010     LDA SKSTAT ;Bit 3 is on if
2020     AND #4 ; key is still
2030     BNE VBLANK.1 ; held down
2040     LDA #6 ;If timer has
2050     CMP SRTIMR ; already been
2060 ; ; set with 6
2070 ; ; (Fast Moves'
2080     BCS VBLANK.2 ; Speed),branch
2090     STA SRTIMR ;Else, set timer
2100 VBLANK.2
2110     DEC SRTIMR ;Subtract 1
2120 VBLANK.1
2130     JMP ADDR ;Addr is changed
2140 ; ; to OS's VBI
2150 ; ; routine by INIT
2160 ;
2170 ;FINIS marks the end of pro-
2180 ;tected memory.
2190 ;
2200 FINIS
2210 ;
2220 ;DOS jumps here after auto load-
2230 ;loading Fast Moves. Several
2240 ;addresses within Fast Moves are
2250 ;modified. This routine is not
2260 ;protected as it is needed only
2270 ;once.
2280 ;
2290 INIT
2300     LDA DOSVEC ;Save DOS vector
2310     STA DO.DOS.V+1
2320     STA DOS3
2330     LDA DOSVEC+1
2340     STA DO.DOS.V+2
2350     STA DOS4
2360 ;
2370     LDA DOSINI ;Save DOS initi-
2380     STA REINIT+1 ; alization
2390     STA DOS1 ; vector
2400     LDA DOSINI+1
2410     STA REINIT+2
2420     STA DOS2
2430 ;
2440     LDA VKEYBD ;Save keyboard
2450     STA VKEYBD.SAVE ; handler
2460     STA VKEYBD.L ; vector
2470     LDA VKEYBD+1
2480     STA VKEYBD.SAVE+1
2490     STA VKEYBD.H
2500 ;
2510     LDA VVBLKD ;Save VBI
2520     STA VBLANK.1+1 ; routine
2530     LDA VVBLKD+1 ; vector
2540     STA VBLANK.1+2
2550 ;
2560     JMP INIT2 ;Continue initi-
2570 ; ; alization
2580 ;Autorun
2590 ;
2600     *= RUNAD
2610     .WORD INIT
2620 ;
2630     .END

```


VAMPIRE RATS

Article on page 49

LISTING 1

 Don't type the
 TYPO II Codes! 

```

XM 1 REM VAMPIRE RATS!
PC 2 REM BY TOM ZARBOCK
FF 5 REM (C) 1985, ANTIC PUBLISHING
GX 10 GOTO 22000
AI 5000 REM ACTIONS
LG 5010 S1=STICK(0):S2=STICK(1):F1=AF(F1+
1+F(S1)):F2=AF(F2+1+F(S2))
IC 5020 REM PLYR 1 NEW FACING?
AP 5030 IF S1>12 THEN 5049
XY 5040 COLOR 10+F1:PLOT X1,Y1
CC 5045 IF STRIG(0)=0 THEN S1=14
JY 5049 REM PLYR 1 MOVES OR JMS?
AF 5050 IF S1<>14 AND S1<>13 THEN 5074
GM 5055 U=1:IF S1=13 THEN U=2
JS 5060 TRAP 5074:LOCATE X1+5(0,F1)*U,Y1+
5(1,F1)*U,K
CF 5065 IF K<>32 THEN 5074
PX 5070 COLOR 32:PLOT X1,Y1:X1=X1+5(0,F1)
*U:Y1=Y1+5(1,F1)*U:COLOR 10+F1:PLOT X1
,Y1:POKE 53761,10:POKE 53761,0
ED 5072 B1=B1-2*(S1=13)
IM 5074 REM PLYR 1 BITES? & WHO?
YB 5080 LOCATE X1+5(0,F1),Y1+5(1,F1),K
CA 5085 IF K>183 AND K<187 THEN V1=10:COL
OR 32:PLOT X1+5(0,F1),Y1+5(1,F1):B1=B1
+5
XX 5090 IF K>41 AND K<50 THEN B2=B2-2:B1=
B1+2:POKE 708,156: SOUND 2,18,4,15
KY 5199 REM PLYR 2 NEW FACING?
ZW 5200 IF S2>12 THEN 5219
CS 5210 COLOR 42+F2:PLOT X2,Y2
DM 5215 IF STRIG(1)=0 THEN S2=14
KI 5219 REM PLYR 2 MOVES OR JMS?
IH 5220 IF S2<>13 AND S2<>14 THEN 5259
GV 5225 U=1:IF S2=13 THEN U=2
RJ 5230 TRAP 5259:LOCATE X2+5(0,F2)*U,Y2+
5(1,F2)*U,K
FS 5240 IF K<>32 THEN 5259
VP 5250 COLOR 32:PLOT X2,Y2:X2=X2+5(0,F2)
*U:Y2=Y2+5(1,F2)*U:COLOR 42+F2:PLOT X2
,Y2:POKE 53761,10:POKE 53761,0
FI 5252 B2=B2-2*(S2=13)
JT 5259 REM PLYR 2 BITES? & WHO?
BQ 5270 LOCATE X2+5(0,F2),Y2+5(1,F2),K
QJ 5280 IF K>183 AND K<187 THEN V1=10:COL
OR 32:PLOT X2+5(0,F2),Y2+5(1,F2):B2=B2
+5
YJ 5290 IF K>9 AND K<18 THEN B1=B1-2:B2=B
2+2:POKE 709,206: SOUND 3,16,4,15
CW 5350 REM UPDATE BLOOD LEVEL
HZ 5390 REM PLAYER 1
FZ 5400 IF B1>8 THEN COLOR 168:PLOT 0,B1P
:B1P=B1P-1:B1=B1-8
WZ 5405 IF B1<0 THEN COLOR 41:PLOT 0,B1P:
B1P=B1P+1:B1=B1+8
AL 5406 IF B1P<0 THEN B1P=0:B1=8
DB 5407 IF B1P>10 THEN F=2:GOTO 9000
JV 5410 COLOR 160+INT(B1+0.5):PLOT 0,B1P
JN 5449 REM PLAYER 2
NW 5470 IF B2>8 THEN COLOR 168:PLOT 19,B2
P:B2P=B2P-1:B2=B2-8
BQ 5480 IF B2<0 THEN COLOR 41:PLOT 19,B2P
:B2P=B2P+1:B2=B2+8
CZ 5482 IF B2P<0 THEN B2P=0:B2=8
DA 5484 IF B2P>10 THEN F=1:GOTO 9000
UF 5490 COLOR 160+B2:PLOT 19,B2P
FG 5500 B1=B1-0.1:B2=B2-0.1
ZS 5899 REM RANDOM VICTIMS
LC 5900 IF PEEK(53770)>9 THEN 5940
UH 5910 I=INT(16*RND(0)+2):J=INT(10*RND(0
)+1):LOCATE I,J,D:IF D<>32 THEN 5910
VK 5920 COLOR INT(3*RND(0))+184:PLOT I,J:
POKE 77,0
OI 5940 REM SOUNDS
DY 5950 SOUND 1,0,8,V1:V1=V1-2:IF V1<0 TH
EN V1=0
MJ 5960 SOUND 2,0,8,0: SOUND 3,0,8,0
VQ 5980 POKE 708,150-6*(B2P>8):POKE 709,2
00-8*(B1P>8):POKE 53768,197
OL 6000 GOTO 5000
NB 9000 REM GAME ENDS
VE 9005 SOUND 0,0,0,0: SOUND 1,0,0,0: SOUND
2,0,0,0: SOUND 3,0,0,0:POKE 708,150:PO
KE 709,200
IP 9030 COLOR 32:PLOT X1,Y1:PLOT X2,Y2
TB 9040 J=10:X=X1:Y=Y1:IF F=2 THEN J=42:X
=X2:Y=Y2
AY 9050 FOR I=1 TO 15:FOR K=0 TO 7
XH 9060 COLOR J+K:PLOT X,Y:NEXT K:NEXT I:
RESTORE 9100
FJ 9080 READ I,J:IF I=-1 THEN 9270
YT 9090 SOUND 0,I,10,8: SOUND 1,I+1,10,8:F
OR K=1 TO J/4:NEXT K:GOTO 9080
RW 9100 DATA 237,100,177,100,140,100,117,
200,140,100,117,200,140,100,117,200,14
0,100,177,300,177,500,-1,-1
VA 9270 SOUND 0,0,0,0: SOUND 1,0,0,0
MQ 9275 POSITION 1,0:? #6;"██████████████████
██████":POKE 712,0:POKE 711,6:POKE 710,4
HU 9280 IF STRIG(0) AND STRIG(1) THEN 928
0
VG 9285 B1P=0:B2P=0
SM 9290 GOTO 25000
VK 22000 REM INITIALIZE
BI 22100 DIM F(15),S(1,7),AF(9)
ML 22190 RESTORE 22205
IA 22200 FOR I=0 TO 15:READ D:F(I)=D:NEXT
I
QA 22205 DATA 0,0,0,0,0,1,1,1,0,-1,-1,-1,
0,0,0,0
AT 22210 FOR I=0 TO 1:FOR J=0 TO 7
VO 22220 READ D:S(I,J)=D:NEXT J:NEXT I
SL 22230 DATA 0,1,1,1,0,-1,-1,-1
TH 22240 DATA -1,-1,0,1,1,1,0,-1
KW 22250 FOR I=0 TO 9:READ D:AF(I)=D:NEXT
I
VA 22260 DATA 7,0,1,2,3,4,5,6,7,0
ZM 23000 GOTO 27000
PX 25000 REM CUSTOM CHARACTER SET
RO 25005 IF PEEK(1536)<>0 THEN CHBASE=PEE
K(1536)*256:GOTO 25150
MP 25010 CHBASE=(PEEK(742)-4)*256:POKE 74
2,PEEK(742)-5:POKE 1536,CHBASE/256:POK
E 756,CHBASE/256
GC 25080 FOR I=0 TO 511:POKE CHBASE+I,PEE
K(57344+I):NEXT I:REM MOVE ROM SET
ZW 25120 FOR I=CHBASE+8 TO CHBASE+216:REA
D D:POKE I,D:NEXT I
KH 25150 GRAPHICS 2+16:POKE 756,CHBASE/25
6
VV 25160 REM CUSTOM CHARACTER DATA
FL 25170 DATA 0,0,0,0,0,0,0,126
TU 25171 DATA 0,0,0,0,0,0,126,126
PF 25172 DATA 0,0,0,0,0,126,126,126

```

continued on next page

```

RS 25173 DATA 0.0,0.0,126,126,126,126
BH 25174 DATA 0.0,0.0,126,126,126,126,126
RY 25175 DATA 0.0,126,126,126,126,126,126

PR 25176 DATA 0,126,126,126,126,126,126,1
26
UM 25177 DATA 126,126,126,126,126,126,126
,126
ZX 25178 DATA 0.0,0.0,0.0,0.0
NY 25180 DATA 40.56,40.146,124.56,124.130

HG 25190 DATA 4.40,37.154,120.118,48.8
OH 25200 DATA 136.80,119,122,119,80,136.0

NO 25210 DATA 8.48,118,120,154,37,40,4
ZK 25220 DATA 65,62,28,62,73,20,28,20
GR 25230 DATA 16,12,158,30,89,164,20,32
RF 25240 DATA 0.17,10,238,94,238,10,17
VG 25250 DATA 32,20,164,89,30,110,12,16
QR 25280 DATA 0.127,68,68,79,124,75,74
RG 25290 DATA 0,255,34,34,255,72,255,0
DN 25300 DATA 0,254,34,34,250,30,234,74
HS 25310 DATA 74,74,78,74,122,74,78,122
DB 25320 DATA 74,202,46,26,250,18,254,0
BD 25330 DATA 74,75,122,76,79,72,127,0
BH 25340 DATA 108,84,254,68,124,126,219,2
15
HW 25350 DATA 12,24,48,113,127,63,99,0
LG 25360 DATA 12,138,207,252,254,124,40,1
08
TE 25370 DATA 0.69,213,247,127,62,0,0
KS 26000 REM DRAW ARENA
EJ 26005 POKE 708,150:POKE 709,200:POKE 7
10,240:POKE 711,208:POKE 712,2:B1=8:B2
=8
HQ 26010 COLOR 146:PLOT 1,0:COLOR 147:DRA

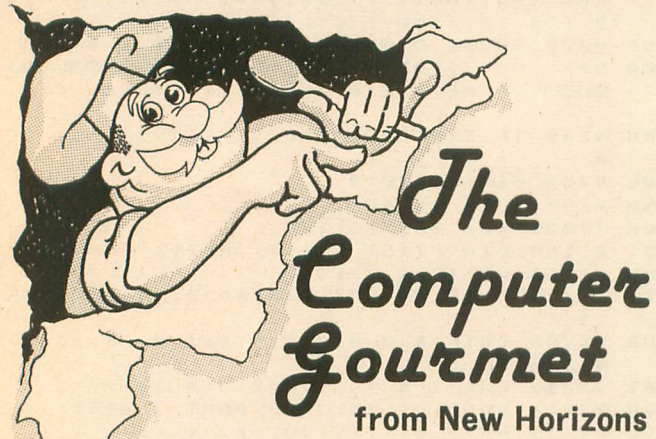
```

```

WTO 17,0:COLOR 148:PLOT 18,0:COLOR 149
:DRAWTO 18,10
LX 26020 COLOR 150:PLOT 18,11:COLOR 147:D
RAWTO 2,11
ZD 26030 COLOR 151:PLOT 1,11:COLOR 149:DR
AWTO 1,1
AU 26040 COLOR 8:PLOT 0,11:COLOR 40:PLOT
19,11
UB 26050 COLOR 168:PLOT 0,10:DRAWTO 0,0:P
LOT 19,10:DRAWTO 19,0
SI 26060 X1=5:Y1=5:X2=14:Y2=5:COLOR 10:PL
OT X1,Y1:COLOR 42:PLOT X2,Y2:GOTO 5000

PA 27000 REM TITLE SCREEN
DO 27010 GRAPHICS 2+16:POKE 708,48:T=5
WL 27011 SOUND 0,250,10,10:SOUND 1,251,10
,10:SOUND 2,252,10,10:K=4
NQ 27020 FOR X=1 TO 18:COLOR 42:PLOT X,0:
DRAWTO 19-X,11:POKE 710,PEEK(53770)
JT 27025 POSITION 3,5: ? #6:"VAMPIRE BRAT
O":IF NOT STRIG(0) OR NOT STRIG(1) T
HEN 27100
HF 27030 COLOR 0:PLOT X,0:DRAWTO 19-X,11
NM 27040 NEXT X
KJ 27050 FOR Y=1 TO 10:COLOR 42:PLOT 19,Y
:DRAWTO 0,11-Y:POKE 710,PEEK(53770)
ZE 27052 POKE 53768,K:J=J+1:IF J=40 THEN
J=0:K=4*(K<>4)+6*(K<>6)
WA 27055 COLOR 0:PLOT 19,Y:DRAWTO 0,11-Y
QW 27056 POSITION 3,5: ? #6:"VAMPIRE BRAT
O":IF NOT STRIG(0) OR NOT STRIG(1) T
HEN 27100
MY 27060 NEXT Y:GOTO 27020
AW 27100 SOUND 0,0,0,0:SOUND 1,0,0,0:SOUN
D 2,0,0,0:POKE 710,50:GOTO 25000
DS 27200 RETURN

```



The Computer Gourmet

from New Horizons

Tired of always searching for the right recipe?
 Are the pages of your recipe books covered with your recipe ingredients?
 Fed up at guessing amounts when a recipe serves five but you want it for two?
 If so then you need The Computer Gourmet.

With The Computer Gourmet you can:

- Easily save your favorite recipes (even give them a rating!)
- Find any recipe you need within seconds
- Adjust for a different serving size *automatically*
- Print the whole recipe or just the list of ingredients

Best of all, The Computer Gourmet comes with a disk full of recipes!
 (With everything from main courses to desserts).

Available on disk for Atari™ computers (requires 48K). To order, send \$29.95 plus \$2.00 for postage (Texas residents please add 5 1/8% sales tax) to:

New Horizons Software • P.O. Box 180253 • Austin, Texas 78718
 Or call (512) 280-0319.

New Horizons Expanding Your Life

MasterCard and Visa accepted.
 Please write to us for information on all of our products for Atari computers.
 Dealer inquiries invited. Atari is a trademark of Atari, Corp.

GIZZMOZ

800-225-5800 Call for our Catalog!
 For ordering only 617-371-1855

Atari "ST" Products

Gem Write Professional ST Cobol 10 Meg
 Gem Paint Valocs II DB Master Hard Drive

Lots of Other Exciting New Products!

Call for Pricing

Fischer-Technic Robot Kit\$99.95
 with Interface.....\$159.95
 Movit Robot Kits\$18.95 & up

US Doubler dbl. density for 1050 disk drive
 w/Sparta Dos\$52.46

Basic XE\$54.95

Atari Video Digitizer KitCall

Relax from Synapse\$69.95

Atari and Atari ST Are Trademarks of Atari Corp.
Order: M/C, Visa, Personal checks allow 2 wks. MA residents add 5% sls. tax. **Ship:**Orders under \$100 add \$3, over \$100 free ship. \$5 ship all ord. outside cont. U.S. **Warranty** No returns w/o authorization. Defective sftwr replaced w/same prgrm.

Inquiries 617-371-1855 P.O. Box 1402, Concord, MA 01742

LISTING 1

```

/* b:Sound.c                               */
/* by Patrick Bass                          */
/* (c) 1985 Antic Publishing                 */

#include "portab.h"
#include "obdefs.h"
#include "define.h"
#include "gemdefs.h"
#include "osbind.h"

int      contrl[12], intin[256], ptsin[256], intout[256], ptsout[256],
         l_intin[20], l_ptsin[20], l_out[100],
         handle, xres, yres,
         i, mx, my, loop, dummy, key_state, port_state,
         x_note, y_note,
         write_command=128, read_command=0, volume=8,
         chana_lo=0, chana_hi=1,
         chanb_lo=2, chanb_hi=3,
         chan_enable=7, chana_volume=8, chanb_volume=9,
         x_note_line=80, y_note_line=100, volume_line=120,
         question_column=15, answer_column=115, twelve_bits=4096,
         hi_mask=0x0F00, lo_mask=0x00FF, pointing_finger=3,
         off=0, thick=1, skewed=4, underlined=8;

char     note_lo, note_hi, buffer[80],
         copyright[]=" copyright 1985 Antic - the ATARI Resource.";

double   m_state, number1, number2, number3;

extern double giaccess();

main()
{
    appl_init();

    handle=graf_handle( &dummy, &dummy, &dummy, &dummy );
    graf_mouse( pointing_finger, 0x0L );

    for( i=0; i<10; l_intin[ i++ ]=1 ); l_intin[10]=2;

    v_opnvwk( l_intin, &handle, l_out);
    xres=l_out[0]; yres=l_out[1];

    vst_effects( handle, skewed ); vst_color( handle, BLUE );
    v_gtext( handle, 10, 20, "Antic- The ATARI Resource." );

    vst_effects( handle, thick ); vst_color( handle, GREEN );
    v_gtext( handle, 30, 40, "'Sound Mouse'" );

    vst_effects( handle, underlined ); vst_color( handle, MAGENTA );
    v_gtext( handle, question_column, x_note_line, " Channel A: " );

    vst_effects( handle, underlined ); vst_color( handle, LMAGENTA );
    v_gtext( handle, question_column, y_note_line, " Channel B: " );

    vst_effects( handle, off ); vst_color( handle, YELLOW );
    v_gtext( handle, question_column, volume_line, "   Volume: " );

    Giaccess( volume, chana_volume+write_command );
    Giaccess( volume, chanb_volume+write_command );

```

continued on next page

```

port_state=Giaccess( port_state, chan_enable+read_command );
Giaccess( 60, chan_enable+write_command );

do
(
    vq_key_s( handle, &key_state );

    if ( key_state & K_CTRL )
        ( volume++ ; for( loop=0; loop<500; loop++ ); )
    if ( key_state & K_LSHIFT )
        ( volume-- ; for( loop=0; loop<500; loop++ ); )

    if ( volume > 15 ) volume=15;
    if ( volume < 0 ) volume=0;

    Giaccess( volume, chana_volume+write_command );
    Giaccess( volume, chanb_volume+write_command );

    vq_mouse( handle, &M_state, &mx, &my );
    x_note = ( mx * ( twelve_bits / ( xres+1 ) ) );
    note_hi = ( x_note & hi_mask ) >> 8;
    note_lo = ( x_note & lo_mask );
    Giaccess( note_lo, chana_lo+write_command );
    Giaccess( note_hi, chana_hi+write_command );

    y_note = ( my * ( twelve_bits / ( yres+1 ) ) );
    note_hi = ( y_note & hi_mask ) >> 8;
    note_lo = ( y_note & lo_mask );
    Giaccess( note_lo, chanb_lo+write_command );
    Giaccess( note_hi, chanb_hi+write_command );

    number1 = x_note;
    ftoa( number1, buffer, 0 ); buffer[79] = 0;
    vst_effects( handle, underlined ); vst_color( handle, MAGENTA );
    v_gtext( handle, answer_column, x_note_line, buffer );

    number2 = y_note;
    ftoa( number2, buffer, 0 ); buffer[79] = 0;
    vst_color( handle, LMAGENTA );
    v_gtext( handle, answer_column, y_note_line, buffer );

    number3 = volume;
    ftoa( number3, buffer, 0 ); buffer[79] = 0;
    vst_effects( handle, off ); vst_color( handle, YELLOW );
    v_gtext( handle, answer_column, volume_line, buffer );
)
while( M_state == off );

Giaccess( off, chana_volume+write_command );
Giaccess( off, chanb_volume+write_command );
Giaccess( port_state, chan_enable+write_command );

v_c15vbk( handle );
appl_exit();
}

```



Vastly SUPERIOR to any translation programs available! FOR ATARI 1200XL/600XL/800XL with 64K.
(Please specify computer model number!)

\$69.95 (Rom)
\$49.95 (D or C)

THE XL "FIX"!



\$69.95 (Rom)
\$49.95 (D or C)

The Atari XL series computers represent power, sophistication, and flexibility virtually unrivalled in today's Home Computer Market.

With "approximately" 30-40% of existing software being "incompatible", a real, and serious problem exists. Because of this we have developed THE XL "FIX"!

ADVANTAGES over cheaper "translation products":

1. The XL "FIX"! is capable of fixing more software... an estimated **30% more software!**
2. The XL "FIX"! is available in **DISK, CASSETTE**, and now **ROM!**
3. XL "FIX"! versions fix ALL THREE types of software (Disk - Cassette - and Cartridges!)
4. The XL "FIX"! (disk or cassette) adds **OVER 4K** of usable RAM to your computer (anyone using Data bases or Word processors will really appreciate this feature!)
5. You never have to hold the **OPTION** button down on 600XL or 800XL computers!
6. **VERY IMPORTANT!** You need to load the XL "FIX"! only **once**... you can **change** disks, cassettes, or cartridges **without** rebooting the XL "FIX"! each time (disk or cassette!)
7. The **ROM** version is instantaneous upon computer power up, has a high speed cursor, is instantly switchable to your original operating system, will work with 16K 600XL's, and more!

The XL "FIX"!... another SUPERIOR product! **64K required!**

DISTRIBUTOR/DEALER inquires welcome

Mastercard-Visa-Money
Order or Cashier Check.
Phone **(716) 467-9326**
Please specify computer model number!

Send \$49.95 (\$69.95 for Rom)
plus \$4 shipping and handling
(N.Y.S. residents please add 7%) to:
COMPUTER SOFTWARE SERVICES
P.O. Box 17660
Rochester, New York 14617



THREE NEW PRODUCTS!

THE "SUPER PILL"!

Exactly the same as the WORLD'S leading cartridge backup device... **THE PILL!**... except it's even simpler to operate, it's **SWITCHLESS!** Excellent for families having young children. Totally eliminates opening computer doors and switches. **THE "SUPER PILL"!** is the most advanced state of the **CARTRIDGE BACKUP** device available today. It is totally compatible with all ATARI computers and all programs backed up by the original "PILL"! Only \$79.95 plus \$4 shipping and handling.

THE "PROTECTOR/SILENCER"!

The "**PROTECTOR**"! is a disk and hardware modification (no soldering) for Atari 810, 1050, and Indus GT disk drives that will allow you to write true **BAD SECTORS** wherever you wish (not to be confused with ridiculous speed control or tape jerking schemes!). **Powerful** disk program finds hidden directories, scrambles existing directories, fast maps, hex conversions, disk dupes, and much more!

The "**SILENCER**"! quiets your drive tremendously (eliminates the **LOUD** grinding noise when you read a bad sector!), **PLUS** it allows you to **WRITE TO BOTH SIDES** of any disk **WITHOUT** cutting or notching the disk! Both for only \$49.95 plus \$4 shipping and handling.

THE "COMPANION"!

An amazing device that will enhance the capabilities of the **XL "FIX"!** or Atari Translator. It will allow you to **de-select BASIC** (no more need to hold the **OPTION** button while loading programs on the 600XL's and 800XL's), and it will allow you to **de-select the DIAGNOSTICS** (no more bad loads because of the **DIAGNOSTICS** jumping into the middle of your program load routine!). Installation is simple (10 minutes) and requires **NO** soldering! Only \$29.95 plus \$4 shipping and handling.

DISTRIBUTOR/DEALER inquiries welcome.

Our other fine products include THE "PILL"!, XL "FIX"!, "IMPOSSIBLE"!, "METAMORPHOSES"!, and "REMOTE"!

Mastercard-Visa-Money
Order or Cashiers Check.

Phone orders:
(716) 467-9326.

Atari is a TM of Atari Inc. The "METAMORPHOSES" is a TM of Computer Software Services (division of S.C.S.D., Inc.)

COMPUTER SOFTWARE SERVICES
P.O. Box 17660
Rochester, New York 14617



\$149.95

For years they said it couldn't be done... **THE "IMPOSSIBLE"!** they claimed!



\$149.95

Backup almost any disk currently available (even **heavily protected** programs) with an **UNMODIFIED** disk drive!
Works with **ANY** disk drive!

PURPOSE: The "**IMPOSSIBLE**" was developed in response to the estimated half million disk drive users that own a drive other than the Atari 810 (Indus, Percom, Trak, Rana, Astra, etc.) that wish to **BACK UP** their **protected software**. Due to a radically new technology developed by Computer Software Services, modification to your disk drive has been eliminated! The advantages are obvious! Drive warranties are not violated, the chance accidental damage has been eliminated, etc., etc.

OPERATION: The "**IMPOSSIBLE**"! consists of a disk program (**unprotected** so you can make as many backups as you wish) and a 4K STATIC RAM pack which is inserted into your computer (no soldering!) The "**IMPOSSIBLE**"! will read your program disk and then **re-write it in an unprotected format!** You may make additional backup copies using a sector copier or even regular DOS! Because your backup copy no longer has **BAD SECTORS** or **EXOTIC FORMATS**, the program data can now be manipulated into DOS compatible files (even double density!), transferred to cassette, etc. (with the aid of our Satellite programs!) No user programming knowledge required. A few programs require logical thinking.

- FEATURES:**
1. Backup protected disks
 2. Handles most MULTI-LOAD programs
 3. Makes DOS files (with Satellite option)
 4. Up to 90K data input capable
 5. AFSD-Automatic FUZZY Sector Discriminator
 6. Expands computer memory to 52K usable
 7. Simple NO SOLDER installation
 8. Satellite expandable

PROJECTED SATELLITES: A "**COMPACTOR**" program which will convert your program into DOS compatible files (double density compatible!) for the storage of several programs on one disk. A "**COLUMN 80**" program for Word Processing, etc. It allows 80 columns on the screen! The "**XL-MATE**" will allow programs made with your 400/800 "**IMPOSSIBLE**"! to now play on your XL Computer! The **METAMORPHOSES II** program will allow you to convert your **protected CASSETTES** into disk DOS files and vice-versa. All satellite programs must be used with inconjunction with The "**IMPOSSIBLE**"!

REQUIREMENTS: The "**IMPOSSIBLE**" diskette, the 4K STATIC RAM pack, a 400 or 800 computer (please specify!) with 48K and "B" Rom's. NOTE! The very old ATARI computers were shipped with "A" Rom's which had some serious "Bugs". Even if you don't own an "**IMPOSSIBLE**", you should upgrade to "B" Rom's (simple to install!) We have them available at a very inexpensive price. CALL US! "XL" version available soon!

NOT A PIRATING TOOL: We at C.S.S. did not design The "**IMPOSSIBLE**"! to put Software Manufactures out-of-business overnight! Nearly all of our products have been "ripped-off" by industry parasite who have little or no ability to develop a product of their own so we can sympathize with their dilemma. All C.S.S. products have built-in safe guards which prohibit their use for flagrant pirating. The "**IMPOSSIBLE**"! is no exception! While The "**IMPOSSIBLE**"! back-up the most heavily protected programs, it also checks to see that the 4K STATIC RAM pack is installed before allowing the backup copy to execute!

EXAMPLES: The "**IMPOSSIBLE**"! has been tested on 300 of the most popular and heavily protected programs we could find. With nearly 4000 programs for Atari, we DO NOT guarantee that it will backup all programs in the past-present-and future! We will supply updates at \$6 each (non-profit!) if and when necessary. Programs we have successfully backed up include: Blue Max, Visi-cal, Archon, Mule, File Manager 800 +, Syn Calc, Syn File, One on One, 7 Cities of Gold, Super Bunny, Load Runner, Drol, and Gumball just to name a few!

Mastercard-Visa-Money
Orders or Cashier Check.
Phone: **(716) 467-9326**
Please specify computer model number!

Send \$149.95 plus
\$4 shipping and handling
(N.Y.S. residents please add 7%)

COMPUTER SOFTWARE SERVICES
P.O. BOX 17660
ROCHESTER, N.Y. 14617

FAST MOVES

Speedy cursor and keyboard repeats

by PATRICK DELL'ERA

Learn how to change the keyboard repeat rate on your Atari XE or XL. Or speed up the cursor on any Atari 8-bit model. Disk drive required. The BASIC program creates an AUTORUN.SYS autoloading file. Source code is included for your instruction, but you don't have to be an assembly language programmer to use Fast Moves.

The Atari operating system lets you repeat every key automatically by holding it down. There are two important elements in key repeats. First is how long you must hold the key down before it begins to repeat, which is also called "debounce." Second is how quickly the key repeats after it gets started, which is the "repeat rate."

DEBOUNCE & RATE

Atari owners with XL or XE computers can change either or both of these variables. Location 729 (decimal) holds the debounce value. Dividing that number by 60 tells you how many seconds the debounce value is. You can POKE any number here to change the debounce.

The rate at which the key repeats is held in location 730 (decimal). You

can also change this rate by POKEing any number you want.

FAST MOVES

If you don't own an XE/XL series Atari computer—or you'd like to change *only* the cursor rate—try Fast Moves. Unlike the XE/XL PEEKs and POKEs, this program lets you speed up the repeat rate for cursor movement only. After all, how often do you type a long string of any single character?

Fast Move's debounce is just long enough to allow the average typist time to comfortably move the cursor one space. However, continue holding the key and the cursor will really take off! And, yes—it works on XE/XL models as well as 800/400 Ataris.

TYPING IT IN

Type in Listing 1, check it with TYPO II and SAVE a copy. (Antic disk subscribers will find this program under the filename FASTMOVE.BAS.) Place a formatted disk with DOS 2 or DOS 2.5 into Drive 1.

Now RUN Fast Moves. It will create an AUTORUN.SYS file on your disk. If there already is such a file, Fast Moves will let you know. If you decide you don't want to replace your existing file with the Fast Move autoloader, just put in another disk with

DOS 2 or DOS 2.5. Or, you could press [BREAK] and go to DOS to create the needed disk.

A few moments after you have RUN Fast Moves, your computer will reboot itself. This loads the AUTORUN.SYS you've created. Now Fast Moves is in control of your cursor movement!

Fast Moves is "persistent," which means that pressing [RESET] doesn't harm it in any way. You'll still have the quickest cursor in town! Whenever you want to use the fast cursor movement, just boot the disk with the Fast Moves AUTORUN.SYS on it.

Listing 2 is a highly commented MAC/65 assembly language source code. It is presented here for your information and does not need be typed in. Antic disk subscribers will find it in LISTed form under the filename FASTMOVE.M65.

Patrick Dell'Era is the machine language whiz who wrote Antic's Picture Show (April, 1985) and Fader II (May, 1985). Coming soon from Patrick, the DOS 2.5 adaptation of Dr. Bernard Oppenheim's popular DISKIO (January, 1985).

Listing on page 62



CARTS

\$4.99 each

- AAB4013 ASTEROIDS
 - AAB8130 CAVERNS OF MARS
 - AAB4020 CENTIPEDE
 - AAB4025 DEFENDER
 - AAB8026 DIG DUG
 - AAB8031 DONKEY KONG
 - AAB8039 EASTERN FRONT
 - AAB8030 E.T.
 - AAB4024 GALAXIAN
 - AAB4012 MISSILE COMMAND
 - AAB4022 PAC MAN
 - AAB4027 QIX
 - AAB4008 SPACE INVADERS
 - AAB4011 STAR RAIDERS
 - AAB4006 SUPER BREAKOUT
 - AAB4010 3-D TIC-TAC-TOE
 - AAB8045 MUSIC COMPOSER
 - AAB8045 PENGU
 - AAB8029 FOOTBALL
 - AAB8057 TYPO ATTACK
 - AAB8033 ROBOTRON
 - AAB8042 TENNIS
 - AAB8043 MS PACMAN
 - AAB8044 JOUST
 - AAB8049 JUNGLE HUNT
 - AAB4009 CHESS
- (Repackaged without instructions)

SPECIALS

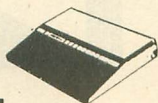
ATARI 400 Computers \$29.99



ATARI 800 48K Color Computers \$69.95



ATARI 1200XL 64K Computers \$69.95

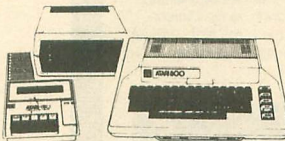


SPECIAL PACKAGES

Package #AAB400P Includes:
Atari 400 16K color computer,
410 program recorder, Basic car-
tridge, and dust cover. **\$49.99**



Package #AAB800P Includes:
Atari 800 48K color computer,
810 disk drive, 410 program
recorder, Basic cartridge, box of
10 disks, and dust cover. **\$239.00**



THE CMO ADVANTAGE

- ✓ THE BEST PRICES!
- ✓ Next day shipping on all in stock items.
- ✓ Free easy access order inquiry.
- ✓ Orders from outside Pennsylvania and Nevada save state sales tax.
- ✓ Free technical support with our factory trained technical staff.
- ✓ There is no limit and no deposit on C.O.D. orders.
- ✓ There's no extra charge for using your credit card. Your card is not charged until we ship.
- ✓ No waiting period for cashiers checks.
- ✓ We accept purchase orders from qualified corporations. Subject to approval.
- ✓ Educational discounts available to qualified institutions.
- ✓ FREE CATALOG MEMBERSHIP.

ACCESSORIES

ATARI 410 Program Recorder \$9.99



INTERFACES Digital Devices
DDA01.....\$49.99
DDA02.....\$59.99
DDA02.....\$69.99

Curtis Safety Strip Bit 3 Full View 80 (80 col. card)...\$179.00

RAM BOARDS
Axlon 32K.....\$39.99
Axlon 48K*.....\$74.99
Axlon 128K.....\$199.00
*Expand your Atari 400 to a full 48K
AtariAABCX853 16K.....\$9.99

PROGRAMMER KIT
Includes Basic, Self-teaching Book, and Reference Manual. **\$19.99**

EDUCATOR KIT
Includes 410 Program Recorder, Atari Basic and the Educational cassette States and Capitals. **\$24.99**

JOYSTICK SPECIALS
Wico Boss.....\$9.99
Original Bat Handle...\$14.99
Analog Joystick (5200)...\$9.99
6 ft. extension cord.....\$3.99
Quickshoot Controller...\$4.99
Atari CX30 Paddles.....\$2.99
Numeric Key pad.....\$34.99

SOFTWARE SPECIALS
Atari Basic.....\$14.99
Atari Writer.....\$24.99
Atari Pilot.....\$9.99
Atari Music II (disk)...\$7.99
Atari Paint (disk).....\$7.99

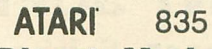
ATARI 850 Interface \$119.00



ATARI 1030 MODEM \$59.99



ATARI 835 Direct Modem \$39.99



ATARI 800 Parts Kit
Sold as is
Defective 800's with no power supply.

AMDEK Color 300 \$199.00



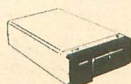
NEC Color 1215 \$239.00



INDUS ATARI GT Disk Drive \$239.00



ATARI 1050 Disk Drive \$159.00



WARRANTIES

AAB800W 1-yr. warranty for AAB800P pkg.

\$69.00

AAB1200W 1-yr. warranty for AAB400G pkg.

\$69.00

SS/SD DISKETTES

Maxell.....\$14.99

Nashua.....\$11.99

(Pack of 10)

3rd PARTY SOFTWARE SAVE UP TO 80%

From Retail Prices

- NAMES LIKE:**
Adventure International
Artworx
Broderbund
Batteries Inc.
Creative
Continental Software
Comumax
PDI Software
Rocklyn
Romex
Sierra On Line
Sirius
Datsoft
DTECH
Eduware
Edufun
Spinnaker
Screenplay
Synapse
Gebelli
Koala
Learning Company
Tronix
LJK
Optimized Systems

NOTE

All items sold "as is" with a 15 day exchange policy. Units available for sale for the most part do not have instruction manuals and/or original packaging. Some units may have minor cosmetic damage. All units are in new working condition.

All items are in Limited Quantities.

ORDER LINE

1-800-233-8950
In PA 1-800-242-4215
CUSTOMER SERVICE AND TECH SUPPORT
1-717-327-1450

Dept. B610

MAILING ADDRESS

COMPUTER MAIL ORDER Dept. B610

477 E. Third Street
Williamsport, PA 17701



MEMBER DIRECT MARKETING ASSOCIATION

CREDIT CARDS



SHIPPING

Add 3%, minimum \$5.00 shipping and handling on all orders. Larger shipments may require additional charges.

All items subject to availability and price change.

Returned shipments may be subject to a restocking fee.

CANADIAN ORDERS

1-800-268-3974
Ontario/Quebec

1-800-268-4559
Other Provinces

1-416-828-0866
In Toronto

TELEX: 06-218960
2505 Dunwin Drive,
Mississauga, Ontario
Canada L5L1T1

All prices shown are for U.S.A. orders. Call The Canadian Office for Canadian prices.

COMPUTER MAIL ORDER

TOLL-FREE 1-800-233-8950

DIGITAL VISION

COMPUTEREYES™

VIDEO IMAGES ON YOUR COMPUTER!

Finally—an inexpensive way to capture real-world images on your computer's graphics display! **COMPUTEREYES™** is an innovative slow-scan device that connects between any standard video source (video tape recorder, video camera, videodisk, etc.) and your computer. Under simple software control, a b/w image is acquired in less than six seconds. Unique multi-scan modes also provide realistic grey-scale images. Hundreds of applications!

Package includes interface module, complete easy-to-use software support on disk, owner's manual, and one year warranty all for \$129.95 plus \$4.00 S&H (USA).

Also available as a complete package including:

- **COMPUTEREYES™**
 - Quality b/w video camera
 - Connecting cable
- for only \$399.95 plus \$9.00 S&H.

Demo disk available for \$10.00 postpaid (refundable).

See your dealer or order direct. Mass. residents add 5% sales tax. Mastercard, Visa accepted. To order, or for more information, write or call:



ONLY \$129.95

Available for:

- Apple II series
- Commodore 64/128
- Atari 800/800XL/65XE/130XE

DIGITAL VISION, INC.

14 Oak Street — Suite 2
Needham, MA 02192
(617) 444-9040, 449-7160

Be the TRAIN DISPATCHER



Available for your:
Atari 400, 800, 800XL

for only **\$25.00**

+ postage and handling
send to:

Signal Computer Consultants
P.O. Box 18222, Dept. 25
Pittsburgh, PA 15236
(412) 655-7727

Color TV or Monitor recommended.

Play this fast-paced computer video game that's so true-to-life that a major railroad indicated they use it in dispatcher training.

TRAIN DISPATCHER's 24 displays help you make crucial decisions, **RAPIDLY**.

You're under pressure, but in control — throwing switches, clearing and cancelling signals, constantly maneuvering both east and westbound trains. Keep the tracks clear ahead of all your trains and watch your score go up!

Action packed, yet non-violent, **TRAIN DISPATCHER's** 5 levels of play challenge players from age 8 to 80. Work your way up from "Cub Dispatcher" to "Chief Dispatcher" or even "Trainmaster."

Created by designers of computerized traffic control systems for operating railroads, **TRAIN DISPATCHER** will increase your appreciation for actual railroad operations.

TRAIN DISPATCHER comes complete with Instruction Manual and keyboard template.

USA & CANADA add \$1.00 postage & handling (\$2.50 foreign) for each game ordered. All checks or money orders must be in USA funds, all foreign payments must be against USA banks. PA residents add 6% state sales tax. Visa, Mastercard also accepted, show card number expiration date and signature. **PLEASE INDICATE DISC OR TAPE.**



DISCOUNT SOFTWARE

37 S. Broad Street, Fairborn, OH 45324

ORDERS ONLY: 1-800-282-0333

CUSTOMER SERVICE: 1-513-879-9699

M-F 10 a.m.-7 p.m.; Sat. 10-3 ET

ABBY'S DOES IT AGAIN!

NOBODY BUT NOBODY CAN OFFER YOU THIS SPECIAL, BUT ABBY'S!



**ATARI 410
PROGRAM
CASSETTE
RECORDER**

ONLY

\$19⁹⁵

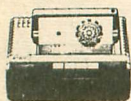
This is **NOT**
a reconditioned product.
This is factory new.
A \$49.95 retail value.
You save **\$30**

ABBY'S EXTRA BONUS!

First 300 to order will receive 5 FREE maxell top quality computer cassette tapes for recording your programs.

P.S.: DON'T FORGET ABBY'S ATARI PRINTER SALE FEATURING:

1020



\$29⁹⁵

1025



\$189⁹⁵

1027



\$249⁹⁵

**BUY BOTH A PRINTER AND
410 RECORDER AND ABBY'S
WILL GIVE YOU A FREE
PAC-MAN GAME CARTRIDGE**

WE HAVE SOFTWARE

FOR 520 ST!

+ Free Timewise

+ Free 1200XL Computer

+ Free 1200XL Computer

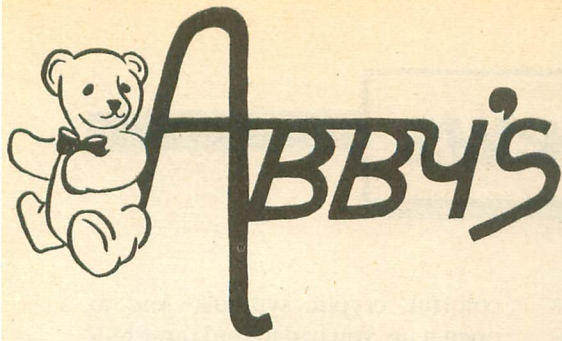
ABBY'S SPECIAL BUYS

800XL 64K Computer	\$ 89	Pac Man	\$ 8
130XE 152K Computer	\$139	Music Composer	\$ 12
1050 Disk Drive	\$159	Bookkeeper Kit	\$ 79

**DEALER
INQUIRIES
INVITED**

Prepaid orders over \$50 receive free shipping, UPS, continental U.S. No waiting period when paid by credit card, certified check or money order. Add \$2 shipping and handling on orders under \$50. Add \$5 for COD orders. \$15 minimum for VISA/MC. Hardware requires additional freight charges. Ohio residents add 5.5% sales tax. All items subject to availability and price change. **WE CHECK FOR STOLEN VISA & MC.**



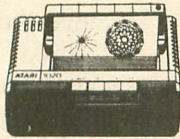


DISCOUNT SOFTWARE

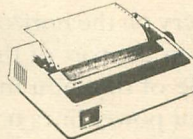
ABBY'S SUPER ATARI PRINTER BUYS

FEATURING:

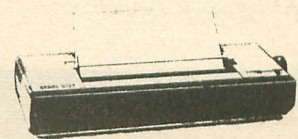
**BUY #1
ATARI 1020
COLOR PRINTER**



**BUY #2
ATARI 1025
DOT MATRIX PRINTER**

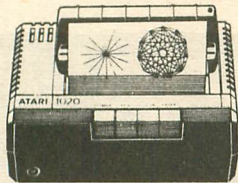


**BUY #3
ATARI 1027 LETTER
QUALITY PRINTER**



NO INTERFACE REQUIRED WITH YOUR ATARI COMPUTER. THEY PLUG IN AND ARE READY TO GO WITH YOUR 400, 800, 600XL, 800XL, 1200XL or 130XE ATARI COMPUTER.

ABBY'S SUPER BUY #1



ATARI 1020 FOUR COLOR PEN PRINTER

ONLY \$29⁹⁵

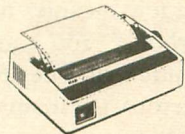
RETAILS FOR
\$109.95 — SAVE \$80!

USE THIS PRINTER TO MAKE COLORFUL SIGNS, BANNERS, GRAPHS, DESIGNS, AND EVEN USE IT FOR WORD PROCESSING.



ABBY'S EXTRA BONUS: First 300 to order this wonderful 1020 COLOR PRINTER will receive FREE the ATARI TIMEWISE PROGRAM. This useful calendar planning program retails for \$29.95.

ABBY'S SUPER BUY #2

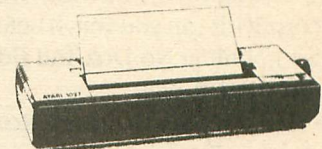


**ATARI 1025
DOT MATRIX PRINTER
\$189⁹⁵**

**BUY EITHER OF
THESE PRINTERS
AND
THE 1200XL
64K ATARI COMPUTER
IS YOURS FREE**



ABBY'S SUPER BUY #3



**ATARI 1027 LETTER
QUALITY PRINTER
\$249⁹⁵**

Atari 800XL 64K Computer	\$89
Atari Basic	\$39
Atari Microsoft Basic II	\$45
I Love My Atariwriter	
Atari Printer Driver	\$29
Print 'N Draw for 1020	\$11

Some outstanding features include:

- 64K RAM computer power
- Compatible with all ATARI software and peripherals
- 256 brilliant colors and built-in 4-voice sound.
- Electronically lockable full-stroke keyboard.
- Fully programmable help & function keys.
- Comprehensive user self-testy system.

©1983 Atari, Inc. All rights reserved.

**DEALER
INQUIRIES
INVITED**

**Order Line
1-800-282-0333**

ORDERS ONLY! Sales Personnel Do
Not Have Information on
Previous Orders or Product Specs.

WE CHECK FOR STOLEN VISA & MASTERCARD

M-F 10 a.m.-7 p.m.; Sat. 10-3 ET

37 S. Broad Street, Fairborn, OH 45324

**Customer Service
1-513-879-9699**

Prepaid orders over \$50 receive free shipping, UPS, continental US. No waiting period when paid by credit card, certified check or money order. Add \$2 shipping and handling on orders under \$50. Add \$5 for COD orders. \$15 Minimum for VISA/MC. Hardware requires additional freight charges. Ohio residents add 5.5% sales tax. All items subject to availability and price change.

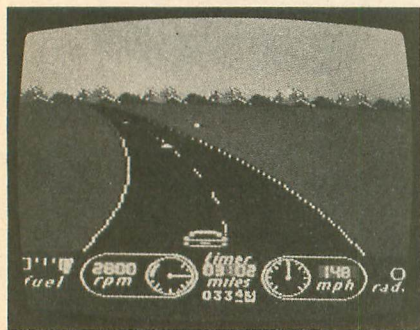


product reviews

GREAT CROSS-COUNTRY ROAD RACE

Activision, Inc.
P.O. Box 7287
Mountain View, CA 94039
(415) 960-0410
\$24.95, 48K disk

Reviewed by Jack Powell



Okay, this game's terrific! And I'm not even a big fan of Pole Position, which has been considered the top Atari auto racing game. I appreciate Pole Position's driving simulation, but I get bored with the scenery. It's a little like driving through the Midwest. How many cornfields can you watch before you start gobbling No-Doz and fiddling with the CB dial?

The Great Cross-Country Road Race is the Ferrari Dino of race games. It's got variety, clever illusions, and attention to detail. Designer Alex DeMeo should be congratulated for this tour de force.

You start off choosing your route across the U.S. A map then appears showing where you are and what city you're headed for. Road conditions flash across the screen. Press [START] and you're off on the first leg of the journey.

Now you're in a screen much like Pole Position—a three-quarter overhead view of your racer and the road stretching to the horizon. Similarities end there, however. You

have a four-shift vehicle which is monitored by the dashboard tachometer and the sound of the engine whine. Rev it too high and you burn out your engine.

This is a long trip, so you'd better watch your gas gauge. There are gas stations along the way, but if you run out you must push your car to the next pump.

The scenery on the horizon varies depending on the part of the country and time of day. You might see mountains or power lines or forests. When night falls, your vision narrows and the cars ahead are nothing but glowing tail-lights. At times you're driving through fog or snow. I especially like the muffled sounds while driving through the snow.

When you reach a city, it looms on the horizon looking a little like its namesake. Detroit, for example, has a billboard with a car, and St. Louis displays the famous Arch.

Refreshingly, there's none of the arcade mentality, crash-and-burn-then-resurrect cycle that other racing games rely on. In G.C.C.R.R., your opponent is time. If you run into another car, you don't burst into flames. You simply come to a stop at the side of the road and lose valuable time.

The wealth of details—both graphics and sound—all contribute toward a full, believable environment. You won't have any problem losing yourself in this game. This is one of the better releases of the year.

ANKH

Datamost
19821 Nordhoff Street
Northridge, CA 91324
(818) 709-1202
\$19.95, 48K disk

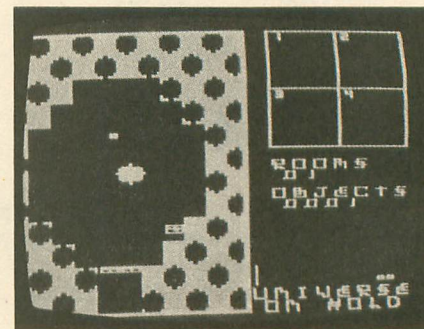
Reviewed by Jack Powell

When I was a child, I bought a puzzle box in Chinatown. It was lacquer-shiny and inlaid with all sorts of

colorful, cryptic symbols. And to open it up, you had to find these hidden panels and slide them up, right, down, and in just the right combination before the top slid back.

ANKH from Datamost is a little like that Chinese puzzle box. It's called an "Adventure in the MetaReal World" but it's really more of a graphic puzzle than an adventure.

You control a strange little four-color blimp, described in the documentation as your "other." The object is to explore all 64 rooms in the game. And to do this, you have to solve various puzzles by opening doors and picking up objects. A large part of the challenge is figuring out just what the puzzles are.



There are a few meanies to avoid in some of rooms. You can shoot them, or outrun them. They're really not that dangerous, the main thing is the puzzle factor.

And you must always watch your Karma. It's the green line on the right of the screen.

If this doesn't sound like your usual computer game, you're right. It's different. In philosophical tone, it's a little like **Lifespan** from the Antic Arcade Catalog. Game play, however, is closer to **Sir Galahad and the Holy Grail**.

The documentation is purposely vague. It really can't say much without spoiling the game. A flyer was included in the package, however, which takes the player, step by step, through the first few puzzles.

PARTS / SERVICE FOR ATARI* COMPUTERS

FLAT SERVICE RATES BELOW INCLUDE PARTS & LABOR, 60-DAY WARRANTY

800	\$49.50	600XL	\$49.50	810	\$79.50	1050	\$85.00
850	\$49.50	1200XL	\$49.50	800XL	\$49.50	800 Keybd. Repair	\$35.00

Above units repaired or exchanged with rebuildable exchange. Include \$7.00 return shipping and insurance.

INTEGRATED CIRCUITS

C014805	\$11.50
C012294	\$8.50
C012296	\$9.50
C014795	\$9.50
C014806	\$9.50
C010745	\$10.00
C010750	\$9.50

MODULES/CIRCUIT BOARDS

complete with IC's	
16KRAM Memory Module - CX853	\$15.00
800 10K Rev. B OS Module	\$15.00
800/400 CPU Board with GTIA	\$19.50
800 Main Board	\$24.50
400 Main Board	\$20.00
800 Power Supply Board	\$10.50
810 Data Separator Board	
upgrade with instructions	\$25.00
810 Side Board w/o Sep. & 1771	\$43.50
810 Rear Power Board	\$25.00
Replacement transformer for 800/400,	
810, 1050, 1200XL, 1020	\$15.00
800XL/600XL, 130XE	
Power Supply	\$25.00
SAMS Service Manual	
for 800/400 or 800XL	\$19.95
De Re Atari	\$12.50
Inside Atari Basic	\$6.50
800 OK Board Set	\$65.00
810 Board Set	\$99.50
800 48K Board Set	\$79.50

BARE BOARDS

With parts lists	
850 INTERFACE BOARD	\$16.50
Build your own interface!!	
810 Analog Board	\$3.50
810 Rear Board	\$5.00

DISK DRIVES, Etc.

810 Custom Disk Drive	\$145.00
850 Custom Interface	\$79.50
Replacement 810 Drive Mech.	\$70.00

SOFTWARE

Basic Cartridge	\$15.00
Editor/Assembler	\$15.00
Q*Bert Cartridge	\$12.50
Popeye Cartridge	\$12.50
Kindercomp Cart.	\$10.00
Buck Rogers Cart.	\$7.50
Jumbo Jet Pilot	\$10.00
Crossfire Cart.	\$5.00
Chicken Cartridge	\$5.00
Picnic Paranoia Cart.	\$7.50
Clown & Balloons disk or cart.	\$5.00
Stratos disk	\$10.00
Mr. Cool cartridge	\$7.50
The Factory disk	\$5.00
Frogger cassette	\$5.00

10K Rev. "B" O.S. Upgrade

for older 800/400's
End printer/disk drive timeouts & OTHER ERRORS. Many new programs require Rev. B. Type the following peek in Basic to see if you have Rev. B. **PRINT PEEK(58383)**. If the result = 56 you have the old O.S. **Three Chip ROM set with instructions.....\$10.00. Complete 10K Rev. B module** \$15.00.

GTIA Upgrade For 800/400

Add additional graphics modes and make your older computer compatible with the latest software. **Instructions included** \$11.50

810 Drive Upgrade

Greatly improve the performance of your older 810, stabilize the speed with the addition of an analog and redesigned rear board. **Instructions included** \$37.50.

AMERICAN TV — 415-352-3787

Mail Order and Repair 15338 Inverness St., San Leandro, CA 94579
Retail Store 1988 Washington Avenue, San Leandro, CA 94577

Terms: We accept money orders, personal checks or C.O.D.s. — VISA, MasterCard okay on orders over \$20.00. No personal checks on C.O.D.

Shipping: \$4.00 shipping and handling on orders under \$150.00. Add \$2.00 for C.O.D. orders. California residents include 6 1/2% sales tax. Overseas shipping extra.

Prices subject to change without notice. We reserve the right to limit quantities. Sales limited to stock on hand. Foreign shipping extra.

Much more! Send SASE for free price list.

*Atari is a registered trademark of Atari Corp.

Datamost probably added this after their phone started ringing off the hook.

The ambiguity can get pretty frustrating. When the game begins, you're presented with arrows pointing right and left, and the word "CHOOSE." Choose "right" and you begin what appears to be the main game. Choose 'left', however, and you end up playing around with what seems to be a pointless character-graphics screen. I've gone both directions and made it through 54 of the 64 rooms, but I still haven't figured out what's going on in the "left" area. It's mentioned nowhere in the documentation. Perhaps it's a meditation room.

ANKH is not an action game. There's plenty of time to sit in one room and think about your next move. Some solutions require coordination, but most require experimentation and abstract reasoning.

If you like puzzles, this is your kind of computer game. I like puzzles.

SIMAX VIDEO SIGNMAKER

Jack Bellis

2013 Green Street, 3F
Philadelphia, PA 19130
\$69.95, 48K disk

Reviewed by Brad Kershaw

Simax is an outstanding business display program for the Atari. In fact, Antic used Simax for our booth display at the Consumer Electronics Show in June and the presentation was a real hit.

Simax makes it quick and easy to create colorful, eye-catching signs and animation-style displays for in-store video viewing. The program is operated entirely by menu, so you don't need to be a programmer to get professional results. Almost all features can be selected with a single keystroke.

There's a choice of 128 Atari colors — up to nine colors onscreen at one time. The graphics editor uses Atari's mode 10, permitting very nice effects on a high-resolution 80 x 192 screen.

Animation effects are created by swapping any of the nine screen colors in a choice of patterns and timing. Your finished display can be transferred to videotape.

Simax's main menu options are: Edit, Load Screen, Save Screen, Delete Screen and Run Show. Each of these options takes you to a submenu where the specific work is done. The program is self-prompting and will not allow you to press an incorrect key.

You can choose between four types of displays: regular-print text, large-print text, moving headline banner, or a graphics screen created with the built-in graphics editor. Simax also has a built-in clock which will display the time in a header that can hold as many as 99 small characters.

You are allowed five text screens, plus one graphics screen. You can specify the display order and timing. You can place text on a graphics

screen and vice versa. The graphics editor is similar to other painting programs on the market today. You choose the color, brush size and special patterns from menus.

You can choose among six borders: squares, circles, small circles, asterisks, a solid border, or no border. Any of the border characters can be set to rotate at a speed you choose.

Simax is an excellent product for store owners to display special promotions. Simax should pay for itself many times over if used in high-traffic areas.

MINDWHEEL

Synapse Software
(Distributed by Broderbund)
17 Paul Drive
San Rafael, CA 94903
(415) 479-1170
48K disk (2 drives required)
\$39.95

Reviewed by Harvey Bernstein

When Synapse invited Antic for a sneak preview of their forthcoming

continued on next page

product reviews

"electronic novel" adventure game **Mindwheel** a year ago, excitement reigned supreme. Unfortunately the finished product has turned out to be a major letdown.

In all fairness, the plot of **Mindwheel** has potential. Civilization is about to fall apart and it is up to you to recover the Wheel of Wisdom—the one object that can hold things together. To do so, you have to travel through the minds of four dead folk-heroes: an assassinated rock star, a poet, a fascist general, and a great scientist.

Each mind is populated by its own set of characters and puzzles. Some of the puzzles are unique, requiring you to do things like solve riddles or finish poems, rather than the usual manipulation of objects.

In spite of some good points, however, I cannot recommend **Mindwheel** for several reasons. For one thing, it is s-l-o-w. Constant disk accessing means that the text is updated at a snail's pace. There is also no prompt to tell you when the program is through accessing the disk, so you are never quite sure when to input your next command.

If you try typing something in during access (which you can do thanks to a handy vertical blank interrupt), odds are that letters will be dropped. I wasted countless minutes re-entering commands that were messed up through no fault of my own.

However, my biggest complaints about **Mindwheel** don't come from operating bugs, but from bad writing and sloppy game design. **Mindwheel** goes overboard on purple prose, apparently trying unsuccessfully to imitate the famous Infocom style. The Thug character (a punk Richard Nixon) threatens to give you a ketchup nose. A ketchup nose?!

Many events that should not repeat themselves do. For example, you enter a room and a character asks if you have a book with you. You give the

book to the character and she writes something down. No problem, except that *every* time you enter the room you must repeat the exact same sequence of events! This sort of thing happens repeatedly.

But the worst offense is that **Mindwheel** is EASY! Characters are forever handing you clues without being asked. An experienced adventurer will be able to finish the game in three or four sessions. A novice might take a week or two. Not much value for your \$40.

By the way, **Mindwheel** requires *two* disk drives. Is it worth buying a second drive for? Absolutely not! Is it worth buying to play with a friend who can bring over a second drive? Perhaps, if you've never had any luck with Infocom adventures, want to try something simpler and have \$40 burning a hole in your pocket. As for me, I'll wait for **Zork IV**.

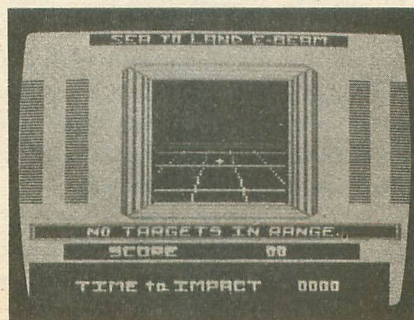
By the way, if you own a 130XE you should know that the program makes use of the extra RAM, but takes forever to load and doesn't seem to speed up the game noticeably.

FINAL LEGACY

Atari Corp.

1196 Borregas Avenue
Sunnyvale, CA 94088
(408) 745-2000
29.95, 16K cartridge

Reviewed by Andre Persidsky



Even though nuclear war turned most of the world into a Dead Zone 50 years ago, a group of "Patriarchs" (the good guys) survives in frozen Antarctica. There's just one problem. Intercepted radio communications reveal that the automated missile stations of the "Warmongers" have managed to complete their own programming and are readying to attack.

In **Final Legacy**, a 1984 game just now being released by Atari, you are in command of the deadly new **Legacy** battleship. You must sail into the Dead Zone, destroy all enemy missile sites, and protect your home cities.

You begin each game with the Navigation screen. It's a wide-ranging map showing your eight cities and the randomly distributed missile sites. Two types of enemy ships are constantly pursuing and attacking your **Legacy** ship. To fight an enemy ship, you switch to Torpedo mode. This gives you a 360-degree scanner view of your bow and the approaching enemies.

An enemy missile site is destroyed in the Sea-to-Land mode. Here you have a window which displays mobile missile launchers moving about. To destroy them you press the fire button while they are directly centered in your sights.

The enemy will send missiles toward your cities as soon as you attack one of their sites. A clock tells you how much time you have before the missiles destroy your city. To intercept them you use the Sea-to-Air mode where you have a satellite view of the missiles.

I found this part of the game the most challenging, especially on the harder levels where the missiles move faster and faster. When all missile sites have been destroyed you will gain bonus points for your surviving cities and then go on to the next round.

continued on page 78

**It Talks!
It Recognizes!
It Writes Music!**
and more . . .



THE AMAZING VOICE MASTER®
Speech and Music Processor

Your computer can talk in your own voice. Not a synthesizer but a true digitizer that records your natural voice quality—and in any language or accent. Words and phrases can be expanded without limit from disk.

And it will understand what you say. A real word recognizer for groups of 32 words or phrases with unlimited expansion from disk memory. Now you can have a two way conversation with your computer!

Easy for the beginning programmer with new BASIC commands. Machine language programs and memory locations for the more experienced software author.

Exciting Music Bonus lets you hum or whistle to write and perform. Notes literally scroll by as you hum! Your composition can be edited, saved, and printed out. You don't have to know one note from another in order to write and compose!

Based upon new technologies invented by COVOX. One low price buys you the complete system—even a voice controlled black-jack game! In addition, you will receive a subscription to COVOX NEWS, a periodic newsletter about speech technology, applications, new products, up-dates, and user contributions. You will never find a better value for your computer.

ONLY \$89.95 includes all hardware and software.

For telephone demonstration or additional information, call (503) 342-1271. FREE audio demo tape and brochure available. Available from your dealer or by mail. When ordering by mail add \$4.00 shipping and handling (\$10.00 for foreign, \$6.00 Canada).

The Voice Master is available for the C64, C128, all Apple II's, and Atari 800, 800XL and 130XE. Specify model when ordering.



For Faster Service on Credit Card Orders only:

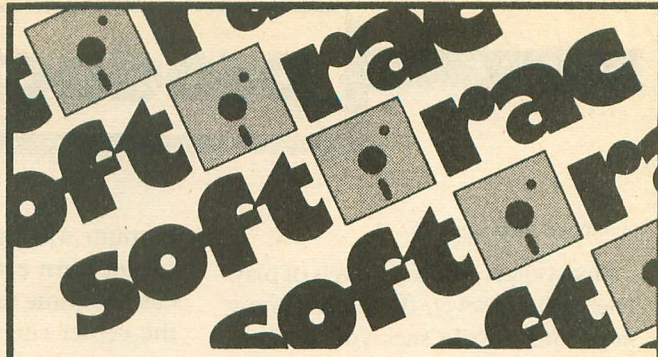
ORDER TOLL FREE 1-800-523-9230



COVOX INC.

(503) 342-1271

675-D Conger Street, Eugene, OR 97402
Telex 706017 (AV ALARM UD)



ATARI COMPUTERS
520 ST w/ 12" mono CALL
520 ST w/ 12" rgb CALL
260 ST CALL
260 STD (w/ drive) CALL
SF 354 (3.5" drive) CALL
130 XE CALL
1010 Recorder \$ 45
Atari Joysticks (pair) \$ 14

COMPUTER SPECIALS
800XL w/ 1050 drv \$ 259
Televideo TPC-1 \$ 999
Columbia PC-port. \$1099

PRINTERS
All Epson Printers CALL
All Okidata Printers CALL
All Star Printers CALL
All Atari Printers CALL
Okimate 10 w/
Interface \$199
NEC JC-1215 color \$199

DISK DRIVES
Atari 1050 CALL
Indus GT w/ softwa. CALL

MONITORS
Atari SM124 CALL
Atari SC 1224 CALL
Teknika 13" color \$190
Amdek 300 color \$239

MODEMS
Atari 1030 w/ soft. CALL
Atari 850 Interface CALL
All Hayes Modems CALL

DIGITAL DEVICES
Ape Face XLP \$ 59
Ape Face 12XLP \$ 59
Ape Face XLPS \$ 70
U-Print-A \$ 69
A16 Interface/Buffer \$ 99

DISKETTES
Maxell MD1 SS/DD \$ 19
Maxell MD2 DS/DD \$ 37
SKC SS/DD \$ 11
SKC DS/DD \$ 14
Wabash SS/DD \$ 14
Elephant SS:SD \$ 14
Elephant SS:DD \$ 18
Call for Quantity Prices

CLASSIC COVERS
1010 Recorder cov \$ 7
1050 Drive cover \$ 7
1025 Printer cover \$ 7
1027 Printer cover \$ 7
800XL cover \$ 7

INNOV. CONCEPTS
Data Case \$ 11
Flip 'N' File II \$ 15

WICO
Ball Bat Joystick \$ 24

ATARI SOFTWARE
Accounts Rec Pay \$ 12
Adventure Writer \$ 18

AtariLab Light
Module (R) \$ 34
AtariLabStarter (R) \$ 45
AtariWriter (R) \$ 35
Codewriter \$ 39
Filewriter \$ 21
Final Legacy \$ 15
Football (R) \$ 13
Home Filing Mgr \$ 25
Home Integrator \$ 20
Menuwriter \$ 21
Microsoft Basic(RD) \$ 37
Retail Invoice \$ 12
Salesman Expense \$ 12
Small Business
Inventory \$ 12
Star Voyager \$ 12
Track & Field (R) \$ 25

ACCESS
Beach Head \$ 24

AMER. EDUCATIONAL
All Titles \$ 17

BATTERIES INCLUDED
B Graph \$ 48
Homepak \$ 35
Paperclip \$ 41

BRODERBUND
Bank St. Writer \$ 49
Printshop \$ 31
Graphics Library #1 \$ 19
Graphics Library #2 \$ 19

CBS SOFTWARE
Big Bird's Special
Delivery \$ 19
Ernie's Magic
Shapes \$ 19
Success w/ Math
Series-All Titles \$ 19

DATASOFT
Bruce Lee \$ 28
Conan \$ 28
Dallas Quest \$ 24
Dig Dug \$ 19
Letter Wizard \$ 52
Lost Tomb \$ 24
Pac Man \$ 19
Pole Position \$ 19
Spell Wizard \$ 35

ELECTRONIC ARTS
Archon \$ 18
Archon II \$ 25
Axis Assassin \$ 10
Cut & Paste \$ 18
Debug \$ 10
Financial Cookbook \$ 30
Hard Hat Mack \$ 10
M.U.L.E. \$ 18
Music Construction
Set \$ 18
One On One \$ 25
Pinball Construction
Set \$ 18
7 Cities of Gold \$ 25
Word Flyer \$ 10
W.O.R.M.S. \$ 10

EPYX
Ball Blazer \$ 28
Pitstop II \$ 28

Rescue on
Fractalus \$ 28
Summer Games \$ 28

FIRST STAR
Romper Room ABC \$ 23
Spy vs. Spy \$ 22

INFOCOM
Cutthroat \$ 31
Deadline \$ 31
Enchanter \$ 24
Infidel \$ 28
Starcross \$ 31
Suspend \$ 31
Witness \$ 24
Zork I \$ 24
Zork II \$ 28
Zork III \$ 28

MICROLEAGUE SPORT
MicroLea Baseball \$ 28

MICROPROSE
F-15 Strike Eagle \$ 24
Kennedy Approach \$ 24
Mig Alley Ace \$ 24
Solo Flight \$ 24

MINDSCAPE
Crossword Mag.c \$ 36
Hailey Project \$ 36

MUSE
Beyond Castle
Wolffenstein \$ 24
Castle Wolffenstein \$ 20

OSS
Action (R) \$ 62
Action Tool Kit \$ 25
Basic XL (R) \$ 50
DOS XL \$ 25

SSI
Field Of Fire \$ 30
50-Mission Crush \$ 30
Kampfgruppe \$ 45

SUBLOGIC
Flight Simulator II \$ 35

SYNAPSE
Blue Max \$ 24
Blue Max 2001 \$ 21
Essex CALL
Mindwheel CALL
SynCalc \$ 35
SynComm \$ 28
SynFile \$ 35
SynStock \$ 28
SynTrend \$ 28
Quasimodo \$ 17

TRONIX
Chatterbee \$ 28
S.A.M. \$ 42

XEROX
Stickybear ABC \$ 29
Stickybear Basket
& Bounce \$ 25
Stickybear Bop \$ 25
Stickybr Numbers \$ 29
Stickybr Opposites \$ 29



To Order Call Toll Free: 1 (800) 545-0111
Orders Only Please!

All Titles On Disk unless marked (R) for ROM Cartridge.
Ohio Residents and Customer Service Please Call: 1 (513) 322-6314
Order Lines Open: 10 a.m. to 6 p.m. Mon.-Fri., 10 a.m. to 4 p.m. Sat. (EST)
Minimum \$10 order. No extra charge for VISA or MasterCard. C.O.D. add \$3. We prepay and add actual freight charges to all hardware orders. Software freight charges: \$10-\$100 add \$3; \$101-\$250 add \$5. Orders Over \$250 Shipped FREE In Continental U.S. Actual Freight will be charged outside Continental U.S. and APO. Ohio residents add 6% sales tax. For immediate delivery use bank cards, cashier's check, or money order. Personal/Company checks allow 3 weeks to clear. School Purchase Orders welcome. Due to our low prices, all sales are final. NO CREDITS. All defective returns must have a return authorization number. Please write or call our Customer Service Number to obtain RA#. Send \$2 for our Complete Catalog (refundable with purchase).

P.O. Box 2052, Springfield, Ohio 45501

product reviews

continued from page 76

Final Legacy offers six levels of play. The higher a level, the more enemy ships and missile sites you will encounter. The different graphics screens are quite inventive and the sound warnings are effective. The 8-page manual is very good.

In some ways this game reminds me of a more advanced **Missile Command**. The new game's main problem is that it lacks strategy and tends to become a little repetitious. But overall, Final Legacy is quite entertaining. It demands alertness and quick responses, and is a worthy successor to the great tradition of Atari action games.

CHOPPER HUNT

Imagic
981 University Avenue
Los Gatos, CA 95030
(800) 654-7340
32K disk
\$19.95

Reviewed by Jack Powell

I don't want to take much space reviewing this throwback, but **Antic** has a certain obligation to warn readers against junk products. **Chopper Hunt** would make a very nice public domain game and might have been seriously considered as a professional program when the Atari 800 was just a twinkle in Nolan Bushnell's eye.

You move a slow, blocky helicopter back and forth across a crude, blocky screen, bombing holes in the ground so you can get to the flashing grey squares. Meanwhile, a slow, blocky enemy airplane flies back and forth dropping slow, blocky "dirt balls". I had to look twice to make sure my BASIC cartridge was not in the machine slowing down the action.

If you plunk down your hard-earned money for this outdated arcade game, you are helping prove that

Barnum was right to say, "There's a sucker born every minute." The circus has come to town and you are in the center ring wearing funny hair.

REFORGER '88

Strategic Simulations, Inc.
883 Stierlin Rd, Bldg. A-200
Mountain View, CA 94043
(415) 964-1200
\$59.95, 48K disk

Reviewed by Dr. John F. Stanoch

Ever since the end of WWII, there has been constant tension along the border between East and West Germany. It is here that the two superpowers have deployed their most advanced war technology. SSI's new **Reforger '88** is an operational-level game of NATO defense against a combined Soviet and East German thrust through the Fulda Gap into the American-defended sector of West Germany.

To win, the Soviet player must gain as many victory points as possible, while the NATO player must hold down the number of points given up. Points are awarded to both players for enemy unit destruction and possession of West German cities. However, once a NATO city has been overrun, the NATO player can not regain victory points for recapturing it. The Soviet player receives a substantial bonus for capturing the main U.S. Airbase at Frankfurt. The NATO point total is subtracted from the Soviet total to arrive at the final score.

In the solitaire mode, the computer ably controls Soviet forces. Units are combined into combat groups that can be combined or split apart at the start of a turn. Orders are given and then all movements and combat are simultaneously executed.

To win, airpower must be successfully integrated with ground troops. Adequate anti-aircraft defense is also necessary. Enemy combat

groups are displayed only if adjacent to a friendly combat group or sighted by friendly air recon missions. Many times, my NATO forces were unpleasantly surprised to find a few Soviet armor combat groups racing toward Frankfurt, well behind what seemed an adequate defense line!

I have one valuable suggestion. Before you play, go out and buy a good set of fine-point overhead projection markers. These will prove indispensable for marking the position of all units on the SSI plasticized data/map card. It is next to impossible to competently play **Reforger '88** without an overview map in front of you. Many times, since the screen displays only a fraction of the entire scrolling map, a player may forget what one combat group was ordered to do on one section of the map.

Although **Reforger '88** is a complicated game, its excitement is well worth the effort. I recommend this game to any advanced wargamer. But keep a cold drink available, you will probably work up a sweat playing it.



Antic
The ATARI Resource

**DISK
BONUS**

November 1985

**ROBOT
DUNGEON**

A Deadly
1,200-room Maze
Only one way out . . .
but it changes every time!

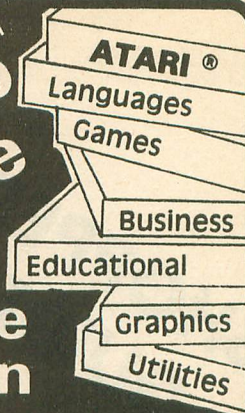
ADVERTISERS

We encourage you to patronize our advertisers — all of whom support the Atari computers. We will appreciate your mentioning ANTIC when you contact these firms.

ABACUS SOFTWARE	25
ABBY'S HOUSE OF DISCOUNT SOFTWARE	72,73
ADD-ON SYSTEMS	3
AMERICAN TV	75
ANTIC	see insert
ATARI CORP	6,7
ATHENA SOFTWARE	27
B & C COMPUTERVERSIONS	80
BATTERIES INC	BC
CAPESTYLE SOFTWARE	80
COMPUCAT	80
COMPUCLUB	79
COMPUTER CREATIONS	48
COMPUTER MAIL ORDER	71
COMPUTER PALACE	43
COMPUTER SOFTWARE SERVICE	69
COVOX	77
DIGITAL VISION	72
E & B COMPUTER SERVICE	80
ELECTRONIC ONE	27
GAMES COMPUTERS PLAY, INC	29
GIZZMOS, INC.	66
HABA SYSTEMS	23
HAPPY COMPUTING	47
ICECO	80
I.P.G.	25
KYAN	25
LOTSAS BYTES	35
LYCO	2
MICROPROSE SOFTWARE	4
NEW HORIZONS	66
SENECOM	80
SIGNAL COMPUTER CONSULTANT	72
SIX FORKS SOFTWARE	80
SOFTRAC	77
SOFTWARE DISCOUNTERS OF AMERICA	50
SUBLOGIC	32
VIP TECHNOLOGIES	19
WHITEHOUSE COMPUTER	15

This is provided as a convenience and as a courtesy to advertisers. ANTIC does not guarantee accuracy or comprehensiveness.

JOIN CompuClub™ and receive the attention you deserve.



- ⌘ Receive our **disk** based catalog and pricebook.
- ⌘ Buy from people who specialize in ATARI exclusively.
- ⌘ Receive our 8 pg. newspapers 9 times a year filled with critiques, special tips, and classified ads.
- ⌘ Get at least 25% off **all** titles (and often more!).
- ⌘ Receive consistent low prices and prompt, knowledgeable service.
- ⌘ Choose from over 1,500 software items.

JOIN CompuClub™
Where Atari owners belong.

To join by phone call toll free **800-MY-ATARI™**
In Mass. call 617-879-5232
Please have credit card number ready!
Or return this coupon with \$5.00*

YES, I want to be a preferred customer of CompuClub™. Rush me my catalog and price book. Enclosed please find my \$5.00 registration fee.

Please make check payable to Compuclub™
Payment enclosed check money order

Bill my Mastercard Visa Expires _____
ID# _____

Signature _____

Name _____

Address _____

City _____ State _____ Zip _____

Atari Model _____

Hours: Mon. - Fri. 11:00 AM - 7:00 PM Eastern time
Answering services after hours
CompuClub™, P.O. Box 652, Natick MA 01760

*Overseas membership \$25.00 per year
⌘ Atari - Trademark of Atari Corporation

SHOPPER'S GUIDE

HALLEY HUNTER!



THE COMET IS COMING. . .

And you can find it in your skies, armed with information from **HALLEY HUNTER** for your ATARI.

Not a "Sky-Plot" Program, but a guide where to look in your SKY, NOT on your screen!

FOR SUGGESTED DATES & YOUR LOCATION:

- Comet Coordinates
- Earth Sun, Earth Comet Distances
- Predicted Brightness
- Where to Look
- Direction on horizon & how high up!
- Program Manual Packed with Tips & Hints: Best dates to observe, where, when & how.

CAPESTYLE SOFTWARE

Box 531
RFD 1
Mashpee, MA 02649

Disk & Manual
only 14⁹⁵

Mail cashiers check, money order or personal check (allow 2 weeks to clear) add \$2 shipping & handling. Mass add 5% state tax

You've got your spouse working.

The kids have paper routes.

Even the dog provides stud service for a fee.

Times are hard.

So Why Is Your Computer Still Unemployed?

Let Your Atari Contribute To The Family Income

The OPPORTUNITY Disk will tell you how.

\$2.95 Plus \$1.00 Postage and Handling
NYS Residents Add 7% Tax

SENECOM

Dept. 33, 13 White St., Seneca Falls, NY 13148
\$2.50 Shipping for Orders Outside USA and Canada.
Atari® is a trademark of Atari, Inc.

ICEPIC PRINTER INTERFACE

WITH FEATURE-PACKED GRAPHICS SOFTWARE
\$49.95 POSTPAID

- Direct-connect Atari to standard printer.
- Works with 400/800, XL and XE models.
- Supports parallel (Centronics) interface.
- Complete: cable, diskette and user's guide.
- Uses one joystick port, no 850.
- Prints incoming data from 850-type modems.
- Prints (dumps) text and graphics screens.
- Atari and user fonts: many format variations.
- EPSON and OKIDATA-92 compatible graphics.
- Dump/restore screen to disk.
- Special functions available from keyboard or by "printing" simple control sequences.
- Many other highly useful functions.
- 30 day money-back guarantee.
- Money order, check, VISA or Mastercard. Write for brochure. Quantity discounts.

ICECO

Integrated Computer Equipment Co.
8507 Natural Bridge Rd.
St. Louis, Missouri 63121
(314) 423-3390

Now available for the Atari ASSEMBLER and LINKER

Software development using a linker is a two-stage process. First, each source file is assembled to a "relocatable" file. Then the relocatables are combined into an executable file using the linker.

The computer industry has long recognized this two-stage process to be vastly superior to those that translate source code directly to executable form.

Let us tell you more. Send for our brochure.

Brochure \$ 1.00

Assembler, linker, 70-page manual, 17-source sample program \$39.00

Hardware required: 48k, 1 disk, printer

Six Forks Software

11009 Harness Circle • Raleigh, NC 27614

VISA and MasterCard accepted



The Online Catalog of Computers and Software
Our Prices are **WHOLESALE + 10%**

SAMPLES!!!

- Star Micronics SG-10 Printer — \$239
- Atari 850 Interface — \$117
- Indus GT Disk Drive — \$234
- Olympia RO Daisy Wheel Printer — \$332
- Atari 1050 Disk Drive — \$172
- Batteries Included Home Pak — \$36

ASK ABOUT OUR FREE PRICE LIST
FREE SOFTWARE - FREE BULLETIN BOARD SERVICE

(408) 353-1836

We support the complete Atari product line.

Instant Shipping (or as fast as we can). MasterCard & Visa accepted (no extra charge). Shipping & handling add 6%. California customers add 6.5% sales tax. Order by phone Mon.-Fri. - 10 a.m.-5 p.m. PST). Order by modem daily 6 p.m.-9 a.m.) from our online Telecatalog.

Prices subject to change without notice.

COMPUCAT

24500 Glenwood Hwy., Los Gatos, CA 95030

SPARE PARTS FOR YOUR ATARI

Hard to find Integrated Circuits \$5. each
On CPU. GTIA, ANTIC, CTIA,
CPU 6502, CPU 6511
On 10K OS: Math ROM 399B, OS ROMS
499B & 599B
On 800/400 Main: Pokey, 6520 PIA
On 810 & 850: MPU 6507, PIA 6532,
RAM 6810, ROM C
Field Service Manuals 800/400, 800XL or 810 \$25 ea
For 1050 or 1200XL \$20 ea. For 410 or 835 \$15 ea
Diagnostic Cartridges Computer or Disk \$25 ea

B&C Computervisions

(408) 554-0666

3400 El Camino Real, #1,
Santa Clara, CA 95051

Hours: Tuesday-Friday 10am-7pm,
Sat. 10am-5pm

Terms: UPS Shipments within USA. Add \$5 COD
or prepaid. Calif. Res. add 6 1/2% sales tax.

C.C.S.
187 CROSBY AVE., KENMORE, N.Y. 14217
716-873-4349

FREE box of disks with purchase of an Atari 800XL or 130XE AND disk drive

Atari 800XL	\$ 95.00
Atari 130XE	149.00
1050 Disk Drive	169.00
1025 Printer	159.00
Atari 520ST package: Disk Drive, & B/W monitor	\$659.00
Package with RGB color monitor	\$829.00
Other Disk Drives	
Indust GT	245.00
Rana 1000	175.00
Monitors	
BMC 12" gr. or am.	99.95
BMC 13" COLOR	219.95
Printers	
Legend L880	219.00
Legend L1080	239.00
Panasonic KXP 1090	205.00
Panasonic KXP 1091	265.00
Interfaces - We carry MPP's and Digital Device Prods. at low prices. Special price when packaged with printer.	
BONUS DISK BOX - 11 SS/DD only \$10.50	
Others - BASF 10"/box SS/DD	14.95
BASF 10"/box DS/DD	16.95

Write or call for price list on Software, Hardware, and other Peripherals.
Shipping: Add 2.50 for software; 5.00 for each hardware (or actual charges if less). International orders pay actual charges.
Terms: No COD orders. All orders will be shipped UPS or best way.
Sorry: No returns or exchanges UNLESS defective.

TURN YOUR ATARI 1030™ MODEM INTO A HAYES™ SMARTMODEM

WITH
SMART 1030

INCREASE THE CABABILITY OF YOUR 1030 AND MAKE IT A POWERFUL COMMUNICATION TOOL. WITH SMART 1030 YOU CAN:

- * USE THE INDUSTRY STANDARD HAYES™ COMMAND SET
 - * UPLOAD/DOWNLOAD FILES DIRECTLY TO YOUR DISK DRIVE
 - * PULSE OR TOUCH TONE™ DIAL
 - * NO 850 INTERFACE MODULE™ REQUIRED, YET YOU CAN USE MOST TERMINAL SOFTWARE WRITTEN FOR THE 850
 - * USE LONG DISTANCE NETWORKS
 - * AUTO DIAL DIRECTLY FROM A DISK STORED BBS DATA BASE WHICH YOU CREATE
- SMART 1030 IS A MACHINE LANGUAGE HANDLER THAT ALLOWS YOUR 1030 OR 835 TO SIMULATE A HAYES™ SMARTMODEM. IT IS A MUST PROGRAM FOR ANY 1030 OR 835 OWNER. INCLUDED FREE IS THE TERMINAL SOFTWARE PROGRAM AMODEM, WHICH SUPPORTS XMODEM PROTOCOL AND UNLIMITED FILE SIZE TRANSFER.

E & B COMPUTER SERVICES \$19.95

P.O. BOX 292506 • COLUMBUS, OHIO 43229
VISA OR MASTERCARD CALL 614-891-4614, OR MAIL CHECK (ALLOW TWO WEEKS FOR PERSONAL CHECKS TO CLEAR) WITH \$2.00 FOR SHIPPING AND HANDLING.

new products

SYNCALC TEMPLATES

(software)
Synapse & Broderbund
17 Paul Drive
San Rafael, CA 94903
(415) 479-1170
\$19.95, 48K disk

Users of **SynCalc**, the well-known spreadsheet program, can now save hours of time in creating applications. Twenty-two common applications are included on the disk, ranging from a checking account register to cost analysis of buying versus renting a home. The disk also illustrates the basic techniques of modifying the templates for specific applications.

COLONIAL CONQUEST, PANZER GRENADE

(software)
Strategic Simulations, Inc.
883 Stierlin Road, Bldg. A-200
Mountain View, CA 94043
(415) 964-1353
\$39.95 each, 48K disk

Up to six people can play **Colonial Conquest**, a strategy game about the struggle for world dominance between Germany, France, England, Japan, Russia and the United States 100 years ago. Roger Damon's **Panzer Grenadier** is a WWII strategy depicting the platoon/company warfare between the Germans and the Russians on the Eastern front.

TYPESETTER

(software)
XLent Software
P.O. Box 5228
Springfield, VA 22150
(703) 644-8881
\$34.95, 48K disk

A graphics program with a difference, **Typesetter** gives you total graphics freedom in preparing any page. It allows you to mix type styles, width and height; to print forward, reverse, up, down and overlays. It comes in two versions on the Atari disk, one for the larger memory of the 130XE and the other for the remaining 8-bit Atari models.

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.

HALLEY PROJECT

(software)
Mindscape
3444 Dundee Road
Northbrook, IL 60062
(312) 480-7667
\$44.95, 48K disk

Complete a series of navigational tests and qualify for the top secret **Halley Project** by learning about the solar system in this real-time simulation from Tom Snyder Productions.

ASSEMBLER & LINKER

(software)
Six Forks Software
11009 Harness Circle
Raleigh, NC 27614
(919) 847-2740
\$39, 48K disk

Programming tools that create source code to develop assembly language programs. Requires printer, word processor, knowledge of 6502 machine language and Atari internal architecture. Includes software, 70-page manual, 17-source sample program.

THE SOURCE

(online service)
1616 Anderson Road
McLean, VA 22102
(703) 734-7500

The Source now has speedy 2400 baud service online. Prime time weekdays 7 am to 6 pm will be 46 cents a minute. Non-prime usage is 20 cents a minute.

COPYMATE 2.1

(software)
10843 Venice Circle
Tampa, FL 33615
\$5, 48K disk

This is a double density version of the disk copier that quickly backs up your software.

C.E.A. HOME CONTROL

(home control system)
Computer Engineering Applications
P.O. Box 4878
Las Vegas, NV 89127
\$89.95, 48K disk

Keep burglars away with your Atari. Complete home security system includes joystick port interface to turn four devices on/off, power control module, heater/ac temperature controller, reprogrammable BASIC software.

PLAN AHEAD

(software)
Advanced Financial Planning
20922 Paseo Olma
El Toro, CA 92630
\$29.95, \$49.95, \$59.95, 48K disk

Purchase only the modules you require—Retirement Planning, Life Insurance Planning and College Funding financial software. All account for the effects of inflation and produce printed statements and itemizations.

HARD BYTE SECURITY

(home security system)
Hard Byte
P.O. Box 605
Warren, MI 48092
(313) 739-2098
\$99.95
32K disk, 16K cartridge

Plug this into your joystick port and turn your computer into an alarm system. Includes software, three window sensors, 30 feet of glass foil, door sensor, switch box, security panel.

PRINT SHOP GRAPHICS LIBRARY:II

(software)
Broderbund
17 Paul Drive
San Rafael, CA 94903
(415) 479-1170
\$24.95, 48K disk, printer

Even more designs, symbols and pictures for the popular **Print Shop** graphics printing program. Categories are jobs, hobbies, people, places, travel and health.

continued on next page

new products

BRIMSTONE

(software)
Synapse & Broderbund
17 Paul Drive
San Rafael, CA 94903
(415) 479-1170
\$39.95
48K disk, (requires 2 drives)

An electronic medieval interactive text adventure. This latest "electronic novel" takes the knights of the round table on a quest into hell.

ELITE PERSONAL ACCOUNTANT

(software)
Elite Software
14897 Interurban Ave. South
Seattle, WA 98168
(206) 246-5122
\$48.95, 48K disk, BASIC

Financial record keeper and checkbook balancer for personal financial management.

MICROLEAGUE BASEBALL

(software)
Datamost
20660 Nordhoff Street
Chatsworth, CA 91311
(818) 709-1202
\$39.95, 48K disk

You are the manager in this action-packed re-creation of baseball. You select a team from either the American League or the National League, and then pit it against the others. Actual players in the game perform just as they do in real life.

WRITE FILE, HOME OFFICE, TEAM MATE

(software)
Tri Micro
1010 North Batavia Street
Orange, CA 92667
(714) 771-4038
\$29.95, 48K disk

The **Write File** is an integrated word processor and database manager. **Your Home Office** is the same integrated word processor with a spreadsheet. **Team Mate** (\$49.95) combines both of these along with a business graphics system.



COMPUTEREYES

(video digitizer)
Digital Vision, Inc.
14 Oak Street, Suite 2
Needham, MA 02192
(617) 444-9040
\$129.95, 48K disk

Video digitizing comes to the Atari with this slow-scan acquisition system. Plugs into your joystick port to capture and digitize black and white images from sources such as videocamera, videotape recorder, videodisk, or just plain TV. Saves disk files compatible with KoalaPad. Includes interface module and software on disk. For \$399.95, the complete system includes a b&w videocamera.

MONDAY MORNING MANAGER

(software)
TK Computer Products
P.O. Box 9617
Downers Grove, IL 60515
(800) 422-4912
\$34.90, 48K disk

Manage any of 36 major league baseball teams and trade among more than 680 real-life players. All statistics built-in.

ON-TRACK RACING

(software)
Gamestar
1302 State Street
Santa Barbara, CA 93101
(805) 963-3487
\$24.95, 48K disk

Take on Mario or Parnelli (Mario Sandunni or Parnelli Pothole). You see the whole track on Le Mans, Monaco, Daytona and other famous speedways.

HACKER, DESIGNERS PENCIL, PASTFINDER

(software)
Activision
2350 Bayshore Frontage Road
Mountain View, CA 94043
(415) 960-0410
\$24.95 each

Hacker (48K disk) is a simulation of the online hacking experience and tests your ability to work your way into a mystery system. **Designers Pencil** (16K cartridge) is a powerful but easy-to-use joystick graphics tool. **Pastfinder** (16K cartridge) is a graphic adventure game that takes you on a journey beyond the moons of Altair.

TRUE GRID DIGITIZERS

(graphics digitizers)
Houston Instruments
8500 Cameron Road
Austin, TX 78753
(800) 531-5205
\$495, 48K disk

Priced from \$495 to \$975, these graphics input digitizing tablets feature a resolution of .005 inch, a built-in RS-232C interface and choice of stylus, one button cursor or four button cursor.

HALLEY HUNTER

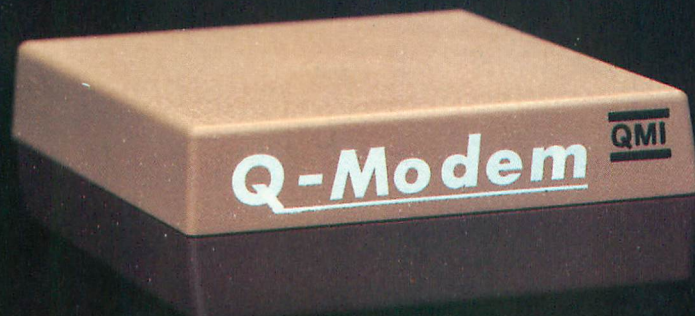
(software)
Capestyle Software
Box 531, RFD #1
Mashpee, MA 02649
(617) 477-2448
\$14.95, 32K disk

You won't have any trouble finding Halley's Comet during its 1985-6 visit. Input your location and time of observation. The program returns coordinates, predicted brightness, where on the horizon to look and how high up.

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



BOLDLY GO WHERE NO ATARI® HAS GONE BEFORE



QUANTERM V1.0	
D	DIAL
A	ANSWER
E	EDIT
S	SET-UP
?	HELP

(SELECT) to Choose, **(START)** to Begin
COPYRIGHT 1984, John DeMar, QMI

AUTO-DIAL DIRECTORY			
NAME	TELEPHONE NUMBER	IS/HR	
BOSSBBS	622-1952 (LOCAL CALL)		
SOFICITY	445-2528 (CARRIER BFM)		
MYRBBBS	437-4990 (LIMITED USE)		
GLDNGATE	1-415-282-6136 (SF, CA)	16.00	
MRTSHOR	1-617-595-8211 (MA55)	16.00	
AMEFACS	1-716-235-8394 (NY)	12.00	
RBBSCHEL	1-215-836-5116 (PA)	10.00	
PRILDACE	1-503-245-9485 (OR)	16.00	
ARGADE	1-513-978-8087 (OH)	12.00	
ARMDDC	1-202-276-8342 (DC)	12.00	
INFERMIN	555-1212 (VOICE)		
QMI	1-315-451-7747 (VOICE)		

(SELECT) to Choose, **(START)** to Begin
(OPTION) to Add or Edit Selected Entry
(ESC) for Terminal, **(RETURN)** to Exit

COMPU\$RV	
CompuServe	Page HOM-1
HOME SERVICES	
1	News/Weather/Sports
2	Reference Library
3	Communications
4	Home Shopping/Banking
5	Discussion Forums
6	Games
7	Education
8	Home Management
9	Travel
10	Entertainment

Last Menu page. Key digit
or M for previous menu.
(NEXT) CAPTURE | **(RECEIVE)** SEND | **(DOS)** HANGUP
(SELECT) to Choose, **(START)** to Begin

OPTION SET-UP MENU	
Translation	ATARI OS/2 OPTION
Duplex/Echo	HALF/on AUT/20T
Send Parity	NO EVEN ODD MARK 525A
Baud Rate	USA 500 1200 2400 4800
Line-Feds	APPEND NO APPEND
CD Wait Time	20 Seconds
Answer Ring	1 2 3 4 5 6 7 8 9 RR
File Transfr	NONE MODEM CIS
Use Kon/Korfr	YES NO
(KCR) Pause	00 Characters
Block Size	128 Characters
Cursor Blink	OFF ON 5/10
Screen Color	ORIG BLACK GREEN GOLD
Text Bright	LOW HIGH
Invert Video	YES NO
Left Margin	0 2 3
Right Margin	32 50 63
Column Size	40 64 80

Use cursor arrows or touch-tablet
(START) Saves to Disk or Cassette

The Q—Modem for your Atari Computer - - -

The telecomm package with features that are out of this world and a price that's down to earth.

- **Quick** to install and easy to use. The Q-Modem doesn't even need an interface or power adapter. In seconds, you will be talking to other computers and services, even if you've never used a modem before.
- **Quality** comes built-in with every Q-Modem. In fact, we guarantee it: if you have any problems with our modem, we will replace it for a full year. Best of all, the Q-Modem comes through even with the noisiest phone connections.
- **Quantity** You won't believe the quantity of features. Features like tone dialing, auto-answer, auto-exec for unattended use, three ways to transfer files, a built-in Editor and much more. You can even listen to the progress of the call through your TV speaker! And, with its small 5x4x1.5 inch size, the Q-Modem fits in the palm of your hand!
- **Questions?** Our Q-Modem manual has the answers. But, with QuanTerm's menus and help-screens, you won't be looking up things as often. That's why QuanTerm is the easiest software to begin and grow with.
- **Value!** So, it doesn't begin with "Q", but it's what you get when you add all of the Q's together. The Q-Modem is simply the most powerful telecomm package for your Atari at any price.

Requires 400/800/600XL/800XL, minimum 32K RAM & Disk. (c) 1984, QMI. Atari is a registered trademark of Atari Corp.

QMI Quantum Microsystems, Inc., PO Box 179, Liverpool, NY 13088, 315-422-5010

Imagine...

For
COMMODORE 64
ATARI
APPLE IIe/c AND IBM PC

**A WORD PROCESSING PROGRAM!
AN INFORMATION MANAGEMENT PROGRAM!
A TELECOMMUNICATIONS PROGRAM!**

ALL THREE PROGRAMS, ON ONE DISKETTE!, FOR ONLY \$49.95*!

"Quite simply the best! The highest rating possible...the package should be part of every (computer) library." — ANALOG COMPUTING

"Russ Wetmore has done an EXCELLENT job! The program is flexible, powerful and very easy to use. \$49.95 buys a heck of a lot of program." — REVIEW BY ARTHUR LEYENBERGER

"Performance: ★ ★ ★ ★ (Excellent) Value: ★ ★ ★ ★ (Excellent)

This three-in-one package is a bargain... one of the finest values on the market."

FAMILY COMPUTING

HOMETEXT WORD PROCESSOR.
HOMEFIND INFORMATION MANAGER.
HOMETERM TELECOMMUNICATIONS

Together they are **HomePak**: the three most important and most useful home computer applications in one integrated system — on one diskette!

The reviewers are unanimous: any one of these programs **alone** is well worth the price. So you're getting **three times the computing power**, with this exceptionally easy to use package:

- all commands in simple English; no complex computer jargon, no obscure instructions
- all key commands are immediately available on the screen menu; additional commands can be called up for the more experienced user
- to help you, system status is displayed right on the screen

And it's easy to use the three programs together. For example, in the "Merge" mode, you can take data stored in **HOMEFIND** and print letters and labels using **HOMETEXT**. Or, use **HOMETEXT** to write reports based on information you've called up via **HOMETERM**.



BATTERIES INCLUDED



"The Energized Software Company!"

30 Mural Street
Richmond Hill, Ontario
L4B 1B5 CANADA
(416) 881-9941
Telex: 06-21-8290

WRITE TO US FOR FULL COLOUR CATALOGUE of our products for COMMODORE, ATARI, APPLE and IBM SYSTEMS
FOR TECHNICAL SUPPORT OR PRODUCT INFORMATION PLEASE PHONE (416) 881-9816

17875 Sky Park North, Suite P
Irving, California
USA 92714
(416) 881-9816
Telex: 509-139

*MANUFACTURERS SUGGEST U.S. LIST PRICE

© 1985 BATTERIES INCLUDED. APPLE, ATARI, COMMODORE AND IBM ARE REGISTERED TRADEMARKS RESPECTIVELY OF APPLE COMPUTERS INC., ATARI INC., COMMODORE BUSINESS MACHINES INC., AND IBM BUSINESS MACHINES INC.