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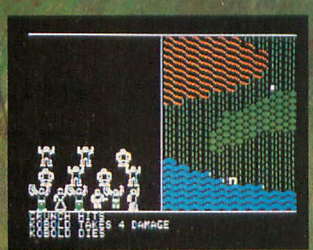
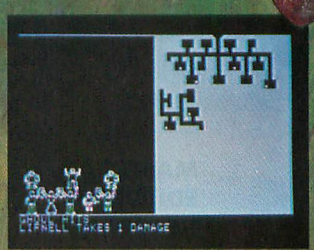
An attack by killer bees in the colorful countryside.



The wave of deadly monsters continues as dwarfish Kobolds threaten your party.



One of your comrades is injured by Ghouls during a search of the dungeons.

A sample composition of your party showing race, class and status.

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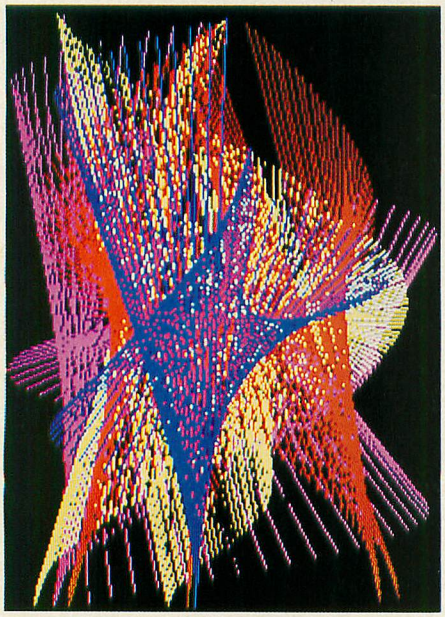

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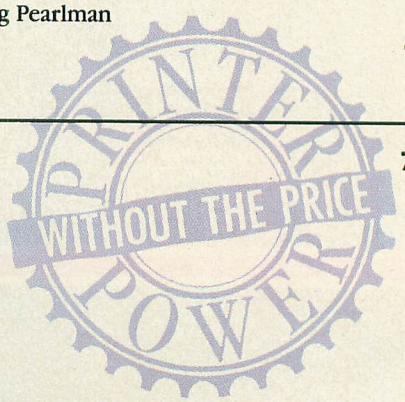

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Contributing Editors
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Art
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Cover Photography: Tia Dodge

Circulation
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July 1987, Volume 6, Number 3

Antic—The Atari Resource is published twelve times per year by Antic Publishing. Editorial offices are located at 544 Second Street, San Francisco, CA 94107. ISSN 0745-2527. Second Class Postage paid at San Francisco, California and additional mailing offices. POSTMASTER: Send address change to **Antic**, P.O. Box 1919, Marion, OH 43306.

Subscriptions: One year (12 issues) $28. Canada and Mexico add $8, other foreign add $12. Action Edition (12 issues with disks) $99.95, all foreign add $25. (California residents add 6½% sales tax for disk subscriptions.

Editorial submissions should include text and program listings on disk and paper. Submissions will be returned if stamped, self-addressed mailer is supplied. **Antic** assumes no responsibility for unsolicited editorial material.

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Editorial

As you may already have noticed elsewhere in this issue, the price of each double-sided Antic Monthly Disk has been slashed almost in half—from $10.95 to $5.95. And the newsstand price of the monthly magazine-plus-disk Action Edition was lowered by three dollars—now $9.95 instead of $12.95.

At the same time, we have been forced to raise the North American newsstand price of **Antic** 45 cents in order to bring income more in line with current costs. When you compare a $3/$5 disk-price reduction against a 45-cent magazine increase, we think the overall change seems pretty fair.

Also, Antic Publishing is *not* raising any subscription prices at this time. And we presently have *no* plans for any subscription price boosts. This means it's a better deal than ever to subscribe to your favorite Atari magazine—only $28 for 12 **Antic** issues in the U.S.. And for a short time only, a special offer of $79.95 for the Action Edition of 12 disk issues.

Our primary purpose in drastically cutting prices of the double-sided Antic Monthly Disk is to make it a lot easier for Atari "power users" to build up a large library of useful and valuable software at a lower cost than ever before possible! This magazine's surveys during the past two years have shown clearly that **Antic** readers now consist almost equally of programming hobbyists, and power users who are not heavily interested in writing their own software.

Typing in magazine listings is an excellent way to learn programming. But it cannot be an especially gratifying experience for people who just want to *use* the software, rather than figuring out exactly how it works. Now for less than $6 a month, you can get a disk that immediately delivers every program in the issue—plus Xtended Disk Bonus software that's too big and powerful to be printed as a type-in listing.

The Xtended Disk Bonus is a new feature starting with this issue of **Antic**. Every month we will publish at least one disk-only program. Whenever possible, this Xtended Bonus will be a listing that is too big or too complicated to have been accepted as a type-in listing. This month's Xtended Bonus is a full-featured 8-bit word processor, written in speedy machine language by professional programmers. Next month, the disk bonus will a professionally programmed 8-bit database. In future months, there will also be Xtended Disk Bonuses for the ST.

Because readers don't need to type in the Xtended Disk Bonus, we will bring you big, ambitious application software written in any language that has a "stand-alone" option. (Stand-alone programs can be used by readers who don't own the actual language.) In the past, **Antic** has been unable to accept many otherwise excellent programs simply because they were too big to print, too hard to type, or written in a language that most readers couldn't use.

But now the Xtended Disk Bonus feature lets us bring you a new treasure trove of powerful software at unheard-of savings—a double sided disk with close to 176K of Atari programs per month for less than $6. We can hardly believe it ourselves. . .

By the way, **Antic** would like to thank the thousands of readers who have been voting for their favorite features in recent issues by circling numbers on the monthly reader service card. At this writing, your first ballots are just being tabulated.

Nat Friedland

Nat Friedland
Editor, **Antic**

DESIGNING LABELS

Designer Labels (**Antic**, April 1987) is an excellent program, but here's my simple fix that will allow readers to use graphics from the *original* Print Shop disk as well as the Print Shop Graphics Library disks:

Boot Print Shop as usual, and enter the Graphic Editor. Then GET any of the 60 designs on the original disk and SAVE the design to a data disk formatted by Print Shop. The saved graphics are now compatible with the Designer Labels program and may be used exactly as you would use graphics from the Library disks. You still can't use images directly from the Print Shop disk itself, but you *can* use the graphics from it once you've followed this procedure.

Robert Conklin
Liverpool, New York

EDU-WARE LIST

I am computer-using educator who has compiled a database of over 350 commercial educational software titles for the 8-bit Atari. In order to keep this database current, I welcome any update information that **Antic** readers might send me. I am also glad to send a copy of my seven-page, single-spaced list to anyone who sends me a stamped, self-addressed envelope plus 50 cents to cover printing costs.

William Brooks III
Naquag School
Rutland, MA 01543

DVORAK TOOL

The *Dvorak Keyboard* (**Antic**, March 1987), when combined with the Multi-AUTORUN program from the same issue, can be used with the Writer's Tool word processor from OSS. Format a disk and write the modified DOS from Multi-AUTORUN on the disk. Save the Dvorak file to disk as AUTORUN.SYS, and copy the AUTORUN.SYS file from the Writer's Tool disk, saving it to the new disk as AUTORUN1.SYS. When the program initializes, the Dvorak program operates as advertised. Now—if I can just figure out how to type on my Dvorak keyboard.

Brian Pendergrass
APO, NY

SOUND OFF

Can I permanently modify DOS to disable *all* input/output sounds? I realize that POKE 65,0 turns it off, but pressing [RESET] brings it back.

Arnel Gallanosa

If you are a machine language programmer, you could write a routine to store a zero at location 65 during every vertical blank interrupt, preserve this routine under a new MEMLO, and trap the RESET vector to keep it there. Readers, let us know if there's an easier way to do this.—ANTIC ED

SILENT TYPEWRITER

We have received a lot of letters and phone calls regarding the Talking Typewriter *(**Antic**, January 1987). Many praised the project and asked us to print the advanced version of it, while others said it didn't work at all. We tested our prototype for an entire month at **Antic** before printing the article, and we can think of no reason for a properly built board and a properly typed program not to work. Here are some common errors:*

- *Some people wired the serial connector backwards. The diagram shows the pins as you look at the computer—that is, from the rear of the plug (as the diagram states).*
- *The .022pF capacitor in Figure 1 should be a **.022uF**—our mistake.*
- *The notes at the bottom of the parts list on page 23 explain some workable substitutions.*—ANTIC ED

TTY FOR THE DEAF

Regarding Deaf Modem Help *(**Antic** I/O, April 1987), it has been brought to our attention that that page 69 of the Atari 850 Interface Manual contains a listing for a Baudot terminal emulator. This may be helpful to persons wishing to to communicate with their deaf friends via Atari computers and modems.*—ANTIC ED

continued on page 10

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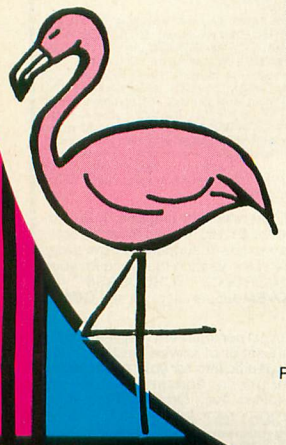

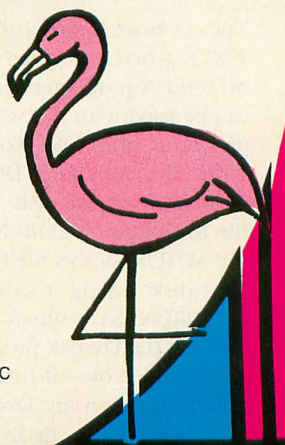

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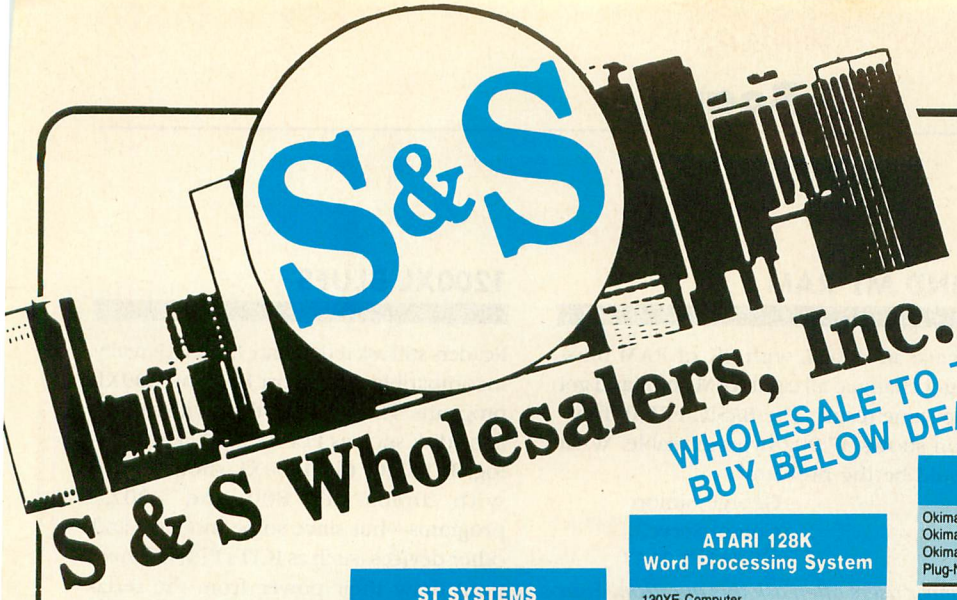

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CIRCLE 041 ON READER SERVICE CARD

IO BOARD
continued from page 7

PRAISE ATARI CORP.

When two keys broke off the numeric keyboard of my 1040ST—after the warranty expired—I figured I was in bad shape. However, I ran into a beta tester for Atari Corp. at the Las Vegas CES, who told me I should write to Jack Tramiel and explain the problem.

Three weeks later I received a letter from Atari Technical Services Manager Randy Hain, and 10 days after that I received—free of charge—an entire new ST keyboard.

I was only looking for the two replacement keys, but to have a large company replace an expensive part at *company* expense was really unexpected. I can't say enough good about Atari Corp.—if you want a computer that you know is supported *and* backed up, then look to Atari.

Richard Draude
Kingman, Arizona

MONITORING THE ST

Is the Atari monochrome monitor the only "brand" of monitor that works with the ST, or will green or amber monitors manufactured by other companies work?

Mark Brown
Ashland, OR

Any monitor, color or monochrome, can display the ST monochrome signal—provided the monitor can lock onto the non-standard "sync" signals sent out by the ST. The ST monochrome signal runs at about 70 Hertz vertical and 31.5 kilo-Hertz horizontal. The NEC MultiSync can handle the 31.5 kHz, but the picture might roll while trying to lock onto the non-standard 70 Hz. Even if you found a compatible monitor, you'd have to build a cutomized hookup cable running from your monitor to the Atari's DIN 13-pin video plug. You'll also need to hook pin 4 of the video plug to the ground to alert the ST to send out a monochrome signal. Why not just stick with the inexpensive, rock-solid Atari SM124 monitor?—ANTIC ED

FIND MY RAM

I have an 800XL with 8K of RAM missing. I changed all eight RAM chips and got the same result. The BASIC FRE(0) function shows 37,902 bytes available. What could be the problem?

George Simon
CompuServe
ID 72347,2657

Newer users often ask this question. Your Atari 800XL (as well as the Commodore 64 and the Apple IIe) is advertised as a 64K computer. Putting it simply, this means that the 6502 microprocessor chip which is the heart of the computer can address a maximum 64K of memory. But approximately 16K of memory is reserved for the operating system and other overhead such as screen memory. DOS uses a little more. When you use BASIC, 8K of the remaining RAM is replaced by 8K of ROM.

FRENCH DOS

With regard to Clement Carbonneau's question about re-writing the DOS menu in French (**Antic**, April 1987): *Anything* can be loaded to AtariWriter. Therefore, you can load the DUP.SYS file from the DOS menu into AtariWriter. Edit the file—making sure that your new text message has exactly the same number of characters as the original text—and save it just like any other file. Some files come up weird when you do this, but not DUP.SYS.

Beth Jane Freeman
CompuServe ID
71777,3172

MILES AWAY

I'm trying desperately to find the Miles Computing accounting programs (General Ledger, Payroll, etc.). Can anyone help me?

J.P. Coggins
Fernandina Beach,
Florida

***Antic** reviewed the Miles Payroll Accounting System in January, 1987. Here's the address: Miles Computing Inc., 21018 Osborne Street, Building 5, Canoga Park, CA 91304. (818) 341-1411.*—ANTIC ED

1200XL BLUES

Readers still ask if the Atari 1200XL is really incompatible with most 800 and 800XL programs. The answer is that, with a translator disk such as FIX XL ($10, The Catalog, PD0026) the 1200XL should work with almost all 800 and 800XL programs—but since some modems and other devices (such as ICD's P:R: Connection) draw their power from the serial port, the software controlling the devices won't work because the 1200XL serial port doesn't supply power the same way as other Atari 8-bit computers. There will also be problems with Atari 800 multiplayer games that access joystick ports 3 and 4.—ANTIC ED

ROTATE FIX

ROTATE FIX
If you tried and failed to get *Rotate* from the February, 1987 Tech Tips to work, here is the fix:

1. Change the 2317 in line 40 to 217.
2. Change the 233 in line 40 to 223.
3. Change the 4C in line 70 to 40.
4. Change the 102 in line 80 to 1024.

TELECOMMUNICATIONS

Exactly what do I need in order to transfer Atariwriter text files from my Atari 800XL or 130XE to my IBM-compatible Leading Edge D at work?

Patrick Lyle
Wheeling, WV

Each computer needs its own modem and communications software. The modems should both be capable of transmitting at the same baud rate, usually 300 or 1200. Your software must use the same file transfer protocols ("handshaking"), so look for two programs with a common file transfer method. For the Atari, we suggest Backtalk 1.2 ($19.95, The Catalog, APO154), which supports both XMODEM and XON/XOFF protocols and can translate the weird Atari carriage returns into standard ones. It works with the XM301, as well as other modems.—ANTIC ED

I/O Board

ULTIMATE PRINTER?

You called the Star SB-10 "the ultimate dot-matrix printer" (**Antic**, February 1986). Print Shop and Megafont II+ don't work on the SB-10. Broderbund said its programs don't work with 24-pin printers, and Star Micronics said the SB-10 isn't compatible with any other printer. Since you claim that it's the ultimate printer and use it for your listings, please tell me what programs *do* work with the SB-10.

Roger Brownell
Compuserve I.D.
71777,164

***Antic** considers 24-pin printers like the Star SB-10 the "ultimate" because of their near laser printer resolution. We never claimed that the SB-10 was Epson-compatible. When we decided to use the SB-10 to print our program listings, in-house programmer Patrick Bass created a complete 24-pin font editor/listings printer program, which runs on any Atari 8-bit computer with at least 48K.*

For those who can program, the SB-10 printer manual has plenty of information on sending commands to the printer. If you don't program, you should still be able to teach any word processing software allowing the creation of a "printer driver"—such as AtariWriter or AtariWriter Plus—how to converse with the SB-10. We have not, however, succeeded in getting PaperClip to work with the SB-10.

On the ST, we use the SB-10 for letter quality printouts by simply double-clicking on a text file and then selecting "Print File" from the desktop. Any ASCII file printout should be fine. For printing ST pictures, DEGAS includes an SB-10 printer driver.—ANTIC ED

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

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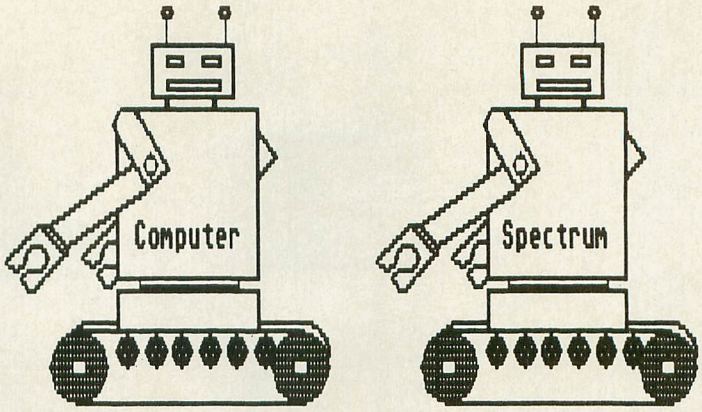

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Charlotte, NC 28210
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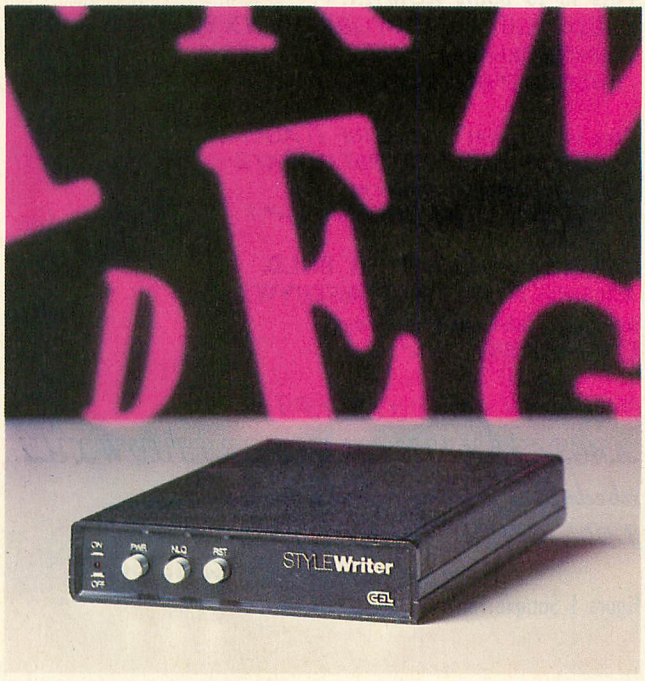
CIRCLE **197** ON READER SERVICE CARD

Reviewed by Charles Cherry



The impressive **StyleWriter** is a box about the size of a Hayes modem that gives your dot matrix printer a variety of very high quality fonts. The $199 model also provides a printer buffer of 128K. (You can get smaller-memory units with 8K for $99 or 64K for $169.) *Figure 1* shows the six fonts which came with our review sample. Eleven other fonts are currently available and we can expect more in the future. Font chips cost $13.95 apiece and StyleWriter can hold six chips at a time. The font styles come in several sizes, but each chip can only contain one font in one size.

StyleWriter is actually very easy to use. It comes *pre-configured* for your specific computer and printer, so all you need to do is hook it up and it should work immediately. The print styles are controlled by simple codes that you type into your word processor text. In addition to changing fonts, you can also use a variety of special printing modes (see *Figure 2*). Note that the inverse printing (white on black) did not work very well with the Epson FX-80 I used for this review.

StyleWriter's font chips are proportional typefaces, so your word processor will not be able to control the spacing properly. To overcome this, StyleWriter provides its own commands that control the margins, tabs, centering and justification. There is no command for aligning text from the right margin. All control codes are a simple backslash (\) followed by letters or numbers.

Although it is not mentioned in the generally very good manual, DIP switch three inside the StyleWriter box will change the control character from \ to @. DIP switch four controls the line feed for the printer. You will need to change that if you move your StyleWriter from an 8-bit Atari to an ST.

StyleWriter achieves its excellent results by taking control of your printer in its graphic mode. Six passes of the printer head are required to print each line. There is a high quality mode which takes 12 passes. All this is obviously time-consuming. However, there is a bypass button which turns StyleWriter into a plain-vanilla buffer, so your printer can work at its normal speed. This makes it a snap to print out draft copies until everything is perfect and then punch in the StyleWriter and go get a sandwich while it prints the final copy.

If you do much printing and a good-looking output is important to you, you should definitely consider invest-

continued on next page

ing in a StyleWriter. It is reasonably priced and will greatly enhance your pages. For most people it will eliminate the need for a daisywheel printer. If you change printers in the future, you can have your StyleWriter reconfigured at the factory. There is currently no charge for this.

It is obvious that a lot of thought, care, and an awful lot of work has gone into developing StyleWriter. My only quibble is wanting even more of what is already there—more fonts built into the box, larger memory buffer, bigger and smaller font sizes, etc. Although the review period is over, I don't want to give back my StyleWriter. I like it a lot.

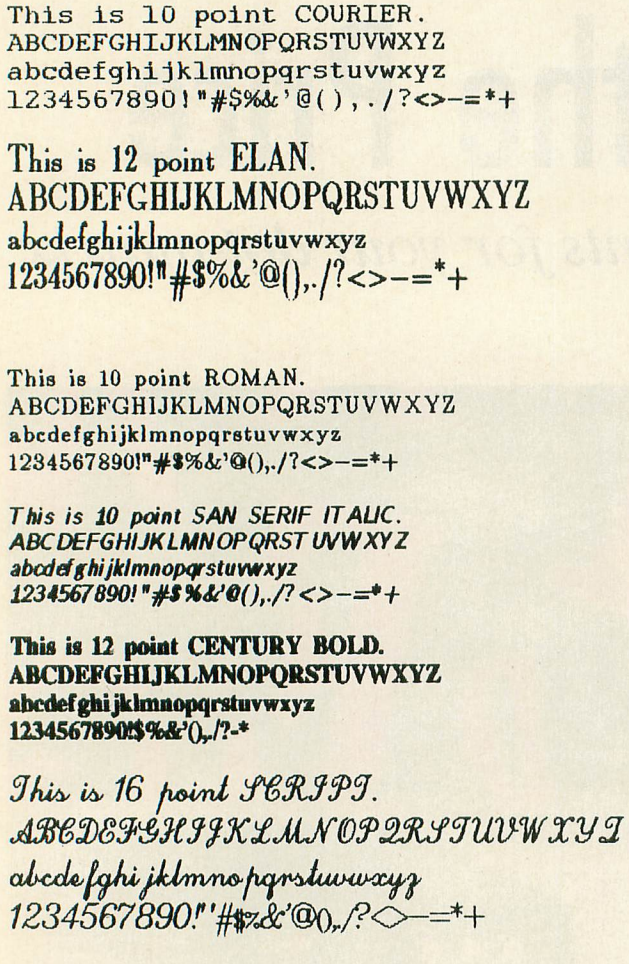


Figure 1 Sample Fonts

```
\0\75\
This is 10 point COURIER.
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890!''#$%&'@(),./?<>-= * +

\This is 12 point ELAN.
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890!''#$%&'@(),./?<>-= * +

\3This is 10 point ROMAN.
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890!''#$%&'@(),./?<>-= * +

\This is 10 point SAN SERIF ITALIC.
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890!''#$%&'@(),./?<>-= * +

\5This is 12 point CENTURY BOLD.
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890!''#$%&'@(),./?<>-= * +

\This is 16 point SCRIPT.
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890!''#$%&'@(),./?<>-= * +
```

Figure 3
StyleWriter File Commands for Figure 1

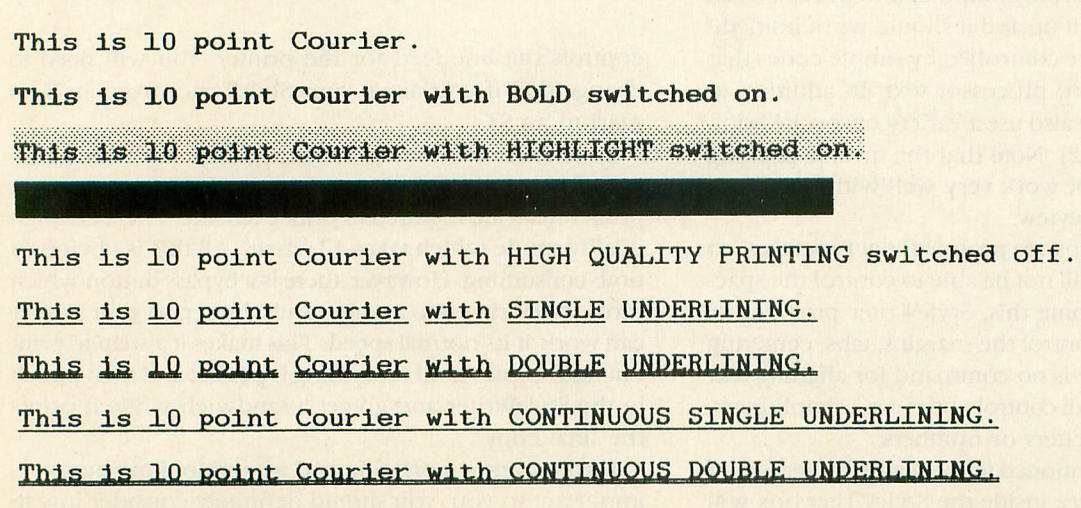


Figure 2 Special Printing Modes

QUIK PIX
White Lion Software
P.O. Box 357
Ridge, NY 11961
(516) 924-6071
$29.95, 48K disk

CIRCLE 192 ON READER SERVICE CARD

Users of AtariWriter, AtariWriter Plus and PaperClip word processors can use **Quik Pix** to put Broderbund's Print Shop Graphics Library pictures into their text printouts. Pictures can be saved as "pix," letterhead—or labels that use the Mail Merge features of these word processors. There are also 12 choices of horizontal borders. Text, graphics and borders are printed in one pass.

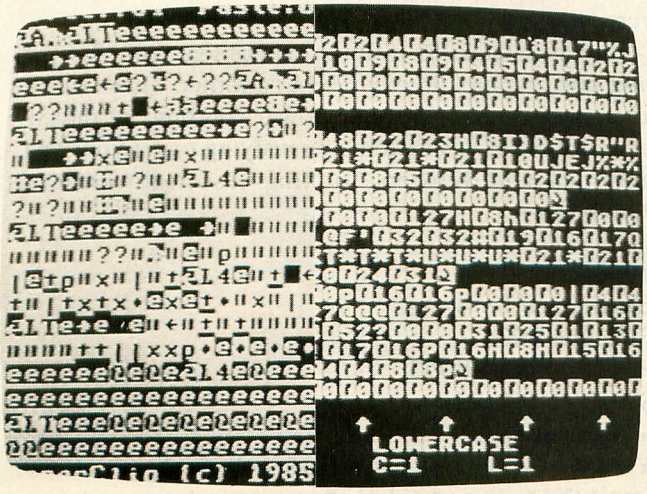
But the great thing about Quik Pix is that you can convert *any* picture—if you convert it to Print Shop format first. And virtually any graphic format for 8-bit Ataris can be converted with Graphics Shop ($19.95, The Catalog, APO157). Also, if you want to use graphics from the *original* Print Shop program disk as well as the Print Shop Graphics Library disks, see the simple DESIGNING LABLES fix in this issue's I/O letters.

Quik Pix is menu-driven and has drop-down windows and single-keystroke commands. The manual is thorough, but not exactly easy to read. If you make a mistake you can't correct, you must press the [ESC] key and start the operation over. The Quik Pix basic process is easy enough to do. But the fancier you want your file to be, the harder you must work.

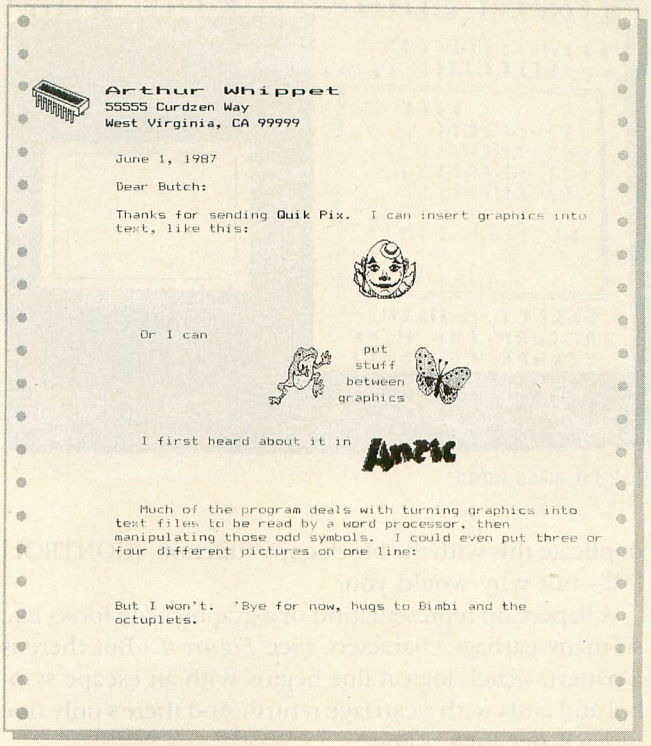
Quik Pix comes in two separate versions that work slightly differently, depending on which word processor they were written for. The remainder of this review will cover each version individually.

QUIK PIX PC

Quik Pix PC uses PaperClip's Include File and Verbatim File commands. Include File lets you chain as many as three files so that they'll print as one. For instance, here



Quik Pix graphics files as seen with PaperClip (left) and AtariWriter Plus.



Arthur Whippet
55555 Curdzen Way
West Virginia, CA 99999

June 1, 1987

Dear Butch:

Thanks for sending Quik Pix. I can insert graphics into text, like this:

Or I can put stuff between graphics

I first heard about it in Antic

Much of the program deals with turning graphics into text files to be read by a word processor, then manipulating those odd symbols. I could even put three or four different pictures on one line:

But I won't. 'Bye for now, hugs to Bimbi and the octuplets.

are the steps you might take if you were writing a 12,000-word paper:

1. Since 12,000 words works out to about 48 double-spaced pages and PaperClip's maximum file length is approximately 20 pages, write the document in three sections, saving them as D:DOC.1, D:DOC.2 and D:DOC.3

2. Read DOC.1 to the screen.

3. Instead of having to append the other two files (which won't work anyway), *include* them by adding the following to the end of the document:

[CONTROL] [Z] ID:DOC.2
[CONTROL] [Z] ID:DOC.3

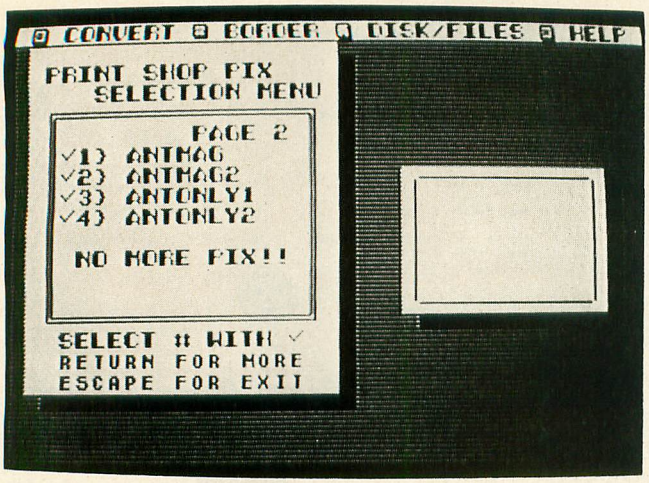
4. If you want to print it later, write DOC.1 back to disk. To do so now, however, simultaneously press [CONTROL] [SHIFT] [ESCAPE] to print. When the printer reaches the end of the document and sees those include commands, DOC.2 and DOC.3 will be read directly from the disk to the printer.

The Verbatim File command does the same thing, but for PaperClip-compatible graphics. It takes data from the disk file—such as B/Graph charts and Micro Illustrator pictures—and prints this verbatim.

Here's where Quik Pix PC comes in. It converts Print Shop Library graphics to *PaperClip* format so that they can be included in text files.

To get the desired effects, however, you must read the converted file into PaperClip and fiddle around. All PaperClip users know that the underlined, crooked arrow pointing left is the carriage return symbol. Few users know that the *inverse* carriage return is the *escape* symbol—which you can't create by typing in PaperClip. True, you can

continued on next page



Quik Pix menu screen.

duplicate this with the block copy function, [CONTROL] [M]—but why would you?

A PaperClip representation of a graphics file looks like so many garbage characters. (See *Figure 1.*) But there is a pattern—each logical line begins with an escape symbol and ends with a carriage return. And there's only one of each per logical line.

Unless you change the file, the graphic will be printed in column 1 on your paper. However, if you put 35 spaces before each escape symbol, the printer will center the picture, as it did with the clown in the sample letter.

PC MULTI-PIX

If you want more than one graphic on one line, you really have your work cut out for you, although PaperClip's two windows make it easier. In *Figure 1*, to get the frog, butterfly and text on the same line, call the frog file into window 1 and the butterfly file into window 2. Then:

1. Number each line, adding the numbers *before* the escape symbol. In the top window you might number the lines 111, 222, etc., using 1111, 2222, etc. in the bottom. The lines with three digits would come before the ones with four, making things easier.

2. Go to line 1111 in window 2 and use [SHIFT] [DELETE] to put each screen line of that logical line into the paste buffer.

3. Hop back up to window 1, put the cursor on 222 and simultaneously press [CONTROL] [SHIFT] [P] to put line 1111 under line 111.

4. Delete the carriage return in line 111 and add 10 spaces.

5. Press [CONTROL] [SHIFT] [I] to get into the overwrite mode and center the word "put" in those 10 spaces.

6. Delete the 111 and 1111. Now the first logical line is complete.

7. Repeat steps 2-6, adding words where appropriate. The new picture file is ready, so save it to disk.

If this sounds like a hassle, that's because it is. But it's easy to get used to, although plenty challenging at first. Expect a lot of trial and error before you get what you want.

The **Antic** Magazine graphic in *Figure 1* came from the Picture Plus disk ($19.95, The Catalog, APO179) and was in Micro Illustrator format. Graphics Shop was needed to convert the picture to Print Shop format. However, since the graphic was directly in the center of the screen on a white background, we didn't want to convert the entire screen.

Converting part of a picture entails putting a frame around the area to be captured. While this feature works well, it isn't terribly flexible—you can't shrink or expand the frame to fit the graphic—so we had to make two files. It wasn't easy to place the frame so as not to duplicate parts of the picture. Then these files had to be converted to PaperClip format with Quik Pix PC.

The name and address at the top of *Figure 1* were made with the letterhead option. A label would look about the same.

ATARIWRITER QUIK PIX

Neither AtariWriter nor AtariWriter+ has a verbatim command, but you can load and print a converted graphics file right away. Graphics can be converted in either normal or compressed mode in this version of Quik Pix.

The compressed mode is used if a picture is too wide for AtariWriter Plus. Quik Pix documentation points out that AtariWriter Plus is slightly *more* limiting than AtariWriter in terms of graphics, and if you try to print a non-compressed picture the computer might lock up. If this happens, just press [RESET]—everything in memory will remain there.

PaperClip graphics files are easier to interpret than AtariWriter files—where the escape character is just represented by a 27. The other codes are also represented in decimal form. This may sound easier to deal with than those odd PaperClip symbols, but AtariWriter files are longer, and it's harder to see where one logical line ends and another begins.

With the Merge File command, [OPTION] [L], you can get several pictures into one file, but trying to put more than one on a line is even harder than with the PaperClip version.

However, Quik Pix is fun to experiment with. Try putting one graphic directly next to another. That's easy—after you figure out how. But now try putting one directly *above* another. It's extremely satisfying to get your text, graphics and borders looking just right.—GREGG PEARLMAN

YEMACYB
Electronical Software
P.O. Box 8035
Rochester, MI 48063
$21.95, 48K disk

CIRCLE 193 ON READER SERVICE CARD

PRINTER POWER WITHOUT THE PRICE

YEMACYB prints microscreens in color on Epson MX/80, Star 10X/SG-10 and C.Itoh Prowriter printers and compatibles. The program requires four colored ribbons, yellow, cyan, magenta and black. Printing takes four passes,

Four-pass color printout on standard one-color dot-matrix printer with YEMACYB.

and you must change the ribbon for each pass. You can order the program with the ribbons for $18 to $26 more, depending on your printer.

YEMACYB does its job well. I tested it with Star's Gemini 10X and the results were better than with most color printers. YEMACYB maintains a palette that defines the blend for each of the Atari's 128 colors. A separate program lets you change the palette if the printout doesn't match your screen exactly.

YEMACYB supports Graphics 7 and Graphics 7 1/2 (ANTIC mode E) screens in uncompressed 62-sector format. It also supports display list interrupts (DLIs). You can change any or all colors at every scan line. The resulting picture can be printed in only one size—my printer printed it sideways, 6 3/8×8 1/4 inches.

On the downside, the program is not easy to use. The process of backing up the printer and aligning the page is inefficient even at the best of times. This program does nothing to help and there's a bug in the alignment routine. The DLI feature is user-hostile. You can't even see the picture as you are changing it. All of this aggravated by a poor manual.

On balance, YEMACYB is worth having. Nothing else does what it does, and the results are impressive. I just hope that future versions improve the user interface.—CHARLES CHERRY

MAGNIPRINT II+
Alpha Systems
4435 Maplepark Road
Stow, Ohio 44224
(216) 374-7469
$24.95, 48K disk

CIRCLE 194 ON READER SERVICE CARD

Magniprint II+ has been around for quite a while and won many satisfied users. Version 3 now adds four different text sizes and compatibility with Typesetter icons to an already impressive list of capabilities. Although it does not do everything (such as mirror images for T-shirts), Magniprint II+, Version 3 will fulfill most of your printing needs.

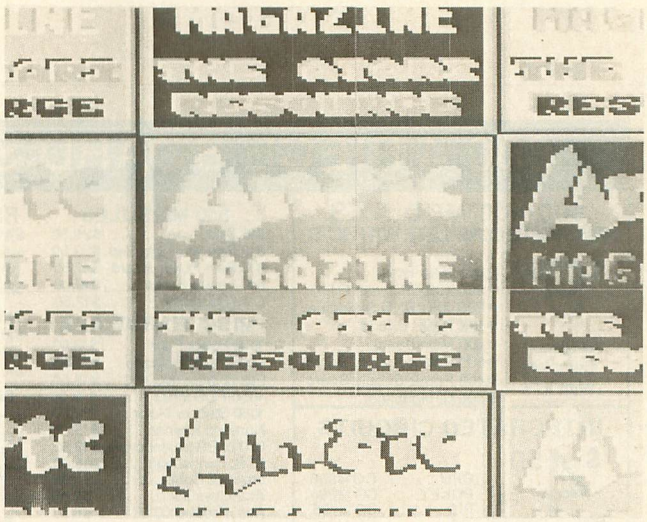
Magniprint II+ can take a microscreen in any mode and print it in several sizes, normal or sideways, with up to 16 gray levels. It can also produce gigantic multi-page poster printouts. Magniprint II+ produces the best quality picture your printer can deliver.

This program loads a picture in any format—even Print Shop—and lets you touch up the drawing, change the colors, assign a gray scale and add text using normal or custom fonts. Large text has vertical lines. Printing is in two full-screen sizes—three, if you count the convenient Quick Print previewer. Larger sizes can be printed in sections which you can designate, within limits.

Special features include a lister, which reproduces text files exactly as they appear on screen, including inverse and graphic characters—ideal for listing BASIC programs. You can also fine-tune the printer's line-feed to preserve the aspect ratio of your picture (so circles come out round instead of oval).

Magniprint II+'s best features are its excellent GTIA 16-shade printouts and the remarkable (yet easy) gigantic, multi-page posters. Disappointments include the slow "multi-load" operation and the separate conversion process needed to use most picture formats.

Magniprint II+ supports Epson, Panasonic, C. Itoh, NEC, and Star dot-matrix printers and compatibles.—CHARLES CHERRY



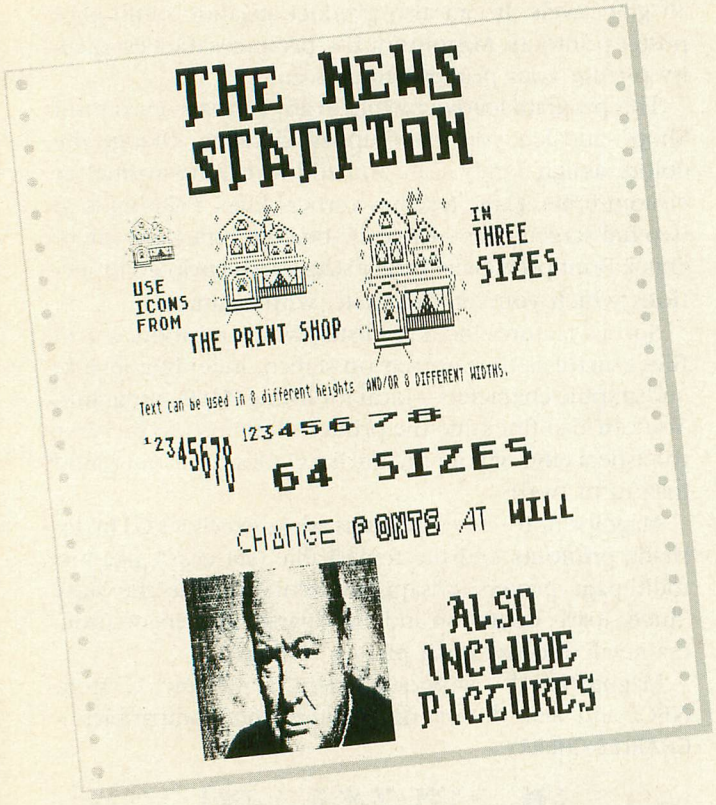
NEWS STATION
Reeve Software
29W150 Old Farm Lane
Warrenville, IL 60555
(312) 393-2317
$29.95, 48K disk

CIRCLE 195 ON READER SERVICE CARD

Here's another attempt to bring desktop publishing to the 8-bit Atari. As always, the problem is not enough memory. You can't put a whole page in the computer and still have room for a program.

continued on next page

Text-graphics printout with News Station.



News Station divides the page into eight "plates" which must each be composed and saved to disk individually. Once all eight are created and saved, the page is printed. The plates are printed in this arrangement:

PLATE 1 PLATE 2

PLATE 3 PLATE 4

PLATE 5 PLATE 6

PLATE 7 PLATE 8

This works fine for two-column printouts, but full-page composing is difficult.

You can typeset your text with custom 8×8 character sets in 64 sizes. Five fonts are provided, but there is no font editor. You can draw freehand with a joystick or touch tablet, or load pictures, Print Shop icons and *short* text files.

But with 64 text sizes, News Station is an ideal tool for putting lettering into a picture. Also, the plate concept makes it easy to replicate an image eight times on a page. However, you might find it too restricted for serious typesetting and printing.—CHARLES CHERRY

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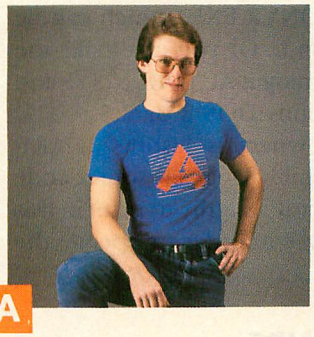

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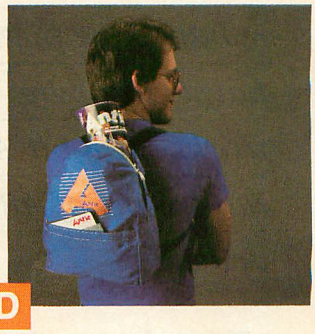

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ASCII Art Converter

"Printer pictures" go hi-res

BY PAUL TUPACZEWSKI

Thousands of "character art" pictures can be found online, free for the downloading. ASCII Art Converter transfers this visual treasure trove into Atari high-resolution graphics formats—so you can enhance the pictures with your favorite paint software. This BASIC program works on 8-bit Atari computers with a minimum of 48K memory and a disk drive.

If you have ever have logged onto a bulletin board—especially a non-Atari BBS—you may have noticed sections of the board offering something called "printer art" or "ASCII character art." You can download these "picture" files and put them into your word processor to make hard copies with any type of printer. Type GO ARTSIG when you log onto CompuServe and you'll find a vast storehouse of ASCII art files.

ASCII art works by taking various characters—X, M, 9, etc.—and combining them in patterns to make pictures. When you stand up close, the pictures don't look like anything except a jumble of letters and numbers. But when you stand back, you'll see a detailed image—perhaps Abraham Lincoln or Marilyn Monroe. For users of most personal computers, this is a satisfactory online graphic compromise. But with the powerful graphics of your 8-bit Atari and this ASCII Art Converter software, you can do a lot better.

ASCII Art Converter speedily translates printer art files into the Atari's high-resolution graphics modes. After conversion, your picture will have four shades of gray—and you can then enhance this image with any popular Atari paint program. (Rapid Graphics Converter *from the November 1985* ***Antic*** *enables you to convert graphics files between all paint software formats.*—ANTIC ED)

Get started by typing in Listing 1, ARTCONVR.BAS. Check it with TYPO II and SAVE a copy before you RUN it. When RUN, it creates the actual ASCII Art Converter machine language file, ARTCONVR.EXE, which can be loaded from DOS using option L. Or you can make the converter self-loading by renaming it AUTORUN.SYS and putting it on a disk that contains DOS 2 or 2.5.

A bonus for Antic Disk owners is Listing 2, ARTCONVR.M65, the MAC/65 assembly language source code for the ASCII Converter. It was too lengthy to print in this issue. You do *not* need Listing 2 in order to operate the ASCII Art Converter.

CONVERTER COMMANDS

Following are the main menu commands you'll see when you load the converter:

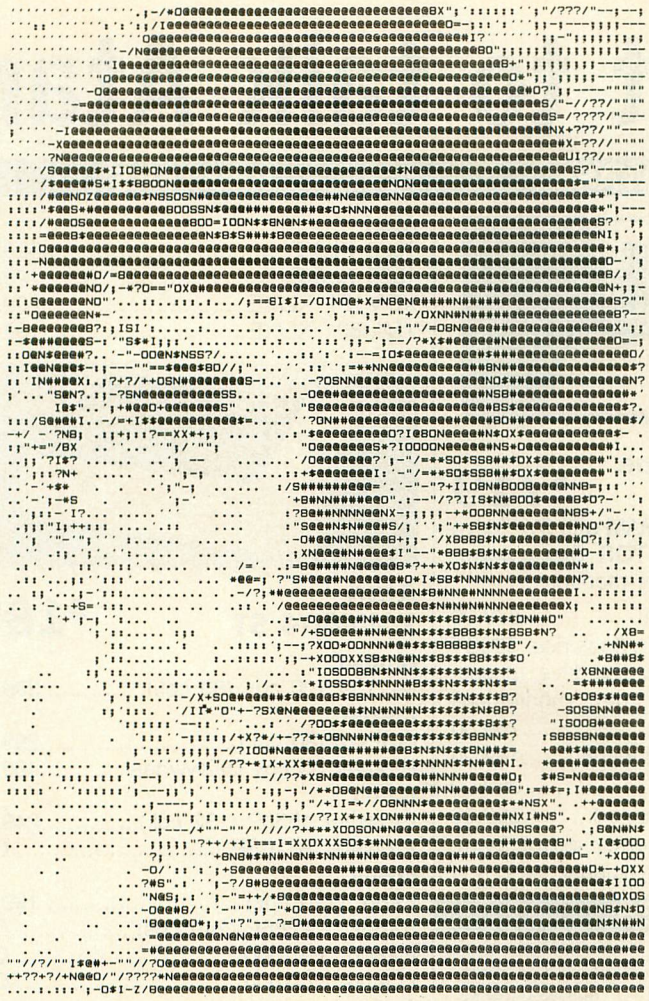
[C]olumn number— Most printer art files are meant for 80-column printers, but some are in compressed 132-column mode. [C] toggles between 80-columns and 132-columns.

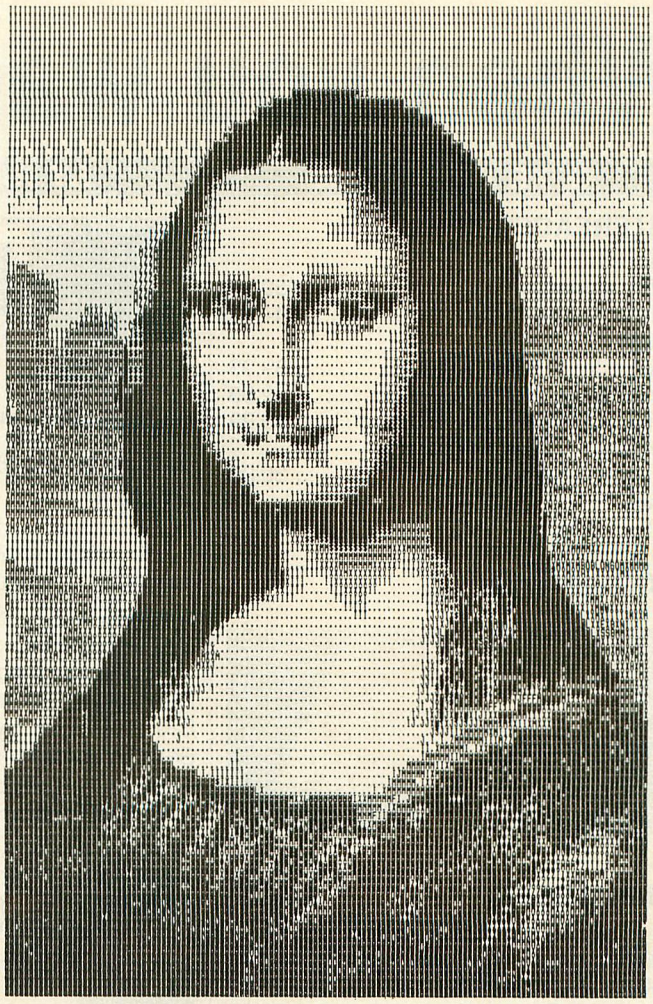
[L]oad file—Here is where you enter the printer art filename.

[D]rive default number—Choose any number from 1 to 8. Using a RAMdisk (D8:) speeds conversion greatly.

[P]osition of picture—When printed, some art files are supposed to be looked at vertically, others horizontally. This option rotates an arrow that specifies the *top* of the image.

[G]raphics mode—This option is handy for "compress-





CompuServe's ARTSIG library was the source of this ASCII character art.
"Spock" by Ron McDowell is 80 columns. "Monalisa" by David Horn is a 132-column picture.

ing" 132-column pictures. Most pictures should be viewed in Graphics 7, but some compressed 132-column pictures look better in Graphics 7+.

[SPACEBAR]—Press this to start the process when everything is set for conversion. You'll then see the prompt:

[U]se defaults or [E]dit your own?

If you press [U], the program immediately starts the conversion, using a built-in "character shade" code chart, where different characters represent different pixel shades.

If you press [E], the program searches your entire printer art file for examples of each different character byte and displays those examples at the top of the screen. (This is where RAMdisk speed comes in *really* handy.) You are then prompted to give each character a shade value, with 0 being white, 1 being light gray, 2 being dark gray and 3 being black.

The character marked by the arrow is the one for which you enter the value. Generally, the bigger the character, the darker the value. For example, commas and periods might normally be light gray, while M's and cross-hatches (#) might be black. Spaces should be white. If you change your mind about a color value, the [DELETE] key moves the cursor back and the [SPACEBAR] advances it. When you're happy with the values you've entered, press [RETURN].

SCREEN CONVERSION

When your picture appears on the screen, if it's too large it wraps to a second screen. (If it's still too large, it wraps back and overwrites the first screen.) When you're finished, pressing any key toggles between the two screens.

Pressing [OPTION] brings up another menu. If you don't like the picture, press [4] to reRUN the entire program. To look at the picture again, press [START].

If you like the picture, call up the screen you want to save and type [3], then enter a filename. Press [1] to save a GRAPHICS 7 screen or [2] to save a GRAPHICS 7+ screen. Both types are saved in the 62-sector Micro-Painter format, and the program automatically expands GRAPHICS 7 pictures to fit Micro-Painter GRAPHICS 7+ screens.

Boonton, NJ high school student Paul Tupaczewski wrote Bomb Squad *(**Antic**, June 1986). He says there's a gold mine of art files on local bulletin boards.*

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Listing on page 89

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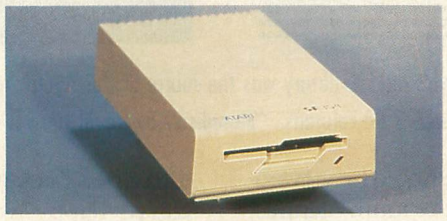

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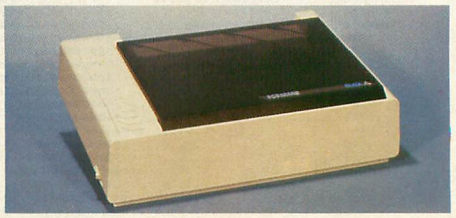

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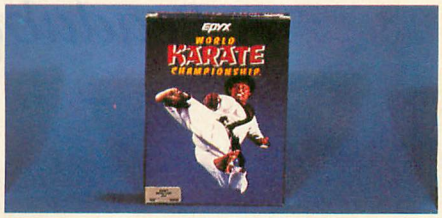

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Easy 80

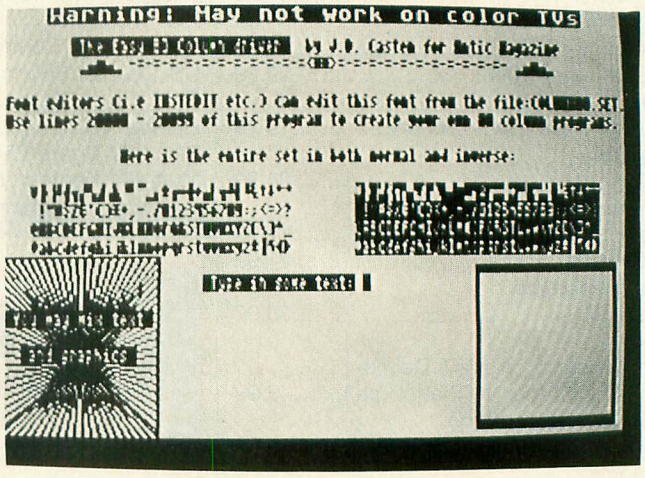
Readable software 80-column text

BY J.D. CASTEN

This versatile subroutine displays 80 columns of readable text (even combined with pictures too) on a Graphics 8 screen. Easy 80 includes an impressive demonstration of what the 80-column display can do. But this subroutine is primarilly meant for insertion in your own BASIC programs. Easy 80 is a BASIC program that works on all 8-bit Atari computers of any memory size, with disk or cassette. However, Easy 80 text is not likely to be too readable on a television set or on some color monitors.

A major limitation of 8-bit Atari text is the 40-column display, which greatly limits the amount of information that can be shown at one time and hampers translation of programs from 80-column computers to the Atari. Easy 80 provides an efficient, flexible access to 80 readable columns with no additional hardware. How much use you get from Easy 80 depends on your needs, programming expertise and imagination.

(Also Note: Readability of Easy 80 text depends largely on the quality of your video display. Standard television sets don't have high enough resolution to produce good details. For best results with a color monitor, turn down your Color and Tint controls as low as they will go. Adjust any other controls that will make your color screen resemble a monochrome display.—ANTIC ED*)*



GETTING STARTED

Type in Listing 1, EASY80.BAS, check it with TYPO II and SAVE a copy before you RUN it. The actual 80-column subroutine consists of lines 20000-20199 within the Easy 80 demonstration program.

Next, type in Listing 2, CHARMAKE.BAS, check it with TYPO II and SAVE as before. When RUN, Listing 2 creates a file called COLUMN80.SET. This is the Easy 80 character set, similar to character sets made with *Ultrafont* (**Antic**, August 1986) or Envision ($19.95, The Catalog, AP0185).

You don't need a font editor program to use Easy 80, but with a font editor you can alter the COLUMN80.SET file created by Listing 2. Just operate your font editor with the COLUMN80.SET file like you would for any other character set file.

To use the 80-column subroutine in your own programs, simply LIST lines 20000-20199 to a separate disk file, then

ENTER them into your BASIC program.

PROGRAM TAKE-APART

The 80-column subroutine has two main parts. The initializing routine starts at line 20000. GOSUB here at the beginning of your program. The PRINT subroutine is at line 20099. These routines use the following variables:

E80$— contains the machine language program for the 80-column driver.

T80$—contains the text to be printed.

CHBAS—the location of the 80-column character set in memory. This can be altered to any location divisible by 1K (1024).

X80—the horizontal coordinate of the text to be printed; can be from 0 to 79.

Tired of waiting for a readable 80-column word processor for the 8-bit Atari? Then write one yourself with help from Easy 80. Even the Atari [CONTROL] characters will appear as legible as in standard 40-column mode.

Y80—the vertical coordinate of the text to be printed; can be from 0 to 23.

To use the PRINT routine, set the variables T80$, X80 and Y80, and GOSUB to line 20199.

The demonstration program shows some effective ways to use the 80-column routine. Hopefully you will find a good use for Easy 80—whether you're just showing off the demo or writing an 80-column word processor.

With Easy 80, J.D. Casten departs from the chase-and-shoot maze games which made him an **Antic** *programming favorite. Longtime readers of this magazine will be familiar with Casten games such as* Risky Rescue *(April 1984),* Biffdrop *(December 1984) and* Rebound *(January 1987).*

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Listing on page 81

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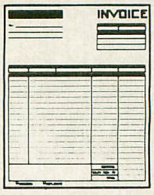

Designed by Jeff Brenner, columnist for *Computer Shopper* magazine, of "Applying The Atari" fame, and author of book and magazine articles in *COMPUTE!, ANALOG* and others.

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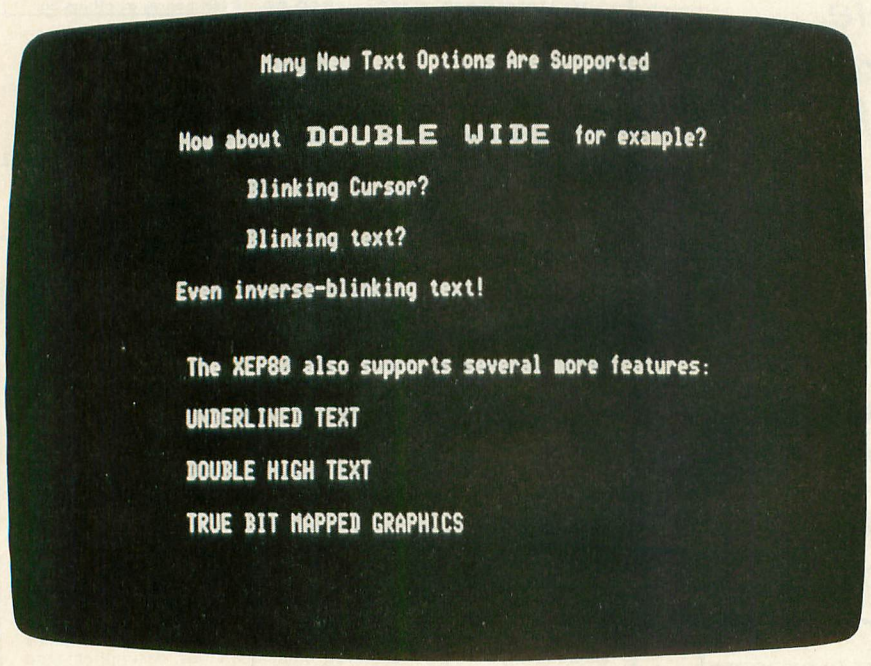
CIRCLE **088** ON READER SERVICE CARD

Miracle Box From Atari

True 80-column text at last

BY CHARLES JACKSON, ANTIC TECHNICAL EDITOR



It's here.

Arriving at **Antic** just as we were about to go to press, the long-promised **XEP80** 80-column box is being manufactured at the Atari Corp.'s Taiwan manufacturing center and should be available in stores for $79.95 by the time you read this.

The XEP80 displays 80 columns and 24 rows of readable text on your screen. On monochrome monitors, this text is razor-sharp. It's also quite readable on a color monitor, though naturally the characters are smaller than standard 40-column Atari text. Either way, the XEP80 is far superior to any software-only commercial products that produce an 80-column display.

COMPATIBLE SOFTWARE

According to John Skruch, Atari's Associate Director for Software, **AtariWriter 80**—a new 80-column upgrade of the AtariWriter Plus word processor—was undergoing final testing at deadline and should also be in the stores when the XEP80 arrives in June 1987.

AtariWriter 80 and a new 80-column, single-density version of Atari's **Silent Butler** personal finance program will be the first commercial software that runs on the XEP80. However, early prototype versions of the XEP80 box were sent to major publishers of 8-bit software—such as Batteries Included, Broderbund, XLEnt and OSS—with the expectation that existing products will soon be updated for 80 columns.

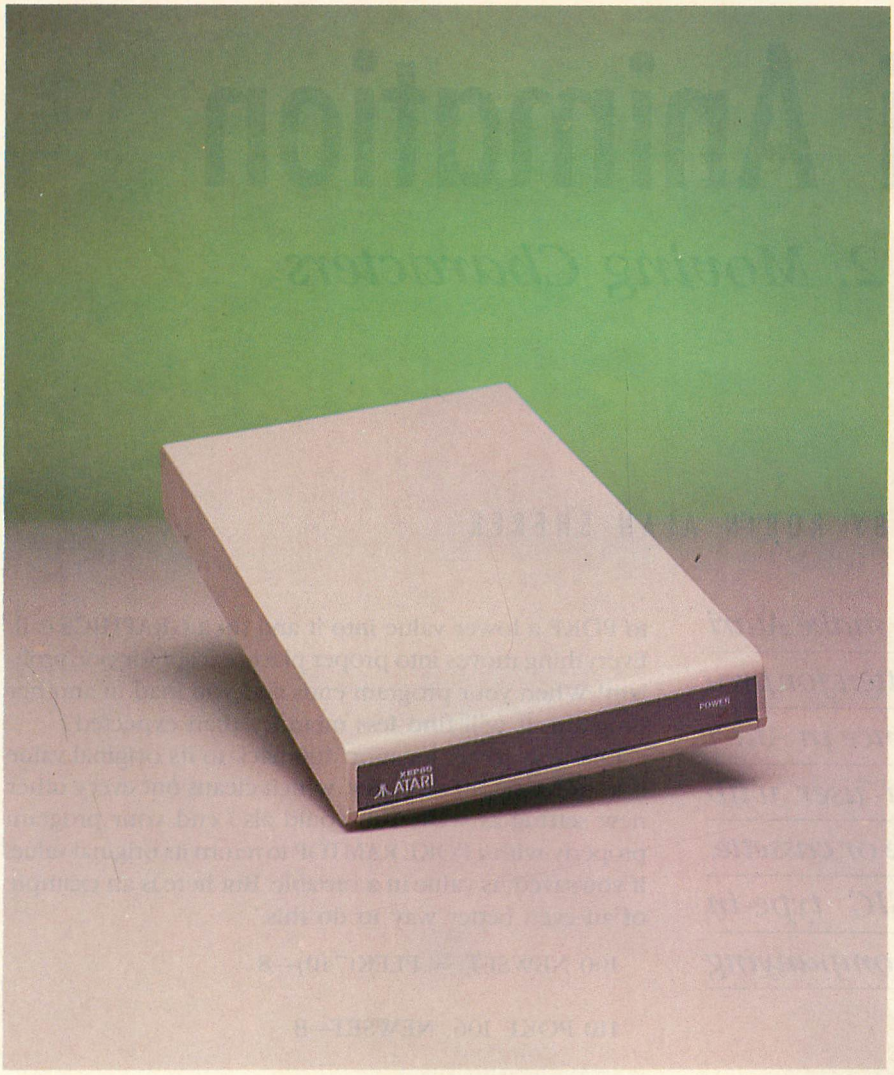
Inexpensive 80-column trade-up prices for users of the existing AtariWriter Plus and Silent Butler will be offered by Atari, according to Skruch. But no prices for the software have been set as of this writing.

USING XEP80

The XEP80 is about the size of a 1030 modem (5 3/8×9 1/4×1-3/8 inches) and weighs in at just two pounds. It can easily fit atop your disk drive.

The XEP80 connects to your Atari through either joystick port 1 or 2. An XL/XE RCA-jack video cable carries the signal from the back of the XEP80 to your monitor. (Atari says the XEP80 display will not be satisfactory on a televison set.)

Keeping the system running is a small 9-volt power supply, the same power unit used with the 2600 videogame system and the still-awaited Atari 1200-baud moderm. Note: The



power supply that came with our prototype XEP80 tended to grow unusually hot.

The XEP80 also includes a parallel printer port that uses the same 25-pin cable as the ST. If you hold down the [SELECT] key when you boot your computer, the XEP80 will serve only as a parallel printer interface—without turning on the 80-column display.

UTILITIES AND DEMOS

The disk that comes with the XEP80 contains the AUTORUN.SYS file which installs the handler (which is only about 200 bytes). Commented MAC/65-compatible source code for the handler is also included. Atari's Lane Winner is credited as the main designer of the XEP80 system.

The disk also features a number of impressive demonstration programs written in BASIC and assembly language, as well as detailed documentation and utility software for inserting 80-column handler rountines into your own programs.

The XEP80 handler introduces several new commands to Atari BASIC. These take the form of XIO statements which:

- Invert the screen colors (default is white text on a black background).
- Enable underlining.
- Produce a blinking cursor.
- Mix double-width or double-height text with standard-size text.
- Mix blinking text (any width or height) with standard text.
- Enable character-by-character horizontal scrolling with a POSITION statement and an XIO statement.

The XEP80 is immediately compatible with all software that supports E: calls—such as Atari BASIC (versions A, B and C) and Atari DOS 2.5. During our tests, the XEP80 didn't work with DOS 2.0.

GRAPHICS

Built into the XEP80 is 8K of static RAM, which is used as a screen storage buffer to operate the display faster. The XEP80 has two complete character sets built in, the standard XL/XE special character set and Atari's international character set.

The XEP80 can draw high-resolution bit-mapped graphics covering as much as half the screen. However, the 80-column drawing routines are much slower than standard 40-column drawing. It took five minutes to draw and fill a golfball-sized circle in Graphics 8.

Drawing isn't simple either. The PLOT and DRAWTO statements are not supported and text windows are not allowed. If your program crashes in the middle of one of these lengthy and complicated bit-map operations, the display remains in bit-mapped mode. You must reboot and start again.

SUMMARY

If you're serious about an 80-column display, the XEP80 won't disappoint you. The text is outstanding on monochrome monitors and acceptably readable on composite color monitors. Beginning and intermediate BASIC programmers will want to explore new ways to use the XEP80's additional XIO commands. Advanced BASIC and assembly language programmers will enjoy adapting the XEP80 handler to their favorite business software, word processor or telecommunications program.

XEP80
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Atari Corp.
1196 Borregas Avenue
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(408) 745-2000
$79.95, 16K disk

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Atari Animation

Lesson 2: Moving Characters

BY ROBIN ALAN SHERER

This series teaches you how to make Atari 8-bit graphics move. It is written for programmers with some experience in Atari BASIC. But any 8-bit Atari user with minimum 32K memory, disk or cassette, can enjoy the short BASIC type-in graphics demonstrations accompanying each lesson.

Last month we drew the shape of a haunted house. Now we will begin to put animated characters into the picture.

First we must find a safe place for the new character set we'll create. You must always protect data by placing it somewhere that won't be written over. Both BASIC and the operating system are constantly moving code all over the place. Fortunately it's easy to create safe havens.

MEMTOP AND RAMTOP

Memory use limitation is controlled by RAMTOP at location 106 and MEMTOP at locations 741 and 742. These locations hold values representing 256-byte pages of memory. By changing the values at these locations, we can fool the computer into thinking that some of its unused memory is already full.

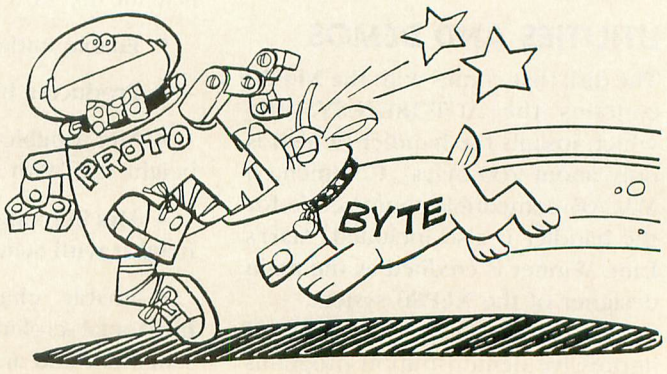
See *Figure 1.* RAMTOP holds the highest page number of free RAM memory available for use. The operating system won't use memory above this number. By lowering the number, you can use the RAM between the original number and the new number without disturbance. RAMTOP is easier to use than MEMTOP, since you just have to POKE a lower value into it and do a GRAPHICS call. Everything moves into proper place, except for one problem! When your program ends and you load in another program, it will find less memory than expected.

One way to get location 106 back to its original value is to press the [RESET] key, which cleans out every other new setting as well. You could also end your program properly with a POKE RAMTOP to return its original value, if you saved its value in a variable. But here is an example of an even better way to do this:

```
100 NEWSET = PEEK(740)—8

110 POKE 106, NEWSET—8

120 GRAPHICS 0
```

This way whenever 106 is moved down, it is referenced to location 740, which will be constant. It works with Atari BASIC, but not with all BASICs from other companies. Use the RAMTOP (location 106) method with these languages. After moving RAMTOP down by 2K (8 times 256), we have our safe area. Sometimes the first 1K is still unsafe, so we will use the second 1K for our character set. There is a very good reason for the extra precaution:

Anytime a CLEAR SCREEN is executed in Graphics 0,



the first 64 bytes of RAM above RAMTOP are CLEARed! Whenever you make a GRAPHICS call which also causes a CLEAR SCREEN, the first eight characters of your character set will disappear.

This situation is even worse if you allow your screen to scroll up. Did you ever wonder where the old text goes when you LIST and the text flows up the screen? Yep, into the 800 memory locations above RAMTOP. That number 800 comes from the 20 lines of the screen times 40 characters per line.

But why start the new character set 1,024 bytes up in memory, instead of 800? The computer requires a memory location that can be divided by 1,024 for the start of the character set when using Graphics 0, and one that can be divided by 512 when using GRAPHICS 1 or 2. This means either two or four pages at a time.

MOVING CHARACTERS

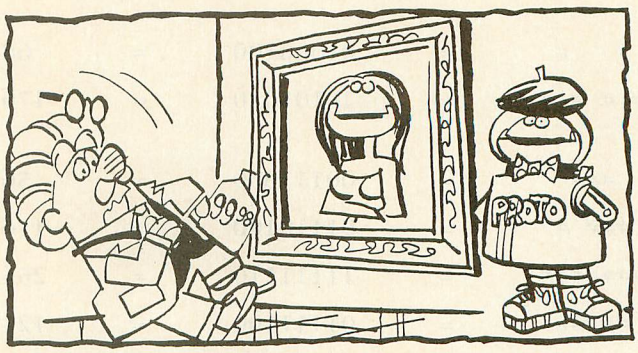
Now we are ready to start moving an animated character into the HOUSE01.BAS program from last month. We'll need to modify three characters. But first we must move the regular character set from ROM into RAM, so we can work on it:

```
130 CHSET = 57344

140 FOR BYTE = 0 TO 1023

150 POKE NEWSET*256+BYTE, PEEK(CHSET+BYTE)

160 NEXT BYTE
```

Wow, it takes a long time to move 1024 bytes, doesn't it? What we need is a machine language routine to do it faster. The machine language routines in these lessons are written so that you can use them in your own BASIC programs—even if do not understand machine language.

But we do need to know how to move machine language routines into our BASIC programs. There are a number of ways to do this, some quite complex. Below is MOVMEM, a simple machine language method translated into BASIC:

```
10 DIM MM$(41)

20 FOR CHAR=1 TO 41

30 READ CODE

40 MM$(CHAR,CHAR)=CHR$(CODE)

50 NEXT CHAR

60 DATA 104,104,133,204,104,133,203
,104,133,206,104

70 DATA 133,205,104,170,160,0,138
,208,2,104,168,177
```




```
90 DATA 206,202,224,255,208,233,96

130 CHSET=57344

140 X=USR(ADR(MM$),CHSET,SETNEW*256,1024)
```

Now the Atari character set is in the RAM area we protected. You can verify this by changing CHBAS:

```
POKE 756,NEWSET
```

SHAPE CHANGING

Next you decide which characters to change into new shapes. There is no point in messing up any of the regular letters, so let's change [CONTROL] [A] through [CONTROL] [C]. These are normally Atari graphics characters and have ATASCII values of one through three.

However, as stated in last month's lesson, the character set has a different order than ATASCII. Look at the chart in your BASIC reference guide. (See Recommended Books at end of article.) You'll see that our three characters have INTERNAL values of 65 to 67.

Now for the new shapes. Meet my favorite character—Prototype! Here are three views (with data) for good old Proto:

```
  ###       =    00111000    =    56
 # ###       =    01011100    =    92
#######      =    11111110    =    254
 #####       =    01111100    =    124
 #   #       =    01000100    =    68
 #  # #       =    01001010    =    74
 #           =    01000000    =    64
# #          =    10100000    =    160

  ###       =    00111000    =    56
 ## ##       =    01101100    =    108
#######      =    11111110    =    254
 #####       =    01111100    =    124
 #   #       =    01000100    =    68
 #   #       =    01000100    =    68
```

continued on next page

# #	=	01000100	=	68
# # # #	=	10101010	=	170
###	=	00111000	=	56
### #	=	01110100	=	116
#######	=	11111110	=	254
#####	=	01111100	=	124
# #	=	01000100	=	68
# # #	=	10100100	=	164
#	=	00000100	=	4
# #	=	00001010	=	10

Now here is the code to make Proto move.

```
170 SET = NEWSET*256

180 FOR CHAR=65 TO 67

190 FOR BYTE = 0 TO 7

200 READ DAT

210 POKE SET+CHAR*8+BYTE,DAT

220 NEXT BYTE

230 NEXT CHAR

1000 DATA 56,92,254,124,68,74,64,160

1010 DATA 56,108,254,124,68,68,68,170

1020 DATA 56,116,254,124,68,164,4,10
```

Our character set is now all ready to use, so let's tell the computer where it is:

```
240 POKE 756, NEWSET
```

And let's use it:

```
250 POKE 752, 1

260 POSITION 10,4

270 PRINT CHR$(4)

280 RESTORE 1100

290 FOR LP=1 TO 3

300 READ CHAR

310 POSITION 10,2

320 PRINT CHR$(CHAR)

330 FOR WAIT = 1 TO 2

340 NEXT WAIT

350 NEXT LP

360 GOTO 270

1100 DATA 1,2,3
```

Notice that all we have to do to animate Proto is print the different versions one after another in the same place, with a small delay between each of them to slow things down so we can see each picture. This technique is used by a lot of programs to do simple (and sometimes complex) animation. For example, the aliens in Space Invaders are created using a redefined character set.

Make the following changes to the program if you want to try the character set in Graphics 1 or 2:

```
120 GRAPHICS 1: REM (OR 2)

240 POKE 756, NEWSET+2

270 PRINT #6;CHR$(4)

320 PRINT #6;CHR$(CHAR)
```

You can get rid of the hearts by redefining the heart character to a space (the data is all 0's). The hearts show up because the heart character is the first character of the set that these graphics modes use. If you need both upper and lowercase characters, all you have to do is redefine the character set so that the graphics characters become upper case letters. You can even use MOVEMEM (MM$ from above) to do this quickly for you. The following statement will move the uppercase letters into the graphics characters locations in memory:

```
X=USR(ADR(MM$), 57377,NEWSET*256+65,26)
```

Now a [CONTROL] [A] will give you an uppercase A.

ANOTHER TRICK

If you want to switch quickly between several character sets, there are two techniques you can use:

1. You can simply load several character fonts into RAM and switch the character base pointer to the appropriate font. This is inefficient because you must keep many character sets in memory.

2. Use MOVMEM (MM$). This little utility will move your character set from a string variable into RAM while the CHARACTER BASE POINTER is already pointing to your newly protected memory reserved for custom fonts. You need only one area for all of your data because the routine will place the correct 1,024 bytes of data into your reserved area so fast you can't tell it's happening.

MAIN PROGRAM ADDS

Now you should type in Listing 1, HOUSE02.LST, check-

continued on page 33

Red, White and Blue

More devilish than Rubik's Cube?

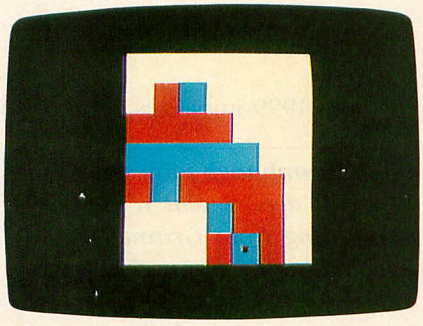
BY HEIDI BRUMBAUGH, ANTIC EDITORIAL ASSISTANT

Celebrate July Fourth by trying to beat your Atari at the challenging logic game of Red, White and Blue. It's a kind of solitaire Othello, with no less than 30 skill levels. So go ahead and put "Stars and Stripes Forever" on your stereo, turn up the volume as loud as you can stand it, light your sparklers, firecrackers and Piccolo Petes—making sure to observe the local fire safety codes, of course—and get ready to play Red, White and Blue, the first publication of a Game of the Month written by an employee of Antic Publishing. This BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.

You win the game of Red, White and Blue by converting all the squares from red to blue. To change the color of a square, you just move onto it. The problem is—you can't move onto a square that is *already* blue.

To play Red White and Blue, type in Listing 1, RWB.BAS, check it with TYPO II and SAVE a copy before you RUN it.

At the start of the game, all the squares except the one you occupy are white. This means their true colors are hidden. The only way to discover



a square's true color is to try moving onto it.

Use your joystick to move up, down, right or left. The color of the new square you have chosen is displayed. If the square is red you will move onto it at once, changing it to blue. However, if the square is already blue the computer will beep, indicating that you cannot move into it.

The red and blue squares are arranged randomly at the beginning of a new game, so you get a different pattern every time you play.

The reason the game can be so hard to win is that once you make a move, you can't go back the way you came. This makes it easy for you to get surrounded by blue squares and blocked from any further moves.

FLIP THE BOARD

But there's a way to escape. You can "flip" the entire board by pressing your joystick button. At once, all the squares that were previously blue will be red—and vice versa. The only square that doesn't change color is the one you occupy. It always remains blue.

After you flip the board, you will be free to continue moving about the grid with your joystick, trying to forge a path that allows you to change all the red squares to blue without getting trapped again. But even with the help of repeated flipping, some boards will be impossible to solve.

Skill level is determined by the size of the grid. At the opening screen, move your joystick up or down to change the skill level, then press the

continued on next page

joystick button to start playing.

There's not much challenge to a low skill level—a 2×2 or 3×3 grid. It will either be very easy to win or immediately obvious that the board is impossible to solve. However, this is a good place to start if you want to get an idea of how the game works. The highest skill level is limited only by the number of squares that can fit on your video screen. As written, the program's maximum is eight squares. But you can shrink the square size to squeeze more into the grid. Do this by decreasing the value of LSQR in line 11000 to 3 (or even 1) or change MODE to 7+16 to get a higher resolution.

For a super-challenging grid size of 32×32 use MODE 7+16 and a LSQR of 1. However, game speed will slow considerably at this point.

If you get stuck, quit a game and randomize the squares for a new game by pressing the [ESC] key. Or do the same thing by pressing the joystick forward and giving a light tap to the trigger button. Then use the joystick to confirm that you want to quit and tap the trigger once again. (**Antic** is fulfilling the request of a March 1987 I/O letter. For the convenience of physically handicapped players, all commands in this game can be given with the joystick.)

ABOUT THE PROGRAM

I originally wrote this game for the IBM PC as a way of better understanding MicroSoft BASIC's logical operators. Commands such as AND, OR and XOR (eXclusive OR) made it very simple to flip a square's value back and forth without using any math. Ironically, when I translated the program into Atari BASIC I had to change the data structure completely to account for that language's sometimes limited syntax.

The values of the squares are held in a two-dimensional array (STAT(X,Y)). If a square is blue (already captured) it has a value of 1. If it is red, its value is 0. To "hide" the squares at the beginning of the game, simply add 10 to that value.

This way, it is easy to see that the integer value of a hidden square (10 or 11) will be 1 if it divided by 10 (see line 5030). If it is not hidden, you "flip" the square by taking the absolute value of STAT(X,Y) subtracted by 1, as in line 5050. (ABS(1−1)=0; ABS(0−1)=1.)

In the original PC version of the program, the four possible square values— 0, 1, 10 and 11—were given in binary (0, 1, 2 and 3), to make it easier for the computer to perform its logical operations. The Atari version uses decimal instead, to make it easier on the programmer.

PROGRAM TAKE-APART

Lines 100-499 use subroutines for initialization and opening menus.

500-999 puts the often-used subroutine to draw a square at the beginning to save processing time

1000-1999 is the main routine. It reads joystick value, makes sure the user doesn't want to quit and checks for win after each turn.

2000-2999 makes sure the move is within the grid. The updated position is held in temporary variables during a checkup that the user isn't trying to move into a blue square.

3000-3999 paints the new square color, moves the place marker and updates the STAT(X,Y) values if the move is valid. If not, the computer beeps and saves the old values.

You can't move into a square that's already blue—and you don't know if it's red or blue until you remove the white covering.

5000-5999 flips the board. We save time by redrawing the board as we flip the squares.

6000-6999 draws the gameboard.

7000-7999 is the opening menu.

10000-10999 randomizes for new game.

11000-11999 initializes.

Heidi Brumbaugh joined the **Antic** *editorial department a year after graduating from Grinnell College, Iowa where she majored in Russian language. After taking a few programming courses, she became a fixture in the computer center until they felt so sorry for her they gave her a job as a user consultant. We promised Heidi we'd publish this first submission (originally titled Pathfinder) as the July Game of the Month if she let us change the title—and the game colors—to a suitably patriotic Red, White and Blue.*

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Listing on page 84

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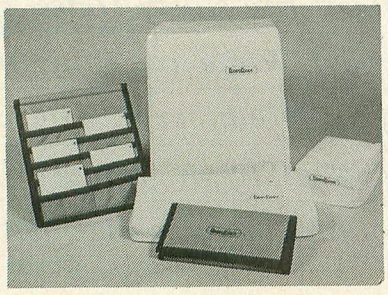

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ing it with TYPO II. ENTER it into HOUSE01.BAS from last month to make use of the things we have learned so far. Save this version as HOUSE02.BAS. If you have trouble typing the special characters in lines 110 and 150, Listing 2 will create these lines for you, and write them to a disk file called LINES02.LST.

HOUSE animates by printing modified #, $ and % characters, all in the same spot on the screen.

Line 110 contains the memory move routine from above.

Lines 140 and 150 place the data for three new characters into a string called (naturally) "CHARSET$".

Line 160 saves the RAMTOP value

Line 170 sets the character base, CB, at 4 pages or 1K down in memory.

Line 180 safeguards RAMTOP by lowering it another 1K below the character set.

Line 190 uses the MM$ routine to move the 1,024 bytes of the character set from its regular place at 224 pages to the new location 1K down in our safe area.

Line 200 moves only the 24 new bytes in the character string into the old set we just moved into RAM. It is placed into the set starting at the third character, because NCA, which is the starting point for this move, is 24 bytes or 3×8 past CA, which is the start of the whole set. Translated into English, the first eight numbers starting at CA are the first character, the next eight the second, and so on.

Line 2000 tells the computer the new location of the character set data and will switch character sets instantly. Now we need Proto.

Lines 2010 to 2080 simply print our modified characters on the screen, using #$% over and over again with their new data.

Finally comes a loop to slow down our frisky friend Proto.

MORE PROTO

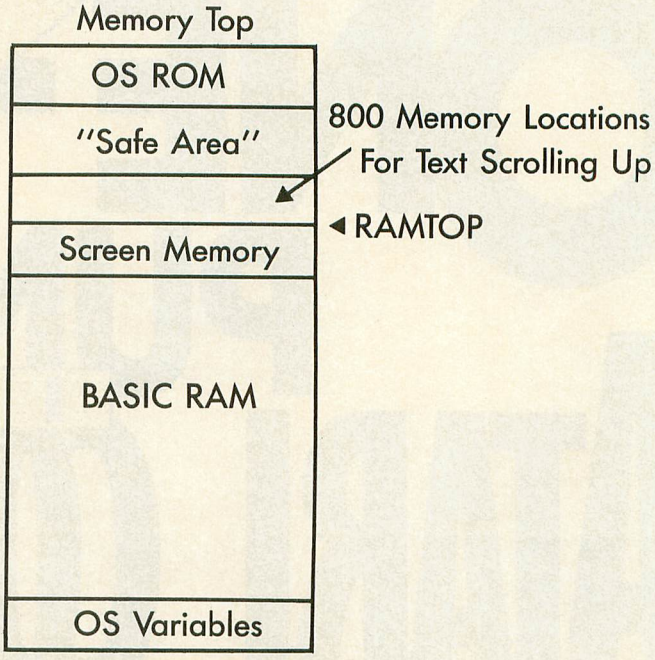
Our pal is pretty small and doesn't move around much. After all, Proto is only one character tall. But we can make him larger by using several characters to draw him on the screen.

Type in Listing 3, HOUSE03.LST, checking it with TYPO II. If you have trouble typing the special characters in lines 2110-2120, Listing 4 will create these lines for you, and write them to a disk file called LINES03.LST.

HOUSE03 adds some new lines to the program and enlarges Proto. Be sure and type in the REM statements, because they blank out old line numbers that are no longer used. You ENTER the code while HOUSE02.BAS is LOADed into your Atari. SAVE this version as HOUSE03.BAS.

Line 100, the delay loop, has been moved to the front of the code. This is because timing loops take longer to run the further back in the code they are. BASIC always starts each loop by going to the top of the code and searching for the lines it needs. Placing it here will keep the timing the same as the program grows.

FIGURE 1



Lines 150, 160, and 180 delete the old lines in the last version of the program. If you're typing this in, you can delete the old lines simply by typing the line number and pressing [RETURN].

Line 200 places the new shapes, starting at character 96 in the set—abcdefghijklmnopqr. The other trick in this line involves SEC=0 to 1. This and line 210 place two strings into the Proto character. The second set of data starts 76 bytes into the data. The two sets allow us to keep our strings short. You can do this several ways, but you can't have 300-character strings all on one line. I could have had line 2120 say CHARSET$ (77,152) = "whatever goes here" to define the string.

2000 to 2060 work as usual, we just print three vrsions of the little guy using more characters this time. Here are the three versions of Proto:

VERSION 1	VERSION 2	VERSION 3
ab	gh	mn
cd	ij	op
ef	kl	qr

Of course, we have given these letters new shapes of a more artistic nature.

The most interesting change we've made is to store the shape of the characters in a string called CHARSET$. It it efficient because each number (like 240) previously stored in a data statement is now stored in one number. Those are the characters you see in the string.

A simple way to check the progress of your work with custom characters is to stop the computer after you think you have changed the characters. Now press the keys you

continued on page 41

THE ONE-TWO PUNCH IN ATARI COMPUTING

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Chicken XL

A Stan Ockers classic returns

PROGRAM BY STAN OCKERS
ARTICLE BY ANTIC ED

Chicken is a smooth "Frogger"-type game that originally appeared in the first issue of ***Antic****. This BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.*

We're proud that so many readers have been with us for the entire five years of **Antic** Magazine's publication. However, most people discovered Atari computers and **Antic** considerably more recently. Now you won't miss out on the classic programs from **Antic's** early years. Our newest department—the **Antic** Hall of Fame—will reprint outstanding programs from the issues we published five years ago.

Actually, the Hall of Fame will do more than simply reprint classic **Antic** programs. Without changing anything about the way these programs look or run, we will re-edit the listings to ensure that they work on today's XL and XE models—and also to ensure that typing them is made as easy as possible.

It's a pleasure to begin the Hall of Fame with Stan Ockers' *Chicken* from April 1982, the very first issue of **Antic**. Though now less active than he used to be, Ockers is probably the best known and most prolific programmer of Atari public domain games. He still lives in Lockport, Illinois, but his games usually premiere in the newsletter of the Eugene (Oregon) ACE. He has resisted offers to turn pro and gives all his games to public domain, refusing to accept payment for them.

Ockers' smooth, inventive games are state-of-the-art Atari BASIC and highlighted this magazine's early issues. His last appearance in **Antic** was *Crickets*, September 1985. Games by Stan Ockers can be found on no less than four public domain disks from The Catalog. (PD001, PD003, PD004, PD005. $10 each.)

Other public domain programmers have tinkered with the original Chicken listing. So unfortunately many current versions do not work correctly on the XL/XE computers. However, the listing published in this issue is the "pure" version that Ockers recently sent us at our request, and it works just fine on the XL and XE.

CHICKEN REVISITED

Type in Listing 1, CHICKEN.BAS, check it with TYPO II and SAVE a copy before you RUN it.

This gem was a clever BASIC adaptation of the popular "Frogger" format. What follows is the original 1982 text for *Chicken—A Great Game*:

Why did the chicken cross the road?

To lay an egg.

Actually, our chicken is trying to score points by getting safely across this busy highway. Each time he makes it adds to his score, but the cars go faster and faster. If he gets hit, the SPCA sends an ambulance and the cops slow the traffic for a while.

FOR MORE ARTICLES LIKE THIS, CIRCLE **203** ON READER SERVICE CARD.

Listing on page 86

Ghost Writer

Transmit your own subliminal messages

BY TOM MOORE

Ghost Writer lets you experiment with subliminal messages on your Atari—anything from "Feed Spot" to "Feel Good" to "Use TYPO II." Just don't use the power of subliminal text to influence your friends with sneaky messages such as "Buy Lunch." Ghost Writer's influence should only be used for positive-thinking, self-improvement messages. This BASIC program works on all 8-bit Atari computers of any memory size, with disk drive.

Warning: the Ghost Writer program makes USR calls to the spirit world. Not only that, techniques of subliminal suggestion are employed and *you* could be subconsciously influenced.

But if you're brave enough, douse those lights, lean back and commune with another world via your Atari. Ghost Writer works best from a distance and with the lights out. Try to get a *black* background on your monitor or TV.

Ghost Writer calls the spirits randomly—and it seems that insulting, obnoxious spirits are the most prevalent. . . "Here—we die," said the Ghost Writer. "Profound," I thought. Then came a couple of screens of gibberish. Then "Kiss—Moi" (A French ghost?) and suddenly I had this crazy urge to go jogging—so I did.

What's going on here? Actually, those random phrases that Ghost Writer flashes over the flickering screen patterns are just a coverup for your secret subliminal message.

For a while during the '50s, use of subliminal messages was a hot controversy. Subliminal messages are flashed on film or TV so fast that the eye doesn't consciously notice them—but the brain gets the message anyway. People were worried that unscrupulous advertisers or politicians would use the hypnotic power of subliminals to control the minds of

citizens.

As it turned out, subliminal messages weren't all that effective. A couple of low-budget horror movies used subliminals as a gimmick, but drew more giggles than shivers. However, there were also occasional tantalizing reports of successful experiments. For example a movie theater snackbar was supposed to have increased business substantially by flashing subliminal messages like "Eat Popcorn" and "Drink Cola" during the films.

Ghost Writer lets you experiment with subliminal messages of your own writing. Ghost Writer's influence is best applied to "self help" sayings such as "Be Positive" or "Make Sure." Don't misuse the power of subliminal text to bombard your friends with sneaky messages such as "Buy Lunch."

I've tested Ghost Writer on several unsuspecting friends and they found the spirits' ramblings surprising. More surprising, however, was my friends' unconscious desire to do something. Even when pointed out, the message still has impact—watch what you say.

GETTING STARTED

Type in Listing 1, GHOST.BAS, check it with TYPO II and SAVE a copy to disk. Next, type in Listing 2, GHOSTA.BAS, check it with TYPO II and SAVE a copy before you RUN it.

When RUN, Listing 2 creates a file called GHOST.FNT, the special character set used by Listing 1. (Antic Disk Subscribers will find GHOST.FNT on the monthly disk).

Keep GHOST.BAS and GHOST.FNT on the same disk. To use the program, simply type RUN "D:GHOST.BAS".

ABOUT THE PROGRAM

TOM$ and MOT$ contain your message, located in line 1220. The strings are dimensioned at 20, so you could have a message that's 40 characters long—but it would look a bit shoddy. Short messages (four letters or less) are picked up most effectively by your subconscious mind. To center the message you'll have to use words or sentences that contain an even number of letters and spaces.

Ghost Writer uses a display list that allows smooth vertical scrolling to create the effects you see. There's also a great variety of colors on the screen. If your eye's not fast enough to catch them all, press [CONTROL] [1] when the words "Ghost Writer" start flashing at the top of your screen. This is when the most colors appear onscreen.

GHOST.FNT is the character set the spirits write with. Feel free to change the character set as you wish (but keep a back-up copy of my original in case you don't like the changes). Try edit-

continued on next page

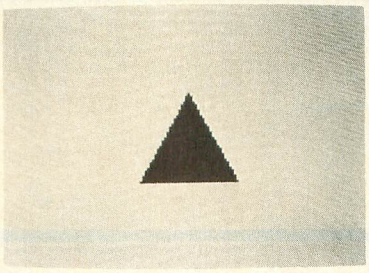
Afterimage

Tricky Atari optical illusion

BY NICK KOZIUPA

Afterimage is a short listing that tests a simple but interesting optical illusion. Most users will apparently still "see" an image after it has been removed. This BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.

One day my biology teacher showed the class how an image—such as the bright glare of a flashbulb—can be temporarily "burned" into the retina of the eye. So that after the image has been removed, you



can apparently still "see" it. I decided to try demonstrating this effect with the graphics of my 8-bit Atari computer.

Type in Listing 1, AFTIMAGE.BAS, check it with TYPO II and SAVE a copy before you RUN it. When you RUN the program, you'll see a brief title screen and be asked if you need instructions. Press either [Y] or [N].

Now you'll be prompted to choose a color and a shape. The screen then turns white and the shape appears at the center. Concentrate on it and try not to blink. In about 15 seconds the shape will leave the screen. If the test works, you'll still see it—but in the opposite color. So if you picked a red square, you should now see a *green* square in its place. After several seconds, the program returns to the color selection menu.

Nick Koziupa is a high school sophomore in Hamilton Township, New Jersey. He has been programming on his Atari for three years.

Listing on page 91

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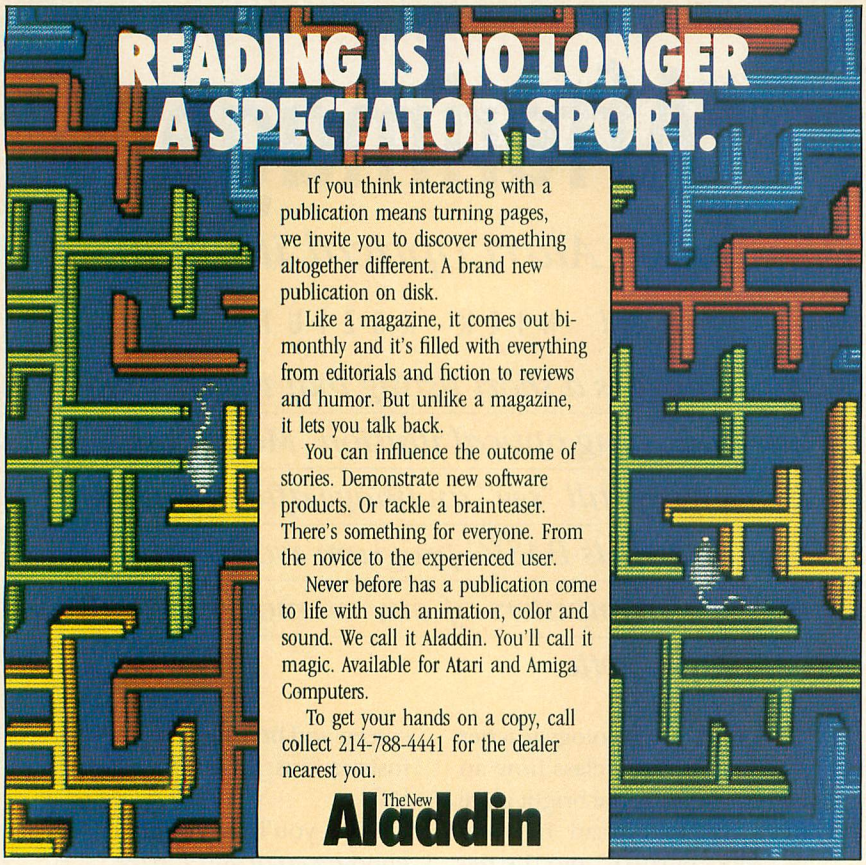

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ing the [*] and the [!] and their [CONTROL] key equivalents for the most radical changes in the appearance of the writings. I used Envision ($15.95, The Catalog, APO185) for my character creating, but other character editors such as *Ultra Font* (**Antic**, August 1986) will work just as well.

For a different look, try this: Hold down the [SELECT] key when you type RUN. When the Ghost Writer screen appears, press the [BREAK] key to stop the program. (Programmers Note: GHOST.BAS uses a fairly common DEBUG routine. Holding down the [SELECT] key activates this routine and lets you use the [BREAK] key. When the DEBUG routine is not used, the [BREAK] key is disabled.)

With Ghost Writer, be careful about what you suggest.

Once the program is stopped, type something such as ? FRE(0), or ? TOM$. Press [RETURN] and then type RUN. You can repeat this procedure until you get a spirited lock-up. (Make sure the program has been SAVEd to disk before you try this.) Once the spirits lock up your computer, even an exorcism can't help it. Time to reboot.

If you own a BASIC compiler, give it a spin. The speed of events is critical, so you may have to tinker with lines 2430 and 2440 to achieve the speed that works. Simple delay loops are tough, so you might use system timers to cue your subliminal (PEEK 20 and 19).

Tom Moore is a 31-year-old designer and builder of professional audio/video systems in central Florida. A former pro musician, he is now totally immersed in MIDI and is working on turning his Atari 800 into a MIDI velocity meter for use alongside his 1040ST.

FOR MORE ARTICLES LIKE THIS, CIRCLE **158** ON READER SERVICE CARD.

Listing on page 87

Antic Writer

Full-featured professional word processor

Now for only $5.95—down from $10.95—you can get single copies of the Antic Monthly Disk. And each month's double-sided disk will feature an Xtended Disk Bonus not available in the magazine. Usually this bonus program will be software that's too long or complex to work as a type-in listing. Xtended Disk Bonus software may be for either the 8-bit Atari or the ST in any given month—or sometimes even for both.

For our premiere Xtended Disk Bonus, **Antic** is proud to offer a professionally programmed full-fledged *machine language* word processor for any 8-bit Atari with minimum 48K memory—Antic Writer.

Developed by a small commercial publisher, Antic Writer never quite made it all the way to being released in a crowded and competitive software marketplace. In a number of ways, Antic Writer is reminiscent of leading Atari word processors such as PaperClip and Word Magic. It certainly delivers the essential capabilities you'd expect from a professional word processor: block move, search and replace, block copy, headers, print formatting and so on.

Because it is written entirely in assembly language, Antic Writer is *fast*. You'll find that it can keep up with even the fastest typist and not lose any characters.

Antic Writer is easy to operate and provides extensive online help screens. We have also placed the Antic Writer manual on side 2 of the July Disk, along with the Antic Writer program itself. The manual is in two Antic Writer text files—ANT1.TXT and ANT2.TXT. Select option C from the DOS menu to "Copy" these files to P: (your Printer) or E: (onscreen Editor).

You'll find it a lot more convenient to work with Antic Writer if you copy it off the monthly disk and put it on a separate disk. To make your own Antic Writer disk, start with a disk which has been formatted with DOS 2 or 2.5 and has a DOS.SYS file on it. Next, copy ANTICWTR.EXE to this disk and rename it AUTORUN.SYS. Be sure to make a backup copy of this disk before you use it.

To start using Antic Writer, place your Antic Writer disk into your disk drive, remove all cartridges from your Atari (XL/XE owners should depress the [OPTION] key) and turn on your Atari.

Next month's Xtended Disk Bonus—a professionally programmed, full-featured database!

Special Note to Programmers: If you have high-quality software for the Atari 8-bit or ST that is too big or too complicated for a type-in listing, send it to **Antic** for possible paid publication as an Xtended Disk Bonus. Runtime versions of software in any programming language will be considered. If your program was once turned down here solely because it was too big or too hard to type, you can resubmit it for Xtended Disk Bonus consideration.

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Toronto Atari Federation

Membership zooms tenfold since '84

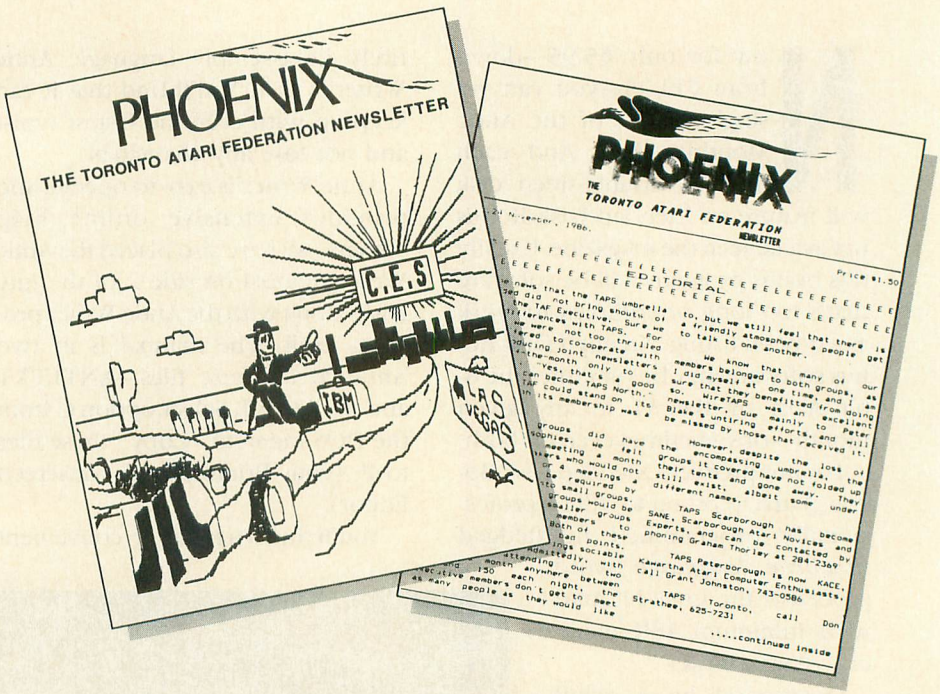
BY GREGG PEARLMAN, ANTIC ASSISTANT EDITOR

TAF, the Toronto Atari Federation, went from about 40 family memberships in 1984 to 300 by the end of 1986—and then added another 73 families in the first two months of 1987. Lots of Canadians got STs for holiday gifts.

"Our growth rate is normally around 25 members a month," says Ian Newton, who was TAF's president until February 1987, when Jim Clark took over. The greatest distance anyone travels to the meetings is about 40 or 50 miles.

"One of the big problems most clubs have is that normal screen size imposes limits on program demonstrations," says Newton, "so we purchased equipment to project the programs onto a very large screen—about eight feet by 10. This has improved presentation a lot, and we don't have to use three small monitors. You tap into the video system and it projects right onto a wall or a screen."

TAF began in March, 1982, with a group of interested Atari users aided by a local software marketing company. Memberships are for the whole family. If a parent joins, the spouse or the children can also join at no extra cost. The average age for individual members is late thirties or early forties. Most members are university graduates and they work in a wide variety of occupations. Less than 5% of TAF members are children, but kids often show up at special functions such as auctions.



The ST users meet the first Monday of each month, and the 8-bit users meet on the third Monday. Each group has its own vice president. The executive meeting is on the second Monday. About 100 people show up at both the ST and 8-bit meetings. "That's a large percentage of 8-bit users," says Newton, "because we only have about 150 8-bit members." The group's only SIG is for users of VIP Professional, and while TAF has no BBS, a section of AMCO, a local system, has been set aside for the group.

Newton says that both ST and 8-bit meetings are always well-organized. "The first part consists of demonstrations of the latest library disk highlights. There are always at least one or two new disks per month. Then comes a 10-minute break for disk sales, followed by a feature presentation from an outside speaker which normally takes 30 to 45 minutes. Then one or two additional presentations usually take place."

TAF meetings usually have a featured outside speaker, often from Atari of Canada—General Manager Ian Kennedy or a marketing executive. Atari gives presentations at least three or four times a year. Batteries In-

cluded, being a local company, is always around and Ian Chadwick, author of *Mapping the Atari*, often attends meetings.

Several retailers are active at TAF meetings, supplying free giveaways at raffles, etc. "We have quite good support from our retailers," says Newton. "Some retailers have special deals where if you buy their equipment, you'll get a free membership to our club or a 10% discount. At the raffles, any software we have is freeware or public domain material—no unauthorized copying whatsoever."

TAF FUNCTIONS

TAF is semi-affiliated with several clubs in southern Ontario which they provide with club library disks. "We suggest that an officer of each club become a TAF member also," says Newton. "They can get a copy or two of all our disks and make duplicates for their own club members." TAF also had a booth at the April 1987 Western New York Atari Users Group Atari Fest in Buffalo.

"Mainly, however, we do a lot of swapping of our newsletters—with clubs all over the world," says Newton, "including some in the Netherlands, England, and Australia. On a business trip to Europe, I contacted some users groups for the purpose of ST disk exchanges."

PHOENIX

The TAF newsletter, Phoenix, is usually 28 pages, typeset on the ST with a dot matrix printer and copied at a local printshop. Between 50 and 100 are sold by retailers. In March 1987, Larry Sannuto become the editor. "We're doing a lot more with graphics in the newsletter now, using DEGAS Elite on the ST," says Newton.

SURVEY

Of TAF's 373 family members in January 1987, 219 owned STs, of which 65-70% are 1040s. The 130XE is by far the most popular 8-bit computer used. About 90% of XE owners use Atari 1050 disk drives. Few, if any, members use cassettes anymore.

Almost all TAF members are users, not programmers. In fact, only about 5% program. TAF member James Duffin is the author of *Font Maker* (**Antic**, March 1985) and he now has a version for the ST.

XE users who do program mostly use BASIC, and ST programmers use ST BASIC, C and Pascal. ST BASIC has a narrow margin over C.

There's no club BBS, so only 15% to 25% of members go online. The most widely used online services are local bulletin boards and then CompuServe.

In order of importance, TAF members use their Ataris for:

1. Word Processing
2. Games
3. Education
4. Programming
5. Business/Finance
6. Communication
7. Other

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ATARI ANIMATION

continued from page 33

have modified and see if they print out on the screen with the new shapes. In our example, press the keys in this order:

abc def ghi jkl mno pqr

This should display the different parts of the new shapes we have created. It is easier to look at the shapes this way than to wait for the program to use them. Also, you can study each shape when it is not moving around.

Creating the masterpiece I promised you will take *lots* of custom characters. Figuring out a few shapes for Proto was not bad, but 30 or 40 shapes sounds hard. However, next month we will deliver the tools to make it easy!

Robin Sherer is co-author of the Atari programming books Tricky Tutorials, Master Memory Map For Atari, BASIC Arcade Graphics *and* Atari Game Design.

RECOMMENDED BOOKS

Your Atari Computer by Lon Poole, Osborne/McGraw-Hill.

Mapping The Atari by Ian Chadwick, Compute! Publications, Inc.

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How Much Are You Worth?

SynCalc template figures it for you

BY GORDON TOOMEY

How much are you worth? Net worth measures your financial growth and can help you attain desired financial goals. This file gives a projection for the next year, as well as each six-month period for the next two years. I use SynCalc (Broderbund, $49.95) to update my net worth as of January 1 and July 1 each year. (*We could not get this template to work with Calc Magic or VisiCalc. If you come up with a fix, send it to* ***Antic*** *for possible publication.* —ANTIC ED)

A personal net worth file is a key document in planning your financial future. If you have SynCalc spreadsheet software and are familiar with its use, you can track your own personal net worth on an 8-bit Atari computer with at least 48K memory and disk drive.

To figure out your net worth, you need to know the value of your assets, liabilities and, in this case, liquid assets. Net worth is the dollar value of total assets minus total liabilities.

- Total assets = all money and property.
- Total liabilities = The sum of charge cards and other credit accounts.
- Liquid assets = cash in hand. In other words, available money—not including property.

ASSETS AND LIABILITIES

Start out by using your word processor to make a table of your assets and liabilities. *Figure 1* shows the January 1, 1987 table for a fictional couple we'll call Tom and Betty.

Here, "property" includes all personal property—even if it's mortgaged or owned on borrowed money. For example: houses, furniture, automobiles, rentals, and valuable collections such as coins or stamps.

Tom and Betty own a house, furniture, a car and a coin collection. Except for the car, the market value for all this property will remain constant for the next two years. (The market value of the furniture is taken from the fire insurance policy.) Instead of using classified ads or a dealer's blue book, Tom established a car depreciation figure of $1,000 per year from his past history. The car cost $10,000 two years ago, and Tom thinks it will last eight more years.

Include the cash value, if any, of all insurance policies. Investments include stocks, bonds and limited partnerships. Note their current value and estimate the percent of increase based on past growth and dividend. Tom notes $3,000 of JB Inc. stock with a projected growth of 8%.

Miscellaneous accounts are items not covered by other categories. Here, it's a one-year, $1,000 loan Tom made to his friend Bill at 6% interest.

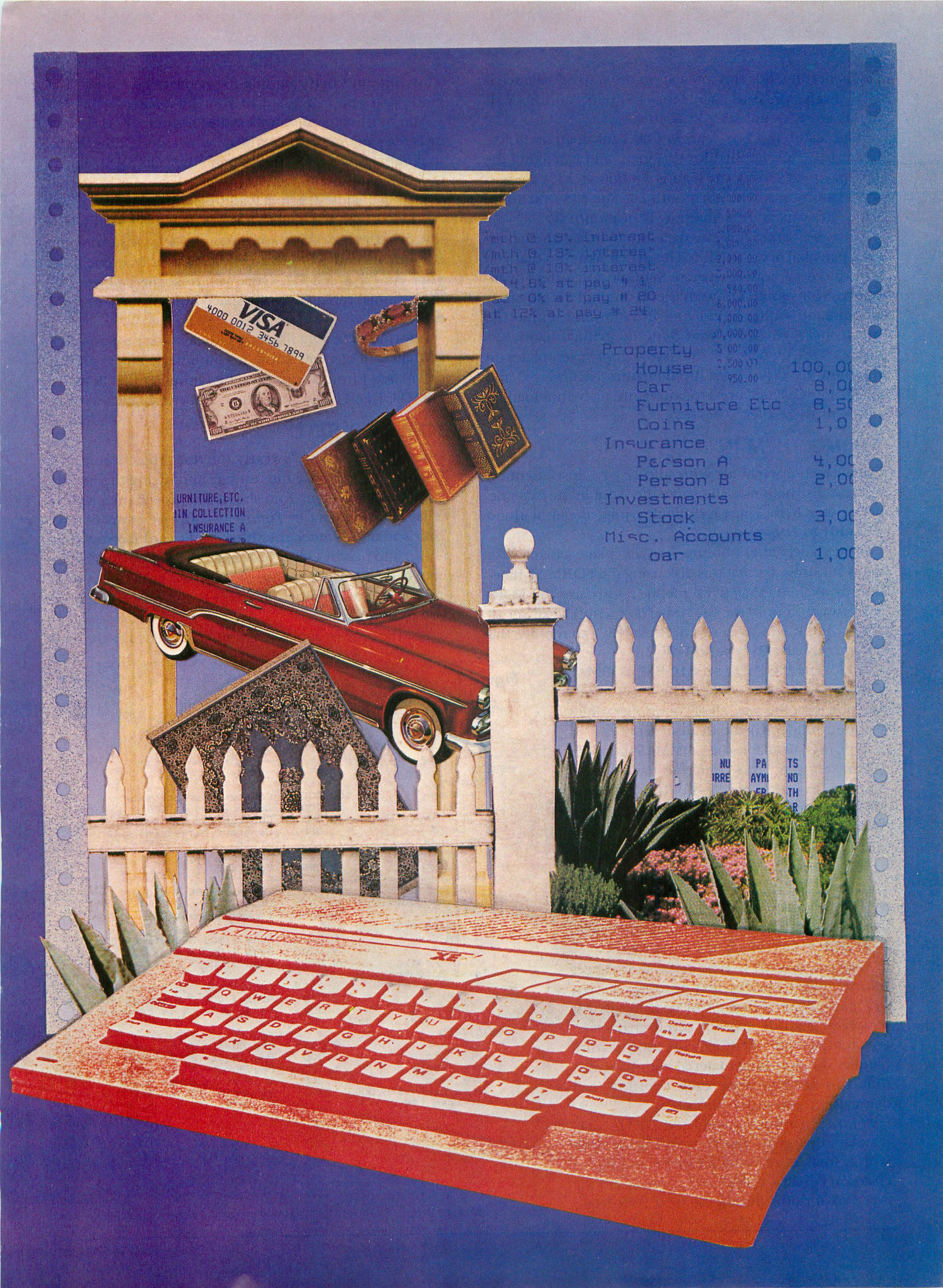
The remaining items include Not Taxed Accounts and Taxed Accounts—only money earned in the *taxed* account must be reported at the end of the tax year.

Tom has three Not Taxed Accounts: two IRAs (Individual Retirement Accounts), and an account consisting of money contributed to Tom's pension by his employer. Tax on this must be paid upon retirement unless Tom puts it into another IRA. Every six months, $1,000 is added to each account. Interest averages 8%.

The Taxed Accounts are two savings accounts earning an average of 8%, and a checking account earning 6%.

Once your assets are defined, list your liabilities—credit cards and all loans, such as home, car and rental property. Tom and Betty have a Visa card and two department store cards. Their current Visa debt is $2,000. Monthly

continued on page 44


VISA
4000 0012 3456 7899
Property
House 100,0
Car 8,0
Furniture Etc 8,5
Coins 1,0
Insurance
Person A 4,0
Person B 2,0
Investments
Stock 3,0
Misc. Accounts
oar 1,0

payments are $80, and interest on the unpaid balance is 19%. Each store card charge totals $1,000. Monthly payments are $30 and interest is 19%.

Tom also has a one-year, $1,000 bank loan at 14.8% interest. He just applied for this loan, and is making the first payment. Tom's car loan is $8,000 at 12% interest for 48 months, and he's in month 24. The $75,000 house loan, 30 years at 10% interest, is in month 80.

Now we'll enter this raw data into SynCalc and generate a personal net worth file. This article assumes that you already know how to operate SynCalc software. For instance, you should know that pressing [OPTION] starts a command sequence, how to move around within the spreadsheet, etc. Keep your SynCalc manual handy!

Antic Disk owners will find two complete templates on the monthly disk under the filenames NETJAN.SC and NETJULY.SC. You'll need to boot SynCalc before loading either of these files.

TYPING THEM IN

Even if you're a SynCalc whiz, please pay close attention to these instructions—and carry them out in the exact order printed here. There is difficult typing ahead, with no TYPO II to help you.

Immediately after booting SynCalc, place a blank disk into your drive. Format this disk using the **FORMAT** function from the **LOAD/SAVE** menu. (Don't use the **FORMAT** function from the **COMMAND** menu!) Next, set all your column widths to seven. Press [ESC] to remove the command bar and type: **/FGW 7**

Now, type **/FGP 2** to set GLOBAL FORMAT PRECISION to two. When the PRECISION function is set this way, all of your dollar values will be rounded to the nearest cent.

Type **/FG,** to enable the COMMAS function. When chosen, this function will insert commas in numbers like 1,000. Next, type **/RM** to enable the GLOBAL RECALCULATE MANUAL command. This function speeds data entry.

Type **/FL A1:A255** to justify your entries in column A against the left margin. Type **/FR F1:H255** to justify your entries in columns F through H against the right margin. Finally, type **/RR** to set calculation to ROWS.

You're now ready to type in the spreadsheet information. Copy the text headings shown in *Figure 2* into column A of your net worth template. If a title exceeds seven characters, type it in anyway—SynCalc's overflow feature handles the over-long material automatically. (But you need to erase each overflow cell manually if you move the title.)

Figure 2 shows a completed NETJAN.SC template that gives you Tom and Betty's net worth, total assets, total liabilities and liquid assets on January 1, 1987 and as projected for every six months during the next two years.

This Tom and Betty sample file is intended simply as a guide that you can adapt to your own situation!

You must enter all numbers and formulas in the *exact cells* shown, or else the template won't work. Enter zeros in columns B to E to "hold open" the cells for formulas and values to come later.

Listing 1 shows each cell address, followed by the entry. *Don't* type the cell addresses (such as D7) shown in the first three or four spaces at the left. Instead, type **/G*cellname*** to *go to* that cell. **/GD7**, for example, puts your cursor at cell D7. Once you're at the cell, type in the formula, typing over the space-holding zeros entered earlier.

A formula element like E17 is not text—type it as **+E17** so that SynCalc will know it's a numeric entry. As you enter each formula, protect it by typing **/FO** (FORMULA PROTECT ENTRY) so you won't accidentally write over it.

TOM AND BETTY

Enter Tom and Betty's yearly interest projection in cell D4. Try changing the interest rate and seeing the impact of a new projection. Tom shows 8%, based on a review of the interest data in *Figure 1*— six line items of 8%. Tom could also enter the three credit card interest rates (19%) into nearby cells. Next, enter the *Figure 2* loan data between cells D6 and F14. If you have more loans than shown in the example, just repeat the procedure until you're done.

After typing in the text as shown in cells D6 through

Figure 1

ASSETS AND LIABILITY DATA CURRENT AS OF JANUARY 1, 1987

ITEMS	CURRENT VALUE	REMARKS
ASSETS		
Property		
House	100,000	Constant Market Value
Car	8,000	Depreciates 1,000/yr
Furniture Etc	8,500	Constant Market Value
Coins	1,000	Constant Market Value
Insurance		
Person A	4,000	Constant
Person B	2,000	Constant
Investments		
Stock	3,000	Increases 8% per year
Misc. Accounts		
Loan	1,000	1 year loan at 6%
Not Taxed Accounts		
IRA A	6,000	Adds 1,000 @ 6 mts at 8%
IRA B	4,000	Adds 1,000 @ 6 mts at 8%
Co. Pension	30,000	Adds 1,000 @ 6 mts at 8%
Taxed Accounts		
Bank A	5,000	Adds 1,200 @ 6 mts at 8%
Bank B	2,500	Adds 1,000 @ 6 mts at 8%
Checking	950	Value plus 6% is constant
LIABILITIES		
Visa card	2,000	Pay 80/mth @ 19% interest
Dept. Store A	1,000	Pay 30/mth @ 19% interest
Dept. Store B	1,000	Pay 30/mth @ 19% interest
Bank Loan	1,000	1 yr at 14.8% at pay # 1
House Loan ($75,000)		30 yrs at 10% at pay # 80
Car Loan ($8,000)		4 yrs at 12% at pay # 24

D14, Tom enters "house" in the adjoining cells under column E. The loan is the initial amount borrowed ($75,000). The interest is entered as a decimal (0.10). Enter the number of monthly payments (360) and type the current payment number (80) in the line below.

The monthly payment amount (PAY/MONTH) goes in the cell below. Tom used this formula for the monthly payment of the house loan in cell B9:

B5/((1-(1+B6/12)^ -B7)/(B6/12))

(The ^-B7 is not a misprint. It means you're raising the value of B7 to a negative *power. This is the same as ^(1/B7).*—ANTIC ED)

For the car loan, use B12, B13 and B14 instead of B5, B6 and B7. The last item, cells B10 and B17, is the interest rate factor. Here's the formula for B10:

((1+B6/2)^ (1/6)-1)

For B17, substitute B13 for B6 in the formula.

Rate factors for the other loans are calculated the same way. Just make sure that the cell letter is the same as the column letter for that particular loan.

Now enter the current value data for assets and liabilities. Move to the equivalent of row 24 shown in the example. Enter the *text* data in column A from the data you generated that is *similar* to *Figure 1*. Do the same for column B. Remember, when compiling the asset and liability data, we calculated the current value for the house and car loans while preparing the net worth file in Table B cells B49 and B50.

Tom used this formula for his house and car loans. (The house loan is in column E and the car loan in column F.):

B9*(1-(1+B6/12)^ (-B7+B8))/(B6/12)

The house and car loan equities are easy to calculate. The loan equity equals the amount of the loan minus the value of the above formula.

PROJECTED DATA

Move to the equivalent of cell C24 in your file before inserting the projected data shown in columns C through F. *Figure 1* indicates a constant market value for the house, furniture, coins and insurance for both Betty and Tom, so he copied the cell B24 current house value into cells C24, D24, E24, and F24 by typing B24 into each of these cells. If cell B24 is changed, all corresponding cells to the right of B24 would change also. Tom also did this for furniture, coins and insurance.

Due to car depreciation, the cells to the right of B25 were treated differently. In *Figure 2*, Tom entered the value B25-500 into cell C25, C25-500 into cell D25, D25-500 into cell E25, and E25-500 into cell F25. Therefore, each cell reflects a depreciation of $500 compared to the cell to the left. A change in cell B25 instantly revises all neighboring cells.

Figure 2

NET WORTH AS OF JAN 1, 1987

	A	B	C	D	E	F	G	H	I
1									
2	LOANS		INTEREST/YR						
3	----------		----------						
4	HOUSE LOAN		0.08						
5	LOAN	75000.00							
6	RATE (DECIMAL)	0.10							
7	NUMBER PAYMENTS	360.00							
8	CURRENT PAYMENT NO	80.00							
9	PAY PER MONTH	658.18							
10	RATE FACTOR	0.01							
11	CAR LOAN								
12	LOAN	8000.00							
13	RATE (DECIMAL)	0.12							
14	NUMBER PAYMENTS	48.00							
15	CURRENT PAYMENT NO	24.00							
16	PAY PER MONTH	210.67							
17	RATE FACTOR	0.01							
18									
19									
20									
21									
22	ASSETS	PER 1/1/87	PER 7/1/87	PER 1/1/88	PER 7/1/88	PER 1/1/89			
23	----------	----------	----------	----------	----------	----------			
24	HOUSE	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00			
25	CAR	8,000.00	7,500.00	7,000.00	6,500.00	6,000.00			
26	FURNITURE,ETC.	8,500.00	8,500.00	8,500.00	8,500.00	8,500.00			
27	COIN COLLECTION	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00			
28	INSURANCE A	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00			
29	INSURANCE B	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	NET WORTH	JAN 1,1987	95,314.60
30	STOCK	3,000.00	3,120.00	3,244.80	3,374.59	3,509.58	----------	IN 6 MTHS	104,182.44
31	LOAN	940.00	470.00	0.00	0.00	0.00		IN 1 YEAR	113,453.13
32	IRA A	6,000.00	7,280.00	8,611.20	9,995.65	11,435.47		IN 1.5 YR	123,220.83
33	IRA B	4,000.00	5,200.00	6,448.00	7,745.92	9,095.76		IN 2 YRS	133,464.40
34	CO. PENSION	30,000.00	32,240.00	34,569.60	36,992.38	39,512.08	TOTAL ASSETS	JAN 1,1987	175,890.00
35	BANK A	5,000.00	6,448.00	7,953.92	9,520.08	11,148.88	----------	IN 6 MTHS	182,376.50
36	BANK B	2,500.00	3,640.00	4,825.60	6,058.62	7,340.97		IN 1 YEAR	189,131.62
37	CHECKING ACCOUNT	950.00	978.50	978.50	978.50	978.50		IN 1.5 YR	196,665.74
38								IN 2 YRS	204,521.23
39	SUM ASSETS	175,890.00	182,376.50	189,131.62	196,665.74	204,521.23	TOTAL LIABILITIES	JAN 1,1987	80,575.40
40	SUM LIQUID ASSETS	18,450.00	23,546.50	28,817.22	34,298.77	39,999.58	----------	IN 6 MTHS	78,194.06
41								IN 1 YEAR	75,678.49
42								IN 1.5 YR	73,444.92
43	LIABILITIES	PER 1/1/87	PER 7/1/87	PER 1/1/88	PER 7/1/88	PER 1/1/89		IN 2 YRS	71,056.84
44	----------	----------	----------	----------	----------	----------	LIQUID ASSETS	JAN 1,1987	18,450.00
45	VISA CARD	2,000.00	1,664.40	1,296.92	894.53	453.91	----------	IN 6 MTHS	23,546.50
46	DEPT STORE A	1,000.00	897.90	786.10	663.68	529.63		IN 1 YEAR	28,817.22
47	DEPT STORE B	1,000.00	897.90	786.10	663.68	529.63		IN 1.5 YR	34,298.77
48	BANK LOAN	852.00	426.00	0.00	0.00	0.00		IN 2 YRS	39,999.58
49	HOUSE LOAN	71,248.04	70,853.23	70,438.26	70,002.10	69,543.67			
50	CAR LOAN	4,475.36	3,454.63	2,371.11	1,220.94	0.00			
51									
52	SUM LIABILITIES	80,575.40	78,194.06	75,678.49	73,444.92	71,056.84			

To accommodate the constant 8% annual interest for JB Inc. stock, Tom entered the following formulas into cells C30, D30, E30 and F30:

B30*(1+C4/2)
C30*(1+C4/2)
D30*(1+C4/2)
E30*(1+C4/2)

Bill's loan was handled differently: the interest was deducted from the initial loan at the start ($1,000-(.06*1000)), and the balance ($940) was divided into 12 payments of $78.33 each. Therefore, Tom entered 940 in cell B31, B31-(940*6/12) in cell C31, and C31-(940*6/12) in cell D31. The zero in D31 means the loan has been paid, so he entered zero into cells E31 and F31.

The values in rows 35 through 39 all use the same formula —except the identification of the row number of each cell is different. For cells C32, D32, E32 and F32 the formulas are:

(B32+1000)*(1+C4/2)
(C32+1000)*(1+C4/2)
(D32+1000)*(1+C4/2)
(E32+1000)*(1+C4/2)

The cells in row 35 are handled as above, except 1200 is used instead of 1000 because of the difference in the amounts deposited every six months. The checking ac-

continued on next page

count entry is B37*(1+0.06/2) for cells C37, D37, E37 and F37.

The assets data is completed after entering the the *assets* (the sum of the columns from row 24 through row 37: @SUM(B24:B37)) and liquid assets (the sum of columns from rows 32, 33, 35, 36 and 37).

The formulas used to calculate the projected six months for the Visa and two department store accounts is lengthy. Since the net worth file indicates trends and doesn't have to be accurate to the nearest dime, Tom used this formula:

(B-(P*6))*(1+R/2)

B is the balance shown in the cell to the left, R is the interest rate and P is the monthly payment. For example, cell C49 says:

(B46-(30*6))*(1+.19/2)

Tom's formula for the cells showing the bank loan projection is the *balance shown in the cell to the left minus the amount paid each month*. It's calculated like this:

1000-(.148*1000)=$852.

Put 852 into cell B48. For cell C48 this is B48-(71*6), and for cell D48 this is C48-(71*6).

Figure 3

NET WORTH AS OF JULY 1, 1987

	A	B	C	D	E	F	G	H	I
1									
2	LOANS		INTEREST/YR						
3	----------		----------						
4	HOUSE LOAN		0.08						
5	LOAN	75000.00							
6	RATE (DECIMAL)	0.10							
7	NUMBER PAYMENTS	360.00							
8	CURRENT PAYMENT NO	86.00							
9	PAY PER MONTH	658.18							
10	RATE FACTOR	0.01							
11	CAR LOAN								
12	LOAN	8000.00							
13	RATE (DECIMAL)	0.12							
14	NUMBER PAYMENTS	48.00							
15	CURRENT PAYMENT NO	30.00							
16	PAY PER MONTH	210.67							
17	RATE FACTOR	0.01							
18									
19									
20									
21									
22	ASSETS	PER 7/1/87	PER 1/1/88	PER 7/1/88	PER 1/1/89	PER 7/1/89			
23	----------	----------	----------	----------	----------	----------			
24	HOUSE	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00			
25	CAR	7,500.00	7,000.00	6,500.00	6,000.00	5,500.00			
26	FURNITURE,ETC.	8,500.00	8,500.00	8,500.00	8,500.00	8,500.00			
27	COIN COLLECTION	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00			
28	INSURANCE A	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00			
29	INSURANCE B	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	NET WORTH	JUL 1,1987	104,332.84
30	STOCK	3,285.00	3,416.40	3,553.06	3,695.18	3,842.99	----------	IN 6 MTHS	113,639.11
31	LOAN	470.00	0.00	0.00	0.00	0.00		IN 1 YEAR	123,413.76
32	IRA A	7,280.00	8,611.20	9,995.65	11,435.47	12,932.89		IN 1.5 YR	133,664.57
33	IRA B	5,200.00	6,448.00	7,745.92	9,095.76	10,499.59		IN 2 YRS	143,091.12
34	CO. PENSION	32,240.00	34,569.60	36,992.38	39,512.08	42,132.56	TOTAL ASSETS	JUL 1,1987	182,526.00
35	BANK A	6,448.00	7,953.92	9,520.08	11,148.88	12,842.83	----------	IN 6 MTHS	189,316.61
36	BANK B	3,640.00	4,825.60	6,058.62	7,340.97	8,674.61		IN 1 YEAR	196,857.60
37	CHECKING ACCOUNT	963.00	991.89	991.89	991.89	991.89		IN 1.5 YR	204,720.23
38								IN 2 YRS	212,917.36
39	SUM ASSETS	182,526.00	189,316.61	196,857.60	204,720.23	212,917.36	TOTAL LIABILITIES	JUL 1,1987	78,193.16
40	SUM LIQUID ASSETS	23,531.00	28,830.61	34,312.16	40,012.97	45,941.81	----------	IN 6 MTHS	75,677.50
41								IN 1 YEAR	73,443.84
42								IN 1.5 YR	71,055.66
43	LIABILITIES	PER 7/1/87	PER 1/1/88	PER 7/1/88	PER 1/1/89	PER 7/1/89		IN 2 YRS	69,826.24
44	----------	----------	----------	----------	----------	----------	LIQUID ASSETS	JUL 1,1987	23,531.00
45	VISA CARD	1,664.40	1,296.92	894.52	453.91	0.00	----------	IN 6 MTHS	28,830.61
46	DEPT STORE A	897.90	786.10	667.68	529.63	382.84		IN 1 YEAR	34,312.16
47	DEPT STORE B	897.00	785.12	662.60	528.45	381.55		IN 1.5 YR	40,012.97
48	BANK LOAN	426.00	0.00	0.00	0.00	0.00		IN 2 YRS	45,941.81
49	HOUSE LOAN	70,853.23	70,438.26	70,002.10	69,543.67	69,061.84			
50	CAR LOAN	3,454.63	2,371.11	1,220.94	0.00	0.00			
51									
52	SUM LIABILITIES	78,193.16	75,677.50	73,443.84	71,055.66	69,826.24			

Since Tom didn't have the current balance for the house and car loans (see *Figure 1*), he calculates the current balance and projected value for them. Here's the formula for cell B49:

B9*(1-(1+B6/12)^(-B7+B8))/(B6/12)

B8 shows the current payment number of the house loan. For cell C49 this value is B8+6, since it's for a time period six months later. For cell C49 the above formula is:

B9*(1-(1+B6/12)^(-B7+B8+6))/(B6/12)

For the automobile loan, use row 50 and replace B5 through B10 with B12 through B17.

Finding the sum of the liabilities is like finding the sum of the assets. Here, it's the sum of all of the columns from rows 45 through 50.

You'll finish the net worth file after entering the formulas into cells I29 through I48. Enter total assets into cells I34 through I38 (@SUM B39:F39). Also, enter the total liabilities and liquid assets from the cells in rows 40 and 52. Finally, enter the formulas into cells I29 through I32. For example, into cell I29 enter the formula for the current net worth: B39-B52. This logic applies to the remaining net worth cells; total assets minus total liabilities for the same time period.

UPDATING

Every attempt was made to make sure each cell uses the data in the cell to its *left*. This simplifies the updating of the net worth file. For example, when a value in column B is revised, the remaining cells in that row change automatically.

For example, *Figure 3* shows NETJULY.SC, the updated file for July 1, 1987. First, Tom changes the current date shown in cells I29, I34, I39 and I44 to JUL 1, 1987. Next, he adds six months to the current loan payment number for the house and car loans (shown in cells B8 and B15) to 86 and 30 respectively.

Then Tom revises the dates shown in rows 22 and 43. Column B reads "PER 7/1/87". Six months will be added to the remaining columns so that "PER 7/1/87" will appear in column F.

The *projected* data for 7/1/87 shown in column C is revised and compared with the *actual* value for this date. For example, the current value of the house remains the same, as do the values of the furniture, coin collection and both insurance policies.

The new value for the car, $7,500, goes in B25. All remaining cells in this row reflect this new data input. The JB Inc. stock does a little better than Tom predicted, let's reset its value at $3,285. However, since Tom believes that the projected 8% interest is still valid, he puts 3285 into B30.

Bill's loan repayment proceeds on schedule, so Tom types 470 into cell B31. The IRA accounts, company pension, and bank accounts are at the projected values, so Tom enters the values shown in cells C32 to C36 into the

continued on page 49

RAMCHARGER

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CIRCLE **162** ON READER SERVICE CARD

Reviewed by Charles Cherry

It is strangely satisfying to use an old Atari 800 with more memory than a 1040 ST. In truth, **RAMcharger** extra memory has limited utility, but it warms the heart to know that it is there.

Because the 8-bit Ataris can't use all this memory directly, 16K blocks of memory are switched around to fool the computer. Most programs are not designed to play this shell game and can't use the extra memory. For this reason, most people configure the memory upgrades as an imaginary disk drive—a RAMdisk. The RAMdisk works just like real disk drive—only bigger and much faster. Oh yes, the RAMdisk also forgets everthing as soon as the electricity stops, so copy your files to floppies before you switch off.

Bulletin board system operators will enjoy using a one-megabyte RAMdisk with over 8,000 sectors. So will programmers who work with compilers and macro assemblers—a huge RAMdisk speeds development very nicely. People who own a lot of unprotected programs will load their mega-RAMdisk and never turn off the computer—using RAMcharger as a very fast hard disk. Imagine, load any program instantly.

A few commercial programs will accept the extra memory as a larger workspace. Among them are SynFile+ and SynCalc, which will use about 288K. PaperClip 2.0 will use

320K on the XL and XE only. Magna includes a patch to let AtariWriter Plus use 48K. If you have a third-party DOS, it will probably use some or all of the extra memory as a RAMdisk. MYDOS is included in the package and can utilize all the installed memory. Atari XL and XE computers will let you use BASIC XE with a RAMdisk.

The Atari 800 expansion is Axlon compatible. The XL and XE expansions are 130XE compatible. The ST expansion is, of course, compatible with the 1040ST. The XL, XE, and ST modifications require that you send your computer to the Magna factory. I tested the 1Mb unit for the 800. That gave my computer 1032K total memory, 32K more than a 1040ST.

This 1Mb upgrade for the 800 consists of one board which plugs into the middle 16K RAM slot under the top lid of this Atari model. The RAMcharger can be surrounded by standard 16K boards or a modified 32K board and the BIT-3 80-column card. The 1Mb board is packed with piggybacked chips and it's a tight squeeze. Don't let the exposed wire on top of the chips touch the board in slot three. A simple 3×5 card will keep the boards safely separated.

The board I reviewed is very well designed and meticulously assembled, using the highest quality parts (tantalum capacitors, 5% resistors, gold-plated connector and switch). Power is drawn from the 800's almost unused 12VDC bus. An on-board regulator reduces it to 5VDC for the chips. A switch will turn off the expanded memory for any program which requires an unmodified machine.

It is unfortunate that thousands of copy-protected and autoboot programs will not run from a RAMdisk. This limits the practical value of these memory expansions. I would love to load all my favorite programs into a vast RAMdisk and never boot my system again. But life doesn't work that way. If you have any use for an 8-bit Atari computer with a vast amount of memory, Magna's products are an excellent choice. Their production quality is first rate.

BDT SHEET FEEDER

BDT Products, Inc.
17152 Armstrong Avenue
Irvine, CA 92714
(714) 660-1386
$189

CIRCLE **151** ON READER SERVICE CARD

Reviewed by Kevin Steele

Shortly after upgrading my old Epson FX-80 to letter quality I took a look at the tractor paper I was using. Even with laser-edge paper, I still had to rip the tractor edges off after a printing session. And I practically had to tear apart the printer just to use my own letterhead. There had to be a better way, I figured, than just hand-feeding single sheets of paper.

Then I discovered a relatively inex-

continued on next page

pensive ($189) sheet feeder for my printer. BDT's ad listed sheet feeders for the Epson FX-80+, FX-100+, FX-85 and upgraded FX-80/100 printers. "The perfect solution," I thought, as I eagerly placed an order.

When the **BDT Sheet Feeder** arrived, I was already prepared for installation with a couple of screwdrivers. To my surprise, the unit simply snapped into place. It looked like this would be easier that I thought.

I was wrong. The instructions were a disaster. The "operator's manual" devoted a whole page to the normal printer DIP switch settings (of which only one has to be changed). But it didn't even mention how to assemble the front panel of the sheet feeder.

The manual went into depth on what thicknesses of forms the printer would take, but it never once mentioned how to load paper. After explaining that paper must be fanned to get air between each sheet, it simply says "Load paper." Luckily, this proved to be no problem. Simply place the paper into the input tray and push back on the tray to let the paper fall into place.

The feeder is actually simple enough for anyone to install and use. It was also styled to match the printer, so it looks like an original component—a nice touch.

Now came the important part—the performance test. I loaded AtariWriter Plus for a test run, ran a few single test sheets, then loaded the feeder with my finest letterhead and ran a mail-merge form letter. As I watched, the first copy effortlessly ran through the printer and came to rest in the output tray. "Not bad," I thought, and I left the computer to its business.

When I returned, I discovered something that, once again, the manual failed to mention. With the printer in sheet feeder mode, the page length is 60 lines, as opposed to the normal 66. Each succeeding sheet printed was six lines higher than the last. While all I had to do was change the page length in AtariWriter Plus to 120 instead of 132 and the top margin to 2, I had still wasted quite a bit of paper.

But aside from the inadequate manual, I enjoy the convenience of my BDT Sheet Feeder. I use copier paper for normal printouts—at about one-third the cost of laser-edge paper. For someone who prints a lot, changes paper often and would like to use single sheets, the BDT Sheet Feeder is a must.

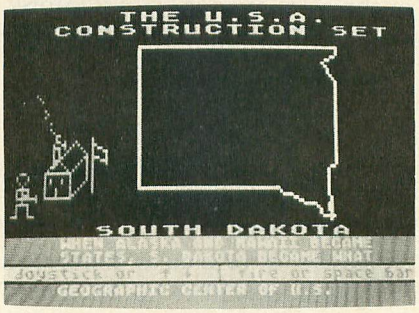
USA CONSTRUCTION SET

EZuse Software
2850 Enea Way
Antioch, CA 94509
(415) 754-6026
$9.95, 48K disk

CIRCLE **150** ON READER SERVICE CARD

Reviewed by Gregg Pearlman

If it wasn't for the **USA Construction Set**, I might never have known that North Carolina's state motto is "To be, rather than to seem," or that there's a marble quarry in Proctor, Vermont.



For just $9.95, the USA Construction Set gives you a program disk, plus two data disks that each contain files full of questions for half of the states. The files can easily be edited and enlarged, so you'll have a constant variety of questions to be answered.

In the upper half of the screen, the game quickly draws the outline of the state you've selected. But the rest of the action takes place in the lower half, so graphics don't really play a major part in the game.

The questions themselves are a problem, however. EZuse's earlier Quizmaster Construction Set (reviewed in **Antic**, November 1986) gave multiple choice quizzes, but the USA Construction Set does things differently. Each question has only one possible answer and you must use the joystick to select from *all* the answers in the file. Suppose you choose a quiz on New Mexico and the question is "What is the state capital?" All you need to do is move the joystick up or down, and when "Santa Fe" appears press the fire button.

The problem lies in the fact that a 20-question file has 20 answers total. After you've answered one question, you eliminate the need for one answer — unless the file has two questions which could be answered with "Santa Fe."

The upshot is it's not difficult to figure out that the state capital of Wisconsin is *not* May 29, 1848, the state flower is *not* "On, Wisconsin," and the state tree is *not* Milwaukee. Once you've got all the "nots" out of the way, the correct answers aren't hard to find. The quiz becomes more like a matching test.

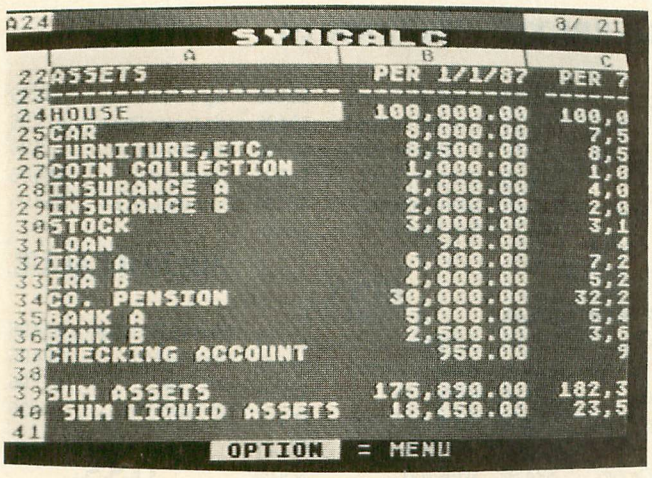
What's good about the USA Construction is that you'll learn something from it. There are plenty of history and statehood buffs who don't necessarily know the date of admission for Rhode Island. And the USA Construction Set is a good source of such information. Younger students should enjoy the sights and sounds, and they can learn as well.

However, if you decide to add to a file, it will take considerably longer to find a right answer in a sea of wrong ones. Can you imagine a file containing 1,000 questions and answers instead of the 20 provided? Possibly the game should have an option to type in the correct answer if you know it offhand.

respective cells in column B. The checking account is lower than projected—only $963—so this value is entered into B37. All of the assets, including the sum of the assets and the sum of the liquid assets, automatically change.

Any new assets are entered into the file in their proper places between the current entries. The spreadsheet

Keep your SynCalc manual handy.



should automatically accept any new or deleted entry and readjust the resulting expressions in the remaining cells.

The current values for the Visa, credit card and bank loans are entered in column B. Here, Tom's projected values were correct and the values in column C go into the respective cells in column B. The house and car loan entries are revised automatically by the changes in cells B8 and B15.

The net worth file is now ready for you to examine and analyze, this year and for years to come. Some experts believe your net worth should show an annual growth of about 10%.

SYNCALC
Broderbund Software
P.O. Box 12947
San Rafael, CA 94913
(415) 479-1185
$49.95, 48K disk

CIRCLE **189** ON READER SERVICE CARD

Gordon Toomey is an aerospace engineer from Rancho Palos Verdes in Southern California

FOR MORE ARTICLES LIKE THIS, CIRCLE **190** ON READER SERVICE CARD.

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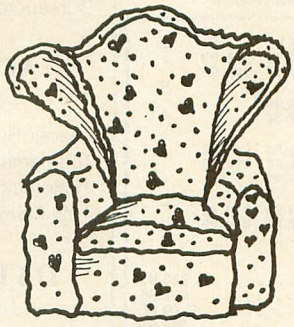

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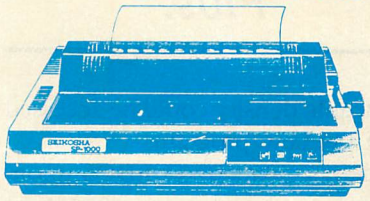

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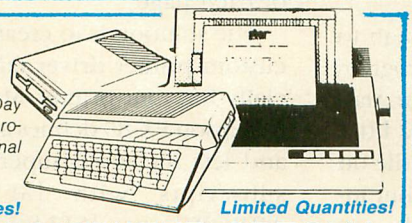

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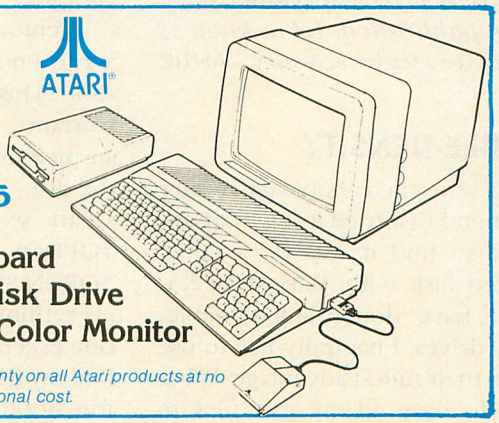

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Secrets of AtariWriter Plus

Get more power from this word processor

BY CAROLYN HOGLIN

After you succeed at getting AtariWriter Plus fully configured to the specific needs of your own hardware system, using this fine word processor becomes a real joy. Everything works exactly as it should, characters are never dropped, and search-and-replace is so vastly improved over the original AtariWriter that it alone is almost reason enough to purchase the new software. Maximum file size is limited if you're not using the 130XE computer, but the chaining feature works very well and pretty much makes up for this.

Here are the most important things I needed to learn about AtariWriter Plus through my own personal experimentation. (*Please note that* ***Antic*** *doesn't have the hardware in-house to test* all *these specialized tips prior to publication. Let us know if you find any fixes necessary.*—ANTIC ED)

DOUBLE DENSITY

I wasn't so excited about AtariWriter Plus when I first tried it. I was disappointed to find it was on a copy-protected disk with Atari DOS 2.5. Since I have double-sided/double-density drives, I naturally like to use them to their fullest advantage. What a drag to have all my text files in single-density only. (My drives don't work in enhanced density.) Worse yet, none of my old files in double or quadruple density could be accessed from the new program.

Get the most out of AtariWriter Plus.

Then I loaded TOPDOS (configured to be density-wise), put AtariWriter Plus back into drive 1, and binary-loaded (option L) the AUTORUN.SYS file. Voila—the program came up as usual and could now read all my disks. I liked it a lot better already. But this method became a nuisance and took a *long* time to get running.

Eventually I was brave enough to write a new DOS file to my program disk. (This, of course, voids your Atari warranty, so be warned.) I'm a little suspicious about the DUP.SYS file on the disk, so I didn't replace it but instead wrote DOS.SYS only. In TOPDOS you must also rename AUTORUN.SYS to AUTORUN.AUT. Now everything works as intended, with one exception—I must make certain that my 850 interface is turned off before booting AtariWriter Plus. Apparently the built-in code included in the AUTORUN.SYS file to boot the RS-232 handler is incompatible with other disk operating systems—no big deal after you realize it.

MARK OF ZERO

I have heard complaints about a bug that makes AtariWriter Plus print a zero in the upper left corner of each page. This *isn't* really a bug. If you have an Epson-compatible printer that does not have a proportional print option (or uses a different escape code for it) and you use the FX-80 printer driver from the program disk, your printer will receive the code to cancel proportional print for each font except Font 3. The FX-80 code is [ESC]-[p] [0]. Your printer may discard the first two characters as a meaningless escape code and then print the 0 as instructed. If you choose Font 3, you might get a 1 at the top of each page.

The solution is to create and use a custom printer driver tailored especially for your printer. My driver for the Epson FX-85 defines all nine fonts and lets me write superscripts and subscripts with [SELECT][UP-ARROW] or [SELECT][DOWN-ARROW], as well as with Fonts 4 and 5. In addition, two-column printing is now accomplished by printing one column and then backrolling the paper for the second one. This does away with certain limitations imposed when both columns are printed together—as is necessary with many printers.

MARGIN MIXUP

The left and right margin numbers on the Global Format screen assume that the first printer column is 0 and the last one (in picas) is 79. For reasons known only to Atari, the Print Preview feature numbers these columns beginning with 1. If you choose 80 as your right margin, your printout won't be what you expect. The rule is: Your right margin setting must not exceed one less than the maximum number of columns available with a particular font.

If your printer offers elite spacing (12 characters per inch), choose that font and set margins L6, R45, M50, and N89 for an ideal two-column printout.

STRING TOO LONG

The AtariWriter Plus manual doesn't mention an error that pops up every so often: STRING TOO LONG. This aborts your printing or Print Preview with no other explanation. What's happening is that a string of characters somewhere in your file is too long to fit on the line you have defined with your margin settings.

The program considers this string to be a very long "word" and is reluctant to break it up. The string often turns out to be a series of dashes or underlines used in a form of some kind. The solution is to break the string at the end of the lines with a space or a [RETURN]. You can use the Print Preview to check that you did it right.

Incidentally, if you need a continuous blank underline in a form, press the inverse key [ ] before and after typing the underline. Then your printer will not produce individual underline characters.

And don't forget that you can extend the default of 38 screen columns in the edit mode up to 249 columns with [OPTION] [C]. This lets you set real TAB stops for a chart, for instance, and scroll across the screen while you enter or edit text and make sure that your columns are lined up properly. This sort of editing is almost impossible with a fixed 38-column screen, such as the original AtariWriter had. However, the scrolling makes for a rather jerky screen, so I use extended columns only when needed. Otherwise I use 40 columns—and always when proofreading.

ESCAPE CODES

The manual suggests that instead of entering escape codes with [CONTROL]-[O] [27], you can hold down the [SHIFT] key and press [ESC] twice. However, the resulting code is not the escape symbol, but rather the same symbol produced by [OPTION] [INSERT]. When I try to print or Print Preview the file, the program asks me to "MAKE ENTRY, PRESS RETURN." Therefore I stick to [CONTROL]-[O] [27] when entering escape codes for my printer.

You can use double-density files and print to any printer —you can print symbols you didn't even know you had.

If you need curly brackets, use [CONTROL] [;] for the left one and [CONTROL] [CLEAR] for the right. (This *won't* clear your screen.) These keystrokes produce graphic characters on your screen, but the curly brackets will appear correctly on your paper. And have you wondered where to find a lefthand single quotation mark? The [CONTROL] [.] will print this character if you should happen to need it.

CHAINING FILES

When printing multiple-file text, if you attempt to "chain" to files that were prepared on another word processor instead of AtariWriter Plus, you'll probably lose some of your text from the beginning of each file after the first. Apparently, the program thinks it is stripping off the Global Format commands which, of course, are not present in non-AtariWriter text files. The solution: Load each file into AtariWriter Plus and RE-save it. If it was created with the AtariWriter cartridge, be sure to remove the old formatting line from the top of each file before the re-save.

For some reason, I have not found a way to successfully chain files together using SmartDOS.

TINY FONT

If your printer prints superscript or subscript *font* and can produce 1/2-line spacing, change the S command on the Global Format screen to 1 (or use [CONTROL] [S] for an in-text change). You'll get the obligatory fine print for that contract. Or you can use it to get a lot of printing in a small space—on a disk label, for example.

ATARI 825

If you have an Atari 825 or a Centronics parallel printer and use the built-in 825 driver, you can't get 1 1/2-line spacing by setting S on the Global Format screen to 3, as instructed in the manual. And when you use headers or footers, each page after the first will often begin two lines higher than the previous one.

Here we *do* have a real bug in AtariWriter Plus. There is a code in the printer driver for a 1/2-line feed and carriage return. In the 825 driver the code mistakenly calls for a *reverse* 1/2-line feed. This error causes both problems above. I have successfully fixed it by changing byte $37 in sector 276 from $1E to $1C. (In the 130XE version, the byte to change is $72 in sector 111.) Or you can make a corrected printer driver for your 825.

If you use the XMM801 and meet similar problems, try changing bytes $0A and $63 in sector 495 (byte $45 in sector 115 and byte $22 in sector 116 in the 130XE version). Each change is from $1E to $1C.

Note that the two versions of AtariWriter Plus require corrections in different locations!

continued on next page

CUSTOM DRIVER

The manual discusses this procedure in detail, but it still doesn't cover everything you need to know to create the perfect driver for your printer.

Use ATASCII code 155 for "LINE FEED AND CARRIAGE RETURN," even if your printer manual tells you something different.

FIGURE 1

ATARIWRITER PLUS
EPSON FX-85 PRINTER DRIVER CODES

INIT EVERY LINE									
LINE FEED AND CR	155								
UNDERLINE OFF	27	45	0						
UNDERLINE ON	27	45	1						
BACKSPACE	8								
ELONGATE OFF	20								
ELONGATE ON	14								
BOLD OFF	27	72							
BOLD ON	27	71							
UP 1/2 LINE	27	106	18						
DOWN 1/2 LINE	27	74	18						
DOWN 1/2 LINE & CR	27	65	6	155	27	65	12		
CR WITH NO LF	27	65	0	155	27	65	12		
Font #1 PICA	27	112	48	27	84	27	80	18	
Font #2 CONDENSED	27	112	48	27	84	27	80	15	
Font #3 PROPORTIONAL	27	112	49	27	84	27	80	18	
Font #4 SUPERSCRIPT	27	112	48	27	80	15	27	83	48
Font #5 SUBSCRIPT	27	112	48	27	80	15	27	83	49
Font #6 ELITE	27	112	48	27	84	18	27	77	
Font #7 NLQ	27	120	49	27	84				
Font #8 ITALICS ON	27	120	48	27	52				
Font #9 ITALICS OFF	27	53							

Should "BOLD" be emphasized or double-strike? I chose double-strike so that it works with elite and condensed, as well as with pica (but not with near letter-quality).

If your printer cannot do reverse line feeds, be sure to leave the "UP 1/2 LINE" code blank. Entering even a zero here will make it impossible to print double columns correctly. While an entry can be changed, you can't delete it entirely—you must start all over again by rebooting the program.

The trickiest code to define is the "DOWN 1/2 LINE AND CARRIAGE RETURN." The manual says you must define this one only if you intend to use 1/2-line spacing with the superscript or subscript fonts. Actually, AtariWriter Plus uses this code when printing headers or footers, as well as when printing 1 1/2-line spacing. It may require a trial-and-error process before you get this one right.

You'd think that you should merely add a 155 to whatever you used for the previous "DOWN 1/2 LINE." With some printers—the Atari 825, for instance—this *is* what works. With other printers (including the Epsons), this code produces a 1/2-line feed followed by a *full* linefeed, and it may print headers and/or footers two lines lower on each successive page. And 1 1/2-line spacing becomes 2 1/2-line spacing.

Therefore you must define the code for *setting* 1/2-line spacing (1/12 inch), followed by code 155, followed by the code for *setting* full-line spacing (1/6 inch).

The "RETURN WITH NO LINE FEED" or S=0 isn't needed very often, but I have used it on occasion. Enter the code for 0-line spacing if your printer allows this, followed by code 155, followed by the code for full-line spacing (1/6 inch).

Now for defining your fonts. You must remember that many of the commands are cumulative, so you must cancel the ones you don't want while enabling the one you *do* want. Many Epsons have a Master Select code that does this to some extent, but I don't recommend using these codes here. They are generally sent to your printer at the beginning of each page and, therefore, will cancel any additional codes for emphasized, etc., that you've entered in your text or enabled through the SelecType push-button feature on your printer.

Figure 1 is my Epson FX-85 printer driver.

On the Epson, italics are not available with near letter-quality (NLQ), so [CONTROL]-[G] [8] produces draft italics. They will look better with NLQ if you also type [SELECT] [.] before and after the italicized words to match the blackness of the NLQ. [CONTROL]-[G] [9] turns italics off, but if you're using NLQ, you must also type [CONTROL]-[G] [7] to re-enable near letter quality.

If you use [CONTROL]-[G] [4] to enter a footnote number (instead of [SELECT] [UP-ARROW]), you must use a [CONTROL] [O] code for your number. For instance if you wanted to enter a reference to footnote 1 and typed [CONTROL]-[G] [4], followed by a [1], the program will think you have asked for [CONTROL]-[G] [41], and will give you an INVALID TYPE FONT error. Instead, type [CONTROL]-[G] [1] [CONTROL]-[O] [49] [CONTROL]-[G] [x] (where [x] is whatever font you've been using). This gives you a raised "1" where you want it. The codes for digits 0-9 are 48-57, inclusive.

Carolyn Hoglin of Orlando, Florida is a homemaker and former secretary. She was given an Atari 8-bit computer in 1982 and has been programming ever since. This is her first publication in ***Antic****.*

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ANTIC JULY 1987

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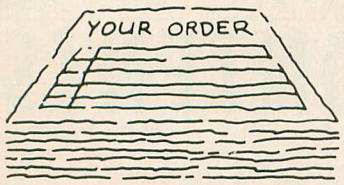

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CIRCLE **058** ON READER SERVICE CARD

Turning the Corner to GFA Basic

Entering a new world of power

By Patrick Bass, Antic Technical Editor

"Let the joyous news be spread: The wicked old witch, at last, is dead." I recently watched *The Wizard of Oz* again, and when the Munchkin mayor stood before Dorothy and made the above proclamation, I just happened to be sitting at an ST using GFA BASIC. I was struck by how closely his statement paralleled my feelings on the old ST BASIC and brash newcomer GFA BASIC.

Let's face facts. ST BASIC is not a very good implementation of the BASIC language. The windows get in the way, it has trouble with general math and double precision variables, and the editor is a joke, among its other foibles. But BASIC it is, and it *is* given away with each ST, so a lot of people wound up with it, even though they consider it the "Wicked Old Witch".

NEW KID ON THE BLOCK

Enter, stage right, GFA Systemtechnik, of West Germany. The ST computer is a huge success in Europe, and in West Germany, it's the best-selling personal computer. GFA has written a BASIC which comes closer than anything else **Antic** has seen to being the perfect BASIC. MichTron Software got the North American distribution rights, and it looks like they've made a good choice. In my opinion, it drops a big, big house right on top of ST BASIC and squashes it *flat*.

This month, to show off the advantages of GFA BASIC, I decided to whip up a small demonstration program in both GFA *and* ST BASIC. Longtime **Antic** readers may remember the first C program I published, way back in the August 1985 issue, called *GEM Color Cascade*. It's a small, very simple program, which I've programmed a version of on every new computer and new computer language I've had my hands on in the last ten years. Its purpose in life is to plot a dotted sine wave running from left to right, and plot a cosine wave running from right to left, and then connect the two points.

TYPING IT IN

We have two listings this month. *Listing 1* is the GFA BASIC version, and *Listing 2* is the same program written in ST BASIC.

If you've got GFA BASIC, double-click on its icon to boot it up and get it running. When the edit screen comes up, type in *Listing 1*, GFACOSIN.BAS, and save a copy of it to disk. (Sorry, we don't have a GFA TYPO program yet.) To try the ST BASIC version, power up ST BASIC, and type in *Listing 2*, STCOSIN.BAS. Check your typing with ST TYPO. If any of the checksums don't match, recheck that line carefully. Both BASIC programs are also located on Side B of the **Antic** monthly disk. Use LinkLine (or some other, more cumbersome method) to shoot the files over to your ST. (If you have any questions about LinkLine, see Side B on the **Antic** disk.)

PROGRAM BREAKDOWN

Take a look at both BASIC listings in the back of the magazine, and compare their structure. Both programs were designed to be as similar as possible.

Right off the bat, you'll notice GFA BASIC doesn't use line numbers. Don't worry—GFA BASIC doesn't need line numbers. In fact, GFA BASIC will choke on any line you try to slip it with a line number.

The top five lines are remarks, describing what the program is and who wrote it. The next small block of code determines the resolution you powered up in, and sets screen limits accordingly. In GFA BASIC, the **XBIOS(4)** call describes the Atari XBIOS call **Getrez( )**, which returns a number corresponding to the resolution we are currently in. ST BASIC performs this with a PEEK to **systab**. I also threw a little Boolean algebra in there to shorten the code. Next, below the lines which assign values to **Xres** and **Yres** we assign mouse button bit-pattern values to mnemonic variables.

Now we enter the main loop of the program. Before we draw each display, select a random sine and cosine **Amplitude**, meaning how far up and down on the screen the pattern will get, select a random sine and cosine

continued on next page

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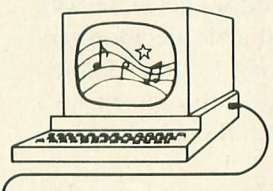
Period, which describes how squeezed the pattern appears, select a random color for the display to be drawn in, and choose a Step **Size** to determine how crowded the display gets.

Next, we start our looping structure which will actually draw the image on screen. Starting on the left side, and continuing across the screen, the program computes the **Sine** and **Cosine** of the current point, plots them, and then connects the two points. Directly after the program draws the connecting line, it runs over and checks the mouse for activity. If the *left* mouse button is pressed, then the program will finish the loop and drop out. If the *right* mouse button is pressed, clear the screen. Then it repeats the loop until the program ends.

CONCLUSIONS

GFA BASIC is a vastly better implementation of the BASIC language than ST BASIC is. For example, notice how clean the mouse call is. While the **ST Resource** will continue to accept submissions written in ST BASIC, if we get the same application written in GFA BASIC we'll probably give preference to the GFA BASIC version. If you've been looking for a more powerful language than ST BASIC, but don't want to move up to Pascal or C, then run, don't walk, and check out GFA BASIC today. A

Listing on page 92



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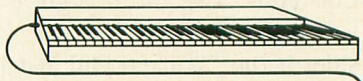

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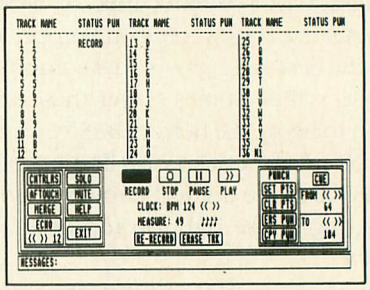

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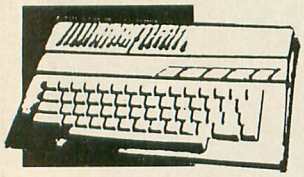

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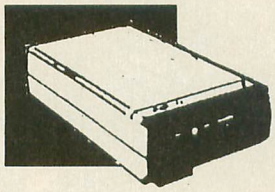

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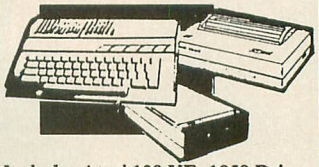

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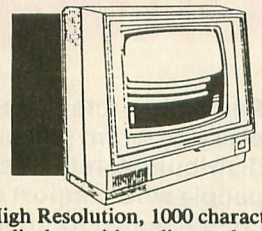

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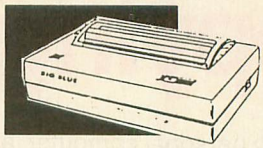

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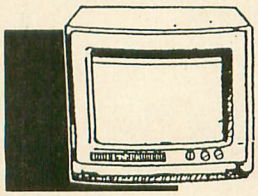

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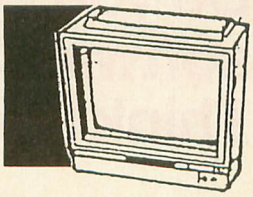

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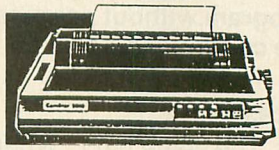

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CIRCLE 231 ON READER SERVICE CARD

Reviewed by David Plotkin

MicroCube's **MicroFlyte** joystick is an alternate controller primarily designed for use with SubLOGIC's Flight Simulator II. It has been available for a while on the eight-bit Ataris, and has recently been released in an ST version.

The MicroFlyte joystick is a box that plugs into the mouse port on the side of your ST. It contains a self-centering joystick, a reset button, the equivalent of the right and left buttons on the mouse, and two buttons for controlling the throttle (up and down). This little device makes a tremendous difference in how simple it is to fly Flight Simulator II.

To use the joystick, simply unplug the mouse from the front port of your ST and plug the joystick in. It gets its power from the computer, and a power light will come on to indicate that everything is hooked up properly. You then hold down the Reset button for a few seconds. Finally, you either press the Reset button once for "mouse" mode and twice for "FS2" mode. In mouse mode, pushing the joystick in any direction causes the mouse pointer to travel smoothly in that direction. You can use the joystick in place of a mouse if you don't have enough desk space. "FS2" mode is the normal one you use to fly the Flight Simulator. Pressing the joystick in any direction causes the aircraft to respond appropriately: for example, pulling back on the stick will put you in a climb. The throttle buttons will advance or retard the throttle, and double as an alternate set of mousebuttons when you are in the "mouse" mode.

I can't tell you what a joy the MicroFlyte joystick is to use with Flight Simulator. The self-centering stick eliminates the wild weaving and overcorrection (causing frequent crashes) of control with the mouse. Maneuvers that would be suicide (actually, they *were* suicide!) with a mouse are easily achieved with the joystick. I successfully flew *under* both of the bridges in San Francisco Bay, buzzed the Transamerica Pyramid and landed on Alcatraz Island, all without a crash. And my first successful landing did not occur until I had switched to the joystick.

You will have to make a few minor adjustments when using the joystick. First, when you switch to the "cursor" mode of FS2, where you can set various options (maps, weather, spotter plane, etc.), you'll also want to press the Reset button on the stick to switch to "mouse" mode, because the arrow on the screen is too difficult to control otherwise. Once you have finished setting your options, press the Reset button twice to return to "FS2" mode and resume your flight. Also, you will want to pay more attention to how your aircraft is "trimmed" for level flight. Normally, depending on your throttle setting, the aircraft will have a tendency to either dive or climb. When using the mouse, it is simple to compensate for this by setting the controls. With the self-centering joystick, though, compensating means you have to apply constant pressure to the stick, which can make turns a little tricky. However, you can easily trim the aircraft either up or down by using the keys on the numeric key pad to adjust the elevators, to the point where a centered joystick means more-or-less level flight. There are also trim tabs on the stick itself, which I have found work well for finer adjustments.

The instructions that came with the stick were preliminary and rather cryptic. I hope the production version will have better instructions included.

The MicroFlyte joystick for the Atari ST is different from the eight-bit version in a very significant way. The eight-bit version required software patches for it to work with various programs. The ST version includes its

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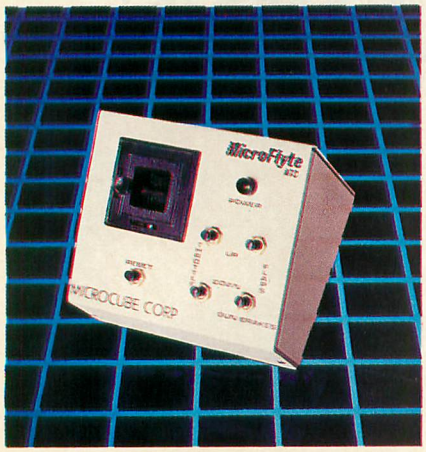

own microprocessor and ROM, and can be used anywhere a mouse is. I have tried it on a variety of programs, and it works better with some than with others. For example, Starglider really works better with a mouse, although it will work with this stick.

I just love this joystick. For me it has turned using Flight Simulator II from a frustrating experience to a real pleasure. I find myself booting up whenever I have time and going for scenic rides. I can't wait until the scenery disks come out. For anyone who loves Flight Simulator but has a hard time with the mouse flight controls, this is the answer.

ARCTIC FOX

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CIRCLE **227** ON READER SERVICE CARD

Reviewed by David Plotkin

Arctic Fox from Electronic Arts is a remarkably addicting battle simulation featuring excellent graphics, animation, split-second timing and strategy to produce a superior gaming experience. You are placed at the controls of a super-tank, equipped with a high-caliber gun, guided missiles, mines, heavy armor, and a top speed of 100 mph. The mission: penetrate the defenses of an alien enemy near the South Pole and destroy the enemy's main fortress. The hazards are many, including heavy and light tanks, rocket launchers, radar stations, two communications forts and devilishly fast fighters. The rocket launchers are especially bad news, as a single hit can so heavily damage your tank that the game is effectively over. There are natural obstacles as well: rifts (driving into one is instant death), snowfields, electrical storms that mess up your instruments, and slippery mud.

The enemy's procedure for world domination is clever: convert all our atmosphere to a poisonous gas identical to their atmosphere. To this end, oxygen converter towers are placed periodically. Destroying them delays the conversion process, and this gives you more time to find and destroy the enemy fortress. An oxygen gauge mounted on the control panel will tell you how much oxygen remains in the atmosphere. If there is none left, then you die and the game is over.

Arctic Fox is a heavily strategic game. Enemy equipment is all located within a square about 67 miles on a side. This square is bounded by a force field, and the entire game is played within this area. Fixed enemy defenses such as rocket launchers, radar, forts and oxygen converters are in the same locations each time you play. Some concentrations of firepower are too much for Arctic Fox. I recommend that you make a map of the locations of the enemy defenses. The enemy communications fort will marshall strike forces against you, so it is a good idea to knock it out, though I have won this game without doing so. But even finding the forts is tough, although mapping enemy defenses will suggest where the forts might be. . .

The graphics and sound are good. The screen shows all instruments, and the view out the window shows a high resolution, three dimensional battlefield with rocks, mountains, ridges, rifts, snow fields, and, all too often, enemy forces. A small screen on the instrument panel shows a radar view, upon which enemy forces appear as red blips. This same screen is also the guidance system for your missiles, in effect doubling as a miniature flight simulator. The view on this small screen is from the nose camera of the missile, so accurate guidance is possible. You can even see your guided missiles and shells through your cockpit window. The animation is fairly smooth, although it does get a bit jerky when there is a lot of move-

ment on the screen. There can also be a noticeable delay before response to your input, but this really does not detract from the program.

Huge electrical storms can blot out your view and mess up your radar. During these storms, you may only see something during the flashes of lightning. This is a particularly realistic effect. Other touches include reduced speed of your tank on snow and a tendency to skid when driving on mud.

The Arctic Fox is heavily armed. Your main armament is a heavy caliber, turret-mounted cannon. It can fire rapidly, with a short time between reloads. This cannon is effective against all enemies, with multiple hits necessary on some. Your guided missiles are awesome weapons—they can take out just about anything with a single hit. They even have a radar tracking system, which won't work with all of

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Midisoft Studio

MIDI editing with ease

Reviewed by Jan Moorhead

In the world of MIDI, there are lots of developers trying to sell sequencers, patch librarians, editors and every other type of music software imaginable. In this welter of hype and hoopla it's a real pleasure to find a package that does what it sets out to do, cleanly, efficiently and without a lot of fuss. If I were looking for one word to describe **MIDIsoft Studio**, it would be *clarity.* I wish every package I work with was this straight forward.

Something you become inured to when working with computers is the proliferation of bad manuals. It becomes normal to struggle with documents that are barely comprehensible. With this in mind, I was completely taken by surprise when confronted with MIDIsoft Studio's manual. They have done a splendid job in producing a clear, well-organized and well-thought-out document. It has a glossary that should be very useful to those just getting involved with MIDI systems. The table of contents, in conjunction with the glossary, make up for its only weakness, which is the lack of an index. Overall, though, it's a clean and impressive effort.

MIDIsoft Studio, as opposed to sequencers that work like drum machines, functions like a multi-track tape recorder with 32 tracks. The metaphor is carried to the *n*th degree with Fast Forward, Reverse and other tape recorder-like "buttons" on the screen. This makes your operations very straightforward; so much so that with a little savvy, you could run this program quite easily without reading the manual at all.

You have one primary work screen, and can access everything through the usual drop-down windows. You can see 12 tracks at a time and scroll up and down through the rest of the 32 tracks. There are a generous 24 characters available for labeling the tracks. In addition to having the tracks in Play, Record or Clean modes, you can turn tracks Off or Solo them. This is very useful for editing and isolating musical problems. Solo and Off perform the same useful functions as they do on a professional mixing console. After using them a bit you will find them indispensible. A caveat: There is a small inconsistency in data entry. You can enter most numeric values with the mouse or by direct entry, but in a few cases you must key them in exclusively. In addition to the usual Desk and File menus there are three menus involved in running the program: Setup, Edit and MIDI.

The Setup window contains some very nice features. Though the program is aimed at a large general audience, some of the features nestled here make it attractive for serious professional users as well. The program will recognize or send a MIDI Song Position Pointer. This is important for synchronizing your sequencer with other devices that have an internal clock and record song information, such as drum machines, other sequencers, and sequencer-to-tape synchronizers. The MIDI Song Position Pointer can be sent or received so that the receiving device knows its position in a composition at any point in time. This is particularly critical if you're doing work with video or film.

Another advanced feature is its control of the various MIDI modes and Local On/Off for each channel. Local On/Off disconnects your keyboard from its own internal sound generators. "Great," you say. "Just what I wanted—a function that makes it impossible to play my synth!" Ah, but what it does allow you to do is play *other* synths through MIDI while your sequencer plays the internal sound generators of your master keyboard. This and the other MIDI features allow you to make better use of the keyboards you have and lessen the need for a sophisticated mother keyboard. Personally, I've never liked the idea of spending money on something that doesn't make any noise, so I've always avoided buying a dedicated master controller. This feature gives you one of the important elements of such a controller.

The Setup also gives you control over the number of bars of count off, the meter, After-Touch filtering, the output of the MIDI clock and a few

continued on next page

special features for the advanced user. My particular favorite is "Fast Mouse," which isn't. What it really does is reduce the distance the mouse has to travel on the pad to move the cursor a particular distance on the screen. You get more done with less movement. The so-called "Expert Mode" is something that, personally, I wouldn't touch with a ten-foot MIDI cord. It removes the warning flags and windows for many of the destructive commands. I'm the kind of guy who needs to be slowed down—I'm the first one to get overconfident and blithely throw three hours of work down the toilet. I'll leave "Expert Mode" to those less breezy and more methodical individuals.

"Auto-Rewind" is a nice feature. It saves you some time when you're setting up for the next bit of recording. There is also an After-Touch Filter in the Setup window, though with a megabyte of memory on the 1040 ST (and more on the Mega STs) there is little worry about using up the available memory. If you're writing pieces that long, perhaps you should consider your audience's endurance! I can see that, occasionally, you may encounter situations where the After-Touch is controlling a feature you'd rather not use. For instance, perhaps when you are recording a track on your master keyboard the After-Touch is controlling Modulation. When the track is sent to the appropriate module, the patch you want happens to use After-Touch to control Pitch Bend. In a situation such as that you could use the After-Touch filter to remove the undesirable After-Touch information.

The Edit window has two general types of editing available: edits affecting an entire track and edits affecting portions of a track. Under the former you have Erase, Copy, Move, and Combine (often referred to as Merge in other applications). What is more interesting is the approach to area and fine point editing. They have not implemented any clever graphic representations to make life sweet for you, but they do have an effective means of achieving this all-important level of control. I've spoken to the developers, who've assured me that they do have some interesting developments in mind for this area. Eventually, you'll be able to do editing through graphical notation. The 1040ST ought to be eminently well-suited for this approach.

The four modes of editing that you do have at this time are Insert, Delete, Paste and Erase. Erase removes information from a track but leaves a hole. Delete, however, removes the information and the resulting blank area, leaving the track shortened. Using these modes along with the Edit Mark windows should allow you to do any standard editing that you wish. Generally, editing with numbers isn't as much fun as being able to look at something and say "That's him! That's the bad note!" and promptly zap it. To make finding the offending error a little easier, they have created Step Play. By using the right mouse button on the screen's Play "button" you can step through part of a track one note or chord at a time. This makes the setting of Edit points a lot more intuitive and less like a lesson in business accounting.

When working with computers, you get used to bad manuals. But MIDIsoft Studio's manual took me completely by surprise —it's splendid and well-organized.

Another feature with some nice elements that we're seeing in more sequencers nowadays is the quantization, which allows you to control not merely where notes start but their lengths as well. There are a total of four modes: no quantization, controlling note attacks, controlling note endings, or both. MIDIsoft also allows transposition of tracks or portions of tracks.

I'm not a big fan of step entry but MIDIsoft Studio's system seems to work with less hassle than most. By using one hand to select pitches on the keyboard and the other to control the parameters of the Step Entry window, you ought to be able to really fly along, with practice. The program will receive velocity information from the keyboard so this form of data entry should be more expressive than most—again, with practice.

The MIDI window allows you to do a MIDI reset, send a message to the synths for self-tuning, and send Song Selection cues for other sequencers. The handiest item is the All Notes Off command. Anyone who's spent much time working with Yamaha's DX/TX line of FM modulation synths is familiar with their special "Insta-drone" feature. It's nice to be able to fix that kind of problem without having to search through your modules to find out which one has started improvising without permission.

The people at MIDISoft have an attitude toward product development that's very promising for future development. I have seen two releases so far, and the second is a naturally evolved and improved version. The program as it stands does not feature a lot of bells and whistles but concentrates on the basics, which are implemented intelligently. As future MIDIsoft releases offer more and more power, the program should retain its clarity and ease of use if the developers continue as they have.

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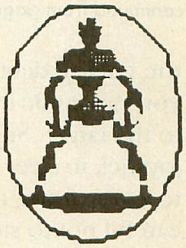

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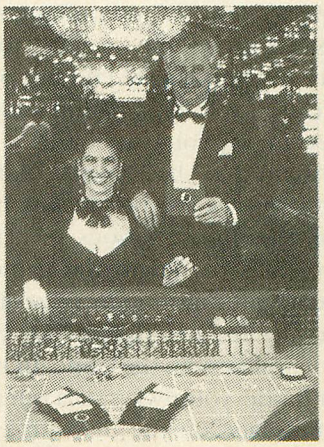

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CIRCLE **085** ON READER SERVICE CARD

continued from page 68

the enemy defenses. In those cases, you can guide the missile all the way to the target. Since you use the same joystick to steer the missile as you do to control the tank, you have to be careful not to steer into an enemy or fall into a rift while controlling the missile.

There are two modes of control, selectable with a button on the control panel. The first allows you to control the speed of the tank by pressing the joystick forward and back; the second allows you to control gun angle with the joystick. This second mode is by far the more useful! In this mode, there is another button that varies your speed and direction between full speed in the foward direction and full speed reverse. I normally stay in this second mode. Other buttons control your mines, launching of missiles, and digging into the snow to hide. The control panel will also let you know when you have been spotted, and how heavily damaged you are.

As you can tell, controlling Arctic Fox will take some practice. To help you, the buttons are laid out on the screen in the same configuration as they are on your keyboard.

Arctic Fox has several different game modes. In the practice mode, you can choose various special features, but can't win the game. An enemy preview mode presents the enemies and descriptions for you to get familiar with the game. In beginner mode, you always start out in the same place on the map. In expert mode, you can start out in different places, and enemy forces are tougher. The damage portion of this game is somewhat frustrating. There is no way to get repairs, and when a main system such as the gun or treads is damaged, there is little point in continuing the simulation. You can abort at any time, but I would have preferred to be able to beat a hasty retreat for repairs. Another potential frustration is the delay between giving a command and the response. This is something you become used to quickly, and to be fair, a real tank certainly doesn't respond instantly!

Arctic Fox is a very realistic game/simulation with a lot of playability. It is a very welcome piece of software from Electronic Arts, a company that has not paid a lot of attention to the ST. If you enjoy action and strategy with 3-D animated graphics, you'll love Arctic Fox.

WINTER GAMES

Epyx Inc.
600 Galveston Drive
Redwood City, CA 94063
(415) 366-0606
$29.95-$39.95

CIRCLE 252 ON READER SERVICE CARD

Reviewed by Rick Teverbaugh

Winter Games is exciting, colorful and great fun. The only recurring problem is that to be proficient at many of the events you must either have keen memorization skills or refer continually to the documentation.

The game has seven events you can choose to compete in, taking on as many as eight people in each. There's ski jump, bobsled, figure skating, hot dog aerials, freestyle skating, speed skating and biathlon. Some events are head-to-head, meaning that two competitors must use joysticks simultaneously.

Figure skating has eight different moves, selected by joystick or from the numeric keypad. Forward skating is necessary for the double or triple axel jumps. All others require backward skating for execution. When trying a move while skating forward, start it during an open stride. But start with closed strides on backward moves. When doing camel or sit spins, try for six rotations. Any less will hurt your score, and more will make the skater dizzy and fall down. A perfect score is 6.0.

Freestyle skating offers the same eight moves, but points are awarded regardless of how many times each move is attempted. You choose the content of your two-minute program. Try to determine which moves you're best at and execute them as well and as often as possible.

Speed skating is controlled by rhythm, not joystick frenzy. Move the joystick left and right, in time with the leg movements of the skater. Too much quick movement can make the skater spend too much time in one spot.

Hot dog aerials is another exercise in memorization, though not as involved as the skating events. Only six moves are possible. The trick is to know which moves can be done in combination, and then time the leap so the skier lands on his feet. For those who want to get some safe points on the board before trying something more daring, a little hesitation after the jump before executing the move will increase the judges' tally.

Ski jump keeps you so busy watching the closeup box of the skier to correct flaws in form that you'll miss the smooth, precise execution of the graphics for this event. If the knees are bent too much, tap the joystick up. If the skis are crossed, tug the stick down. If the skier leans too far forward, tap the stick to the left—but be warned that too little lean cuts the length of the jump. Scoring is three

times the distance in meters plus style points.

Biathlon is the most demanding and versatile challenge of the seven, involving uphill, downhill and cross-country skiing. Then there's a series of targets to be picked off with the .22 caliber rifle slung across the shoulder. A heart is shown pounding away at the bottom of the screen and it's a good idea not to get it pumping too fast. When the skier stops to shoot, the sights move at the same rate as the heartbeat—it wouldn't be a bad idea to stop briefly to catch a calming breath before shooting.

Bobsled shouldn't be too tough to get decent score, with a few simple guides. The first turn is a right-handed bank, and the rest of the course has a left-right, left-right pattern except for the last curve. Stay as low as possible on the curves; going too high on the bank adds to your time.

World records are saved to the first of the package's two disks. If the competition's hot, there will be a lot of disk swapping. Five points are awarded for a gold medal, three for silver and one for bronze. After the selected number of events, the highest point winner is crowned champion.

FAST—THE COMPLETE DESK-TOP ORGANIZER

Migraph, Inc.
720 S. 333rd Street
Federal Way, WA 98003
(206) 838-4677
$49.95

CIRCLE 230 ON READER SERVICE CARD

Reviewed by David Plotkin

Fast is a collection of desktop accessories. They include a built-in DOS, Editor, Cardfile, Calendar, Clock, Calculator and ASCII Table. All these accessories are assembled under one entry in the Desk menu; clicking on that entry brings up a window from which you may select the tool you want by clicking on it with the mouse or pressing the appropriate function key. The chosen accessory then appears on the screen.

ST-DOS is a resident disk operating system similar to MS-DOS. You type in commands that perform various tasks, such as formatting a disk or copying a file. Once you learn the system, this can be more efficient than using the GEM desktop. For example, to copy all the files with an extender of "DOC" from drive A to drive B, you would simply type "COPY A:*.DOC B:". This is much faster than clicking on each file in a window and dragging it to the drive icon, especially if all the files you want can't be seen in the window at once. ST-DOS allows you to set time and date, get a directory, see the contents of a file, rename a file, delete a file, and set an alarm to go off either at a certain time or in a specified number of hours and minutes from the present time. You may also lock and unlock files, make a new directory (folder) and delete an empty directory. The formatting option supports four different formats, including two that can store more information than usual on a disk. ST-DOS also supports wildcards (characters that can substitute for a letter or a group of letters in a filename).

ST-EDIT is a full-screen editor for entering text. However, it is more like the MINCE editor than a word processor. It takes over the entire screen, so you can't enter notes while looking at other information on the screen. There is also no mouse support or menus. Instead, all commands are activated by pressing a sequence of keys. ST-EDIT supports search, replace, block moves, copies and deletes, letter transposing, and some limited macros for using in the editing sessions. The keys that activate various features seem pretty strange to me, al-

continued on next page

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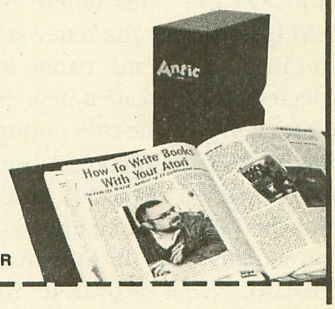

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though I'm told they are similar to the keys used in MINCE. Fortunately, all the commands are summarized on a card, and most of the time you can get by with just using the arrow keys, the Delete and Backspace keys, and the save file key ([Control][X]/[Control][S]). The editor does not word-wrap. Also, if you don't press [Return] at the end of every line, then the number of "physical" lines will be different from the number of "logical" lines. Some of the ST-EDIT commands use these numbers, so you need to keep track of them. You also need to keep an eye on your buffer size. If you run out of buffer for text, you must save the file, then reload it to obtain more space.

CARDFILE is an address book. It is set up in three levels. In the first level you choose the letter of the alphabet you want to work with. You may also print all the cards in the file, select one of two formats for all printing (list or label) and change the field names on the cards. Clicking on a letter of the alphabet brings you to level 2, which shows all the cards where the first field begins with the letter selected. You may edit a card, delete it, print selected cards, create a new card, or autodial one of the two phone numbers on the card. If you choose to create a new card or modify an existing one, this brings you to level 3, where you actually fill in the information on the card, save it or print it. You may also move to the next or previous card. The fields initially on the card are for names, addresses and phone numbers; you can further customize the cards by modifying a file called DEFAULT.DAT. This gives you the option of changing field length, text style (bold, underline, etc.), default buffer size, field position and various print options.

The other tools included in Fast are a digital clock, an ASCII table that shows the characters corresponding to each decimal and hex number, a four-function calculator with memory and percent that allows you to enter either by clicking on a button or pressing a key on the keyboard, and a calendar that displays one month at a time. To step through the months and years you use the arrow keys. The calendar doesn't remind you about what the key functions are, so I frequently found myself pressing the wrong arrow keys. You cannot access any date before 1980, and stepping through the years to 50 years in the future can take a while—one year at a time.

The documentation accompanying Fast has a number of inaccuracies and typos. In several places, the picture of a screen or dialog box doesn't match the description, text is missing on another page, and some paragraphs make absolutely no sense at all. The distinction between physical and logical lines in the editor is never made, and the ST-DOS section assumes you know quite a bit about MS-DOS. Migraph claims that most people never read the documentation for a program this simple. That may normally be true, but I'd like to see someone figure out ST-EDIT without a manual. At any rate, you can figure everything out—it just takes longer.

I have mixed feelings about Fast. As with other combination desk accessories, I find that I like some of the tools (like ST-DOS), and don't want to give up the memory for others (like ST-EDIT). Whether this package is right for you will depend on what you need.

BUZZWORD

Buzzword Game Company
5582 S. Zeno Court
Aurora, CO 80044
(303) 693-4263
$42.95

CIRCLE 228 ON READER SERVICE CARD

Reviewed by Sol Guber

Buzzword is a word-guessing game with a sophisticated strategy, suitable for both adults and children because of its multi-level play. Buzzword uses a subtle sense of humor to give clues for each set of words. The words are combined in categories and the package contains a set of cards with all the answers in the categories.

The game is quite simple to play. The upper right section of the screen contains the nine boxes that stand for the words you will be guessing. At the simplest level, each box will contain the first letter of the word and how many letters make up the word. At the bottom of the screen is a list of all the letters used in the nine words, as well as their frequency of usage. Also at the bottom of the screen is a typewriter, where you type your answers. In the upper right corner is the score. As you guess each word correctly, the number of letters available is decreased.

Before we go any further, let me give some examples of both the type of words that need to be guessed and the variety of categories. Let's pick a category at random: "A MAN'S CASTLE." Now try to guess three words: a six-letter word starting with D, a six-letter word starting with S, and a six-letter word starting with W. If you figured out that the words are duplex, shanty, and wigwam, your word reasoning is excellent. Let's try another category called "NO NUTRITION"—things people put in their mouths. The words you need to guess each have four letters, and start with a "C," an "F," and a "P." If you guessed chaw, foot and pipe, then this is the game for you.

The object of the game is to guess the word and type it correctly. You are scored on the number of words you have previously guessed correctly, and the column and row of the word. If you make five mistakes, or determine all the words correctly, your turn is over. There are 200 different categories and between 30 and 50 members in each category, so it is very difficult to remember all

of the answers in any one category.

It's evident much time and effort went into making this game. The contents of the sets of words are of various difficulty, with something for everyone. The categories included range from Old MacDonald's Farm to Opera, and from the Zodiac to Golf. There is only one screen in the game, but the colors are bright and the "typewriter" action is good. There is only a slight amount of animation, and few sounds (when you press the keys and when you identify the words correctly), but the game doesn't require more bells and whistles for enjoyable play.

While not billing itself as such, Buzzword is quite educational and is lots of fun to play.

You have numerous options available when you play Buzzword. You can play it by yourself, against another player, or with groups of people. Using the various options, some of this information will not be available—for example the first letter of the word and its length can be hidden or displayed. Finally, you can set a timer to make the game a real challenge.

While not billing itself as an educational game, Buzzword is quite educational. It is also lots of fun to play in groups and is as sophisticated as some trivia games. The package comes with cards that contain all of the categories and the answers. The 24-page manual explains the variations well, and gives a list of the various subjects. This game is like no other, and it's a well-designed word game for the whole family.

ST New Products

By GREGG PEARLMAN, ANTIC ASSISTANT EDITOR

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MichTron, 576 South Telegraph, Pontiac, MI 48053. (313) 334-5700. PRESS.
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In this adventure game, the beautiful, magical Isle of Ferronrah is beset by evil power emanating from an enchanted orb controlled by the Dark Lord Nikademus. Players gather a group of adventurers to sail to the mysterious island, use spells and weaons to invade difficult terrain, escape dungeons, destroy the demons and their orb, and relieve the land of its calamity—if they can.

$39.95. Strategic Simulations, Inc., 1046 N. Rengstorff Avenue, Mountain View, CA 94043. (415) 964-1353. PRESS.
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FIT FOR A KING

Royal Software's **EZ Calc** ($69.95) is a fully mouse-controlled, GEM-based spreadsheet featuring 300 columns by 999 rows, a built-in sort routine, online help windows and 10 macros controlled by the function keys. But its most interesting feature is a 10-key calculator that can be pulled down any time and operated either with mouse or keyboard—and the results of a calculation can be transferred to any cell with the click of the mouse. EZ Calc even lets you attach a four-line personal note to any cell, which is then highlighted to remind you about the note.

Help Calc ($24.95) contains 11 preprogrammed templates, including check register, depreciation schedules, investment portfolio and loan amortization schedules for EZ Calc or VIP Professional.

Royal Software, 2160 West 11th Avenue, Eugene, OR 97402. (800) 452-8013, (503) 683-5361. PRESS.
CIRCLE **228** ON READER SERVICE CARD

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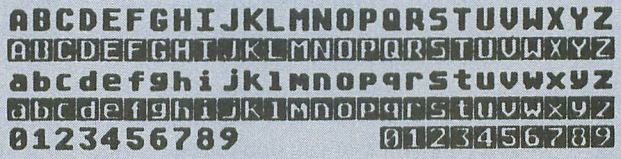
TYPING SPECIAL ATARI CHARACTERS

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.



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

NORMAL VIDEO

FOR THIS	TYPE THIS
♥	CTRL ,
▶	CTRL A
■	CTRL B
▄	CTRL C
▌	CTRL D
▘	CTRL E
◢	CTRL F
◣	CTRL G
◤	CTRL H
▝	CTRL I
◥	CTRL J
▖	CTRL K
▗	CTRL L
▔	CTRL M
▁	CTRL N
▂	CTRL O
▒	CTRL P
▐	CTRL Q
▀	CTRL R
▚	CTRL S
▞	CTRL T
▃	CTRL U
▕	CTRL V
▛	CTRL W
▜	CTRL X
▟	CTRL Y
▙	CTRL Z
♣	ESC ESC
↑	ESC CTRL -
↓	ESC CTRL =
←	ESC CTRL +
→	ESC CTRL *
●	CTRL .
♠	CTRL ;
◧	ESC CTRL =
◪	ESC SHIFT CLEAR
◀	ESC DELETE
▶	ESC TAB

INVERSE VIDEO

FOR THIS	TYPE THIS
♥	小 CTRL ,
▶	小 CTRL A
■	小 CTRL B
▄	小 CTRL C
▌	小 CTRL D
▘	小 CTRL E
◢	小 CTRL F
◣	小 CTRL G
◤	小 CTRL H
▝	小 CTRL I
◥	小 CTRL J
▖	小 CTRL K
▗	小 CTRL L
▔	小 CTRL M
▁	小 CTRL N
▂	小 CTRL O
▒	小 CTRL P
▐	小 CTRL Q
▀	小 CTRL R
▚	小 CTRL S
▞	小 CTRL T
▃	小 CTRL U
▕	小 CTRL V
▛	小 CTRL W
▜	CTRL X
▟	CTRL Y
▙	CTRL Z
↑	ESC SHIFT DELETE
↓	ESC SHIFT INSERT
←	ESC CTRL TAB
→	ESC SHIFT TAB
●	小 CTRL .
♠	小 CTRL ;
◧	小 SHIFT =
◪	ESC CTRL 2
◀	ESC CTRL DELETE
▶	ESC CTRL INSERT

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 小 instead.)

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 boxed. Compare the two sets of characters below:

SPECIAL		STANDARD	
◢	◢ CTRL F	/	◢ /
◣	◣ CTRL G	\	◣ SHIFT| +
▁	▁ CTRL N	_	▁ SHIFT -
▀	▀ CTRL R	-	▀ -
▚	▚ CTRL S	+	▚ +

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.

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EASY 80 81

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RED, WHITE AND BLUE 84

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HOW TO USE TYPO II 80

DISK SUBSCRIBERS: Programs for 8-bit Atari computers can be used immediately. Just follow instructions in the accompanying magazine articles. ST Owners: See monthly disk's ST Help File for instructions on how to transfer programs to 3-1/2 inch disk.

DOS COMPATIBILITY: All 8-bit programs published by **Antic** are tested to work with Atari Disk Operating System (DOS) 2.0S and 2.5—*not* with the incompatible DOS 3.0. DOS 2.0S is available on each Antic Monthly Disk. Copy the DOS.SYS and DUP.SYS files.

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HOW TO USE TYPO II (8-BIT)

TYPO II automatically proofreads **Antic**'s type-in BASIC listings for 8-bit Atari computers. 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 the left of the line number. Press the [RETURN] key.

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.

Don't type the TYPO II Codes!

```
WB 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLO
   SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "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
   $:IF LINE$="" THEN POSITION 2,4:LIST B
   :GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL(LIN
   E$(2,LEN(LINE$))):POSITION 2,4:LIST B:
   GOTO 32060
TH 32080 POSITION 2,10:? "CONT"
MF 32090 B=VAL(LINE$):POSITION 1,3:? " ";

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

SynCalc template figures it for you

HOW MUCH ARE YOU WORTH?

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LISTING 1

```
B9 B5/((1-(1+B6/12)^-B7)/(B6/12))
B10 ((1+B6/2)^(1/6)-1)
B16 B12/((1-(1+B13/12)^-B14)/(B13/12))
B17 ((1+B13/2)^(1/6)-1)
B39 @SUM(B24:B37)
B40 B32+B33+B35+B36+B37
B49 B9*(1-(1+B6/12)^(-B7+B8))/(B6/12)
B50 B16*(1-(1+B13/12)^(-B14+B15))/(B13/12)
B52 @SUM(B45:B50)
C24 B24
C25 B25-500
C26 B26
C27 B27
C28 B28
C29 B29
C30 B30*(1+C4/2)
C31 B31-(940*6/12)
C32 (B32+1000)*(1+C4/2)
C33 (B33+1000)*(1+C4/2)
C34 (B34+1000)*(1+C4/2)
C35 (B35+1200)*(1+C4/2)
C36 (B36+1000)*(1+C4/2)
C37 B37*(1+0.06/2)
C39 @SUM(C24:C37)
C40 C32+C33+C35+C36+C37
C45 (B45-(80*6))*(1+0.19/2)
C46 (B46-(30*6))*(1+0.19/2)
C47 (B47-(30*6))*(1+0.19/2)
C48 B48-(71*6)
C49 B9*(1-(1+B6/12)^(-B7+B8+6))/(B6/12)
C50 B16*(1-(1+B13/12)^(-B14+B15+6))/(B13/12)
C52 @SUM(C45:C50)
D24 B24
D25 C25-500
D26 B26
D27 B27
D28 B28
D29 B29
D30 C30*(1+C4/2)
D31 C31-(940*6/12)
```

```
D32 (C32+1000)*(1+C4/2)
D33 (C33+1000)*(1+C4/2)
D34 (C34+1000)*(1+C4/2)
D35 (C35+1200)*(1+C4/2)
D36 (C36+1000)*(1+C4/2)
D37 B37*(1+0.06/2)
D39 @SUM(D24:D37)
D40 D32+D33+D35+D36+D37
D45 (C45-(80*6))*(1+0.19/2)
D46 (C46-(30*6))*(1+0.19/2)
D47 (C47-(30*6))*(1+0.19/2)
D48 C48-(71*6)
D49 B9*(1-(1+B6/12)^(-B7+B8+12))/(B6/12)
D50 B16*(1-(1+B13/12)^(-B14+B15+12))/(B13/12)
D52 @SUM(D45:D50)
E24 B24
E25 D25-500
E26 B26
E27 B27
E28 B28
E29 B29
E30 D30*(1+C4/2)
E31 0
E32 (D32+1000)*(1+C4/2)
E33 (D33+1000)*(1+C4/2)
E34 (D34+1000)*(1+C4/2)
E35 (D35+1200)*(1+C4/2)
E36 (D36+1000)*(1+C4/2)
E37 B37*(1+0.06/2)
E39 @SUM(E24:E37)
E40 E32+E33+E35+E36+E37
E45 (D45-(80*6))*(1+0.19/2)
E46 (D46-(30*6))*(1+0.19/2)
E47 (D47-(30*6))*(1+0.19/2)
E48 0
E49 B9*(1-(1+B6/12)^(-B7+B8+18))/(B6/12)
E50 B16*(1-(1+B13/12)^(-B14+B15+18))/(B13/12)
E52 @SUM(E45:E50)
F24 B24
F25 E25-500
F26 B26
F27 B27
F28 B28
F29 B29
F30 E30*(1+C4/2)
F31 0
F32 (E32+1000)*(1+C4/2)
F33 (E33+1000)*(1+C4/2)
F34 (E34+1000)*(1+C4/2)
F35 (E35+1200)*(1+C4/2)
F36 (E36+1000)*(1+C4/2)
F37 B37*(1+0.06/2)
F39 @SUM(F24:F37)
F40 F32+F33+F35+F36+F37
F45 (E45-(80*6))*(1+0.19/2)
F46 (E46-(30*6))*(1+0.19/2)
F47 (E47-(30*6))*(1+0.19/2)
F48 0
F49 B9*(1-(1+B6/12)^(-B7+B8+24))/(B6/12)
F50 B16*(1-(1+B13/12)^(-B14+B15+24))/(B13/12)
F52 @SUM(F45:F50)
I29 B39-B52
I30 C39-C52
I31 D39-D52
I32 E39-E52
I33 F39-F52
I34 B39
I35 C39
I36 D39
I37 E39
I38 F39
I39 B52
I40 C52
I41 D52
I42 E52
I43 F52
I44 B40
I45 C40
I46 D40
I47 E40
I48 F40
```

readable software 80-column text

EASY 80

Article on page 24

LISTING 1

Don't type the TYPO II Codes!

```
PM 10 REM EASY-80
UB 20 REM BY JD CASTEN
HA 30 REM (c) 1987, ANTIC PUBLISHING
BD 40 REM 80-COL. ROUTINES ARE IN 20000-2
   0099
MR 90 GOSUB 20000
LI 100 TRAP 140
AI 110 COLOR 1:FOR J=2 TO 78 STEP 4:PLOT
   J,112:DRAWTO 41,159
TX 111 DRAWTO 41,159:DRAWTO J,190:PLOT 2,
   J+110:DRAWTO 41,159:DRAWTO 78,J+110
RS 120 NEXT J:PLOT 0,112:DRAWTO 78,112:DR
   AWTO 78,191:RESTORE 470
RY 130 READ T80$,X80,Y80:GOSUB 20099:GOTO
    130
VK 140 X80=4:Y80=10:FOR J=0 TO 127:T80$=C
   HR$(J):GOSUB 20099:T80$=CHR$(J+128):X8
   0=X80+40:GOSUB 20099
VA 150 X80=X80-39:IF X80=36 THEN X80=4:Y8
   0=Y80+1
GN 160 NEXT J
TM 180 T80$="
   ":X80=6:Y80=0:POKE 88,PEEK(88)+80
```

```
IY 200 U=USR(ADR(E80$),ADR(T80$),LEN(T80$
   ),57344,X80,Y80):POKE 88,PEEK(88)-80
G5 210 X80=59:T80$="                    "
   :FOR Y80=15 TO 22:GOSUB 20099:NEXT Y80

HB 220 PLOT 0,0:DRAWTO 319,0:DRAWTO 319,1
   91:DRAWTO 0,191:DRAWTO 0,0
SC 230 REM ACCEPT TEXT IN 80 COL.
WU 240 DIM I$(20):X=1:XPOS=44:YPOS=15
PP 250 T80$="  TYPE IN SOME TEXT!  ":X80=25
   :Y80=15:GOSUB 20099
XI 260 CLOSE #1:OPEN #1,4,0,"K:"
GR 270 U=USR(ADR(E80$),ADR(" "),2,CHBAS,
   XPOS+X,YPOS):GET #1,K
NV 280 IF K<>126 THEN 320:REM DELETE?
CT 290 IF K=126 AND X>1 THEN X=X-1:U=USR(
   ADR(E80$),ADR(" "),1,CHBAS,XPOS+X,YPOS
   ):IF X>1 THEN I$=I$(1,X-1)
HT 300 IF X=1 THEN I$="":U=USR(ADR(E80$),
   ADR(" "),1,CHBAS,XPOS,YPOS):IF X>1 THE
   N I$=I$(1,X-1)
OT 310 GOTO 270
```

continued on next page

```
JH 320 IF K=155 THEN U=USR(ADR(E80$),ADR(
   " "),1,CHBAS,XPOS+X,YPOS):GOTO 350
WC 330 IF X=11 THEN 270:REM MAX. LENGTH I
   S 11
UW 340 I$(X)=CHR$(K):U=USR(ADR(E80$),ADR(
   I$(X)),1,CHBAS,XPOS+X,YPOS):X=X+1:GOTO
    270:REM PRINT & UPDATE
CR 350 T80$=" What you typed in: ":X80=25
   :Y80=16:GOSUB 20099
IM 360 T80$=I$:X80=44:Y80=16:GOSUB 20099
WG 370 T80$="That was a demo of 80 column
    input.":X80=22:Y80=18:GOSUB 20099
IR 380 T80$="Here's a little 80 column mo
   tion:":X80=23:Y80=20:GOSUB 20099
UO 390 T80$="Press any key to exit...":X8
   0=28:Y80=22:GOSUB 20099
WK 400 POKE 764,255
FO 410 X=60:Y=20:YD=1:XD=1:OX=X:OY=Y
VZ 420 U=USR(ADR(E80$),ADR(" "),1,CHBAS,O
   X,OY):U=USR(ADR(E80$),ADR("*"),1,CHBAS
   ,X,Y):OX=X:OY=Y
WI 430 X=X+XD:IF (X=77) OR (X=60) THEN XD
   =-XD
UX 440 Y=Y+YD:IF (Y=22) OR (Y=15) THEN YD
   =-YD
DC 450 IF PEEK(764)=255 THEN 420
JW 460 POKE 764,255:END
DL 470 DATA ■The Easy 80 Column driver■
   by J.D. Casten for Antic Magazine,9,2
VL 480 DATA □■■■□□ -=-=-=-=-=-=-=-=-=-=-=-=(
   ##)=-=-=-=-=-=-=-=-=-=-=-=- □■■■□□,10,3
OL 490 DATA Font editors (i.e INSTEDIT et
   c.) can edit this font from the file:C
   OLUMN80.SET.,1,5
TY 500 DATA Use lines 20000 - 20099 of th
   is program to create your own 80 colum
   n programs.,1,6
LD 510 DATA Here is the entire set in bot
   h normal and inverse:,15,8
QC 520 DATA ■YOU may mix text■,1,17
XP 530 DATA ■and graphics■,3,19
WA 540 DATA ■■■
```

```
    701701700000000102136068034034204000000
    238068068068068068000000170
IU  1230 DATA 170170170170238000000170170 1
    701702380680000001701701702382381700000
    000170170068068170170000000
PD  1240 DATA 170170238068068068000000238 0
    340681361362380000002381361361361362380
    000000136136068068034034000
SI  1250 DATA 000238034034034034238000000 0
    682381700000000000000000000000000000000
    000255000068238238238068000
TW  1260 DATA 000000000204034102170238000 0
    001361362041701702040000000001021361361
    361020000000340341021701700
AE  1270 DATA 102000000000068170238136068 0
    000000340682380680680680000000001021701
    702380342040001361362041700
```

```
TH  1280 DATA 170170000000068000204068068238
    000000034000034034034034204000136136170
    204170170000000204068068
JT  1290 DATA 068068238000000000170238238170
    170700000000002041701701701700000000006
    817017017006800000000204
VA  1300 DATA 170170204136136000000102170170
    102034034000000204170136136136000000000
    102136068034204000000068
JM  1310 DATA 238068068068102000000001701701
    701701701020000000001701701702380680000
    000001701702382381700000000
ZG  1320 DATA 000170170068170170000000001701
    701701701020342040000002380340681362380
    000000068238238068238000000
MH  1330 DATA 102102102102102102102102000023
    820417003403400000000003410223823810203
    400000013620423823820413 6
MO  1340 DATA 000000001055109163208001055109
    163208
```

lesson 2: moving characters

ATARI ANIMATION

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LISTING 1

Don't type the TYPO II Codes!

```
GY  1 REM HAUNTED HOUSE, PART 2
OQ  2 REM BY ROBIN ALAN SHERER
PN  3 REM (c) 1987, ANTIC PUBLISHING INC.
EP  100 REM CHAR2 ADDS 8*8 PIXEL PROTO
WF  110 DIM MM$(41):MM$="hh0h0Nh0h0Ph■►
    ►P0h(1NEP/E)PWFOFQJ◄►P#$;"
BK  130 REM ■■MAINLINE
ER  140 DIM CHARSET$(24)
KT  150 CHARSET$="8►■■DJe■81■■DDD■8t■■DSH►
    "
MV  160 TM=PEEK(106)
KL  170 CB=TM-4:CA=CB*256:NCA=CA+24
MS  180 POKE 106,CB-4
SI  190 X=USR(ADR(MM$),224*256,CA,1023)
AZ  200 X=USR(ADR(MM$),ADR(CHARSET$),NCA,2
    4)
PK  2000 POKE 756,CB
QN  2010 C=5:R=22
AS  2020 POSITION C,R
MF  2030 ? #6;"#";:GOSUB 2090
AY  2040 POSITION C,R
MX  2050 ? #6;"$";:GOSUB 2090
BE  2060 POSITION C,R
NP  2070 ? #6;"%";:GOSUB 2090
OY  2080 GOTO 2020
GJ  2090 FOR I=1 TO 50
ES  2100 NEXT I
AF  2110 RETURN
```

```
BK  130 AR$="":READ AR$
XW  140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
    2,255
DG  150 LM=LM-1:POSITION 10,10:? "(Countdo
    wn...T-";INT(LM/10);")     "
UY  160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
    1:NEXT X:GOTO 130
MZ  170 IF PEEK(195)=5 THEN ? :? :? "■TOO
    MANY DATA LINES!":? "CANNOT CREATE FIL
    E!":END
CZ  180 IF C<LN+1 THEN ? :? "■TOO FEW DATA
     LINES!":? "CANNOT CREATE FILE!":END
AL  200 OPEN #1,8,0,FN$
PP  210 POKE 766,1:? #1;A$;:POKE 766,0
AF  220 CLOSE #1:GRAPHICS 0:? "■COMPLETED■
    "
FK  1000 DATA 104
IT  1010 DATA 049049048032068073077032077
    770360400520490410580770770360610341041
    041332071041332061041332 9
ZF  1020 DATA 104133208104170160255138208
    021041681772061452081361922552082472302
    072302092022242552082330 6
XT  1030 DATA 034155049053048032067072065
    082083069084036061034056092254124068074
    064160056108254124068068068
MG  1040 DATA 170056116254124068164004010
    034155
```

LISTING 2

```
MZ  10 REM HAUNTED HOUSE, PART 2 (HELP)
EG  20 REM BY ROBIN ALAN SHERER
HA  30 REM (c) 1987, ANTIC PUBLISHING
HI  35 REM (CREATES LINES 110-150 FOR HOUS
    E02.LST)
CQ  40 REM (LINES 10-220 MAY BE USED WITH
    OTHER BASIC LOADERS IN THIS ISSUE.
IS  45 REM CHANGE LINE 70 AS NECESSARY.)
MG  50 DIM FN$(20),TEMP$(20),AR$(93)
HO  60 DPL=PEEK(10592):POKE 10592,255
FV  70 FN$="D1:LINES02.LST":REM THIS IS TH
    E NAME OF THE DISK FILE TO BE CREATED
YS  80 GRAPHICS 0:? "     ANTIC'S GENERIC
    BASIC LOADER"
CD  90 ? ,"BY CHARLES JACKSON"
PW  100 POKE 10592,DPL:TRAP 170
PO  110 ? :? :? "Creating ";FN$:? "...plea
    se stand by."
LQ  120 RESTORE :READ LN:LM=LN:DIM A$(LN):
    C=1
```

LISTING 3

```
HZ  1 REM HAUNTED HOUSE, PART 3
OQ  2 REM BY ROBIN ALAN SHERER
PN  3 REM (c) 1987, ANTIC PUBLISHING INC.
ND  98 REM CHAR3 ADDS MULTI CHAR PROTO
NA  99 GOTO 110
BH  100 FOR I=1 TO 50:NEXT I:RETURN
BP  130 REM THESE LINES DELETE CODE
EO  140 DIM CHARSET$(76):DLY=100
QW  150 REM
QY  160 REM
ET  170 CB=PEEK(740)-4:POKE 106,CB-12:CA=C
    B*256:GRAPHICS 0
XT  180 REM DELETES OLD 180
EN  200 CA=CA+(96*8):FOR SEC=0 TO 1:GOSUB
    2110+10*SEC:X=USR(ADR(MM$),ADR(CHARSET
    $),CA,75)
GF  210 CA=CA+76:NEXT SEC
JE  1040 POKE 752,1:REM REMOVE GR. CALL
LT  2000 REM CHAR3 ADDS MULTI CHARACTER PR
    OTO
```

continued on next page

```
XB 2010 X=5:Y=20
AJ 2020 POKE 756,CB+2
SJ 2030 POSITION X,Y:? #6;"ab":POSITION X
   ,Y+1:? #6;"cd":POSITION X,Y+2:? #6;"ef
   ":GOSUB DLY
QU 2040 POSITION X,Y:? #6;"gh":POSITION X
   ,Y+1:? #6;"ij":POSITION X,Y+2:? #6;"kl
   ":SCROLL=SCROLL+2:GOSUB DLY
PZ 2050 POSITION X,Y:? #6;"mn":POSITION X
   ,Y+1:? #6;"op":POSITION X,Y+2:? #6;"qr
   ":SCROLL=SCROLL+4:GOSUB DLY
PF 2060 GOTO 2030
IS 2070 REM
IV 2080 REM
IY 2090 REM
HZ 2100 REM
VV 2110 CHARSET$(1,76)="■■■
```

```
XI 1230 POSITION 1,4:? #6;"RED white & BL
   UE?"
YZ 1240 POSITION 6,7:? #6;"yes":POSITION
   11,7:? #6;"NO"
LZ 1250 POSITION 0,9:? #6;"*▚▞*▚▞*▚▞*▚▞*▚
   ▞*▚▞*▞"
GH 1260 REM HIGHLIGHT NO
PX 1280 REM CHECK TRIGGER
WA 1290 IF STRIG(0)=0 THEN GOSUB 6000:GOT
   O 1000:REM NO
CU 1295 POSITION 6,7:? #6;"YES";
FQ 1297 POSITION 11,7:? #6;"No";:GOSUB 18
   20:POSITION 11,7:? #6;"nO";:GOSUB 1820
   :POSITION 11,7:? #6;"NO";
DW 1298 GOSUB 1820
BX 1300 IF STICK(0)<>11 THEN 1290
YK 1310 REM HIGHLIGHT YES
SR 1320 POSITION 11,7:? #6;"NO";
DN 1325 POSITION 6,7:? #6;"YeS";:GOSUB 18
   20:POSITION 6,7:? #6;"YEs";:GOSUB 1820
   :POSITION 6,7:? #6;"yES";
CV 1326 GOSUB 1820
AI 1330 IF STRIG(0)=0 THEN 110
SP 1340 IF STICK(0)<>7 THEN 1320
SU 1350 GOTO 1290
CT 1400 IF STRIG(0)=0 THEN 1400
NP 1410 GOTO 110
OW 1800 SOUND 0,45,10,8:FOR D=1 TO 25:NEX
   T D:SOUND 0,0,0,0:RETURN :REM SOUND RO
   UTINE
OJ 1810 FOR I=1 TO 200:NEXT I:RETURN :REM
    DELAY ROUTINE
SK 1820 FOR D=1 TO 10:NEXT D:RETURN
VY 1830 POKE 77,0:IF BRK THEN POKE 16,112
   :POKE 53774,112:RETURN
BB 1840 RETURN
ME 2000 IF XGUY<NSQRS THEN XTEMP=XTEMP+1:
   GOTO 3000
GP 2010 GOSUB 1800:RETURN
DN 2020 GRAPHICS 0:END
SM 2100 IF YGUY>0 THEN YTEMP=YTEMP-1:GOTO
    3000
GR 2110 GOSUB 1800:RETURN
QJ 2200 IF XGUY>0 THEN XTEMP=XTEMP-1:GOTO
    3000
GT 2210 GOSUB 1800:RETURN
OX 2300 IF YGUY<NSQRS THEN YTEMP=YTEMP+1:
   GOTO 3000
GV 2310 GOSUB 1800:RETURN
WS 3000 POKE 77,0:IF INT(STAT(XTEMP,YTEMP
   )/10) THEN 3180
TY 3005 REM NOT HIDDEN
YA 3100 IF STAT(XTEMP,YTEMP) THEN 3160
QP 3110 REM NOT GOTTEN
UH 3120 COLOR CGOT:PLOT XSTART+(LSQR*XGUY
   )+INT(LSQR/2),YSTART+(LSQR*YGUY)+INT(L
   SQR/2)
GP 3130 X=XSTART+(LSQR*XTEMP)+INT(LSQR/2)
   :Y=YSTART+(LSQR*YTEMP)+INT(LSQR/2):GOS
   UB 500
AT 3140 COLOR CGUY:XGUY=XTEMP:YGUY=YTEMP:
   PLOT X,Y:STAT(XGUY,YGUY)=1:TGOTTEN=TGO
   TTEN+1:RETURN
PV 3150 REM ALREADY GOTTEN
XH 3160 GOSUB 1800:XTEMP=XGUY:YTEMP=YGUY:
   RETURN
SA 3170 REM HIDDEN
TQ 3180 STAT(XTEMP,YTEMP)=STAT(XTEMP,YTEM
   P)-10:TFOUND=TFOUND+1:TGOTTEN=TGOTTEN+
   1
YJ 3185 IF STAT(XTEMP,YTEMP) THEN 3240
RN 3190 REM NOT GOTTEN
LV 3200 COLOR CNOTGOT:X=XSTART+(LSQR*XTEM
   P)+INT(LSQR/2):Y=YSTART+(LSQR*YTEMP)+I
   NT(LSQR/2):GOSUB 500
FG 3205 D=SQR(2^4.4)
UG 3210 COLOR CGOT:PLOT XSTART+(LSQR*XGUY
   )+INT(LSQR/2),YSTART+(LSQR*YGUY)+INT(L
   SQR/2)
EG 3220 COLOR CGOT:GOSUB 500:COLOR CGUY:X
   GUY=XTEMP:YGUY=YTEMP:PLOT X,Y:STAT(XGU
   Y,YGUY)=1:RETURN
SE 3230 REM GOTTEN, REVEAL SQUARE
TD 3240 COLOR CGOT:X=XSTART+(LSQR*XTEMP)+
   INT(LSQR/2):Y=YSTART+(LSQR*YTEMP)+INT(
   LSQR/2):GOSUB 500
XG 3250 GOSUB 1800:XTEMP=XGUY:YTEMP=YGUY:
   RETURN
IE 5000 GRAPHICS MODE:POKE 712,BLACK:POKE
    708,RED:POKE 709,WHITE:REM FLIP
HD 5010 FOR Y=0 TO NSQRS
GW 5020 FOR X=0 TO NSQRS
BH 5030 IF INT(STAT(X,Y)/10) THEN COLOR C
   HIDE:GOTO 5070
OW 5040 IF X=XGUY AND Y=YGUY THEN COLOR C
   GOT:GOTO 5070
JN 5050 STAT(X,Y)=ABS(STAT(X,Y)-1)
WP 5060 IF STAT(X,Y) THEN COLOR CGOT:GOTO
    5070
FG 5065 COLOR CNOTGOT
GD 5070 FOR TY=YSTART+(Y*LSQR) TO YSTART+
   (Y*LSQR)+LSQR-1
DP 5080 TX1=XSTART+X*LSQR:TX2=TX1+LSQR-1
FN 5090 PLOT TX1,TY:DRAWTO TX2,TY:NEXT TY
   :NEXT X:NEXT Y
AS 5140 COLOR CGUY:PLOT XSTART+(LSQR*XGUY
   )+INT(LSQR/2),YSTART+(LSQR*YGUY)+INT(L
   SQR/2)
UI 5150 TGOTTEN=TFOUND-TGOTTEN+1:RETURN
ZJ 6000 GRAPHICS MODE:POKE 712,BLACK:POKE
    708,RED:POKE 709,WHITE
RN 6010 FOR YTEMP=0 TO NSQRS:FOR XTEMP=0
   TO NSQRS
NW 6020 IF INT(STAT(XTEMP,YTEMP)/10) THEN
    COLOR CHIDE:GOTO 6050
YF 6030 IF STAT(XTEMP,YTEMP) THEN COLOR C
   GOT:GOTO 6050
EH 6040 COLOR CNOTGOT
FL 6050 X=XSTART+(XTEMP*LSQR)+INT(LSQR/2)
   :Y=YSTART+(YTEMP*LSQR)+INT(LSQR/2):GOS
   UB 500
QS 6060 NEXT XTEMP
RG 6070 NEXT YTEMP
BD 6080 COLOR CGUY:PLOT XSTART+(LSQR*XGUY
   )+INT(LSQR/2),YSTART+(LSQR*YGUY)+INT(L
   SQR/2)
ZD 6090 XTEMP=XGUY:YTEMP=YGUY:RETURN
ZK 7000 GRAPHICS 18:GOSUB 1830
IM 7010 PRINT #6;"skill level:":POSITION
   13,0:? #6;NSQRS+1
JQ 7020 POSITION 3,3:? #6;"USE JOYSTICK T
   O":POSITION 1,5:? #6;"CHANGE SKILL LEV
   EL"
WK 7030 POSITION 9,7:? #6;"MMM":POSITION
   2,9
GQ 7040 ? #6;"PRESS TRIGGER TO":POSITION
   8,11:? #6;"PLAY"
ME 7050 REM JOYSTICK INPUT
YU 7060 IF STRIG(0)=0 THEN RETURN
MU 7070 J=STICK(0):IF J<13 OR J>14 THEN 7
   060:REM CHECK RANGE
RB 7075 ON 15-J GOTO 7080,7090
TJ 7080 IF NSQRS>MAXSQRS-1 THEN GOSUB 180
   0:GOTO 7060
HH 7085 NSQRS=NSQRS+1:GOTO 7110
XG 7090 IF NSQRS<2 THEN GOSUB 1800:GOTO 7
   060
SY 7095 NSQRS=NSQRS-1
XP 7110 POSITION 13,0:? #6;"  ":POSITION
   13,0:? #6;NSQRS+1:FOR I=1 TO 100:NEXT
   I
SQ 7120 GOTO 7060
HH 10000 XSTART=INT((WIDSCR/2)-(((NSQRS+1
   )/2)*LSQR))
FM 10005 YSTART=INT((LENSCR/2)-(((NSQRS+1
   )/2)*LSQR))
HE 10010 FOR X=0 TO NSQRS
IO 10015 FOR Y=0 TO NSQRS
ZA 10020 STAT(X,Y)=INT(RND(0)+0.5)+10
NF 10030 NEXT Y
MX 10040 NEXT X
OB 10050 XGUY=INT(RND(0)*NSQRS+1):YGUY=IN
   T(RND(0)*NSQRS+1):STAT(XGUY,YGUY)=1:XT
   EMP=XGUY:YTEMP=YGUY
JP 10060 TGOTTEN=1:TFOUND=1
ED 10080 RETURN
YF 11000 MODE=5+16:WIDSCR=80:LENSCR=48:LS
   QR=5:MAXSQRS=INT((LENSCR/LSQR)-1):NSQR
   S=4
OL 11010 CGUY=0:CGOT=3:CNOTGOT=1:CHIDE=2
KK 11020 DIM STAT(MAXSQRS,MAXSQRS),CLS$(1
   )
OC 11030 CLS$=CHR$(125):ESC=28:RED=50:WHI
   TE=14:BLUE=114:YELLOW=30:BLACK=0
DP 11040 RETURN
ZY 12000 DATA 170,10,42,170,10,42,170,10
```

a Stan Ockers classic returns

CHICKEN XL

Article on page 35

LISTING 1

Don't type the TYPO II Codes!

```
GL 1 REM CHICKEN
ZK 2 REM BY STAN OCKERS (12/81)
YC 3 REM ANTIC PUBLISHING, 1987
PE 10 OPEN #1,4,0,"K:":DIM L$(20),S$(20),
   C$(20)
KS 15 ? "INITIALIZING ..."
JW 20 REM PAGE 6 ROUTINES AND DATA
EE 40 FOR I=1536 TO 1587:READ A:POKE I,A:
   NEXT I
NU 41 REM VERTICAL BLANK ROUTINE
LH 42 DIM VB$(210):FOR I=1 TO 210:READ A:
   VB$(I)=CHR$(A):NEXT I
CD 43 REM LOAD PLAYER ROUTINE
QL 45 DIM LD$(73):FOR I=1 TO 73:READ A:LD
   $(I)=CHR$(A):NEXT I
SC 47 REM INSERT ADDRESS OF ROUTINE IN PA
   GE 6
MR 48 A=ADR(VB$):B=INT(A/256):POKE 1540,B
   :POKE 1538,A-256*B
QG 50 DATA 104,160,52,162,6,169,7,76,92,2
   28,104,160,98,162,228,169,7,76,92,228
KY 52 DATA 120,120,120,120,30,57,81,105,1
   5,15,15,15,0,0,0,0,52,53,54,55,2,2,3,4
   ,12,15,15,15,15,11,11,11
BK 54 REM
BM 55 REM
YZ 56 DATA 72,138,72,152,72,162,0,189,120
   ,2,29,44,6,160,15,24,176,32,201,15,240
   ,28,201,14,208,2,160,13,201,13
RB 57 DATA 208,2,160,14,201,11,208,2,160,
   7,201,7,208,2,160,11,192,15,240,6,61,4
   8,6,157,28,6,152,61,44,6,157,44,6
JO 58 DATA 232,224,4,144,195
KK 60 DATA 162,0,189,32,6,133,203,189,36,
   6,133,204,189,40,6,133,209,198,209,16,
   7,232,224,4
YS 65 DATA 144,232,176,91,189,28,6,133,20
   7
XV 70 DATA 70,207,176,26,188,24,6,192,1,2
   40,19,208,1,200,177
AB 75 DATA 203,240,6,136,145,203,200,208,
   245,136,145,203,222,24,6,70,207,176,29
   ,188,24,6,200,192,254,176,21
NH 80 DATA 177,203,208,247,136,177,203,24
   0,6,200,145,203,136,208,245,200,145,20
   3,254,24,6,70,207,176,3,222,20
KM 85 DATA 6,70,207,176,3,254,20,6,189,20
   ,6,157,0,208
ZB 90 DATA 24,144,154,162,4,189,11,208,24
   0,5,169,0,157,39,6,202,208,243,104,168
   ,104,170,104,76,98,228
JO 100 DATA 234,234,234,104,104,104,170,1
   89,32,6,133,186,189,36,6,133,187,104,1
   33,213,104,133,212
NK 110 DATA 189,24,6,133,195,169,0,168,19
   2,255,176,35,196,195,240,5,145,186,200
   ,208,243,162,0,161,212,240,11
GQ 120 DATA 145,186,230,212,200,192,255,1
   76,11,208,241,169,0,145,186,200,192,25
   5,144,249,96,234,234
TE 150 REM CAR COLOR DATA
IL 160 FOR I=1 TO 20:READ A:C$(I)=CHR$(A)
   :NEXT I
GK 170 DATA 24,60,218,68,90,186,70,150,54
   ,232,74,168,88,154,21,252,200,76,228,2
   8
FQ 190 REM DEFINE P/M AREA - SINGLE LINE
   RESOLUTION
BP 200 A=PEEK(106)-16:POKE 54279,A:PM=256
   *A
FV 205 REM PLAYER MISSILE POINTERS
CM 210 FOR I=4 TO 7:POKE 1568+I,A+I:NEXT
   I
OU 212 FOR I=1568 TO 1571:POKE I,0:NEXT I
ZG 218 REM DATA FOR PLAYER IMAGES
TC 220 FOR I=PM TO PM+121:READ A:POKE I,A
   :NEXT I
RA 230 DATA 16,56,16,56,40,16,16,16,146,2
   54,254,124,56,56,40,40,40,40,40,108,0
ZE 232 DATA 126,195,219,219,91,219,219,21
   9,219,91,219,219,195,126,0
OW 234 DATA 126,195,219,219,218,219,219,2
   19,219,218,219,219,195,126,0
QX 236 DATA 33,34,150,84,57,30,60,123,159
   ,30,52,86,151,36,194,193,0
TH 238 DATA 16,56,16,56,40,16,16,56,124,2
   54,186,56,56,40,40,40,44,32,96,0
WC 240 DATA 16,56,16,56,40,16,16,146,214,
   124,56,56,40,40,40,104,8,12,0
WG 242 DATA 126,255,173,173,239,199,199,1
   99,199,239,173,173,255,126,0
VB 270 REM INIT. HORIZ. & VERT. POS.
SB 280 RESTORE 282:FOR I=1556 TO 1563:REA
   D A:POKE I,A:NEXT I
FK 282 DATA 120,120,120,120,30,57,81,105
YI 288 REM INIT COLORS
FC 290 DIF=3:BONUS=300:POKE 704,40:CP=0:F
   OR I=1 TO 3:POKE 704+I,ASC(C$(CP+I)):N
   EXT I:CP=3:BPOS=5
VI 295 REM DRAW ROADS - SET PRIORITY
PA 300 GRAPHICS 17:FOR I=1 TO 20:L$(I)="_
   ":NEXT I
WD 305 FOR I=2 TO 20 STEP 2:S$(I)="-":S$(
   I-1)=" ":NEXT I
OI 310 POSITION 0,2:? #6;L$:POSITION 0,11
   :? #6;L$:POSITION 0,13:? #6;L$:POSITIO
   N 0,22:? #6;L$
NB 312 POSITION 0,5:? #6;S$:POSITION 0,8:
   ? #6;S$:POSITION 0,16:? #6;S$:POSITION
    0,19:? #6;S$:POKE 710,90
QG 340 REM INIT. AND PRINT INFO. - RESET
   TIMER
HM 350 SCORE=50:POSITION 0,1:? #6;"score
            time ":POSITION 0,23:? #6;"di
   f             high ";
VA 360 POSITION 0,0:? #6;SCORE:POSITION 1
   5,22:? #6;HIGH:POKE 77,0:POKE 19,0:POK
   E 20,0
GO 365 REM INIT. P/M GR. - FLAGS
JE 370 POKE 559,62:POKE 53277,3:I1=68:I2=
   88:FL=I1
EW 375 REM LOAD PLAYERS - SET COLORS - PL
   AYER SIZES
EG 380 LD=ADR(LD$):A=USR(LD,0,PM):A=USR(L
   D,1,PM+21):A=USR(LD,2,PM+21):A=USR(LD,
   3,PM+21)
MP 385 A=USR(1536):REM INSERT VBI ROUTINE
ZP 390 POKE 53257,1:POKE 53258,1:POKE 532
   59,1:POKE 623,1
CD 393 REM INIT. SPEEDS
CT 395 POKE 1576,2:FOR I=1577 TO 1579:POK
   E I,RND(0)*DIF+1:NEXT I
NX 398 POSITION 1,22:? #6;DIF
XI 400 REM IF CARS OFF SCREEN, CHANGE LAN
   ES
EQ 410 IF PEEK(1557)<15 AND PEEK(1561)=57
    THEN POKE 1561,193:A=USR(LD,1,PM+36):
   POKE 1585,7:GOSUB 1000:POKE 705,C
TF 420 IF PEEK(1557)>240 AND PEEK(1561)=1
   93 THEN POKE 1561,57:A=USR(LD,1,PM+21)
   :POKE 1585,11:GOSUB 1000:POKE 705,C
UY 430 IF PEEK(1558)<15 AND PEEK(1562)=81
    THEN POKE 1562,169:A=USR(LD,2,PM+36):
   POKE 1586,7:GOSUB 1000:POKE 706,C
FN 440 IF PEEK(1558)>240 AND PEEK(1562)=1
   69 THEN POKE 1562,81:A=USR(LD,2,PM+21)
   :POKE 1586,11:GOSUB 1000:POKE 706,C
TH 450 IF PEEK(1559)<15 AND PEEK(1563)=10
   5 THEN POKE 1563,145:A=USR(LD,3,PM+36)
   :POKE 1587,7:GOSUB 1000:POKE 707,C
```

```
BN 460 IF PEEK(1559)>240 AND PEEK(1563)=1
   45 THEN POKE 1563,105:A=USR(LD,3,PM+21
   ):POKE 1587,11:GOSUB 1000:POKE 707,C
HV 465 REM PRINT TIME - CK. FOR TIME UP
IT 470 TIME=30-PEEK(19):POSITION 16,0:? #
   6;TIME;" ":IF TIME<=0 THEN 910
YO 472 REM RESET SOUND - HORN ROUTINE
WL 473 SOUND 0,0,0,0
QY 475 IF RND(0)>0.5 THEN SOUND 1,0,0,0
OF 480 IF RND(0)<0.05 THEN SOUND 1,7,12,1
   0
BI 482 REM CHICKEN STOMP
HA 485 P=PEEK(1564):IF P>15 OR P<13 THEN
   500
JO 490 IF P=15 THEN A=USR(LD,0,PM):GOTO 5
   00
NU 492 IF FL=I1 THEN FL=I2:SOUND 0,16,6,8
   :GOTO 496
PW 494 IF FL=I2 THEN FL=I1:SOUND 0,22,6,8

LY 495 REM CHECK FOR REACHING BOTTOM
ZE 496 A=USR(LD,0,PM+FL)
GA 500 IF PEEK(1560)>230 THEN 810
CJ 505 REM CHECK FOR COLLISION
TG 510 IF PEEK(53260)=0 THEN 410
IU 515 REM SPLAT
IO 520 A=USR(LD,0,PM+51):FOR J=1 TO 3:SOU
   ND 0,RND(0)*255,8,8:SOUND 1,RND(0)*255
   ,8,8
KY 525 POKE 704,PEEK(704)+8:FOR I=1 TO 30
   :NEXT I:NEXT J:SOUND 0,0,0,0:SOUND 1,0
   ,0,0:POKE 704,40
BP 527 REM DECREASE SCORE - CHECK FOR 0
XG 530 SCORE=SCORE-20:POSITION 0,0:? #6;S
   CORE;"   ":IF SCORE<=0 THEN 702
GI 533 REM MOVE UP - RELOAD BIRD - RESET
   COLL.
YE 535 POKE 1560,PEEK(1560)-24:A=USR(LD,0
   ,PM):IF DIF>1 THEN DIF=DIF-1
BQ 590 POKE 53278,0:GOTO 395
SG 700 REM SCORE = ZERO
FF 702 POSITION 3,2:? #6;"CHICKEN'S DEAD"

MQ 704 REM AMBULANCE
FA 705 C=1
DM 706 IF PEEK(1576+C)=0 THEN C=C+1:GOTO
   706
NP 707 IF C>3 THEN C=1
BF 713 POKE 1576+C,1:POKE 1560+C,PEEK(156
   0):POKE 1556+C,220:A=USR(LD,C,PM+107)
XT 715 FOR J=1 TO 6:FOR P=60 TO 40 STEP -
   2:SOUND 0,P,10,8:FOR I=1 TO 6:NEXT I
RL 716 NEXT P:FOR P=40 TO 60 STEP 2:SOUND
    0,P,10,8:FOR I=1 TO 6:NEXT I:NEXT P:N
   EXT J:SOUND 0,0,0,0
LS 718 REM NEW HIGH SCORE?
ST 720 A=USR(1546):IF SCORE>HIGH THEN HIG
   H=SCORE:POSITION 15,22:? #6;HIGH
HJ 730 POSITION 2,6:? #6;"PRESS FIRE BUTT
   ON":POSITION 4,7:? #6;"TO PLAY AGAIN"
LC 732 FOR I=53248 TO 53251:POKE I,0:NEXT
    I:SOUND 0,0,0,0:SOUND 1,0,0,0
WX 735 REM WAIT FOR BUTTON
CA 740 IF STRIG(0)=1 THEN 740
OP 745 REM P/M GRAPHICS OFF
TP 750 POKE 53278,0:POKE 53277,0:A=USR(15
   46):GOTO 280
MT 800 REM BACK TO TOP - STOP MOVEMENT OF
    BIRD
BK 810 POKE 1560,30:A=USR(LD,0,PM):POKE 1
   576,0
YX 815 REM SIGNAL AND INCREMENT SCORE
YR 820 FOR I=1 TO 5:FOR J=10 TO 5 STEP -1
   :SOUND 0,J,14,8:SOUND 1,J,2,8:NEXT J:S
   OUND 0,0,0,0:SOUND 1,0,0,0
UX 825 A=USR(LD,0,PM+68):FOR J=1 TO RND(0
   )*30:NEXT J:A=USR(LD,0,PM+88)
XP 830 SCORE=SCORE+DIF*2:POSITION 0,0:? #
   6;SCORE;"   ":NEXT I
RJ 840 IF DIF<9 THEN DIF=DIF+1
FG 841 REM CK FOR BONUS
XG 842 IF SCORE<BONUS THEN 850
YC 844 SOUND 0,25,10,10:BONUS=BONUS+300:P
   =PEEK(19):IF P<11 THEN POKE 19,0:GOTO
   848
CT 846 POKE 19,P-10
WG 848 POSITION BPOS,13:? #6;"M":BPOS=BPO
   S+1
QM 850 GOTO 390
OZ 900 REM TIME'S UP ROUTINE
PJ 910 POSITION 5,2:? #6;"TIME'S UP"
OW 920 GOTO 720
TY 990 REM CHANGE CAR COLOR
QF 1000 CP=CP+1:IF CP=20 THEN CP=1
NU 1010 C=ASC(C$(CP)):RETURN
```

transmit your own subliminal messages

GHOST WRITER

Article on page 36

LISTING 1

Don't type the TYPO II Codes!

```
WP 10 REM "GHOST WRITERS IN DIS-GUISE"
ER 20 REM BY THOMAS MOORE
PT 30 REM (c)1987, ANTIC PUBLISHING
JX 1000 GRAPHICS 1+16:CLR
WQ 1040 DIM MSS$(20),TOM$(20),MST$(20),MO
   T$(20):BRK=(PEEK(53279)<>5)
EH 1060 GOSUB 1860
QM 1080 TRAP 1820
TG 1100 A=1
PQ 1120 GOSUB 1200:GRAPHICS A+16:POKE 756
   ,CHSET/256
MH 1140 POKE 709,228:POKE 710,10:POKE 708
   ,130
MF 1160 DL=PEEK(560)+256*PEEK(561)+6
TW 1180 FOR I=0 TO 6:POKE DL+I,133+A:NEXT
    I:GOTO 1240
FJ 1200 POKE 82,10:POKE 83,29:?
XM 1220 TOM$="CALL":MOT$="HOME":RETURN
HH 1240 FOR I=0 TO 42:READ B:POKE 1553+I,
   B:NEXT I
TR 1260 DATA 72,138,72,152,72,162,0,141,1
   0,212
AD 1280 DATA 189,1,6,188,9,6,141,24,208,1
   40,25,208
HZ 1300 DATA 232,173,0,6,201,1,144,3,141,
   10,212
IX 1320 DATA 224,6,144,226,104,168,104,17
   0,104,64
RE 1340 FOR I=0 TO 73:READ C:POKE 1599+I,
   C:NEXT I:POKE 1596,0
WO 1360 DATA 72,138,72,173,60,6,201,4,144
   ,55,162,7
QU 1380 DATA 173,8,6,141,61,6,173,9,6,141
   ,62,6
IM 1400 DATA 202,189,1,6,157,2,6
EM 1420 DATA 224,0,208,245,173,61,6
RS 1440 DATA 141,1,6,162,0,189,10,6,157,9
   ,6,232,224,7,208,245,173,62,6,141,16,6
   ,169,0
SM 1460 DATA 141,60,6,238,60,6,104,170,10
   4,76,98,228
BP 1480 FOR I=0 TO 7:POKE 1537+I,(8+I)*16
   +I*2:NEXT I
RB 1500 FOR I=0 TO 7:POKE 1545+I,(1+I)*16
   +I*2:NEXT I
DL 1520 POKE 1536,A
HJ 1560 POKE 512,17:POKE 513,6
NY 1580 POKE 548,63:POKE 549,6:POKE 54286
   ,192
BZ 1585 GOSUB 10000
YQ 1590 POSITION 0,9:? #6;"J&&&&&&&&&&&&&
   &&&&&."
```

continued on next page

```
PG 1600 POSITION 0,1:? #6;"[XXXXXXXXXXXXX
   XXXXX,"
MU 1605 SOUND 3,40,8,2:POKE 53768,1
LE 1610 POSITION 4,11:? #6;"R E -- I a X"

RA 1615 POSITION 4,20:? #6;"OBSERVE"
AS 1617 POSITION 8,21:? #6;"WRITINGS"
PF 1620 MS5$=":CCCCCCCCCCCCCCCCCC:"
CC 1622 MST$=":MMMMMMMMMMMMMMMMMM:"
QM 1640 TRAP 1820
VK 1650 POSITION 2,0:? #6;"
   "
JE 1680 IF BRK THEN POKE 16,112:POKE 5377
   4,112
VL 1690 GOSUB 2020:GOSUB 7000:GOSUB 9000
WX 1700 GOSUB 2040:GOSUB 7000:GOSUB 9100
BA 1750 GOSUB 2420
BG 1770 GOSUB 10000
OP 1775 POSITION 8,5:? #6;"MMMM"
UL 1780 FOR SD=4 TO 14:POSITION SD,11:? #
   6;" ":FOR GQ=1 TO 7:NEXT GQ:NEXT SD
UI 1781 FOR SD=15 TO 5 STEP -1:POSITION S
   D,11:? #6;"G ":FOR GQ=1 TO 7:NEXT GQ:N
   EXT SD
MJ 1782 POSITION 4,11:? #6;"R E -- I a X"

RY 1800 GOTO 1640
DZ 1820 TRAP 40000:SOUND 0,12,10,8:SOUND
   0,0,0,0:GOTO 1640
EK 1860 OPEN #1,4,0,"D:GHOST.FNT"
RY 1880 X=16:CHSET=(PEEK(106)-8)*256:POKE
    756,CHSET/256
XS 1900 ICCOM=834:ICBADR=836:ICBLEN=840
HZ 1920 POKE ICBADR+X+1,CHSET/256:POKE IC
   BADR+X,0
HI 1940 POKE ICBLEN+X+1,4:POKE ICBLEN+X,0

XJ 1960 POKE ICCOM+X,7:A=USR(ADR("hhhKLVK
   "),X)
NZ 1980 CLOSE #1
AA 2000 RETURN
EF 2020 FOR K=2 TO 8:POSITION 0,K:? #6;MS
   5$:NEXT K
AJ 2030 RETURN
FY 2040 FOR K=2 TO 8:POSITION 0,K:? #6;MS
   T$:NEXT K
AS 2060 RETURN
UI 2420 SOUND 0,0,0,0:SOUND 1,0,0,0
WM 2421 FOR TY=1 TO 10:POKE 708,PEEK(5377
   0):POSITION 2,0:? #6;"THE GHOST writer
   "
NJ 2425 SOUND 2,TY*3,8,4
VA 2430 IF TY>7 THEN POSITION 8,5:? #6;TO
   M$
WP 2440 IF TY>9 THEN POSITION 8,5:? #6;MO
   T$
JE 2490 SOUND 2,0,0,0
ZQ 2495 NEXT TY:SETCOLOR 0,PEEK(20),2:POK
   E 77,0
AK 2500 RETURN
IK 7000 IF BRK THEN POKE 16,112:POKE 5327
   9,112
AI 7010 RETURN
KI 9000 FOR RP=2 TO 80
OF 9005 PR=RP
KU 9010 WE=RND(1)*18:IF WE<1 THEN WE=10
PP 9030 IF PR>8 THEN PR=PR/13+2
UP 9040 POSITION WE,PR:? #6;"H"
UF 9050 NEXT RP
AD 9060 GOSUB 7000
BC 9070 RETURN
KK 9100 FOR RP=2 TO 80
OH 9105 PR=RP
KW 9110 WE=RND(1)*18:IF WE<1 THEN WE=10
PR 9130 IF PR>8 THEN PR=PR/13+2
NL 9140 POSITION WE,PR:? #6;"Q"
UH 9150 NEXT RP
AF 9160 GOSUB 7000
BE 9170 RETURN
OJ 10000 SOUND 0,255,10,4:POKE 53768,1:SO
   UND 1,254,10,4:POKE 53768,1
DB 10010 RETURN
```

LISTING 2

```
WP 10 REM "GHOST WRITERS IN DIS-GUISE"
ER 20 REM BY THOMAS MOORE
PT 30 REM (c)1987, ANTIC PUBLISHING
UG 35 REM CREATES "D:GHOST.FNT"
CQ 40 REM (LINES 10-220 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
RJ 70 FN$="D1:GHOST.FNT":REM THIS IS THE
   NAME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "      ANTIC'S GENERIC
   BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")     "
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CZ 180 IF C<LN+1 THEN ? :? "TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? "COMPLETED
   "
JC 1000 DATA 1029
QI 1010 DATA 0000000000000000000000000000
   3606600000002400019510210210200000000
   0000001950000240000000066036
AB 1020 DATA 0000361262542281260391260360
   0000000000000000255000002550000000000
   0000000000003200000400006 4
GQ 1030 DATA 0000000000000360000000000000
   3603600000000000036000000000000064000
   0040000320000000240241260 24
RB 1040 DATA 0240000000000000002482480240
   2402400000000012600000000000024024024
   2482480000000000006012024
AZ 1050 DATA 0480960640001242061981981982
   3012400005605602402402402402400012423 0
   0120240480962540001260 12024
XC 1060 DATA 0120061020600000120280601082
   0425401200012609612400600610206000012 4
   1981922522062301240001260 06
XC 1070 DATA 0120240480480480001242062301
   2420623012400012420619823012601202404 8
   0240240240240240240240240000
ZC 1080 DATA 0000240240000240240480000480
   9625409604800000000000126000000126000
   0000001200612700601200000 0
TX 1090 DATA 0601021020120240000240000000
   6010211011009606200012015606005406210 2
   1021952381150990991100990 99
CN 1100 DATA 2220601022041921921922301242
   3811509909909909909922225410209612009 6
   0991021242541020961200960 96
HM 1110 DATA 0960960601021981922221981020
   6019819819820625423019819804802402402 4
   0240240240120300120120120 12
EO 1120 DATA 0280560961981081081201201081
   0819822409609609610212612019823825 4
   2141981981981981982302 46
PR 1130 DATA 2222061981981242061981981981
   9823012425210210210210809609619212423 0
   1981981981982061272381151 02
SY 1140 DATA 1081021020991950581020960600
   0600610209225404809619219219419812423 0
   1021021021021021100631951 02
NH 1150 DATA 1021021021020600241951951952
   1120322311909819519510206006010219519 5
   1951021020600240240240241 26
WQ 1160 DATA 1980120242540961952540000000
   0003103102402402400006409604802401200 6
   0000240240240310310000000 00
BC 1170 DATA 0000080280540990000000000000
   0000000000000025500000006019824619823 0
   2460002402402403103102402 4
GD 1180 DATA 0240030030030030030030030030
   2402402424824800000000002402402424824 8
   0240240240000000002482480 24
FM 1190 DATA 0240240030070140280561122241
   9219222411205602801400700300100300701 5
   0310631272550002302462222 06
XN 1200 DATA 2302460001281922242402482522
   5425500019219219222424025400000124198
   1982302461240000001261921 92
YM 1210 DATA 2382461260000000000000000000
   0025525500000000000024024024024000002 8
```

```
   028119119008028000000000000
PP 1220 DATA 031031024024024000000002552
   550000000002402402425255024024024000
   000601261261260600000000
VI 1230 DATA 000000255255255255192192192 1
   921921921921920000000002552550240240240
   240240242552550000000240
ID 1240 DATA 240240240240240240240024024 0
   240310310000000001200961200961260240300
   000000240601260240240240000
LP 1250 DATA 000024024024126060024000000 0
   240481260480240000000000240121260120240
   000000135159135159129231225
GF 1260 DATA 255000000621021021020590002
   240960961241021021240000000000060102096
   102060000012006006062102102
WH 1270 DATA 058000000000060102126096062 0
   000140240240240620240240000000006124204
   204120194124192096096108118
```

```
BI 1280 DATA 102102000048000240120120120
   120000120000120120120120120560001921021
   081201082300000480240240240
SD 1290 DATA 024024012000000192102126126 1
   060990000001921241021021020990000000000
   060110102118060000000192124
VQ 1300 DATA 102102124096224000000059102 1
   020620060070001921241180960960960000000
   000062096060134124000000048
BI 1310 DATA 126048048048048054028000002301
   021021100590000000002301021020600240000
   000000227107127062054000000
LQ 1320 DATA 003102060024060102192000000 2
   301021020622041200000001260121260491260
   000000024060126126024060000
JF 1330 DATA 024024024024024024024024000 1
   261201241101020060000800240561200560240
   008000016024028030030028024
MZ 1340 DATA 016040202148070000
```

"printer pictures" go hi-res

ASCII ART CONVERTER

Article on page 20

LISTING 1

Don't type the TYPO II Codes!

```
ZY 10 REM ASCII ART CONVERTER
UF 20 REM BY PAUL TUPACZEWSKI
HA 30 REM (c) 1987, ANTIC PUBLISHING
CQ 40 REM (LINES 10-220 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
DE 70 FN$="D1:ARTCONVR.EXE":REM THIS IS T
   HE NAME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "      ANTIC'S GENERIC
   BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")     "
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "■TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CZ 180 IF C<LN+1 THEN ? :? "■TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? "■COMPLETED■
   "
IU 1000 DATA 3207
FV 1010 DATA 255255000032251032162048169 0
   031570660031690631570680031690401570690
   031690041570740031690001 57
GZ 1020 DATA 075003032086228032106039032 0
   350380320840360322260381620321690121570
   660030320862281690421410 48
EN 1030 DATA 002169042141049002169033141 0
   470021691961411980021690961410000021690
   043141001002169192141014212
UI 1040 DATA 169030141030039169032141031 0
   390321720391732020392010322401212010710
   208012169011056237051043141
BU 1050 DATA 051043076097032201080208027 2
   380780401730780402010042080051690001410
   780401740780401890740401 41
MT 1060 DATA 023043076097032201067208029 1
   690010562370730401410730400100101600000
   170189065040153183042232200
MF 1070 DATA 192004208244076097032201068 2
```

```
   080272380800401730800402010572080051690
   049141080040173080040056233
YW 1080 DATA 032141206042076097032201076 2
   081310320320390760970321730820402010320
   208003076097032032085038169
VU 1090 DATA 069141048002169042141049002 0
   322520322470331720391732020392010852400
   072010692082420760280331 62
ES 1100 DATA 000189219041157129040232224 0
   642082450760110341691751410480021690431
   410490021690001411990021 69
TW 1110 DATA 064141014212032188038032166 0
   380321760381690001411440391620161690071
   570660031692171570680031 69
MZ 1120 DATA 048157069003169000157072003 1
   690011570730030320862281600001852170400
   761240381701890970402080 18
CV 1130 DATA 254097040185217040056233032 1
   741440391572360430760260422002082231621
   016189067003201136208182032
AM 1140 DATA 226038169070141199002169000 1
   411440391741440391691581570120441890440
   440241051281570440440321 72
JT 1150 DATA 039173202039201155240091201 1
   262080141731440392402370321480382061440
   390761490332010322080161 73
VY 1160 DATA 144039201031240217032148038 2
   381440390761490332010481442042010521760
   200056233048141145039174144
RP 1170 DATA 039189236043024105032170173 1
   450391570970401741440391732480332430341
   450390241050161570440441 69
JR 1180 DATA 000157012044238144039076149 0
   330321880380320880371690341410470021690
   001411080441411090441690 12
EE 1190 DATA 141200002169010141196002169 0
   071411970021690021411980021690641410142
   121620161690071570660031 69
ZD 1200 DATA 217157068003169040157069003 1
   690015707200316900115707300303208622816
   201618906700320113620800 3
LS 1210 DATA 032112038169000141110044174 1
   100441892170402011552400482010132400442
   010102400291701720730401 85
SR 1220 DATA 217041024109108044141145039 1
   890970401741450391721090440321840342381
   080442381100441731100442 08
ZE 1230 DATA 201076171034169000141108044 2
   381090440761180361730830032011362081330
   322260380760290351411460 39
IE 1240 DATA 173078040208006173146039076 1
   470392010012080251381411450391521411440
   391691280562371450391681 73
PX 1250 DATA 144039170173146039076147039 2
```

continued on next page

```
   0100220802614214503914014403916915905623714503917024403423903516
VR 1260 DATA 0950562371440391681731460390761470391381411450391521411440391692242241091450391681691590562
YZ 1270 DATA 1440391701731460390761470391730312082010032400501690071411970021732520022012552400251730510
IJ 1280 DATA 2400071691921410020382080051690961410020380322130371692551412520021690861410300391690351410
TD 1290 DATA 0390760290351730480021332071730490021332081691111410480021690441410490021690821411970021730
PI 1300 DATA 0421411210451730312082010062080131652071410480021652081410490020760290351732520022012552402
TG 1310 DATA 0321720391732020392010491442192010531762152010512080060320140370761170352010522080030760300
CP 1320 DATA 1731230452401931732020392010492080940322280361690001411440391650881332031650891330416000177
EI 1330 DATA 2031532170401530010412001920402082431620161690111570660031692171570680031690801570690031690
IG 1340 DATA 1570720032400352350361690001570730030320862281730830032010012080010961040762360380321060391622409620824616900014120000224
HK 1350 DATA 1050001332042381440391731440392010962081810761810362010502080360322280361620161690111570660031692241570680031690801570740031690
UT 1360 DATA 1650881570680031650891570690031690001570720031690301570730030320862281730830032010012080010961040762360380321060391622409620824616900014120000224
JD 1370 DATA 0371730830032010012082460761810360761370351620001690001572360432322409620824616900014120000224
SN 1380 DATA 1690101411970021620001381570970402322241202082480961740780401730510432080111891418452051090442080030761700360761490341690961410020380322130371690001411080
LP 1390 DATA 2080140761510361891450452051090442080030761700360761490341690961410020380322130371690001411080
KG 1400 DATA 0441411090440761490341691921410020380322130370761590361620161690111570660031692241570680031690801570740031690000
DJ 1430 DATA 1570750030320862281730830032010012080010961040762360380321060391620801421440391691281741440390516904320800816900715707500300
ER 1440 DATA 1571230450321720391741440391732020392011262080182240002402281690001571230451690321570820402020
WM 1450 DATA 0760190372011552400172240122402061570820400562330321571230452320760190371690001571230451696200
QQ 1460 DATA 0321690031570660031692111570680031690371570690031690081570740031730510432080081690071570750030320
EB 1470 DATA 0761280371690081570750030320862281730510432400741730480020241050031332031730490021050001332040
EH 1480 DATA 1600001772032010792080201690781452031652030241050021332031652040105800133204076194037201015208
UU 1490 DATA 0061690141452032080052010652080010961652030241050011332031652041332061330204076153037096083058
ZM 1500 DATA 1690001411440391650881332031650891330241690001332051690642320372270381332061600001772030721770
XY 1510 DATA 2051452031041452052001920402082412381440391731440392010962402900291652030241050401332031652041050
OD 1520 DATA 0001332041652050241050401332051652061050001332060762340370961690001411440391690001332031690640
TN 1530 DATA 1332041600001521452032001920402082492381440391731440392011922400161652030241050401332031652040
ZB 1540 DATA 1050001332040760480380961730510432080111691281412110341692241410100350961674080003107612400033201
ZZ 1550 DATA 1410100350961740880031690321572170402322082500962011552080003076124033201613208003076124033201
TQ 1560 DATA 0102080030761240330761000331690001741440391570120441890440440562331281570440440896162000138157
LN 1570 DATA 2170402322082500961620001381570970402322241202082480961620161690031570660031692171570680031690
UW 1580 DATA 0401570690031690041570740031690001570750030320862281730830032010012080010961620162016228038223039
JS 1590 DATA 1690121570660030760862281691491410480021690451410490021730830031332121690001332130321702170327
ZK 1600 DATA 2302162161602552001772430410311531750451772430162440321270390322260380321720390760300320321060
BR 1610 DATA 0391620001421440391691281741440391572080042032172039174144039173202039201126208018224000240228
YC 1620 DATA 1690001572080421690321570820402020760370392011552400172240122402062067603703920115524001722401224020615708204005623303215720804200
JB 1630 DATA 2320760370391690001572080420961620001690321570820401690001572080421571230452322240132082389615708204005623303215720804200
JH 1640 DATA 1600321621271420312081420102122020162471360162420960000000000141170039142171039140060040173060
ZI 1650 DATA 0400101332051690000421332060762030390000001620481690071570660031692021570680031690391570690031690
IG 1660 DATA 1690011570720031690001570730030760862280000062050382060062051651652051410610400382061652061410621
JM 1670 DATA 0400062050382240390960402060062050382061652050241090610401332051652061090624013320616508902410
ZM 1680 DATA 1012051332051650891012061332061731710390410031701731710390740740241012051332051652061050001331
UZ 1690 DATA 2061721700391890560400570480401410610401890520401600000492050138610401452050960000851702550631
VK 1700 DATA 2072432521920480120030000000010750580240160000000170190180000008920940930950000680490580320321
XP 1710 DATA 0320320320320320320320320320320320320320320320320320320320320320320320320320320320320320320320
GC 1720 DATA 0010010010010030030030030030030030030030030030030030030030030030030030030030030030030030030030
DX 1730 DATA 0030030030030030030030030030030030030030030030030030030030030030030030030030030030030030030030
LM 1740 DATA 1240330761360331121121121121121121224007111204214400211200200000200000200000200000206502
NL 1750 DATA 0421121121121120710800420070650690421810510370000360370380330530440520510000470500001650360410
ZI 1760 DATA 0520000570470530500000470550460310000001922252422441922272392382462292422442292421931920000080
RE 1770 DATA 0990090170250240230120000331101161050990000481170981081051151041051101030000411100990140000000
NA 1780 DATA 0000001631111081171091100001111020001121141051101161111171160260000240160000000000000000000000
VD 1790 DATA 0000000017211097100000102105108101000036017026000000000000000213042208043000000000000000000
HO 1800 DATA 0000000000000000000000000001641011020971171081160001001141051181010001101171090981011140000000000
CB 1810 DATA 0000000000000000000000000000000176105099116117114101000112111115116105111110105110103026000092000
FR 1820 DATA 0000000000000000000000000000000000801671140971121041050991150001091111001010260000230000000000000
GB 1830 DATA 0000000000000000000000000000000000800017917616116316500011511609711411611500011610410100009911111
00 1840 DATA 1181011141151051111100000000721380721621441420102121420252082322241602082451691261410000021690
MM 1850 DATA 0431410010021041701040640721380721620001600141420102121697414102420816900014102320823222400916020824516912614100000216904
NP 1860 DATA 2082381691961410242081690101410232081690961410000021690431410010021041701040641121121121120712040
TP 1870 DATA 2040430071121121121121120020000020000211211211211211206000006065175043128174175183128209043
RF 1880 DATA 2040441791651611781631681691741671281281661691721651281661751701281621851801651791421420000000
```

```
AQ 1890 DATA 000000000000000000000000000000
   000000000000000000000000000000000000000000
   000000000000000000000000000000
ZR 1900 DATA 000000000000000000000000000000
   000000000000000000000000000000000000000000
   000000000000000000000000000000
ZU 1910 DATA 000000000000000000000000000000
   000000000000000000000000000000000000000000
   000000000000000000000000000000
ZP 1920 DATA 000192192229238244229242192228
   282252442252181921921922282212472322332
   244229204192211221226236225
TQ 1930 DATA 227235001001001112112112112112
   121121120711370440481120020000020000020
   000002000002032002065111044
BH 1940 DATA 128128163168175175179165128161
   611741281751761801691751741541280000000
   000000000000000000000145000
SG 1950 DATA 051097118101000115099114101101
   111000001300010911110010100002300000000
   000000000000000000000000000
EK 1960 DATA 000000000000000000205044194045
   000014600005109711810100011509911410110111
   000013000109111100101
```

```
VD 1970 DATA 000023011000000000000000000000
   000000000000000000000000000000000147000
   037110116101114000115097118
FB 1980 DATA 101000102105108101110097109101
   010000000000000000000000000000000000000000
   000000000000000000000148000
MM 1990 DATA 050101115116097114116000112114
   141110311409710900000000000000000000000000
   000000000000000000000000161
FJ 2000 DATA 174185128171165185000116111103
   103108101115000115099114101101110115012000
   179180161178180000102
AA 2010 DATA 111114000115099114110000000000
   000000005109711810100010210510810111009710
   910100003601702600000
HN 2020 DATA 000000000000000000000000000000
   000000000000000000009616009616019216019216
   011211211211211211211211211211
BU 2030 DATA 112112112071165045065149045000
   000037050050047050000013000000000000000000
   000000000000000000000000000000
DU 2040 DATA 000000000000000000000000002240
   02225002000032
```

tricky Atari optical illusion

AFTERIMAGE

Article on page 37

LISTING 1

Don't type the TYPO II Codes!

```
IJ 70 REM AFTERIMAGE TEST
GT 80 REM BY NICK KOZIUPA
HG 90 REM (c) 1987, ANTIC PUBLISHING
QI 100 GOSUB 1000
AA 110 REM COLOR CHOICE
TV 120 ? "■":? :POKE 752,1
GJ 130 ? "                Afterimage Test"
EY 140 ? :? "Choose the color of the obje
   ct to focus on:"
NX 150 ? :? "1)  Red":? "2)  Blue":? "3)
    Yellow":? "4)  Green":? "5)  Purple"
VY 160 ? "6)  Orange"
CF 170 GET #1,A
DN 180 IF A=49 THEN COL=4:LUM=2:GOTO 250
DO 190 IF A=50 THEN COL=8:LUM=2:GOTO 250
DW 200 IF A=51 THEN COL=1:LUM=8:GOTO 250
BC 210 IF A=52 THEN COL=12:LUM=2:GOTO 250
BU 220 IF A=53 THEN COL=5:LUM=2:GOTO 250
EB 230 IF A=54 THEN COL=2:LUM=6:GOTO 250
OO 240 GOTO 170
SN 250 REM SHAPE CHOICE
OK 260 ? "■":?
GS 270 ? "                Afterimage Test"
QL 280 ? :? "Choose the shape of the obje
   ct to focus on:"
QV 290 ? :? "1)  Circle":? "2)  Square":?
    "3)  Triangle":? "4)  Cross"
BT 300 GET #1,A
NH 310 IF A=49 THEN SHAPE=1:GOTO 360
KW 320 IF A=50 THEN SHAPE=2:GOTO 360
MH 330 IF A=51 THEN SHAPE=3:GOTO 360
NS 340 IF A=52 THEN SHAPE=4:GOTO 360
MM 350 GOTO 300
JJ 360 ON SHAPE GOSUB 380,600,690,760
MH 370 GOTO 110
LE 380 REM CIRCLE TEST
LI 390 GRAPHICS 7+16:POKE 710,10:POKE 712
   ,10:COLOR 1:POKE 708,10
SY 400 RESTORE 500
LF 410 POKE 765,1
AF 420 FOR N=0 TO 95
EU 430 READ X,Y:PLOT X,Y
RC 440 IF N>55 THEN XIO 18,#6,0,0,"S:"
IC 450 NEXT N
GT 460 SETCOLOR 0,COL,LUM
YE 470 FOR DE=1 TO 3500:NEXT DE
MH 480 POKE 708,10
MT 490 FOR DE=1 TO 2500:NEXT DE:RETURN
HE 500 DATA 77,33,78,33,79,33,80,33,81,33
   ,82,33,83,33,84,34,85,34,86,34
PT 510 DATA 87,35,88,35,89,36,90,37,91,38
   ,92,39,92,40,93,40,93,41,93,42
BM 520 DATA 94,42,94,43,94,44,94,45,95,45
   ,95,46,95,47,95,48,95,49,95,50
FX 530 DATA 95,51,94,51,94,52,94,53,94,54
   ,93,54,93,55,93,56,92,56,92,57
TW 540 DATA 91,58,90,59,89,60,88,61,87,61
   ,86,62,85,62,84,62,83,63,82,63
YA 550 DATA 81,63,80,63,79,63,78,63,77,63
   ,76,62,75,62,74,62,73,61,72,61
SZ 560 DATA 71,60,70,59,69,58,68,57,68,56
   ,67,56,67,55,67,54,66,54,66,53
QK 570 DATA 66,52,66,51,65,51,65,50,65,49
   ,65,48,65,47,65,46,65,45,66,45
JI 580 DATA 66,44,66,43,66,42,67,42,67,41
   ,67,40,68,40,68,39,69,38,70,37
OA 590 DATA 71,36,72,35,73,35,74,34,75,34
   ,76,34
WQ 600 REM SQUARE TEST
KV 610 GRAPHICS 7+16:POKE 710,10:POKE 712
   ,10:COLOR 1:POKE 708,10
GT 620 PLOT 64,35:DRAWTO 96,35:DRAWTO 96,
   62:DRAWTO 64,62
LL 630 POKE 765,1
YQ 640 FOR X=62 TO 35 STEP -1:PLOT 64,X:X
   IO 18,#6,0,0,"S:":NEXT X
GT 650 SETCOLOR 0,COL,LUM
YE 660 FOR DE=1 TO 3500:NEXT DE
MH 670 POKE 708,10
MT 680 FOR DE=1 TO 2500:NEXT DE:RETURN
BL 690 REM TRIANGLE TEST
KU 700 GRAPHICS 7+16:POKE 710,10:POKE 712
   ,10:COLOR 1:POKE 708,10
SM 710 FOR X=60 TO 100:PLOT 80,32:DRAWTO
   X,64:NEXT X
GO 720 SETCOLOR 0,COL,LUM
XZ 730 FOR DE=1 TO 3500:NEXT DE
MC 740 POKE 708,10
MO 750 FOR DE=1 TO 2500:NEXT DE:RETURN
ZO 760 REM CROSS TEST
LI 770 GRAPHICS 7+16:POKE 710,10:POKE 712
   ,10:COLOR 1:POKE 708,10
DN 780 FOR X=75 TO 85:PLOT X,35:DRAWTO X,
   62:NEXT X
SF 790 FOR X=44 TO 53:PLOT 64,X:DRAWTO 96
   ,X:NEXT X
GL 800 SETCOLOR 0,COL,LUM
XW 810 FOR DE=1 TO 3500:NEXT DE
LZ 820 POKE 708,10
ML 830 FOR DE=1 TO 2500:NEXT DE:RETURN
XW 1000 GRAPHICS 0:POKE 752,1:POKE 82,0:?
    "■"
BY 1010 ? :? :? "          ■■■Afterimage■
   Test■■■   "
BU 1015 ? :? "                  by Nick Koziup
   a"
DQ 1020 FOR DE=1 TO 350:NEXT DE
```

continued on next page

```
HW 1040 CLOSE #1:OPEN #1,4,0,"K:"
BO 1045 ? "E":? :? "          Afterimag
   e Test"
XG 1050 ? :? "Do you need instructions (Y
   /N)?";
CG 1060 GET #1,A
SG 1070 IF A=89 THEN 1100
BX 1080 IF A=78 THEN RETURN
QP 1090 GOTO 1060
NB 1100 REM INSTRUCTIONS
EX 1110 ? "E   Afterimage Test      by Nic
   k Kozitpa   "
CC 1120 ? :? "  This program demonstrates
    afterimages":? "Chow your eyes percie
   ve an image ";
ZZ 1130 ? "after  it has disappeared.)":?
    :? "  After selecting an object to vi
   ew,"
SI 1140 ? "the screen will change to a du
   ll shade":? "of white.  Within seconds
   , the shape"
FP 1150 ? "will appear at the center of t
   he":? "screen.  Fix your eyes upon the
    center"
CO 1160 ? "of the object.  After about 15
   ":? "seconds, the object will disappea
   r."
IT 1170 ? "Continue to look at the area w
   here the":? "shape had been.  If the e
   xperiment was"
LN 1180 ? "successful, the image will sti
   ll be":? "visible, but now in the oppo
   site"
ER 1190 ? "color.":? :? "          Press [
   START] to begin          "
OQ 1200 IF PEEK(53279)<>6 THEN 1200
AG 1210 RETURN
```

ST RESOURCE

ST COLOR COSINES

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LISTING 1

```
'
' ST Color Cosines in GFA BASIC
' (c) 1987 Antic Publishing
' Written by Patrick Bass
'
' ---------------------------------------
Xres=(-319*(Xbios(4)=0))+(-639*(Xbios(4)>0))
Yres=(-199*(Xbios(4)<2))+(-399*(Xbios(4)=2))
Left_button=1
Right_button=2
Both_buttons=3
'
Setcolor 0,0,0,0
Mk=0
While Mk<>Both_buttons
  Sinamplitude=Rnd(9)*(Yres/2)
  Cosamplitude=Rnd(9)*(Yres/2)
  Sinperiod=(Rnd(9)*70)+20
  Cosperiod=(Rnd(9)*70)+20
  Color Rnd(9)*16
  Size=(Rnd(9)*4)+2
  '
  For X=0 To Xres Step Size
    Y1=(Sin(X/Sinperiod)*Sinamplitude)+(Yres/2)
    Y2=(Cos(X/Cosperiod)*Cosamplitude)+(Yres/2)
    Line X,Y1,(Xres-X),Y2
    '
    Mouse Mx,My,Mk
    '
    If Mk=Both_buttons
      X=Xres+1
    Endif
    '
    If Mk=Left_button
      Pause 20
      Repeat
        Mouse Mx,My,Mk
      Until Mk>0
    Endif
    '
    If Mk=Right_button
      Cls
    Endif
    '
  Next X
Wend
Setcolor 0,7,7,7
'
End
```

LISTING 2

```
1000  '
1010  ' ST Color Cosines in ST BASIC
1020  ' (c) 1987 Antic Publishing
1030  ' Written by Patrick Bass
1040  '
1050  '---------------------------------
1060   res=peek(systab)
1070   Xres=(-319*(res=4))+(-639*(res<4))
1080   Yres=(-199*(res>1))+(-399*(res=1))
1090   fullw 2
1100   Left.button=1
1110   Right.button=2
1120   Both.buttons=3
1130  '
1140   while Mk<>Both.buttons
1150      Sinamplitude=Rnd(9)*(Yres/2)
1160      Cosamplitude=Rnd(9)*(Yres/2)
1170      Sinperiod=(Rnd(9)*70)+20
1180      Cosperiod=(Rnd(9)*70)+20
1190      Color 1,1,Rnd(9)*(-16*(res=4))+(-4*(res<4))
1200      Size=(Rnd(9)*4)+2
1210      '
1220      for X=0 to Xres step Size
1230           Y1=(sin(X/Sinperiod)*Sinamplitude)+(Yres/2)
1240           Y2=(cos(X/Cosperiod)*Cosamplitude)+(Yres/2)
1250           linef X,Y1,(Xres-X),Y2
1260           '
1270           A#=GB
1280           Gintout=peek( A#+12 )
1290           gemsys( 79 )
1300           Mk=peek( Gintout+6 )
1310           if Mk=Both.buttons then X=Xres+1
1320           if Mk=Right.button then clearw 2
1330      next X
1340   wend
1350  '
1360  end
```

Checksum for file: stcosine.bas

```
1000 :00F2      1090 :0326      1180 :07CC      1270 :01F4
1010 :0943      1100 :0585      1190 :0B89      1280 :06DA
1020 :087B      1110 :05FA      1200 :0555      1290 :0425
1030 :090A      1120 :05FE      1210 :00EB      1300 :06FA
1040 :00EC      1130 :00EC      1220 :08AD      1310 :0B95
1050 :06BA      1140 :08DB      1230 :0F46      1320 :0BB1
1060 :06DA      1150 :0A20      1240 :0F39      1330 :02DE
1070 :0978      1160 :0A1C      1250 :073F      1340 :0276
1080 :097F      1170 :07D0      1260 :00F0      1360 :0201
```

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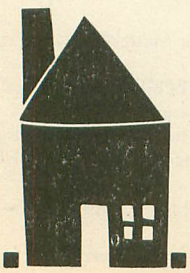

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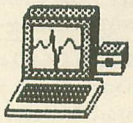

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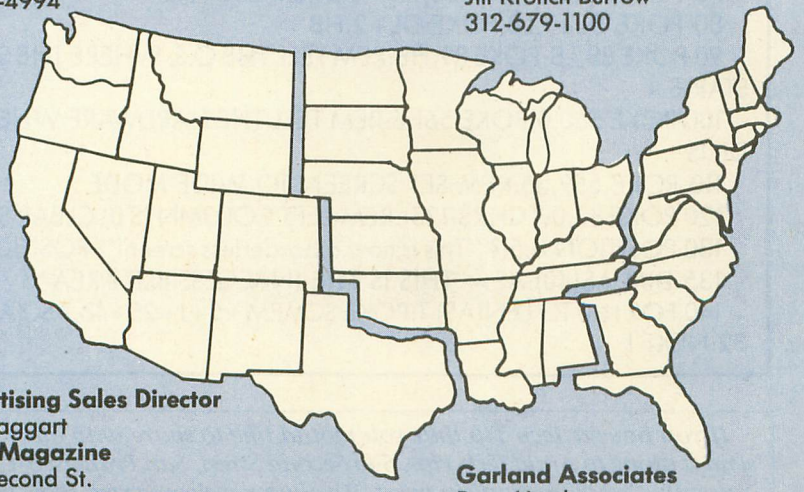

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Tech Tips

BY BILL MARQUARDT, ANTIC TECHNICAL ASSISTANT

AUTOBOOT BASIC

To make your favorite BASIC program run automatically when you boot your Atari, rename it AUTORUN.BAS. Then RUN the following program which will create an AUTORUN.SYS file on the same disk.

We found this listing in the February 1987 issue of Pan*Atari*News, from the Panama Canal Atari Users' Group.

```
10 OPEN #4,8,0,"D:AUTORUN.SYS"
20 FOR I=1 TO 94:READ A:PUT #4,A
30 NEXT I:CLOSE #4:END
40 DATA 255,255,0,6,81,6,216,24,173,48,2,105,4,133,204,173,49,2,105,0,133,205,24,160,0,177,204,105,162,133,212
50 DATA 160,1,177,204,105,0,133,213,160,32,185,49,6,145,212,136,208,248,169,13,141,74,3,96,0,48,47,43,37,0,24
60 DATA 20,18,12,17,18,26,50,53,46,0,2,36,17,26,33,53,52,47,50,53,46,14,34,33,51,2,226,2,227,2,0,6
```

The following two Tech Tips were sent in by Texan James Hague, author of *Uncle Henry's Nuclear Waste Dump* (Antic, December 1986).

[BREAK] KEY TRAP

Sometimes you prefer your program to detect the [BREAK] key when it is pressed, instead of simply disabling [BREAK] entirely. The following short program is an example of how to do it.

```
10 FOR A=0 TO 6:
READ B:POKE 256+A,B:NEXT A
20 POKE 566,0:POKE 567,1
30 DATA 169,1,141,7,1,104,64
40 POKE 263,0
50 IF PEEK(263)=0 THEN 50
60 ? "BREAK WAS PRESSED":
GOTO 40
```

RAINBOW STRIPES

Here is a variation of the famous Atari "rainbow effect" created by display list manipulation. With this program, pressing any keys on your Atari keyboard will produce a different effect. Remember that [SHIFT]ed and [CONTROL]led keypresses are different.

```
10 FOR A=0 TO 14:READ B:POKE 1536+A,B:NEXT A
20 A=USR(1536)
30 DATA 200,152,74,45,9,210,141,10,212,141,24,208,76,0,6
```

ROTATE FIX

If you tried and failed to get *Rotate* from the February, 1987 Tech Tips to work, here is the fix:

1. Change the 2317 in line 40 to 217.
2. Change the 233 in line 40 to 223.
3. Change the 4C in line 70 to 40.
4. Change the 102 in line 80 to 1024.

BIG SCREEN

The following program was written by David Pochron and appeared in the March, 1987 issue of Florida's Atari Journal. It will create a 48 X 28 character display in GRAPHICS 0 mode by altering the display list and using the wide screen mode. A suggested use for this technique is in VCR applications, such as creating title screens. Note that printing to the "forbidden zone" requires extra programming, as in line 140 of the sample program, because the operating system is not set up for the extra space.

```
10 MEMTOP=PEEK(106)*256
20 DL=1536:REM NEW HOME FOR DISPLAY LIST
30 TRAP 40:FOR I=DL TO DL+34:READ D:POKE I,D:NEXT I
40 DATA 66,0,0,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,65,0,6
50 SCSIZE=28*48
60 SCMEM=MEMTOP-SCSIZE:REM GET START ADDRESS OF NEW SCREEN
70 HB=INT(SCMEM/256):LB=SCMEM-256*HB
80 POKE DL+1,LB:POKE DL+2,HB
90 POKE 88,LB:POKE 89,HB:REM TELL THE O.S. WHERE THE SCREEN STARTS
100 POKE 560,0:POKE 561,6:REM TELL THE HARDWARE WHERE THE DL IS
110 POKE 559,35:REM SET SCREEN TO WIDE MODE
120 POKE 82,0:? CHR$(125):REM LEFT COLUMN IS 0; CLEAR SCREEN
130 POSITION 0,5:? "This is now a borderless screen!":POSITION 0,10
135 DIM A$(40):A$="THIS IS THE INACCESSIBLE AREA"
140 FOR I=0 TO LEN(A$)-1:POKE SCMEM+5+I+25*48,ASC(A$(I+1))-32:NEXT I
```

If you have a Tech Tip that you would like to share with other readers, send it along to Antic Tech Tips, 544 Second Street, San Francisco, CA 94107. You might get your name in print. We always welcome very short programs that demonstrate the Atari's powers, simple hardware modifications, or useful macros for popular software.

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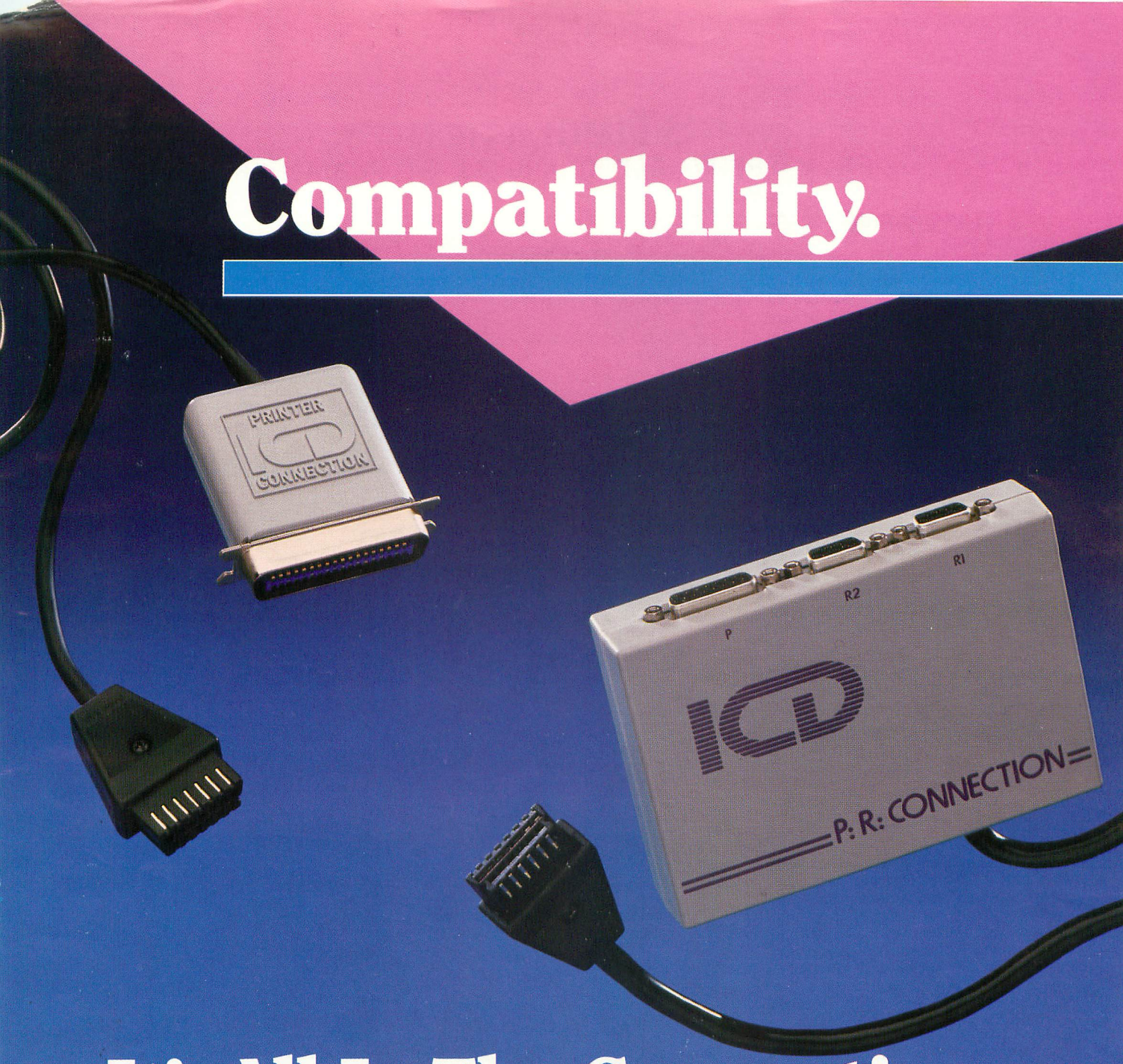

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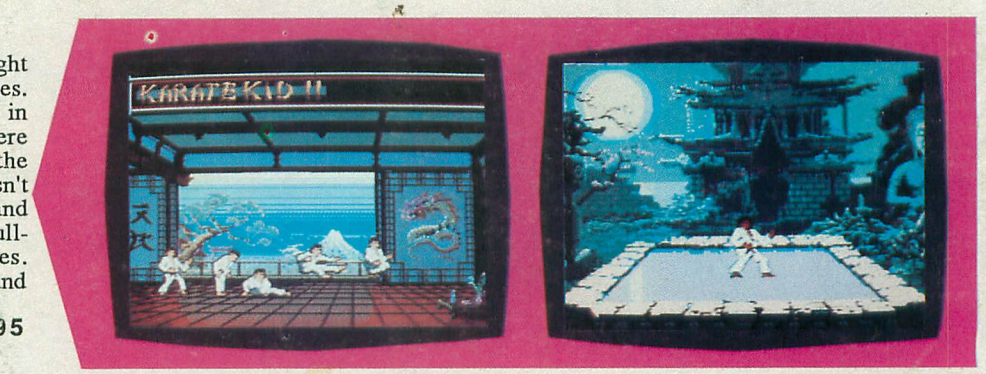

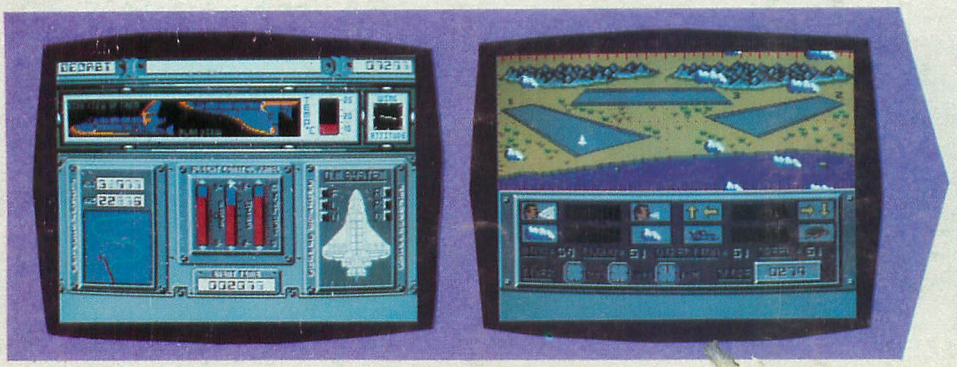

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