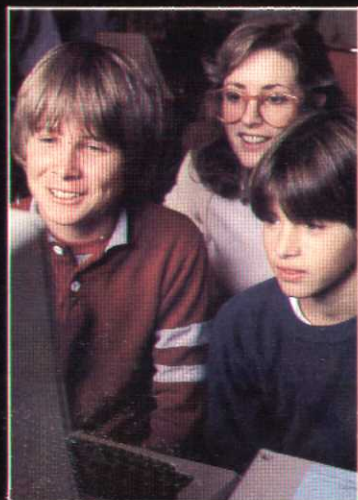


SUMMER 1982

VOLUME 2, NUMBER 2

THE ATARI® CONNECTION™

\$3.00



ATARI COMPUTER CAMPS

A CAMP EXPERIENCE
THAT WILL LAST A LIFETIME

THE SOUND OF BUGS

ATARI 800 COMPUTER CREATES
SOUND EFFECTS FOR
NEW TRON MOVIE

ATARI PILOT SPECIAL

HOW TO CHANGE
PEN COLORS
PILOT PLAYGROUND—
NEW ATARI PILOT PROGRAMS

THE ATARI CONNECTION SUMMER 1982

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GETTING ACQUAINTED

interconnections

By Earl Rice

One of the more exciting events in the computer world is the computer trade show. These shows are where manufacturers, software vendors, and computer organizations show their products. On the West Coast, the granddaddy of these shows is the West Coast Computer Faire. While the industrial trade shows are larger, the excitement, crowds, and just plain fun of the West Coast Computer Faire make it one of the best attended in the home computer world.

Since the Faire happens in our own back yard, it is also the home of Atari, Inc.'s annual invitational hospitality suite for Users' Group officers and their guests. There, for a few hours, the officers of our groups can meet with the officers from Atari, and we can all let down our hair and talk about our interests and concerns. There's also a lot of catching up on how it's going for friends who usually meet only on the phone.

Last year's meeting, our first, was small. About twenty of us met and talked about our hopes for the growth of the Users' Group community. We had met maybe thirty groups at that time. This year, there were about eighty of us from fifteen groups around the country, and we are in contact with nearly two hundred groups around the world.

One of the topics of discussion was the growth of the community and Atari's plans for more technical sup-

port materials, new organizational support materials, greater Users' Group participation in group support projects, and Atari's commitment to qualified, convenient service support for our products. Don Kurtz, the Atari Home Computer Division's Director of Marketing Services, outlined our service philosophy and strategy, emphasizing that Atari intends to see to it that our products are cared for properly, economically, and quickly when they require service.

We also demonstrated Pascal, the recent language addition to the Atari Program Exchange catalog. Group representatives from as far away as Boston, Dallas, and Seattle listened as Pascal's product manager, Bonnie Umphreys, demonstrated its capabilities and cautioned that the APX version is for experienced programmers only. When she announced the bargain price of \$49.95, you could practically hear the checkbooks popping open all over the country!

Afterwards, everyone was able to buttonhole Atari staff and chat about their ideas and concerns more personally. Some of the guests demonstrated software projects, some talked about project ideas, book ideas, and the like, and the whole event went pretty much as any users' group meeting anywhere in the world.

One thing was very obvious: next year we'll need a bigger room!

Earl Rice is the Manager of The Users' Group Support Program, in the Atari Home Computer Division.

TWO NEW UPGRADES

Two new upgrades are now available that will improve your Disk Operating System (DOS) performance. The ROM-C is designed to be installed in your ATARI 810 Disk Drive. The new OS (Operating System) ROM-B upgrade can be installed into your ATARI 400 or ATARI 800 Home Computer.

The OS ROM-B upgrade enhances the efficiency and performance of your ATARI Home Computer's *Operating System* by improving the I/O (Input and Output) routines and instructions. Suggested Retail Price: \$49.95.

The ROM-C upgrade increases the speed of your ATARI 810 Disk Drive's ability to read and write information on your diskettes. Suggested Retail Price: \$53.95.

If your ATARI 810 Disk Drive or ATARI Home Computer is still under the *Limited Ninety-Day Warranty*, you can have them upgraded at *no charge*.



How do I know if my ATARI Computer or ATARI 810 already contain the two new upgrades? Both upgrades have been installed in all computers and disk drives manufactured since

November of 1981. Unfortunately, there isn't a simple test to determine if you have a computer or disk drive that contains the new upgrades. We suggest the next time you bring your ATARI 810 Disk Drive into your Atari Service representative for a periodic "tune-up" you have the service representative check for the upgrades. (You should have the heads cleaned and checked for alignment and the speed calibrated at least once a year.) If your computer or disk drive haven't been upgraded, this may be the ideal time to have the new upgrades installed.

For more information call our toll-free Customer Service:

800-538-8543

In California call:

800-672-1404

WANTED: HOME PHOTOS OF YOUR HOME COMPUTER

Now that you've brought your home computer "home," you might be asking, "Where do I put it?" Most of us working here at the Atari Home Computer Division have faced the same dilemma. Some of us have set up our ATARI Home Computer systems in our living rooms, hooked up to our television sets. Others sequestered their new home computer systems in the "hobby room," den, or on the workbench in the garage or basement.

Inevitably, a certain number of people were soon confronted with a

jury-rigged, hodge-podge "home computer center" built upon wooden box crates, old drafting tables, "high-tech" warehouse parts, old student desks, and whatever else was handy or available at garage sales. Of course, there were those who wisely shopped about (and who could afford it!) for the attractive personal computer furniture that's just now becoming available to home computer owners.

Another group of people, the home craftsmen, set about employing their carpentry skills and constructed appealing, functional furniture that provided a compact, pleasing home computer center worthy of inhabiting the living rooms of most homes. Some of us were not quite so imaginative or diligent, and are in dire need of some constructive suggestions and ideas on how to clean up and design our home computer centers.

If you feel you've created an attractive workable solution for integrating your ATARI Home Computer into your home, home office, or workplace, we would like you to send us a photograph along with a description of your design. We'll choose several ideal, unique examples and publish them in the next issue of THE ATARI CONNECTION. Contributors whose photos are selected will receive a free one-year subscription to THE ATARI CONNECTION. Be sure to include your address and phone number so we can contact you.

Send your examples to:

Home Computer Photos
c/o THE ATARI CONNECTION
60 E. Plumeria
San Jose, CA 95134

ANOTHER ATARI ADVANTAGE

ATARI I/O SEMINAR SERVICES

The Atari Home Computer Division's Software Development Support Group has been christened with a new name, *Atari I/O*. The new *Atari I/O* Support Group will continue to provide software developers with an opportunity to learn the intricacies of advanced sound, color, and display features of the ATARI 400 and ATARI 800 Home Computer systems.

Over the past year, the team held seminars with software developers across the country, explaining how to take advantage of the ATARI Computer's operating system and the advanced technical design features of its dedicated microprocessor chips, ANTIC, POKEY, and CTIA/GTIA.

If you're an advanced programmer or interested in developing professional or entertaining software for the

ATARI 400 or ATARI 800 Home Computer systems, you'll be interested in attending the *Atari I/O* special seminars for the following reasons:

- Advanced technical information on the ATARI 400 and ATARI 800 Home Computers
- Meet Atari Software Engineers
- Obtain Software Marketing Information
- Learn sophisticated programming techniques for:

Display List Interrupts
Vertical Blank Processing
ANTIC, POKEY, and CTIA/
GTIA Chips

For more information about attending *Atari I/O's* special seminars, write to:

ATARI INC.
Atari I/O
30 E. Plumeria
P.O. Box 50047
San Jose, CA 95134

Ted Richards
Editor, THE ATARI CONNECTION

COMMUNICATIONS CALLING ALL COMPUTERS

HOME TELECOMPUTING WITH DR. G

By Pat Lee

This weekend I brought home my ATARI 800 Home Computer, complete with an ATARI 830 Acoustic Modem, ATARI 850 Interface Module and the ATARI 825 80-Column Printer. And let me tell you, home telecomputing is Dr. G's best discovery since his "ham" radio days. Got the old Dr.'s mind in an uproar with the amazing amount of fun he has been having being a national Computer CBER on the CompuServe Information Service. I can "talk" to people all over the North American continent — all with a local phone call. Old Dr. G's home hasn't been the same since he started "Logging On."

I tuned into the world of Computer CBers under the Personal Computing Services Menu section of CompuServe. There are 36 possible channel selections on the CB simulation but people seem to stick to three or four favorites. Channel 1 is the adult channel and is popular during late night hours. Channel 33 has been popular lately for conferences. Channel 19 is the general calling channel and is a great place to meet others of similar interests.

The command structure on CB simulation is very simple and easy-to-learn. Going to /TALK allows you to talk more privately with others you have met. Commands like /STA, /USTAT, and /HELP allow a screen listing of who's on your channel, who's on every other channel, or information about the simulation. Other commands allow calling people to invite /TALK, leaving Electronic Mail for someone in particular, or leaving bulletins for other CBers to tune to another channel.

You're also able to monitor two channels other than the one you're talking on. There are at least two ways to achieve special CB communications: CB conferences and Scrambling. If you know the same

secret code as your friends, CB band communications can be sent in scrambled form. For example, if you and your friends are on channel 33, by typing in /SCR and a "SECRET WORD" you will be able to talk to each other in the scrambled mode.

The "handles" that the computer CBers use to identify themselves are great! Names like: Bugman, Mr. Right, Southern Belle, L.A. Cop, Hex Goddess, Computer Bum, Happy Hippy, Sweetcakes, Rebel Yell, Love-ly Legs, Wookie, and Columbia What a Crew!

Various colloquialisms have come to popular use as ways for the CBers to show friendship. Phrases like ((HUG)), + + + smotch + + +, ***KISS***, = Howdy =, and other endearing words tend to create their own language for the CBers. There's also a Citizen's Band Interest Group (commonly called CBIG), that provides a place for CBers to leave private messages or public notices — often these messages tell of "socials" and parties given by other CBers to encourage gatherings.

Next time you have an evening free, join the old Doctor for some CB chatter on the CompuServe Citizens's Band simulation. My handle of course — Dr. G!



Dr. G is the alter ego of Pat Lee, a Special Projects Manager in the Marketing Publications Department of the Atari Home Computer Division.

TED RICHARDS

SHOP BY COMPUTER

NEW SERVICE FROM THE SOURCE

McLean, VA — James Thomas became an "electronic shopper" out of frustration. His time-consuming search for a videotape recorder had only left him confused about price, quality, accessories and the availability of the right machine for his needs.

Thomas, who subscribes to THE SOURCE, AMERICA'S INFORMATION UTILITY, turned to its new electronic shopping service, Comp-U-Star. Within ten minutes, Comp-U-Star was able to provide him with the information on a wide range of videotape recorder manufacturers and products. Thomas was able to find exactly what he wanted at a substantial discount. He paid for it by credit card, and arranged for delivery directly to his home in Mendham, New Jersey.

The new Comp-U-Star Service, developed specifically for subscribers to THE SOURCE, allows you to select from over 30,000 name-brand items, and order them directly using your ATARI Home Computer. Prices are often discounted up to 40% off suggested retail prices.

Nearly 200 manufacturers are represented on Comp-U-Star, offering such items as cameras, appliances, stereos and televisions. Subscribers can use the service to comparison shop. They are automatically "prompted" by the system to specify manufacturer and product descriptions. Comp-U-Star then uses the information to scan for product availability and the best price among its hundreds of participating dealers.

For more information contact THE SOURCE, toll-free, (800) 336-3366.

QUESTIONS & ANSWERS

"HOW DO I USE THE COLLISION REGISTERS?"

Naturally, your main concern when playing STAR RAIDERS centers around destruction of Zylon starships and preservation of friendly starbases. Have you ever wondered about the animated action on the TV screen? You may have phrased this question something akin to, "I KNOW I hit that Zylon dead-center @#*!" Did you or didn't you? Only your computer knows for sure.

Within your ATARI Home Computer resides a special integrated circuit chip called CTIA (Color Television Interface Adapter). The CTIA chip has registers designed to detect collisions of animated players and missiles and control their *priority*. When moving objects overlap on the screen, CTIA decides which object has priority to appear in front of the other.

As an example, notice that in STAR RAIDERS whenever you attempt a docking maneuver, your tracking computer's crosshairs are always in front of the starbase. In this instance, the crosshairs are assigned priority.

CTIA's next door neighbor is a chip named ANTIC. The ANTIC chip fetches data from memory for CTIA to display on the TV screen. On the screen, all players act independently of the playfield and of each other. According to a prearranged agreement, ANTIC never requests CTIA to display more than one playfield at a time, which simplifies matters considerably.

Whenever players and missiles collide on the playfield, the programmer decides which object has priority then determines what is to happen next.

How do I know when a collision has occurred? Whenever CTIA records a collision on the screen a *bit is set within the register where the collision occurred*. Therefore, a collision causes a *nonzero* (any number but

zero) condition to occur within the register where the collision is recorded.

If you are writing a program in ATARI BASIC you can check the register by entering the command: IF PEEK (53251 < > 0) THEN GO TO — the program line or subroutine that contains the instructions for the collision. (See chart, this page for the *Decimal Address* used in this example.) Once set, these bits stay on until cleared by program language instructions. To clear all the collision registers, you enter the command: POKE 53278, 0 (This command will always clear the collision registers).

To use your collision registers you simply check the register to see if a collision has occurred. You then decide what you want to happen by writing the appropriate program instructions for each player or missile involved in the collision. You might decide to create an explosion or have one of the missiles change color and make music.

Because the animated action occurs within the microprocessor, collision detection is automatic and doesn't depend upon program language instructions. Collisions are recorded

within the hardware register addresses, \$DOOO through \$DOOF (see ATARI BASIC Reference Manual). If you are aspiring to produce the much-awaited sequel to the ever-popular STAR RAIDERS, the following Memory Location Chart provides you with the exact Decimal Addresses for detecting collisions of your player/missiles.

As is true in most cases, when explaining how to use the ATARI Computer's player/missile graphics, we have only created more questions and interest! Player/missile graphics is an interesting and exciting subject to pursue because you, the user, have at your fingertips a fully automatic, computerized graphics animation system. The possibilities are endless, and we'll continue to provide information, tidbits and tantalizing insights, plus answer your questions about this powerful built-in graphics feature of your ATARI Home Computer.

Send your questions to Questions and Answers, c/o THE ATARI CONNECTION.

Questions and Answers is written by the Atari I/O Seminar Services Group.

MEMORY LOCATION CHART

Hardware Register Name	Description	Address Decimal
M0PF	Missile 0 to Playfield	53248
M0PL	Missile 0 to Player	53256
M1PF	Missile 1 to Playfield	53249
M1PL	Missile 1 to Player	53257
M2PF	Missile 2 to Playfield	53250
M2PL	Missile 2 to Player	53258
M3PF	Missile 3 to Playfield	53251
M3PL	Missile 3 to Player	53259
P0PF	Player 0 to Playfield	53252
P0PL	Player 0 to Player	53260
P1PF	Player 1 to Playfield	53253
P1PL	Player 1 to Player	53261
P2PF	Player 2 to Playfield	53254
P2PL	Player 2 to Player	53262
P3PF	Player 3 to Playfield	53255
P3PL	Player 3 to Player	53263

SPECIAL FEATURE

GTIA HAS ARRIVED!

MORE COLOR GRAPHICS FOR YOUR ATARI COMPUTER

By Kevin Rardin

Imagine your ATARI Home Computer drawing a shimmering 3-D golden goblet with finely tooled figures and shapes etched crisply along the sides. Or a spiralling hypnotic spectrum of swirling colors. Imagine three new Graphics Modes in ATARI BASIC. Imagine no longer. The new GTIA integrated circuit chip has arrived and it lets you paint, draw or animate with up to 16 colors on the screen at one time. In addition to the Graphics Modes already featured (0 through 8), Graphics Modes 9, 10 and 11 can now be added to your system through an upgrade available at your local Atari Service representative.

currently used in ATARI Home Computers. The CTIA integrated circuit chip was especially designed to control the color display on your television or monitor. The ATARI BASIC programming language features eight Graphics Modes using the CTIA chip. Each Graphic Mode features various sized "pixels" - the dots used to build characters or shapes on the television screen - some as large as a cursor, the smallest no larger than a dot on an "i". The three new high-resolution Graphics Modes added by GTIA, use a tiny, *rectangular pixel*.

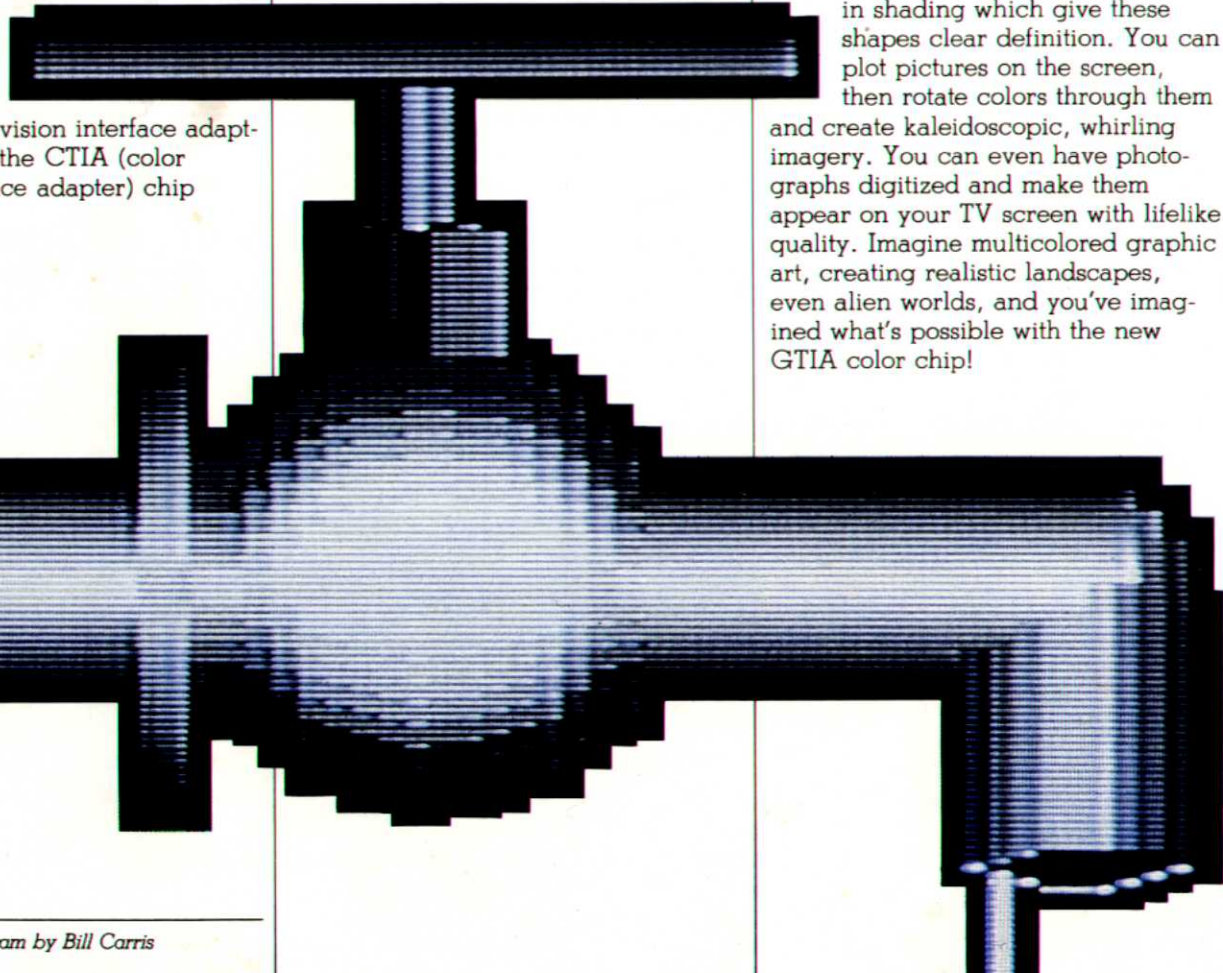
Originally installed in all ATARI 400 and ATARI 800 Home Computers shipped to Europe, the GTIA chip

made use of Europe's higher resolution TV screens. Now being installed in all U.S. models, the new chip has been praised widely in both British and continental European computer magazines. Terry Hope from the U.K., writing in *Microcomputer Print-out* magazine, states, "We're thus forced to the inescapable conclusion that the ATARI 400 or ATARI 800 microcomputers . . . do indeed offer the current absolute in graphics capability."

With the new GTIA chip installed in your ATARI Computer a new world of three-dimensional graphics and animation capability opens up. Cylindrical and spherical shapes may be drawn complete with subtle nuances in shading which give these shapes clear definition. You can plot pictures on the screen, then rotate colors through them and create kaleidoscopic, whirling imagery. You can even have photographs digitized and make them appear on your TV screen with lifelike quality. Imagine multicolored graphic art, creating realistic landscapes, even alien worlds, and you've imagined what's possible with the new GTIA color chip!

Just What Is GTIA?

GTIA stands for graphics television interface adapter and replaces the CTIA (color television interface adapter) chip



Farrah Faucet program by Bill Carris

THREE NEW GRAPHICS MODES

Graphics Mode 9

Graphics 9 permits up to 16 shades (or luminances) of a single color. This mode is excellent for creating three-dimensional monochrome graphics. You'll also be able to draw metal cylinders or spheres and give them just the right sheen for realistic effect. The "Faucet" illustration for this article was created in Graphics Mode 9 — as you can see, you'll be limited by only your imagination.

Graphics Mode 10

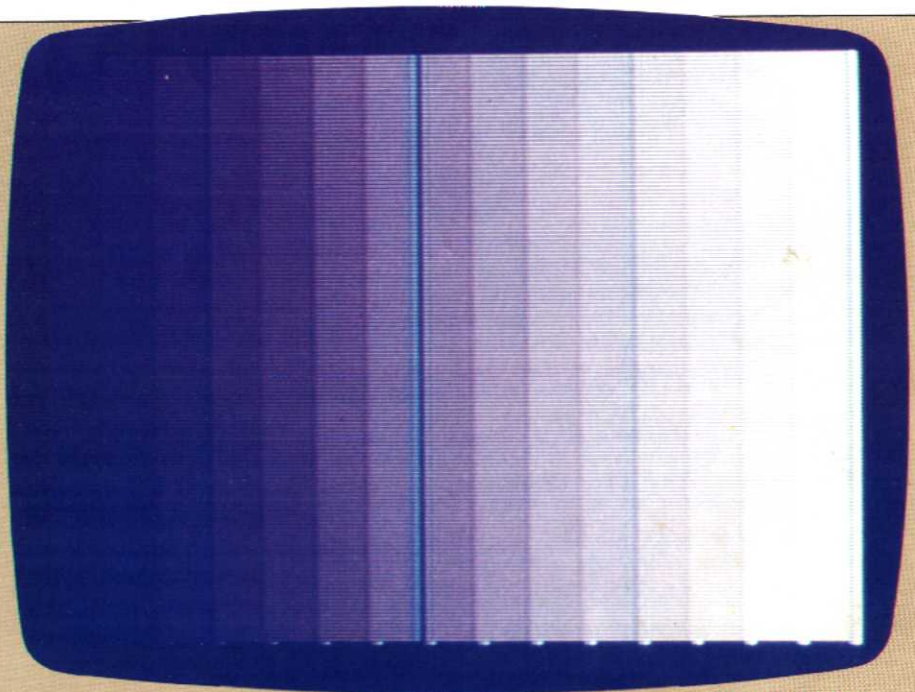
Graphics Mode 10 provides you with nine colors on the screen, each with its own variation in hue and shading (or luminance). You can draw an object, then rotate the colors through it, and create stunning effects like whirlpools, pinwheels, and barbershop poles with oscillating vibrant colors as the spectrum changes. The new Graphics Mode 10 promises a whole new realm of energetic computer games and lively animation.

Graphics Mode 11

You can use Graphics Mode 11 to generate 16 different colors on the screen (15 in the foreground, 1 background). However, with Graphics Mode 11 you can only specify one value (luminance) for use with the range of colors on the screen. You can use Graphics Mode 11 to simplify complicated charts, bar and pie graphs, or generate special screen displays requiring lots of color.



Graphics Mode 11 Test Screen Using The GTIA Test Program.



Graphics Mode 9

DOES MY HOME COMPUTER HAVE A GTIA CHIP?

You can use the following GTIA Test Program to see if your ATARI 400 or ATARI 800 Home Computer contains the new GTIA chip or the original CTIA chip. The program is written in ATARI BASIC. First, type the GTIA Test Program into your computer.

Now RUN the program. Try Graphics Mode 11 (GRAPHICS 11) first and compare your screen with the screen pictured. If you test all three modes and you get a blank screen (GR. 9 & 11), or an orange screen (GR. 10), your computer's equipped with the CTIA chip. If you see a rainbow spectrum of color bars against a dark background in Graphics Mode 10, or 11, or a blue screen with graduated blue stripes, in Graphics Mode 9, you've got the GTIA chip.

```
10 DIM A$(8):PRINT "GTIA TEST":PRINT
20 ? "GRAPHICS MODE (9,10, OR 11)";:INPUT MODE:LIM=15:GRAPHICS MODE
30 IF MODE=9 THEN POKE 712,128:GOTO 70
40 IF MODE=11 THEN POKE 712,10:GOTO 70
50 FOR I=704 TO 712:READ R:POKE I,R*16+8:NEXT I:LIM=8
60 DATA -.5,12,13,14,15,1,2,3,4
70 FOR X=1 TO LIM
80 COLOR X:POKE 765,X:PLOT X*4+5,0:DRAWTO X*4+5,159
90 PLOT X*4+1,159:POSITION X*4+1,0:XID 18,#6,0,0,"S":NEXT X
100 FOR DE=1 TO 5000:NEXT DE
110 GRAPHICS 0
120 ? "DO YOU WANT ANOTHER MODE (Y OR N)";:INPUT A$
130 IF A$="Y" THEN GOTO 20
140 END
```

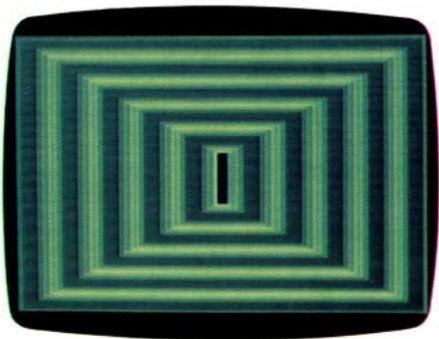
SPECIAL FEATURE



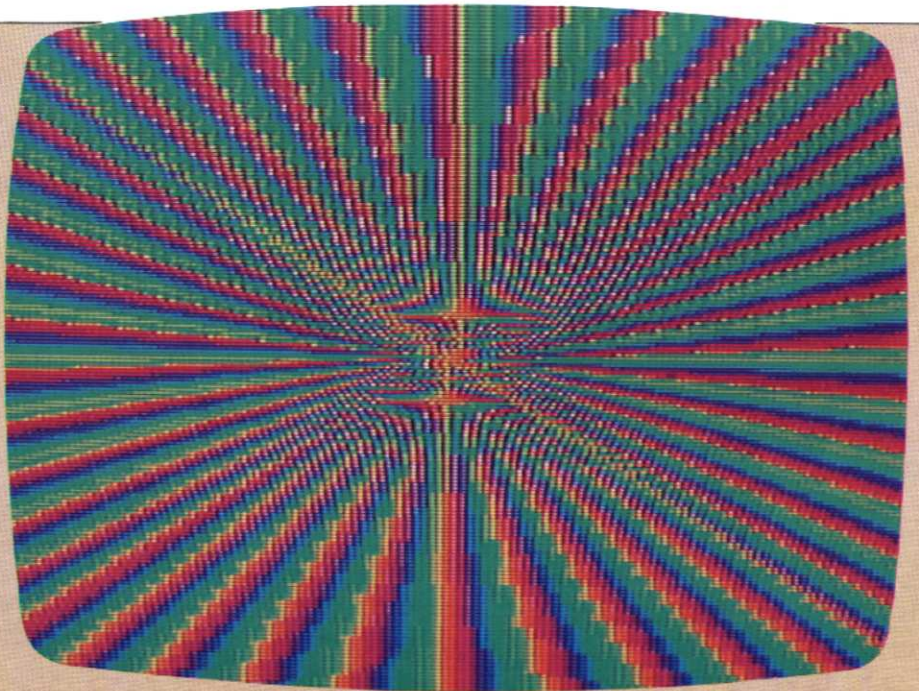
How Do I Get My GTIA Chip?

To have your new GTIA chip installed in your ATARI 800 Home Computer, simply take it in to your nearest Atari Service Center. If your computer is still covered by the *Limited Ninety-Day Warranty*, your GTIA chip will be installed at *no charge*. If your warranty is no longer in effect, you can have a new GTIA chip installed for the suggested retail price of \$62.52.

For more information and the Atari Service Center nearest you call our toll-free number: (800) 538-8543. In California call: (800) 672-1404.



Kevin Rardin is a writer for Marketing Publications in the Atari Home Computer Division.



Hypnosis

The following special *Hypnosis Program* is written in ATARI BASIC. Type the program into your ATARI Home Computer exactly as it's listed

below. When finished, type RUN — you'll see why this program was named *Hypnosis!*

```
10 DIM A$(30)
20 ST=ADR(A$):FOR I=ST TO ST+26:READ A
30 POKE I,A:NEXT I
40 GRAPHICS 10:FOR I=1 TO 8
50 POKE 704+I,(I-1)*32+22:NEXT I
60 Q=1:FOR Y=0 TO 191
70 COLOR Q:PLOT 0,Y
80 DRAWTO 79,191-Y
90 Q=Q+0.416666666:IF Q>8 THEN Q=1
100 NEXT Y:Q=1
110 FOR X=79 TO 0 STEP -1
120 COLOR Q:PLOT X,0
130 DRAWTO 79-X,191
140 Q=Q+1:IF Q>8 THEN Q=1
150 NEXT X
160 X=USR(ADR(A$))
170 FOR J=1 TO 4:NEXT J
180 GO TO 160
190 DATA 104,162,0,172,193,2,189,194
200 DATA 2,157,193,2,232,224,8,144
210 DATA 245,140,200,2,96,65,65,65
220 DATA 65,65,65
```

Hypnosis program courtesy Atari Program Exchange.

SPECIAL FEATURE

YOUR ATARI HOME COMPUTER SPEAKS YOUR LANGUAGE

You can now use more programming languages than ever to bring your ATARI Home Computer to life and make it do what you want. Whether you're a beginning programmer or a seasoned "bit-diddler," you'll discover the amazing things your ATARI 800 or ATARI 400 Home Computer can do with any one of our seven computer languages.

ATARI PILOT (with "turtle" graphics) is one of the best languages you can use to learn how to program. You'll write most of the commands in common English. Kids love it. With its built-in "turtle" graphics, you draw and paint by telling the "turtle" which pen to use and what color. ATARI PILOT means programming fun for the entire family.

ATARI BASIC is quickly becoming a popular member of the BASIC language family. Easy to learn and fun to use, its low cost and minimal use of memory (only 8K is required) are the reasons for its popularity. ATARI BASIC lets you make full use of the graphics and sound capabilities that have made ATARI Home Computers famous.

ATARI Microsoft BASIC—Long recognized as the industry standard, Microsoft BASIC is now available for your ATARI Home Computer. ATARI Microsoft BASIC is one of the most powerful computing tools you can use on your home computer. Special features such as "PRINT USING" statements let you format numbers and align decimal points as well as dollar signs or other special symbols.

ATARI Assembler Editor uses machine language to get at the heart of your ATARI Home Computer. You can create high-speed animated action and get quick information processing once you've learned to program in Assembly code.

ATARI Macro Assembler—Even more powerful than the ATARI Assembler Editor, the ATARI Macro Assembler allows you to assemble

larger programs faster and more efficiently. You can create your own library of assembler routines to speed up program development. ATARI Macro Assembler gives you the maximum control over the powerful graphics and sound features of your ATARI Home Computer.

Two More From The Atari Program Exchange (APX)

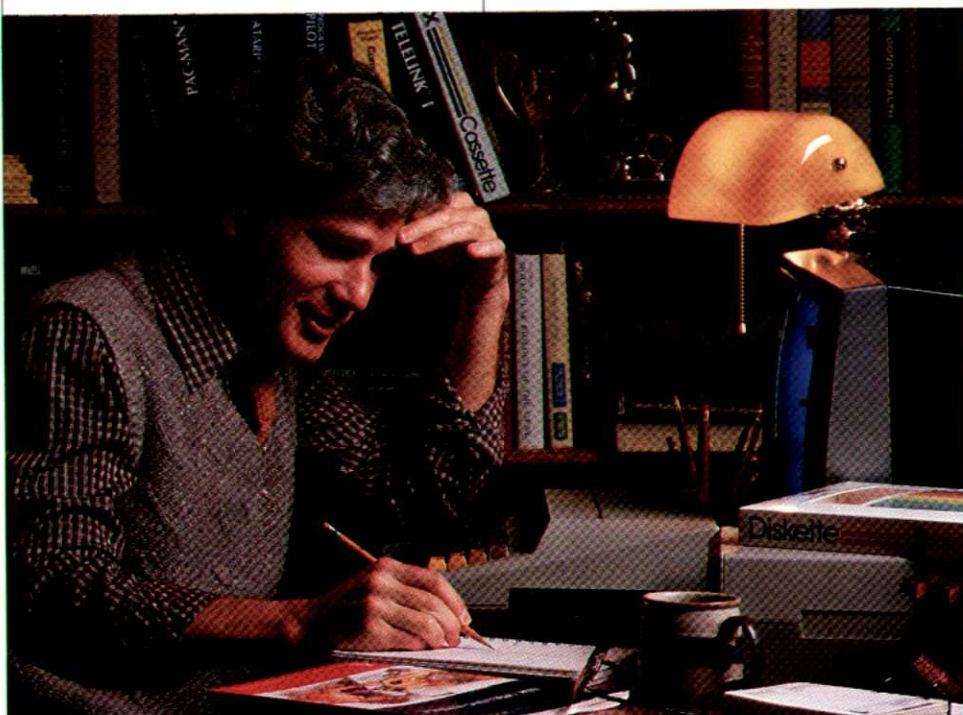
EXTENDED fig-FORTH is a development language that falls somewhere between assembly-level and the higher-level languages. Rapidly gaining popularity as a games and educational development tool, FORTH combines the speed and efficiency of an assembly language with the simplicity of languages like BASIC. Neatly packaged in a 10K format, FORTH is an excellent programming language for programs requiring high speed and low memory consumption.

ATARI Pascal—With its ability to teach efficient programming techniques, Pascal has gained wide acceptance in high schools and colleges. It's a structured-programming language

commonly used by professional software developers working with large mainframe computers. Pascal, like all of our programming languages, makes full use of your ATARI Home Computer's graphics and sound capabilities.

It's not necessary to know how to program to enjoy the power and convenience of your ATARI Home Computer. But if you're the adventurous type, love to tinker, or create your own inventions, then knowing how to program a computer can be an exhilarating and rewarding experience. The seven programming languages now available from your Atari Computer Retailer and APX provide you with the tools you need to fully explore the exciting new world of home computing with Atari.

You can order EXTENDED fig-FORTH and ATARI Pascal direct from the Atari Program Exchange (APX). Call toll-free: 800-538-8543 (in California call 800-672-1404 or 800-672-1408).



MARK TUSCHMAN

SPECIAL FEATURE

THE SOUND OF BUGS

By Jim Inscore

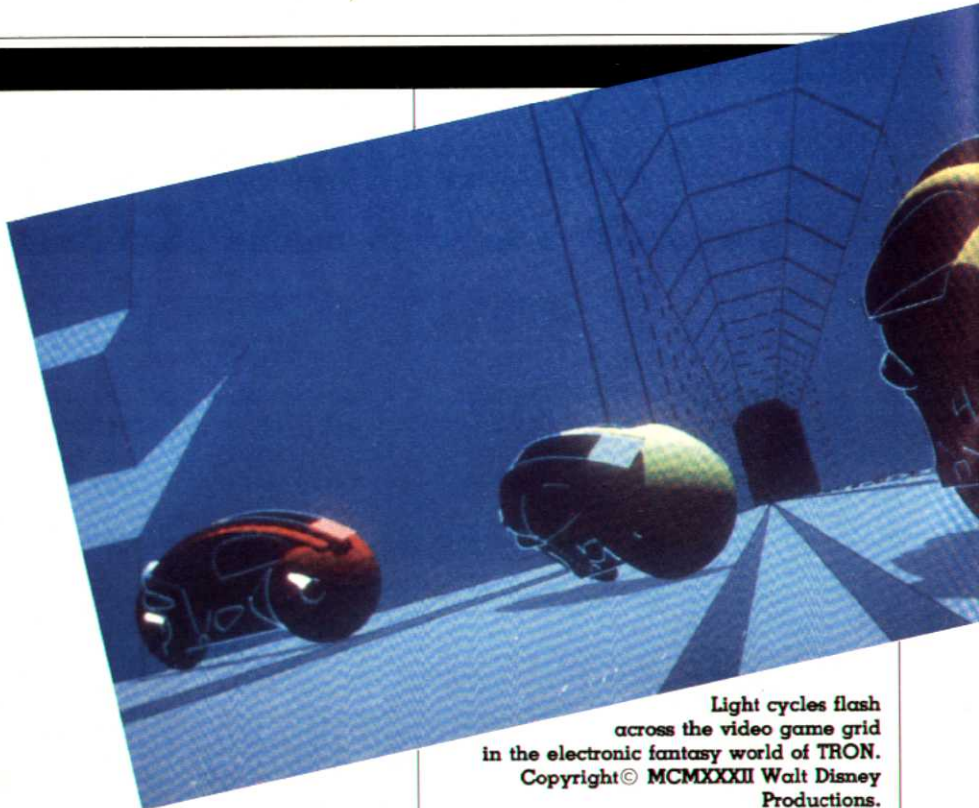
The television monitor flickers briefly, then comes to life. On the screen, a young man races madly through a buzzing maze of pure energy, pursued by electronically animated computer bugs. No longer merely the figment of some programmer's overactive imagination, these bugs are in hot pursuit. They look like mutant water-spiders hatched from integrated circuit chips. And they sound like . . .

Wait a second. Something's missing. It's that feeling you get when you're sitting in the theater and a cold finger runs down your spine 'cause you can *hear* the monsters getting closer, closer. These big scary computer bugs aren't making any sound at all.

The screen flickers again as Frank Serafine taps out a few nimble keystrokes on his ATARI 800 Home Computer. The video tape recorder beneath the monitor rewinds, a 16-track audio recorder across the room whirs to life, then stops. With a few more deft keystrokes, the audio and video tapes start rolling at the same time.

The bugs once again bear down on our hero. But now their eerie cries screech from the monitor speakers. It's a weird, ominous cry, realistic but surreal — the sound of live crickets electronically manipulated and mixed with some piercing computer generated chirps and bleeps. This time we feel the cold fear of the hero's desperate race, the danger of these electro-beasts. An icy chill runs down the spine. The scene ends, the sound fades. Frank Serafine, sound effects expert extraordinaire, has just made a perfect "take", using some extraordinary film and audio equipment and a standard ATARI 800 Home Computer.

Photography courtesy of Walt Disney Productions. Copyright © 1982.



Light cycles flash across the video game grid in the electronic fantasy world of TRON. Copyright © MCMXXXIII Walt Disney Productions.

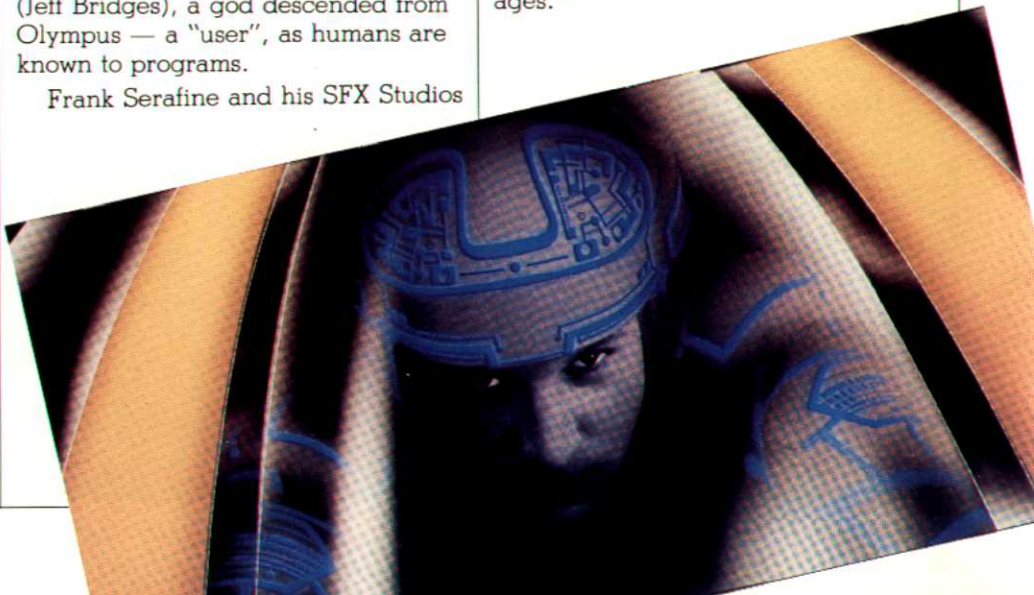
Frank's sound effects project is the latest effort from Walt Disney Studios, a computer-age fantasy entitled "TRON." Capitalizing on the current popularity of video games, TRON takes us inside the guts of a computer, where the games are larger than life — and the computer bugs are real.

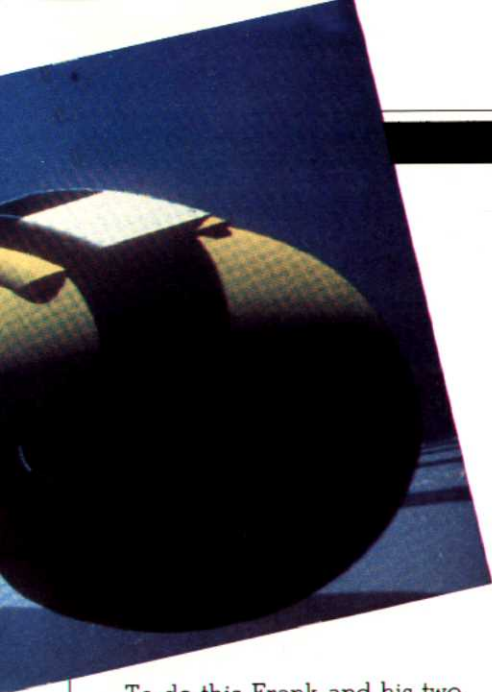
TRON uses computer-generated graphics and sound effects, plus state-of-the-art optical effects to bring to life a fantasy world where characters made of pure light and energy defy the laws of physics. This fantastic landscape is governed by a demonic Master Computer Program (MCP) who puts master programs to death on a video game grid. Into this electronic Oz comes the human Flynn (Jeff Bridges), a god descended from Olympus — a "user", as humans are known to programs.

Frank Serafine and his SFX Studios

in Los Angeles were the natural choice to create sound effects for this high-tech adventure movie. Frank's a trained musician, an expert on digital synthesizers, and a well-published proponent of computer applications for music and film sound tracks. At SFX, he's worked hard the last few years creating effects for some of the more interesting movies recognized for their excellent sound tracks such as *Star Trek* and *The Fog*.

"The ATARI 800 is perfect for a movie like TRON," says Frank. "I can recreate all the same sounds or make up new ones of my own. In TRON, we wanted to create an impression with sound images as well as visual images."





To do this Frank and his two sound editors recorded the real sounds of army tanks rumbling, missiles firing, and crickets chirping.

By combining these "organic" sounds, as Frank calls them, with sounds generated by the ATARI Computer, then enhancing the mix electronically, Frank created the hyper-real sounds you'll hear in TRON.

Part of the task for any sound editor is to search through reels and reels of 35mm sound stock for just the right effect. Then the sound effect must be cut and spliced together by hand on a film editing machine called a *Movieola*. Using this technique, sound editors may take several days to assemble just one effect. But over the past two years, Frank has used his ATARI Computer to revolutionize that process.

"I've assembled a collection of over sixty reels of sound effects tapes. The filing program I'm using with the ATARI 800 allows me to enter every effect and cross reference each of them under several different categories," says Frank. Now, when he wants a sound, he asks his ATARI 800 for a listing of each category, and can get the sound he wants in minutes instead of hours or days.

While sound generation and file management are tasks the ATARI Computer handles daily for many users, Frank has one use for his ATARI Computer that's completely unique. Using an interface that allows the ATARI Computer to control both audio and video recorders, Serafine is able to edit sound effects super-precisely — right from the keyboard of his ATARI 800 Computer.

"You've got to understand what this means for the industry," Serafine emphasizes. "As much as one-third of the sound budget for a film could go into looking for the right effects. And the actual editing process could take several days per effect."

The Future of SFX

Frank is very enthusiastic about what he's doing with his ATARI Computer. And his enthusiasm carries over to those he works with. "Producers come in and say 'Oh, I have one of these things at home. I love the games.' But when I show them what I'm doing with it, they just shake their heads in amazement — and ask me how to make theirs do the same thing."

"The ATARI 800 is a natural for this kind of creative work," Frank sums up. "What it comes down to is this," he points to the racks of equipment around him, "here is some of the most powerful state-of-the-art gear being used in the film industry. And the ATARI 800 is able to tie into it and make it all work. I guess that's the bottom line for me."

A Talk With a Computer Whiz Kid

Seventeen-year-old Laurent Bassett has only had his ATARI Computer for two years, but he has already managed to land an exciting part-time job that puts his skills to good use. Laurent, a high-school senior at the Ecole Francaise in Los Angeles, has been working for the past six months at SFX Studios, writing programs that help generate and edit sound effects for the new Walt Disney movie "TRON". We caught up with Laurent at the studio and asked him some questions about how he got into the movie biz.

CONNECTION: Have you always been interested in computers and electronics?

Laurent: No, actually all my life I've been interested in art. That was what attracted me to the ATARI Computer, the graphics and sound capabilities. I do a lot of drawing, painting and that sort of thing. But when I discovered the computer I kind of abandoned paper.

CONNECTION: How did you get started on the ATARI Computer?

Laurent: Well, a couple of years ago, my father was working on a report on computers. Several people told him about the ATARI Computer, that it was the best available. So he brought one home.

When I got it, I went through the ATARI BASIC manual and learned how to program. I started writing little games, little business programs. I thought the sounds were pretty amazing. I followed the sound effects that came in THE ATARI CONNECTION, then started writing some sound programs of my own. I've got one program that uses just a few lines of BASIC to demonstrate all the sounds in the ATARI Computer.

CONNECTION: Are you looking forward to a future in sound effects?

Laurent: Not really, no. What I want to do is get heavily into computer graphics. I'll be starting at UCLA next year. I'm planning to major in computers and art. I don't know if anybody's done that before, but those are the two things that interest me most right now. In fact, the thing I really want now is a GTIA chip for my ATARI 800.



SFX Sound Studios.
Laurent Bassett
and Frank Serafine.

Jim Inscore is the Writing Manager for Marketing Publications in the Atari Home Computer Division.

NEW PRODUCTS

PAC-MAN*

The goblins are coming, they're on the attack, man.

You like chomping dots but they like chomping PAC-MAN.

Blinky is fastest, so watch where he goes.

Pinky is sneakier than anyone knows.

Inky has quite a few tricks up his cape,

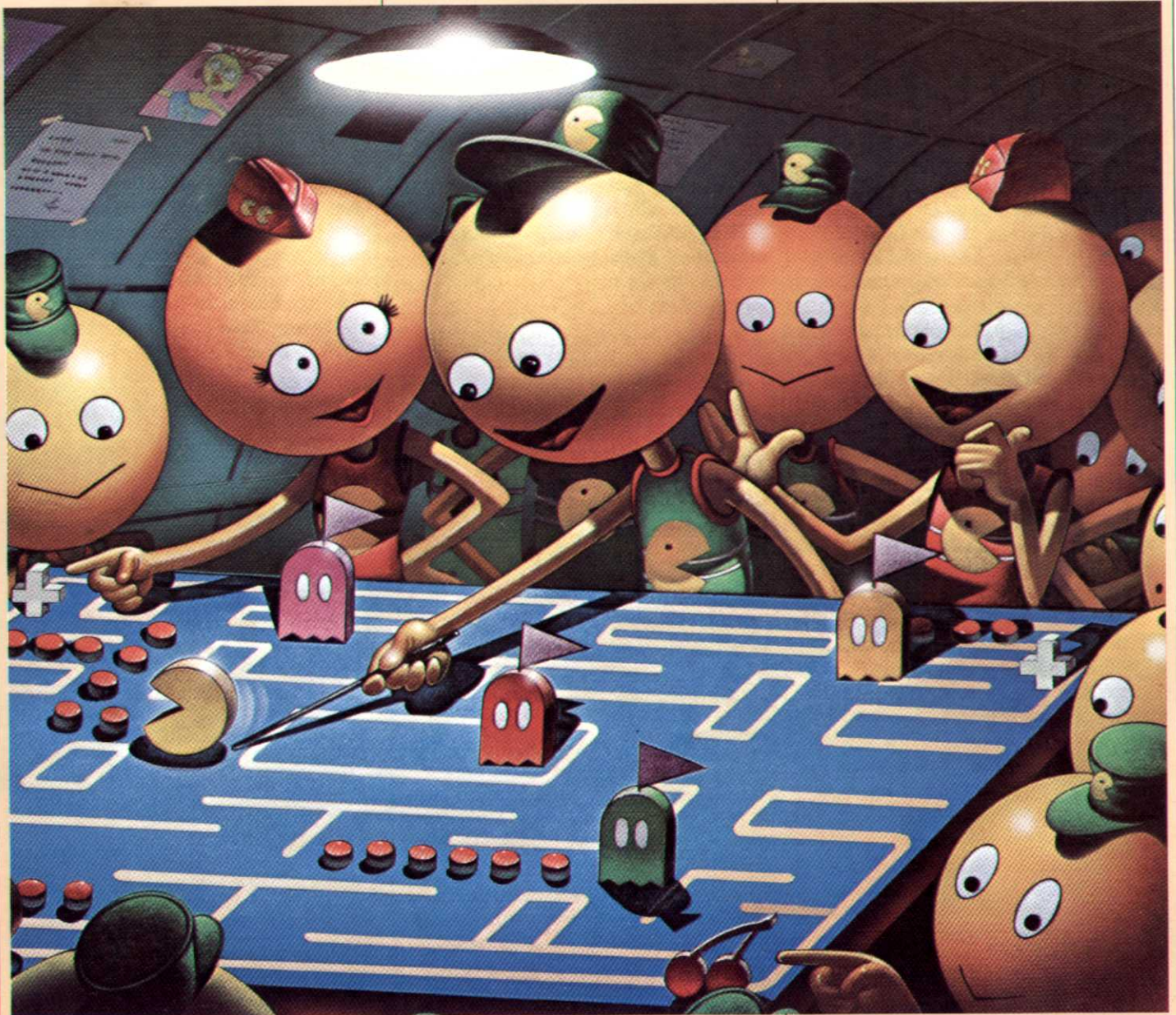
Clyde cuts you off so there's just no escape!

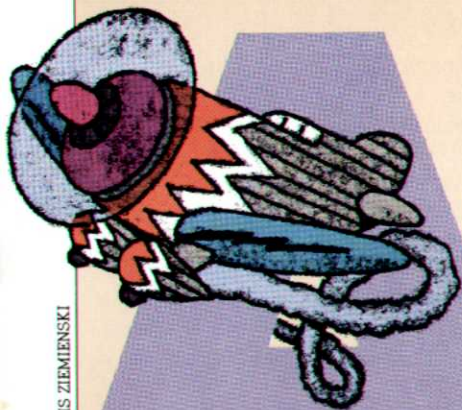
It's a race to gobble up all those dots and stay away from those sneaky ghosts! Your ATARI Home Computer's powerful combination of color and sound features give you an almost perfect rendition of the brilliantly colorful and musical coin-operated game. You (and the host of new friends you'll suddenly have!) will be absorbed in devouring dots, running from the ghosts, and turning the tables on Clyde and the gang. Rack

up more points by eating the fruit that pops up, and gain an extra PAC-MAN with each 10,000 points.

PAC-MAN has become one of America's favorite video games and we're sure you'll enjoy your very own ATARI Home Computer cartridge game that you can play anytime. Available at your Atari Computer Retailer now, PAC-MAN includes the game cartridge, and a delightfully illustrated Owner's Guide. Just plug it into your ATARI 800 or ATARI 400 Home Computer with a minimum of 16K RAM and get movin' PAC-MAN!

*Trademark of Bally Midway Mfg. Co., licensed by Namco-America, Inc.





MY FIRST ALPHABET

Alive with music, animated figures and vibrant colors, *My First Alphabet* offers a fun, musical way for pre-school children to learn the alphabet and numbers. Large colorful letters pop onto the screen, clowns smile and frown, and the "Alphabet Song" plays with just the press of a button.

Created by Fernando Herrera to help his son with a visual handicap, *My First Alphabet* has seven different options that provide exciting and attention-holding educational adventures. Even if your child is too young to use the keyboard, *My First Alphabet* will automatically display the high-resolution storybook pictures of everything from Airplanes to Zebras.

Besides giving your children a head start in learning how to spell and count, they will also be encouraged to learn, develop and understand basic computer skills and concepts.

The package includes a colorfully animated learning guide and a program diskette. *My First Alphabet* requires an ATARI BASIC cartridge, an ATARI 800 Home Computer with a minimum of 32K RAM, and an ATARI 810 Disk Drive. Expected availability date: July, 1982.

Read the dramatic, heart-warming human interest story behind *My First Alphabet* in the Spring Issue of *THE ATARI CONNECTION*, Vol. 2, No. 1.

THE HOME FILING MANAGER

By Jeff Schwamberger

I used to be absolutely fascinated by how fast a telephone operator could find the number I wanted. I used to envision the person at the other end of the line fanning through the pages of the directory at lightning speed and being possessed of some sort of supernatural ability to scan hundreds of thousands of names and numbers printed on reams of smudged, torn, and dog-eared pages. One day, as I hung the phone up, I couldn't contain my amazement any longer. "How can they do it?" I asked, "How can they possibly find one number out of all the others *that fast?*"

"Computers," my son said.

Of course, computers! I envisioned thousands of tiny bits of information — in the guise of electrons — dancing in Buzby-Berkley precision down the avenues and alleyways of the electronic city that constitutes a computer's brain.

But still, most of us must deal with those tattered, torn, odd-sized pieces of paper to locate vital pieces of information. I'm not immune to the homey charm of a desk, well cluttered with paper. However, when it comes time to extract some vital piece of paper from that mess, the charm fades quickly. If you're all too familiar with that frustrating experience, Rejoice! Now there's a simple, efficient, and inexpensive way to make your ATARI Home Computer do it for you. It's called the *Home Filing Manager*.

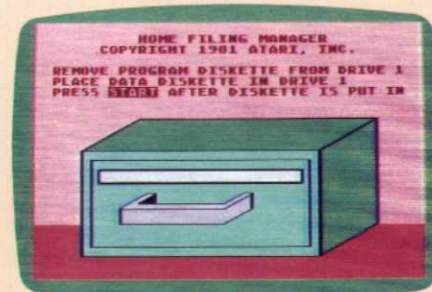
The new ATARI *Home Filing Manager* is something that everyone in the family can use. Even my wife — who used to exhibit toward our ATARI 800 the same affection she felt for our son's late, little-mourned tarantula — has taken to *The Home Filing Manager* like a duck to orange sauce. For example, she has more collectibles than I would care to count. She uses *HFM* to catalogue every piece she owns, where she bought it, how much she paid for it, and what it's

currently worth. I've also discovered that half the fun of owning collectibles is telling your friends precisely those details.

Our daughter, a sophomore in college, uses *HFM* to take notes while she's studying. She says that reviewing for an exam is a pleasure — well, almost. She also tells me that her term papers nearly write themselves: once she has her notes printed out in the right order, she goes from a rough draft to a final copy in no time at all. She finds *HFM* so invaluable, in fact, that she's been known to commandeer our family's ATARI Home Computer for entire weekends — which has led her brother to complain to me of a serious withering of his ATARI *Missile Command* skills.

But *HFM* has made even our son see that a computer is more than just a game. He uses *HFM* to keep track of all the theorems, postulates, and formulas and whatnot that he needs for his geometry class.

Of course, all those things only scratch the surface of what you can do with *The Home Filing Manager*. Recipes, medical records, names and addresses — whatever you can put on



an index card, you can put in *The Home Filing Manager*. And what's more important is that as a way to store and find things you need to know, it's a considerable advance over the shoebox.

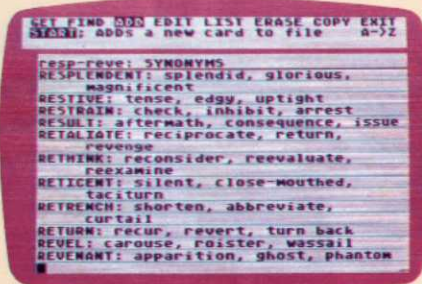
Another thing I really like about *The Home Filing Manager* is that even though it means business, it knows how to have fun, too. Up to now, most data base managers, as they're called, have all the personality

Continued on page 13.

NEW PRODUCTS

Continued from page 12.

of a tank. If they could roll in there and get the job done, it didn't matter how unattractive they were. That's true no longer — not since *The Home Filing Manager* is here. The program's clever index card and file jacket graphics are familiar, friendly and appealing. In fact, the first time I used *The Home Filing Manager*, I spent the first couple of minutes just playing with the function keys because I found it so entertaining.



To use *The Home Filing Manager* program diskette, you'll need either an ATARI 400 or ATARI 800 Home Computer with a minimum of 16K RAM, and an ATARI 810 Disk Drive. You can make printed copies of your files with an ATARI 825 80-Column Printer and ATARI 850 Interface Module. The package also includes a formatted data diskette for recording information, and a user's guide. Expected availability date: July, 1982.

Editor's Note — Jeff Schwamberger is the Manager of the Software Standards Group at the ATARI Home Computer Division. Jeff doesn't have a daughter who's a sophomore in college nor a computer whiz kid for a son. However, he did imagine electrons dancing in Busby-Berkeley precision. The ATARI Home Filing Manager was tested among selected families who provided Jeff with reports of the uses and applications mentioned in his story.

THE ATARI MACRO ASSEMBLER AND PROGRAM-TEXT EDITOR

By Howard Chan

Have you ever tried to build furniture with just a hand saw? It can be done but it takes a lot more time and effort. Writing a computer program is much like building a piece of furniture. It is creative work and it can be rewarding. But it also takes a lot of time, energy, and good programming tools.

The ATARI Macro Assembler and Program-Text Editor is a new programming tool that will make building programs a lot easier than before. This powerful new programming tool complements the ATARI Assembler Editor cartridge which serves as an ideal and convenient program for beginning programmers in assembly language.

The Macro Assembler has been designed for the advanced assembly language programmer who desires faster and more sophisticated features. Benchmark test programs have shown that on the average, the Macro Assembler assembles 5.5 times faster than the Assembler Editor cartridge. It can also assemble programs with as many as 1600 symbol definitions with no limit on program size.

The Macro Assembler resembles assemblers that are found in many of the large mainframe computers. It has an extensive set of pseudo instructions that lets you tap the power of the 6502 microprocessor. You can duplicate code, optionally assemble code, and modularize your program. The construction of large programs is much easier with the capabilities provided. You can define symbols and macros in a library file and access them. This saves you development time by using modules of your old programs.

The Program-Text Editor included with the Macro Assembler package is just as powerful and versatile as the assembler itself. It automatically backs up your working file so you can never lose your entire program. In addition

to the many text insert and text delete features, it has text search and replace capabilities. The Text Editor also allows you to copy, move, delete, and save a block of text to your disk drive. It even lets you customize your text files for different programming languages with specific tab stops, line length, margin, and screen color. The Program Diskette conveniently stores both the Text Editor and Macro Assembler programs.

The ATARI Macro Assembler and Program-Text Editor package is a must if you are a serious software developer using the ATARI Home Computer. It is much faster and contains more powerful commands than currently available assemblers. With it, you can take advantage of the ATARI Computer's superior hardware features. Use a power tool instead of a hand saw. The ATARI Macro Assembler will save you time and let you concentrate on the creative part of programming.

(Requires an ATARI 800 Home Computer with a minimum of 32K RAM and an ATARI 810 Disk Drive.)

ATARI MACRO ASSEMBLER

Listed below are selected samples of some of the easy-to-use *Pseudo Instructions* featured in the new ATARI Macro Assembler.

- ASSERT** Check assembly time condition
- DB** Define bytes
- DC** Define character
- DW** Define word
- ECHO** Duplicate code
- END** End of assembly
- EQU** Define symbol
- INCLUDE** Assemble code from another file
- LINK** Assemble code from another file later
- LOC** Set location counter
- MACRO** Macro definition
- USE** Define program segments

Howard Chan is Software Product Manager for the Atari Home Computer Division.



CENTIPEDE

CENTIPEDE

"While searching one day for a rare specimen in the Hemipter's order I, Lord Motley Bugnut, Bug Expert, happened to stumble upon an enchanted mushroom patch. It was astounding the number of pesky, bothersome bugs that inhabited this patch! Attacking Centipedes, Jumping Spiders, Frenzied Fleas and Scurrying Scorpions moved towards me through a field of fluorescent-colored mushrooms. I was quite alarmed when each bug I encountered was endowed with magical powers. It was just my good fortune that I had my Bug-Blaster about and began to lay siege to this curious bombardment of pernicious pests . . ."

You'll have as much fun blasting and zapping those pesky pests as Lord Motley with the ATARI Home

Computer rendition of Centipede.

Just as in the popular arcade version, the Centipedes launch their attack from the top of your TV screen. You must blast away all of the Centipede's segments to get rid of this pest. The Spider bounces from its web and destroys any mushrooms in its path — you have to keep an eye on this lolloping arachnid. Scorpions scurry and dash across the mushroom patch without warning, poisoning all the mushrooms in their way. And while you're busy firing your Bug-Blaster at these pests, the Fleas have the power to put more of those mushrooms in your garden.

The Centipede game package includes a fully illustrated instruction guide giving tips on how to increase your bug-blasting skills, and a program cartridge (Minimum of 16K RAM required. Expected Availability Date: July, 1982).



A

N ENCHANTED MUSHROOM PATCH OF YOUR OWN

ANOTHER FIRST FROM ATARI

COAST TO COAST SERVICE FOR YOUR ATARI HOME COMPUTER

Now you can get factory-perfect care for your ATARI Home Computer, without having to send it back to the factory. Just bring it to a nearby *Atari Service* center — the place to go if you ever need your ATARI Home Computer fixed, adjusted, upgraded or just fine-tuned (see the article on the new GTIA chip, page 7).

Atari Service Nationwide

Atari has just recently established the first nationwide network of service representatives for home computers and video games. Over 700 factory-trained, factory-authorized representatives are now available to handle any problem on any ATARI Home Computer. The new *Atari Service* is the kind of innovative service program you'd expect from Atari — the company that has done so much to bring the computer age into so many people's homes.

You'll find you can rely upon your new *Atari Service* representative to solve any problem on any ATARI Home Computer system or ATARI Video Computer system. They know just about as much about your computer system as the Atari people who designed and built them, because Atari trained them, right here at the factory.

So Close, So Convenient

Call toll-free for the name and address of the *Atari Service* representative nearest you:

(800) 538-8543

In California call:

(800) 672-1404

Atari Service — the only service that's as good as Atari.

EDUCATION

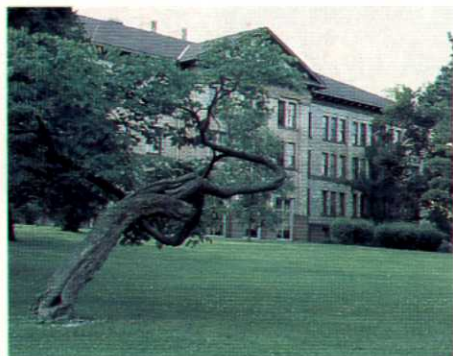
ATARI COMPUTER CAMPS

A LIFETIME EXPERIENCE
FOR THE SUMMER OF '82

"Hey, I can do it myself!" That's a cry you'll hear a lot this summer at ATARI Computer Camps. That's what ATARI Computer Camps are all about — ten to eighteen-year-olds getting a head start in the new world of computers.

At the same time, they'll enjoy all the fun and adventure a summer camp provides: hiking, swimming, tennis. It's exercise for the body *AND* mind at ATARI Computer Camps — the camp experience that lasts the rest of your life!

Eight ATARI Computer Camp sessions will be held in four locations across the United States beginning in late June. While most summer camps last a week or two, ATARI Computer Camps will go a full month, giving campers a chance to get beyond the "nuts and bolts" of personal computing, according to Linda Gordon, Vice President of Special Projects for Atari, Inc.



"We believe computers are a tool, not an end in themselves," she says. "They'll soon be as common around the house as the telephone or calculator. Campers will learn how the computer can help them in their everyday lives and later in their careers."

"Our curriculum focuses on a camper's personal interests," continues Linda. "We'll encourage the fun of learning. And we'll take them as far as they want to go with the

computers. We want them to return home able to say, I can make the computer do that!"

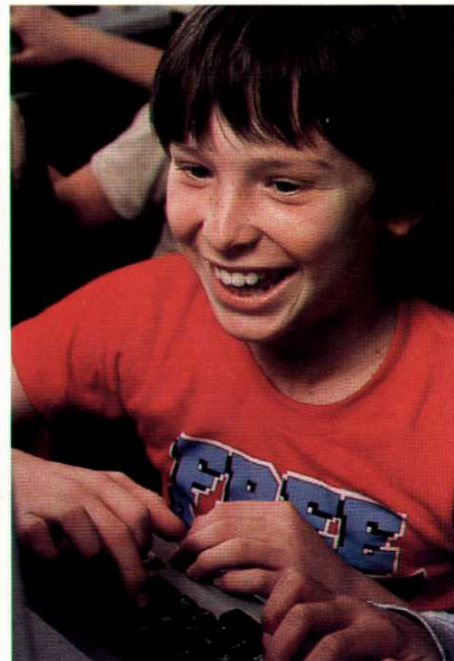
To help campers learn to use the computer as a tool and problem-solver, Atari has tapped its vast resources to offer a unique program enriched by guest lectures from top specialists in the field, including Dr. Alan Kay, Vice President of Research and Development for Atari, Inc. Dr. Kay will stimulate campers' imaginations with insights into Artificial Intelligence, while other speakers will explore fantasy and adventure gaming or computer animation, graphics, and music.

Atari is the first major home computer manufacturer to fully sponsor summer computer camps. Raymond E. Kassar, Chairman of the Board and Chief Executive Officer, said, "We are already heavily involved in computer education, and ATARI Computer Camps will give us opportunities to make further contributions to the field."

"We've designed our own curriculum and hired professionally trained staff and educators. There'll be one instructor for every five or six campers. We feel it is important to create an informal learning environment to complement the more structured programs."

Robert A. Kahn, Manager of ATARI Computer Camps curriculum, says regardless of a camper's experience with computers, he or she will be challenged to advance to higher and higher levels.

Campers will receive 12 hours of classroom instruction each week centered around the popular ATARI PILOT and ATARI BASIC programming languages. Free time on the computers will also be made available each day so students can explore a variety of interesting applications and programming languages. In all phases of the program, campers will



work individually and in teams, just as professionals do. ATARI Computer Camp sessions will last four to eight weeks, beginning in late June. The four ATARI Computer Camp sites are:

The University of San Diego,
San Diego, California

The Asheville School
Asheville, North Carolina,
located in the foothills of the
Smokey Mountains

Lakeland College,
Sheboygan, Wisconsin, north of
Milwaukee

East Stroudsburg State College
East Stroudsburg, Pennsylvania,
located in the Pocono Mountains

For further information, write:

ATARI COMPUTER CAMPS

Department D
40 East 34th Street
New York City, NY 10016

Or, you can call toll-free:
(800) 847-4180

New York and Canada residents
should call collect:
(212) 889-5200

INTERNATIONAL PAC-MAN ON THE SLOPES

By Teddi Converse

PAC-MAN chomped his way into the hearts of our European friends recently at a meeting between Atari International and our major European distributors. The people of the small skiing town in Zermatt, Switzerland were greeted by Atari and PAC-MAN as he wandered through the village streets and challenged the nearby famous Matterhorn Mountain.

The only way to reach Zermatt is by electric train or horse-drawn carriage, so you can imagine the town's amazement when out of nowhere PAC-MAN and Pinky the ghost came schuss-booming down the mountain side to pose for a few photographs. "Who are those guys" could probably have been heard in several European languages.

ATARI Computer products are marketed through one major wholesale distributor in each of the European countries. Coin operated video games and the ATARI Video Computer Systems are as popular in European countries as in the United States. And now the ATARI Home Computer's popularity is increasing day by day. The ATARI 400 Home Computer was recently voted *Computer of the Year* by the leading West German computer magazine *CHIP*. Now ATARI Home Computer users around the world can have fun playing the home version of PAC-MAN as the game makes its debut in Europe, the Far East, Australia, Canada and South America.

This bi-annual Atari International Marketing meeting kicked off the upcoming release of PAC-MAN in Europe. Activities such as a PAC-MAN contest were held as festive, promotional events. You never know where that sneaky PAC-MAN will show up next!



BUSINESS/PROFESSIONAL

HOME COMPUTERIZED PHOTOGRAPHY

By Teddi Converse

The photographic prints we all enjoy and appreciate in fine art books and art galleries are created by a very demanding and precise knowledge of film development and photographic printmaking.

Ansel Adams, the renowned naturalist photographer, famous for his photographic prints of Yosemite National Park, uses a microwave oven to quickly test the contrasting nuances of gray tonal quality and white values between wet and dry prints. Creating your own unique photographic prints from a roll of film not only requires a refinement of artistic technique but the ability to precisely control the timing process.

Craig Hickman, a photography instructor at the Evergreen State College in Olympia, Washington has increased the efficiency and aesthetic appeal of his photography by using his ATARI 400 Home Computer. Craig has developed two programs

written in ATARI BASIC for use in his darkroom. One of the programs times the negative's development, and the other monitors and times enlargements and the making of the positive prints.

"It would be very easy to develop a program that is actually more trouble than it's worth," said Craig. "So I tried to make the program just very simple and practical."

The program is simple, and can be used for a variety of different applications other than the photographic process. The Developing Program presents you with three options: PROGRAM, TIME and LIST. PROGRAM allows you to enter developing and exposure times. TIME will, of course, start the timing of the processes you've entered in the PROGRAM mode. And the LIST option returns you to the last program listing and is identical to the LIST command in ATARI BASIC.

The computer will store up to thirty

film processing combinations. For example you could name the process with the type of film or the speed. If you have been "pushing" the film (that is, deliberately underexposing the film when shooting for compensation during development), you could identify it that way.

Once the film is developed into a negative, you are ready to use Craig's Enlarger/Timer program to make a positive print.

When Craig was developing the program for the enlarger he knew he was going to need some kind of interface with the computer to turn the enlarger off and on. So he built an extra interface using a transistor and a relay. "It works just great," Craig told us, "and it cost less than \$15.00 to put together."

This Enlarger/Timer program monitors the enlarger and programs the exposure time of the negative. The program has several options, one being an option for the location on the photograph you would like to burn (darkening a specific area of a print by giving it additional exposure). The program also allows you to save all of this information so you can easily recall the unique exposures of a certain print at a later time.

"The computer will time the enlarger at up to 1/10th of a second accuracy," Craig explained. "And although there are other programmable timers on the market today, the cost of the ATARI 400 Home Computer isn't that much higher. It's amazingly flexible and sophisticated."

In addition to the many features Craig has added to his programs, the computer will signal you with tones to let you know when to agitate, and change from stop to fixer, etc.

"One problem that I did have with the system was the light emitting from the TV screen," explained Craig. "So when I am developing black and



KIDBITS FOCUS ON KIDS

white photographs I put a filter over the screen that makes it the color of a safe light. Space is also always scarce in any darkroom so I use a small 5" screen that sets right on top of the computer. It is clear enough and works just great."

When Craig is working with color photo processing, he uses a \$.98 photo cell that adjusts the brightness of the picture. He connects the cell to the first Joystick Controller port on the computer and it automatically dims the color of the television set when the lights in the darkroom are turned off. For an extra precaution against exposing the photographic paper, he simply turns the TV screen away from the enlarger.

Craig also likes the ATARI 400 because of its "peanut-butter proof" keyboard. "You are dealing with various chemicals and other stuff, and many times your hands may be sticky, so the keyboard's a safeguard."

"I'm really surprised there hasn't been more done to interface computers and the darkroom equipment," Craig said. "It really is handy and extremely efficient. Not to mention the other things it can do like cost comparisons of chemicals, metric conversions, and other things like that."

Scores of new and different applications are being explored by home computer users every day. Linking the intricate technology of the computer with the photographic process, as Craig has done, may very well lead to a new dimension in photography.

If you would like to learn more about photography programs that Craig has developed, feel free to write him at the address below:

Craig Hickman
819 W. Hickerson St.
Seattle, Washington 98119



By Karen Henken

Scott Schinderman of Commack, New York began learning about computers 10 years ago. That wouldn't be so unusual except for the fact that Scott is now 15 years old. Scott recently put his computer expertise to work at a Bamberger's Home Computer Week in Menlo Park, New Jersey. Throngs of people were amazed by the variety of music, games, drawings and programs that Scott showed them — all of them programmed on the ATARI 800 Computer.

Since both of Scott's parents are computer salespersons, an interest in computers came naturally to him. In the summer of 1980, while in eighth grade, Scott connived his way into a summer course in computer programming offered at the local high school.

The teacher let him stay — and Scott was soon learning BASIC, PASCAL, LISP, 6502 Assembler and "a little FORTRAN". The following summer he went to a computer camp offered by New York Institute of Technology — this time officially. Scott began learning how to program the ATARI 800 five months ago and it was evident at the Bamberger's show

that he and his computer are old friends by now. Scott uses his computer for doing his homework in science, social studies and English — all on the word processor. He says, "It's much easier than using a typewriter!" He also writes music on the ATARI 800 — his favorite piece is *Sonata by Vivaldi*. And of course, he writes his own computer games!

Asked what he likes about the ATARI Home Computer, Scott answered, "It's easy to program, expandable and has great graphics. It helps out with school work and the games are fantastic."

Scott is now working on a "study at home by computer" campaign — trying to convince his teachers and schoolmates that it would be more effective than having to commute to school every day. He has gone as far as to circulate information to support his idea, but he knows the concept may take a while to catch on. Meanwhile, he just keeps on computing!

Karen Henken is a Sales Support Specialist for the Atari Home Computer Division.

Teddi Converse is a writer for Marketing Publications in the Atari Home Computer Division.

PROGRAM PUZZLE

DATABASE 2000

By Ted Richards and Dave Menconi

What will the computers of the future be like? Now we know! The following short program was given to me by BOB, an amiable, personable computer from the year 2000, gifted with a witty, articulate, artificial intelligence (BOB's name stands for *Behemoth of a Brain*). Our interview covered many topics, which, unfortunately, I don't have the space to cover here, and I must say BOB is indeed very witty, if not somewhat silly at times!

I told BOB about the thousands of ATARI Home Computer owners who would appreciate a glimpse of BOB's awesome databanks and its much ballyhooed sense of humor. BOB was flattered and presented me with *DataBase 2000*. BOB has hidden a secret message from the future within the program and thought you'd have fun trying to find it.

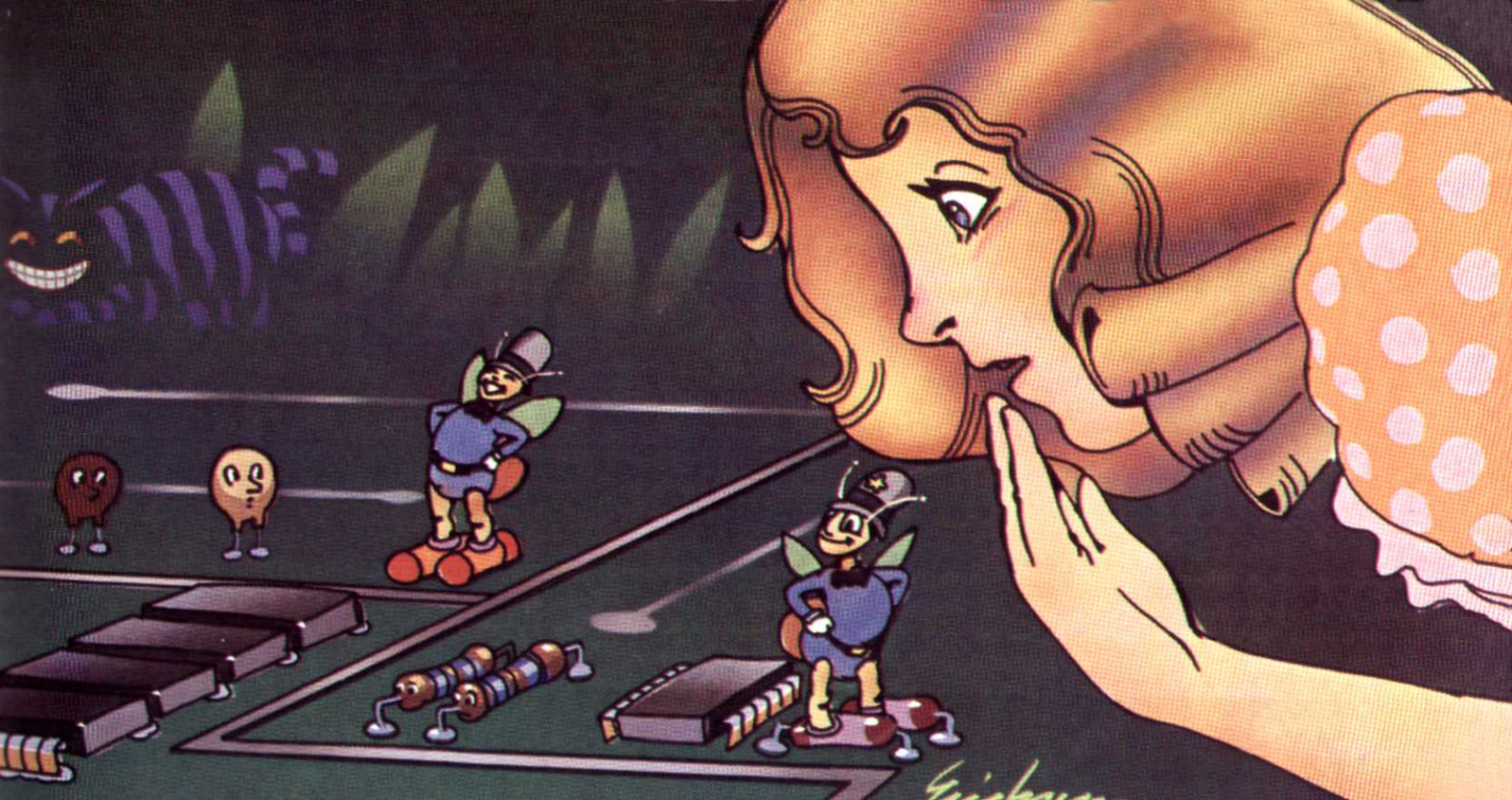
The program is written in ATARI BASIC, a language BOB thought you'd easily understand. Simply type the program into your ATARI Home Computer then type RUN. You'll see BOB's secret message, written in everyday English, flash by on a special screen. See if you can "catch" the message by pressing your START button. The message will freeze on the screen so you can read it!

```

10 POKE 752,1:? CHR$(125):A=PEEK(106)
20 POKE 106,A-10:OLD=PEEK(89)
30 POKE 708,148:GRAPHICS 18:POSITION 6,4
40 PRINT #6;"DATABASE"
50 POSITION 8,6:PRINT #6;"2000"
60 FOR I=1 TO 400:NEXT I:GRAPHICS 0
70 LMSHI=PEEK(560)+256*PEEK(561)+5:X=0:T=5
80 FOR I=OLD*256+555 TO OLD*256+570
90 READ A:POKE I,A:NEXT I
100 POKE 756,RND(0)*255:POKE 77,128
110 POKE 19,RND(0)*255:POKE LMSHI,RND(0)*255
120 SOUND 0,RND(0)*255,10,4:X=X+1
130 IF X>T THEN GOTO 160
140 POKE LMSHI,OLD:POKE 756,224
150 X=0:T=INT(RND(0)*4+5)
160 FOR I=1 TO 20
170 IF PEEK(53279)=6 THEN GOTO 190
180 NEXT I:GOTO 100
190 IF PEEK(53279)=6 THEN GOTO 190
200 GOTO 100
210 DATA 52,40,37,0,48,33,50,52,57
220 DATA 7,51,0,47,54,37,50,8,0,8
    
```

DataBase 2000 Program by Dave Menconi.





FIND THE BUG

```
10 PRINT "NUMBER OF SECONDS TO COUNT";:INPUT S
20 CO=S*59.9227434
30 POKE 16,0:POKE 19,0:POKE 20,0
40 OPEN #1,12,2,"S:"
50 GRAPHICS 2:SETCOLOR 2,0,0
60 POSITION 6,3:PRINT #6;"ELAPSED:"
70 CO=INT((PEEK(18)*65536+PEEK(19)*156+PEEK(20))/69.9227434)
80 POSITION 9,6:PRINT #6;CO
90 IF CO>=S THEN 110
100 GOTO 70
110 POSITION 3,9:PRINT #6;"YOUR TIME IS UP!"
```

By Tom Hudson

This is a Late Bug. A chronically Late Bug. It's supposed to keep accurate time to within one second every day. But this Bug is off by one day a week! Your mission as a fledgling programmer, first class, is to FIND THE BUG, and make it work on time. To make your mission more challenging, there are actually *three* Bugs causing this chronic tardiness. Once you've deBugged the program, you can maybe think up some interesting and imaginative jobs for your Computer Clock. How about as an Egg Timer? Or a Chess Clock?

Tom Hudson is a Sales Training Specialist With the Atari Home Computer Division.

FIND THE BUG CONTEST!

If you find the three late Bugs, isolate them, and write them down. Include a short story about yourself along with some applications you've discovered for your new "Computer Stopwatch".

Your entry will qualify you for a special "Find the Bug" Prize Drawing for an ATARI Computer PAC-MAN game cartridge! If you're a winner, we'll also print your story in THE ATARI CONNECTION.

Send your entry to:
FIND THE BUG
c/o THE ATARI CONNECTION
60 E Phurmeria
P.O. Box 50047
San Jose, CA 95150

KIDBITS

FIND THE BUG WINNER

Last issue we published two "Find the Bug" contests. Needless to say, your response was, again, sensational and well appreciated here at THE ATARI CONNECTION. Every one of your letters was read and every one of you found The Nice Bug. We'll admit, The Mean Bug was a tough one, but thirteen-year-old Brandon Plewe came closest to getting it right. Brandon got the Nice Bug perfectly and told us in his letter:

Dear Atari:

I found both bugs in the Spring issue of THE ATARI CONNECTION. The Nice Bug gave me an ERROR-133, Input/Output Control Block Not Open. I fixed it by changing the following lines:

```
50 GRAPHICS 2+16
60 POSITION 5,5:PRINT #6;A$
```

The corrected program prints your name on the screen as it rotates through the colors.

I also found The Mean Bug. It was ERROR-13 Next Without For. I fixed it by changing line 70 to:

```
POKE 765,1
```

The program draws a blinking line. The error is caused by the POKE 145,X which I took out. It is part of MEMTOP, the top of program memory. If the program sets 145 at X, MEMTOP becomes lower than the



FOR-NEXT stack for X, and so makes it unusable. Thus, the computer forgets X, and when it encounters 90 NEXT X, it has forgotten the FOR X=1 TO 255 STEP 5 in line 10, which, of course causes an error.

I have lived in St. George for four years. I am 13 years old. We bought our ATARI 800 last May, and I think Atari is the best. I am working on Display Lists and Character Sets now, and would like some information on those things in PILOT. I want to become a Computer Engineer in Silicon Valley, hopefully, for Atari. (Save me an opening! I'm a full-fledged, honest-to-goodness Atari freak!)

Sincerely,
Brandon Plewe
St. George, Utah

Well, Brandon, your explanation for the Mean Bug was correct but your solution wasn't totally right. However, it's not your fault! We goofed! The position statement in line 60 was wrong. The corrected program should have displayed a glass of orange juice. The next step would be to eliminate line 10 also. So, to fix this bug, eliminate lines 10 and 90. Then change line 70 to:

```
70 POKE 765,1
```

THE MEAN BUG

```
1 REM Correct Mean Bug
2 REM File: MEAN3
10 FOR X=1 TO 255 STEP 5
20 GRAPHICS 5+16:COLOR 3
30 PLOT 44,45:DRANTO 49,15
40 COLOR 0:DRANTO 20,15
50 DRANTO 25,45:POSITION 25,25
60 POSITION 25,45
70 POKE 765,1:POKE 145,X
80 XIO 18,#6,0,0,"S:"
90 NEXT X
100 GOTO 100
```

THE NICE BUG

```
1 REM Nice Bug
10 DIM A$(15)
20 PRINT "PLEASE TYPE YOUR NAME";
30 INPUT A$
40 SETCOLOR 0,0,0
50 POSITION 5,5:PRINT #6;A$
60 GRAPHICS 3+16
70 FOR X=1 TO 10
80 FOR Z=0 TO 16
90 SETCOLOR 0,4,Z
100 NEXT Z
110 NEXT X
120 SETCOLOR 0,0,0
130 GOTO 40
```

Then insert the new position statement, line 60:

```
60 POSITION 20,15
```

There! So much for that Mean Bug!

You'll receive a Caverns of Mars game diskette for finding the Nice Bug, plus you'll get the Bonus Prize of the popular APX game, Eastern Front '41, for your great attempt at finding the Mean Bug!



ENTERTAINMENT

THE ATARI COMPUTER SOUND FINDER

By Jim Inscore

Want to recreate the blast-off into hyper-space from Star Raiders? Make up sirens or explosions to go with your home movies? Or how about turning on the old rhythm machine and cranking out some new wave electronic sounds?

Here's a simple program that lets you do it.



BUZZ!

The SOUND FINDER program in ATARI BASIC was written by Laurent Bassett (see "Talk With a Computer Whiz Kid") when he was just 15. Using your Joystick, you can set the PITCH and DISTORTION values for a SOUND statement and draw interesting pictures on the screen — both at the same time! You change the pitch up or down, and set the distortion level from pure tones for music to grating noises for super-realistic blastoffs and explosions.

One nice feature of the SOUND MAKER program is that it displays the SOUND statement, giving you a useful development tool for writing game programs. Once you find exactly the sound you like, use the statement on the screen to write sound effects commands for interstellar shoot 'em ups or earthbound adventure games. The possibilities are limitless.



WHIRP!

Who knows? Maybe you'll even be able to make up a movie soundtrack of your own!

Voice Pitch
SOUND 1, 127, 8, 10
Distortion Volume

The SOUND MAKER program lets you see the SOUND statement. PITCH and DISTORTION values will change as you move the joystick.

```
10 X=80:Y=40:GRAPHICS 7:POKE 710,0  
20 POKE 752,1:S=STICK(0)
```

Set the Graphics to mode 7, set the screen to black and eliminate the cursor.

```
30 IF S=14 OR S=6 OR S=10 THEN Y=Y-1  
40 IF S=13 OR S=5 OR S=9 THEN Y=Y+1  
50 IF S=7 OR S=8 OR S=5 THEN X=X+1  
60 IF S=11 OR S=9 OR S=10 THEN X=X-1
```

Accept the input from the joystick for PLOT and SOUND statement values.

```
70 IF X<0 THEN X=159  
80 IF X>159 THEN X=0  
90 IF Y<1 THEN Y=79  
100 IF Y>79 THEN Y=1
```

Cause the PLOT to "wrap-around" — going off the bottom of the screen and coming back in top.

```
110 POKE 656,1:POKE 657,12
```

Set the cursor position.

```
120 COLOR 1:PLOT X,Y
```

Cause the SOUND FINDER program to draw.

```
130 P=INT(X*1.593+0.5):D=INT(Y/11.4+0.5)*2  
140 ? "SOUND 1,";P;" ";D;"",10"  
150 SOUND 1,P,D,10:GOTO 20
```

Sets the values for PITCH and DISTORTION then turns on voice 1.

Sound Finder Program by Laurent Bassett

ENTERTAINMENT PILOT PLAYGROUND

By Jim Paige and Jack Perron

Grab Your Joystick and Take Off With Turtle Graphics.

ATARI PILOT (with "turtle" graphics) lifts you smoothly into the wild blue yonder of computer programming. With "turtle" graphics, you'll soar into art and animation. It's as simple as a push on your Joystick Controller! Below are four programs for student PILOT users. Taxi out onto the PILOT Playground and you'll be soloing in no time! Here are some tips to help with your takeoff:

First insert your ATARI PILOT cartridge and turn on your ATARI 400 or ATARI 800 Computer. Type the programs EXACTLY as they are listed.

SQUIRALS — Here's a program that will put your turtle into a tailspin —squarely! Some ideal angles to try are: 45, 89, 123.

THREE D — Fly into the third dimension with this one. Start with less than 50 for length. Hint: Use

multiples of 8 for the degrees — it's multi-dimensional!

TURTLE CHASE — Two players compete. Each player controls a "turtle" on the screen with a Joystick Controller. Knock heads and music sounds! Use the first two controller ports on the front of your computer (from the left).

SKYWRITERS — Here's a special one for those with Paddle Controllers. Two players draw. Take turns and outdraw your partner (Art Wars). Or pretend you're skywriting! (NOTE: Line #110 requires extra steps. First type "T:". Now press the Escape Key [ESC], then hold down the Control Key [CTRL] and then press the Up Arrow Key after #X and #Y.)

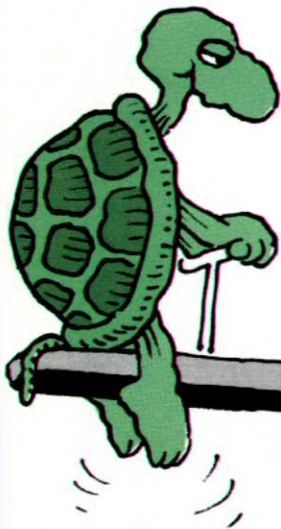
```

Squirals
20 XBEGIN
30 T:What ANGLE do you want
  the "TURTLE" to turn?
40 A: #A
50 GR:GOTO0,0;TURNT00;CLEAR
60 C:#B=0
70 XLOOP
80 GR:DRAW #B
90 GR:TURN #A
100 U:XCOLORS
110 C:#B=#B+1
120 J(#B<100):XLOOP
130 J:XBEGIN
140 E:
150 XCOLORS
160 C:#Z=#Z\1
170 GR(#Z=1):PENBLUE
180 GR(#Z=2):PENRED
190 GR(#Z=3):PENYELLOW
200 C(#Z=3):#Z=0
210 E:
220 GR(#Z=2):PENYELLOW
230 C(#Z=3):#Z=0
240 E:
250 C(#Z=3):#Z=0
260 E:
  
```

Skywriters

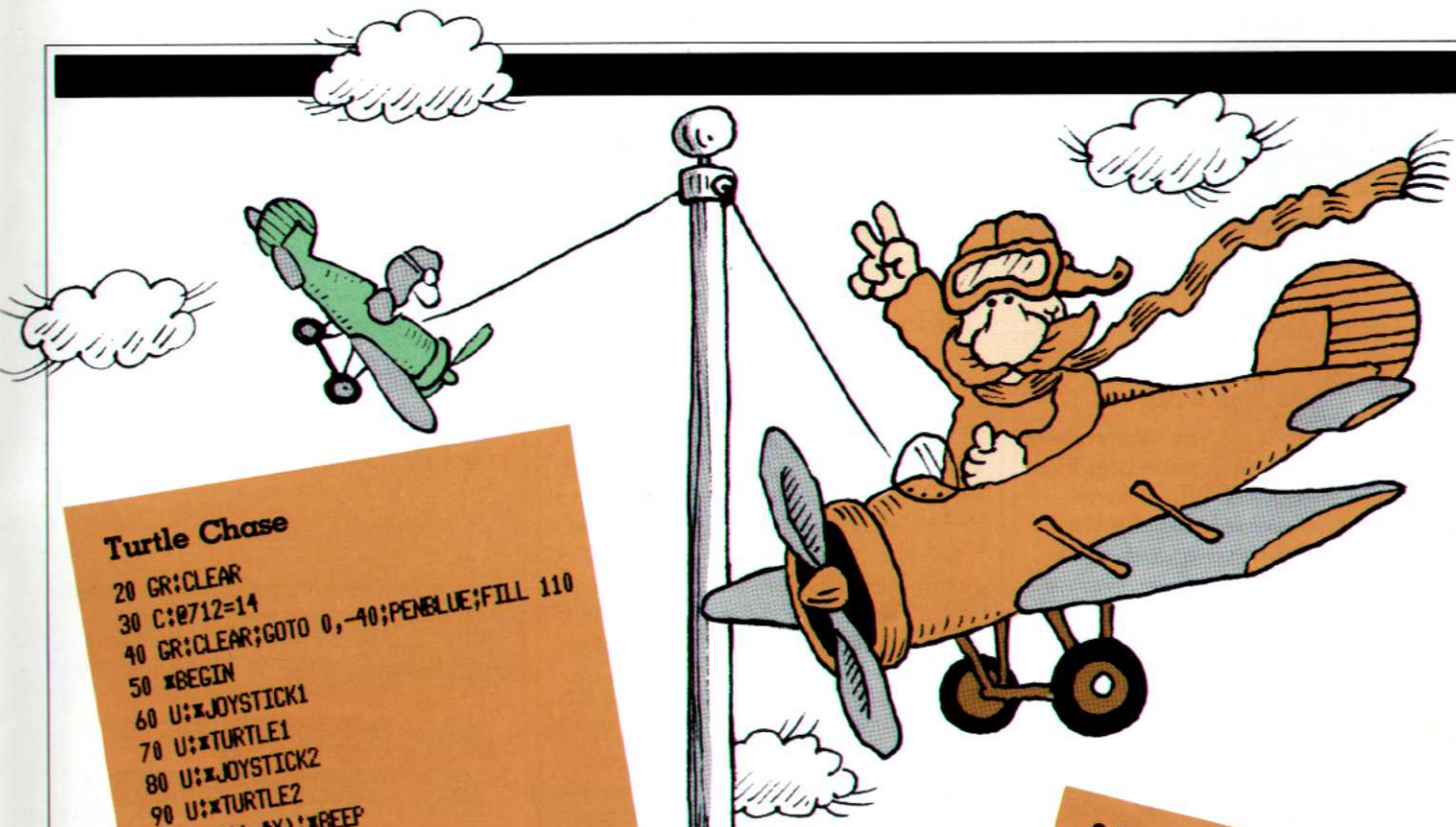
```

20 R:USES PADDLE CONTROLLERS
30 XLOOP
40 GR:GO 0;PENBLUE
50 C:#P=#P+1
60 C:#R=#R+1
70 C:#X=#P*79/113-79
80 C:#Y=#R*41/118-31
90 GR:DRAWTO #X,#Y;DRAWTO #X,#Y
100 GR:PENERASE;GO 0;PENBLUE
110 T:      X=#X_  Y=#Y_
120 GR(XT0=1):CLEAR
130 GR(XT1=1):CLEAR
140 J:XLOOP
  
```



Jack Perron is a Senior Writer with the Atari Home Computer Division

Jim Paige is the National Education Sales Manager, Atari Home Computer Division.



Turtle Chase

```

20 GR: CLEAR
30 C:@712=14
40 GR: CLEAR; GOTO 0, -40; PENBLUE; FILL 110
50 *BEGIN
60 U: *JOYSTICK1
70 U: *TURTLE1
80 U: *JOYSTICK2
90 U: *TURTLE2
100 U(#A=#X): *BEEP
110 J: *BEGIN
120 *JOYSTICK1
130 C(%J0=8): #X=#X+1
140 C(%J0=9): #X=#X-1
150 C(%J0=1): #Y=#Y+1
160 C(%J0=2): #Y=#Y-1
170 C(%T8=1): @B710=?\255
180 E:
190 *TURTLE1
200 GR: GOTO #X, #Y
210 GR: PENRED; GOO
220 E:
230 *JOYSTICK2
240 C(%J1=8): #A=#A+1
250 C(%J1=9): #A=#A-1
260 C(%J1=1): #B=#B+1
270 C(%J1=2): #B=#B-1
280 C(%T9=1): @B710=?\255
290 E:
300 *TURTLE2
310 GR: GOTO #A, #B
320 GR: PENYELLOW; GOO
330 E:
340 *BEEP
350 SO(#B=#Y): 13, 17, 20, 24
360 PA(#B=#Y): 5
370 SO(#B=#Y): 0, 0, 0, 0
380 E:
  
```

3-D Generator

```

20 GR: CLEAR
30 GR: TURN 270; GO 40; TURN 90
40 C:@B709=56
50 C:@B708=50
60 C:@B710=60
70 T: *WHAT IS THE 1ST LENGTH? \
80 A: #S
90 T: *WHAT IS THE 2ND LENGTH? \
100 A: #R
110 T: NUMBER OF DEGRESS TO TURN? \
120 A: #A
130 *FOREVER
140 GR: DRAW #S; TURN #A
150 U: *COLORS
160 GR: DRAW #R; TURN #A
170 J: *FOREVER
180 *COLORS
190 C:#Z=#Z+1
200 GR(#Z=3): PENBLUE
210 GR(#Z=1): PENRED
220 GR(#Z=2): PENYELLOW
230 C(#Z=3): #Z=0
240 E:
250 C(#Z=3): #Z=0
260 E:
  
```

ENTERTAINMENT PILOT UPDATE #1

CHANGING PEN COLORS

By Pat Tubbs & Bob Kahn

No doubt, some of you who've been enjoying the unique simple graphics commands of ATARI PILOT have wondered, "Can I change the standard PILOT Pen Colors, red, blue, and yellow?" Of course you can! In fact, you can access the same beautiful spectrum of 16 brilliant colors available in ATARI BASIC. Read on, and you'll discover how you can change your ATARI PILOT Pen Colors.

PILOT's Graphics Mode gives you the three pen colors, plus black (the background color) to color your graphics and pictures. (See ATARI PILOT *Student Pilot Reference Guide* on pages 78-83.) Only these four different colors are allowed on the screen at a time.

For example, the program below draws a house in the four standard pen colors: red, yellow, and blue, with a black background. Type the program into your ATARI computer, then type RUN and press RETURN.

The PILOT's House

```

10 GR: CLEAR
20 T:
100 GR: PEN RED
110 GR: GOTO 10, -20; TURN TO 0
120 GR: 2(DRAW 30; TURN 90; DRAW 40; TURN 90)
130 GR: PEN BLUE
140 GR: GO 30; TURN 30
150 GR: 3(DRAW 40; TURN 120)
160 GR: FILL 39
170 GR: PEN YELLOW
180 GR: GOTO 26, -20; TURN TO 0
190 GR: 2(DRAW 10; TURN 90; DRAW 5; TURN 90)
200 GR: GOTO -79, -32; FILL 11
210 GR: GOTO 26, -20; FILL 10
220 GR: PEN RED
230 GR: GOTO 10, -20; FILL 30
240 GR: GOTO 31, -20; FILL 10
250 E:

```

You can change the colors assigned to a "PILOT Pen" but, unfortunately, you cannot change the *names of the pens*. (For instance, a yellow ball point pen may write with green ink, but it is still a yellow pen.)

The color of each of the PILOT Pens is controlled by a number value stored in four special places in the computer's memory, called *color registers*. Each color register has its own address. Below are the addresses for the four PILOT Pen colors.

Pen	Address
Red	B708
Yellow	B709
Blue	B710
ERASE (Black)	B712

By using the C: (Compute) command along with the @ symbol and a color address, you can change the color of each pen. For example, this command will change the color of PEN RED to Royal Blue!

```
C:@B708=118
```

The range of values for each of the color registers is 0 through 256, which represents the entire spectrum of the ATARI Computer's 16 colors. We've provided you with two color charts (on the next page) to help you choose your new PILOT Pen colors: One shows each of the colors with its corresponding *color number*; the other shows the range of *luminance values* (brightness) for each color.

You must add a *luminance number* to a color number to make the shade of a color you desire. The special formula below will help you calculate the number for each color you want to use. Use the color chart illustration, pick your color, and note its number. Next choose the color shade by selecting one of the eight lumi-

nance numbers from the luminance chart. Add the two numbers together to get your PILOT Pen Color number.

Color	+	Luminance	=	Color Value
0	+	8	=	8
(black)		(medium)		(medium grey)
192	+	6	=	198
(green)		(bright)		(bright green)

We will now create four new color change commands to add to our house program to make a house of a different color. Note that lines 30, 40, 50, and 60 change the pen colors as follows:

```

30 C:@B708=118
   Changes value of PEN RED
   to Royal Blue
40 C:@B709=200
   Changes value of PEN YELLOW
   to Canary Yellow
50 C:@B710=30
   Changes value of PEN BLUE
   to Spring Green
60 C:@B712=90
   Changes value of PEN ERASE
   to Rhodamine Red

```

As you can see from the house program, changing the PILOT Pen Colors can have side effects. For instance, when you change PEN BLUE to green, you not only change the blue roof to yellow, you also change the color of the text window at the bottom of the screen. PEN YELLOW controls the brightness of the letters in the text window.

If you are in *Text Mode* instead of Graphics Mode, PEN BLUE controls the color of the rectangular text area and PEN YELLOW controls the brightness of the letters. And PEN ERASE controls the color of the outer border around the text area.

COLORS	VALUES
BLACK	0
RUST	16
RED-ORANGE	32
DARK ORANGE	48
RED	64
DARK LAVENDER	80
COBALT BLUE	96
ULTRAMARINE BLUE	112
MEDIUM BLUE	128
DARK BLUE	144
BLUE-GREY	160
OLIVE GREEN	176
MEDIUM GREEN	192
DARK GREEN	208
ORANGE-GREEN	224
ORANGE	240

LUMINANCE (BRIGHTNESS)	VALUES
MIN. BRIGHTNESS =	0
	2
	4
	6
	8
	10
	12
MAX. BRIGHTNESS =	14

When you enter Graphics Mode from Text Mode (any GR: command), the PILOT Pen Colors are automatically reset to their normal values. Likewise, when you leave Graphics Mode to return to Text Mode (GR: QUIT), the color registers are also automatically reset to the standard colors. Thus, to change colors, you must first change modes and then, change the color values.

The program below contains the four new PILOT program instructions that change the colors for the PILOT's house. Type it into your computer and RUN it — you've just changed the PILOT Pen Colors. See how easy it is?

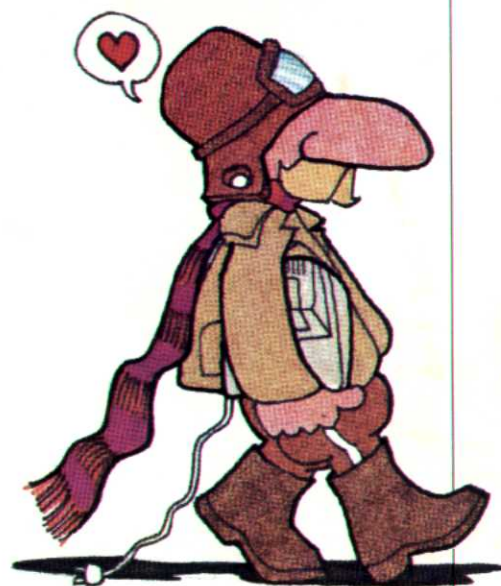
Now that you know how to change colors you can have some fun experimenting with all the new brilliant colors at your command with ATARI PILOT (with "turtle" graphics)!

The Painted House

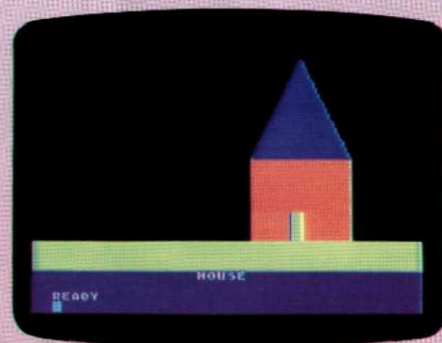
```

10 GR: CLEAR
20 T:          HOUSE
30 C:@B708=118 ...Color of House
40 C:@B709=200 ...Color of Roof
50 C:@B710=30  ...Color of Grass
60 C:@B712=90  ...Color of Sky
100 GR: PEN RED
110 GR: GOTO 10, -20; TURN TO 0
120 GR: 2(DRAW 30; TURN 90; DRAW 40; TURN 90)
130 GR: PEN BLUE
140 GR: GO 30; TURN 30
150 GR: 3(DRAW 40; TURN 120)
160 GR: FILL 39
170 GR: PEN YELLOW
180 GR: GOTO 26, -20; TURN TO 0
190 GR: 2(DRAW 10; TURN 90; DRAW 5; TURN 90)
200 GR: GOTO -79, -32; FILL 11
210 GR: GOTO 26, -20; FILL 10
220 GR: PEN RED
230 GR: GOTO 10, -20; FILL 30
240 GR: GOTO 31, -20; FILL 10
250 E:

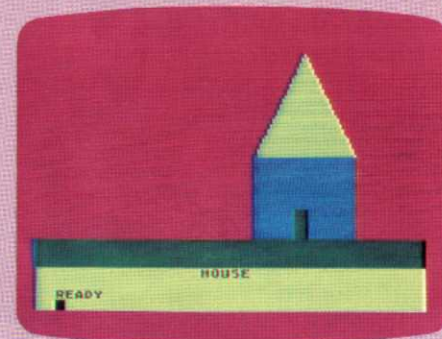
```



Bob Kahn was Project Manager for PILOT in the Atari Home Computer Division, and Pat Tubbs is a Special Projects Consultant who field tested the PILOT program in the elementary school where she teaches.



Before.



After!

BOOK REVIEWS

DISCOVER GAMES FOR YOUR ATARI COMPUTER

*ATARI Games and Recreations**,
Reston Publishing

ATARI Games and Recreations, a new book from Reston Publishing Company, uses an exciting new twist for teaching novices how to program their computers. The authors, Herb Kohl, Ted Kahn, and Len Lindsay, encourage *you* to develop your own ideas for computer games! You'll start with easy games and review models which will serve as building blocks for more complex and creative programs. At the end of each chapter are more sophisticated programs that will interest experienced programmers or beginners looking for more of a challenge. Learn how to develop your own programming style, and have fun while you are learning! Through this unique approach you can discover and master all of the powerful capabilities of your ATARI Home Computer.

In addition to games, you'll find a special section on graphics, sound, and color features of your ATARI 400 or ATARI 800 Computer. You'll learn how to draw graphs, add color and sound to your games, and use all of the ATARI BASIC Graphics Modes. The book also serves as an ideal source for teachers looking for entertaining and educational programs for classrooms.

ATARI Games and Recreations is the perfect companion for your ATARI Home Computer.

For more information, contact:
Reston Publishing Co.
11480 Sunset Hills Road
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COMPUKIDS NOW KIDS HAVE THEIR OWN COMPUTER MAGAZINE

You've probably seen the growing number of computer magazines at the newsstands. Technicians, engineers, businessmen, game players, hobbyists, and even people who build robots have their own magazines. Now there's a computer magazine for kids.

COMPUKIDS calls itself a "computer magazine for beginners." Its first issue, published in March, 1982, contains information about ATARI Home Computer systems and software. The new monthly also includes cartoons, stories, poems, BASIC programs, and reviews of educational

and game software. *COMPUKIDS* is also starting a national club for kids interested in computers.

The premiere issue contains a number of interesting features, including "How Computers Remember," introducing kids to ROM (Read Only Memory) and RAM (Random Access Memory). "The Adventures of Nemo P. Jones" follows a Tom Sawyer type into the modern world of electronics and computers. "A Trip from the Keyboard to the Screen" is an Alice in Wonderland-type adventure that brings computer terms and jargon down to the level of kids. There's even a lesson in history, with a series on computer concepts dating back some 2,000 years.

Subscriptions are \$12 a year (\$20 with club membership). Contact: *COMPUKIDS* Magazine, P.O. Box 975, Sedalia, MO 65301.



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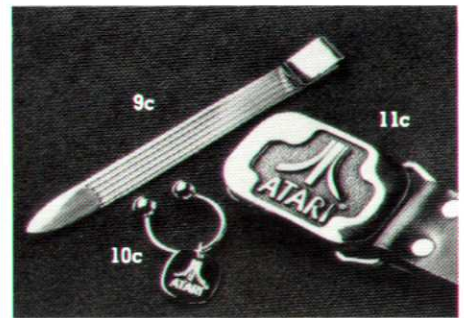
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