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ATARI PRODUCT CATALOG INCLUDED

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NEW PRODUCTS

PERSONAL INTEREST AND DEVELOPMENT CONVERSATIONAL FRENCH, GERMAN & SPANISH

If you are beginning or just brushing up, these conversational language programs will teach you the words and phrases you may need when traveling to a foreign country. Descriptive color pictures and audio instruction (voice through television speaker) provide a dynamic presentation and make learning a foreign language fun. You can stop the lesson at any point and practice if you want. Then, continue with the lesson when you are ready. Each language course contains 5 cassettes and a workbook for drill and reference. (5 cassettes. Requires an ATARI® BASIC cartridge, an ATARI 410™ Program Recorder and a minimum of 16K RAM. Suggested Retail Price — \$59.95 each set).

AN INVITATION TO PROGRAMMING™ 2 & 3

If you haven't already discovered it, computers are very friendly and very powerful. The key is knowing how to program the system.

An Invitation to Programming 2 is a set of lessons covering how to write an ATARI BASIC program. With this cassette program, you will learn about library functions and how to use FOR-NEXT loops and subroutines. You will also learn how and when to use READ, DATA, DIM, PEEK and POKE statements. Like An Invitation to Programming 1, the lessons are presented in color with audio narration. A workbook with examples and sample problems is also included.

An Invitation to Programming 3 goes further and teaches you how to use

ATARI BASIC graphics and sound commands. The interactive design of these lessons makes it easy and fun to learn how to program. (Cassette. Requires an ATARI BASIC cartridge, an ATARI 410™ Program Recorder and a minimum of 8K RAM. Suggested Retail Price — \$24.95 each.)

INFORMATION & COMMUNICATION NEW SERVICES AVAILABLE FREE WITH TELELINK™ I



The TeleLink 1 package now includes a new free offer on two more information networks. In addition to the free hour access to CompuServe information services, the TeleLink 1 package now includes a password for one free hour access to the Dow Jones* information service, and to the Source Telecomputing Corporation. (Cartridge. Requires an ATARI 830™ Acoustic Modem, an ATARI 850™ Interface Module and a minimum of 8K RAM. Suggested Retail Price — \$24.95.)

The Dow Jones Information Services provides current quotes (as current as 15 minutes old) on stocks, options, corporate and foreign bonds, mutual funds, warrants and U.S. Treasury issues. You can also review historical stock performance. Furthermore, through this service you can access exclusive articles from *Barron's*, *The Wall Street Journal* and the Dow Jones News Service. These articles may be as recent as 90 seconds and no older than 90 days. On June 1, tran-

scripts of the popular public television program, *Wall Street Week*, became available.

The Source Telecomputing Corporation provides access to over 1,000 information and communication services. Among these services are the UPI news information service, lists of job opportunities and resumes, consumer buying tips, electronic mail service and many more services.

Still included in the package is one free hour access to CompuServe information service with access to daily news stories, Standard & Poors financial reports, a users' bulletin board, several major metropolitan newspapers and, for user groups, Talk to ATARI and the ATARI Newsletter.

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NEW LEARNING PROGRAM FOR HOME OR SCHOOL SCRAM™ (A NUCLEAR POWER PLANT SIMULATION)

Nuclear power is without a doubt a popular topic for discussion. SCRAM is a cassette program simulation of a nuclear power plant. Featuring a colorful display of the basic components of a nuclear plant, SCRAM provides an opportunity for you to learn the fundamentals of how a nuclear power plant operates.

You are the power station manager, and you must monitor and maintain smooth operation. After reviewing the status of different components of the plant, using a joystick controller, you can move to different locations and take action to keep operations running smoothly. An optional risk factor allows you to increase the probability of earthquakes. When damage occurs,

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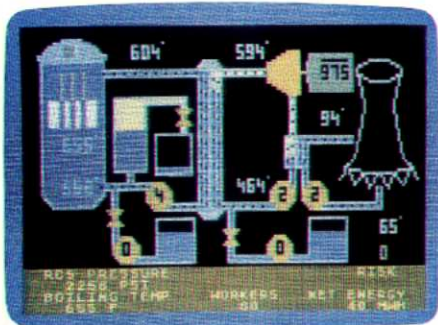


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NEW PRODUCTS



you must decide where to allocate workers for repair. You must act quickly. If you don't, you could end up with a meltdown! (Cassette. Requires an ATARI® BASIC cartridge, an ATARI 410™ Program Recorder, joystick controller and a minimum of 16K RAM. 16K and 24K versions are on alternate sides of the cassette. Suggested Retail Price — \$19.95.)

LET US ENTERTAIN YOU MISSILE COMMAND™

Nervously, your finger twitches on the fire button. The alarm sounds. Immediately you see the incoming attack missiles. As the Missile Command, you launch your defensive missiles to defend 6 cities from impending doom.

Not for the faint-hearted, Missile Command pits your skill and reflexes against branching multiple warhead missiles, attack bombers, killer satellites, and "smart" missiles (these missiles will desperately try to avoid your fire). Game options include 1 or 2 players, wave selection, bonus cities, and special "smart" missile waves. Fast paced action, color and sound create a truly excellent game. (Cartridge. Requires a minimum of 8K RAM and joystick controller. Suggested Retail Price — \$39.95.)

ASTEROIDS™

Based on the popular arcade game, Asteroids places you at the controls of a

spaceship caught in a field of asteroids. As these hurtle toward your ship, you fire your photon cannon to blast them and the wandering enemy saucers into space dust. Game play includes more than 18 battle selections with 4 defensive options. One to four players can play cooperatively or competitively. (Cartridge. Requires a minimum of 8K RAM and joystick controller. Suggested Retail Price — \$39.95.)

BUSINESS/ PROFESSIONAL APPLICATIONS THE ATARI ACCOUNTANT™

Computerized accounting for small businesses is finally here. The ATARI Accountant brings the price of computerized accounting within reach of most small businesses. You don't have to be a computer professional or accountant to operate the ATARI Accountant. Its operation is simple and straightforward.

The ATARI Accountant is comprised of three packages: General Accounting System, Accounts Receivable System and Inventory Control System. Each operates by itself or in conjunction with the other packages. You can start with one package and add others as your needs dictate. The General Accounting System is now available at your local dealer. The other two packages will be available soon.

GENERAL ACCOUNTING SYSTEM

The General Accounting System can be customized to your needs. With this program, you can process up to 750 general ledger accounts and up to 2,500 journal entries per month. Financial statements and reports are generated automatically. Statements and reports range from balance sheets and profit and loss statements to subsidiary

ledgers for accounts receivable, accounts payable, and payroll. In addition, updating your records is faster with this system than many other personal computer accounting programs on the market.

The ATARI Accountant will dramatically reduce manual bookkeeping, thus increasing the accuracy and timeliness of journals and reports. Developed with assistance from and tested by Arthur Young & Company, a large accounting firm, the ATARI Accountant will produce financial statements which summarize accounting data entered into the system. It will provide you with the financial information you need to make intelligent decisions concerning your business. (Diskettes.



NEW PRODUCTS

Requires an ATARI® 800™ Computer with 48K RAM, an ATARI 815™ Dual Disk Drive, an ATARI 850™ Interface Module and an ATARI 825™ 80-Column Printer. Suggested Retail Price — \$499.95.)

ATARI WORD PROCESSOR

Designed for people who generate a lot of typing, the ATARI Word Processor increases productivity by eliminating time-consuming and repetitive typing tasks. The ATARI Word Processor is easy to master and easy to use. In fact, once you become familiar with the ATARI Word Processor, you will find it as easy to use as a typewriter, but a lot more powerful.

Letters, manuscripts, documents, reports and memos are entered via the ATARI 800 Computer keyboard.

Once entered, the text can be revised to incorporate changes, stored for later retrieval or printed for your files.

The ATARI Word Processor contains many features which allow you to produce professional and error-free material. You can search through an entire document and replace words. You can move, copy, delete and save blocks of text, format a paragraph, a page or an entire document, enter superscripts or subscripts. In addition, this program will print headings, page numbers or titles automatically, underline words, justify margins, set proportional spacing and much more. (Diskette and training audio tape and diskette. Requires an ATARI 800 Computer with a minimum of 48K RAM, an ATARI 810™ Disk Drive, an ATARI 850 Interface Module and an ATARI 825 80-Column Printer. Suggested Retail Price — \$149.95.

MORE MEMORY THAN EVER

ATARI announces its new ATARI 815 Dual Disk Drive. This new Dual Disk Drive provides over 356K bytes of double density data storage on two 5¼" diskettes. It comes with full operating instructions and a diskette containing the disk operating system programs and File Management System. If one Dual Disk Drive is not adequate for your needs, your ATARI 800 Personal Computer can control up to four Dual Disk Drives for a total of 1424 bytes of storage! (Requires an ATARI 800 Personal Computer and a mini-

num of 16K RAM. Suggested retail price — \$1,499.95. Available soon.)

PAPER AND RIBBON FOR ATARI PRINTERS

Visit your local ATARI Dealer. Your ATARI dealer now stocks both printer ribbon and paper. Request the following types:

Printer	Printer Ribbon	Printer Paper
ATARI 820™	CO14854	CO14062
ATARI 822™		CO16345
ATARI 825™	CA016087	CO16233



ANNOUNCING PRICE REDUCTION

	Suggested Retail Price	
	Was	Now
16K RAM Module	\$199.95	\$ 99.95
8K RAM Module	\$124.95	\$ 49.95
ATARI 820 40-Column Printer	\$499.95	\$299.95

SPECIAL PROMOTIONS

(Valid May 1 — August 31, 1981)

	Regular Suggested Retail Price	Special Promotion Price
16K RAM Module with purchase of an ATARI 800 Personal Computer	\$ 99.95	FREE
ATARI 825 80-Column Printer	\$999.95	\$799.95
ATARI 850 Interface Module	\$219.95	\$169.95

PERSONAL INTEREST

PALO ALTO JUNIOR MUSEUM EXHIBIT

by Liza Loop

"I'm really interested in computers but I don't know a thing about them. How can I get started?" This question is being asked more and more frequently by ordinary people. Computers are no longer the private reserve of scientists, business executives and data processing personnel. Today, every informed voter considers the use and misuse of computers in our society. Tomorrow, all white-collar and most blue-collar workers will encounter some form of computerized equipment

during their employment. Increasingly, school children contact a computer through school administration, testing or direct instruction from elementary level on up. Since not everyone can run out and purchase a personal computer of their own, what can be done to help large numbers of people to learn about computers—to become "computer literate"?

One solution to the computer literacy problem is to provide access to computers in public facilities—museums, libraries and community centers. This approach is being used with great success in the city of Palo Alto, California. The main thrust has been directed toward the children. An ATARI® 400™ Computer is permanently available at the children's branch of the Palo Alto Library. For a month and a half, an exhibit at the Palo Alto Junior Museum featured the ATARI Computer and other personal computers. The museum provided hands-on exploration, structured demonstrations, and classes. Although

hundreds of children took this opportunity to get close to a computer, their enthusiasm was well matched by the adults who delighted in learning along with their kids in this non-threatening environment.

What equipment is appropriate for an exhibit in a museum, community center or company lobby?

Nothing fancy—to the computer neophyte, all computer equipment and programs are new and exciting. For the museum visitor, the only thing worse than a machine that is "down" is a machine with a programmer madly typing some strange hieroglyphics and mumbling repeatedly, "but it was working perfectly at 3 a.m. this morning . . ." Most small museums and libraries have neither the budget nor the expertise to develop new materials to display. An ATARI 400 Personal Computer with the *Video Easel*™ cartridge and one joystick is almost a complete exhibit in itself. Add to this display a copy of the instruction booklet protected by clear, self-adhesive, shelf paper, and you are in business.

At the Palo Alto Junior Museum, we loaded programs into the computer in



the morning when the exhibit opened and usually had to reload them several times during the day. Many visitors already knew how to clear the computer's memory, although most visitors had to be taught how to load a cassette tape. To avoid the delay of loading tape, we preferred cartridge programs. Each machine ran only one program for several days. This practice encouraged people to spend a little while at each computer and then move on to another, so another visitor could have a turn.

Favorite software included ATARI® *Video Easel*™, *3-D Tic-Tac-Toe*, *States & Capitals*, *European Countries & Capitals* and *Energy Czar*™. Other popular programs were the math games developed by Science Research Associates (SRA). Visitors with some computer experience delighted in clearing out the cassette programs and writing their own small BASIC programs. Although we did not originally plan this activity, it worked out well. Soon our visitors began teaching each other.

We deliberately omitted video games such as *Space Invaders** and *Star Raiders*™ from the exhibit. They are so engrossing for the preteenage male segment of the museum clientele that the museum would not have been able to handle the competition for machines.

What do people learn in a free access computer exhibit?

First, they discover the computers don't bite—they don't explode and spit fire like the science fiction portrayal; they don't attempt to take control of the world or even to order the hapless beginner around. Even experienced TV channel changers can be a little bit startled when they press the START key and the ATARI Computer responds with full animation and sound! Getting comfortable in the presence of the computers is the first step toward individual computer literacy.

Second, they begin to see the versatility inherent in computer technology. By experiencing games, simulations and rudimentary BASIC programming, adult visitors to the Junior Museum began to formulate their own answers to the question, "What could I use a computer for?"

Third, by actually pressing keys and operating the machines themselves, people gain practical knowledge of how to use a computer. Once many people cross a minimal threshold of confidence and interest, they choose to take short classes in computer programming or the use of application programs like *VisiCalc*** or computer-assisted instructional packages.

Fourth, in every computer environment, people see some examples of machine failure and many examples of *apparent* machine failure which usually turn out to be user generated. Visitors discover everyone makes mistakes (even computer experts), machines are usually reliable but not infallible, and each of us can learn to use computers if we keep an exploratory attitude and don't quit.

ATARI 400™ and ATARI 800™ Personal Computers are helping to solve the computer literacy problem.

Liza Loop is a free-lance consultant in educational technology and human factors design in Palo Alto, CA. She has written user manuals for several popular personal computer products, has taught beginners of all ages to use computers, and is currently involved in the design of educational software and the environments which surround it.

If you would like assistance in setting up a public access computer exhibit in your community, please write to Liza Loop, c/o THE ATARI CONNECTION™

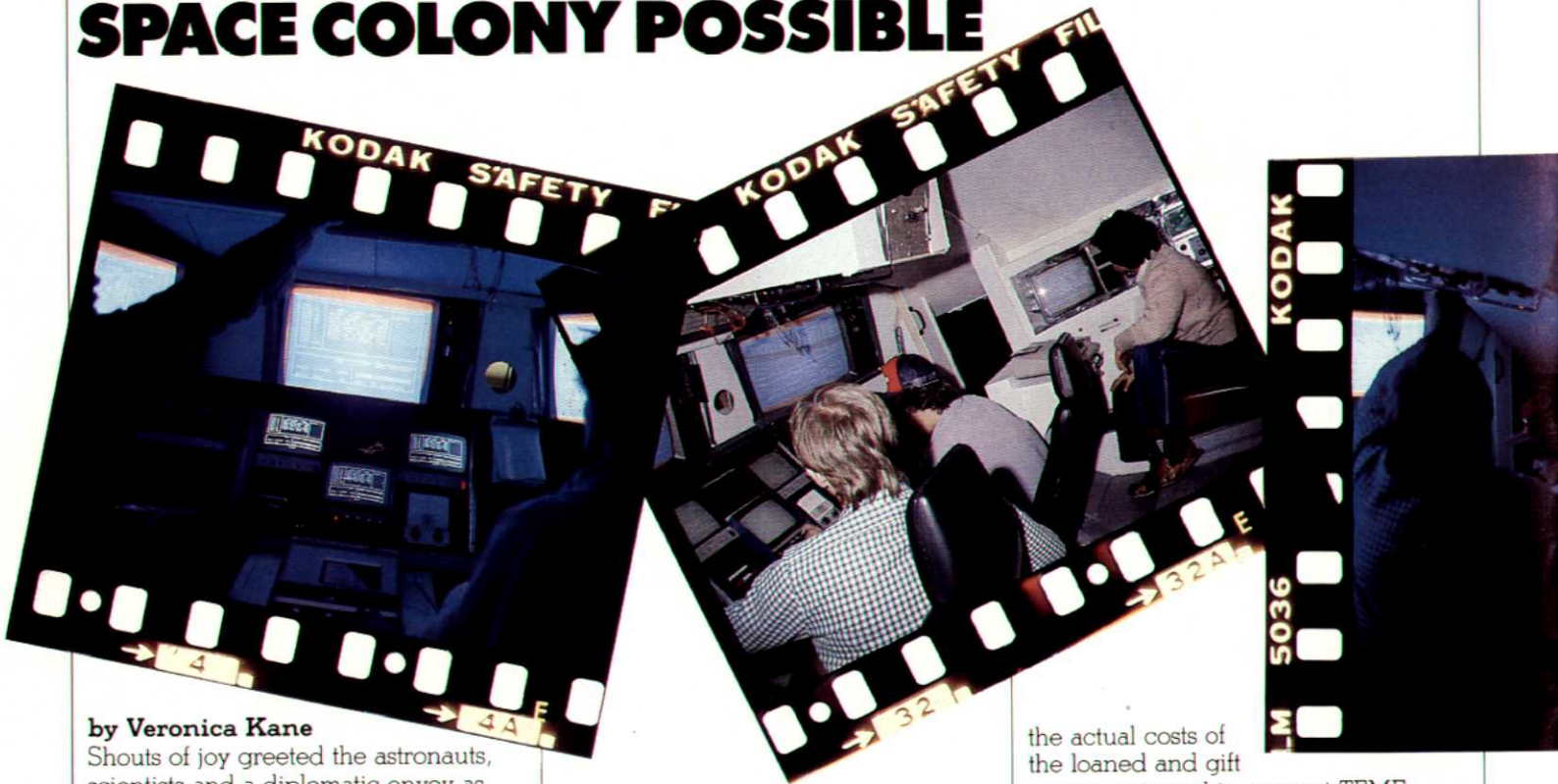
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EDUCATION

AN ATARI® COMPUTER MAKES RENDEZVOUS WITH SPACE COLONY POSSIBLE



by Veronica Kane

Shouts of joy greeted the astronauts, scientists and a diplomatic envoy as they stepped out of the TEME (Totally Enclosed Modular Environment) flight deck to a hero's welcome at 8:00 p.m. on April 28. The seven-member space crew had completed a 72-hour mission during which their shuttle had a rendezvous with a space probe, then continued to its ultimate destination, the space colony, L-5. There, the earth representatives gained membership for their home planet in the Galactic Federation and successfully negotiated mining rights for elements desperately needed at home.

The conclusion of the momentous journey was met with unrestrained excitement by a crowd of more than 100 gathered in an observation lab adjacent to the touchdown site in Greenfield, Massachusetts.

This futuristic scenario, though simulated, presented all the known demands of space travel and furthermore, projected what routine space flights might be in 20 years. A small computer and the efforts of 75 Greenfield Community College students and their instructors made the

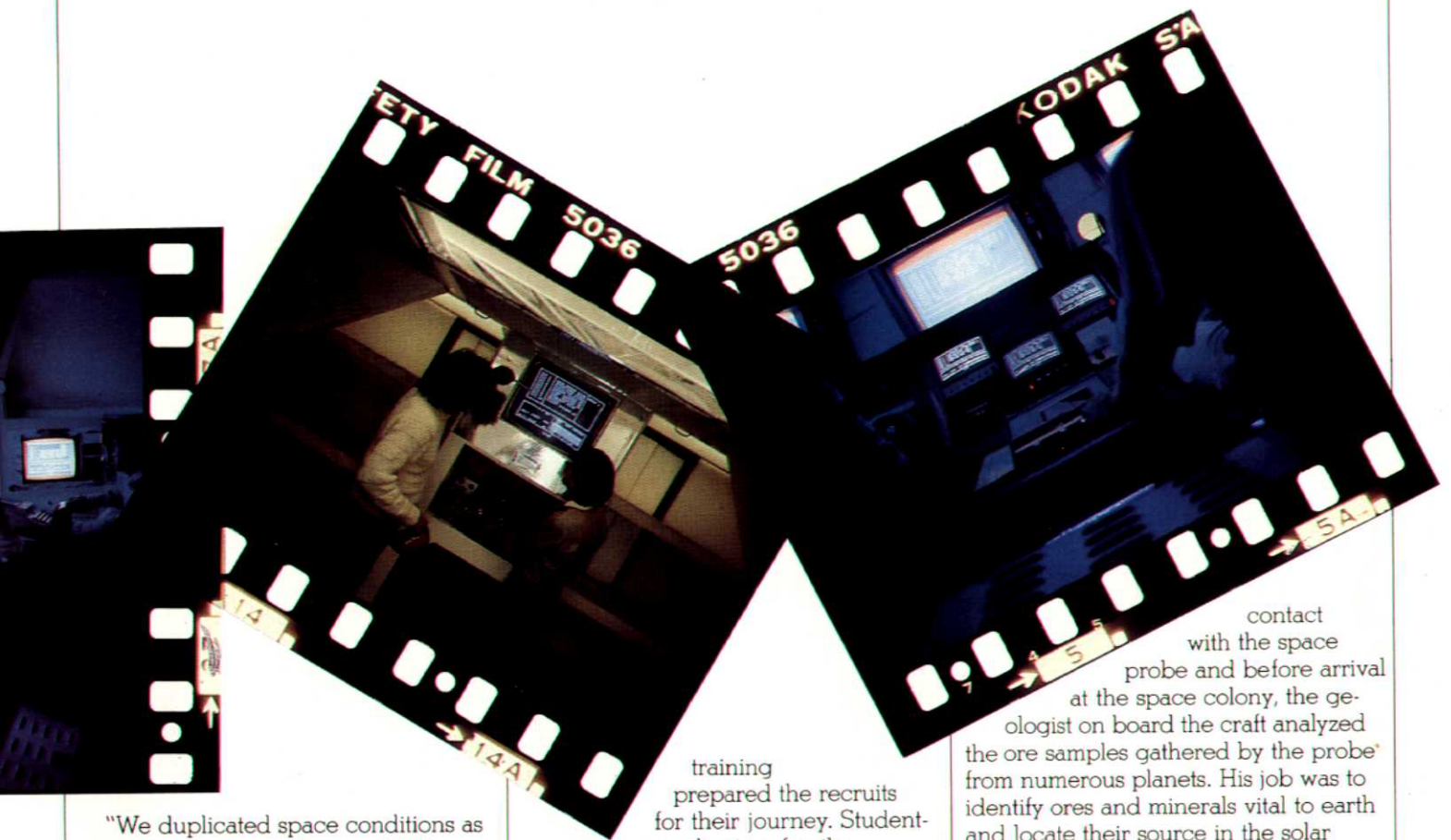
realistic three-day space flight possible. Gregg Vouros, instructor in anthropology, and Dan LaRose, instructor and psychologist, who prefer to be known as human ecologists, coordinated the TEME project.

Using a complex program created by student Mike Tepper, the ATARI 800™ Personal Computer simulated each phase of the involved flight and prompted activity among the flight crew members. Constant crew/computer dialogue occurred as the mission commander, pilot and others aboard the spaceship were coached to respond to changing conditions.

Unlike the recent Columbia space shuttle, the computer operated without a hitch, and the project was brought in within the allocated \$2,000 budget. "There couldn't be cost overruns," Vouros states. "There was no way to accommodate them." The students and their faculty advisors counted on donated equipment and materials to make their adventurous space project a reality. Vouros estimates

the actual costs of the loaned and gift equipment used to support TEME would be close to \$250,000, yet the most vital element was the \$1,080 ATARI 800 Personal Computer which ATARI donated to the school. The students and their instructors also called upon the expertise of NASA scientists and ATARI computer engineers "for counsel which can't be priced," Vouros says.

The TEME project team built a flight deck mock-up and connected it by air lock to a habitation module. This lab is the same size as, and duplicates many of the features of, the European Space Lab which will be launched in 1985 or 1986. Next to these two rooms, the TEME project team constructed an observation lab to house the ground control crew and an audience of approximately 75 persons. Throughout the three-day exercise, students from local schools, community leaders, parents and other interested observers rotated through the viewing stands, watching the activity in the flight deck and housing module through one-way glass windows.



"We duplicated space conditions as closely as economically possible," Vouros states. "We couldn't create zero gravity, but we were able to simulate the lower oxygen levels and to ration water and other resources." The flight crew members consisted of six men and a woman and included a mission commander, pilot, navigation/communications specialist, mission specialist, a geologist and a bio-medical researcher. In addition, a diplomat was on board to handle negotiations with galactic leaders in the space colony.

The flight crew was selected through a series of elimination programs. Applicants were subjected first to prolonged stress situations and the project team judged the individual's ability to cope with relentless demands. Of the 43 initial student-applicants for the crew, only 21 were chosen to move to the next phase of training. Instruction concentrated on developing interpersonal relationships to attain a high level of confidence among the team members. Physical fitness programs, emergency procedures and, finally, flight

training prepared the recruits for their journey. Student-coordinators for the

TEME project made the final selection of the seven-member crew for TEME's virgin flight.

The intricate computer program for the simulated space trip mimicked a 14-phase journey from pre-launch, lift-off and orbital insertion to re-entry and final touchdown. Three large television screens served as the spaceship windshield. The computer synchronized special audio/visual effects with each segment of the journey, enabling the flight crew to view space and earth as in an actual flight.

Although the computer program was designed to be "fail-safe" ("We wanted that crew back," Vouros says) and to compensate for pilot or navigator errors, the trip presented one cliff-hanger. Actual contact with the space probe 24 hours into the flight required the decisions and timing of the pilot. If the timing was off by a single moment, a miss would occur, and the entire mission would have been in vain. After

contact with the space probe and before arrival at the space colony, the geologist on board the craft analyzed the ore samples gathered by the probe from numerous planets. His job was to identify ores and minerals vital to earth and locate their source in the solar system. This information prepared the diplomatic envoy for negotiating mining rights with the extra-terrestrial tribunal at the L-5 colony.

"The project," Vouros explains, "was designed as a multi-disciplinary exercise. We wanted the project to help build ecological consciousness and develop interpersonal skills, as well as advance knowledge of engineering and science. Space travel, colonization and industrialization are inevitable if the species survives. The project provides a very stimulating background against which to encourage intellectual growth and decision making as well as to force the students to look at what's out there . . . what the future holds for them."

The complete ATARI® Computer System used in the TEME flight included an ATARI 800™ Personal Computer, two ATARI 810™ Disk Drives, an ATARI 825™ 80-Column Printer and several ATARI joystick controllers.

Veronica Kane is a free-lance writer from Belmont, California.

ENTERTAINMENT

ATARI® BELLS & WHISTLES

by Sally Bowman

Anyone who plays ATARI games quickly realizes the ATARI Personal Computer has exceptional graphics and animation capabilities. In addition, games are greatly enhanced by the special sound effects possible on ATARI Personal Computers.

You, too, can make special sound effects with your ATARI Personal Computer. Use sounds in games or in educational programs (for example, a buzzer for a wrong answer and a tune for a correct one).

You can quickly learn to use the sound capabilities of your ATARI Personal Computer, using the ATARI BASIC programming language. Developing the exact sounds you want, however, can take time and experimentation, but you'll have fun doing it.

To design sounds, you need to understand how to:

- (1) write SOUND statements
- (2) write timing FOR-NEXT loops
- (3) combine the different voices to create sounds.

THE SOUND STATEMENT

The SOUND statement is a statement written in ATARI BASIC (make sure your ATARI BASIC cartridge is in your computer) which tells the computer what voice, pitch, distortion and loudness to make the sound. Every sound statement must always have four numbers.

10 SOUND 0,200,10,8

voice pitch distortion loudness

Voice. Your ATARI Personal Computer has four voice or audio channels. As a result, you can produce four different sounds simultaneously. The different voice values are 0, 1, 2 and 3. Separate SOUND statements must be used for each voice. You cannot combine them all into a single statement.





Pitch. The pitch number tells the computer the frequency of the sound you want (how high or how low, as with a musical note). This number must be between 0 and 255. The higher the number, the lower the sound. The range of possible pitches on your ATARI® Personal Computer spans slightly more than three octaves. The table below gives the numbers for musical notes one octave above and below middle C. (A complete list can be found in your BASIC Reference Manual.)

	PITCH	VALUE
	C	60
	B	64
	A# or Bb	68
	A	72
HIGH NOTES	G# or Ab	76
	G	81
	F# or Gb	85
	F	91
	E	96
	D# or Eb	102
	D	108
MIDDLE	C# or Db	114
	C	121
	B	128
	A# or Bb	136
	A	144
	G# or Ab	153
	G	162
LOW NOTES	F# or Gb	173
	F	182
	E	193
	D# or Eb	204
	D	217
	C# or Db	230
	C	243

Sally Bowman is a Manager in Marketing Communications in the ATARI Computer Division.

Distortion. The distortion value tells the computer how pure the sound should be. For musical notes (pure tones), use 10. The other distortion values yield a variety of interesting sound effects. This value must be an even number between 0 and 14.

Loudness. The final number determines how loud the sound will be and may be any number between 0 and 15. A 0 results in no sound, whereas a 15 creates the loudest sound. Use an 8 for a normal volume level. When you use more than one voice at the same time, make sure the total of the loudness numbers is 32 or less. For example, if you use three voices and thus, three different SOUND statements, and the loudness values are 10, 15 and 15, you need to change these values so the total is less than 32 (rather than 40).

TIMING FOR-NEXT LOOPS

You determine how long you will hear a particular sound through the use of a FOR-NEXT loop. The FOR statement and the NEXT statement follow the SOUND statement (line 10) and must be followed by a statement that resets the sound channel to silent (line 40). For example:

```
10 SOUND 1,121,10,8
20 FOR X=1 TO 100
30 NEXT X
40 SOUND 0,0,0,0
```

The FOR statement tells the computer how many times to cycle through the loop (and thus, repeat the FOR and NEXT statements, in the example above, 100 times). Line 40 turns the sound off by setting the pitch, distortion and loudness to zero. If you do not reset the sound channel to silent, the sound will continue until the program stops or you write a different SOUND

statement for the same voice. By experimenting with the number of loops (changing 100 in the example), you can maintain the sound for whatever length of time you want.

The FOR-NEXT loop also allows you to put pauses between different sounds. The value in the FOR statement tells the computer how long a pause you want. To make the pause longer, change 100 in Line 50 below to a larger number. Using the example above, add:

```
10 }
20 } First Sound
30 }
40 SOUND 0,0,0,0
50 FOR Y=1 TO 100
60 NEXT Y
70 }
80 } Second Sound
90 }
```

You can then add lines for the next sound (include a SOUND, FOR and NEXT statement similar to lines 10, 20 and 30 above), and a pause will occur between the two sounds.

COMBINING VOICES TO CREATE SOUNDS

By using different voices simultaneously, you can create chords for musical tunes and interesting sound effects. To use more than one voice, you must write different SOUND statements for each of the voices you are using. To eliminate a voice, you must remember to reset the particular voice to silent. (Use a new SOUND statement with the number of the voice you want silent and zeros for the pitch, distortion and loudness.)

Writing music can take some time. The following program may help you to get started.



N1=Note 1
N2=Note 2
N3=Note 3
N4=Note 4
T=Timing Value

```
10 RESTORE
20 READ N1,N2,N3,N4,T
30 IF N1=-1 THEN END
40 SOUND 0,N1,10,8
50 SOUND 1,N2,10,8
60 SOUND 2,N3,10,8
70 SOUND 3,N4,10,8
80 FOR X=1 TO T
90 NEXT X
100 GOTO 20
110 REM DATA STARTS HERE
120 DATA 100,200,50,150,400
130 DATA -1,0,0,0,0
```

Insert data statements like line 120 between lines 100 and 130. Each DATA statement represents a chord and must include five numbers. The first four numbers are the pitch values for the notes of the chord. The fifth number represents the length of time the chord plays (400 equals approximately one second with four note chords). Lines 30 and 130 tell the computer to end the program when it runs out of data (in other words the end of the song).

SPECIAL SOUND EFFECTS

On the next page, you will find sets of lines you can use to produce various sounds. Begin building your own library of sounds so you can easily add them into your different programs.

BOUNCING BALL

```

10 FOR T=1 TO 6
20 FOR X=1 TO 5
30 SOUND 0,120,14,4
40 NEXT X
50 SOUND 0,0,0,0
60 FOR Y=1 TO 500:NEXT Y
70 NEXT T

```

COMPUTER THINKING

```

10 FOR Z=1 TO 100
20 SOUND 0,INT(RND(0)*75),10,8
30 NEXT Z

```

JACKHAMMER

```

10 FOR Z=1 TO 200
20 SOUND 2,100,6,4
30 NEXT Z

```

RUNNING FOOTSTEPS

```

10 FOR TIME=1 TO 10
20 SOUND 0,6,13,8
30 SOUND 1,0,0,0
40 FOR X=1 TO 100:NEXT X
50 SOUND 0,0,0,0
60 SOUND 1,11,13,8
70 FOR X=1 TO 100:NEXT X
80 NEXT TIME

```

DOORBELL

```

10 SOUND 0,60,10,8
20 SOUND 1,70,10,8
30 SOUND 2,10,8,2
40 FOR X=1 TO 700
50 NEXT X

```

OCEAN

```

10 FOR Z=0 TO 10
20 SOUND 2,Z,8,4
30 FOR I=1 TO 30
40 NEXT I
50 NEXT Z
60 FOR Z=10 TO 0 STEP -1
70 SOUND 2,Z,8,4
80 FOR I=1 TO 100
90 NEXT I
100 NEXT Z

```

GUNSHOTS

```

10 FOR T=1 TO 3
40 SOUND 0,80,0,11
50 FOR Z=1 TO 200
60 NEXT Z
70 SOUND 0,0,0,0
80 FOR Z=1 TO 300
90 NEXT Z
100 NEXT T

```

BIRDS

```

10 FOR J=1 TO 10
20 FOR I=1 TO 20
30 SOUND 2,I,10,8
40 NEXT I
50 NEXT J

```

FALLING MISSILE

```

10 FOR Z=30 TO 200
20 SOUND 2,Z,10,8
30 NEXT Z

```

AMBULANCE

```

10 FOR SIRENS=1 TO 10
20 FOR PITCH=60 TO 40 STEP -2
30 SOUND 0,PITCH,10,8
40 FOR X=1 TO 10:NEXT X
50 NEXT PITCH
60 FOR PITCH=40 TO 60 STEP 2
70 SOUND 0,PITCH,10,8
80 FOR X=1 TO 10:NEXT X
90 NEXT PITCH
100 NEXT SIRENS

```

TELEPHONE RING

```

10 FOR RINGS=1 TO 5
20 SOUND 0,86,10,15
30 SOUND 1,88,10,15
40 FOR BELL=1 TO 500:NEXT BELL
50 SOUND 0,0,0,0
60 SOUND 1,0,0,0
70 FOR PAUSE=1 TO 1000:NEXT PAUSE
80 NEXT RINGS

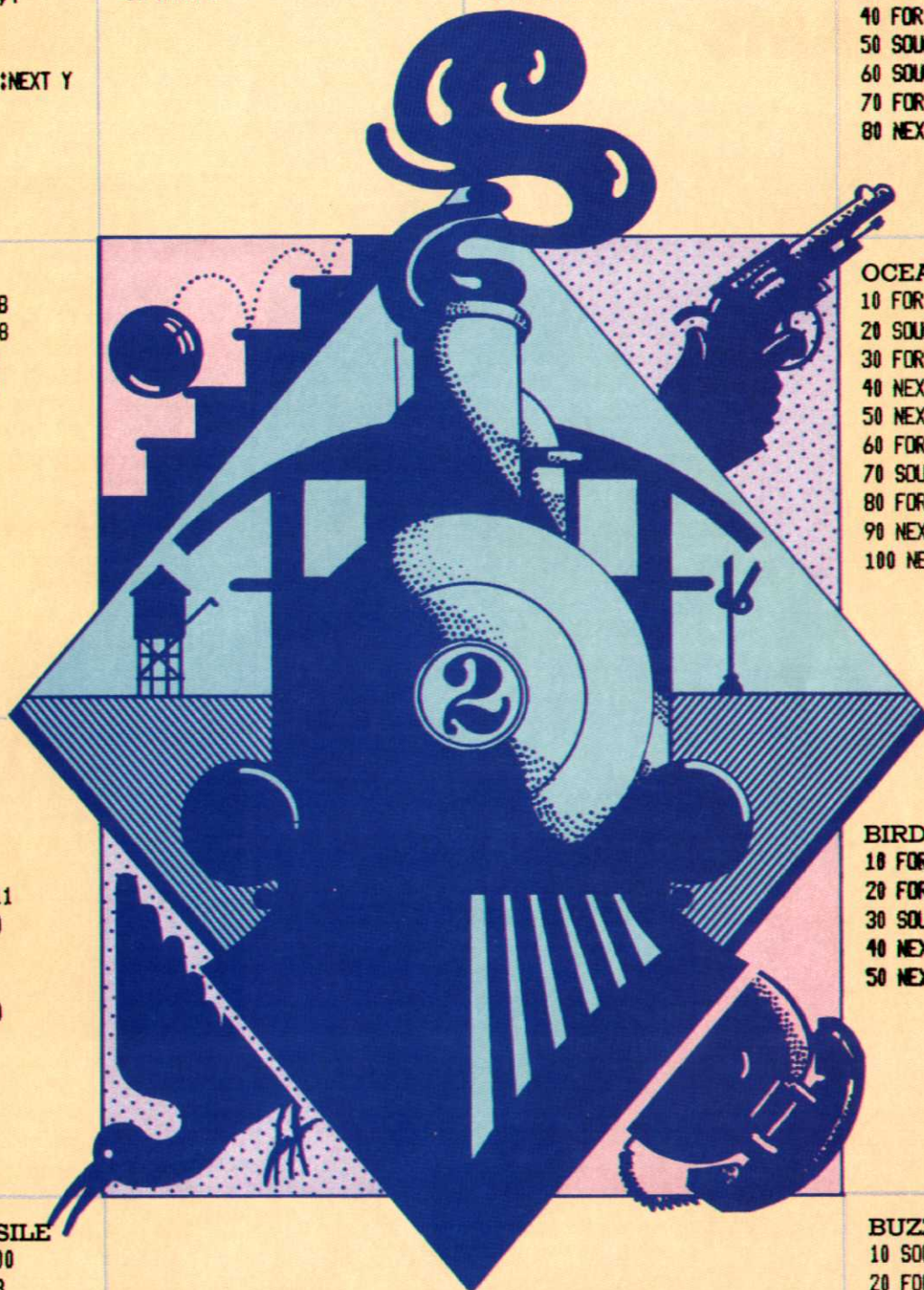
```

BUZZER

```

10 SOUND 2,40,6,10
20 FOR Z=1 TO 400
30 NEXT Z

```



KIDBITS

KIDBITS PROGRAMS



Type the KIDBITS programs into your computer. Make sure you have your BASIC cartridge installed in your computer before you start. Some KIDBITS programs are just fun to use and show you some of the things you can make your ATARI® Personal Computer do for you. Others can help you learn. Make sure you type the programs in exactly as they are below or your program won't work. Computers have to be told exactly what to do. They can't think like you do, although they do things very quickly. After you type in your program, type "RUN" and the computer will show you your program.

COUNTDOWN

Practice counting backwards. You just pick the number you want to start with (the program even asks you what number you want to start with). If you want to practice counting backwards by 2's or 3's or any number, just change the number in line 60 (for example, to count backwards by 2's, use $N=N-2$, by 3's, use $N=N-3$).

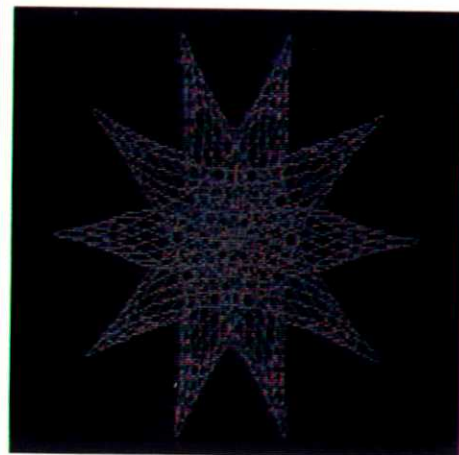
Learning can be fun with your ATARI Personal Computer.

```
10 PRINT "HOW MANY NUMBERS DO YOU
    WANT TO COUNT DOWN";
20 INPUT N
25 X=N*5
30 PRINT N
35 X=X+5
40 SOUND 0,X,10,8
50 FOR P=1 TO 400:NEXT P
60 N=N-1
70 IF N>0 THEN GOTO 30
80 SOUND 0,10,8,8
90 PRINT "HURRAH!!!"
100 FOR A=1 TO 1000:NEXT A
110 END
```

LIGHT AND SOUND SHOW

This program will show you some of the color graphics (if you have a color television) and sound you can make your ATARI Personal Computer do.

```
10 DEG :GRAPHICS 7+16:COLOR 0
20 FOR T=0 TO 5580 STEP 180+6
30 X=50*COS(T)+79:Y=47*SIN(T)+47
40 DRAWTO X,Y
50 C=C+1:IF C>3 THEN C=1
60 COLOR C
70 SOUND 0,255*NRND(0),14,14
190 NEXT T
195 SOUND 0,0,0,0
200 GOTO 200
```



KIDBITS KIDBITS SPECIAL

THE NEWSPAPER ROUTE MANAGE- MENT PROGRAM

by Robert Powers

When I first started the newspaper route, the manager gave me the route list with all the houses. But since it was the only one, we had to do all our changes on it, like crossing out houses and adding them. That's when the computer came in. My dad had an idea and put it to work.

The program allowed me to erase and enter house numbers with what each is, like a Sunday only, a 7-day, or a 6-day. Whenever I wanted to start a house, I would go to the computer and enter the house number. Also, when the list I wanted was getting shabby or out of date, I would have the computer print out another one. On the computer is a map of all the streets and various dots that represent houses. It makes it easier to divide up the route into sections and for locating a house.

Another feature of the program is that it will print out receipts, which cuts my work in half. On the receipts are the customer's address and places to put my name and the cost. Also, all the receipts have an extra spot that I could tell the computer to put various things like "Have a nice day" or "Merry Christmas". The computer also prints out a record. On this sheet, I can check off the houses that paid, how much they paid and when they paid.

The nice thing about the receipts is that they are small and can be easily carried around. I organized them into booklets, one for each street or streets. So, if I want to go to one street, I grab the booklet for that street. Or, I can just grab all the booklets and collect from the whole route!

I'm glad I have the Newspaper Route Management Program. It sure can make it easier for someone and saves a lot of written work!

Robert is 14 years old and in the 8th grade in Milpitas, California. His program is so good that it is being sold through the ATARI® Program Exchange (APX-20013, \$17.95). If you would like to order this program, see your ATARI Program Exchange Catalog for more information. If you have not received a catalog, please write to ATARI Program Exchange, P.O. Box 427, 155 Moffet Drive, Sunnyvale, CA 94086.

JUST FOR KIDS

Announcing the Kidbits Special! A new program for kids (must be 18 years old or younger). If you send in an article on how you use your ATARI Personal Computer or a program you have written and we include it in THE ATARI CONNECTION™, you will receive a free ATARI tee shirt. Send articles and programs to Kidbits Special, THE ATARI CONNECTION, Atari, Inc., 1196 Borregas Avenue, Sunnyvale, CA 94086. Include a picture of

yourself and a paragraph telling about yourself (including your age and grade in school). Make sure to tell us your teeshirt size and your address.



KIDBITS PUZZLE

See how many computer words you can find in the puzzle. Some are written forward, some backward, some diagonally, some across and some up and down. Then, see if you can match the words you find to the definitions below.

BIT
DOS
OPERATING SYSTEM
MEMORY
ROM
REAL TIME
BYTE
BASIC
MODEM
PERIPHERAL
DISKETTE
PROGRAM
PEEK
LIGHT PEN
GRAPHICS
PILOT
POKE

O J U N K T H I S I S H A R D D
P P W Z F M D I S K E T T R S O
E R E Q L F U N C W L O K P J P
R O P R O G R A I M L Q O N Y P
A G R A A M E Q H I W D E R O E
T R E A P T I M P E U P O K R R
I A U M Y E I U A J T M E S J I
N M O B J C R N R H E A O E Y P
G S P X I Z Y I G M P B Z R K H
S U K S O F K I P S X P I O K E
X P A Q Y R L I G H Y F D T M R
S B A S I S C I K Z E S E C O A
R E A L T I M E G Q N R T F D M
D I S K E T T E Y H F Z A E E S
M E M O R O P E R A T I N L M X

1. _____ Name for accessories for ATARI Personal Computers, like a disk drive or a printer.
2. _____ A BASIC command that tells the computer to look into a specific place in the computer's memory and see what is stored there.
3. _____ Easy to learn programming language used with personal computers.
4. _____ Used to save programs with a disk drive.
5. _____ Set of instructions in the personal computer that gives the computer its basic "personality", the basic things the computer can do (two words).
6. _____ Type of clock inside a computer so the computer knows what time it is. The user can always find out what time it is, even when the computer has been turned off (two words).
7. _____ The part of the computer where information is stored.
8. _____ A BASIC command that tells the computer to put a new number into a specific place in the computer's memory.
9. _____ Accessory that connects to a computer and can be pressed against a T.V. screen to tell the computer to do something (two words).
10. _____ Instructions for the computer to follow; a computer _____
11. _____ A single computer "word" made up of eight bits.
12. _____ A single binary digit, used to represent 1's and 0's in computers, smallest amount of information a computer uses.
13. _____ Ability of a computer to draw pictures rather than just print letters and symbols.
14. _____ A program recorded on a diskette that tells the computer how to operate the disk drive.
15. _____ Recently developed programming language becoming popular for personal computers in education.
16. _____ A machine that allows information to be sent over telephone lines to a personal computer.
17. _____ Cartridge with the program permanently stored inside.

BUSINESS/PROFESSIONAL

ATARI® COMPUTERS ENTER THE MUSIC WORLD



by **Veronica Kane**

The Leo Quan* Musical Products, Inc. name is synonymous with the finest harmonically tunable bridge devices for guitars on the market today. The San Francisco company's gold-plated BADASS* products gleam under stage lights in concert halls throughout the world.

The Arthur Young & Company name, one of the nation's largest public accounting firms, is synonymous with accounting confidence.

Arthur Young selected Leo Quan to field test the ATARI Accountant.™ After completion of extensive testing, ATARI now offers the first part of this new computer accounting system for small business, the General Accounting System of the ATARI Accountant.

Late last year, Leo Quan was in a position typical of many thriving small businesses. More than a year of dramatic growth in sales had resulted in a paper flow that defied manual management. Paperwork had mushroomed almost tenfold in 18 months.

Glen Quan, President of Leo Quan, threw his arms high in a dramatic gesture as he described the paper towers which threatened to fill every crevice in their office which serves as their corporate center. Thirty-one-year-old Quan, who is more apt to be found in jogging shorts than the three-piece suit usually expected of a chief executive officer, realized that customer service and responsiveness to distributor needs was responsible for the company's successful growth. Paper problems were jeopardizing these vital customer relationships. Leo Quan needed computer support.

Though the dress at the Leo Quan headquarters is casual, there is nothing relaxed about the company's approach to its customers. A highly effective filing system with elaborate cross referencing allows the company managers to retrieve within minutes any piece of correspondence Leo Quan ever sent or received. Leo Quan is a company in control. Glen Quan wanted that same degree of control in the company's accounting system.

Arthur Young doesn't associate its name with anything lightly. Before being in a position to issue a letter regarding the computational accuracy of the ATARI Accountant, Arthur Young needed a business situation in which to test the program.

Steve Cherry, a consultant with Arthur Young, describes their criteria in selecting the ATARI Accountant test site. "We wanted a small business that had an inventory of up to 1,000 items, accounts receivable and accounts payable files of up to 350 accounts and the need for approximately 2500 journal transactions." Leo Quan met that model almost precisely.

Leo Quan entered the test of the ATARI Accountant with full knowledge of the predictable difficulties they would encounter as "bugs" were ironed out of the new computer programs. Ellen Berger, Leo Quan Vice President and the person who worked most closely with the ATARI Accountant, often dissipated her early-test

*Registered trademark of Leo Quan Musical Products, Inc.

BUSINESS/PROFESSIONAL



Glen Quan: Free to tend business.

frustrations on the parallel bars at a nearby gym, as the expected glitches surfaced in the newly-developed program. Her faith was admirable, however. Long before the program was fully debugged, Ellen abandoned manual journals in the belief her fingers would never again be stained by accountant's ink. The program was to go through several iterations as small errors were found and rapidly corrected, before Ellen's faith was rewarded.

In April, while the ATARI® 825™ 80-Column Printer printed out the month's general ledger transactions in the background, Ellen was able to turn her attention to other tasks, able to rely on the accuracy of the report. It had been a lengthy shakedown period as Leo Quan put its full accounting system on-line. For this risk, Leo Quan was rewarded with time and space, both desperately needed by the growing company. Ellen explains that formerly she needed an entire morning to compile and age the company's accounts receivable. Today, the ATARI Accountant™ handles this task in min-

utes. In addition, more than 300 paper files have been put in storage because the information in these files is now contained on compact diskettes.

Ellen describes her former manual journals as "adequate. I could always find what I wanted, though it sometimes took a long time to get at it. With the ATARI Accountant, I can get to any figures I need in seconds."

Though Ellen had several years of bookkeeping experience before working with the ATARI Accountant, she candidly admits she understood the "how" of accounting, but not the "why." Aided by the ATARI Accountant's coaching features and the "Business Manager's Companion Guide" by Arthur Young, this former bookkeeper is now beginning to view herself as a financial manager. She is using a feature of the ATARI Accountant, not available in other microcomputer accounting systems, to conduct a cost and profitability analysis of each of the Leo Quan products. In addition, a sales analysis by product line is helping her fine-tune the company's

inventory purchase commitments and is improving management control over inventory.

The patience and faith of the adventuresome managers of Leo Quan Musical Products, Inc. and hundreds of hours of testing went into the development of the ATARI Accountant. As a result, the ATARI Accountant meets the high standards of ATARI and the conditions required by Arthur Young before they would issue a letter verifying the computational accuracy of the program. The new ATARI Accountant has been launched to tackle virtually any small business general accounting, accounts receivable or inventory control challenge the program is handed.

Leo Quan's system includes an ATARI 800™ Personal Computer, an ATARI 815™ Dual Disk Drive, an ATARI 825™ 80-Column Printer, an ATARI 850™ Interface Module and a video monitor.

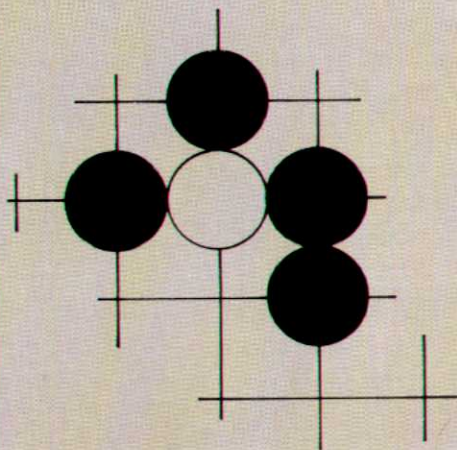
Veronica Kane is a free-lance writer in Belmont, California.

Glen Quan and Ellen Berger: Understanding the "why" of accounting.



INSIDE ATARI®

IF ATARI ISN'T A JAPANESE COMPANY, WHY DOES IT HAVE A JAPANESE NAME?



by Joel Miller

The name ATARI is in fact a Japanese word, but the company is most definitely American. The evolution of the name ATARI is interesting and somewhat complicated. To get to the root of it, we spoke with Ted Dabney, one of the founders.

In the beginning, three friends, who knew each other from previously working at Ampex, decided to invent and market the first commercially feasible video game. They were Nolan Bushnell, Ted Dabney and Larry Bryan. To become a partner, each had to ante up \$100—unbelievable today considering ATARI's success! The three were all sitting around Bushnell's house one day, drinking beer and trying to figure out a name for their new company. Bryan was thumbing through the dictionary and came upon an interesting last listing in the "S" section: Syzygy—"the straight-line configuration of three celestial bodies." What a perfect name, they thought, for a company begun by three so obviously astronomically talented people...

They invented the game Computer Space. Things became a little shaky

and Bryan didn't ante up his \$100. Only Bushnell and Dabney remained. They set up shop in Santa Clara, California and incorporated the business. A little later, they invented Pong.®

Bushnell and Dabney applied for the name Syzygy, but the Office of the California Secretary of State, which regulates California corporations, informed them that this name had already been taken by another California corporation. As this corporation didn't appear to be active, they tried to buy the rights to the name; however, they were unsuccessful. Their attorney told them to identify a new corporate name. They considered "BD, Inc." and "DB, Inc." but these names too closely resembled Black & Decker Manufacturing Inc. or Dunn and Bradstreet Inc.

Bushnell and Dabney were both players of Go, a Japanese strategy game. Their best brainstorming always occurred over beer and a good game of Go. Being preoccupied with Go at the moment, they decided to make a list of several Go words and see if one of them would fly as the new corporate name.

First on the list was "Sente," which

means "the upper hand." Their second and third choices were "Atari," which has similar meaning to the chess word "check" and "Hanne," the acknowledgement of an overtaking move.

Bushnell and Dabney submitted the list to the Office of the California Secretary of State. A few weeks later, their incorporation papers came back; the Office of the Secretary had selected their second choice, ATARI. If someone in the Office of the Secretary of State had decided to approve their first choice, you might now be reading "THE SENTE CONNECTION."

When the name changed, Bushnell and Dabney wanted to change the logo too. So they incorporated both the "S" from Syzygy and the "A" from ATARI into the new design. If you look closely at the middle logo, you'll see both letters. Some time later, as the company became more successful, an advertising agency designed the slicker and now famous ATARI logo, the ATARI "fuji" or stylized "A" design.

Joel Miller is the Manager of Marketing Publications in the ATARI Computer Division.

CHARACTER STRING ARRAYS WITH ATARI® BASIC

by Earl Rice

Computers are very good at making and managing lists. When you want to manage a list of names, sorting and searching the list is easier if you put the names in a string array. An *array* is simply a regular and orderly grouping of things. A *string* is anything consisting

of alphabetic information. The following list is a string array of names:

ANNA
BRIAN
EDDY
FRAN
YOLANDA
ZORHAB

Many versions of BASIC represent such an array by using a variable name such as A\$(N). In this representation, A\$(0) is ANNA, A\$(1) is BRIAN, and so forth.

ATARI BASIC doesn't use the form A\$(N) to represent string arrays. As a result, some programmers are under the impression that ATARI BASIC can't process character string arrays. While it's true that ATARI BASIC does not have string array variables, such as A\$(N), it does have the *substring* function, A\$(X,Y). Building and processing arrays of strings is fairly simple with ATARI BASIC's substring function.

To define a string array, you must first

```
10 DIM SA$(250)
```

Reserve the space in memory for the entire string array (25 strings with 10 characters each).

```
20 DIM WS$(10)
```

Reserve the space in memory for holding new individual strings before adding them to the string array.

```
30 FOR W=1 TO 25  
40 INPUT WS$
```

Input the data for the new string.

```
50 IF LEN(WS$)=10 THEN GOTO 90
```

Check to see if the new string has 10 characters. If it does, skip to line 90. If it doesn't, continue to the next line.

```
60 FOR S=LEN(WS$)+1 TO 10  
70 WS$(LEN(WS$)+1)=" "  
80 NEXT S
```

Add spaces to the new string until it is 10 characters long.

```
90 SA$(LEN(SA$)+1)=WS$
```

Add the new string to the string array.

```
100 NEXT W
```

Go back to line 30 and repeat steps until string array is full (25 strings; repeat steps 25 times).

```
110 PRINT SA$
```

To see what the complete string array looks like, print the complete string array.

```
120 PRINT "WHICH STRING ";  
130 INPUT R
```

To print a particular individual string, tell the computer which individual string you want to see.

```
140 LET B=10*(R-1)+1
```

Compute the beginning position of the individual string.

```
150 LET E=B+9
```

Compute the ending position of the individual string.

```
160 PRINT SA$(B,E)
```

Print the individual string.

```
170 GOTO 120
```

Go back to line 120 and select another individual string to be printed.

```
180 END
```



```
READY  
20 DIM WS$(10)  
30 FOR W=1 TO 25  
40 INPUT WS$  
50 IF LEN(WS$)=10 THEN GOTO 90  
60 FOR S=LEN(WS$)+1 TO 10  
70 WS$(LEN(WS$)+1)=" "  
80 NEXT S
```



COMPUTER TALK

decide the maximum length the separate strings within the string array will be. For example, you may want to limit the string length to 10 characters.

Next, you must decide the maximum number of individual strings the array will hold. For example, suppose you want to store and process 25 strings.

To hold 25 lines of 10 characters you must be able to store 250 characters somewhere in your computer's memory. Reserving that much space requires a DIM statement. In our example, we will name the string array SA\$. To reserve the space, we need the following DIM statement.

```
10 DIM SA$(250)
```

We will use SA\$ to build our string array. Each new string we want to store will be added to SA\$. The substring function of ATARI® BASIC enables us to locate the individual strings stored in the array.

We need memory space to hold the new individual strings before adding them to the string array. This space in the computer's memory is called a *workspace*. To establish a workspace, we need to define a workspace string. We will call it WS\$. We first read input data (for the new individual string) into the workspace string and then add the new string data to the end of the array until it's full. Before adding the new string to the end of the array, however, we need to make sure the new string is 10 characters long. Thus, if the new string has less than 10 alphabetical characters, we must add

spaces to fill the 10 memory spaces. Otherwise, we won't be able to find the individual string again later when we want it. The listing on the previous page shows how to make the computer do all of these steps for you.

This technique allows you to build arrays of strings. The substrings can be selected and processed simply by referring to their position as in the example below.

Earl Rice is the Manager of the Users Group Support Program in the ATARI Computer Division.

HOW MUCH MEMORY DO YOU HAVE?

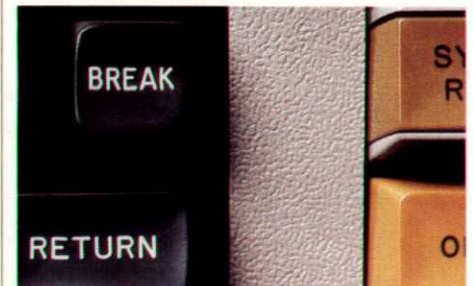
Many people have asked why, when they have an ATARI Personal Computer with 48K of memory, only 40K of RAM is available for programming?

Currently, all of our cartridge programs which are inserted into your personal computer utilize the very top 8K of your system's RAM. Thus, whenever a cartridge program is inserted, computers with a full 48K of memory will only have 40K available for programming. When no cartridge program is in the computer, the top 8K of RAM is available for programming. If your personal computer system has 40K of

RAM or less, no memory space is lost when you insert an 8K cartridge.

Thus, a 40K personal computer system would have 40K of RAM available for programming.

DISABLING THE BREAK KEY



You can prevent the Break key from stopping your program when you accidentally hit it.

The following routine will disable the Break key:

```
100 X=PEEK(16)
110 IF PEEK(16)<128 THEN 140
120 POKE 16,X-128
130 POKE 53744,X-128
140 REM Begin lines of your
    program here
```

If you hit System Reset, enter a new graphics mode or write to the disk drive or printer, you must execute the above routine again to keep the Break key disabled.

COMPUTERESE DICTIONARY

Array — A regular and orderly grouping of information to be used by the computer.

String — Information input into the computer that consists of alphabetical information.

Substring Function — A function which enables the user to select and work with part of a string

Workspace — Space in the computer's memory which holds new individual strings before adding them to an array string.



JOIN A GROUP!

AN ATARI® COMPUTER USERS' GROUP

Computer Clubs and Users' Groups are a great way to learn more about your ATARI Personal Computer, meet other owners of ATARI Personal Computers, and share what you know with others. If you belong to a group, would like to join or start a group, or just want to know more about them, fill in the information below. We will add your name to our mailing list to receive information from and about Users' Groups.

Name _____

Address _____

City, State, Zip _____

Telephone (_____) _____

I belong to an ATARI Users Group.

Group Name _____

Address _____

City, State, Zip _____

Telephone (_____) _____

President _____

I want to join a group in my area.

If there is no group in my area, I would like to start one.



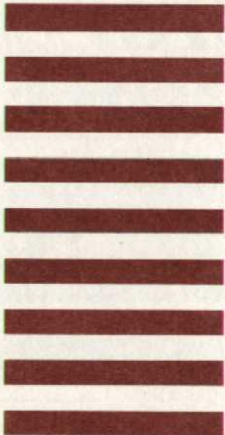
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SUPPORT PROGRAM**
COMPUTER DIVISION
ATARI, INC.
P.O. BOX 427
SUNNYVALE, CA 94086



GETTING ACQUAINTED

ATARI® COMPUTER USERS' GROUPS

Most of the fun of having a computer is learning about it and sharing what you learn. Computer clubs, sometimes called users' groups, are a great way to do both.

Below is a list of some of the users' groups around the U.S. If your area doesn't have a group, you might consider starting one. For more information about newly formed groups or about starting a group, fill out the enclosed card and send it postage-paid to ATARI today.

West Valley Atari Computer Users' Group

George Barti, President
20213 Parthenia Street
Canoga Park, CA 91306
(213) 998-0769

Orange County Atari Computer Associates

John Branom, President
9108 Helm Avenue
Fountain Valley, CA 92708
(714) 894-4852

San Diego Atari Computer Users' Group

Dick Hiatt, President
5353 Baltimore Dr. #39
La Mesa, CA 92041
(714) 277-6700 x218

Monterey Bay Atari Computer Group

P.O. Box GH
Pacific Grove, CA 93950
(408) 373-7177

Bay Area Atari Computer Users' Group

Mark Spencer, President
12345 El Monte Road
Los Altos Hills, CA 94022
(415) 965-9355

Starfleet

Mike Iverson, President
8353 Zephyr Street
Arvada, CO 80005
(303) 423-9478

The Atari Computer Club

Ed Fason, President
5500 Troy Street
Denver, CO 80239
(303) 371-6614

Ft. Collins Area Atari Computer Users' Group

Leroy Castertine, President
(Poor Richard's)
204 West Laurel Street
Ft. Collins, CO 80521
(303) 221-1776

Panama Canal Atari Computer Users' Group

Dr. Mel Boreham, President
PSC Box 417
APO Miami, FL 34008

Atari Computer Users' Group of Chicago

Larry Hitz, President
15 Mohawk Drive
Clarendon Hills, IL 60514
(312) 727-4206

Louisiana

Tom A. Hiday, President
c/o Alexander Grant
601 Poydras
Pan American Life
Center
New Orleans, LA
70130
(504) 581-1211

Arinc Atari Computer Club

Bruce Morgenstern
2551 Riva Road
Annapolis, MD 21401
(301) 266-4735

Boston Atari Computer Users' Group

Paul Hoffman, President
48 Norfolk Street
Cambridge, MA 02139
(617) 491-0739

Atari Computer User Club

Mike Deschenes, President
565 Main Street
Cherry Valley, MA 01611

Michigan Atari Computer Enthusiasts

Ashby Woolf, President
6236 Worlington Road
Birmingham, MI 48010
(313) 626-8868

Omaha Atari Computer Federation

Glen Flint, President
14219 Pierce Plaza #41
Omaha, NE 68144
(402) 333-7953



New Jersey

Dick Kushner, President
58 Dewey Avenue
High Bridge, NJ 08829
(201) 582-4794

Computer Club of the Islips

Gregg Beasley, President
15 Cardinal Lane
East Islip, NY 11730

A.C.E. of Syracuse

Tom Karkowski, President
5728 Paisley Place
E. Syracuse, NY 13057
(315) 656-2228

Atari Computer Enthusiasts of Cleveland

Bruce Frumker, President
Cleveland Museum of Natural History
Wade Oval—University Circle
Cleveland, OH 44106
(216) 231-4600

Portland Users' Group

Jim Leiderman, President
P.O. Box 1692
Beaverton, OR 97075
(503) 644-5080 (after 1:00pm)

Atari Computer Enthusiasts

Stacy Goss, President
3662 Vine Maple Drive
Eugene, OR 97405
(503) 687-4075

Medford Area Users' Group

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"Converting Graphics" (End of article), August 1980, p. 22.

ANSWERS

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A G R A A M E Q H I W D E R O E
T R E A P T I M P E U P O K R R
I A U M Y E I U A J T M E S J I
N M O B J C R N R H E A O E Y P
G S P X I Z Y I G M P B Z R K H
S U K S O F K I P S X P I O K E
X P A Q Y R L I G H Y F D T M R
S B A S I S C I K Z E S E C O A
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