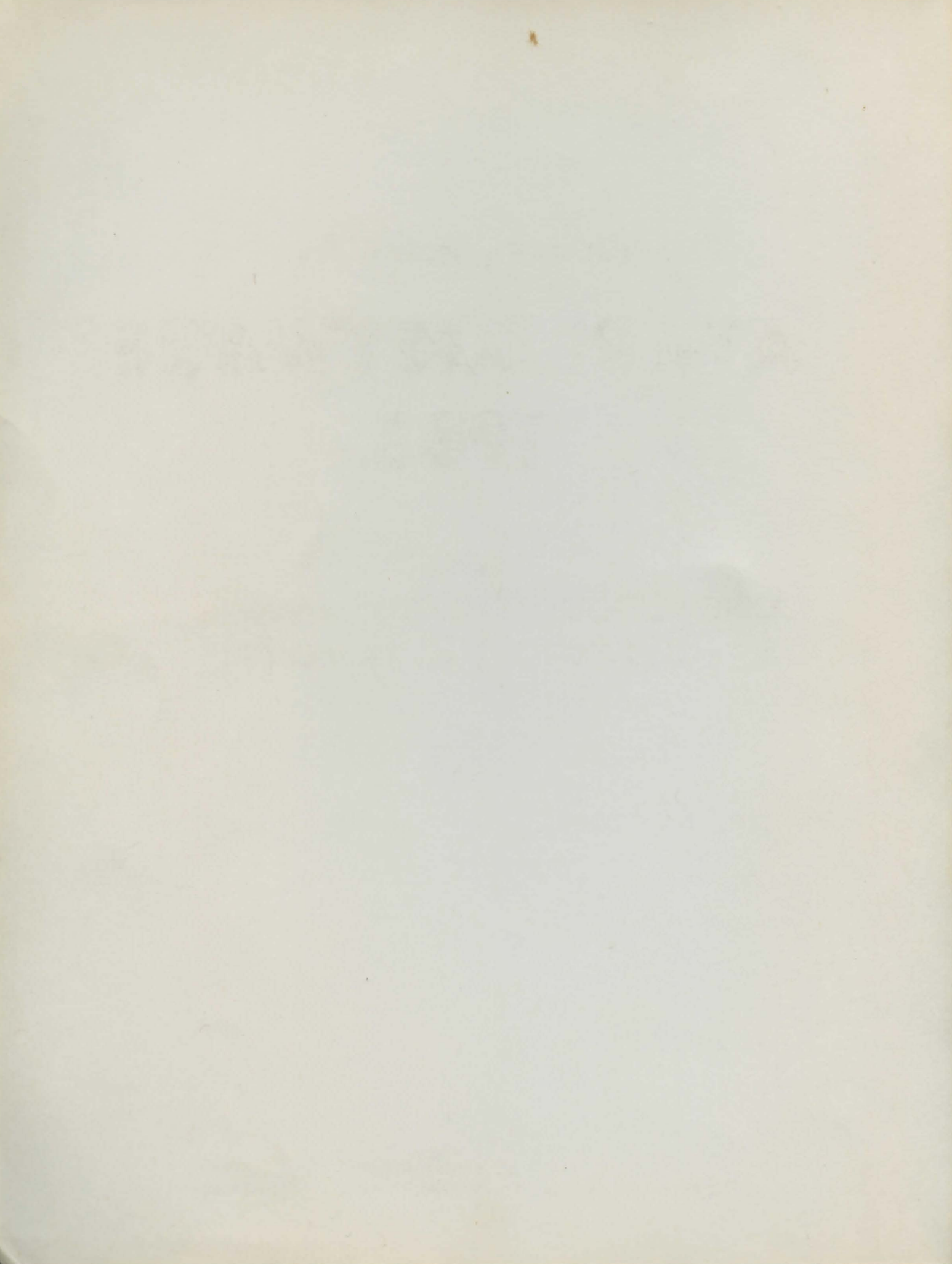


The Addison-Wesley Book of

ATARI^{T.M.} SOFTWARE 1983

Jeffrey Stanton / Robert P. Wells, Ph.D.
Sandra Rochowansky

**The one book that should be on every
Atari 400/800 and 2600/5200 VCS
owner's bookshelf**



This book is in the Addison-Wesley Microcomputer Books Popular Series. Thomas A. Bell, sponsoring editor, and Marshall Henrichs, cover design.

July 1983

The Addison-Wesley Book of **ATARI SOFTWARE** **1983**

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Edited by
Jeffrey Stanton, Robert P. Wells, Ph.D.,
and Sandra Rochowansky

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The Addison-Wesley Book of
ATARI SOFTWARE
1983

Edited by
Jeffrey Stanton, Robert P. Wells, Ph.D.
and Sandra Prochowski

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INTRODUCTION

This 1983 edition of *The Book of Atari Software* is a comprehensive reference book for owners of Atari VCS and the new Atari 5200, Atari 400, and Atari 800 computers, offering a directory of a substantial number of the programs presently available for these machines. It is a book that is dedicated to you, the consumer. We hope that you will use it as a convenient guide for finding information on software.

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One of the major goals of *The Book of Atari Software* is to provide a comprehensive directory of the majority of presently useful or interesting programs available for its machines.

Other periods await the uninformed buyer. For instance, it is sometimes difficult to tell from the experience of the purchaser whether your computer has sufficient memory space available to use the program. It is often more difficult to tell whether backup copies can be made from the program disks, or if programs or cassette can be transferred later to disk if you upgrade your system. One of the goals of *The Book* is to eliminate as many of these problems as possible.

As Atari owners, you have purchased a versatile and powerful second generation computer with advanced graphics and sound features found in few other microcomputers. While most of us might expect to be used primarily for family entertainment or for its educational value to your children, the Atari 800, with the addition of a few printers and disk drive, is quite capable of being used as a word processor or even to run a small business. While Atari has never emphasized the educational aspect of their computer, the Atari 800 can nevertheless quite adequately be used as a general purpose, practical computer as well as a fine game machine. All that's lacking are high-quality, user-friendly, practical business packages. The few that are available, in most cases, are somewhat deficient in necessary features and ease of use. It is unfortunate that this situation has led many people to think of Atari computers as mere toys. They are not. As the availability of first-rate, practical software programs will continue to grow, the

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INTRODUCTION

This 1983 edition of *The Book of Atari Software* is a software review book for owners of Atari VCS (and the new Atari 5200), Atari 400, and Atari 800 computers, offering evaluations of a wide variety of the programs presently available for those machines. It is a book that is dedicated to you, the consumer. We hope that you will use it as a reference guide for making informed and intelligent decisions when purchasing software.

Atari computer owners are currently confronted with a bewildering selection of software from which to choose. On one hand, this should please you in that, as the owner of an extremely popular microcomputer, you have a broad and rapidly expanding selection of software available for a variety of applications. On the other hand, this wide and growing selection of programs presents some problems. The majority of people staffing retail computer stores simply do not have the time to adequately review each new piece of software as it comes into their store, nor to track the market in order to tell you what programs might be worth special ordering. Add the fact that a large number of Atari computers are sold in discount houses and department and/or toy stores, where the personnel are not normally knowledgeable about computers, then the strong need for a reliable guide to purchasing software becomes even more apparent.

Atari computer owners have moved from a situation a year ago in which very little quality software was available to one in which the number of new products has simply exploded. This is due primarily to a much larger and steadily expanding user base, as well as the publication of information that enabled programmers and third party software vendors to take full advantage of the computer's capabilities. It is hard to determine which factor was more significant. But software has markedly improved; and the best Apple software products, thanks to the Atari's use of the same microprocessor, are now being converted to run on the Atari Computer.

Software buyers are now confronted with the problem of product similarity. Few stores, for example, can afford to carry in stock several different word processors, five mailing list programs, six different personal finance packages, and seven different assemblers, never mind become fully aware of their obvious advantages and disadvantages. Many stores limit their software selection to the two dozen most popular games. The obvious disadvantage is that the consumer remains unaware of the majority of potentially useful or entertaining programs available for his computer.

Other pitfalls await the uninformed buyer. For instance, it is sometimes difficult to tell from the appearance of the package whether your computer has sufficient memory space available to use the program. It is even more difficult to tell whether backup copies can be made from the program diskette, or if programs on cassette can be transferred later to disk if you upgrade your system. One of the goals of *The Book* is to eliminate as many of these problems as possible.

As Atari owners, you have purchased a versatile and powerful second generation computer with advanced graphics and sound features found on few other microcomputers. While most of you bought it to be used primarily for family entertainment or for its educational value to your children, the Atari 800, with the addition of a line printer and disk drive, is quite capable of being used as a word processor or even to run a small business. While Atari has never emphasized the potential business uses of their computer, the Atari 800 can nevertheless quite adequately be used as a general purpose, practical computer as well as a fine game machine. All that's lacking are high quality, user-friendly, practical business packages. The few that are available, in most cases, are somewhat deficient in necessary features and ease of use. It is unfortunate that this situation has led many people to think of Atari computers as mere toys. They are not. And the availability of first rate, practical software programs will soon prove that point.

Most people are unaware of the powerful features that have been incorporated into their machines. Functionally, the Atari 400 is little different from the Atari 800, except that it has a membrane keyboard, less memory, and doesn't interface to disk drives or printers without modification. They are both 6502-based computers, and run at 1.79MHz. This is almost twice as fast as the Apple Computer using the same microprocessor. In addition, it has three custom microprocessing chips, ANTIC, POKEY, and GTIA. The ANTIC chip is a custom microprocessor that manages graphics. It has its own instruction set (a display list) that outputs combinations of six text and eight graphics modes to the screen. It will allow the entire screen or only portions of the display to be smoothly scrolled in any direction. Best of all, it frees the 6502 to do important calculations. The GTIA chip, in addition to translating ANTIC's digital commands, manages some of the graphics functions: for example, what colors to put on the screen, player-missile graphics, and collision detection. These latter two features make game animation extremely easy to implement. The last chip, POKEY, handles sound generation, all I/O functions (such as keyboard and paddle/joystick input), and does miscellaneous housekeeping chores. In combination, these chips make the Atari computer a fabulous graphics machine for the price. With some attention paid to providing faster disk access and increased disk storage, the Atari computer will prove itself as excellent a "practical" computer as well as an entertainment machine.

It will be very interesting to see what new products will make a significant impact on the Atari market during the next year. New disk drives that are both faster and can store more data are just beginning to appear. Eighty column boards and larger memory boards that have been on the market for some time are opening the way for the production of more sophisticated software. New and better software alone might make the coming year a significant one.

Perhaps the best news is the advent of the Atari 800's big brother, "The Atari 1200XL." It is a 64K machine that is completely software-compatible with the older machines. It is a sleek and stylish machine done in earth tones; it has one cartridge slot, and joystick ports placed on the side. All cables connect in the rear of the machine. A strip of recessed Function Keys are placed above the keyboard. In addition to the standard four function keys are four user-programmable keys. They default to one button cursor control for homing the screen to any corner, toggle the keyboard on/off, and turn the display off (for added speed). Users will notice immediately on power up that the memo pad has been replaced with a Help key that can perform machine diagnostics. All this is available at a slightly higher price than the Atari 800, and it looks to be a very exciting upgrade to the Atari product line.

APOLOGY IN ADVANCE

While we have striven to include the majority of known and available Atari software, we realize that there are a number of programs which have not been included. In most cases, omissions are a result of our not being aware of a program's existence or our inability to obtain and review a program in time to meet our press deadlines. We apologize for these omissions, and will try to keep you as current as we can with supplemental issues of *The Book*. We also feel constrained to point out that software vendors seem to change addresses frequently, and that the suggested retail prices of various products likewise change often. The information published here was true to the best of our knowledge at the time we went to press, but is subject to change without notice.

We have made every effort to present fair and objective evaluations of Atari software. But it is appropriate to point out here that neither our reviewers nor the publishers of *The Book of Atari Software* will be held liable for any mistakes, comments, or omissions that have occurred. We welcome comments from our readers, of course; and in future editions we will correct or revise errors which are brought to our attention.

Remember: *The Book* is merely intended as a guide to owners and would-be owners of Atari computers. As a consumer, it is your responsibility to do whatever further investigation you deem necessary before making your software purchases.

CRITERIA

Each program included begins with a listing of basic facts and a summary rating, followed by the review commentary. Because our reviewers were agonizing over the point scale ("Is this feature worth an 86 or an 87?"), we've returned to the familiar A through F grading system:

A	B	C	D	F
(Superior)	(Good)	(Average)	(Poor)	(Unacceptable)

An exception to this is Availability, which uses a 1 to 10 scale, indicating whether a program will be available from few dealers or many (10 = almost all dealers).

GENERAL

These are grading criteria that apply to almost all programs, regardless of category:

Overall Rating: This takes all facets and evaluation criteria of the program into consideration.

Value For Money: Is the purchaser getting what he is paying for? Is it good value compared with similar programs?

Vendor Support: Does the software company back its product? Are they available to answer question? Will they replace a defective program (bad disk or tape)?

Documentation: Does the documentation answer all questions clearly, and is it extensive?

Error Handling: Does the program "crash" during execution? Are there proper error-trapping routines?

Reliability: Does the program consistently do what it's supposed to do?

Note: An * indicates that the tape or disk is not copyable.

ARCADE GAMES

This category refers to those games considered to be of the “shoot-em-up” or “action” type. Specific criteria for this category include:

Challenge: Does the game challenge the participant, or is it a game one will tire of quickly?

Controllability: How responsive is the game to either keyboard, paddle, or joystick control?

Creativity: Has the author been creative and imaginative, or not?

Game Concept: Is the idea behind the game sound? Does it require strategy and offer a goal?

Game Depth: Does the game have much of a scenario? Does it offer a number of challenging levels?

Skill Involved: Does the game require strategy and skill, or is it based mostly on luck?

Holds Interest: Is this game one you would like to play over and over, or is it one that you will soon lose interest in?

Graphics: Was excellent use made of the computer's graphics capabilities, or not? Are the visual effects pleasing or dull?

ADVENTURE GAMES

These games are those considered to be of the “puzzle,” text, or adventure variety. Special criteria for this category includes:

Puzzle Quality: For adventures, how complex are the puzzles or riddles in the game? Does the mapping follow a logical sequence?

Originality: Is the game novel and inventive, or does it smack of conformity in concept and execution?

Vocabulary: For adventure games, how good is the parser, or how well does it understand words and commands that you input?

Text Quality: Are the descriptions imaginative, or bland?

Save/Restore: Does the game have a save-game feature, allowing you to continue later, and how accessible is it?

Difficulty: What is the level of difficulty encountered in this game? Is it challenging, or suited to novice adventure game players?

Graphics and Holds Interest: as above.

BUSINESS

As the title suggests, those programs of a “practical” nature apart from educational and utility packages, even if designed for home use and not the office. One specific criterion not described above is:

Ease of Use: Are the screen designs and documentation clear and well laid out, enabling the new user to run the program with a minimum of difficulty?

EDUCATION

Any program which purports to teach or offer instruction. Specific criterion includes:

Educational Value: How effectively does the program teach its subject?

UTILITIES

In general, those programs whose purpose is to enable you to use your computer more effectively. One criterion especially important to this category is:

Usefulness: Does the program offer a good, necessary, or important tool to the user?

PERSONAL & HOME INTEREST

This category encompasses programs designed for home use and self-improvement.

MISCELLANEOUS

You will notice that some programs are discussed but not rated. This will occur for one of several reasons:

(A) We received the program too close to the press deadline to thoroughly review it. We felt, however, that the program was of sufficient merit and/or importance to warrant some kind of consideration. Given the time constraints, we tried at least to describe it. A complete review should follow, either in a supplemental issue of *The Book* or a later edition.

(B) Some programs fall into such specialized categories that a reviewer with expertise in that particular area was not immediately available. However, the program appeared to be of sufficient worth to merit some comment.

(C) The Book Company is now a division of a larger organization, Arrays Incorporated, which is engaged in software publishing. We have always provided impartial evaluations of software products, and therefore any programs that could involve a conflict of interest are not rated.

THANKS TO THE REVIEWERS

We must gratefully acknowledge the reviewers of the 1983 edition of *The Book of Atari Software*. They have shared their knowledge and experience with other owners and prospective owners of Atari computers, and their hard efforts have made this book possible. Our thanks to:

George Barti
Norma J. Berinstein
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David Sanford
Kim Schuette
Hank Shiffman
Tom Simondi
Robert A. Smith
Jeffrey Stanton
Jane Sunderman
Ray Watt
Robert Wells
Richard West
Don Worth

Atari VCS Reviewers:

Gary Kevorkian
Brook McMahan
Cotie McMahan
Jason McMahan
David Staie
Greg Staie
Mary Watt

A CALL FOR REVIEWERS

Help! Because software for the Atari computer continues to proliferate at an amazing pace, and the knowledge necessary to pick software wisely from a host of similar programs continues to expand, the need for our review service has never been greater.

We wish to take the opportunity at this time to issue a call for more reviewers. The variety of microcomputer applications is increasing (ranging from farm management to weather science), and we would like to enlist the assistance of Atari-owning experts in different fields. We want to make *The Book* as complete as possible, because frequently the only real notice the public will have of specialty programs will be in *The Book*. But because we provide consumer reports on programs, rather than simple directory listings, we need specialists to handle certain programs.

There are a number of benefits associated with being a reviewer, not the least of which is the possibility of amassing software that ties in to your particular area of interest. If indeed you wish to become a reviewer, please send us a description of your experience, the type of hardware that you own, and indicate your area of interest and expertise. We would also like a sample review (whether we've evaluated the program already or not), to give us an idea of your writing style. Please send the information to:

THE BOOK COMPANY
11223 S. Hindry Avenue
Los Angeles, CA 90045
ATTN: Review Dept.

And please be patient. It will take us a while to deal with all of the correspondence.

ATTENTION: SOFTWARE PUBLISHERS AND AUTHORS

The Book of Atari Software presents you, the producer of software, with a unique opportunity to greatly increase the visibility of your programs. There is no other single source of objective software evaluations for Atari owners like *The Book*. Our sales, surveys, and projection figures indicate that a substantial percentage of Atari owners either own or have consulted *The Book* before making their software purchases. Likewise, a large number of Atari dealers use *The Book* when recommending software for their customers, and as a reference to assist themselves in ordering products for their stores.

The task of locating, acquiring, and then reviewing the increasing number of software programs for the Atari computer is a huge one, and getting more complex each week. We need your help, to keep us informed about new products and enhanced versions of existing programs, and to supply us with copies for evaluation. At the same time, we will help you by providing you with a showplace for your product that is effective, far-reaching, and yet considerably less expensive than any form of advertisement you may be contemplating. Indeed, *The Book* is often the only substantial notice the public may receive of interesting specialized programs. In terms of valuable publicity and increased sales, many companies have found it to their advantage to be included in *The Book*.

What is the cost to you? Relatively little. All we require is two copies of your software for review purposes. Accompanying the software, we also ask that you include a suggested retail price list, information regarding necessary hardware requirements, and the name of a person to contact in case our reviewers have any questions.

Please send your review copies and relevant information to:

The Book Company
11223 S. Hindry Avenue
Los Angeles, CA 90045
ATTN: Review Department

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GAMES & ENTERTAINMENT

One of the more significant advantages to owning an Atari Computer lies in the fact that the Atari has a dual personality. On one hand, the Atari is an extremely powerful personal computer capable of performing a variety of "practical" tasks. On the other hand, the Atari, due to its superb color graphics and sound capabilities, is also a "fun" machine. This section, "Games and Entertainment," deals with that facet of the Atari character.

Games in general, especially during the last year, have evolved from simplistic shoot-'em-up scenarios into lengthy adventure simulations or games with high speed, arcade-quality animation. The days have passed when player missile graphics was a mystery to all but a few, and games written in BASIC represented the only viable alternative to the average game programmer. Today's programmers are more sophisticated. They are totally aware of the Atari's capabilities. Their friends and competitors have provided challenges to them in setting new standards for game programming. Economic considerations have played a strong part in this process. The public, which has been spoiled by some of the best of the Atari game-oriented software and arcade game-playing experiences, is always looking for something better, new, and challenging.

Programmers who design games can be likened to writers creating works of fiction. There are hundreds of books of fiction written each year, with perhaps only nine plot types. Regardless of how well they sell initially (whether they sell because they are different, the author is hot, or they are widely promoted and/or package their work in a flashy cover), few editions will sell for a period exceeding a year. Most will quickly fall by the wayside. However, a few will become classics, selling to newcomers year after year. In the computer world, only *Adventure*, *Star Raiders*, *Pac-Man*, and *Asteroids* have achieved this rank so far. Other new games show promise of becoming "classics" as well, but technology is advancing too rapidly. Even today's best games may soon be considered too primitive.

Meanwhile, games are increasing in magnitude as programmers attempt to give the public something better for their money. With game prices steadily creeping upward, the time it takes before players tire of a game is becoming an important consideration, especially when games can no longer be traded because of protection methods.

Programmers are striving for spectacular effects in their games. Their games have a strong Atari graphics look: multiple graphics modes, four directional fine scrolling, colorful modified character-set backgrounds, and, of course, player missile graphics. Sound effects are becoming more realistic, and use is being made of two or more voice harmony in background music. This contrasts sharply with a large number of quality Apple games that are being transferred to the Atari by "rastering" them over in graphics mode eight with little or no sound and color changes.

There is a potpourri of entertainment programs available today. The sheer multitude of titles might suggest that a lot of people use their computer primarily for fun; and this is quite true for many Atari owners.

These programs have been divided into 11 categories. Within any section, we have tried to group similar games together, attempting to show, in many cases, their differences. We rate games according to such features as concept, creativity, playability, skill levels, challenge, sound, and graphics. Game depth, how long a game holds a player's interest, or the number of time players will use a game, are important considerations when buying a game.

We are indebted to Mike Harvey, publisher of *Nibble* magazine, for his kind permission to reprint his excellent article "How to Write Games That Last." This article first appeared in *Nibble*, Vol. 1 No. 1, 1980.

HOW TO WRITE GAMES THAT LAST

There's a very old story about the early use of computers to optimize complex mixtures — in this case, Cattle Feed. As the story goes, Government Researchers were searching for a Cattle Feed which would optimize everything. It would take very little land to grow it. It would have a short growing season, a high yield, a low cost, high nutritional value to the cows, and be able to be stored efficiently. The land was studied. The nutrition of various grains was studied. Farming techniques were studied.

After all the studies were completed, formularized, and fed into the computer, the system cranked out the recipe for the "Perfect Cattle Feed." Only one problem: The cows wouldn't eat it!

After considerable despair, head-scratching, and puzzlement, a young researcher made the wild-eyed suggestion that they consult a cattle farmer for the answer. After listening to the whole story, the farmer asked one question: "Does your feed have any Alfalfa in it?" The answer, "No," brought the reply: "Put in some Alfalfa. Cows will eat almost anything if it has Alfalfa in it."

The moral of the story is that technical perfection doesn't necessarily "fly" if the "Cows won't eat it." The same principle applies in writing and "Kid-testing" computer games.

This article is an effort to define the "Alfalfa" to make your games more fun and lasting, and interesting.

SET LIMITS! Even the most innovative game becomes boring if it goes on and on and on. If you're writing a shooting gallery, hockey, or some other game involving pieces which are used up during the game, limit the number of shells available, the amount of fuel for the flight, etc. Most kids quickly lose interest in the "process" if the process is all there is to it. Even better, set a combination of limits. If you have set a limited number of shots in a two-player shooting game without setting a countdown, eventually one of the players will lay back, waiting for the other to use up his shots. When the first player has used up his shots, the second will then fire at leisure and usually with more accuracy (a game playing strategy). This usually proves infuriating to the first player who throws the game control on the floor and storms out of the room (this has been "kid-tested" with my two boys).

The presence of the countdown timer, however, keeps both on their toes and involved every second of the game.

SET DYNAMIC GOALS! One of the tastiest "Alfalfa" game improvements is the PREVIOUS HIGH SCORE report. This is a very easy feature to install and it is a particularly potent addition to single-player games. Carrying the Previous High Score forward from round-to-round (of the game) gives a constantly rising goal to shoot for. Some kids also look on it as a way to test the "limits of the game." It allows the player to measure his/her progress and improvement in skill and will bring them back to play again and again.

MULTI-LEVEL PLAY! Most of your games can be structured for "Easy" and "Hard" play by inserting random variables that tend to draw the player toward disaster. Also, you may want to add a feature that automatically switches to the "Hard" version after some number of "Easy" games have been played.

LET THE ATARI COMPETE! Give your multi-player games the option to be played solitaire by having the Atari become the other player.

In having the computer compete, give it some elementary "smarts" to play a decent opposing game. You can program the game to shift probabilities dynamically to equalize the game as it progresses, or allow the Atari to seek out the closest target (to its shell) and then automatically track to target.

MAKE YOUR GAME UNPREDICTABLE! Introduce random variables to throw the player off-stride as he/she tries to “psych out” the game. In one of my early target games, I found one of my boys staring intently at the screen and rhythmically squeezing off shots which hit every target. He had a “feel” for the rhythm of the targets and was about to play for the last time. A random variable that required a “countdown” before the target reappeared, as well as a random pattern of “speed” changes in the target, re-kindled his interest.

While you’re inserting randomness, don’t over-do it! If your game is totally random — that is, it lacks a Skill Factor — your players will quickly discover they are “Observers” and have no real control over the outcome.

KEEP THE ACTION FAST! A method for “speeding up the action” is to introduce a lot of different player responses into a visually slow game.

Don’t ignore the potential for programming ALL the slow graphics routines totally in Assembly Language. Depending on the type of program, an Assembly Language version may run 10-100 times faster than its Basic counterpart.

SET GREATER REWARDS FOR WINNING THAN LOSING! One of the seductive traps in game programming is to concentrate the creative effort in making spectacular explosions, etc. as you lose the game. If your game is too heavily weighted in this direction, you’ll abort the very purpose of the game. The same principle is particularly true in another field, Computer Assisted Instruction (CAI). One of my early CAI programs found my sons eagerly making mistakes to bring out the computer responses and help statements — where their correct answers did nothing but go on to the next problem. Spend some effort to program Bonus Points, Extra Balls, More Shots, etc. for exceeding different score thresholds and they’ll keep coming back for more. Player “Evaluation” is a good technique to apply here. At the end of the game, evaluate the scores and bring out a “Player Rating” and you’ll find the kids trying like mad to become a “Pinball Wizard,” “Admiral of the Fleet,” a “Starship Commander,” and so on.

Consider adding an “artificial” reward which exists for itself (i.e., doesn’t really tie into the game). For example, you might program a Fireworks Display for the Winner; play the STARWARS music; run up and down the music scale; “Flash-Print” your messages, etc. The possibilities are mind-boggling.

PLAN A GAME ANALYSIS/WRAPUP. You can keep game statistics as the game progresses. Then, at the conclusion, print out a summary analysis which shows “Who-did-What.” This can include things like the number of shots taken; the ships hit (by type of ship, enemy or friendly, etc.); the number of first-downs; fuel used; and so forth. Not only will this tend to resolve disputes, it has even greater advantage in allowing the player to study his/her performance, the game itself, and the methods for improving the performance (to beat the PREVIOUS HIGH SCORE — which you added earlier).

CRITIQUE AND TUNE YOUR FINISHED PRODUCT. Many of the best computer games have “evolved” by repeated play and “tuning.”

When you’re working with a number of game variables such as the number of shots, countdown timers, etc. you’ll need to inspect how they all work together. Then you should make adjustments to integrate them and make them consistent. To exaggerate the point, if you are allowing 50 shots to be fired at targets and your countdown fuel timer only allows 25 shots to be squeezed-off before time runs out, that’s an obvious “Glitch,” and is easy to change. But when you’re going through complex evaluations of scores, reward messages, and the like, you should make sure that your “Top Reward” is actually ATTAINABLE by a skilled player — but not too easily attainable. Test it yourself and with other players. If the Top Prize never comes up, then the scoring should be re-tuned.

ASK FOR SUGGESTIONS! Above all, don’t charge out of your study, drag in the kids, and say, “Play this new game. You’re going to LOVE IT!” Kid-testing is very low-key and my boys have had tremendous ideas for improving game programs over the last couple years. Listen! And Tune!

ADVENTURE, FANTASY, SPACE and OTHER ROLE PLAYING GAMES

Did you grow up in the company of the Brothers Grimm, Snow White, the Red Fairy Book, Flash Gordon serials, the Three Musketeers, the Knights of the Round Table, or any of the three versions of the Thief of Bagdad? Have you read the Lord of the Rings, the Worm Ouroboros, The Incomplete Enchanter, or Conan the Conqueror? Do you enjoy Asimov? Remember Tom Swift? Have you ever wished you could cross swords — just for fun — with Cyrano or D'Artagnan, or stand by their sides in the chill light of dawn awaiting the arrival of the Cardinal's Guard? Ever wondered how you'd have done against the Gorgon, the Hydra, the bane of Heorot Hall, or the Bull that walks like a man? Would you have sailed with Sinbad or Captain Blood, sought passage on the Ship of Ishtar, or drunk of the well at the world's end? Did Aphrodite make Paris an offer you couldn't refuse? Would you seek a red-hued maiden beneath the hurtling moons of Barsoom, or walk the glory road with "Dr. Balsamo," knowing it might be a one-way street? Have you seen "Star Wars" and "The Empire Strikes Back"? Ever imagined you were John Wayne?

If any or all of your answers are "yes," you're a player of role-playing games — or you ought to be. (If your answers are all "No," you have either stepped through the looking glass by mistake, or fate knows your destiny better than you do.)

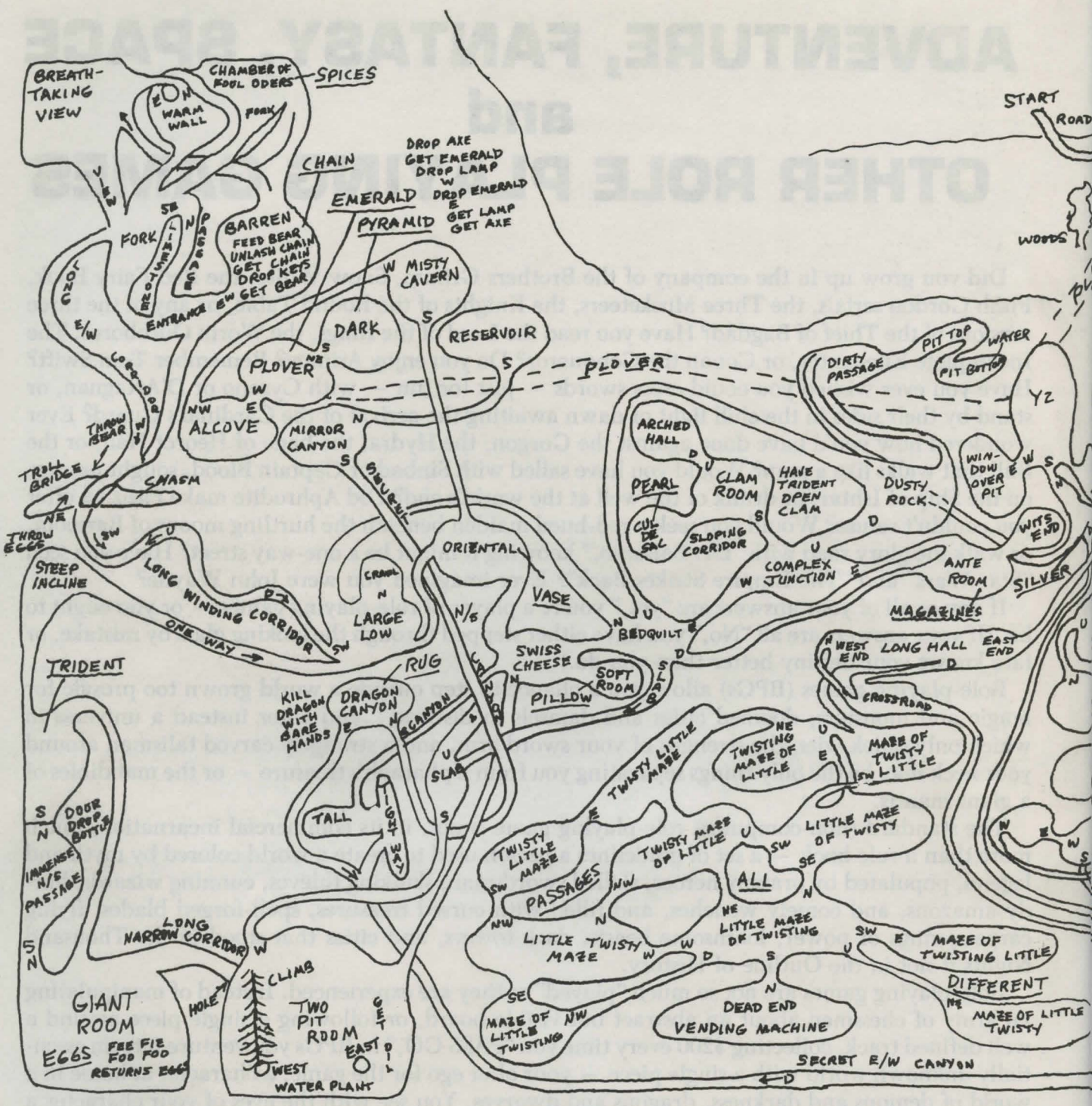
Role-playing games (RPGs) allow you a chance to step outside a world grown too prosaic for magic and monsters, doomed cities and damsels in distress . . . and enter instead a universe in which only quick wits, the strength of your sword arm, and a strangely carved talisman around your neck may be the only things separating you from a pharaoh's treasure — or the mandibles of a giant mantis.

The standard (non-computer) role-playing game is not, in its commercial incarnation, much more than a rule book — a set of guidelines a person used to create a world colored by myth and legend, populated by brawny heroes, skilled swordsmen, skulking thieves, cunning wizards, hardy amazons, and comely wenches, and filled with cursed treasures, spell-forged blades, flying carpets, rings of power, loathsome beasts, dark towers, and cities that stood in the Thousand Nights if not in the Outline of History.

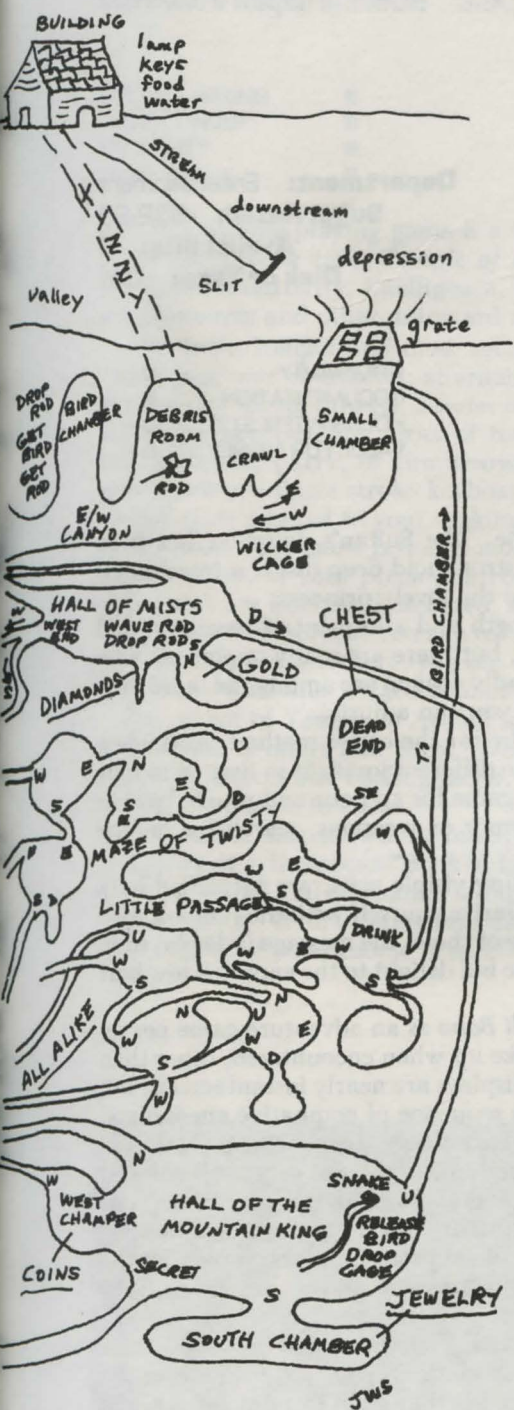
Role-playing games are not so much "played" as they are experienced. Instead of manipulating an army of chessmen about an abstract but visible board, or following a single piece around a well defined track, collecting \$200 every time you "PASS GO," in RPGs you venture into an essentially unknown world with a single piece — your alter ego for the game, a character at home in a world of demons and darkness, dragons and dwarves. You see with the eyes of your character a scene described by the "author" of the adventure — and no more.

The adventure-type games reviewed herein run the gamut from scenarios of ancient times to the far distant future, from fantasy to murder and war. In sum, selections from these programs will provide you with many hours of enjoyment and "exercise" for your imagination.*

*Our thanks to Automated Simulations for allowing us to excerpt from the booklet accompanying their excellent program, "Temple of Apshai" comments concerning Adventure Games in general.



“TYPICAL” ADVENTURE MAP



A
"TYPICAL" MONSTER YOU MIGHT ENCOUNTER DURING AN ADVENTURE

FANTASY & ROLE PLAYING GAMES

ALI BABA AND THE FORTY THIEVES

Company: Quality Software

Language: Machine

Hardware Requirements: 32K

Department: Entertainment

Sugg. Retail: \$32.95

Availability: 8

Disk or Tape: Disk

OVERALL RATING	B	DIFFICULTY	C	ORIGINALITY	B
PUZZLE QUALITY	C-	EASE OF USE	B+	DOCUMENTATION	A
TEXT QUALITY	B	VOCABULARY	N/A	HOLDS INTEREST?	B+
GRAPHICS QUALITY	A-	SAVE/RESTORE	B-	VALUE FOR MONEY	B+

Ali Baba and the Forty Thieves is a delightful role-playing fantasy game. The Sultan's daughter has been kidnapped by the ruthless band of thieves, and has been taken to the thieves' stronghold deep inside a treacherous mountain. You play the famous Ali Baba, and have been summoned to rescue the lovely princess.

You enter a world filled with exciting characters, each with his own strength and allotment of weapons, and armor. Some of these are loyal to the sultan and will assist you in your quest, but there are many opponents who must be overcome. Ferocious tigers, ruthless bandits, magical swords, and a deadly dragon are among the more than one hundred creatures you will face. These have a reincarnation ratio which you can adjust.

The game may be played by either keyboard or joystick. Joystick mode is by far the easier method. And when other characters are created to help Ali Baba in his quest, they can be assigned to different joysticks so that up to four players can play at once. The game is also novel in that a player can leave the game for an hour and return later to that same character again. Players can move, create new characters, buy armor or weapons, search for hidden doors, and open treasure chests.

The graphics are refreshing. As you enter each room, the contents, including visible exits, are identified by a moving cursor. While this slows game play substantially, it does help you familiarize yourself with the symbols used throughout the game. Various runes contain messages, and when you touch one of these, the message is displayed in lettering that is reminiscent of ancient Arabic writing. The accompanying music is a delight to the ears — a few bars of Rimsky-Korsakov's *Scherazade* done in multi-part harmony.

There is a degree of puzzle content, but it's not really sufficient to classify *Ali Baba* as an adventure game per se. Hints, either obtuse or blunt, are found in Runes. These cause your disk to wake up when encountered; other than that, there is no disk interaction in the entire 60-plus room game. New Hi-Res displays are nearly instantaneous, but the unfortunate byproduct of this is a very slow response in the interminable sequence of combative encounters. These delays are only slightly offset by the humorous text accompanying the encounters. Even with the Monster Regeneration Factor (i.e., difficulty control) set to zero, there seems a near endless procession of assault-minded thieves and assorted monsters. Mitigating this, but again at the expense of longer delays before it is once more your turn, there is the ease of calling in a veritable army of allies, including yourself, or any favorites that may have just been killed off. This multi-player capability also simplifies the difficult task of mapping, made complex by the extensive use of one-way doors and teleporting locations. The game is divided into dungeons and outside areas. Gold can be discovered in chests throughout both sections.

You may encounter in your adventure two other captives, Abdulla and Morgiana. Free them, and they show their gratitude by aiding you in your quest. If you are very virtuous, a unicorn may come to your aid in fighting the monsters. Be very wary of moving statues and collapsing tunnels: things are not what they seem in many parts of the dungeon, so explore with caution.

A particularly novel and amusing feature is that the bad guys, all being played by the Atari computer, are not too particular whom they clobber, and will gladly pile into other bad guys. It's fun (in a devilish sort of way) to start a fight, and then sit back and watch your enemies go at it. This feature, together with the multi-player capability, make *Ali Baba* great fun. This unique Hi-Res adventure should be a part of every player's collection.

TEMPLE OF APSHAI

Company: Automated Simulations (EPYX)

Language: BASIC

Hardware Requirements: 32K; disk drive or cassette player.

Department: Entertainment

Sugg. Retail: \$39.95

Availability: 6

Disk or Tape: Both

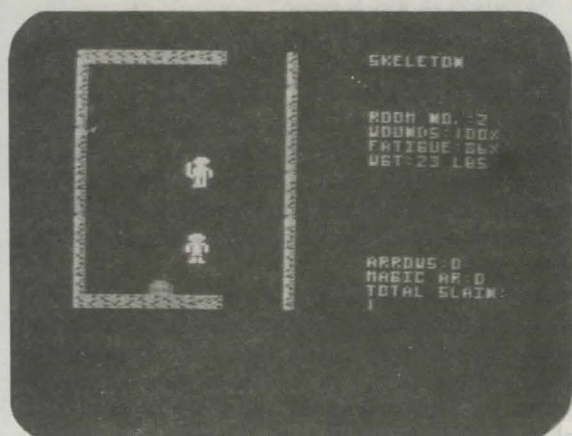
OVERALL RATING	B	CONTROLLABILITY	B-	ERROR HANDLING	A-
GAME CONCEPT	B+	SKILL INVOLVED	C	DOCUMENTATION	B+
CREATIVITY	B	CHALLENGE	C+	HOLDS INTEREST?	B+
GAME DEPTH	B+	GRAPHICS	B-	VALUE FOR MONEY	B

A fantasy role-playing game is a type of game that gives the player certain attributes in order to accomplish a particular goal or task. *Temple of Apschai* is a good example of this type of game. The player must utilize such attributes as dexterity, intelligence, strength, tools, fatigue, and so on, to fight his way through a maze populated with monsters and other untoward dangers.

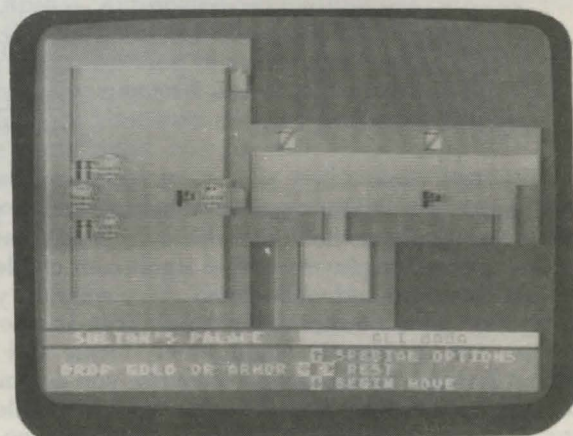
This is the longest and most versatile of the *Dungeonquest* series. The dungeonmaster program allows you to create your own characters; alternatively, you can let the computer choose character traits and abilities at random. Your player moves through a series of rooms displayed on the Hi-Res screen, and gains experience or treasures while fighting a never-ending series of terrible monsters. The combat portion is nicely conceived. Your character can attack, thrust, parry, or fire arrows. Of course, he has to be facing the opponent. All movement and fighting commands are single stroke keyboard commands. This means that you have to become fast and proficient in the limited time allotted to your making a move. The monsters don't wait for you to turn around or fight. One of the drawbacks in the game is that a monster's status isn't displayed. You never know how much fight is left in it, and might use one of your precious arrows to finish it off when it only needs one more sword thrust. Also, since your commands are held until executed, sometimes you waste a shot after the monster's demise. Your status is displayed on the left of the screen. You can tell immediately how wounded or fatigued your character becomes. If the status of your wounds becomes zero, you die. There is of course the possibility of resurrection; but that depends on who finds you. The dwarf and wizard demand a very stiff price in treasure or belongings.

The object of *Temple of Apschai* is to explore a four-level dungeon and obtain its twenty treasures. Some rooms contain secret doors and traps. Whenever you leave the dungeon, you can pawn your treasures at the inn for weapons, armor, and healing salves. Since the program doesn't keep track of each treasure's worth (you look it up), it is quite possible to cheat.

The author has shown as much thought in preparing the documentation as in writing the program. The documentation includes a "Book of Lore," which not only relates how to play the game, but provides the player with the background and mechanics of fantasy role-playing games in general. In sum, this is an excellent game, one that's very involving. With its numerous difficulty levels and play options, the game can last for hours. Fortunately, games can be saved if you become pressed for time.



TEMPLE OF APSHAI



ALI BABA

CURSE OF RA

Company: EPYX - Automated Simulations
Language: BASIC
Hardware Requirements: 32K, disk drive.

Department: Entertainment
Sugg. Retail: \$19.95
Availability: 7
Disk or Tape: Both

OVERALL RATING	B	CONTROLLABILITY	B-	ERROR HANDLING	A-
GAME CONCEPT	B+	SKILL INVOLVED	C	DOCUMENTATION	B+
CREATIVITY	B	CHALLENGE	C+	HOLDS INTEREST?	B+
GAME DEPTH	B+	GRAPHICS	B-	VALUE FOR MONEY	B

Curse of Ra is the second expansion module for the *Temple of Apshai*, which you must have in order to make use of this program. This module adds four new levels to explore, more treasures to find, and more monsters to fight. Getting started requires booting *Temple of Apshai*, awakening or creating a new character, and inserting *Curse of Ra* when you're ready to leave the inn.

The setting is ancient Egypt; the task is to gain entrance to each of two pyramids, the Great Sphinx and the powerful Statue of Ra, and get the four treasures powerful enough to overcome the Curse of Ra. Naturally, inhabitants of these pyramids take exception to trespassers, and there are numerous traps and associated dangers. Due to the power of some of the monsters, it is advised to visit each level in numerical order. *Ra* contains over 100 rooms, and mapping is still a must. To complicate life, there are many secret rooms that are disclosed only by careful examination.

Game technique is the same as *Apshai*. Hi-Res figures are seen inside or outside of a maze of walls, as if viewed from above. Each level has room and treasure descriptions, but only in the Player's Manual — a distraction to the flow of the game, especially if one is trying to fight off a monster at the same time. As before, running away from some monsters will materially prolong your character's life.

Survival in *Ra* is not too difficult, and players of the *Dunjonquest* series will thoroughly enjoy this new addition of monster-whomping, mapping, and exploration.

STARQUEST/STAR WARRIOR

Company: Automated Simulations [EPYX]
Language: Atari BASIC
Hardware Requirements: 32K; disk drive or cassette player.

Department: Entertainment
Sugg. Retail: \$39.95
Availability: 7
Disk or Tape: Both

OVERALL RATING	B	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	B	DOCUMENTATION	B
CREATIVITY	B-	CHALLENGE	B	HOLDS INTEREST	B
GAME DEPTH	B-	GRAPHICS	C+	VALUE FOR MONEY	B-

Compared to Automated Simulations' earlier programs, *Star Warrior* is more like a shoot-'em-up, Real Time game (especially at the higher difficulty levels), and seemingly faster paced. It is difficult to beat, while presenting even experienced players with a significant challenge during each new game.

As a futuristic and well-armed space warrior, you have your choice of two scenarios and three types of armored weaponry (plus a customizing capability). In one scenario, your mission is to create a diversion while your unseen compatriot attempts to clandestinely locate and assassinate the tyrannical Military Governor of the beleaguered planet Fornax. In the second scenario, you assume the assassin's role. In either case, you will have your hands full locating (or evading) nine different types of mobile armed units, two forms of fixed weapons, and three types of fixed installations, including "Civilian" (which is a no-no for your attacks). Your potent forms of weaponry are: semi-invisibility, and the ability to fly, jump, and move through four types of terrain, all the while managing a limited energy supply.

The background and the game-specific documentation are very good, as are the Hi-Res graphics. The commands are sufficiently varied and inclusive to fully control your "destiny," and make for a very challenging game, even at the lowest difficulty level. While bearing strong resemblances to *Rescue at Rigel* and *Dunjonquest*, *Star Warrior* moves at a faster pace, and provides a greater degree of personal involvement.

HELLFIRE WARRIOR

Company: Automated Simulations (EPYX)
Language: Basic
Hardware Requirements: 32K, disk drive.

Department: Entertainment
Sugg. Retail: \$39.95
Availability: 7
Disk or Tape: Disk*

OVERALL RATING	B	EASE OF USE	B-	ERROR HANDLING	A-
GAME CONCEPT	B+	SKILL INVOLVED	C	DOCUMENTATION	B+
CREATIVITY	B	CHALLENGE	B+	HOLDS INTEREST?	B
GAME DEPTH	B	GRAPHICS	B-	VALUE FOR MONEY	B

Hellfire Warrior is a full-length Hi-Res adventure game that almost literally starts where *Temple of Apshai*, also by Automated Simulations, left off. It has no time limit, as do the shorter *Morloc's Tower*, *Datstones of Ryn* and *Rescue at Rigel* programs, but it have the same system commands and overall format as does the longer *Temple of Apshai*.

The game requires exploration of Levels Five through Eight of the *Temple of Apshai*. Your character explores the 60 rooms of each level in search of treasures and a sleeping Brunhilde. Naturally, a multitude of monsters are encountered and must be dealt with. The level number is proportional to the strength and power of its inhabitants, so if you're brand new to the Automated Simulations series, you might consider the *Temple* or, for the general flavor of the game system, the faster playing *Morloc's Tower*. On the other hand, if you liked the predecessors, you'll love *Hellfire Warrior*.

MORLOC'S TOWER

Company: Automated Simulations
Language: BASIC
Hardware Requirements: 16K cassette; 32K disk

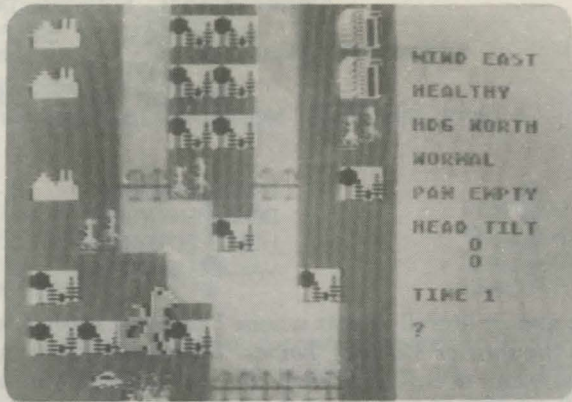
Department: Entertainment
Sugg. Retail: \$19.95
Availability: 7
Disk or Tape: Both

OVERALL RATING	B+	CONTROLLABILITY	B-	ERROR HANDLING	A
GAME CONCEPT	B	SKILL INVOLVED	C	DOCUMENTATION	B
CREATIVITY	C+	CHALLENGE	B-	HOLDS INTEREST	B+
GAME DEPTH	C	GRAPHICS	B	VALUE FOR MONEY	B-

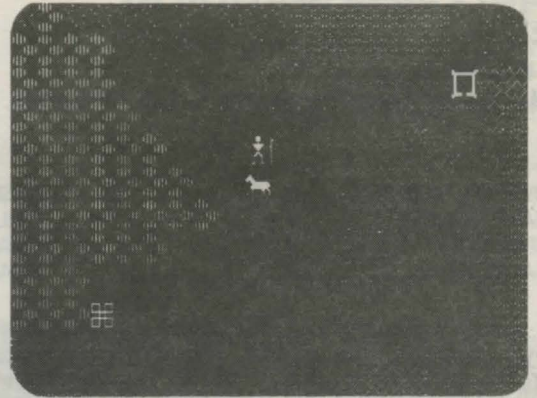
Although *Morloc's Tower* is not as elaborate as the *Temple of Apshai*, Automated Simulations has provided yet another entertaining and challenging adventure game. The object of the game is to find and kill the mad wizard, Morloc. One spends his time wandering through the six floor dungeons, battling monsters and finding treasures.

A plus to this game is that every time you play this adventure, the traps, monsters and other surprises are found in different locations. In addition, you can compete against your friends or your own past performance. The game is appropriate for beginners as well as advanced players since there is no "right" way to win.

Documentation is excellent. The authors provide a very attractive layout with clear and concise instructions including helpful hints. As a last resort, the player may wish to read some of the "answers" which disclose where Morloc may possibly be found.



CRUSH, CRUMBLE & CHOMP



ULTIMA

CRUSH, CRUMBLE AND CHOMP

Company: Automated Simulations

Language: BASIC

Hardware Requirements: 32K, disk drive.

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 8

Disk: Disk*

OVERALL RATING	B+	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	A-	SKILL INVOLVED	B+	DOCUMENTATION	B+
CREATIVITY	A-	CHALLENGE	A-	HOLDS INTEREST?	B+
GAME DEPTH	B+	GRAPHICS	C	VALUE FOR MONEY	B

In *Crush, Crumble and Chomp* you can play one of six featured monsters (or one of your own home-grown creatures) to attack the city of your choice: San Francisco, Washington, D.C., New York City, or Tokyo Harbor. With your fiery breath you can burn entire cities or smash them underfoot. You can block roads with your webs and escape underground where tanks dare not tread. Your monster can tear apart bridges with its tentacles, emit an ultrasonic scream as you grab the populace and fly over a city of smoking ruin.

Of course, being a monster isn't easy. You're always hungry. A good rule is: if it moves, it's edible. And the city, played by your friendly computer, has an arsenal of police cars, tanks, artillery, helicopters, National Guard, and your indomitable mad scientist.

You control the monster with a variety of keyboard commands. All monsters have a basic command structure that controls general direction, head position, and movement. Some monsters can burrow, another can fly. All can crumble buildings or grab individuals fleeing in the crowds. Each has its specialty, like (A)tomize or (U)ltrasonic Scream, (B)reathe Fire, (W)eb (weave obstructing web), or (Z)ap flying units with ray gun. Control is rather sluggish. This is because you're taking turns with the computer and it's not ready for your next command. Be patient; the computer has to update the screen and attack before you can make the next move. Unfortunately, by the time it allows you to enter the next command your prey has moved away. Also, you can't change your mind once you type a command and must wait for your next turn to correct your error.

You can monitor the game on a map as you move around sections of the city. Your monster's health, his hunger status, head position, and general direction are all displayed on the right side of the screen. The head position is displayed in all its living facial monster horror. It keeps you aware of who or what you are.

Yes, this game is for real and it actually can be fun to play once you get used to the keyboard controls. It is certainly a way of releasing your aggressions and no different than those shoot-'em-up games where you play the good guy and kill the aliens.

The graphics are a little disappointing. The display map and animation are done with animated character set graphics, but the display update is slow and cumbersome. As a translated Apple game, it does not take advantage of the Atari's fine scrolling capabilities. Instead, this game laboriously draws a new map once the monster goes off the edge of the screen. In a game that essentially runs in Real Time, this is somewhat distracting. Despite the game's rather slow play, it offers a lot of creativity, is challenging, and is well documented in a lengthy but humorous vein.

ULTIMA I

Company: Sierra On-Line

Language: BASIC & Machine

Hardware Requirements: 48K

Department: Entertainment

Sugg. Retail: \$39.95

Availability: 8

Disk or Tape: Disk

OVERALL RATING	A	DIFFICULTY	B	ORIGINALITY	A
PUZZLE QUALITY	C	EASE OF USE	A	DOCUMENTATION	B
TEXT QUALITY	N/A	VOCABULARY	B	HOLDS INTEREST?	A
GRAPHICS QUALITY	A	SAVE/RESTORE	A	VALUE FOR MONEY	A

Ultima I is an adventure game of truly epic proportions, consisting of three neatly integrated major games, each with a subset and end game thrown in for good measure. The game starts in the Medieval period. Armed with daggers and leather shields, and progressing through the space age with blasters and reflective suits, your *Ultima* role playing character evolves in experience and attributes through fifteen levels, finally arriving at the "ultimate confrontation" after a trip through time.

Ultima is perhaps the best yet fantasy role-playing game for the Atari, in that a variety of characters can be created and evolved. It is not a particularly thought-provoking or logic-puzzle game. The puzzles included are straightforward. The adventure's object and approach are easily deduced from the clues within the game. The challenge lies in its sheer weight and sequential evolution.

The above ground adventure is massive with continents, lakes, rivers, oceans, castles, and towns. Every castle has an individual ruler who is served by fulfilling quests, an imprisoned maiden to rescue, and a jester who is likely to steal your possessions. As you travel around the countryside (on a large scrolling map), you meet and fight various adversaries. The treasure won can be taken to different towns and traded in the various shops for armor, weapons, transportation, food, and magic. There is also a bar where the bartender can be a source of information. But be careful of the serving wench, she may roll you for all of your money. The town has guards to keep you honest in your dealings with the merchants.

The dungeon portion of the game is a slug-it-out-against-the-monsters scenario. The dungeon's levels, joined by ladders, are interconnecting hallways and doors done with straight line graphics and crudely drawn monsters. The system commands are limited to basic move, turn, and attack functions. Ladder up and down spells are buyable and relatively inexpensive. Their efficiency depends on your characteristics. You'll need plenty of food to proceed very deeply. There are many secret doors hiding additional treasure to locate in your quest.

Ultima is unique in that time passes as you grow in experience and strength. Although you begin with medieval weapons (such as swords and daggers) and use simple modes of transportation (e.g. horses); technological developments make new products available until you eventually reach the space age. Even then, *Ultima* isn't through. What lies beyond must be gained by playing the game.

The game comes on two disks, a master game disk and a master player disk. The entire adventure is quite large and takes a very long time to play. While it is a good game, it has some faults. The game could be improved by holding the number of monsters in each sea, dungeon, and land area to a fixed number so that one could eventually roam around more freely in order to finish the adventure more quickly once the novelty of the encounters has worn off. The game can (and should be) saved rather frequently; however, unfortunately, a game cannot be recalled except by hitting RESET or turning off the system power. Also, the "Q" key, which saves the game, is disadvantageously located close to ESC, another often-used command key.

Considering that the game involves eight castles, eight monuments, some 32 cities and dungeons, and an 8 by 8 sector space setting, it's too bad that there couldn't have been some slight differences between each object within the group. Interestingly enough, it's possible to steal an item that has not yet been invented from an Armourer or Weapons Dealer and which, therefore, he doesn't carry in stock. Despite these minor aggravations, *Ultima* represents a superior achievement that can be as much fun to play the second time around as it is the first.

DATESTONES OF RYN

Company: Automated Simulations

Language: BASIC

Hardware Requirements: 32K, disk drive or cassette

Department: Entertainment

Sugg. Retail: \$19.95

Availability: 6

Disk or Tape: Both

OVERALL RATING	C+	CONTROLLABILITY	B-	ERROR HANDLING	A
GAME CONCEPT	B	SKILL INVOLVED	C	DOCUMENTATION	B
CREATIVITY	C+	CHALLENGE	C	HOLDS INTEREST	C+
GAME DEPTH	C	GRAPHICS	C+	VALUE FOR MONEY	C+

Datestones of Ryn is the second of the Dungeonquest series of fantasy games. This is the first of their "mini-adventures," since the character is defined and a time limit of twenty minutes is imposed.

One spends time exploring a building filled with monsters and thieves that try to stop you from recovering the missing ten datestones. As in the others of the series, the positions of all objects and monsters are randomized in a set-piece map, which appears in sections as one explores. Fighting sequences are animated with shape tables.

See the review on *Temple of Apschai* by the same vendor for an even more extensive example of this type of program.

RESCUE AT RIGEL

Company: Automated Simulations

Language: BASIC

Hardware Requirements: 32K

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 8

Disk or Tape: Both

OVERALL RATING	C+	CONTROLLABILITY	C+	ERROR HANDLING	A
GAME CONCEPT	B	SKILL INVOLVED	C	DOCUMENTATION	B
CREATIVITY	B-	CHALLENGE	B-	HOLDS INTEREST	B
GAME DEPTH	C+	GRAPHICS	D	VALUE FOR MONEY	C+

This game, modeled after the successful Dungeonquest series, is the first in their Starquest series. It is a science fiction game where you, the hero, attempt to rescue 10 humans held captive in a pyramid shaped Tollah moonbase. Armed with a blaster and a powerpack supplying your laser, shield and bionic gear, you attempt to find the humans and teleport them back to your base ship. The moonbase floors are connected by graveshafts and each floor and room has enemy Tollahs, monsters and sentry robots who consider you the enemy. The user has 60 minutes to complete the mission.

All commands are entered by keyboard as single letter commands (i.e., B = Blast, S = Shields, etc.). A quick reference card is supplied. Since *Rescue at Rigel* was the first of the EPYX games on Atari, it has very poor graphics. Nonetheless, it is a challenging game even on the easiest level, and enjoyable to play.

ADVENTURE GAMES

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ADVENTURE GAMES: A REVIEW OF RESEARCH AND APPLICATIONS
The purpose of this review is to provide a comprehensive overview of the research and applications of adventure games. The review is organized into three main sections: (1) a review of the literature on the effects of adventure games on learning and motivation, (2) a review of the literature on the effects of adventure games on social skills and communication, and (3) a review of the literature on the effects of adventure games on problem-solving and critical thinking. The review concludes with a discussion of the implications of the research for the design and use of adventure games in educational settings.

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ADVENTURE GAMES

ADVENTURE

Company: Creative Computing Software

Language: Assembly

Hardware Requirements: 32K, disk drive or cassette player

Department: Entertainment

Sugg. Retail: \$25.00 disk / \$20.00 cassette

Availability: 9

Disk or Tape: Both

OVERALL RATING	A +	DIFFICULTY	A	ORIGINALITY	A
PUZZLE QUALITY	A	EASE OF USE	A	DOCUMENTATION	B
TEXT QUALITY	A	VOCABULARY	B	HOLDS INTEREST?	A
GRAPHICS QUALITY	N/A	SAVE/RESTORE	A	VALUE FOR MONEY	A

Adventure is the Granddaddy of all adventure text games. It was originally written in Fortran in the mid-1970's for the Digital Equipment PDP-11 series of computers by Crothers and Wood. In it, you confront a unique world consisting of 130 rooms, 15 treasures, 40 objects useful to your quest, and 12 obstacles.

The computer represents your eyes and hands, dutifully responding to your two word instructions as to which direction to go, and when and how to manipulate the objects you encounter. *Adventure* starts with a message: "You are standing at the end of a road before a small brick building. Around you is a forest. A small stream flows out of the building and down a gully." After describing what you can see, the computer awaits your order to enter the nearby building or go off to the (N)orth, (S)outh, (E)ast, or (W)est. With any kind of luck, you'll find your way to an enormous underground cavern (which is beautifully described). The many rooms and passageways contain treasures for you to find, a variety of none-too-savory inhabitants to outsmart, and pitfalls to be avoided. Violence and the warding off of monsters are not a major part of *Adventure*, but you can manage to kill yourself if you aren't careful. The snares are not random between games; and once you learn how to deal with the trolls, dwarves, the dragon, the pirate, and so forth, you will be better prepared for your next inevitable bout with them.

Adventure is highly addictive. It definitely should be mapped by all adventurers. Many hours can be spent obtaining ALL the treasures, and in attempting to become a Grand Master, after which you are borne off on the shoulders of the cheering elves. "Winning" depends upon your perspective, but the score is accumulative as you progress. Sometimes you receive points for solving a particular puzzle, enabling you to reach a new passage in the cavern; but points are primarily accumulated for finding treasure and returning it to the building. The game, which can literally take days to play, can be saved at any point.

This game is definitely a classic. The adventure is very logical and very enjoyable to play. While it may not be a beginner's game, it can certainly be played by patient and persevering adventurers of all levels of skill.

SURVIVAL

Company: United Software of America

Language: BASIC

Hardware Requirements: 40K, disk drive.

Department: Entertainment

Sugg. Retail: \$24.95

Availability: 4

Disk or Tape: Disk

OVERALL RATING	C +	DIFFICULTY	C +	ORIGINALITY	B
PUZZLE QUALITY	C +	EASE OF USE	B -	DOCUMENTATION	B +
TEXT QUALITY	C +	VOCABULARY	C	HOLDS INTEREST?	C +
GRAPHICS QUALITY	N/A	SAVE/RESTORE	B	VALUE FOR MONEY	B -

Imagine being dropped into a mountainous area and searching for diamonds. Your are running short of food and water, and must find more in order to survive and continue your search for the treasure. All this must be accomplished in *Survival* within a prescribed time limit.

The game features displayed elapsed time, changing from day to night and also recording weather changes. There are nine levels of difficulty with the higher levels presenting more hazards, including some formidable predatory creatures. The adventure is text only, however, it does have sound effects, and the background screen color changes. Vocabulary is limited. This adventure should be mapped, and it is best to do so on the easiest levels (diamonds are present only on the higher levels). You can save the game at any time, at which point and score will be given.

Survival, in short, has its high points.

DRAGON'S EYE

Company: Automated Simulations (EPYX)

Language: BASIC

Hardware Requirements: 40K, disk drive.

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 7

Disk or Tape: Disk*

OVERALL RATING	C	DIFFICULTY	C	ORIGINALITY	D
PUZZLE QUALITY	C	EASE OF USE	B	DOCUMENTATION	A
TEXT QUALITY	B	VOCABULARY	N/A	HOLDS INTEREST?	C
GRAPHICS QUALITY	B	SAVE/RESTORE	C	VALUE FOR MONEY	C-

Dragon's Eye is a relatively straightforward and easy to play maze adventure style game. The objective is to help a good magician who is the enlightened ruler of the Seven Provinces by finding the bad magician's power-source gem (the dreaded Dragon's Eye) and returning before 21 variable-length days have elapsed. Failure to accomplish this task will naturally result in the complete ruin of the provinces. Since neither the Evil One nor the effects of his power are ever encountered, the real object is simply to enjoy the game and try for as high a score as possible.

The strength of this game is in its well done graphics. The single screen map of the provinces is nicely done, but it's the encounters with various monsters and the spell-casting graphics that will endear the game to the younger generation. The monsters are amusingly realistic and well-animated, and clever captions go along with the battle.

The challenge is minimal and there are no surprises from one game to the next, although there is a well-hidden degree of interaction between various aspects of the game. These depend largely on the weapon you choose, how you employ it, and the nature of various treasures you will hopefully uncover and covet. The pace of the game is unfortunately slowed in the "Examine-ing" of the different locations, because of Atari BASIC's speed and the liberal use of randomizing functions.

Nevertheless, kids will get a kick out of the *Dragon's Eye*; it should keep them occupied for hours, although a game takes only 30 minutes or so. Adults will also enjoy a game or two by dint of observing the battles, and following the graphics utilized in the spell casting; besides, they will have to help the kids learn to play because the otherwise excellent documentation was made difficult to understand in an attempt to make it "cutsey" by writing it in a poor man's version of Old English. Thus, hie ye to game's yonder chamber, and savor the rewards!

KING ARTHUR'S HEIR

Company: Automated Simulations

Language: Atari BASIC

Hardware Requirements: 40K, Disk Drive

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 7

Disk or Tape: Disk

OVERALL RATING	C-	EASE OF USE	B+	ERROR HANDLING	B
GAME CONCEPT	C	SKILL INVOLVED	D	DOCUMENTATION	C
CREATIVITY	B-	CHALLENGE	D	HOLDS INTEREST?	F
GAME DEPTH	D	GRAPHICS	B-	VALUE FOR MONEY	D-

King Arthur's Heir is a single-player graphic adventure, written by the author of *Crypt of the Undead* and *Escape from Vulcan's Isle*. This time, your quest is to find the sacred Book of Truth and return it to King Arthur. Once you have done so, the king will be so grateful that he will immediately name you as heir to the throne, which explains the game's title.

In structure and play, *Heir* is the twin of *Escape*, and first cousin to *Crypt*. The game begins with the display of a picture of a castle, accompanied by the most painful rendition of the theme from *Camelot* I ever hope to encounter. Using your joystick, you wander from location to location, fighting dragons and evil wizards and gathering objects which will help you to get past obstacles.

None of the puzzles present any great difficulty, and you should be able to find the necessary treasures and return to the king in less than an hour. Do so, and you get yet another picture of a castle and another dreadful chorus of *Camelot*. This is followed by the display of your final score.

One wonders about the reason for reporting this score. To complete the game, you will have had to solve all of the puzzles it contains. It seems unlikely, therefore, that anyone would be inclined to try to improve his score other than by completing the entire game. Perhaps a rating scale could have been provided to give you some idea of what your score really means.

In any event, *King Arthur's Heir* cannot be recommended. It requires neither hand-eye coordination, nor problem solving ability. Like *Crypt* and *Escape*, it is a case of a good manual being packaged with a boring game.

CRYPT OF THE UNDEAD

Company: Automated Simulations
Language: Atari BASIC
Hardware Requirements: 40K, disk drive.

Department: Entertainment
Sugg. Retail: \$29.95
Availability: 7
Disk or Tape: Disk

OVERALL RATING	C	CONTROLLABILITY	B+	ERROR HANDLING	B
GAME CONCEPT	B-	SKILL INVOLVED	D	DOCUMENTATION	C
CREATIVITY	B-	CHALLENGE	D	HOLDS INTEREST?	D
GAME DEPTH	C-	GRAPHICS	B-	VALUE FOR MONEY	D

Crypt of the Undead is a one-player, Real Time adventure game. Locked inside a cemetery, your player has twelve hours of game time (as opposed to clock time) to find his way out. Along the way you will collect treasure (gold pieces), food (a steady diet of bagels), and you may even have to fight off various representatives of the "undead."

You control your player's movement by joystick. Wandering around the cemetery, you will discover objects that will permit entry into some of the buildings within the grounds. To pick up an object (or even to start a fight with a creature), your character must first touch that object on the screen.

The graphics in *Crypt* were produced by redefined character sets. So all of the trees, headstones, and walls look identical. After about twenty minutes of play, scenery which in the beginning amused soon begins to grate on your nerves.

The biggest complaint I have about *Crypt* is that it demands no skills beyond patience and persistence. The outcome of your battles with the undead is determined by your relative power level, and requires neither strategy nor manual dexterity. Survive your first few encounters, and you will quickly reach the "indestructible" stage. Discover a key, and you will be told the name of the building to which it belongs. Go to that very building and search until you find another object which will point you to your next goal. In fact, the only intentional puzzle in *Crypt* can be solved by following the instructions given in a poem you will trip over along the way.

There is only one challenging (and purely accidental) puzzle in this game. The disk is double-sided. All of the above ground action is described on side one, and the below ground on side two. When you finally reach the end of the game (which takes place in one of the underground rooms), the program will try to write a small file to the diskette before displaying "The End." Unfortunately, Automated Simulations placed a sticker over the write protect slot for side two. As long as that sticker remains, it is not possible to finish the game.

The instruction booklet, although interesting, does little to explain the game. Most of its length is taken up with a story which does a good job of setting the mood, a mood that the game itself is unable to sustain. It's too bad that this slim volume is the only aspect of *Crypt of the Undead* which is worthy of praise.

ESCAPE FROM VULCAN'S ISLE

Company: Automated Simulations
Language: Atari BASIC
Hardware Requirements: 40K

Department: Entertainment
Sugg. Retail: \$29.95
Availability: 7
Disk or Tape: Disk

OVERALL RATING	C	EASE OF USE	B+	ERROR HANDLING	B
GAME CONCEPT	C	SKILL INVOLVED	D	DOCUMENTATION	C
CREATIVITY	B-	CHALLENGE	D	HOLDS INTEREST?	F
GAME DEPTH	D	GRAPHICS	B-	VALUE FOR MONEY	D-

Escape from Vulcan's Isle is a single-player graphic adventure written by the author of *Crypt of the Undead*. In this game, you must find a way to escape from Vulcan's Isle. To help you in this effort, village shops provide a variety of tools for you to purchase. This, of course, requires money, which may be found throughout the island in the form of gold coins.

In most respects, *Escape* is little different from *Crypt*, and requires no more thought or effort to play. Explore every part of the island, pick up anything that looks interesting, listen to every clue you are given and follow it to the letter, and you will be off the island in record time. It took me less than two hours from the first time I booted the disk to complete this game.

If *Escape* has an audience, it would be among those who are old enough to read, but young enough to get frustrated easily. Anyone over the age of ten is likely to be highly unimpressed.

GALAHAD AND THE HOLY GRAIL

Company: APX

Language: Machine

Hardware Requirements: 32K, disk drive.

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 8

Disk or Tape: Disk

OVERALL RATING	C	DIFFICULTY	A-	ORIGINALITY	B-
PUZZLE QUALITY	D	EASE OF USE	B	DOCUMENTATION	D-
TEXT QUALITY	N/A	VOCABULARY	N/A	HOLDS INTEREST?	B
GRAPHICS QUALITY	B-	SAVE/RESTORE	N/A	VALUE FOR MONEY	C+

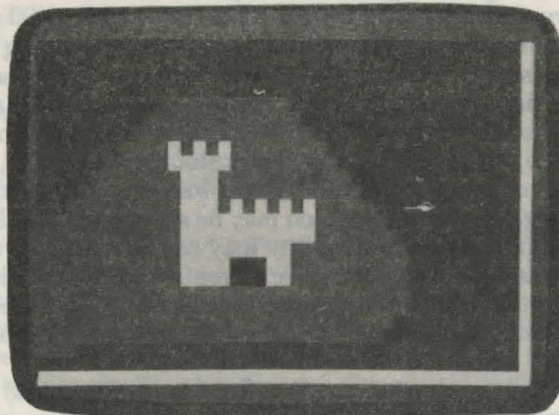
Galahad and the Holy Grail is a Real Time arcade adventure game in which you, as one of the Knights of the Round Table, venture on a quest to find and return the Holy Grail to the white chapel. It is a very imaginative game, becoming quite obvious as you explore it that the author modeled it after the film adventures of "Monty Python and the Holy Grail." He has included objects like the Holy Hand Grenade, and enemies such as the Rabbit.

The game can be played on two levels of difficulty. The easiest, indicated by a black chapel, does not require you to obtain the various keys that unlock the portals connecting various segments of the adventure. While this may simplify the game somewhat, this game is still incredibly difficult, because of the random Real Time aspects of the fighting portions of the games. Couple this with an exploration of the adventure maze full of traps and secret portals (found by the minesweep method or blind luck rather than by logic), then you have a very, very tough and frustrating game.

I hate to criticize a creative game, but *Galahad* has features that seem illogical to the player, features not explained in the very sparse documentation. Probably the most irksome aspect is that each time you encounter an enemy knight the item you are carrying magically disappears and a sword appears in your hand. Fine, but where did that item disappear to? Actually, it changes place with the sword. Well, that is nice, assuming you remember where you left the sword. But in reality, since you get killed often (this game allows an infinite number of lives), in the room with the two spiders, for example, items begin to pile up in that room. Another irksome feature is being magnetically pulled into walls if you touch some of them. While at times this may be helpful in reaching some room that you might never have otherwise found, sometimes the wall is deadly and the item that you were carrying becomes embedded permanently (or at least until you reboot the disk). There is no puzzle content to finding anything. It just takes exhausting searching by the minesweep method. I searched the rooms in one castle numerous times and didn't find the secret portal until Atari was nice enough to furnish a complete map and hint sheet to *Galahad*. I must admit that the game makes a lot of sense once you have the map. You begin to realize that there is a way out of that part of the maze if you only searched longer for that secret portal.

Now that I have the map with the locations of all the secret portals, three neighborhood teenagers and myself treat this game as a very frustrating arcade game. While we are sure the game is possible to finish, having spent more than a month trying to kill three knights, two spiders, a very quick rabbit, a deadly dragon, and a lightning fast spider, none of us have succeeded in killing or eluding all in any one lifetime. Each time you are killed you start again at the chapel. We have suffered the frustration of having an enemy knight randomly appear on top of us just as we changed rooms (this is not fair), and rooms scrambled by an exploded hand grenade but with our enemy still alive.

I can't say the game isn't fun or you would question why we are still playing it. But buyers should be aware that the game is exceptionally difficult and challenging, yet flawed in many ways. The documentation leaves a great deal to the imagination. At the least it should have sets of hints for different player levels. I have to hand it to the author for creating a very imaginative game, but the it relies too much on luck and too little on logic to be considered a good adventure game.



GALAHAD & HOLY GRAIL

ZORK

Company: Infocom
Language: Assembly
Hardware Requirements: 40K, Disk Drive

Department: Entertainment
Sugg. Retail: \$39.95
Availability: 8
Disk or Tape: Disk*

OVERALL RATING	A+	DIFFICULTY	B	ORIGINALITY	A
PUZZLE QUALITY	A	EASE OF USE	A	DOCUMENTATION	B
TEXT QUALITY	A	VOCABULARY	A+	HOLDS INTEREST?	A
GRAPHICS QUALITY	N/A	SAVE/RESTORE	A+	VALUE FOR MONEY	A

Zork is THE definitive adventure game. Only the original *Adventure* program and the Scott Adams' series are comparable in challenge and complexity. It has the monstrous scope, fundamental tenets, and beautifully descriptive prose of *Adventure*, plus a complex enough "puzzle" structure to warm the heart of any Adams fan.

The scenario is familiar, but the specifics are totally new and different. Not surprisingly, one starts at a deserted house which leads (in hopefully short order) to a cavernous underground complex replete with varied and sundry treasures, a hungry Cyclops, an audacious Thief, a testy Troll, enchanted items (like mirrors and certain knives), an underground lake, dam, and river, to say nothing of the coal mine, chapel, maze, and on and on ad infinitum, even unto the Gates of Hell.

The split-screen, all-text, and silent display is neatly formatted and scrolls very well. The vocabulary is out of this world; by far the most extensive yet encountered. Compound and multiple commands are accepted and individually acted upon. For example, "Take all but shovel and pump. Enter the boat. Examine Scarab" is a valid, single command line. It will even answer a few abstract questions such as "What is xxx?" and "Where is yyy?" Through it all, the speed of the game is satisfyingly fast. Well conceived system commands permit diagnosis of your state of health, control over the degree of text verbosity, enabling/disabling a printer from within the program, and saving a game's status (only one) to a separate disk.

Zork will require at least the same amount of time (or more) than was required to achieve a perfect score in *Adventure*. For those of fainter heart and lesser patience, Infocom's well written documentation advises that a price list is available for various hints and maps. But whether you tough it out or not, the best news is that this is only Part I!

ZORK II

Company: Infocom
Language: Assembly
Hardware Requirements: 32K, Disk Drive

Department: Entertainment
Sugg. Retail: \$39.95
Availability: 8
Disk or Tape: Disk*

OVERALL RATING	A+	DIFFICULTY	B	ORIGINALITY	A
PUZZLE QUALITY	A	EASE OF USE	A	DOCUMENTATION	B
TEXT QUALITY	A	VOCABULARY	A+	HOLDS INTEREST?	A
GRAPHICS QUALITY	N/A	SAVE/RESTORE	A+	VALUE FOR MONEY	A

Zork II comes reasonably close to filling the large shoes left by the first *Zork*. It continues the all-text, split-screen adventure, starting in the Stone Barrow where *Zork I* left off. There are another 400 points worth of treasures to find and tricky activities to accomplish before achieving the primary mission of becoming "Master of the Domain", which is currently under the control of the senile Wizard of Frobozz. Whereas *Zork* was quite faithful to the original mainframe *Zork*, significant changes have been included in *Zork II* to the extent that it is almost a "new" game for players expecting the inclusion of the "second-half" of the mainframe game. The changes are revealed in the inability to return to the White House, although you may get a final glimpse of it, briefly and from afar.

Zork II has the same outstanding command flexibility, wry humor, and word recognition of *Zork*. A well-conceived addition incorporates eight game scenarios which may be saved and quickly recalled at any time, whether you've been killed or not. The overall interest-holding ability may not be as intense as the original possibly due to a certain jaded attitude acquired from too much quantitative adventure game-playing by this reviewer. The initial phase of the contest seems to drag a bit, until the Dragon is conquered and a riddle is completely solved. An especially interesting challenge, at which time a "save" is suggested, occurs at the point in which the demon is ready to do your bidding.

In comparison to *Zork*, this game is somewhat smaller (by about 75 rooms) and has only one small, but unmappable maze, which presents one of the more difficult puzzles. Even after you amass your 400 points, there is still a final puzzle to solve before you become a "Superior Adventurer." At that point, you also learn of the pleasant surprise that *Zork III* is coming!

ZORK III

Company: Infocom, Inc.

Language: Assembly

Hardware Requirements: 40K, disk drive.

Department: Entertainment

Sugg. Retail: \$39.95

Availability: 8

Disk or Tape: Disk*

OVERALL RATING	A+	DIFFICULTY	A-	ORIGINALITY	A
PUZZLE QUALITY	A	EASE OF USE	A	DOCUMENTATION	A
TEXT QUALITY	A	VOCABULARY	A+	HOLDS INTEREST?	A
GRAPHICS QUALITY	N/A	SAVE/RESTORE	A+	VALUE FOR MONEY	A

Zork III completes the classic all-text adventure originally written in 1979 on the DEC PDP-11. Like its predecessors, there is a considerable amount of "new" material incorporated not present in the mainframe version, all written in the graphically imaginative style with which even the Atari's Hi-Res pages cannot compete.

When *Zork III* begins, you are at the bottom of a long staircase (which should strike a responsive chord to those who have completed *Zork II*), equipped only with your lamp and your imagination. At the end, you are in the Treasure Room with all of the treasures of Zork at your disposal, including a controlling interest in Frobozzco International. In between, you may hear, or see and hear, the fabled Dimwit Flathead, glimpse into a ritualistic scene from a to-be-hoped-for *Zork IV*, and speak with — or even command — the omniscient Dungeon Master himself. All along the way you will enjoy the excellent save-game implementation, command parser, and vocabulary characteristic of Infocom programs.

Zork III, with its 58 mappable locations (excluding the 8 by 8 matrix "Royal Puzzle"), is slightly smaller than its predecessors; but it is rich in subtle detail. It is perhaps the most entertaining of the three, with very logical, highly interactive puzzles. It is possible to successfully complete the game and still miss much of this detail: you may never find that peculiar set of conditions which can cause a sign to change in its inscription, hinting gently that you may have gone astray. There are numerous, amusingly tongue-in-cheek responses to inputs that otherwise get you nowhere. Overall, the game is somewhat more difficult than *Zork II*, due to several individually difficult puzzles, and also because of their high degree of interaction. You can easily find yourself in a no-win situation, a condition you may not realize until the game is replayed, making alternate life-and-death decisions which are available only once.

The conclusion provides an unexpected and novel twist, but to get that far requires an equally unusual approach as far as most adventures are concerned. Don't count on the seven point score system giving you any real guidance as to your true progress. It is relatively easy to have all seven points and yet find yourself in another no-win situation. The points, like other elements of the game, only prove that things are not always what they seem. Indeed, the toughest puzzles award no points, and several toughies remain unsolved even once all the points have been awarded.

Zork III represents a highwater mark for subtlety and logic, and is a Four Star must, not only for previous Zorkers but also for anyone who enjoys adventure games or pleasurable mental stimulation. The game is a separate and complete game unto itself, requiring no knowledge of *Zork I* and *Zork II*. However, for maximum enjoyment and imaginative continuity, it is recommended that they be played in sequence.

WIZARD'S GOLD

Company: APX

Language: BASIC

Hardware Requirements: 24K, disk drive.

Department: Entertainment

Sugg. Retail: \$15.95

Availability: 8

Disk or Tape: Disk

OVERALL RATING	C	DIFFICULTY	D	ORIGINALITY	D
PUZZLE QUALITY	C	EASE OF USE	A	DOCUMENTATION	B
TEXT QUALITY	D	VOCABULARY	C	HOLDS INTEREST?	C
GRAPHICS QUALITY	C-	SAVE/RESTORE	N/A	VALUE FOR MONEY	C+

If you are an experienced adventurer, this is not a game for you. The hints are obvious, and it is almost impossible to be killed, which, as every adventurous type knows, is part of the challenge. If you are not an experienced adventurer, then perhaps this game would be a good one to start you on the road.

Some screen problems are evident. When a line comes to an end, it will break off in the middle of a word. In addition, there are large gaps between the words, making it difficult to read the screen and play the game. One plus in this game is that it provides the player with a lot of rooms to move around in, but if your map is not accurate, you will simply go in circles.

For the young aspiring adventurer, finally, this is a good game to start with despite its lack of depth and other faults.

SCOTT ADAMS' ADVENTURE SERIES

Company: Adventure International
Language: Assembly Language
Hardware Requirements: 32K, disk drive

Department: Entertainment
Sugg. Retail: \$39.95 (3 games)
Availability: 4
Disk or Tape: Disk

OVERALL RATING	A to C	DIFFICULTY	A to C	ORIGINALITY	B
PUZZLE QUALITY	A to C	EASE OF USE	A	DOCUMENTATION	C
TEXT QUALITY	B	VOCABULARY	B	HOLDS INTEREST?	B+
GRAPHICS QUALITY	N/A	SAVE/RESTORE	A	VALUE FOR MONEY?	A

(*Note on Grading:* This is a series of 12 games, and the rating above represents an average. The difficulty of Adventures 1-6 is a "C"; Mystery Fun House and the two parts of Savage Island rate an "A" level of difficulty; the Pyramid of Doom is a "B"; Mission Impossible, Golden Voyage, and Strange Odyssey were each given a "C." The Overall Rating of most adventures was a "B," with Strange Odyssey, Mystery Fun House, and Savage Island I leading the pack with two "B+"s and an "A-," respectively. Savage Island II fared rather less well, given a "C.")

Scott Adam's Adventure Series are puzzle games, each set in a different fantasy adventure scenario. The all-text display states what you can see and where the visible exits are. Two-word instructions lead you through a 20 to 30 call matrix, permitting manipulations of the various objects you encounter and leading to an eventual solution. The puzzle aspect, much more prevalent than in other adventure games, comes from using the objects to further your progress or avoid being killed. (Doesn't everyone know that a mummy lurching for your throat can be put to sleep by pouring water on his burning terra leaves? You did bring along the water, didn't you? The water was easy to find, but the empty object to carry it in was either somewhere else or hard to find.)

You may be able to solve a game in four to eight hours if you are lucky, clever, and take advantage of the "Save Game" command periodically to avoid having to retrace all the correct steps you make up to the point you were suddenly wiped out. If you enjoy resolving a myriad of interactive, thought-provoking exercises in deductive logic and have the patience of a chess master, it's easy to become helplessly addicted to those challenging games.

The program responses are exceptionally fast and often humorous. Hints and clues, when given, are always obtuse. There are no graphics or sounds, and little use is made of color. As of this printing, the series includes 12 full length adventures, all devilishly devious, delicately intricate, and deceptively involved. One hopes that Scott Adams' imagination will continue to produce more in the series and at his current level of quality.

ADVENTURES 1, 2, and 3

Adventure Land. This game has the distinction of being the first of the good puzzle-adventure games. There are thirteen treasures, above and below ground in this adventure's 29 mappable locations. Some treasures just lie around for the taking, but you may end up a scratching and screaming lunatic before you can truly deal with the bear. Overall, not too difficult, and a good introduction to the tougher games in the series.

Pirate's Cove. You must magically travel between a London flat and an island on your way to locating two treasures. It offers a smooth storytelling style, and its 25 locations are populated by such wacky characters as a talkative parrot, a mongoose that becomes a failure in life, and a drunken pirate who continually wanders off. The task of building a ship on the first island is a good example of a well done interactive puzzle. It is roughly as difficult as *Adventure Land*, in slightly different ways, and fun to play.

Mission Impossible. You must stop the saboteur from bombing the Nuclear Reactor. To complicate matters, you are a walking time-bomb, and the saboteur dies before you get very far. Three differently colored rooms must be entered in a specific sequence in this 21 location game. There's nothing new or particularly difficult here, but things pick up in the last of the rooms, and the game can have either an explosive or rather watery finish.

ADVENTURES 4, 5, and 6

Voodoo Castle. You are assigned the not-so-simple task of removing a curse from the Count Christo. The puzzle takes place in the 24 rooms, hallways, and darkened dungeons of Voodoo Castle. There is a Kachina Doll, a Juju Man, a book for removing curses, and much more. There are a few tricky spots, but the puzzle is solvable. It is very well done and fast moving, with the best story line in the entire series.

The Count. While this game has only 19 locations with which to contend, the new element of time has been introduced. Activities must be time-phased over several days and (parts of) nights in order to kill Count Dracula. It's slightly less complex in format than other games, but unique in that "things change" between night and day, and between successive days.

Strange Odyssey. You're on an alien planet in a damaged spaceship. You need to find five treasures, fix your spaceship, and return to home base. The first four treasures aren't too hard to find, once you figure out how to really move about in the 22 locations of this game. But finding the fifth treasure is a dog of a job, and it might be a pretty cold day before you get it, even after you learn what and where it is.

ADVENTURES 7, 8, and 9

Mystery Fun House. Spies have hidden secret plans that must be retrieved from a carnival Fun House, which consists of 37 locations and a rather messy four-element maze. *Mystery Fun House* is devilishly clever, fun to play, challenging to unravel, and difficult to bring to a successful conclusion. It is tricky to get in, easy to get thrown out, and more than one door may prove frustrating. It's this reviewer's choice for the best of all twelve in the series.

Pyramid of Doom. Thirteen treasures are scattered about in an unexplored Egyptian pyramid. This 26-location game starts out simply enough, but gets very difficult in spots; one treasure, for example, is in a logical spot where you cannot see it, while others are guarded by a stone-hearted Iron Pharaoh. Have fun. And good luck with the Purple Worm!

Ghost Town. The locale is an Old West ghost town, complete with saloon, hotel, telegraph stations, jail, Boot Hill, and a piano-playing ghost. Again, there are 13 treasures to find. It's difficult in some phases, but unique in having a game within a game. Once you've solved this 39-location adventure, try doing so again by finding the optimum sequence of moves that will earn you the maximum bonus. In a typical Adams' switch, there is also opportunity for revenge on the Purple Worm.

ADVENTURES 10, 11, and 12

Savage Island, Part I. If you aren't already familiar with this Adventure series, then this game isn't the one to start with. This one is for aficionados who easily solved *Fun House* and casually breezed through *Ghost Town!* Adams' saga is more devious, treacherous, involved, tricky, and underhanded than ever. *Savage Island* is a long succession of extraordinary puzzles, and entails considerable retracing of steps in and around the island. The object is to obtain the one "password" to permit entry into Part II of this game.

Savage Island is more intricate than most games, and some parts move quickly and easily. The difficulty lies in getting to the easy part, which follows one of the toughest and most intricate sequences that Adams has yet conceived. To help you get into the tough part (before you reach the dinosaurs, UFOs, pirates, and force fields), remember that some sickly animals can be cured with a dose of salts.

Unfortunately, Adams has somewhat flawed a potentially perfect masterpiece by inhibiting the save-game feature during the early, surprisingly difficult part of the game. This, coupled with two very dangerous killers who appear at random (like the Ice Hound of *Strange Odyssey*), often prevents you from getting back to the place you had previously been in order to deal with your tormentors. The resulting frustration kills much of the interest and perseverance required to solve any Adams adventure. It can be done, however; and with the restoration of the save-game aspect, *Savage Island, Part I* could become the type of fun and challenging adventure enigma to lead this excellent series.

Savage Island, Part II. The second part of this game starts out with a bang, so to speak, while displaying the admonition that "Part I was a piece of cake compared to what you are about to go through." Playing was so tough that it required 30 minutes of struggling just for this reviewer to survive the first move, another 30 minutes for two more moves, and another three hours to get up to five moves! Note that Part I must be conquered in order to gain the necessary password to get into Part II (although the reason for this isn't clear, since the games have relatively little in common, except for the Pirate).

Golden Voyage. This game is another matter. It's one of the easiest of Adams' puzzle games almost to the end, and then it becomes only a little harder but a lot more interesting. You are given three days to find the potion required to restore the aged king's youth. It runs a bit slower than earlier games, and as a consequence the upper screen display is quite jerky in updating. The reason for these deficiencies may well be that Adams has used a common assembly language shell for all his adventures, resulting in certain execution inefficiencies, at least in this particular "patched-in" game.

In general, newcomers to Adams' puzzle games would be better advised to cut their teeth on earlier editions; although *Golden Voyage* is close to being complex enough to provide the necessary "training." Even then, the *Savage Islands* are almost too tough, except for the dedicated and somewhat masochistic expert adventurers.

CASTLE

Company: Atari Program Exchange

Language: BASIC

Hardware Requirements: 24K, disk drive.

Department: Entertainment

Sugg. Retail: \$15.95

Availability: 8

Disk or Tape: Disk

OVERALL RATING	B-	DIFFICULTY	C+	ORIGINALITY	B-
PUZZLE QUALITY	B-	EASE OF USE	C+	DOCUMENTATION	C-
TEXT QUALITY	C	VOCABULARY	C-	HOLDS INTEREST?	C+
GRAPHICS QUALITY	N/A	SAVE/RESTORE	N/A	VALUE FOR MONEY	B-

In this all-text adventure your task is to discover the exit to the castle you've been imprisoned in by a nasty wizard. Not so simple a task, and you must call upon your ingenuity to get around the 19 mappable locations within the castle. There are two "dummy" exits to delay the unwary player, and some of the clues and objects are well hidden. Unfortunately, for the beginning adventurer, a save/restore feature is absent.

This game will provide a couple of pleasurable hours for the budding adventurer.

SOFTPORNO ADVENTURE

Company: Sierra On-Line

Language: BASIC

Hardware Requirements: 40K, Disk Drive

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 8

Disk or Tape: Disk

OVERALL RATING **A -**
PUZZLE QUALITY **A**
TEXT QUALITY **B**
GRAPHICS QUALITY **N/A**

DIFFICULTY **C**
EASE OF USE **A**
VOCABULARY **B**
SAVE/RESTORE **C -**

ORIGINALITY **A**
DOCUMENTATION **C**
HOLDS INTEREST? **A**
VALUE FOR MONEY **A**

Softporn Adventure is a moderately difficult, but challenging adventure game with several unique twists. One is the bizarre concept of a game which requires you to find and seduce girls. This all-text, split-screen fantasy resembles the Scott Adams' adventures, both in format and puzzle concepts. While not a large, epic-length game (30 mappable locations), the puzzles generally require multiple operations and objectives to solve. A moderate degree of disk interaction calls in lower-screen descriptions with a tongue-in-cheek tone that would be PG-Rated, while user input can be X-Rated. Responses for some re-solved puzzles are quite amusing and surprising.

The game incorporates both blackjack and slot machine games; however, their formats are not nearly as imaginatively applied in using the text page as are some of the other responses. An occasional fatal bug may occur just prior to giving the girl in the Disco the wedding ring — saving the game just prior to this is highly recommended. There is also a semi-bug associated with the Preacher — regardless of how much money you may have when it's time to pay him off, his fee must be won from gambling proceeds after he asks you for it. The game can be saved.

Overall, *Softporn Adventure* is a fun game, presenting a challenge to even hard-core Adams' fans. It's also a good game on which would-be adventurers can cut their teeth, as it is an excellent example of a challenging, but quite solvable puzzle game.

SNOOPER TROOPS #1

Company: Spinnaker Software

Language: BASIC

Hardware Requirements: 40K, disk drive

Department: Entertainment

Sugg. Retail: \$44.95

Availability: 5

Disk or Tape: Disk

OVERALL RATING **B +**
PUZZLE QUALITY **C +**
TEXT QUALITY **N/A**
GRAPHICS QUALITY **B**

DIFFICULTY **C**
EASE OF USE **A**
VOCABULARY **N/A**
SAVE/RESTORE **N/A**

ORIGINALITY **B**
DOCUMENTATION **B +**
HOLDS INTEREST? **B**
VALUE FOR MONEY **C**

An educational program that teaches an organizational approach to deductive reasoning along with a bit of mapmaking doesn't always have to be dull and tedious learning. Spinnaker proves the point with a new series of interesting educational programs called *Snooper Troops*. The first, a mystery called *The Granite Point Ghost* by Tom Snyder, is well suited to students in grades four through eight. Besides the general learning value that it imparts in the process of solving a mystery, it is great fun to play. In fact, many of the parents will become involved solving the mystery too.

The game, in Hi-Res graphics, takes place in the town of Granite Point. The mystery involves a family that has moved into a large mansion in a small town. For several weeks strange things have been happening late at night. Some say the house is haunted, but maybe someone is just trying to give the family a bad scare. Now that a valuable Siamese cat is missing from a locked bedroom, a Snooper Troop detective has been called in on the case. You play the detective.

The detective gets to drive around town in his "Snoomobile," mapping the town as he goes, and taking statements from suspects. He can make telephone calls from booths to suspects, informers, or the infamous Mr. X. He can even snoop or search a suspect's unoccupied home.

The house snooping is possibly the most enjoyable part of the entire game. The houses are dark, but you have a flashlight. When you enter, the screen displays the walls of the house and the clues along with question marks. You must move to the question mark and take a picture with your "Snoomatic" camera, then exit without being caught. It's rare to be caught (you usually plan the search on a night when the suspect is known to be out); but if you are caught, you simply start over the following night.

Each of the suspects has three clues to give, each phone contact another three, and each home searched yields a final three. All are numbered, and you must write them down in your clue book. Additionally, there are special message clues that you get through the "Snoopnet" computer at headquarters, so you must hurry back before the end of the day to pick up your messages. Drive carefully and not too fast, for if you crash, you'll end up losing valuable time at the tow yard.

The mystery is very structured. Once you're ready to make an accusation, you do so. However, you must eliminate every other suspect by identifying the clue that exonerates him or her, and then name the means and motive of the guilty party. This is not a simple guessing game, but a serious challenge for the child.

The game is played on the keyboard using the A, W, D, X keys for steering, the S key for stopping, and the space bar for entering and leaving headquarters, phone booths, and houses. The space bar also turns the flashlight on and off and takes "Snoophots." As our Snoopmobile travels around town, the screens change from one view to the next. Although the game isn't in real time, and is the same each time you play, a clock ticks off the hours and days of the week. Messages interrupt frequently with news and tips. Sometimes I think these messages are distracting, but this is true in all police and detective work. Incidentally, there is no game save option.

The game is exceptionally well-done. It is cute, obviously appropriate for children, and not too difficult. Although this is not geared for a classroom environment, it certainly is useful for teaching the art of solving a mystery in the home.

ALIEN EGG

Company: Atari Program Exchange

Language: BASIC

Hardware Requirements: 24K, disk drive

Department: Entertainment

Sugg. Retail: \$15.95

Availability: 8

Disk or Tape: Disk

OVERALL RATING	C	DIFFICULTY	C-	ORIGINALITY	C+
PUZZLE QUALITY	C	EASE OF USE	B-	DOCUMENTATION	C-
TEXT QUALITY	C	VOCABULARY	C-	HOLDS INTEREST?	C+
GRAPHICS QUALITY	N/A	SAVE/RESTORE	N/A	VALUE FOR MONEY	C

Alien Egg is an all-text adventure with 27 mappable locations. You find yourself all alone in your spacecraft, and you must obtain certain items before exiting to the planet below. There, you must explore the surface of an alien world in search of the Alien Egg. Find it, and return it to your ship where it must be placed in the biology lab for analysis.

This adventure has a very limited vocabulary (which I find typical with APX adventures), and has no save/restore option. The game plays well in spite of its limited vocabulary, and the hints you find at each location are often very clever. This rates as an introductory adventure, appealing to all ages, although an experienced adventurer should be able to solve it in less than two hours.

SULTAN'S PALACE

Company: Atari Program Exchange

Language: BASIC

Hardware Requirements: 32K, disk drive.

Department: Entertainment

Sugg. Retail: \$15.95

Availability: 8

Disk or Tape: Disk

OVERALL RATING	C+	DIFFICULTY	C+	ORIGINALITY	C+
PUZZLE QUALITY	C+	EASE OF USE	B-	DOCUMENTATION	C
TEXT QUALITY	C	VOCABULARY	C	HOLDS INTEREST?	C+
GRAPHICS QUALITY	N/A	SAVE/RESTORE	D	VALUE FOR MONEY	B-

Sultan's Palace is an all-text adventure game wherein your mission is to rescue the sheik's kidnapped daughter from the clutches of the evil Sultan Abdul, and escort her to safety. The game itself is cute and clever and could be considered just slightly ahead of an elementary adventure. There are two mazes that must be solved in order to find the key to the rescue. To disclose the number of mappable locations in this adventure would be giving away too much key information. However, I will say this, that some of the Sultan's rooms contain objects that may best be described as humorously erotic. I enjoyed them, but parents might exercise their judgment in allowing teens to play this one due to the sexual overtones and double entendres.

One of the game's serious shortcomings is that you cannot save or restore it while in play (should you tire or be interrupted). A save/restore feature could have been very easily implemented. But all in all, this game is worth having, and will provide a delightful afternoon diversion.

CRYPTS OF TERROR

Company: In-House Software

Language: BASIC

Hardware Requirements: 16K; disk drive or cassette player.

Department: Entertainment

Sugg. Retail: \$29.95 cassette / 34.95 disk

Availability: 4

Disk or Tape: Both

OVERALL RATING	C+	DIFFICULTY	B-	ORIGINALITY	A
PUZZLE QUALITY	B	EASE OF USE	C	DOCUMENTATION	C
TEXT QUALITY	C	VOCABULARY	C	HOLDS INTEREST?	C
GRAPHICS QUALITY	C+	SAVE/RESTORE	C	VALUE FOR MONEY	C-

Crypts of Terror is a Real Time adventure game. Its goal is to find the Magic Ring of Power in one of the treasure chests in the fifty Crypts, and return it to Crypt One. If you do so, you will learn the secret keyword to the next level of difficulty.

The game is the typical slug-it-out-with-the-monsters game in which you need to find enough treasures and supplies in the various chests to remain alive and complete your quest. There is a monster in every room that must be killed with a sword or rifle (you need bullets, remember) before you can open a chest. Since you can only carry one item at a time, you must double back and exchange your sword for a key by passing over the item that you wish to carry. You must refrain from pressing the fire button when you want to drop objects. In this game, a map is displayed showing the contents and status of each room. It is available after you have opened a chest. Since plotting all of the items is rather slow, pressing the button is to be avoided.

Life points dwindle rapidly in any encounter with the monsters. Extra life points can be earned by finding food in the chests, or by trading gold coins with the Tree of Life. You must balance fighting with finding enough treasure to sustain life. The game ends once you have lost all three of your men.

The game's concept is good, but the game becomes rather tedious after extended play because it has no puzzle qualities. The graphics and speed are good, considering it is an adventure game written in BASIC.

CYBORG

Company: Sentient Software

Language: BASIC

Hardware Requirements: 48K, disk drive

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 5

Disk or Tape: Disk

OVERALL RATING	B	DIFFICULTY	A	ORIGINALITY	A
PUZZLE QUALITY	C+	EASE OF USE	C	DOCUMENTATION	C
TEXT QUALITY	C	VOCABULARY	C-	HOLDS INTEREST?	B+
GRAPHICS QUALITY	B	SAVE/RESTORE	B	VALUE FOR MONEY	B

Cyborg is a large scale and rather difficult adventure game. It bears many similarities, both in its strengths and weaknesses, to Sentient's initial offering, *Oo-Topos*. However, *Cyborg* is uniformly superior to its older brother, especially in its basic premise, storyline, and a first rate integration of a LORES phase in the otherwise all-text, single-screen game.

There is no scoring, and no treasure to be found. Nearly half the game must be solved before the true nature of the game and your objective even begins to become clear. Because the mission and setting are surprising as they unravel, it would be unfair to describe them here: suffice it to say that the final text display clarifies all, and accords you the "entire human race's thanks."

It will take time to map through the 122 locations, locate the 28 movable objects, determine their many uses, and further determine who and where you are, and why you are really there to begin with. Frequent use of the Scan, Opinion, and Save Game options is suggested, while a "Save" just prior to the LORES "game within a game" is a must. *Cyborg* is faster in response and less disk interactive than *Oo-Topos*, but these qualities are not exactly strong points of the game.

The primary weakness of the game is that it tries to be too much for too many. The result is that the real interest in the plot and "real" puzzle becomes muddled by a superabundance of unnecessary rooms and cross-connections, two absolutely pointless mazes, and an excess of generally humorless verbosity. Many of the puzzles are made needlessly difficult by a limited vocabulary, and there is an absence of clues, often requiring considerable trial and error even though you are on the right track. All too often a puzzle simply disappears if the correct object(s) is merely being carried.

It will take a fairly experienced adventurer to successfully complete *Cyborg*. But if you enjoy Science Fiction, the time and effort will be worthwhile, especially if you enjoyed *Oo-Topos*.

STARCROSS

Company: Infocom, Inc

Language: Assembly

Hardware Requirements: 40K, disk drive.

Department: Entertainment

Sugg. Retail: \$39.95

Availability: 8

Disk or Tape: Disk*

OVERALL RATING **A**
PUZZLE QUALITY **B**
TEXT QUALITY **B**
GRAPHICS QUALITY **N/A**

DIFFICULTY **B**
EASE OF USE **A**
VOCABULARY **A+**
SAVE/RESTORE **A+**

ORIGINALITY **B**
DOCUMENTATION **A**
HOLDS INTEREST? **A**
VALUE FOR MONEY **A**

Starcross is a science fiction, all-text adventure game that continues to offer the quality and enjoyable features expected of Infocom, including the excellent save-game capability, command parsing, and vocabulary. It's long ago and far away, when suddenly the "strident alarm" of your one-man spaceship awakens you to advise you of the presence of an uncharted mass in space. Naturally curious (if you weren't it would be a very short game), you rendezvous, effect an entrance, map the 80 or so locations of the game, encounter both living and dead remnants of preceding alien civilizations, advanced technology, religious superstition, and past tragedy.

With a few exceptions, the puzzles are more of a singular nature than the interactive kind. While the game is somewhat less difficult than its predecessors in the series, there is a relatively difficult sequence which involves obtaining one of the twelve differently colored control rods. Thereafter, it becomes a matter of following through on the logic of the game, placing the rods in appropriately colored slots, and devining the real purpose of your presence there. Hopefully, you will be accorded the salutation of Galactic Overlord.

Unfortunately, the game ends at its high point, where suddenly everything comes together and all becomes clear. This final scene could well have been the basis of a game complete unto itself. Along the way to that scene are several clever side issues; for example, the Ray Gun may be fired at just about anything. Most responses are unique, and frequently have a humorous twist to them — even when you end up getting killed yourself. Throughout, the true use of the Ray Gun, which is required to successfully complete the game, is neatly disguised.

While the prose is a bit less vivid and expansive than in the *Zork* series, the plot and storyline are excellent, perhaps the best yet seen in any computer adventure. Like a good book, *Starcross* stimulates the imagination by not entirely explaining the situation as to all that must have happened in the generations during which the huge artifact has drifted. It is almost a shame to waste the story on kids, who will simply enjoy it for its puzzles, and who just might embarrass Dad with some questions about the Periodic Tables, Newton's Third Law, and Solar System basics. And in the event you get stumped for awhile, you can always go outside and play Flying Saucer Frisbee with the packaging.

ALIEN HELL

Company: Syncro

Language: BASIC

Hardware Requirements: 16K cassette, 24K disk.

Department: Entertainment

Sugg. Retail: \$14.95 cassette / \$19.95 disk

Availability: 5

Disk or Tape: Both

OVERALL RATING **C**
PUZZLE QUALITY **B-**
TEXT QUALITY **N/A**
GRAPHICS QUALITY **C-**

DIFFICULTY **C**
EASE OF USE **C**
VOCABULARY **N/A**
SAVE/RESTORE **F**

ORIGINALITY **B-**
DOCUMENTATION **B-**
HOLDS INTEREST? **C**
VALUE FOR MONEY **C-**

Alien Hell was one of the initial attempts to animate an adventure game in graphics form using a redefined character set. It is unique in that it offers the type of puzzles that text adventures use. Since the player is never told what to do, the challenge is to figure the game out. The player is trapped in an alien slave mine and must find a way out. Mapping is important, as in most text adventures. The maze remains the same in each game. The puzzle factor arises from using the mysterious crystals found in some of the rooms. They are of different colors, each type with a different power. Learning their power is by trial and error, as no mention of them is made in the program's documentation.

The game is joystick controlled. The player's character, which can move from room to room, must avoid fireballs and flames from the firepits in the narrow corridors. Also to be confronted are gaseous monsters, guards, and dead ends that require different crystals in order to get past them. The game has several difficulty levels, starting with the hard and going to the impossible. The game is somewhat frustrating at first, and unfortunately lacks a game save feature, necessary at least in the first couple of exploratory games. The game speed is almost at arcade level. That also can be very frustrating. I have seen more than one broken joystick from trying to avoid a fireball. In sum, *Alien Hell* is an interesting attempt at an action adventure game. It is unlikely to appeal to many people because it is a game that is frustratingly tedious to play: for long periods nothing happens until the player figures out what to do.

ADVENTURELAND SAGA #1

Company: Adventure International

Language: Assembly

Hardware Requirements: 24K, disk drive.

Department: Entertainment

Sugg. Retail: \$39.95

Availability: 7

Disk or Tape: Disk*

OVERALL RATING	B	DIFFICULTY	C+	ORIGINALITY	B
PUZZLE QUALITY	B	EASE OF USE	B+	DOCUMENTATION	A
TEXT QUALITY	B	VOCABULARY	B	VALUE FOR MONEY	C
GRAPHICS QUALITY	B	SAVE/RESTORE	A-	HOLDS INTEREST?	B

Adventureland Saga #1 is Adventure International's re-release of its original all-text adventure game which has been spiffed up with Hi-Res graphics, and much improved documentation. Several command option keys have also been added: the "Z" key toggles the graphics mode on and off, speeding the game considerably and producing an all-text version identical to the original release. They've added a four position save-game option, as opposed to the single position on the original version. It is a bit messier to use, however. The documentation is complete with at least a partial list of recognizable key words — a major breakthrough in adventuring.

As before, the object is to resolve the puzzles so that you can find and retrieve thirteen treasures, only some of which are easy to locate. A significant novelty (not evaluated), is that the "V" key toggles a Votrax (if you have one), to provide spoken feedback from the game. The same key was used, however, to toggle a printer and get a running hardcopy of the game text. A dump of the graphics is also possible, provided you have a Grappler or Microbuffer card and an appropriate printer.

The graphics are pleasant and colorful, but are often painfully slow if a number of shape-table objects must be drawn and filled in. "Inventory" is a particularly slow process, after the novelty of watching a graphical "bag-dumping" wears off. This recalls the old expression of "Z" before "I" (or is it "I" before "E"?). The two-sided disk boots off one side, and eventually plays the game there. The flip side of the protected disk, through which one must pass, carries a plethora of AI promotions, including long demos of three games and a multi-screened graphical statement against pirating/unauthorized copying, complete with a dour-visaged Scott Adams staring balefully from the CRT.

If you have played the lower priced text version, you'll find the graphics add little to the enjoyment of the game. Personally, this reviewer preferred the original, as the graphics detract from the degree of imagination that is needed to be successful. If you haven't played the classic AI text adventures, then you'll have a treat in store — graphics or no, these games are a must for any serious adventurer.

PIRATE ADVENTURE SAGA #2

Company: Adventure International

Language: Assembly

Hardware Requirements: 24K, disk drive.

Department: Entertainment

Sugg. Retail: \$39.95

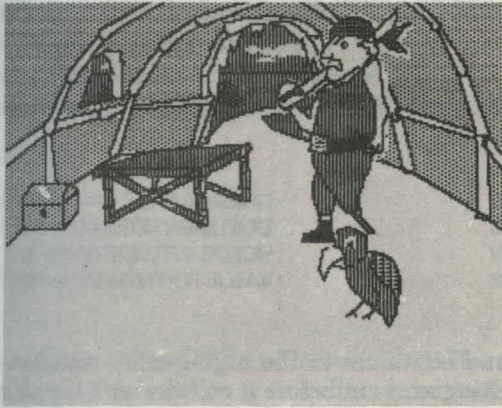
Availability: 7

Disk or Tape: Disk*

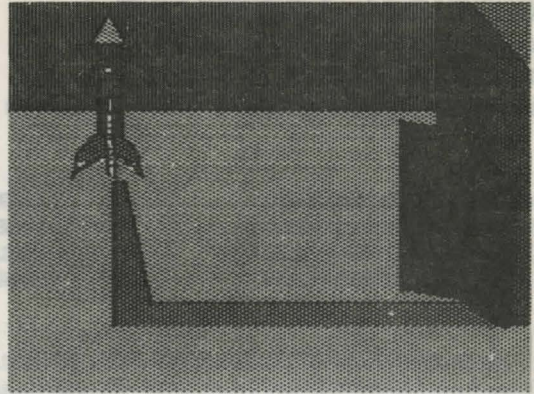
OVERALL RATING	B	DIFFICULTY	C	ORIGINALITY	B
PUZZLE QUALITY	B	EASE OF USE	B+	DOCUMENTATION	A
TEXT QUALITY	B+	VOCABULARY	B	VALUE FOR MONEY	C
GRAPHICS QUALITY	B	SAVE/RESTORE	A-	HOLDS INTEREST?	B

Pirate Adventure Saga #2 is Adventure International's re-release of their second adventure. As is the case with *Adventureland Saga #1* (see above), *Saga #2* has been dressed up with Hi-Res graphics, and much improved documentation, with a the separate Hint Sheet thrown in to boot. In general, the commentary for *Saga #1* is equally applicable to *Pirate Adventure*.

The game itself is identical in all respects to the play of the original all-text version. There are two treasures to locate and collect, but getting them isn't quite as easy as it may seem. In conjunction with the hint sheet, and since *Pirate Adventure* isn't one of Adam's more difficult puzzles, it is especially recommended for beginning adventurers and young children whose parents are willing to "lose" them for several days.



PIRATE'S ADVENTURE



MISSION: ASTEROID

DEADLINE

Company: Infocom Inc.
Language: Assembly Language
Hardware Requirements: 32K, disk drive.

Department: Entertainment
Sugg. Retail: \$49.95
Availability: 9
Disk or Tape: Disk*

OVERALL RATING	A+	DIFFICULTY	B	ORIGINALITY	A
PUZZLE QUALITY	A	EASE OF USE	A-	DOCUMENTATION	A+
TEXT QUALITY	A+	VOCABULARY	A+	VALUE FOR MONEY	A+
GRAPHICS QUALITY	N/A	SAVE/RESTORE	A+	HOLDS INTEREST?	A+

Deadline is the first in a series of all-text mystery adventure games from the creators of *Zork*. Totally engrossing, you are seemingly pulled directly through the CRT, and right into the mansion with the suspects. You, as the Detective, are called upon to investigate the apparent suicide of a wealthy and philanthropic industrialist. There are no monsters, treasures, mazes, wizards, magicians, fantasy, or sound effects, just seven characters with you in a house with grounds having some 48 mappable locations. Sounds simple? Guess again! There are several tricky puzzles, a very involved plot, an abundance of well-written text, characters moving independently of one another (and of you), a second suicide/homicide of one of the characters (under certain conditions), and the possibility of twenty-five different endings, including your own early demise.

Like any good mystery, *Deadline* unravels slowly, and is complete with false leads and subplots. You have 12 hours to establish your case and resolve the conflicting issues. Don't try to do it all in the first hour; events transpire at specific times which will alter your suspicions or influence your investigation. Because of these events, a complete solution is not possible until early in the afternoon, even if you know exactly what needs to be done. Physical evidence, also time dependent, is hard to come by, despite a multitude of objects.

Regardless of which of four principal suspects you attempt to convict, it is necessary to prove the motive, opportunity, and means. When you believe you have enough proof, you may arrest your suspect(s). A summary letter advises you of the result, ranging from dismissal by the Grand Jury, to conviction by the Trial Jury. Some endings come with shocking suddenness, while others are quite a surprise or contain a strange twist or clue for your next attempt. While some are simply variations of others, there is one "complete" solution, distinguished by a three-screen analysis of the crime by the author.

The game suggests the quality, feel, and humor of its *Zork* predecessors, from which *Deadline's* flexible, multiple command parser has been adapted. The vocabulary and synonymous word recognitions are excellent, although there are a few "missing" words which a good detective would use; for example, Who, Why, When and Where. Then too, there is a fast sequence of events near one ending that is illogical, in that someone should have been able to be seen at a crucial point. Lastly, there is an obscure but fatal bug — don't shake a bottle known to be empty unless you have made use of the eight-scenario save/restore game feature.

The response time of the game is excellent. The disk-interactive nature of the game is noticeable on the Atari, and occasionally requires changing sides on this two-sided disk. *Deadline* will play on a 32K system, and runs faster on a 48K system. While the puzzle quantity and difficulty level are moderate, the puzzles are quite involved and interactive, requiring more deductive logic than is usually called for in adventures. After seeing the many screens of possible responses and discriptions, perhaps the biggest single puzzle is, how did Infocom manage to get all that text onto one disk?

MISSION: ASTEROID

Company: Sierra On-Line

Language: Assembly

Hardware Requirements: 40K, Disk Drive

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 8

Disk or Tape: Disk*

OVERALL RATING	B -	DIFFICULTY	C	ORIGINALITY	B
PUZZLE QUALITY	B	EASE OF USE	B	DOCUMENTATION	C
TEXT QUALITY	B	VOCABULARY	C	HOLDS INTEREST?	B
GRAPHICS QUALITY	A	SAVE/RESTORE	C	VALUE FOR MONEY	C -

This is the third of Sierra On-Line's Hi-Res adventure games, and continues in the high-quality tradition of *Wizard and the Princess*. In it, your mission is to destroy an approaching asteroid before it collides with the planet Earth.

The elements of the puzzles are individually easy to solve. In fact, *Mission: Asteriod* is a very easy adventure game, at least right up to almost the very end. The designers let you get tantalizingly close to winning. Emerging victorious is another matter, however. It's a real bear to fit all the necessary elements together within the fixed number of allotted moves. The time limit, at five minutes per move, is of the essence. You're allowed a margin of error of only two moves. When you think you've solved the puzzles, you need to start at the beginning. Saving a game requires an additional move. Also needed is a complete map and, preferably, a written sequence of moves you plan, as things can be easily overlooked with catastrophic results.

All in all, it's a well-done winner, totally straightforward and solvable, even though there may be times when you'll be convinced that you can't "get to there from here!"

THE WIZARD AND THE PRINCESS

Company: Sierra On-Line

Language: Assembly

Hardware Requirements: 40K, Disk Drive

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 8

Disk or Tape: Disk*

OVERALL RATING	B	DIFFICULTY	B	ORIGINALITY	B
PUZZLE QUALITY	B	EASE OF USE	B	DOCUMENTATION	C
TEXT QUALITY	B	VOCABULARY	B	HOLDS INTEREST?	B
GRAPHICS QUALITY	A	SAVE/RESTORE	C	VALUE FOR MONEY	A

The *Wizard and the Princess* may well set a standard by which future graphic adventure games will be judged. As an adventure game, the puzzles are much less involved and devious than the Scott Adams' text games. There are several extremely difficult and illogical hufdles which must be overcome, such as at the very beginning which requires the crossing of several chasms. The Hi-Res graphics are excellent and, with the exception of the initial maze, easily mapped. Color is effectively used, with various stylistic and well-designed shapes for the nearly 100 different primary pictures (not counting variations caused by the presence of objects).

The object is to find and return a Princess who has been bewitched by a wicked wizard and spirited away to his remote castle. It's tough just to get started. You must bypass a coiled snake; and most rocks that you might conceivably use to kill it with are loaded with scorpions. After that, other formidable obstacles must be conquered: a desert, a wide canyon, a wooded beach area, two tropical islands, a rickety bridge, a thieving gnome, a pirate, a giant, a wandering merchant, and a labyrinthean and magical castle. Various objects will be encountered along the way; some are useful, some not, and some are possessed with strange powers.

The game is straightforward and easy to play. Up to 15 different positions may be saved on a scratch disk. Considering the unforgiving and dangerous nature of the terrain and its inhabitants, a frequent "save-game" command is highly recommended in order to catch your breath and regenerate your derring-do.

Both kids and adults will find *The Wizard and the Princess* to be a very entertaining and a somewhat challenging game that will take some doing to successfully conquer. This adventurous rouser may cause some ego-bruising in the family, however, as the game-hardened precocity of youth will probably be the first to solve the problem in getting around the snake.

ULYSSES & THE GOLDEN FLEECE

Company: Sierra On-Line

Language: Assembly Language

Hardware Requirements: 40K, Disk Drive

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 9

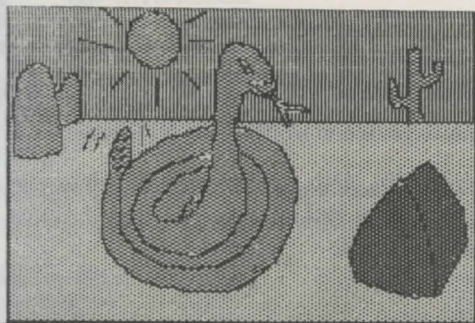
Disk or Tape: Disk*

OVERALL RATING	B	DIFFICULTY	B+	ORIGINALITY	B
PUZZLE QUALITY	B	EASE OF USE	B	DOCUMENTATION	C
TEXT QUALITY	B	VOCABULARY	C	HOLDS INTEREST?	C
GRAPHICS QUALITY	A	SAVE/RESTORE	C	VALUE FOR MONEY	C

Ulysses & the Golden Fleece is a Hi-Res adventure game that rivals *The Wizard and The Princess* in overall concept. Your mission is to find and return the Golden Fleece to the King, thereby gaining a kingdom of your own, plus 300 bags of gold and the designation, "Level 2 Adventurer." This mission is fraught with dangers and obstacles before you can ride home with all your riches atop Pegasus.

The game is better-conceived than its immediate predecessors; it is also much harder to solve, in part due to a disturbing lack of recognition of many words, synonymous with text patterns, which the computer will accept. The game also suffers from several bugs and logical shortcomings (e.g., range errors, fireproof wine, inconsistency when reentering rooms where an event or puzzle has previously occurred). The 15 save-game capability on a scratch disk is great; scenarios may be made or called in at any time as long as you are alive — just don't get killed! (Hint: Save the game upon first encountering a major puzzle or obstacle, then restore the saved version at that position after three or four unsuccessful attempts to solve that puzzle; also, don't bypass the Isle of the Sirens, even though it is possible to do so.)

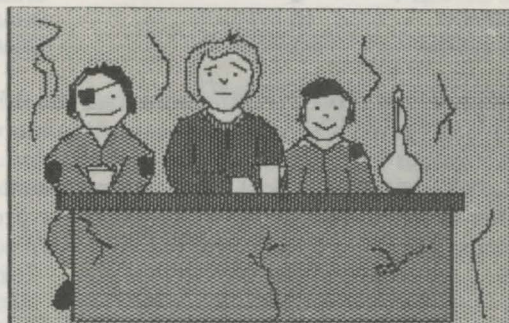
There are almost 150 locations to be mapped, including many near-mazes in jungles, oceans, and forests. The majority of these are cleverly constructed to lead you to the next "correct" location. *Ulysses and the Golden Fleece* is long and difficult but generally maintains one's interest, provided one doesn't get disgusted with the re-booting requirement after being killed and a limited vocabulary.



YOU ARE IN THE DESERT

ENTER COMMAND?

ULYSSES & THE GOLDEN FLEECE



YOU ARE IN A SMALL TAVERN. SOMETIMES
SAILORS WAIT HERE HOPING FOR WORK
THERE ARE DOORS TO THE SOUTH AND EAST

ENTER COMMAND?

WIZARD & THE PRINCESS

WARLOCK'S REVENGE

Company: Synergistics Software
Language: Atari BASIC
Hardware Requirements: 40K, disk drive.

Department: Entertainment
Sugg. Retail: \$34.95
Availability: 5
Disk or Tape: Disk

OVERALL RATING	C-	DIFFICULTY	C	ORIGINALITY	C
PUZZLE QUALITY	C	EASE OF USE	B	DOCUMENTATION	D
TEXT QUALITY	B	VOCABULARY	D	HOLDS INTEREST?	C
GRAPHICS QUALITY	C	SAVE/RESTORE	B	VALUE FOR MONEY	C-

Wizard is an uncomplicated and straightforward adventure game. The objective is to find all the treasures within the four linked, but otherwise independent game segments. The game utilizes black and white, Hi-Res drawings as you traverse your way through the dungeon.

The game will provide a modicum of challenge in mapping the environment, as all areas must be covered to locate the widely scattered treasures. While this adventure does respond to a very limited vocabulary, it occasionally displays some very frothy text statements (i.e., for a perfect score, "You are a grand exalted whiz bang all time poobah, and a nice guy"). After the first phase, a save-game option is available, which should be used if the player still has four "lives" available for each of the 7 characters he may assume. The balance of the game's challenge lies in proper management and usage of these character types.

All in all, *Wizard* is satisfactory for adventure game beginners, while it can serve to "pass time" for devotees; however, don't confuse it with *The Wizard and the Princess* as far as graphic excellence or thought-provoking challenge is concerned.

ADVENTURES ON A BOAT

Company: Sublogic
Language: BASIC
Hardware Requirements: 32K, disk drive.

Department: Entertainment
Sugg. Retail: \$24.95
Availability: 5
Disk or Tape: Disk

OVERALL RATING	D	CONTROLLABILITY	B	ERROR HANDLING	C
GAME CONCEPT	C	SKILL INVOLVED	D	DOCUMENTATION	B
CREATIVITY	C	CHALLENGE	D-	HOLDS INTEREST	D
GAME DEPTH	C	GRAPHICS	C+	VALUE FOR MONEY	F

Adventure on a Boat is little more than the fishing trip program found in many of the BASIC language "type them in yourself" game books. Anyone expecting more in terms of a learning experience in programming and instruction in how games are written will be disappointed.

The player sails his boat on a lake represented by the customary grid. Each square on the grid has a random number of fish to be caught. The further one progresses onto the grid, the more time that is added to the clock. The graphics, finally, are unimpressive, and seem to have little or no point to them.

CHINESE PUZZLE

Company: Atari Program Exchange
Language: BASIC
Hardware Requirements: 24K, disk drive

Department: Entertainment
Sugg. Retail: \$15.95
Availability: 8
Disk or Tape: Disk

OVERALL RATING	D+	DIFFICULTY	C+	ORIGINALITY	C
PUZZLE QUALITY	C	EASE OF USE	D	DOCUMENTATION	C
TEXT QUALITY	D-	VOCABULARY	D-	HOLDS INTEREST?	D
GRAPHICS QUALITY	N/A	SAVE/RESTORE	N/A	VALUE FOR MONEY	D+

Chinese Puzzle is an all text, greatly abbreviated adventure, of sorts. There are 10 mappable locations and three objects to acquire in your quest. The solution to this puzzle is not overly clever, and this reviewer found it quite a disappointment.

The puzzle lacks depth, and requires mundane and repetitive moves to find the right combination for the solution. This is a play it once game: if you solve it, great, if not, it will be put away never to be seen again. Your money is best spent in other areas.

SLEAZY ADVENTURE

Company: Atari Program Exchange
Language: Atari Basic
Hardware Requirements: 24K Atari 800, disk drive

Department: Entertainment
Sugg. Retail: \$15.95
Availability: 6
Disk or Tape: Disk

OVERALL RATING	C -	DIFFICULTY	D	ORIGINALITY	C
PUZZLE QUALITY	D	EASE OF USE	A	DOCUMENTATION	C +
TEXT QUALITY	C	VOCABULARY	C	HOLDS INTEREST?	F
GRAPHICS QUALITY	N/A	SAVE/RESTORE	N/A	VALUE FOR MONEY	D

The object of *Sleazy Adventure* is to sail a ship from Thailand to San Francisco, first finding and then smuggling a variety of contraband items (and, of course, increasing the risk the more valuables you take). Success will bring you fabulous wealth in San Francisco. The title is somewhat misleading, however, in that the only thing "sleazy" about the game are the descriptions of the establishments and residents of the back streets and sewers of Bangkok.

At best, the game will prove to be a good tutorial for the untried text adventure game player. For the advanced video adventure addict the game isn't worth the effort of booting up. The program will assist you by asking if you want a hint. But in many cases you must ask for the hint before it will allow you to proceed with the game, regardless of whether or not you want the assistance. This habit tends to become a "crutch," transforming the user into a spectator rather than a full participant and so defeats the point of text and puzzle-based games.

Documentation is concise and well written, but that alone is not enough to carry the game. The vocabulary is limited; and rather than have you try every verb and adjective you know, the author supplies you with a list that the program will recognize. But some words which are excluded from the list may still produce wondrous effects when used at certain points in the game.

Overall, this is a good adventure game for brand new adventurers, but not a worthy challenge for the experienced player. The game can be completed in a few hours, which is perhaps just what novices need for encouragement with adventure games. But although the game concept is promising, much more could have been done to hold the user's interest and provide a higher degree of challenge.

DR. GOODCODE'S CAVERN

Company: Gebelli Software
Language: BASIC
Hardware Requirements: 40K, disk drive.

Department: Entertainment
Sugg. Retail: \$29.95
Availability: 6
Disk or Tape: Disk

OVERALL RATING	D	DIFFICULTY	D -	ORIGINALITY	F
PUZZLE QUALITY	D	EASE OF USE	C +	DOCUMENTATION	D -
TEXT QUALITY	C	VOCABULARY	C	HOLDS INTEREST?	D -
GRAPHICS QUALITY	D	SAVE/RESTORE	B	VALUE FOR MONEY	D -

Dr. Goodcode's Cavern would have you believe it falls in the adventure game category, yet it offers none of the "reward fortune" features or puzzle challenge that distinguish real adventures. It bears a painful similarity to early text-maze games such as *Wumpus* and *Devil's Cavern*.

The game play is based primarily on the computer's ability to generate random numbers. One soon begins to wonder about the purpose of wandering around a text-maze reading random phrases from the computer. Completing this game gives no satisfaction at all. No puzzle has been solved, and no ability tested other than your patience — a particularly useful attribute to have when an obnoxious "sound" (the best I can describe it) comes on early in the game, and never goes away (although you can turn down the volume).

The text display uses custom character set graphics. Exits appear as square shaped "players" at the four cardinal points on the screen. A miniature map is also displayed on screen, with the room number the player is in and the room numbers of adjoining rooms. The map disappears if you are picked up by a bat.

The documentation is poor. For instance, the program is written in BASIC, and will not boot-up or give any message if the BASIC cartridge is not in place. Nowhere is this mentioned. Nor are instructions given on how to save a game; you simply must experiment on your own. The documentation seems to be more concerned in making sure that the player knows the history of the Cavern.

In short, the only persons who would probably purchase this game are those who are unaware of its tedium.

EMPIRE OF THE OVERMIND

Company: Avalon Hill

Language: Assembly

Hardware Requirements: 40K

Department: Entertainment
Sugg. Retail: \$35.00 disk / \$30.00 cassette

Availability: 6

Disk or Tape: Both

OVERALL RATING **C**
PUZZLE QUALITY **A**
TEXT QUALITY **C-**
GRAPHICS QUALITY **N/A**

DIFFICULTY **A**
EASE OF USE **B**
VOCABULARY **C**
SAVE/RESTORE **D**

ORIGINALITY **C**
DOCUMENTATION **D**
VALUE FOR MONEY **D**
HOLDS INTEREST? **A**

Empire Of The Overmind is an all-text fantasy adventure of the same genre as its predecessor, *Lords Of Karma*, but it is much more extensive and complex. There are 87 mappable locations, many of which are totally dark until you call up the means to light an object. The puzzles are tough, and often you get to within one move before being wiped out. The object is to find and destroy Overmind (a golden sphere), thus winning the love of the enchanted Princess, whom you had previously met while trying to cope with the sundry critters and traps. When this is accomplished, the game ends with a bland page of text, rather disappointing after all the work required to get to that point, and with all the possibilities for a zippier conclusion. The game itself abounds with many objects, helpful people (such as a Dwarf), and several useful magical items. Clues, and the right context in which to use them, are found in the "Rhyme of the Overmind," detailing the history and objective of the game in verse.

While the Rhyme is fairly useful, the Instruction Sheet provides no guidance — except for an easily missed but important comment that three, rather than two words may often be required. The game responds to the first three letters of a word, with the second word often having to be an adjective. To use an object in one's inventory, the command "HOLD" for that object must first be entered, or you'll spend 20 minutes trying to fill the waterskin.

Overmind is written entirely in assembly language. While it isn't disk interactive, it is slow, taking 5 to 12 seconds between commands. All in all, it is a tough and challenging adventure, but is poorly formatted, slow running, and with a minimal vocabulary. It does have a save feature at least to cassette. You'll need to save the game at least once if you expect to complete it.

GHOSTLY MANOR

Company: Sublogic

Language: BASIC

Hardware Requirements: 32K, disk drive.

Department: Entertainment

Sugg. Retail: \$24.95

Availability: 5

Disk or Tape: Disk

OVERALL RATING **D**
GAME CONCEPT **C**
CREATIVITY **C**
GAME DEPTH **C**

CONTROLLABILITY **B**
SKILL INVOLVED **D**
CHALLENGE **D**
GRAPHICS **C**

ERROR HANDLING **B-**
DOCUMENTATION **B**
HOLDS INTEREST **D**
VALUE FOR MONEY **D**

Ghostly Manor is a maze/adventure game for children. The "manor" is a group of boxes arranged in a 4 x 7 rectangle on the screen. Doors to the rooms are randomly generated at the start of the game. The object is to roam round the maze until you find a magic key with which to leave the room. Every room contains an object, and friendly or malign spirits.

It should be pointed out that some sections of the maze have no way in or out unless the player is teleported there, or finds an object to move into the room of his choice. If the player finds himself in this situation, he must move back and forth through the rooms until the right object appears.

The game also has messages: "you are in the dirty closet," or the more common, "oh no, this is a bloody room!" (along with silly sound effects). Standing still in these rooms will likely be rewarded with a message such as, "the spirit was impressed with your bravery."

There is very little skill involved here, and the time given to complete the game is based on random choices.

THE BLACK FOREST

Company: Sublogic
Language: BASIC
Hardware Requirements: 48K, diskette.

Department: Entertainment
Sugg. Retail: \$24.95
Availability: 4
Disk or Tape: Disk

OVERALL RATING	D-	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C-	DOCUMENTATION	D+
CREATIVITY	B	CHALLENGE	D	HOLDS INTEREST?	D
GAME DEPTH	C	GRAPHICS	D+	VALUE FOR MONEY	F

Black Forest is a poorly implemented graphics adventure for children. The object, apparently, is to explore the Black Forest in search of the life-giving waters of Amrita, although this isn't clear in the documentation. You encounter various monsters along the way, and these must be conquered.

The player's figure starts on the right side of the screen. You are given three weapons and a shield, and you use the keyboard to select which you will use at any given time. You have limited control with the joystick over this character. The program uses player-missile graphics, and the shapes are crude at best. The background seems to have been drawn using PLOT and DRAWTO statements. There is also a problem with character control. Since the joystick is only scanned at certain intervals inside a basic loop, control becomes awkward. The monsters you've encountered are entered at the top of the screen. Without this notice you'd never be able to tell what you ran into. *The Black Forest* just misses the boat in terms of interest and challenge.

Black Forest is perhaps the best-designed computer war game to appear on any single computer in its class. It succeeds by having the finest quality graphics of any war game, but its biggest asset is its ease of play. The programming is reduced to simple joystick control. It is an outstanding first experience. Chris L. Stanford, author of the honor of having designed the best computer game of 1981.

The game recreates the invasion of Russia by the German Army in the summer of 1941. The Russians, without aid, are steadily attempting to overwhelm a weak enemy whose only ally is the brutal winter. Time is on the Russian side. The weather will come to their aid. That, coupled with the better food and the German-made equipment they can give them the decisive advantage.

The German Army on a battlefield that stretches over 20 miles. The player's army is depicted by various terrain features. The entire screen is available for movement, and from Leningrad to the Crimea on the Black Sea. The weather conditions are set by a random number generator. The ground is covered with the October rains, and the weather is cold and the ground is hard.

The game is entirely governed by the player's joystick. The player's army is controlled by the joystick. The joystick is used to move the cursor in the desired direction, and the order is issued. An arrow cursor is used to move the cursor in the desired direction, and the order is issued. An arrow cursor is used to move the cursor in the desired direction, and the order is issued. An arrow cursor is used to move the cursor in the desired direction, and the order is issued.

The computer calculates its orders while you are entering yours. It never keeps you waiting until you signal the computer. The Russian side can analyze its position, see game range and opportunities, avoid battle lines, and plan accordingly. Because the computer works at 1/10th the speed of the player, it can plan strategy for the best possible opponent. For that reason, the author recommends against rushing through the game. The computer will win its own strategy over time.

The game, representing one week of actual time, is broken into 10-day turns. In each turn, combat occurs and light. Then, a pre-programmed unit might destroy an adjacent enemy unit, advance across a river, or retreat. (Forcing it to retreat), and finally advance towards a city within the next turn. Terrain affects the movement and combat. Tanks become bogged down in the marshes, and the enemy has an advantage when the weather attack across rivers.

The game lasts until the following Spring, a total of 41 weeks. It takes ten to three hours to finish the campaign. The game ends abruptly, with a score between 0 and 25% reflecting the progress. Early in the game, it is possible to get a high score, awarded for troops killed and territory gained, but it is difficult to hold that advantage through the winter. Most beginners will follow the pattern of the German debacle by concentrating their forces and being destroyed in the Prigol marshes. A better plan would be to split your forces early, to avoid the Russian concentrating them, or crash through the marshes quickly and then split your forces. Regardless of your strategy, you will have to pull back because of uncertain supply lines and bad weather.

Black Forest is the first war game that non-warriors might enjoy. With its ease of play, simple graphics, a complex war game becomes enjoyable to play, by all means. If you like strategy games, play this one quick. Highly recommended.

THE BLACK RIBBON

Company: B&B Software - Boston, MA

Language: BASIC

Hardware Requirements: 48K, DOS 2.0

CONQUEST: THE GREAT ADVENTURE

Company: B&B Software - Boston, MA

Language: BASIC

Hardware Requirements: 48K, DOS 2.0

OVERALL RATING: 4
GAME CONCEPT: 5
QUALITY CONTROL: 4
VALUE FOR MONEY: 4

CONSOLEABILITY: 4
EASY TO LEARN: 4
CHALLENGE: 4
GRAPHICS: 4

OVERALL RATING: 4
GAME CONCEPT: 5
QUALITY CONTROL: 4
VALUE FOR MONEY: 4

Black Ribbon is a highly ambitious strategy adventure game for the PC. The story is set in a world of the late 19th century, and the player is a young man who has just inherited a large estate. The player's goal is to expand his empire on the right side of the map, while the player's opponent, a rival noble, expands on the left. The game is played in a turn-based fashion, with each player taking a turn to move units and build structures. The game is very complex, with a large number of units and buildings, and a deep strategic element. The game is also very well illustrated, with a high-quality graphics engine that gives the game a very professional appearance. The game is a very good example of a strategy adventure game, and is highly recommended for anyone who enjoys this genre.

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ROBOTS: THE GREAT ADVENTURE

Company: B&B Software - Boston, MA

Language: BASIC

Hardware Requirements: 48K, DOS 2.0

Company: B&B Software - Boston, MA

Language: BASIC

Hardware Requirements: 48K, DOS 2.0

OVERALL RATING: 4
GAME CONCEPT: 5
QUALITY CONTROL: 4
VALUE FOR MONEY: 4

CONSOLEABILITY: 4
EASY TO LEARN: 4
CHALLENGE: 4
GRAPHICS: 4

OVERALL RATING: 4
GAME CONCEPT: 5
QUALITY CONTROL: 4
VALUE FOR MONEY: 4

Robots: The Great Adventure is a maze adventure game for children. The "maze" is a grid of rooms arranged in a 10 x 10 grid. The rooms are randomly generated at the start of the game. The player's goal is to find a key and use it to open a door. The game is played in a turn-based fashion, with each player taking a turn to move a robot and interact with the environment. The game is very simple and easy to learn, and is highly recommended for anyone who enjoys this genre.

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TACTICAL SPACE & WAR GAMES

EASTERN FRONT

Company: APX

Language: Machine Language

Hardware Requirements: 16K cassette; 32K disk

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 7

Disk or Tape: Both

OVERALL RATING	A	CONTROLLABILITY	A +	ERROR HANDLING	N/A
GAME CONCEPT	A	SKILL INVOLVED	A	DOCUMENTATION	A
CREATIVITY	A -	CHALLENGE	A	HOLDS INTEREST?	A -
GAME DEPTH	A	GRAPHICS	A	VALUE FOR MONEY	A

Eastern Front is perhaps the best-designed computer war game to appear on any microcomputer to date. It gains this distinction by having the finest quality graphics of any war game, and by being so well engineered that the logistics of entering orders is reduced to simple joystick control. It is so outstanding that it earned Chris Crawford, its author, the honor of having designed the best computer game of 1981.

The game recreates the invasion of Russia by the German Army in the summer of 1941. It is the classic battle of strength and mobility attempting to overwhelm a weak enemy whose only assets are endless territory in which to retreat and the natural ally of a brutal winter. Time is on the Russian side: if they hold out until winter, reinforcements will come to their aid. That, coupled with the bitter cold and the German's over-extended supply lines, can give them the decisive advantage.

You command the German Army on a battlefield that stretches over 20 colorful screens. A number of re-defined character sets delineate the various terrain features. The entire screen fine-scrolls from the Polish border to well beyond Moscow, and from Leningrad to the Crimea on the Black Sea. The weather conditions are set by a series of display list interrupts. The ground turns to mud with the October rains, and the rivers freeze and the snows fall in November.

Screen positioning is entirely governed by the player's joystick-controlled square cursor. Using a joystick for entering the bulk of your orders (cancelled by the space bar) eliminates the drudgery usually associated with computer war games. The player simply moves the cursor to a unit to which he wishes to issue orders, presses the button while moving the cursor in the desired direction, and the order is issued. An Iron Cross shows where you are in the order sequence; and a movable arrow traces the path. By moving the cursor to any unit, even a Russian unit, you can check the corps unit's strength.

The computer calculates its orders while you are entering yours. It never keeps you waiting once you signal the battle to begin. The Russian side can analyze its position, recognize danger and opportunity, avoid traffic jams, recognize the effects of terrain, and plan accordingly. Because the computer works at 1.79Mhz, it can plan strategy faster than human opponents. For that reason, the author recommends against rushing into battle. The computer also improves its own strategy over time.

Each turn, representing one week of actual time, is broken down into 32 subdivisions of time in which combat units move and fight. Thus, a pre-programmed unit might destroy an adjacent enemy unit, advance across a river, engage another unit (forcing it to retreat), and finally advance towards a city within the one turn. Terrain affects both movement and combat. Tanks become bogged down in the marshes, and the enemy has an advantage when the Germans attack across rivers.

The game lasts until the following Spring, a total of 41 weeks. It takes two to three hours to finish the campaign. Actually, the game ends abruptly, with a score between 0 and 255 indicating the outcome. Early in the game it is easy to get a high score, awarded for troops killed and territory gained; but it is difficult to hold that advantage through the winter. Most beginners will follow the pattern of the German debacle by concentrating their forces and becoming mired in the Pripet marshes. A better plan would be to split your forces early, to avoid the Russians concentrating theirs; or crash through the marshes quickly and then split your forces. Regardless of your strategy, you will have to pull back because of uncertain supply lines and bad weather.

Eastern Front is the first war game that non-warriors might enjoy. With its ease of entering orders and its magnificent graphics, a complicated war game becomes enjoyable to play. By all means, if you like strategy games, grab this one quick. Highly recommended.

LEGIONNAIRE

Company: Avalon Hill

Language: Assembly Language

Hardware Requirements: 16K, cassette player.

Department: Entertainment

Sugg. Retail: \$35.00

Availability: 5

Disk or Tape: Tape

OVERALL RATING	A	CONTROLLABILITY	A+	ERROR HANDLING	N/A
GAME CONCEPT	A	SKILL INVOLVED	A	DOCUMENTATION	A-
CREATIVITY	A-	CHALLENGE	A	HOLDS INTEREST?	A
GAME DEPTH	A-	GRAPHICS	A-	VALUE FOR MONEY	A-

The battles between Caesar's Roman legions and the barbarian tribes of southern France during the Gallic Wars (58-51 B.C.) are recreated in this Real Time simulation, *Legionnaire*. In many ways it is quite similar to the author's earlier game, *Eastern Front*. With the addition of movement and orders occurring in a simulated Real Time environment, games only take between fifteen and thirty minutes to play.

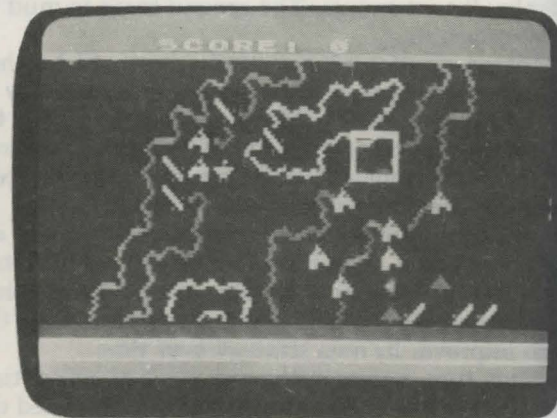
The battles take place on a very large, fine-scrolling map which depicts the hilly terrain of southern Gaul. You can command up to ten Roman legions against your choice of an infantry tribe and a cavalry tribe. The game defaults to two very easy tribes, but you can choose two of the tougher tribes. Each of the tribes has its own characteristics, as does each of the Roman legions.

Orders are issued to the legions through the joystick. The cursor is centered atop a legion, and the direction of its next move or next series of moves is entered. Orders can be countermanded by pressing the space bar. Troops should initially be moved to high ground and rested, because these are two of the factors that are weighed during the battle. Other factors to be considered are troop morale, and the shock factor when infantry is attacked by cavalry. Different strategies work against various enemies. Occasionally it is best to hold the high ground, while at other times it is better to lure or drive the enemy into the forest to keep them from concentrating their forces. The game ends either when the tribes have been defeated, or you, Caesar, have been killed by them.

The graphics, like the game itself, are excellent. The sound, however, which is supposed to represent the sound of marching, becomes annoying quickly. *Legionnaire* has incorporated many features that make the simulation realistic. Its ease of use and its wide range of difficulty levels make this a very good introduction to war game playing.



EASTERN FRONT



LEGIONNAIRE

SHATTERED ALLIANCE

Company: Strategic Simulations Inc.

Language: BASIC & Assembly

Hardware Requirements: 48K

Department: Entertainment

Sugg. Retail: \$39.95

Availability: 8

Disk or Tape: Disk*

OVERALL RATING	C+	CONTROLLABILITY	B	ERROR HANDLING	A
GAME CONCEPT	C	SKILL INVOLVED	A	DOCUMENTATION	C
CREATIVITY	B	CHALLENGE	B	HOLDS INTEREST	B
GAME DEPTH	B	GRAPHICS	C+	VALUE FOR MONEY	B

Shattered Alliance is a tactical war game simulation pitting groups of mythical tribes with varying capabilities against similar opposing forces. Winning is less a matter of destroying opposing forces than it is breaking the opponent's unit and army morale through combinations of encounters. In many regards, this game is similar to a scaled-down version of Strategic's *Operation Apocalypse* on the Apple computer. *Shattered Alliance* is in a completely different setting, however, and uses a new move allowance concept, "Time Points," as an alternative to incorporating any number of squares in a single move for different types of units.

This Time Point concept is both the strength and weakness of this game. Its strength lies in using this approach to speed-up the true game and, perhaps, making for a finer degree of modeling. Its weakness requires the player to react to a near Real Time game, demanding faster reflexes, knowledge of the keyboard, and total concentration on the tactics and strategy being used. A greater weakness is that it leads to one-on-one combats, in which adjacent forces provide neither offensive nor defensive support. Time Points definitely take considerable getting used to, and according to SSI, will be the basis of a series of programs yet to come.

Shattered Alliance features four scenarios for one or two players. The well-done character graphics uses combat units (which are difficult to relate to and differentiate between, especially on a B & W display); two map scales both of which are adequate but very uninspiring; and a Demo game that is very difficult to follow even after a thorough study of the documentation, as it seems to go on, and on, and on. The extensive documentation is light on game specifics beyond describing the screen displays and symbols, examples of combat situations, and information that would make the game more playable. It is heavy on mood-setting "background," as well as detailed descriptions of the various move and factor charts and rule Errata, both of which are included in the program on a separate card.

There is a consistent emphasis on J.R.R. Tolkien-type characters, names, and combat situations which Bilbo and Frodo fans will find both unsatisfactory and insulting. The game is difficult to learn to play, perhaps more so than *Apocalypse*, which is a better, albeit, more expensive game. Once mastered, however, it is perhaps the fastest playing war game yet introduced.

STARBASE HYPERION

Company: Quality Software

Language: BASIC

Hardware Requirements: 24K

Department: Entertainment

Sugg. Retail: \$19.95 cassette / \$22.95 disk

Availability: 6

Disk or Tape: Both*

OVERALL RATING	B	CONTROLLABILITY	C	ERROR HANDLING	C-
GAME CONCEPT	C+	SKILL INVOLVED	B-	DOCUMENTATION	B+
CREATIVITY	B-	CHALLENGE	B-	HOLDS INTEREST?	B
GAME DEPTH	B-	GRAPHICS	C+	VALUE FOR MONEY	B-

Starbase Hyperion is a single-player tactical spacewar game. Your mission is to defend your starbase against invasion from enemy forces until reinforcements arrive 15 days later. During these 15 turns, you must create, command, and deploy a fleet consisting of up to five different warships. At the same time, you must manage your limited energy resources, build ships and power stations, send out probes, and maintain shield defense.

The game is one of the few war-games that works well. There are six skill levels and a random setup. I've seen better graphics, but these are nonetheless cleanly done, using a radiating grid for a map, and a re-defined character set to represent the ships. The computer plays an intelligent game, and although the program is written in BASIC, the computer spends very little time executing its strategy between turns. The battle portions of the game, while not arcade-style, still require quick reflexes during battle. It is not a simple game, but one that will require several plays to learn the rules and tactics.

TIGERS IN THE SNOW

Company: Strategic Simulations Inc.

Language: Atari BASIC & Assembly

Hardware Requirements: 48K

Department: Entertainment

Sugg. Retail: \$39.95

Availability: 7

Disk or Tape: Disk*

OVERALL RATING	C	CONTROLLABILITY	D	ERROR HANDLING	B
GAME CONCEPT	C	SKILL INVOLVED	B	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	C	HOLDS INTEREST	B
GAME DEPTH	C	GRAPHICS	B	VALUE FOR MONEY	C

Tigers in the Snow is a Regimental to Divisional level war game simulation of the 1944 Battle of the Bulge. It offers two rather similar scenarios, differing in length and conditions of victory. Either one or both sides may be played by the computer, and one or two players may compete. The familiar SSI hex grid system and Move Point concept are back, somewhat simplifying the learning process. The game features variable weather, supply, and fuel conditions, which influence the Move Point allowance of each unit. Happily, there is no need for the opponent to ever "turn away" from the screen. It also involves artillery support, reinforcements, optional attacks on each unit by any or all adjacent forces, the probability of independent command actions overriding your orders, and a save game option.

Tigers is one of the faster war games to come along. It is only disk interactive between turns, and the game speed is also a problem in that the status displays flash by too rapidly for planning or understanding. The "hold action" commands of *Operation Apocalypse* are sorely missed. Indeed, there are only three keyboard commands other than the direction numbers and "Yes" or "No" responses. *Tigers* is not as tightly modeled as some of SSI's other games, and makes extensive use of the randomizer leading to a wide range of battle results for a given set of tactics.

As with many SSI games, the documentation is very confusing; be sure to read the "Atari Player's Aid Card" at least twice before even opening the documentation! It is especially poor in defining the meaning and interactions of the various combat commitments that the player is called on to make. *Tigers* has a variety of other aggravating flaws. One is not able to select the sequence in which the units are moved, check the status or location of units, or control the air power when it is available. Symbols indicating the historic and game significant towns, for example, could have been easily added.

Compared to *Operation Apocalypse*, *Tigers in the Snow* is almost as difficult to learn, but is much faster in set-up time and response. It is also easier and simpler to play. It is not as versatile or engrossing as the more expensive *Apocalypse*; however, it is a superior war game to the equally priced *Computer Conflict*. As a minimum, the simplicity of play permits war gamers to enjoy and concentrate on the tactical planning associated with this simulation.

MIDWAY CAMPAIGN/NUCLEAR BOMBER/PLANET MINERS/NUKEWAR/ CONVOY RAIDER

Company: Avalon Hill

Language: Atari BASIC

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$16.00 each

Availability: 4

Disk or Tape: Tape

OVERALL RATING	C-	EASE OF USE	C	ERROR HANDLING	B
GAME CONCEPT	C	SKILL INVOLVED	C	DOCUMENTATION	D
CREATIVITY	C-	CHALLENGE	C-	HOLDS INTEREST	C-
GAME DEPTH	D	GRAPHICS	D-	VALUE FOR MONEY	C-

The Avalon Hill Atari game programs bear little resemblance to their board games, even though several of the names are identical. The well-packaged programs promise involved and sophisticated war-game-like programs. Unfortunately, they are rewritten TRS-80 programs of relatively little complexity, making no use of any of Atari's graphics capabilities. The text displays and "maps" are very simplistic and poorly drawn. Several of these games are fun to play, however, and will hold your interest for several replays. *Midway Campaign* and *Nuclear Bomber* are the best in this regard. They are easy to learn and require few (almost too few) system commands. Generally, they are mediocre in comparison to good games dealing with death and destruction on a grand scale, as controlled by random number generators rather than well-designed algorithms.

MIDWAY CAMPAIGN: Very loosely based on the famous carrier battle of WWII. The computer will search out the opposing fleets. The aircraft quantities and probabilities of hitting the carriers with bombs are stacked in favor of the Japanese in this game. If you are not a war-gamer, Midway Campaign is a good challenge; you'll need luck to get them before they get you. (To win, try violating historic naval tactics by dividing your forces.) If you are a war-gamer, you'll be frustrated by the lack of tactical system commands and tire of the game very quickly.

NUCLEAR BOMBER: As the captain of a nuclear bomber on routine patrol, you are ordered to fly to within 250 kilometers of an identified Russian city and destroy it with your one Megaton weapon. Russian interceptors and missiles don't take too kindly to this idea and are launched against you from Defense Centers, which you can also destroy. The action starts very, very slowly, but picks up rather well. Not much fun for detente dilettantes, however.

NUKEWAR: As leader of a country you may name, you must decide where to stock up on arms, with what and whether or not to initiate a nuclear holocaust with a second country which you also name (I used my Mother-in-law's name). The opposing country may elect to initiate first strike hostilities — after that, it's a matter of a few quick turns, slugging it out, watching cities and bases get wiped out until the Hot Line rings to negotiate a peace. The winner is the country with the fewest million casualties. Little challenge, reasonable luck, but quick and fairly enjoyable. No extension option provided in the game for the effects of radiation poisoning.

CONVOY RAIDER: Very loosely based on the naval engagement and the sinking of the Bismarck, this game requires you to: command the Bismarck; seek, sink or evade four British battleships; locate and destroy the random convoys sailing toward Britain; and return to a friendly port (marked by an "**") — all this with essentially two commands!! Convoy Raider will tax your brain about as much as it does the Apple (on second thought, that may be an inappropriate analogy).

PLANET MINERS: The Solar System is open for exploration. Four "families" compete to gain the mining rights which may be granted after you orbit one of your five spacecraft about a planet. Claim-jumping, sabotage and protesting other's claims are all cricket. Of the ten system commands, six are for largely redundant information and status tables. The program is perfectly happy playing all four families; if you are still interested in playing after watching such a match, you can replace any or all families by human families. Several kids could easily pass some time, but as a solitaire game it rapidly becomes repetitively uninterestingly long before its forty move limit is reached. Would not exercise the mental faculties of a Fredric Pohl or Robert Heinlein (for you science-fictioners).

TACT TREK

Company: Atari Program Exchange

Language: Atari Basic

Hardware Requirements: 32K, disk drive, joystick

Department: Entertainment

Sugg. Retail: \$15.95

Availability: 9

Disk or Tape: Disk

OVERALL RATING	C-	CONTROLLABILITY	C-	ERROR HANDLING	D
GAME CONCEPT	C	SKILL INVOLVED	F	DOCUMENTATION	C
CREATIVITY	D	CHALLENGE	C	HOLDS INTEREST?	D
GAME DEPTH	D	GRAPHICS	D	VALUE FOR MONEY	D

Tact Trek is a real-time space adventure in which, as commander of the starship Enterprise, you must battle from one to three enemy ships. You have at your disposal phasers, photon torpedoes, or an anti-matter device. Your assailants are almost equally well armed.

Your vantage is from the bridge of the Enterprise, looking out into space. A stationary crosshair sits in the middle of your screen. There are no background effects, and your enemies are pictured merely by the first initial of their name (e.g. K for Kreiger). The game is in real-time, and each move takes two seconds in the game. The program updates the screen ten times, so each screen comprises .2 seconds. This keeps the game somewhat interesting in that, as you fire your weapons, the enemy is able to move away from the shot.

The major drawback of the *Tact Trek*, however, is this: even to simply fire the ship's photon torpedoes requires three separate steps. First, the tubes have to be loaded. Second, they have to be locked onto the target. Finally, they can be fired. But the game is set up in such a way that the first command, loading the torpedoes, takes up one entire turn. Now it's your enemy's turn; and oftener than not he will lay down a phaser barrage that inflicts rather heavy damage on the Enterprise. Next, you may lock the photons on target. But before you may fire yourself, you get racked with the enemy barrage. At long last, you may fire your weapon.

Because of this ponderous turn-taking exercise, and the complete lack of skill required, the program fails in its ability to hold one's interest. Moreover, it does not take advantage of the graphic and sound capabilities of the Atari computer. The error-trapping is also somewhat unforgiving. A typographical error results in Mr. Sulu asking "What?" and you losing a turn. The real-time feature is somewhat challenging, but this alone does not seem to warrant the investment of time and effort.

BOARD GAMES

COMPUTER CHESS

Company: Atari

Language: Assembly Language

Hardware Requirements: 16K, joystick

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 9

Disk or Tape: Tape

OVERALL RATING **B+**
GAME CONCEPT **A**
CREATIVITY **B**
GAME DEPTH **B+**

CONTROLLABILITY **A**
SKILL INVOLVED **B+**
CHALLENGE **B**
GRAPHICS **B**

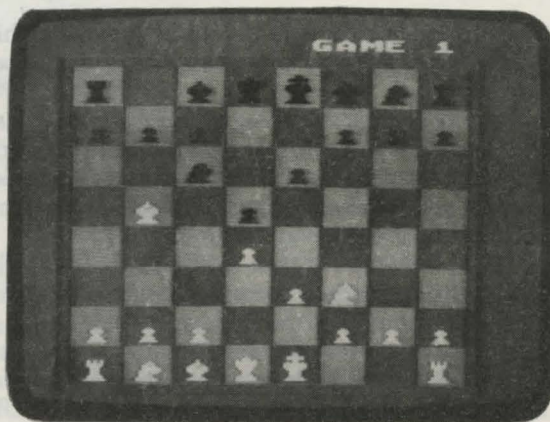
ERROR HANDLING **B**
DOCUMENTATION **B**
HOLDS INTEREST? **B**
VALUE FOR MONEY **B+**

The Atari *Computer Chess* cartridge offers human challengers eight different levels of play, ranging from beginner to expert. The game is played on a green and orange board, with black and white chessmen. You can choose either black or white. Its best feature is the ease with which you can enter moves. Moves are made by positioning the blinking cursor on the piece to be moved, repositioning it on the desired square, then pressing the button to release it there. The computer will not allow illegal moves. If you change your mind before signalling the computer that your move is complete, you can return the piece to its old position, then move another piece. The game permits *en passant* play and castling. To castle, you move the king to the side of the rook, and the computer performs the switch. The game also has the ability to set up a particular situation or chess problem.

Levels one through seven grow progressively more difficult. It takes the computer from 30 seconds to more than ten hours to make a move. It is impractical to play the two highest levels (unless you have months to kill), but level five takes only ten minutes to make a move. There is also a level eight, specially designed for rank beginners. Here, the program takes only fifteen seconds to move.

I played chess on several of the beginner levels; I found that the computer played like a novice, and lost. I'm not a strong enough chess player to test the game at its advanced levels of play. I can comment that I was dismayed when the computer made many obvious mistakes and did not play a good defensive game on levels one and two. Having played against the Apple version of *Sargon II* on the easiest levels, I was very disappointed with *Computer Chess*.

To be fair, a computer chess program must be judged by an expert chess player; or it should be entered in a tournament. Although computer chess programs weren't designed to play against other chess programs, *Computer Chess* didn't do badly in a tournament last year. It is ranked with a chess rating of about 1250. *Sargon II* on the Apple, by comparison, is rated at 1400, and the Z-80/CPM-based *Mychess* is rated at 1600. (Neither is available as yet on the Atari.) In sum, *Computer Chess* can offer a challenge to all but expert chess players on its advanced levels of play.



COMPUTER CHESS

CHECKER KING

Company: Atari Program Exchange

Language: Basic

Hardware Requirements: 16K; disk drive or cassette.

Department: Entertainment

Sugg. Retail: \$22.95

Availability: 3

Disk or Tape: Both

OVERALL RATING	C+	CONTROLLABILITY	B-	ERROR HANDLING	C
GAME CONCEPT	C-	SKILL INVOLVED	B-	DOCUMENTATION	C
CREATIVITY	C-	CHALLENGE	B-	HOLDS INTEREST?	B-
GAME DEPTH	C+	GRAPHICS	D+	VALUE FOR MONEY	C+

Checker King is a one or two player game copying the age old favorite, Checkers. In the one player game, you play the computer; and in the two player mode, you try to best another person. There are also six levels of difficulty to choose from, ranging from Beginner to the Champion level. At the Beginner level, the computer looks one and a half moves ahead, while at the Champion level it is able to plan four moves in advance.

You move your piece by using the joystick controller. The game board is pictured on the screen; by moving your stick, a corresponding "X" moves over your piece. First pressing the firing button, you pick up your checker and then move the "X" to the desired square. By pressing the button again, the checker is deposited. The computer does not permit illegal moves or jumps.

You will find at higher levels of difficulty that the computer must "think" longer between its moves. Sometimes — actually, most of the time — it needs a full ten minutes to plan a move. This can really make the game drag. Nevertheless, this reviewer found the computer an able adversary on the higher levels of play.

Overall, *Checker King* is an entertaining game. Its weak points are its Lo-Res graphics, and especially the length of time required by the computer to make its moves. But when it moves, look out! The two-player mode alleviates most of this tedium.

BACKGAMMON 2.0

Company: Dynacomp

Language: BASIC

Hardware Requirements: 24K, disk drive or cassette player.

Department: Entertainment

Sugg. Retail: \$19.95 cassette / \$23.95 disk

Availability: 4

Disk or Tape: Both

OVERALL RATING	C-	CONTROLLABILITY	C-	ERROR HANDLING	C-
GAME CONCEPT	B-	SKILL INVOLVED	C+	DOCUMENTATION	B
CREATIVITY	C	CHALLENGE	C-	HOLDS INTEREST	C-
GAME DEPTH	C+	GRAPHICS	C	VALUE FOR MONEY	C-

Backgammon 2.0 plays a beginner's level game of Backgammon against a human opponent. The game board is in Graphics 7, with text above and below the game board to identify each piece position with numbers. The playing pieces are more triangular than round. The game is controlled through keyboard inputs. You enter your position choices from and to the place you wish to move, then the computer erases the piece from its current position and redraws it at the new position. It has set up options and gives you the choice of letting you or the computer roll the dice. It plays with the doubling cube, and it plays by standard rules. The computer checks the legality of moves, and whether or not there is an open move, rather swiftly. It seems to have patterned its options after the VCS cartridge.

Keyboard input is an inconvenient arrangement, and withdrawing or changing a move impossible. The program plays a very unchallenging game. It misses very obvious moves at times, and only offers to double when it has a clear win. The graphics are satisfactory, but the level of play will by no means satisfy anyone but novice players.

FASTGAMMON

Company: Quality Software

Language: Assembly

Hardware Requirements: 8K, cassette player.

Department: Entertainment

Sugg. Retail: \$19.95

Availability: 3

Disk or Tape: Tape

OVERALL RATING **B-**
GAME CONCEPT **B**
CREATIVITY **C**
GAME DEPTH **C+**

CONTROLLABILITY **C**
SKILL INVOLVED **C+**
CHALLENGE **B**
GRAPHICS **D**

ERROR HANDLING **A-**
DOCUMENTATION **C**
HOLDS INTEREST? **B**
VALUE FOR MONEY **B-**

Fastgammon is a backgammon game in which the computer is your opponent. While its response time and error checking routines are superior, the display is on the text page in board format, but with X's and O's representing the pieces. While it was one of the first Apple games to be translated to the Atari two years ago, it takes no advantage of the Atari's graphics, not even a redefined character set.

The program plays a fair game of backgammon. Although it has a strong midgame, it has a weakness in its end game. Its major strength is its speed of play. One of the most interesting features is its ability to replay a game with the same series of dice rolls. In sum, it is an excellent learning program for beginning to average players, and will provide some challenge and practice for better players.

REVERSI II

Company: APX

Language: Machine Language

Hardware Requirements: 16K cassette, 24K disk

Department: Entertainment

Sugg. Retail: \$22.95

Availability: 4

Disk or Tape: Both

OVERALL RATING **B**
GAME CONCEPT **B**
CREATIVITY **B**
GAME DEPTH **B**

CONTROLLABILITY **B**
SKILL INVOLVED **B**
CHALLENGE **B**
GRAPHICS **C**

ERROR HANDLING **A-**
DOCUMENTATION **C+**
HOLDS INTEREST? **B**
VALUE FOR MONEY **B**

Reversi II is a computerized version of the game *Othello*. It is a strategy game for one or two players. The object of the game is to surround your opponent's pieces on two parallel sides (horizontally, vertically, or diagonally), and so capture them. The player who has taken the most pieces at the end wins.

One player is pitted against the computer, or against another player. The computer opponent can play on three levels of difficulty. Its strategy on level one is to capture as many pieces as possible, even if the move isn't the best one. On level two it considers its opponent's countermove, thereby playing a better defensive game. The computer employs strategy the most on level three. It tries to dominate the strategically valuable corners while weighing the advantages of each square it can move into. It looks ahead one and a half moves. There is also a fourth level, which is interesting in that it plays in the level three mode but displays its "thought" processes while figuring out its next move.

The game is played on an eight by eight blue colored board. The game pieces are green and red, or black and white if you choose a monochrome monitor. A joystick positions the cursor to indicate the next move. The firing button confirms the choices you make. There is good error checking, since it won't allow an illegal move. The computer's response time is quite fast on all levels of play. It never takes more than two seconds to make its move. Surprisingly, it is a challenging opponent to all but quite advanced players.

A sidenote: I pitted the Apple computer game *Reversal* against *Reversi II* in a best-of-three match. *Reversal* played both games on the advanced level, one at A1 and the other at A4. *Reversi II* was set on level three, the non-transparent advanced level.

The playing styles were totally different. *Reversi II* took an early lead in both games. In one game it lead 32 to 2 before finding itself without a move for three straight times. It eventually lost the game 51 to 13, despite having captured both bottom corners and the entire bottom row. *Reversi II* also lost the other game, 49 to 15.

The winning of the latter game by *Reversal* could be attributed to a longer "thinking" time. But the response time for both programs was the same in the first game. It becomes obvious that, while *Reversi II* uses a set algorithm for determining its moves, *Reversal* takes a very sophisticated and flexible approach to winning.

QS REVERSI

Company: Quality Software

Language: Machine

Hardware Requirements: 40K, disk drive.

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 7

Disk: Disk*

OVERALL RATING	A -	EASE OF USE	A	ERROR HANDLING	A -
GAME CONCEPT	B	SKILL INVOLVED	B +	DOCUMENTATION	B
CREATIVITY	B	CHALLENGE	A	HOLDS INTEREST	B +
GAME DEPTH	B	GRAPHICS	B	VALUE FOR MONEY	A -

QS Reversi may well be the "Othello" champion for the Atari. Although the game hasn't been entered in tournaments as yet, preliminary bouts against Hayden's *Reversal*, playing at similar advanced levels based on response times, has resulted in consistent *QS Reversi* victories. The play is brilliant at times, like two masters sparring against each other. I don't know why one can beat the other, but this version obviously has a much more efficient algorithm.

The program's graphics display and input routines are comparable to those of *Reversal's*. The Hi-Res board is normally visible; but the text page, with its play-by-play listing, can be toggled by Control keys. The move-entry routine is foolproof. Only legal moves, which are displayed via a blinking square whose movement is controlled by the right and left arrow keys, can be entered. The computer waits for you to accept its move before allowing you to continue.

QS Reversi, in addition to offering 12 levels of play, allows you to back up one or more moves so that alternative strategies can be tested. It also offers a tournament entry mode, which requires input for specifying the location of the letter column and number row. You can also handicap either the computer or yourself by giving one or more corners away. One last note: although this program can run on a 40K machine, advanced levels 10-12 require a 48K machine.

REVERSAL

Company: Hayden

Language: Machine

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 8

Disk or Tape: Disk*

OVERALL RATING	A -	EASE OF USE	A	ERROR HANDLING	A -
GAME CONCEPT	B	SKILL INVOLVED	B +	DOCUMENTATION	B +
CREATIVITY	B	CHALLENGE	A -	HOLDS INTEREST	B +
GAME DEPTH	B	GRAPHICS	B +	VALUE FOR MONEY	B +

REVERSAL offers the Othello player a definite challenge. In fact, this program by the Spracklens of Sargon Chess fame is a quantum leap over other commercial programs. It won the First International Man-Machine Othello Tournament last year.

It is a strategy game where one must place a piece on a square (8x8 board) that causes at least one of the opponent's pieces to be trapped between your pieces. All of the opponent's trapped pieces are then "flipped" to your color. The object is to control the most squares. A simple game but difficult to master.

The program allows one to play against the computer, play against another human with the computer monitoring the game, or set up a particular board from which to play. There are 27 levels of play, 9 levels for each of beginner, intermediate, and advanced modes. The computer's response time, depending on the level, is from 2.5 sec. to 3 minutes. The board is normally visible, but the escape key will toggle the text page with its play by play listing. There are other features like a kibitz mode where the computer will offer advice (unfortunately the advice isn't very good), a take back feature, and faces on the counters that smile or frown depending on who is winning. (This can be suppressed.)

The computer's move entry is foolproof. A blinking cursor with only the legal moves is operated by the arrow keys. Each press of the key gives another possible move; the return key is used for entry. When the computer makes its move, it waits for you to press return before it actually flips over the pieces.

I found the program especially challenging on the advanced levels; in fact, embarrassingly challenging. Having beaten other programs relatively easily, I was beaten on advanced-level 4 several times by margins of 3 to 1. I settled down to the intermediate level.

Department: **REVERSI**
 Company: **APX**
 Language: **English**
 Hardware: **IBM PC**
 Department: **REVERSI**
 Company: **APX**
 Language: **English**
 Hardware: **IBM PC**

Department: **REVERSI**
 Company: **APX**
 Language: **English**
 Hardware: **IBM PC**

In addition to offering 12 levels of play, always you to back up your move so that alternative strategies can be tested. It also offers a tournament entry mode, which enables you to specify the location of the latter column and number row. You can also handicap either the computer or yourself by giving one or more current away. One last note: although this program can run on a 486 machine, advanced levels 10-12 require a 386 machine.

REVERSI II
 Department: **REVERSI**
 Company: **APX**
 Language: **English**
 Hardware: **IBM PC**

Department: **REVERSI**
 Company: **APX**
 Language: **English**
 Hardware: **IBM PC**

SPORTS GAMES

SOCCKER

Company: Thorn, EMI

Language: Machine

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$44.95

Availability: 7

Disk or Tape: Cartridge

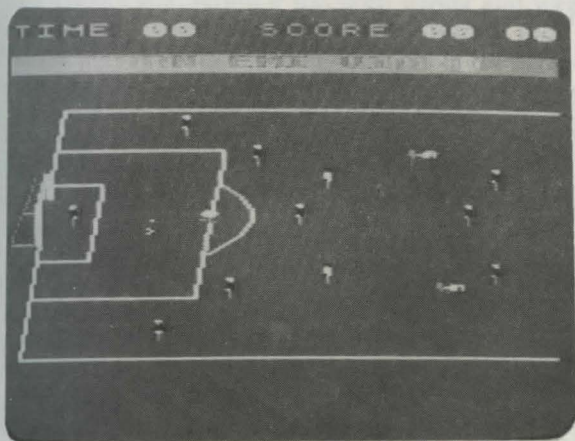
OVERALL RATING	C	CONTROLLABILITY	C-	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C-	DOCUMENTATION	C-
CREATIVITY	C	CHALLENGE	C	HOLDS INTEREST	C+
GAME DEPTH	C	GRAPHICS	C-	VALUE FOR MONEY	C-

One to four players can play the classic game of *Soccer* using this cartridge. The game is played on a long field that is three screens wide and scrolls during play. Teams consist of 11 men each, as in the real game; but they are tiny figures and not animated. Each team member can control one player at a time. The player, selected by pressing the joystick button is always the nearest player to the ball. The team number of that player lights up to indicate which player is now controllable. In games with two or more players on a side (up to four players can challenge a computer-fielded team), the nearest player may already have control of the ball, so the computer will choose the next nearest player, and so forth. The player with the ball moves in the direction desired by joystick control. He runs slower than his opponents and must bob and weave to avoid being intercepted and losing the ball. If he wishes to kick or pass, he aims with the joystick and presses the button. Supporting team players are not intelligent unless you are playing with other humans. They don't move into passing position or help in defense, and only shift positions when the screen scrolls. Even the goalie is non-intelligent, and you must transfer control to him either when intercepting the goal kick or when the other team gets very close.

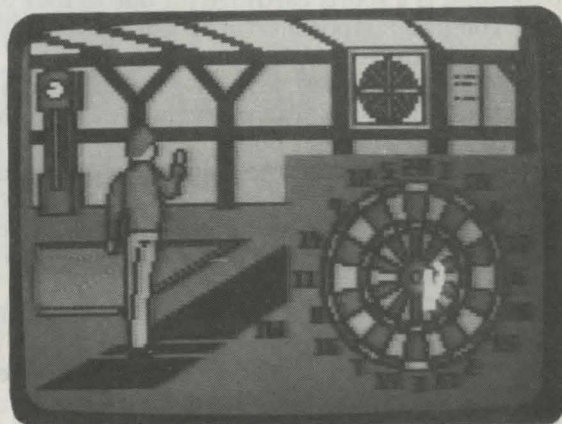
Games with human players on each side tend to be slow, with little field action other than one-on-one play. The offensive player has no one to pass to from midfield on; and since almost all of the players are clustered in a small segment of the field, he has little opposition if he alternates between running and kicking the ball as he moves toward his opponent's goal. It is also difficult to align the tiny player with the ball, so you often miss it when trying to gain possession.

Games against a computer team tend to be lopsided in favor of the computer. While a single player can only control one player at a time, the computer has no trouble moving two or three players simultaneously. There are always two or three players converging on your man with the ball. The best play against the computer is three or four players fielding one team. Incidentally, the computer can play a good exhibition game by fielding two computer teams.

The game is very much a disappointment, particularly if you have played *Soccer* on either the Atari 5200 or the Intellivision. The least one would have expected was some intelligent player positioning support. Instead, you have a static game with single-player movement. The only fortunate thing is that the game improves with the number of players. Four player games are best, because at least you get four-player movement. And four players against the computer makes a very hectic and action-packed game, although four humans can usually overwhelm the less intelligent computer team.



SOCCKER (THORN)



DARTS

SOCCER

Company: Gamma Software
Language: Machine Language
Hardware Requirements: 16K

Department: Entertainment
Sugg. Retail: \$29.95
Availability: 5
Disk or Tape: Both

OVERALL RATING	D	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	C-	SKILL INVOLVED	C+	DOCUMENTATION	C+
CREATIVITY	C-	CHALLENGE	C+	HOLDS INTEREST?	D
GAME DEPTH	C	GRAPHICS	D+	VALUE FOR MONEY	D

Soccer is a sport's action game for two, three, or four players who control two four-man teams. The game closely resembles the author's *Hockey* game. (The graphics, play, and control system are virtually the same.) Players move about the screen in an animated running stance; and the standard rules of soccer apply.

The major objection to the game is that the field is too small in relation to the size of the players. Where a fast moving puck in *Hockey* made that game exciting, the rapidly moving ball in *Soccer* makes the game totally unrealistic. It only takes two seconds for the ball to travel from one goal to the other, and if another player doesn't intercept the ball after a goal kick, the goalie could actually score. The other problem is that it is too easy to miss a pass, and the ball is always going out of bounds, resulting in the referee's whistle blowing continually throughout the game. The need for corner kicks, throw-ins, and goal kicks further interrupt the game's flow.

The two-player game, in which each player must control the goalie and three offensive players, is very difficult. Since the ball travels too fast from one end of the playfield to the other, the goalie is often left to defend the goal area alone. (It's dangerous to try to pull the other players back while defending the goal, so a point is often scored against the goalie.) The flashing defender, who is the only player you control directly, presents another problem as he sometimes becomes lost in the crowd of congested players.

This is not a soccer game that I would recommend. At the very least, it needs a larger playfield with fine resolution graphics, smaller players, and a slower moving ball. At best, it should have incorporated a scrolling playfield like the one in Mattel's version, or the Atari 5200 soccer games.

BASKETBALL

Company: Atari
Language: Assembly
Hardware Requirements: 16K

Department: Entertainment
Sugg. Retail: \$34.95
Availability: 10
Disk or Tape: Cartridge

OVERALL RATING	B	CONTROLLABILITY	B-	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	B-	DOCUMENTATION	C
CREATIVITY	B	CHALLENGE	B-	HOLDS INTEREST?	B-
GAME DEPTH	C	GRAPHICS	B	VALUE FOR MONEY	B

Basketball is a sports cartridge for one to four players, who have the option of competing against each other, or against computer opponents (in all but the four-player mode). The computer will even act as a teammate to one of the players in the three player version.

Basketball players are joystick-controlled. When they come in contact with the ball, they begin dribbling automatically, and thus can move anywhere on the court. You must depress the fire button to shoot a basket. The ball hovers in the player's outstretched hands and oscillates from a low to high position repeatedly. The higher the ball, the longer the shot. The ball can be passed in the three or four-player games, if the recipient holds his button down when the player carrying the ball wishes to shoot. The ball is passed instead.

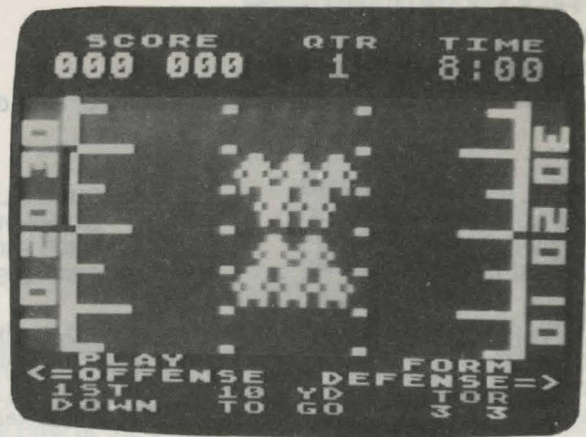
The defensive player can jump and block a shot if his timing is right. He can also harass an opponent who is dribbling and attempt to steal the ball. The steal occurs if the players touch when their feet are exactly aligned on the court.

The graphics are excellent on this almost three dimensional court. The only element that distorts the perspective is the fact that the players don't shrink in size as they move away from the area in the front of the screen. The game is a pleasure to play, even against a computer opponent. The computer plays tough when it is behind or the score is even. But when it pulls ahead more than a few points, it drops into a pattern of predictable play, almost as if hoping to keep the game close. Shooting is very easy with a little practice. The ball almost always travels to the basket, no matter where the player shoots from. Distance is usually the deciding factor in making a basket.

In sum, *Basketball* presents an excellent sports simulation for play on your home computer.



BASKETBALL



CYPHER BOWL

CYPHER BOWL

Company: Artsci

Language: Machine Language

Hardware Requirements: 16K, cassette

Department: Entertainment

Sugg. Retail: \$49.95

Availability: 4

Disk or Tape: Tape

OVERALL RATING

C

CONTROLLABILITY

C-

ERROR HANDLING

N/A

GAME CONCEPT

C+

SKILL INVOLVED

C+

DOCUMENTATION

C+

CREATIVITY

C

CHALLENGE

C+

HOLDS INTEREST?

B-

GAME DEPTH

C+

GRAPHICS

D+

VALUE FOR MONEY

D

Cypher Bowl is an arcade football game for two players. The opponents control five-man teams on a vertically scrolling football field. The game follows the regular rules of American football. The players can choose between pass plays and running plays, and can punt, or kick a field goal.

Each team, depending on whether they are playing offense or defense, can choose between sixteen different plays. A play is chosen in two stages using the joystick. One of four formations can be selected by moving the joystick up, down, left, or right. This method is then followed to pick one of four plays. A chart of these 16 plays is supplied on laminated plastic. They show the running and pass patterns of all players. At first glance, these appear to be unduly complex; but they follow a basic pattern that can and should be memorized for a more enjoyable game. The formation for offense is either a tight left or right, and a split left or right. Obviously, a tight formation gives more protection to the quarterback against the rush since they help to block. The plays are either short or long passes, inside or outside running plays. Defense is somewhat similar, except of course the plays cover the possibilities of the offensive plays.

As a football simulation it has both strong and weak points. The overhead view of players moving up and down the field is very hard to contend with. While it is quite natural to move up the screen, the joystick control is unnaturally backwards when moving down the screen. The overhead view makes pass plays a challenge because of the false perspective. The program allows the player to control the distance the ball is thrown. Although this approach lets the ball pass over the heads of the intervening defensive players, it is extremely difficult to judge how long to hold the button down because you don't see the ball arc in its trajectory. A tonal pitch is supposed to help you tell when the ball is going upwards, but this is little use while steering the fast moving ball with the joystick. The joystick unrealistically allows you to change the course of the ball's trajectory to the point of a full U-turn. Learning to pass is so frustrating that beginners will choose to gain most of their yardage on the ground.

The graphics are chunky and crude. The players are large and not detailed. It seems as if the designers chose graphics mode five, possibly to save screen memory in this 16K game. The ball, which is black, is sometimes difficult to spot when carried by a player. It should have been colored bright yellow or orange for easy visibility against the green playing field. The screen shows approximately half of the field once the game begins. It then scrolls up or down, depending on what happens during the action. From time to time a long pass goes off-screen to an offensive end, but its path is predictable.

Cypher Bowl does have some good points. As a strategic game it is very well designed; and despite its passing game problems is fun to play. Let us hope that some of its better points will be incorporated into a newer version sometime soon that will have improved graphics and a horizontal perspective like that in the Mattel football game.

PRO BOWLING

Company: APX

Language: BASIC

Hardware Requirements: 16K cassette; 24K disk

Department: Entertainment

Sugg. Retail: \$15.95

Availability: 6

Disk or Tape: Both

OVERALL RATING	C-	CONTROLLABILITY	C	ERROR HANDLING	B
GAME CONCEPT	C	SKILL INVOLVED	C-	DOCUMENTATION	B
CREATIVITY	C	CHALLENGE	C-	HOLDS INTEREST?	C
GAME DEPTH	C	GRAPHICS	C	VALUE FOR MONEY	C-

Unhappily, there are no pleasant surprises here, just a mediocre implementation of the game of bowling for the computer. *Pro Bowling* accommodates up to four players, with the program keeping track of the different scores. The ball is controlled by the joystick, and you may elect to throw curves or a straight ball. The graphics are only average, and the "feel" of the game not much better.

GOLDEN GLOVES

Company: Artworx

Language: Assembly Language

Hardware Requirements: 16K, cassette; 32K, disk drive.

Department: Entertainment

Sugg. Retail: \$26.95 disk/\$22.95 cas.

Availability: 3

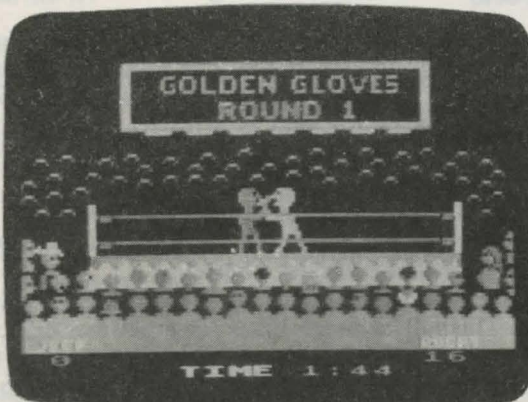
Disk or Tape: Both

OVERALL RATING	C-	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	B-	SKILL INVOLVED	D+	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	C	HOLDS INTEREST?	D+
GAME DEPTH	C-	GRAPHICS	C+	VALUE FOR MONEY	C-

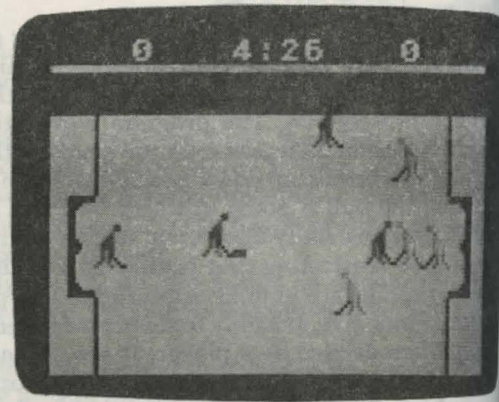
Golden Gloves is a cute action game in which two boxers slug it out in the ring. It can be played competitively against a friend, or by a single player against the computer. Each player controls his fighter's movements with a joystick. The boxers can move backwards and forwards, throw a jab or hook punch, block a punch, or duck. Points are scored for each punch landed. More points are awarded for a punch that causes the opponent to step back than for a normal punch; and, naturally, a knockdown scores the highest points of all.

There seem to be few clues as to the effectiveness of a given punch apart from the score. It is hard to develop any boxing strategy, other than to punch as often as possible. Ducking, where the fighter lowers his head to protect himself, rarely works. A hook to the head knocks him down.

All told, *Golden Gloves* offers appealing graphics, but it lacks enough of a skill level to make it a good sports contest. It is fun to watch, but not much fun to play.



GOLDEN GLOVES



HOCKEY

HOCKEY

Company: Gamma Software
Language: Machine
Hardware Requirements: 16K

Department: Entertainment
Sugg. Retail: \$29.95
Availability: 5
Disk or Tape: Both

OVERALL RATING	C +	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	C +	DOCUMENTATION	C +
CREATIVITY	C	CHALLENGE	B -	HOLDS INTEREST?	C
GAME DEPTH	C	GRAPHICS	C -	VALUE FOR MONEY	C +

Hockey simulates the sport of ice hockey for two, three, or four players. It is much simplified over standard game play: teams are reduced to four players each — three forwards and a goalie. In two player games, a joystick controls one of the forwards, either the man with the puck, or his opposing guard if you are playing defense. The other two men are monitored by the computer, and manage to follow the flow of the game's action quite well. When the puck is passed, control is transferred to the recipient. If a player from the opposite team touches the puck, he gains immediate control in a clever steal. The goalie is also controlled with the same joystick by means of up and down movements. He cannot hold or catch the puck, only deflect it. All passes or shots at goal are made by pressing the joystick button while pushing the joystick in the direction you want the puck to travel.

The game is a grueling test of endurance in these three, five, or eight minute contests. Action is nearly non-stop except when a goal is scored. Games that end in a tie conclude with a two minute, "sudden death" overtime period. These games are best played with four players, one team member guarding the goal while the other plays forward. Defensive goal keeping is improved when independently controlled; although it is best to switch off since the job of goal keeper is not very exciting.

The graphics and sound in *Hockey* are on the weak side. The players don't look like hockey players; perhaps they more resemble praying mantises. The sound effects are terrible. Noise simulates the cheering crowd throughout the game, and a "blat" sounds when the game or period is ended. The defender guarding the advancing offense player with the puck flashes. He is often hard to see, especially when several teammates are in close proximity. With the offensive passing quickly, this blinking man who is under the player's direct control changes position too often, which makes things confusing for the defense.

On the brighter side, *Hockey* is quite fun to play, especially for sports-minded fans. It is a very competitive contest, sure to relieve the players of some of their everyday, working world anxieties and frustrations.

BUMPER POOL

Company: Atari Program Exchange
Language: BASIC
Hardware Requirements: 16K, cassette; 24K disk.

Department: Entertainment
Sugg. Retail: \$15.95
Availability: 6
Disk or Tape: Both

OVERALL RATING	C +	CONTROLLABILITY	C	ERROR HANDLING	C +
GAME CONCEPT	C +	SKILL INVOLVED	C +	DOCUMENTATION	C +
CREATIVITY	B -	CHALLENGE	B -	HOLDS INTEREST?	C +
GAME DEPTH	B -	GRAPHICS	C +	VALUE FOR MONEY	C +

Minnesota Fats, or Mosconi, had better watch out, because after a few games of *Bumper Pool* you'll be ready for the champs. *Bumper Pool* is a two player game with high competition possibilities. Each player is given five balls, and, alternating turns, is required to "sink" his balls into an opening on the opposite side. By guiding the angle and distance of each shot, innumerable combinations are possible.

You are able to shoot the ball by using joystick controls. Three selections (the number on the ball, the direction, and the distance) determine your shot location. After these are all entered, you shoot by depressing the button. Contact with the various bumpers, or other balls, has the effect of deflection and so can rearrange the balls.

The strategic demands are fierce in the later stages of the game, for each player must decide whether to shoot for points or get defensive by bumping his opponent far out of range. The only area that really needs work is in the area of error handling. In the present version an erroneous entry must be accepted.

POOL 1.5

Company: Innovative Design Software
Language: Machine
Hardware Requirements: 48K, disk drive.

Department: Entertainment
Sugg. Retail: \$34.95
Availability: 6
Disk or Tape: Disk*

OVERALL RATING	B	CONTROLLABILITY	B	ERROR HANDLING	B+
GAME CONCEPT	A-	SKILL INVOLVED	B-	DOCUMENTATION	B
CREATIVITY	B-	CHALLENGE	B	HOLDS INTEREST	C+
GAME DEPTH	B	GRAPHICS	B+	VALUE FOR MONEY	B

To simulate the game of pocket billiards accurately with 15 balls and a cue ball bouncing around the table in real time is an incredible feat. The programmer's attention to detail is to be commended. He offers variable friction, strength of shot, type of English on the ball, and four types of pool (straight pool, eight ball, nine ball and rotation).

On the break, or after one's opponent has scratched, one can place the cue ball into position for the shot. Aim is accomplished by a paddle control. A dotted line with the shape of the cue ball's position against the target surface (ball or cushion) is moved about the table. Once a target is chosen, control can be shifted for a finer aim before the shot is taken. While there is a lot of fine adjustment for timing during close shots, it is somewhat less accurate for shots across the table due to the table's angle.

Those who play pool regularly will find the dynamics or physics of the game amazingly accurate. Balls strike and bounce off each other according to Newton's laws of motion. By adding a choice of nine types of English for a shot, one can control the final resting position of the cue ball as in the real game. A nice feature is that if one is practicing a trick shot and misses, the shot can be tried again with all balls in the same place.

The graphics, which are excellent, can be used on either a color or black and white screen. One can toggle between showing the balls with their numbers or in two colors. Actually, on a black and white screen, the colors show up as stripes and solids depending how good your monitor is. The game's instructions can always be reached by toggling the ESCape key. The game comes with a demo mode, with which to break with the friction set to 1 (minimal). The balls seem to bounce around forever until almost every ball is sunk.

POOL 400

Company: Innovative Design Software
Language: Machine Language
Hardware Requirements: 16K

Department: Entertainment
Sugg. Retail: \$39.95
Availability: 7
Disk or Tape: Cartridge

OVERALL RATING	B	CONTROLLABILITY	B+	ERROR HANDLING	N/A
GAME CONCEPT	A-	SKILL INVOLVED	B-	DOCUMENTATION	B
CREATIVITY	B-	CHALLENGE	B	HOLDS INTEREST	C+
GAME DEPTH	B	GRAPHICS	B+	VALUE FOR MONEY	C

Pool 400 is the cartridge version of this company's excellent pool game, *Pool 1.5*. It is similar in control and play, except that it doesn't keep score or enforce the rules. Up to four people can play Straight Pool, Nine Ball, Eight Ball, or Rotation. Control is almost entirely by joystick. Like *Pool 1.5*, you aim the cue ball by moving the joystick from side to side. The cue ball marker shows the projected point of impact. Fine aim is toggled by moving the joystick upward. Both the strength of the shot, and the proper amount of English on the ball are also controlled by joystick. Various keyboard commands allow the players to set the speed of action, the friction, or whether the balls are to be displayed in color or with numbers. They have retained the instant replay feature that allows you to try the same shot repeatedly.

An excellent game. Those pool players who longed for a good pool game simulation, but lacked the computer memory that *Pool 1.5* required, now have their wish.

POOL

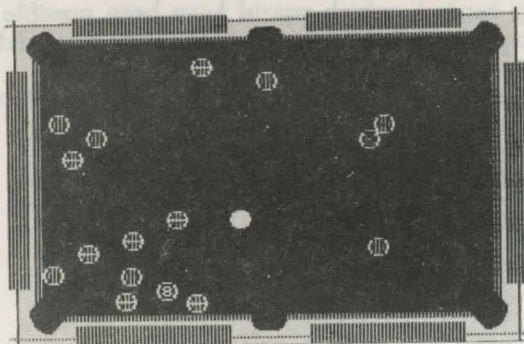
Company: Thorn, EMI
Language: Machine
Hardware Requirements: 16K

Department: Entertainment
Sugg. Retail: \$29.95
Availability: 8
Disk or Tape: Tape

OVERALL RATING	B-	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	B+	SKILL INVOLVED	B-	DOCUMENTATION	C
CREATIVITY	C+	CHALLENGE	B-	HOLDS INTEREST?	C+
GAME DEPTH	C+	GRAPHICS	B	VALUE FOR MONEY	B-

Pool from Thorn, EMI is a nice, straight-forward simulation of the game of pool for one or two players. It offers the games of Eight Ball and Tournament Pool — a game in which you must call your shots, or be penalized. The game has nice, simple joystick control for aiming the cue ball. A cursor points in the direction of the shot. Since there is no fine aim control, you are limited to positioning the cursor by tapping the joystick until it is in the right position against the ball to be struck. However, more precise aim, especially on very close shots, is obtained by just lining the cursor up with the ball. The strength of the shot is determined by a constantly moving “strength of shot” indicator on the left. You take your shot when the indicator reaches your correct value.

The graphics are smooth and nicely done. The table is in green, and each player's balls are a different color. Balls that are pocketed are kept up at the far right. *Pool* is a very easy to play game. While it doesn't enforce the rules, except for scratches, nor has all the bells and whistles of its competition, it's nonetheless a fine game.



POOL 1.5

DOWNHILL

Company: APX
Language: BASIC
Hardware Requirements: 16K cassette, 32K disk

Department: Entertainment
Sugg. Retail: \$22.95
Availability: 6
Disk or Tape: Both

OVERALL RATING	C	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	C-	DOCUMENTATION	C-
CREATIVITY	C	CHALLENGE	C	HOLDS INTEREST?	B-
GAME DEPTH	D	GRAPHICS	C	VALUE FOR MONEY	C

The thrill of downhill ski racing can be had in this game from APX. One player races against the clock in an attempt to ski through a downhill race course consisting of eleven or more gates, and past numerous trees which serve as obstacles. The player steers his man with a paddle controller, and can use the button as a brake if he needs to slow down. The goal is to ski the course in the shortest time without missing any of the gates. A penalty of 10 seconds is added to one's time for each missed gate.

There are four different courses that can be increased in difficulty by changing the steepness of the hill. The beginner's course is the easiest, with the least obstacles; while the expert course is studded with trees with very narrow gaps between them. There is also a random course that resets the gate's positions each time it is played.

The course, which is viewed from above, scrolls vertically from top to bottom as one skis. The skier appears to proceed up the hill rather than down. This doesn't detract much from the game, although it would have been nice to be skiing down the screen rather than up the screen. The skier's dynamics aren't quite like those encountered in real skiing. It normally requires turning sideways to slow down — here you press a button. Also, you can actually ski slightly uphill in a long traverse if you are going fast enough. Recovery after striking a ski gate or tree is maddeningly slow.

Despite the above reservations, *Downhill* is fun to play if you are a skier. It requires good hand-eye coordination and considerable practice. There's also a lot of enjoyment to be had for several players who compete for the fastest time on the course.

PRO GOLF

Company: Dynacomp

Language: Basic

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$17.95cas./\$21.95 disk

Availability: 3

Disk or Tape: Both

OVERALL RATING	D	CONTROLLABILITY	D+	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C-	DOCUMENTATION	C
CREATIVITY	D	CHALLENGE	C	HOLDS INTEREST?	D
GAME DEPTH	C-	GRAPHICS	D	VALUE FOR MONEY	D

One to four players can tee off on a nine hole golf course in *Pro Golf*. The program uses coarse Graphics Mode 2 characters (20 x 10) to represent the green, trees, sand traps, and water hazards. Each of the holes will appear on the screen with the ball's present location. Information at the bottom of the screen provides current score and club selection. You may select any one of two woods, five irons, or a wedge with the joystick, and hit the ball in one of eight directions by pressing the button. There are penalty strokes for hitting the ball in the water or out of bounds. Shots made out of the rough or sand traps are less powerful than shots hit on the fairway. When the ball reaches the green, the view shifts to a full screen, enlarged view of the ball in relation to the hole. The putt can be long, medium, or short.

The nine hole course is not randomly generated by the program each time the game is played, and thus becomes predictable. There is no fine aiming control, which would have been possible with finer graphics and paddle control. The player must be careful to push the joystick in one of the eight desired directions, or the ball will stray off of the desired course.

Although *Pro Golf* may be the only golf game on the Atari computer at present, it is not very realistic, and does not compare to any of the golf simulations on other micro computers.

DARTS

Company: Thorn/EMI

Language: Machine Language

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 8

Disk or Tape: Tape

OVERALL RATING	D+	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	D	DOCUMENTATION	C
CREATIVITY	D+	CHALLENGE	C	HOLDS INTEREST?	D
GAME DEPTH	C-	GRAPHICS	B	VALUE FOR MONEY	D

Darts allows one to four players to compete in this popular British game. Each player throws three darts per turn at a dart board divided into twenty main scoring sectors (1 through 20). The outer and midway rings score double and treble, respectively. The inner bull scores 50; the outer bull 25. The object is to reduce the players' score from the starting total (301, 501, 901, or 1,001) to zero.

The display shows the back of a dart player facing a dart board across the room. The lower right corner presents an enlarged view of the board. A hand is positioned via joystick to the spot on the dart board that the player wants to hit. The hand trembles slightly to add a bit more challenge and anticipation to the game. The higher the skill level, the more jittery the hand becomes. When you press to throw, the player on the left throws the dart at the dart board. The action is very realistic, and the dart may even strike and bounce off of a wire encircling the board. The score is automatically displayed on the computer's score pad, which alternates with the enlarged dart board after each turn.

The game is quite different from American darts. In some ways it offers a challenge, but it does seem inconsequential to just position your hand on a dart board, then aim and throw a dart. The graphics are good, but the game just isn't much fun to play.

GAMBLING & CARD GAMES

SEVEN CARD STUD

Company: Atari Program Exchange

Language: Basic

Hardware Requirements: 24K cassette; 32K disk.

Department: Entertainment

Sugg. Retail: \$15.95

Availability: 2

Disk or Tape: Both

OVERALL RATING	B-	CONTROLLABILITY	C+	ERROR HANDLING	C
GAME CONCEPT	B-	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C+	CHALLENGE	C	HOLDS INTEREST?	C+
GAME DEPTH	C+	GRAPHICS	B+	VALUE FOR MONEY	B-

In this single player game, you sharpen your wits against five other computer opponents. *Seven Card Stud* is the game, and the computer deals, collects and counts bets, and plays five hands against yours. Each player is given a name and certain traits of poker playing. It becomes your job to learn these traits (for your own poker survival), and, if possible, pile up huge winnings. You can change the "personalities" of your poker rivals around if you like, to prevent yourself from getting too cagey. Fortunately, the computer doesn't cheat by "looking" at your hand.

In different levels of play you can program your opponents in areas of tight or loose play, smart play, frequency of raise, and bluff factors. In all, this makes for many variations of the same game. Whether you call, raise, or fold is determined by positioning your joystick.

The graphics in this game are quite good. Against a green backdrop (giving the effect of a felt tabletop), your checkered cards are dealt three down and four up in the regulation manner. The bets after each card are calculated by the computer, and, after each hand, the tally is shown. You can then look at everyone's hand, and so learn to improve your play. The game ends only when you've had enough of Doc, Kelly, and the rest of the boys.

POKER TOURNEY

Company: Artworx

Language: Basic

Hardware Requirements: 32K; disk drive or cassette player.

Department: Entertainment

Sugg. Retail: \$18.95 cas./\$22.85 disk

Availability: 3

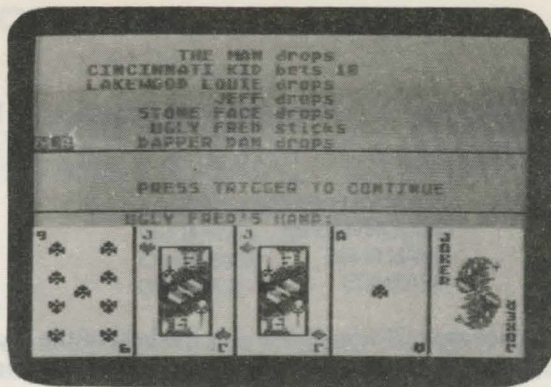
Disk or Tape: Both

OVERALL RATING	C+	EASE OF USE	B	ERROR HANDLING	B+
GAME CONCEPT	B-	SKILL INVOLVED	C-	DOCUMENTATION	C+
CREATIVITY	C	CHALLENGE	C+	HOLDS INTEREST?	C
GAME DEPTH	C	GRAPHICS	C+	VALUE FOR MONEY	C

Poker Tourney simulates the game of draw poker. It is a one-person game pitting you against six other computer players. The deck contains a joker that can be used either as an ace, or to fill in straights and flushes. The rules state that it takes jacks or better to open, and three raises are permitted both before and after cards are drawn. Everyone starts with \$50.00 in chips. Each time a player is forced out of the game the ante and stakes increase. You play until you win or run out of money.

All choices are controlled by joystick input. You can pass, raise, or call; and up to four cards may be discarded. The cards are displayed in colorful, high-resolution graphics if the cassette has more than 32K of memory; otherwise, the cards are in text. The disk version, in addition, contains Hi-Res display.

Each of the computer opponents plays with a different strategy. Some resort to bluffing, others base their play on poker odds. The program tracks your bluffing tendencies and adjusts play accordingly, but it does not cheat by looking at your hand. With features like rotating dealing and escalating stakes, the program plays a very fair yet realistic poker game.



POKER TOURNEY

DICE POKER

Company: APX

Language: BASIC

Hardware Requirements: 16K cassette; 24K disk.

Department: Entertainment

Sugg. Retail: \$15.95

Availability: 6

Disk or Tape: Both

OVERALL RATING	C	CONTROLLABILITY	B-	ERROR HANDLING	B
GAME CONCEPT	C	SKILL INVOLVED	C	DOCUMENTATION	B
CREATIVITY	C-	CHALLENGE	B	HOLDS INTEREST?	C+
GAME DEPTH	C-	GRAPHICS	C	VALUE FOR MONEY	B-

Dice Poker offers an interesting combination of two games, poker and dice. In this game you are allowed up to 13 rounds of play. Each round you may roll any or all five dice up to three times to try for the best of 13 possible scoring combinations. In the diskette version, the computer will only track the 10 best scores along with the players' names.

The program, which is joystick controlled, provides for as many as four players, but a single player can't play against the computer. The graphics are merely adequate, although the overall display is nicely laid out. The game, designed for players aged 12 on up, manages to hold your interest because it requires a curious and indefinable combination of strategy and good luck to win.

HEARTS

Company: Artworx, Inc.

Language: Atari BASIC

Hardware Requirements: 16K; disk drive or cassette player

Department: Entertainment

Sugg. Retail: \$19.95 disk/\$16.95 cas.

Availability: 4

Disk or Tape: Both

OVERALL RATING	C	CONTROLLABILITY	C	ERROR HANDLING	B
GAME CONCEPT	C+	SKILL INVOLVED	C	DOCUMENTATION	C-
CREATIVITY	C	CHALLENGE	C-	HOLDS INTEREST?	C
GAME DEPTH	C	GRAPHICS	D+	VALUE FOR MONEY	C

Hearts reproduces the classic card game, in which the object is to avoid winning any tricks containing either a heart or the Queen of Spades. Like Whist, a player must follow suit to the lead card, but may discard any card if out of that suit. The player with the highest card in the lead suit wins the trick. Thus, the strategy is to discard hearts on your opponents while taking care that no one player accumulates all 26 points ("shooting the moon").

This is a three-player version (in which you are pitted against two computer players). It allows you to pass three unwanted cards to one of your opponents, but it does not allow the most popular option of "shooting the moon." This is very unfortunate, because the "Jekyll and Hyde" approach to accumulating points is what makes the game interesting. The cards are displayed in a text format rather than in a card form design. In sum, the computer plays a fair, but dull, game of straightforward *Hearts*.

BRIDGEMASTER

Company: Dynacomp, Inc.

Language: BASIC

Hardware Requirements: 32K, disk drive.

Department: Entertainment

Sugg. Retail: \$21.95

Availability: 6

Disk or Tape: Disk

OVERALL RATING	C+	CONTROLLABILITY	B	ERROR HANDLING	D
GAME CONCEPT	C	SKILL INVOLVED	C	DOCUMENTATION	C-
CREATIVITY	B	CHALLENGE	C+	HOLDS INTEREST?	B
GAME DEPTH	B	GRAPHICS	N/A	VALUE FOR MONEY	A

Bridgemaster is the successor to Dynacomp's *Bridge 2.0* and is the best of the four known Bridge games currently available for the Atari; unfortunately, it still leaves a lot to be desired. *Bridgemaster* offers 1,000 different hands on a neatly laid out, B&W, all-text playing field; duplicate scoring; and running score sheets for different players. It does not provide a "Claim" feature, so all hands must be fully played out.

The documentation is somewhat long on hype and short on game bidding conventions and menu descriptions. It supports doubles, pre-emptive bids, Blackwood, and Stayman (read the documentation carefully on this one). Given the proper holding, your partner will jump overcall or jump shift your opening bid, but he will seldom overcall an EW opener, even when holding an opening hand himself. North is not prone to shift suits or support your second rebid of a major, even when holding three small cards. Your North partner loves to bid four card suits — again and again, even if he has two other biddable (and higher ranking) four card suits. He seems to keep bidding on the basis of combined point count, pushing his suit until he reaches the correct level, with the proper suit being left to you as South.

Bridgemaster plays EW hands offensively as well as defensively, but the play is conservative and predictable. When NS is defending, the computer plays the concealed North hand. All closed hands have the unfortunate penchant of leading aces and kings off the top, although an ace may be underled against No-Trump contracts. Against a suit contract, an EW declarer always pulls trump, even at the cost of losing trump control; an offensive cross-ruff algorithm is not provided. The game plays without finesse, so why should you? At least it will usually play second hand low.

The speed of play to each trick is excellent; there is a five second delay after the last card to each trick is played, and a lengthy delay before getting on to the next hand. Preset hands are supported, but can't be saved. *Bridgemaster* won't take the place of a good instruction book on learning the game; but it is a step in the right direction, and will give a novice good play as well as practice in getting upset with his partner. Intermediate players will be astonished to find that their game has suddenly improved. Advanced players will have to wait awhile for a good challenge.

BRIDGE 2.0

Company: Artworx

Language: Assembly

Hardware Requirements: 24K

Department: Games

Sugg. Retail: \$17.95 cassette/\$21.95 disk

Availability: 8

Disk or Tape: Both

OVERALL RATING	C	CONTROLLABILITY	B	ERROR HANDLING	B
GAME CONCEPT	C	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C+	CHALLENGE	C+	HOLDS INTEREST?	C
GAME DEPTH	C	GRAPHICS	N/A	VALUE FOR MONEY	C

Bridge 2.0 allows you to play contract bridge with the help of a computer partner against two other computer opponents. The program consists of two parts: bidding for the contract, and playing out the hand, either as declarer or as defender. This ability to play defense against two computer opponents is rather unique, and this was the first microcomputer program to do so.

The bidding follows Goren's point-count bidding system, but because of memory limitations it only incorporates the most fundamental features. Most of these features are explained in the documentation. Don't expect to be able to change to a third suit if you respond with a bid different from the suit with which it opened. Doubles and No Trump are perfectly acceptable. Overall, the program will respond properly around 70% of the time.

The hand is played out in a text display. The display is nicely formatted, and the cards are arranged by rank and suit for your hand, and for your partner if you are the declarer. A king of diamonds is played by typing KD. The computer opponent isn't very good, lacking finesse in play.

Avid Bridge players will find fault with this program. Apart from the limitations discussed above, the computer cheats. In an attempt to develop an algorithm that could play both offense and defense in a limited amount of memory, it was necessary to allow the computer some knowledge of its opponent's hand. While this may not be fair, the computer still doesn't play very well. The game is much more suited to the novice or average player.

BLACKJACK TUTOR

Company: APX

Language: BASIC

Hardware Requirements: 16K cassette, 24K disk

Department: Entertainment

Sugg. Retail: \$22.95

Availability: 4

Disk or Tape: Both

OVERALL RATING

A

CONTROLLABILITY

A

ERROR HANDLING

A

GAME CONCEPT

A

SKILL INVOLVED

A

DOCUMENTATION

B

CREATIVITY

B+

CHALLENGE

A

HOLDS INTEREST?

A

GAME DEPTH

A

GRAPHICS

B

VALUE FOR MONEY

A-

As opposed to the game program *Blackjack*, this program, *Blackjack Tutor*, offers a much better computer implementation of the popular casino game. Not only is the play of game faster, smoother and more challenging, this program is also an excellent teacher of Blackjack strategy.

The game itself offers a complete tutorial, including the ability to play with multiple decks (up to eight), an insurance option, a surrender option, and the ability to split and doubledown. The strategy portion offers not only basic information regarding when to hit or to stand, it also tutors you on the basics of card counting.

Of course, in general, casinos love "systems players." That's how they build those big hotels. But Blackjack can be an exception. Played properly, you can indeed be on almost even terms with the "house," and sometimes you may even be able to swing the odds slightly in your favor. In any case, practising enough using this program, you should at least be able to stretch those gambling dollars further.

BLACKJACK

Company: Atari, Inc.

Language: Atari BASIC

Hardware Requirements: 8K, cassette player.

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 7

Disk or Tape: Cartridge

OVERALL RATING

D

DIFFICULTY

C

ORIGINALITY

F

PUZZLE QUALITY

N/A

EASE OF USE

B

DOCUMENTATION

B

TEXT QUALITY

N/A

VOCABULARY

N/A

HOLDS INTEREST?

F

GRAPHICS QUALITY

C

SAVE/RESTORE

N/A

VALUE FOR MONEY

D-

Blackjack can be one of the more enjoyable casino games. It involves a good mixture of skill and luck. Unfortunately, this computer version of the game does not live up to its potential.

The player is limited in how much he can bet (up to \$4,000). I know casinos have limits, but in a home game this should be optional. Also, a single player against the computer is the only version of play. There is only one deck, and insurance bets and splitting are not allowed. All in all, save the money. You would normally spend on the program for the next time you are in Las Vegas.

SOLITAIRE

Company: APX

Language: BASIC

Hardware Requirements: 16K cassette; 24K disk

Department: Entertainment

Sugg. Retail: \$15.95

Availability: 3

Disk or Tape: Both

OVERALL RATING

D

CONTROLLABILITY

C

ERROR HANDLING

B

GAME CONCEPT

D

SKILL INVOLVED

C

DOCUMENTATION

C

CREATIVITY

D

CHALLENGE

C

HOLDS INTEREST?

D

GAME DEPTH

C

GRAPHICS

F

VALUE FOR MONEY

F+

Somewhere I think I missed the point of this program. It's not that I don't know the game of *Solitaire*, it's just that I do not see value of a computerized version of it. If you think about it, there is no particular adventure to having the computer deal your cards as opposed to doing it yourself. In fact, you may no longer even feel that you are "solitary." (Plus, of course, it is easier to cheat if you do it yourself.)

In any event, *Solitaire* as implemented on the computer and playing the "standard" game, allows betting and will keep track of your wins or losses. The graphics, which could be a saving grace for a computer version of the game, are completely uninspired.

BACCARAT

Company: Dynacomp

Language: BASIC

Hardware Requirements: 24K, disk drive or cassette.

Department: Entertainment

Sugg. Retail: \$18.95 Cassette/\$22.95 Disk

Availability: 6

Disk or Tape: Both

OVERALL RATING	D-	EASE OF USE	D	ERROR HANDLING	C-
GAME CONCEPT	C-	SKILL INVOLVED	C-	DOCUMENTATION	B-
CREATIVITY	D	CHALLENGE	D	HOLDS INTEREST?	D
GAME DEPTH	C-	GRAPHICS	C-	VALUE FOR MONEY	D-

Baccarat is the fastest card game in the world. Fortunes can literally change hands in minutes. "Baccarat," and its sister game, "Chemin De Fer," have always had romantic connotations in films and pulp novels. James Bond has confronted and humiliated many a villain at the Baccarat table.

Baccarat is the simplest of all card games, a gambling game similar to "Blackjack." In past years, this game has been popular in Las Vegas casinos. Since it is the only card game where the player is at nearly 50/50 odds with the house, some hard rules have been added by American casinos as to when cards are allowed to be taken by the player and the dealer to shift the odds in favor of the House.

For those unfamiliar with *Baccarat*, player and dealer are dealt two cards; the player with the total closest to nine is the winner. Each player may draw one card to improve his hand and tens are ignored ($12 = 2$, $19 = 9$). This version plays by none of the additional "House" rules, yet manages to play an extremely poor game anyway. It only takes a few simple rules for the dealer to follow. For example, when a player draws a 9 it usually means -1 to his hand (a 4 would end up 3: $9 + 4 = 13 = 3$), and if the dealer had 5 he should stand. Not so in this version. The graphics are bulky, and game control is slow. If you wanted to bet 50, you would have to sit pushing the joystick, and the many delay loops to this BASIC program make it generally uncommendable.

SHOOT'EM UP ARCADE GAMES

SPACE INVADERS

Company: Atari
Language: Machine
Hardware Requirements: 16K

Department: Entertainment
Sugg. Retail: \$34.95
Availability: 10
Disk or Tape: Cartridge

OVERALL RATING	D+	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C+	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	C-	HOLDS INTEREST?	D
GAME DEPTH	C-	GRAPHICS	C-	VALUE FOR MONEY	D

Space Invaders, an Atari cartridge, is a variation of the classic arcade game. Five rows of invaders disembark from a space ship on the left side of the screen. As they slowly march across the screen, they fire continuously at your mobile laser base. When they reach the edge, they drop down one notch toward the ground, and you must destroy every last alien before they reach the ground.

The game doesn't bear much resemblance on screen to the original. The protective castles at the bottom of the screen are gone, and the arcade version never had a space ship positioned at the side of the screen. The graphics uses character set animation to achieve movement by alternating two character sets.

Two players can alternate the game play. There are six levels of increasing difficulty, with the upper levels giving the player only three ships, instead of the usual five. In summary, this version is a mediocre version of the classic game.

K-RAZY SHOOT OUT

Company: CBS
Language: Machine
Hardware Requirements: 16K

Department: Entertainment
Sugg. Retail: \$49.95
Availability: 8
Disk or Tape: Cartridge

OVERALL RATING	B-	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	B	DOCUMENTATION	C
CREATIVITY	B-	CHALLENGE	B	HOLDS INTEREST?	C+
GAME DEPTH	C+	GRAPHICS	B-	VALUE FOR MONEY	C

K-Razy Shootout is a very good rendition of the arcade game *Berzerk*. You enter a building in which the rooms are guarded by robot sentries. The object is to score points by killing all of the robot guards in a room within a given time limit, then advance to the next room through the left door. Although there appear to be few adversaries on the screen at any one time, killing a robot results in another appearing near the room's edge. Since a collision with either a wall or a robot results in the loss of your man, the best strategy is to stay away from areas where they randomly appear. All of the robots must be killed before exiting, or you must repeat the same room over again with a new set of robots.

Scoring depends on the robot's manner of demise. Some are killed by your fire, others by collision with one another, and a few by shooting themselves. Other scoring factors include the amount of ammunition used and the time left. A bonus man is awarded at 10,000 points, and you'll need these extra men since the robots are much more lethal on upper levels. They begin shooting back in room two, and become outright deadly by room four. A better strategy at this point is to lure the robots into a crossfire or collision course.

The game's sound and graphics are exceptionally good. Arcade purists will despair at the lack of the bouncing ball, and a count of how many droids they have left to kill; but they will find this version just as challenging as the arcade version. The game does have a "wierd" ranking system that can cause needless frustrations, but overall, *K-Razy Shootout* will make for an enjoyable pastime.

STAR RAIDERS

Company: Atari
Language: Machine
Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$44.95

Availability: 10

Disk or Tape: Cartridge

OVERALL RATING	A	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	A-	SKILL INVOLVED	B+	DOCUMENTATION	A
CREATIVITY	B	CHALLENGE	A	HOLDS INTEREST?	A-
GAME DEPTH	A	GRAPHICS	B+	VALUE FOR MONEY	A

Star Raiders is a high speed space battle game against the Zylons for control of the galaxy. It's so realistic that you actually feel as if you're traveling through space. The superb interplay of sound effects with fast visual action using player missile graphics, and a game design that is simple yet challenging, have made this game a classic.

Star Raiders puts you at the controls of "Star Cruiser 7." The mission is to rid the galaxy of Zylons. Your sub-space radio links you with starbase command, and gives the present whereabouts of all enemy ships. Your short and long range sensors, together with an attack computer, keep track of the enemy's position within your galactic quadrant.

The Atari joystick acts like the control stick of an airplane. Pushing the stick forward and pulling back causes the ship to dive and climb, respectively. Moving left and right are true directions, although somewhat confusing if the view is aft. Energy torpedoes are fired with the joystick button. All other commands including activating shields, long range sensors, setting cruise speed, and activating the hyperwarp drive, are by single keyboard commands.

Initially the Zylons are scattered throughout the galaxy. Their strategy is to surround and destroy each of your star bases. Your goal is to attack and destroy as many enemy ships as possible, using the least energy in the shortest period of time. Your final score is loosely based on this criteria.

The battle begins by hyperwarping into a quadrant of enemy ships. The attack computer at the lower left of your three-dimensional, moving star field shows the relative direction of the nearest enemy ship. Within seconds of encountering either an enemy ship or a star base, you must blast it to smithereens with your photons or risk heavy damage with its return fire. The enemy doesn't stand still, but zips back and forth firing energy bursts at you. Even with considerable skill, you are lucky if you can keep the enemy in your cross hair long enough to intercept his return fire, let alone annihilate him. Taking a direct hit, especially on more advanced levels of play, usually results in severe damage needing repair at the nearest starbase. A crucial hit on your shields while engaging a Zylon basestar can result in a dramatic end before your ship can escape at hyperwarp speed.

The game offers four skill levels. At the novice level your ship is virtually invincible. It is a training level that requires no steering when hyperwarping. Advanced levels of *Pilot*, *Warrior*, and *Commander*, by comparison, require holding the precise course during hyperwarp. Upper levels need considerable skill to last more than a few minutes against a determined enemy. The Commander level will test the mettle of the best arcade players.

The game is simply great. Those who are fortunate enough to play it on a large screen projection TV will find it "awesome." Despite the debut of newer arcade games over the past two years, and numerous attempts to surpass the 8K game's visual effects, *Star Raiders* remains the classic.

SPACE EGGS

Company: Sirius Software
Language: Machine Language
Hardware Requirements: 48K, Disk Drive

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 8

Disk: Disk

OVERALL RATING	B	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	C	DOCUMENTATION	B
CREATIVITY	C+	CHALLENGE	B-	HOLDS INTEREST	B-
GAME DEPTH	B-	GRAPHICS	B	VALUE FOR MONEY	B

Space Eggs is reminiscent of the arcade game *Moon Cresta*. In this colorful Atari translation of the popular Apple game, your three-stage spaceship attacks a group of swirling space eggs. Once an egg is broken, depending on which level you have attained, either a spider, lip, wolf, or fuzball attacks your ship. You have to kill these monsters with your joystick controlled guns as they dodge, weave, and dive toward your ship. The top stage of your rocket has one gun, the second stage, two guns, and the booster two widely spaced guns. The shape conversion resulted in a booster that takes up a good quarter length of the screen. Each time you lose a stage of your ship, you start again with the lowest level monsters. When you reach 1,000 points, you can dock with a lower stage for a three-gun attack. The upper-level monsters prefer a fast kamakaze attack. The game is cute and challenging; those who like the Galaxian-invasers concept might enjoy this version.

CAVERNS OF MARS

Company: Atari

Language: Machine

Hardware Requirements: 16K Disk

Department: Entertainment

Sugg. Retail: \$39.95

Availability: 10

Disk or Tape: Disk

OVERALL RATING	B+	CONTROLLABILITY	B+	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	B	DOCUMENTATION	B+
CREATIVITY	C+	CHALLENGE	A-	HOLDS INTEREST?	A
GAME DEPTH	A	GRAPHICS	B	VALUE FOR MONEY	B-

Caverns of Mars is a fast-paced and addictive arcade-type game for the Atari computer with a disk drive. The object is to destroy a Martian base located in a deep and winding cavern beneath the surface of Mars. The game, which features extensive and smooth vertical scrolling, requires you to navigate your ship through five levels to an arming device at the very bottom of the screen. You then have to escape by navigating back through the maze before the timer runs out.

You are given five ships to accomplish this difficult task. Your ship is joystick maneuverable (back and forth as well as up and down). The up and down movement runs at twice the speed of the cavern walls scrolling past, and this flexibility is useful for making long passes during which your ship needs to remain in a stationary position for short intervals relative to the walls. You must realize that once your ship reaches the top of the screen, it again moves at a constant rate downward through the cavern. Learning to take advantage of this principle is what makes this game interesting, as well as frustrating.

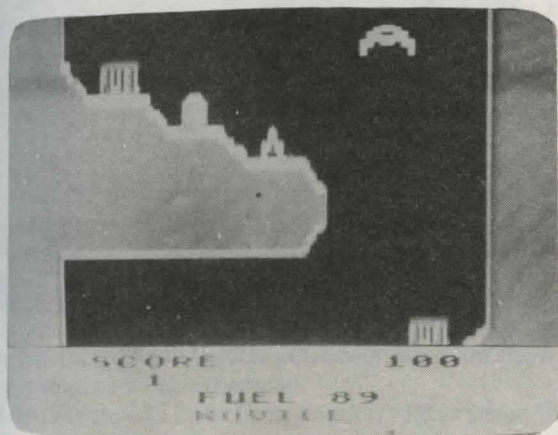
Level one is simply a series of winding passageways cluttered with alien ships and fuel. Since your ship is always expending fuel, collecting these various five-unit fuel bonuses by firing your dual guns is important. Without these, your ship will eventually run out of fuel and explode. The game becomes much harder in level two, where screenfuls of alien ships attempt to destroy you by colliding with your vessel. Fortunately, they don't return fire, or you might never see level three.

The third level contains numerous moving force-field barriers — as many as three deep. This is where the ability to remain stationary for short periods relative to the downward scrolling caverns comes in handy. These fields activate, and then move upwards at predictable intervals. Your ship must move into the gaps, remaining stationary at the correct intervals. Unfortunately, the next level isn't nearly as predictable. The passageways are filled with flickering blue diamonds. The slightest contact with them is lethal.

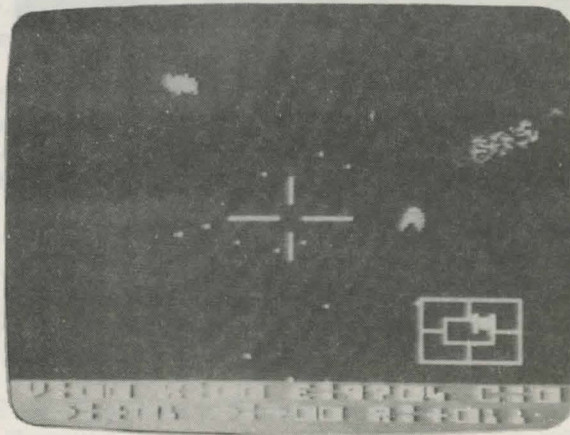
Level five contains many narrow vertical and horizontal passageways. You will have to drop to the bottom of the screen to allow sufficient time to make the long horizontal traverses without striking the tops of the passageways. Fuel tanks also block many of the vertical passageways. If you make it past this point, you will reach a long, verticle passageway where you'll find the arming device. Once the timer is set, you have only the same amount of seconds to navigate all the way back through those winding tunnels before the base explodes. You can't afford to lose even one ship, or you won't make it in time.

Caverns of Mars can be played at various difficulty levels. The "novice level" only contains the level one game, while the "commander level" has all five steps. If you lose a ship, you begin again in the tunnel at the level that your ship was destroyed. For those who need practice on upper levels of the game and don't want to start from scratch, press the TAB, CTRL, and SHIFT keys simultaneously. You must hold these down after the game starts until it shifts to each new level. This point is undocumented.

This game is great fun. It makes extensive use of the Atari's capabilities in smooth vertical scrolling, and a re-defined character set. It is a must for any dedicated arcade game player.



CAVERNS OF MARS



STAR RAIDERS

MISSILE COMMAND

Company: Atari

Language: Machine

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 10

Disk or Tape: Cartridge

OVERALL RATING	A-	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B+	SKILL INVOLVED	B	DOCUMENTATION	B-
CREATIVITY	B	CHALLENGE	A-	HOLDS INTEREST?	A-
GAME DEPTH	B	GRAPHICS	B	VALUE FOR MONEY	A-

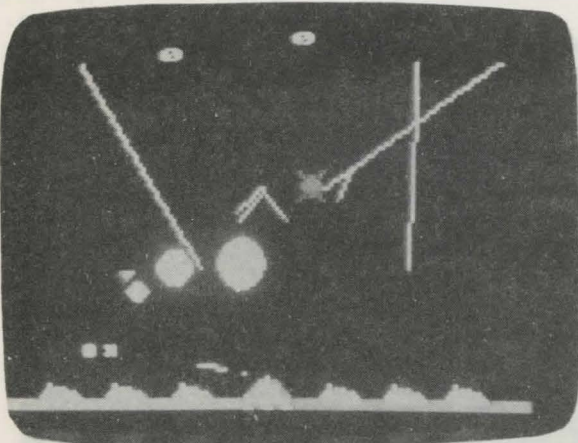
Missile Command is a popular arcade game in which the enemy launches a missile attack against six of your cities. You command anti-ballistic missiles with which you intercept incoming missiles, planes, satellites, and smart bombs.

The cartridge version is very similar to the coin-operated version, except that three missile bases have been replaced with one central base. Each base pops up when the last either has been depleted of its six missiles, or has been nuked. There are thirty missiles per wave, involving underground reloading. This modification was necessary because home computer joysticks have only one fire button, instead of the necessary three found in arcade games. The joystick also replaces the fast and fine positioning features of the original version's track ball. Players shouldn't despair, since the track ball input feature can be activated with the T-key command. With Wico's new track ball, the game again becomes as fast and accurate as the arcade version.

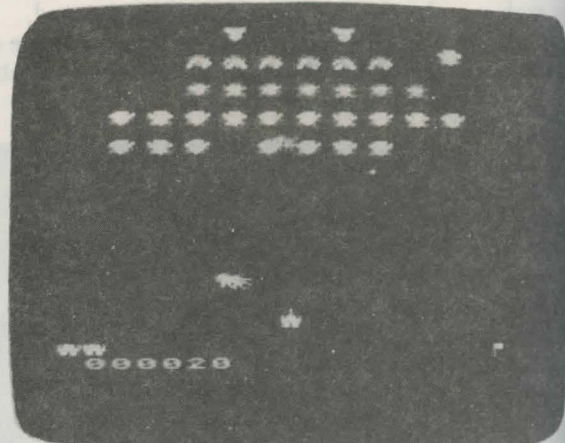
The game, which can be played by either one or two players alternating turns, begins easily with single, slow moving missiles. However, the action soon escalates to MIRV's (missiles that split into multiple warheads), planes and satellites (which must quickly be disposed of before they drop into missiles), and smart bombs that evade explosions on their way to the targets below. The game escalates from bonus level to bonus level until you are eventually overwhelmed, and all six cities are destroyed.

Each level consists of several waves of incoming missiles. The strategy is to protect your anti-missile base, shoot accurately, and intercept the satellite and bomber before they launch their missiles. Bonuses are earned as a multiple of the number of cities and missiles remaining at the end of each wave. Bonus cities are awarded at every 10,000 points.

The graphics and sound effects in the game are very well done. The joystick control, using Atari-type joysticks, lacks the fine positioning needed to accurately stop a smart bomb. This lack is complicated by the fact that diagonal positioning is twice the speed of either vertical or horizontal positioning alone. Although these problems detract somewhat from the game, *Missile Command* is fun and habit forming. It is one of the better arcade games for the Atari home computer.



MISSILE COMMAND



GALACTIC CHASE

GALACTIC CHASE

Company: Prism Computers

Language: Machine

Hardware Requirements: 16K; disk drive or cassette player.

Department: Entertainment

Sugg. Retail: \$24.95 cas / \$29.95 disk

Availability: 6

Disk or Tape: Both

OVERALL RATING	B-	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C+	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C+	CHALLENGE	C+	HOLDS INTEREST?	C
GAME DEPTH	C-	GRAPHICS	C	VALUE FOR MONEY	B-

Galactic Chase is the home computer version of the arcade game *Galaxian*. A five row deep armada of aliens, poised at the top of the screen, is ready to attack. They are sitting ducks for your mobile laser base until several peel out of formation, execute a loop, and begin to attack, shooting continuously as they swoop towards you. If you miss, the aliens disappear at the bottom of the screen, only to regroup back in formation for another attack run. While it is easy to pick them off in formation, they are worth twice as many points while in flight. The command leaders at the very top are worth large bonuses if destroyed while making their attack.

The game is much more involved than the *Space Invaders* games. *Galactic Chase* has two levels of play for either one or two players. There are two difficulty levels: slow and fast. On the advanced level, sometimes as many as three aliens will attack at once, followed by a lull in the fighting. Although this is somewhat challenging, it is not as intense as the Apple versions, where six or more aliens are involved in a kamikaze attack. However, after you clear ten enemy fleets on the advanced level, the lasers jam, and you must resort to your magnetic repeller on the nose-cone of your ship. It sometimes destroys the enemy, and sometimes not. This arcade game is a lot of fun, and it makes good use of the computer's graphics and sound effects.

ASTEROIDS

Company: Atari

Language: Machine

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 10

Disk or Tape: Cartridge

OVERALL RATING	B-	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B+	SKILL INVOLVED	C	DOCUMENTATION	B-
CREATIVITY	B	CHALLENGE	C	HOLDS INTEREST?	B-
GAME DEPTH	C	GRAPHICS	C+	VALUE FOR MONEY	C+

Asteroids is a fascinating game in which you must navigate a spaceship through a field of moving asteroids. The object is to score points by shooting these asteroids apart. Of course, pieces of asteroids make the game more perilous; in addition, an alien spacecraft randomly enters the field and attempts to destroy your ship.

Yet this 8K ROM version is in many ways a disappointment, especially when compared to the superior arcade version designed by Atari's coin-op division. The graphics have a chunky look, no doubt a result of the graphics mode having been implemented in #7 (BASIC), rather than a finer resolution, four color mode like Antic #15. The asteroids appear as irregular blue masses against a black background.

The game can be played by one to four players. There are a number of play options, including hyperspace, shields, and flip-over. The latter allows your ship to flip directions 180 degrees by pulling towards you with the joystick. This is very helpful when confronted by asteroids approaching simultaneously from front and back, for normally you would have to slowly turn your ship around by moving the joystick to the left or right. The shield option, on the other hand, is ridiculous. When the shields are on, your ship appears as a round blob, completely unaffected by colliding asteroids. Since there is no time limit for shield use, you can keep the shields on until all danger is past. The skill level drops to near zero when using this option.

When more than one person is playing, there is a choice of playing in patrol or combat modes. Team play is even possible with three or four players. Shots made during the patrol mode pass right through other ships, while they can strike an opponent in the combat mode. Players playing in the two player mode have a choice of playing by turns, or they can rack up points competitively while on the screen at the same time. In three and four player games, players always appear simultaneously.

Asteroids should have been a much better game than it is, and certainly closer to the coin-op version. The enemy saucer is not much of a shot — only a nuisance in this version. However, the game is quite engaging to play with three or four players.

ASTROWARRIORS

Company: Apogee Software

Language: Machine Language

Hardware Requirements: 32K Disk, 16K Cassette

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 2

Disk or Tape: Both

OVERALL RATING	C-	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	C-	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C-	CHALLENGE	C	HOLDS INTEREST?	D+
GAME DEPTH	D	GRAPHICS	C	VALUE FOR MONEY	D

Astrowarriors is a four-player version of the classic arcade game, *Space War*, which appeared several years ago on many other computers (including the Atari VCS). Each player can maneuver his ship with thrust and rotation controls, fire photon torpedoes, and protect himself with shields. Moving the joystick to the left or right rotates the ship, pushing forward gives thrust, and pulling back activates the shields. Both shields and thrust use up valuable energy which is displayed along with damage status at the top and bottom of the star field. These displays are color keyed to each player's ship.

The universe is closed space. This means that if you approach the edge, you are positioned randomly on the screen. This can be dangerous if you move directly in front of an enemy ship, or even too close to a sun with high gravitational pull.

You have several options for different types of universes: free space, asteroid in the center, black hole, or sun. The latter two have high gravitational fields that require you to thrust your ship quickly into orbit. This maneuver can be practiced in the single player mode. When the battle begins, the winner is the last to survive. He receives a point, and the game ends when one player reaches 50 points.

This version, as opposed to others, structures the game into rounds rather than a continuous battle. Players must establish an orbit early on, or be pulled into the sun or black hole if they are in those game options. With the lack of a wrap-around feature, each time you thrust too hard and go off screen, you must re-establish a new orbit from a random start. This is somewhat frustrating. The game also has the disadvantage in that you always need to find at least one other friend, or enemy to play against. The one-player option is strictly for practice.

CRYPTS OF PLUMBOUS

Company: Cosmi

Language: Machine

Hardware Requirements: 16K cassette, 32K disk

Department: Entertainment

Sugg. Retail: \$9.95 cassette / \$14.95 disk

Availability: 4

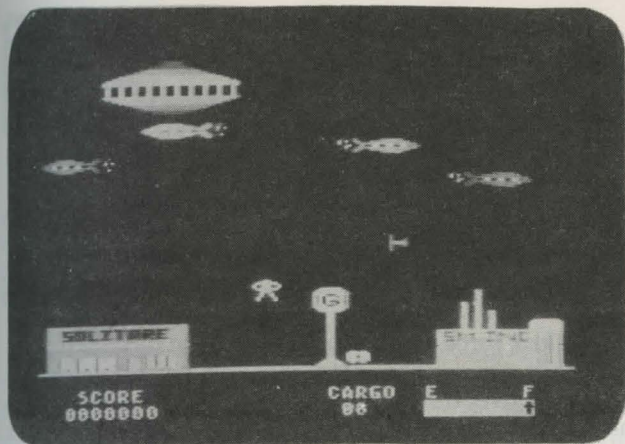
Disk or Tape: Both

OVERALL RATING	D+	CONTROLLABILITY	C-	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	C+	HOLDS INTEREST?	D
GAME DEPTH	D	GRAPHICS	D+	VALUE FOR MONEY	C

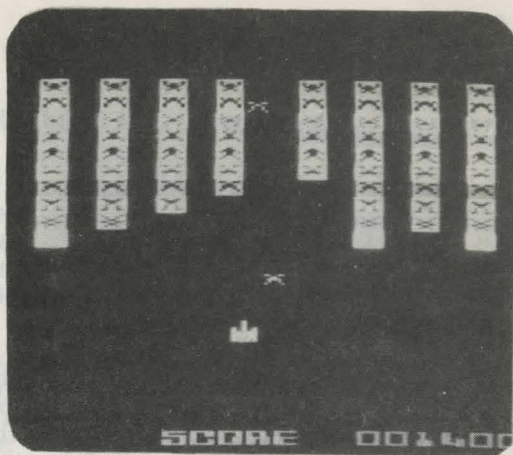
The Crypts of Plumbous is another one of those scrolling "defender"-type games. The object of this version is to protect the Crypts containing deadly atomic waste from raiding parties of aliens. These aliens could care less about the radioactive wastes. They want to extract the lead-lined containers, leaving the planet vulnerable to intense radiation, and, of course, to all the ravages and horrors associated with it.

Controlling a fast fighter ship, you must pursue and destroy the enemy fighters who protect the slowly descending mother ship. Your fighter is joystick controllable. It can barely outfly the enemy. You must constantly vary your strategy from evasion to sudden pursuit, while taking care not to collide with their return fire or the terrain below. Once the mother ship descends below a certain altitude, it moves into position above a vault and beams up the container. You lose either when you have lost all of your ships, or the aliens take all of your containers.

It is a fair game with five skill levels. Probably the best controllable level is the second. The graphics, which are colorful but a little chunky, take up to three screens as the picture scrolls. The scrolling is too fast even on the easiest levels, and the noisy sound effects can get on your nerves after awhile. The game is fun at first, but you'll become bored after repeated play.



EMBARGO



K-RAZY ANTIKS

EMBARGO

Company: Gebelli Software
Language: Machine
Hardware Requirements: 16K

Department: Entertainment
Sugg. Retail: \$44.95
Availability: 6
Disk or Tape: Cartridge

OVERALL RATING	C-	CONTROLLABILITY	B+	ERROR HANDLING	N/A
GAME CONCEPT	C-	SKILL INVOLVED	C-	DOCUMENTATION	C
CREATIVITY	C-	CHALLENGE	C-	HOLDS INTEREST	C-
GAME DEPTH	C-	GRAPHICS	B	VALUE FOR MONEY	D

Embargo is a simplistic arcade game in which you must play smuggler on a planet with a strict trade factory and warehouse, then maneuver a shuttle craft past the robot Orelia guards and through a fleet of orbiting enemy ships to a Varox merchant ship waiting above. The orbiting fleet acts only as an obstacle course, but the robot guard near the surface shoots back. Fortunately, you have a laser to rid of this menace; but killing one just summons another. Fuel, which is a minor concern in this game, can be replenished by touching any one of the fuel pods moving to the warehouse. Ten containers must be transported to the merchant ship before moving to the next but harder level. You have four ships with which to accomplish your mission, although you receive an extra every 5,000 points earned.

The game suffers from a lack of depth, but it is an easy and enjoyable game to play. The graphics are very colorful, quite smooth and well animated. The merchant ship's hatch opens when the shuttle craft nears, and trying to stuff all those packages into that small ship is rather a cute trick.

K-RAZY KRITTERS

Company: CBS
Language: Machine
Hardware Requirements: 16K

Department: Entertainment
Sugg. Retail: \$14.95
Availability: 7
Disk or Tape: Cartridge

OVERALL RATING	D+	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C-	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C-	CHALLENGE	C+	HOLDS INTEREST	D+
GAME DEPTH	D+	GRAPHICS	C	VALUE FOR MONEY	D

K-Razy Kritters is a rather simple minded shoot-'em-up game in which your joystick-controlled gun shoots at kritters encased in colorful blocks which are set in vertical columns near the top of the screen. The object is to destroy all of the blocks; but each time you strike one, it releases a kritter that tries to collide with your gun. If you are quick you can easily shoot them or avoid them. Other, less dangerous kritters descend between the columns. They must be killed before they reach the bottom of the screen, or each subtracts 100 points from your score. The game is definitely one that requires mindless shooting and quick reflexes. If you clear a board, the bulldozer pushes in another collection of trapped kritters. The game's graphics are good; but the game has very little variation or depth, and is certainly not worth the high price of a cartridge.

MOONBASE IO

Company: Program Design, Inc.

Language: BASIC

Hardware Requirements: 32K Disk, 16K Cassette

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 6

Disk or Tape: Both

OVERALL RATING	D-	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C-	DOCUMENTATION	C
CREATIVITY	D+	CHALLENGE	C	HOLDS INTEREST?	F
GAME DEPTH	D+	GRAPHICS	D	VALUE FOR MONEY	D

Moonbase Io is a space shoot-'em-up game. Here you battle a task force of aliens entrenched on three of Jupiter's moons. The game consists of three separate phases, or mini-arcade games. The entire scenario is tied together by a voice actuated tape, which explains the progress of the game, and gives instructions for each of its various phases.

In phase one, you must navigate your ship through a mine field around Io to a base on the moon's opposite side. It is a rather mindless exercise requiring absolutely no skill. Holding down the fire button as the scrolling mine field moves towards your ship will suffice to clear a path. Little traversing is required, since you can always start on the side opposite of the planet. Planet position is not random, so that you can learn its position after one play. And since you have only one ship at this point in the game, if you make a mistake, you will have to rewind the tape and start over.

Phase two is the battle portion of the game. It is a fast, but crude version of *Invaders*. Character graphics allow creatures to hop about the screen rapidly, and these hopping aliens drop bombs on your lone joystick controlled ship. If you can score 1,000 points quickly enough, you can earn a reserve ship; otherwise, just one mistake and it's time to rewind the tape.

If you defeat the aliens on Io, you repeat the first two phases for two more of Jupiter's moons, Europa and Ganymede. You then confront the mother ship during phase three of the game. It is best to have accumulated several reserve ships by this time. Reserve ships are carried over from one moonbase battle to the next; however, these don't count while traversing the mine fields. You only have one ship during those easy parts of the game.

Overall, the game is boring and a disappointment. While the use of a voice track is novel in the beginning, players don't like the hindrance of restarting the tape each time the game ends, nor the delays between phases each time they play the game.

BANDITS

Company: Sirius Software

Language: Machine Language

Hardware Requirements: 48K, disk drive.

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 8

Disk or Tape: Disk*

OVERALL RATING	B+	CONTROLLABILITY	B+	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	B+	DOCUMENTATION	B
CREATIVITY	B-	CHALLENGE	B+	VALUE FOR MONEY	B
GAME DEPTH	B	GRAPHICS	B+	HOLDS INTEREST?	B

Bandits is an innovative variation of the familiar Galaxian game, at least in the beginning. You have a ship, one of five that is joystick-maneuverable at the bottom of the screen. Each ship has a limited amount of replenishable shield energy. Shield energy is effective in units of time. Pushing the joystick forward activates the shields, while pulling back deactivates them. The remaining shield energy is shown at the bottom of the display.

In the first two levels, formations of Phalanxes attack singly or in groups of twos, threes and fives. In themselves they are easy to beat, if you avoid their heat seeking missiles. However, if they get past you, they steal your supplies of food or equipment which you are guarding. There is yet another chance to save the purloined supplies if you shoot accurately as they attempt to escape to base.

When you reach level three, these easy-to-beat Phalanxes are accompanied by deadly Menaces. While the Menaces don't steal your supplies, they preoccupy you, and their missiles are even more deadly; but there is no use in killing the last of these reappearing creatures until all of the Phalanxes are dead.

The next level is a little tricky. This fourth level is a confrontation with the not so friendly Carriers. They look like colorful jacks from a jacks and ball set. The problem is that when one is hit, it breaks up into four bouncing Nusiants. This is when using shields becomes necessary. If you manage to defeat these guys, then comes the snake-like Torrents, who attack in centipede fashion. You must kill every last part or they repeat their napalm assault.

Bandits sounds simple except there are 28 levels. All the rest of the levels are combinations of attacking creatures. The game becomes hectic when you are simultaneously confronted with seven Phalanxes, two Menaces, one Carrier, and snake of Torrents. That's just level six, so level 28 must really be a wonder to behold, and a surefire challenge to the local arcade champion. Overall, *Bandits* is definitely fast, fun, and a challenge to play.

OUTLAW/HOWITZER

Company: Atari Program Exchange

Language: Machine Language

Hardware Requirements: 24K, cassette or disk drive.

Department: Entertainment

Sugg. Retail: \$22.95

Availability: 6

Disk or Tape: Both

OVERALL RATING	D+	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	D+	DOCUMENTATION	C-
CREATIVITY	D	CHALLENGE	C-	HOLDS INTEREST?	D
GAME DEPTH	D	GRAPHICS	C-	VALUE FOR MONEY	D+

Outlaw/Howitzer is a two game shoot-'em-up package. "Outlaw" has two players challenge each other to a shootout among the desert cactus. The players use their joysticks to move their outlaws around, and to aim and fire their guns. They can hide behind cacti or ricochet their bullets off the screen edges and other cacti to outfox their opponent. The game can also be played against a computer opponent. The game involves a lot of luck, rather than skill, and for that reason soon grows tiresome.

Two enemy tanks confront each other in "Howitzer." A river, which neither can cross, divides the battlefield. The tanks can be maneuvered around the field, and the gun turrets can be raised and lowered for accurate shelling. The shells leave bomb craters when they strike the ground, and extend the river if they hit the shore. The tanks explode in a mushroom cloud when hit, and the entire screen shakes. The first player to score ten hits wins. The game can be played against a computer opponent. Again, there isn't much to this game, and it quickly becomes boring.

SNEAKERS

Company: Sirius Software

Language: Machine

Hardware Requirements: 48K

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 8

Disk: Disk*

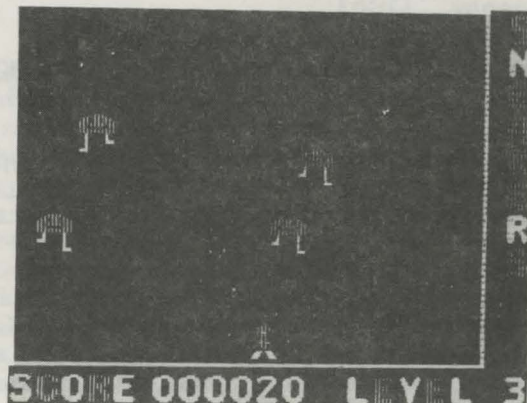
OVERALL RATING	B+	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B+	SKILL INVOLVED	B	DOCUMENTATION	B-
CREATIVITY	B+	CHALLENGE	B+	HOLDS INTEREST	B+
GAME DEPTH	B	GRAPHICS	B	VALUE FOR MONEY	B

Sneakers is a whimsical invader-type game with eight separate groups of characters or targets at which to shoot. Its variety makes this program a cut above its predecessors. Perhaps the most endearing characters are the sneakers and the fangs. Sneakers are cute half-shelled characters with shoe-clad feet that move up and down as they scurry about the screen while attempting to land on your moveable gun turret at the bottom. There are creatures that move in a rocking pattern at the top of the screen, occasionally turning into fangs that plunge to the bottom in an attempt to pierce your gun. Flying saucers that shoot back, cyclops that move lower and lower on each horizontal pass, a meteor shower, and, finally, the deadly scrubs; all inhabit this game.

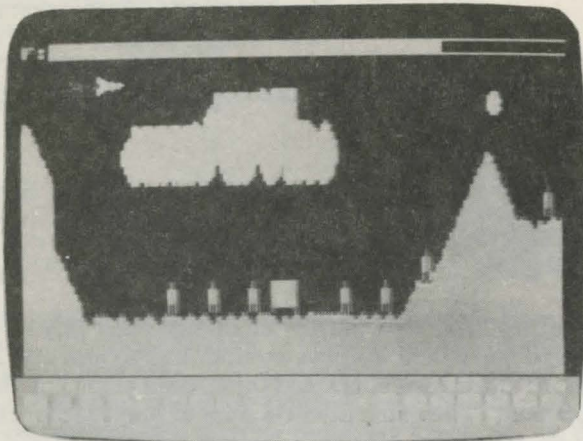
Some of the creatures are easily defeated while others are dreadfully hard to destroy. If you manage to survive long enough to defeat each of the nine groups of creatures, you advance to a more difficult level. The object of this game, like others of its type, is to score as many points as possible with six expendable ships. Highly entertaining.



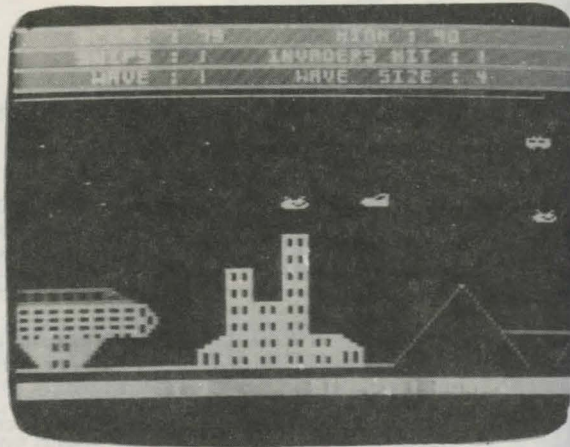
BANDITS



SNEAKERS



AIRSTRIKE



SENTINEL I

SENTINEL ONE

Company: In-Home Software

Language: Machine

Hardware Requirements: 16K cassette; 24K disk

Department: Entertainment

Sugg. Retail: \$29.95 cassette/\$34.95 disk

Availability: 6

Disk or Tape: Both

OVERALL RATING	C+	CONTROLLABILITY	B-	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	B	DOCUMENTATION	C
CREATIVITY	C-	CHALLENGE	B+	HOLDS INTEREST	C+
GAME DEPTH	C	GRAPHICS	B-	VALUE FOR MONEY	C

Sentinel One is a very fast-paced shoot-'em-up game requiring considerable dexterity to remain out of harm's way. The object is to fight off waves of kamikaze aliens that have laid siege to two of your cities. Your joystick-controlled ship flies in front of a scrolling backdrop of cities and mountains. The five or six types of alien craft attempt to box you in, leaving out with little maneuvering room to shoot. The skill is in flying as cleverly as possible, using a great deal of diagonal movement in order to gain that precious lead and so be able to turn and fire without colliding with one of their ships. Fuel is rarely a problem; it can be obtained during long flights at the green tower between the two cities, but only when your tank is empty.

The game is a little more difficult than the average shoot-'em-up. While it may be a little frustrating for beginners, it is a game that has plenty of action. While the graphics are nothing great, they are stylishly done using a redefined character set. In sum, nothing new, but at least it is a playable game.

GALACTIC AVENGER

Company: Cosmi

Language: Machine

Hardware Requirements: 16K cassette, 32K disk

Department: Entertainment

Sugg. Retail: \$9.95 cassette / \$14.95 disk

Availability: 4

Disk or Tape: Both

OVERALL RATING	D	CONTROLLABILITY	B-	ERROR HANDLING	N/A
GAME CONCEPT	D+	SKILL INVOLVED	C-	DOCUMENTATION	C
CREATIVITY	D	CHALLENGE	C+	HOLDS INTEREST?	D
GAME DEPTH	D+	GRAPHICS	D-	VALUE FOR MONEY	C-

Galactic Avenger is a space shoot-'em-up game in which your joystick controlled ship on the bottom of the screen attempts to destroy a task force of five enemy Krell ships and their mother ship. The enemy, arranged three rows deep, moves horizontally, back and forth in a repetitive pattern. The bottom row, firing at every opportunity, homes in on your ship quite rapidly. The Krell are easy to kill on the first level, but require an additional hit for each successive level.

The game's graphics are crude, and the ships are much too large. Furthermore, the game becomes boring all too quickly to any but the 8 to 10 year old audience for whom it was intended.

K-STAR PATROL

Company: CBS Software

Language: Machine

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$49.95

Availability: 8

Disk or Tape: Cartridge

OVERALL RATING	C+	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C-	DOCUMENTATION	B
CREATIVITY	C	CHALLENGE	C+	HOLDS INTEREST?	C+
GAME DEPTH	C+	GRAPHICS	C+	VALUE FOR MONEY	C-

K-Star Patrol is a shoot-'em-up arcade game in which the object is to lead a patrol of eight Star Ships through ten enemy space sectors on a hostile alien planet. Your mission, as the lead Star Ship, is to destroy the alien ships before they can blast any of your patrol. You are armed with laser weaponry, a protective, hydrogen-activated force field barrier, and three powerful HAPN bombs. Your ship (which is joystick controlled) flies over the planet's scrolling terrain. It can only move vertically, and stays on the left side of the screen just in front of the fleet. Shields are activated by pushing the stick left. Use these sparingly since they require hydrogen power that can only be replenished by carefully dipping your ship into the hydrogen laden crater lakes on the planet's surface. Because of the overly sensitive joystick control, this proves to be the most difficult maneuver in the game. One false move and you either hit the bottom, or one of the treacherous mountain peaks.

The alien attack ships rising vertically from the planet's surface are no match for your lasers. They act as rockets, and lack offensive weaponry. These are aided by ground base laser weapons beginning on level two. However, the most awesome threat are the Intergalactic Leeches that invade the atmosphere, and attach themselves to your lead ship. A Leech will immediately absorb all of your energy, both laser and hydrogen power. If this occurs you must use one of your three precious HAPN bombs, activated by rotating the joystick quickly through all four positions.

K-Star Patrol is fair in the category of shoot-'em-ups. While it isn't as exciting as some, it has good graphics and offers a challenge. My only criticism is the sensitive joystick control that often causes you to lose your ships when attempting to replenish hydrogen in the lakes below. When you have lost all of your ships, the game, of course, is over.

AIRSTRIKE

Company: English Software Co.

Language: Machine Language

Hardware Requirements: 16K, cassette player

Department: Entertainment

Sugg. Retail: \$39.95

Availability: 3

Disk or Tape: Tape

OVERALL RATING	D	CONTROLLABILITY	D	ERROR HANDLING	N/A
GAME CONCEPT	B-	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C+	CHALLENGE	A-	HOLDS INTEREST?	D
GAME DEPTH	C	GRAPHICS	B-	VALUE FOR MONEY	D-

Airstrike bears a strong resemblance to the horizontal scrolling game *Scramble*. The object is to pilot your joystick-controlled spaceship through the game's zigzag tunnel system, past an open space of deadly falling asteriods, then to an immovable "space wall" that must be penetrated in order to reach the next level. You have to contend with the falling meteors and anti-aircraft missiles launched from ground-based sites. You score points by attacking the missile launchpads and fuel dumps. Ammunition is replenished along the way through attacks on the enemy's ammo dumps. You use lasers or bombs during your raids. Lasers are fired with the joystick button, while bombs are dropped using the space bar, a more awkward arrangement.

The game, which boasts five levels of difficulty, is nearly impossible to play even on the easiest level. Much of the problem lies with a joystick control system that is too sensitive. The slightest touch moves the spaceship too far in the narrow tunnels. Another problem is that the ground-to-air missiles home in on your ship unless you develop the technique of accelerating or decelerating rapidly to fake them out. The missiles, which use character-set animation, move fast and crudely. And if you manage to get past them, the asteriods are likely to do you in because there is very little reaction time near the top of the screen. Worst of all, you start over each time you lose a ship. A battery of good players have yet to see the entire multi-screen tunnel system. The game is indeed very tough, perhaps beyond the level of frustration.

GORF

Company: Roklan
Language: Machine
Hardware Requirements: 16K, disk drive.

Department: Entertainment
Sugg. Retail: \$39.95 disk/\$44.95 cartridge
Availability: 8
Disk or Tape: Disk or cartridge.

OVERALL RATING	B	CONTROLLABILITY	B+	ERROR HANDLING	N/A
GAME CONCEPT	B-	SKILL INVOLVED	C+	DOCUMENTATION	B-
CREATIVITY	C	CHALLENGE	B	HOLDS INTEREST	B-
GAME DEPTH	B	GRAPHICS	B	VALUE FOR MONEY	C+

Roklan has done a very nice job in translating the popular arcade game *Gorf* to the home computer. The game is rather unique, consisting of four separate arcade games linked by a common theme — the destruction of the Gorfian Empire. Four? Yes, they shortened the game a bit by removing the Galaxian segment. The other four, “Astro Battles,” “Laser Attack,” “Space Warp,” and “Flag Ship” are extremely close to the original version. It is still a one or two player game, with each player alternating turns. In addition, players can start on higher levels of difficulty.

“Astro Battles” is very much like *Space Invaders*. The player is shielded by a force field, which descending Gorfian robots slowly penetrate with their anti-gravity bombs. The shield vanishes when you fire your lasers. These quark lasers are unique in that only one shot can be on screen at one time. While preventing rapid fire, it does allow you to redirect shots that are off target without waiting for them to vanish off the top of the screen. When the entire enemy fleet is destroyed you advance to the next mission.

In “Laser Attack,” the player must destroy the two anti-particle Laser Ships that simultaneously fire vertical beams at him every three seconds. These Laser Ships, which constantly dart about the screen, are accompanied by a fleet of supporting kamikaze ships as well as Gorfs that dive while shooting at your ship. Once every enemy is destroyed you proceed to the next mission.

In “Space Warp,” Gorfs and Fighters emerge in spiral fashion from an eerie web generated by the approaching enemy Flagship. Subquark torpedoes are hurled out of the black center directly at the ship. The enemy must be killed before they reach the edges of the screen.

“Flagship,” the final mission, is to destroy the Flagship that is protected by a heavy forcefield arc. The object is to get a clear shot at the reactor power vent in the center of the ship, but first you must blast a hole through the forcefield. This is easier said than done, because the ship hurls fireballs as it moves back and forth. And on upper levels, two Gorfian robots riding on the ship attack kamikaze-style.

Gorf is a tough game that becomes even faster and harder as you progress through the levels. The graphics are good, and the game is quite faithful to the arcade version. It is great fun if you like *Space Invaders*-type games.

REAR GUARD

Company: Adventure International
Language: Assembly Language
Hardware Requirements: 16K cassette; 32 disk

Department: Entertainment
Sugg. Retail: \$24.95
Availability: 7
Disk or Tape: Both

OVERALL RATING	C-	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C-	DOCUMENTATION	C
CREATIVITY	C-	CHALLENGE	C-	HOLDS INTEREST?	D+
GAME DEPTH	D+	GRAPHICS	C-	VALUE FOR MONEY	D+

Flying a patrol ship in defense of your last surviving Construction Crew base is your assignment in *Rear Guard*. Three waves of mindless Cyborg-controlled ships (60 in all) attempt to get by you to destroy the base. If only ten escape, the base is overwhelmed.

Your ship is armed with guided energy-darts; and you have an energy shield capable of withstanding ten collisions with an enemy ship or its return fire on the upper levels of difficulty. Alien ships approach from the rear of your craft, which is controlled by joystick. You wait until they pass before firing. On the lowest level, the enemy is simply destroyed; but on higher levels, you must avoid either the ball of debris or return fire just as they explode. On the highest levels there are splinter craft that use a common fuel supply, and a wall of darts that must be avoided after an enemy escapes.

There isn't much substance to this scrolling-style shoot-'em-up game. The ships approach from the rear (hence the name), and you simply blast them as they pass. Although there are harder levels, in which you must avoid debris or darts, the game gets old quickly.

ENCOUNTER AT QUESTAR IV

Company: Artworx
Language: Basic
Hardware Requirements: 24K

Department: Entertainment
Sugg. Retail: \$21.95 cas./\$25.95 disk
Availability: 3
Disk or Tape: Both

OVERALL RATING	C-	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	C+	HOLDS INTEREST?	C-
GAME DEPTH	C-	GRAPHICS	C-	VALUE FOR MONEY	C-

Encounter at Questar IV is a space shoot-'em-up game in which you must destroy enemy alien ships that enter your sector. You can maneuver your ship about the screen using a joystick, while firing powerful lasers. The Zentarians appear at random positions on the screen. They are moving targets that fire close to your ship; but most of the time, the Zentarian is only trying to place a deadly mine in close proximity. It takes three hits to destroy one of your five ships. Since your laser range is short, you must do a lot of moving amid the rapidly growing mine field to kill all ten of these moving targets. If you stray off-screen you enter hyperspace, and are placed back on screen in a random position.

The game becomes more difficult with each succeeding board. As the adversaries become smaller in size they fire more rapidly. Information was thoughtfully provided by the program author to allow the player to modify the program, and to make the game easier or more difficult. Lacking the tense excitement of its competition, the game is nonetheless challenging and fun to play.

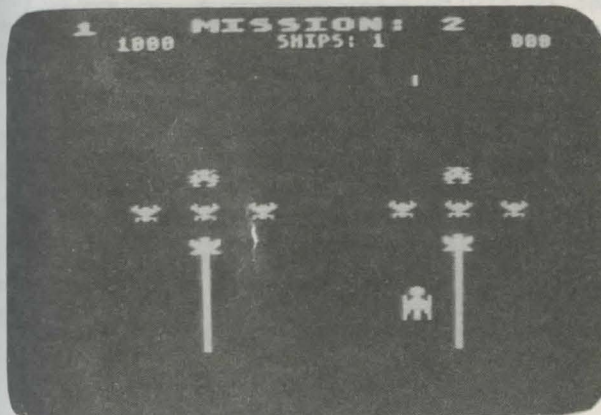
KAYOS

Company: Computer Magic, Ltd.
Language: Machine
Hardware Requirements: 16K

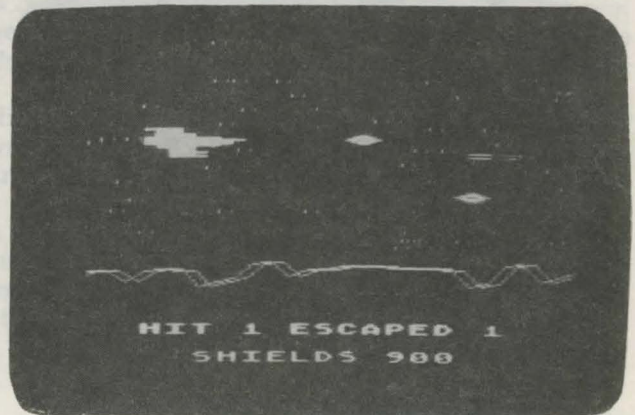
Department: Entertainment
Sugg. Retail: \$34.95
Availability: 5
Disk or Tape: Both

OVERALL RATING	D-	CONTROLLABILITY	B-	ERROR HANDLING	N/A
GAME CONCEPT	D+	SKILL INVOLVED	D+	DOCUMENTATION	C
CREATIVITY	D	CHALLENGE	C	HOLDS INTEREST?	F
GAME DEPTH	D	GRAPHICS	D	VALUE FOR MONEY	F

Kayos is a very poorly conceived space shoot-'em-up game. The object is to shoot down the large and small craft that crisscross the top and mid section of the screen. Smaller craft attack your joystick controlled ship at the bottom of the screen in a zig-zag fashion. The background consists of rapidly moving asteroid shapes that are harmless to your ship. In the end, the game has little depth, and becomes boring very quickly.



GORF



REAR GUARD

CARNIVAL

Company: Analog Software

Language: Machine

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$24.95

Availability: 3

Disk or Tape: Both

OVERALL RATING	D	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	D	DOCUMENTATION	C
CREATIVITY	D+	CHALLENGE	D	HOLDS INTEREST?	D
GAME DEPTH	D	GRAPHICS	C-	VALUE FOR MONEY	D

Carnival is yet another shooting gallery game. This version takes its name from the arcade game that appeared on the market two summers ago. It is the typical shooting gallery game with rows of moving targets. However, there is a compartment of moving bonus pipes presented through a very small shooting window, and hitting one of these awards you with more ammunition. Ducks in the bottom row move out of line and slowly work their way toward the bottom of the screen. You have several seconds to destroy them before they eat some of your bullets.

This game, as with most shooting gallery types, is not particularly exciting. It lacks the animation of moving targets; and while it diverts, there is little skill required, and the player will soon tire of it.

SHOOTING ARCADE

Company: Datasoft

Language: Machine

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$29.95

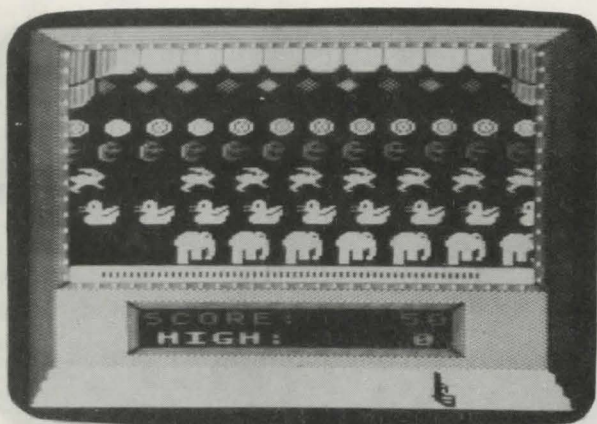
Availability: 7

Disk or Tape: Both

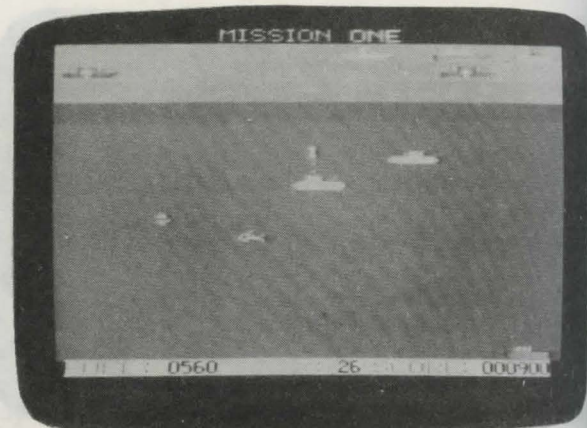
OVERALL RATING	D+	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	D	DOCUMENTATION	C
CREATIVITY	D+	CHALLENGE	D	HOLDS INTEREST?	D
GAME DEPTH	D	GRAPHICS	C+	VALUE FOR MONEY	D+

Shooting Arcade is a simplistic arcade game in which you take shots at rows of moving targets with a joystick controllable gun. You have a limited amount of ammunition which can be supplemented if you can hit the diamond target in the top row. The elephants, ducks, and rabbits are easy targets; but the rotating faces in the row above must be hit when they are smiling, otherwise a rabbit is added to the row below. When all of the targets have been hit, the bonus bear appears. Every time you hit the bear, it changes direction. With the gun able to travel only twice the speed of the bear, the slightest miss is likely to allow him to reach the screen's edge before you can shoot again.

The character graphics animation uses colorful, alternating, redefined sets: the ducks flap and the rabbits hop. It is cute and very suitable for young children. Older players will find the game much too easy.



SHOOTING ARCADE



SEA FOX

ALIEN SWARM

Company: In-Home Software

Language: BASIC

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$29.95 cassette / \$34.95 disk

Availability: 6

Disk or Tape: Both

OVERALL RATING	C+	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	C+	HOLDS INTEREST?	B
GAME DEPTH	C	GRAPHICS	C-	VALUE FOR MONEY	C

Alien Swarm is a clever variation on the "invaders" game theme. A swarm of alien bugs are being created by a snake-like figure moving randomly about the top portion of the screen. You are at the bottom of the screen guarding a depot of twenty energy packs needed for your lazer. The aliens' goal is to steal these before you shoot them down.

It takes considerable skill to destroy the alien bugs as they are created. If you miss a few, they begin their deadly assault on your depot. Your lazer pack, which can only hold a maximum of four energy packs at one time, must be periodically recharged by positioning the gun over a lazer in the depot and pushing the joystick forward. If your energy is out, the warning buzzer sounds to indicate you can't shoot. You can retrieve stolen packs by killing the bug before it reaches the top of the screen. But be careful to avoid the falling energy pack. The round is over when you have either been hit, or have lost all of the energy packs.

The complex scoring system earns you extra energy packs for the next round of play. For example, every one hundred points earns you another pack for the next round. When hit, you lose five missile packs plus the energy stored in the energy bar. A counter keeps track of these points at the top of the screen.

The game has a beginner's level as well as the more advanced level. It advances in difficulty as you acquire more points. Saucers appear after 1,500 points, and smart bombs become the penalty for hitting the snake after a score of 5,000 points. For those dedicated arcaders who manage to score over 20,000 points, *Alien Swarm* promises a boomerang tail. Overall, the game is very well done, offering some exciting moments, and requiring considerable skill on the player's part.

SEA FOX

Company: Broderbund

Language: Machine Language

Hardware Requirements: 48K, disk drive.

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 8

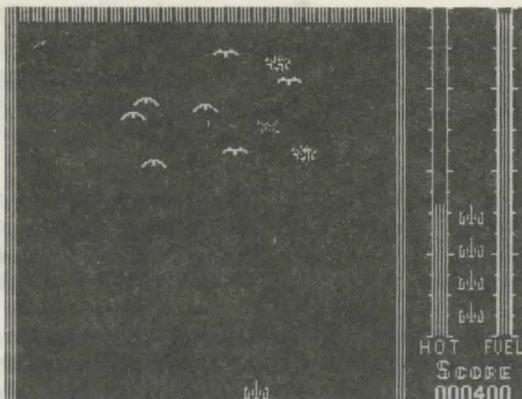
Disk or Tape: Disk*

OVERALL RATING	B	CONTROLLABILITY	B+	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	C	DOCUMENTATION	B-
CREATIVITY	C+	CHALLENGE	B	HOLDS INTEREST?	B-
GAME DEPTH	B	GRAPHICS	C+	VALUE FOR MONEY	B-

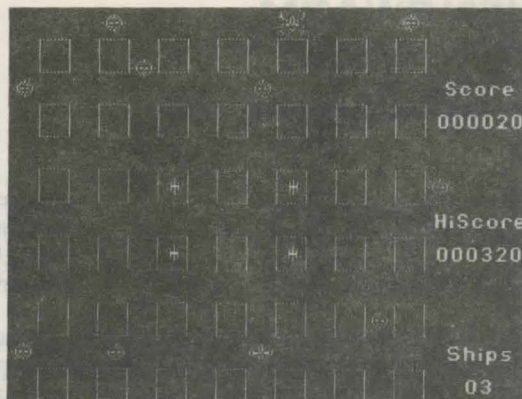
Seafox has elevated the classic (yet boring) two-dimensional "submarine against the destroyers" game into an exciting and challenging shoot-'em-up. It is obvious that the author regards Tony Suzuki and his game *Star Blazer* very highly, for this game has very close parallels. *Seafox* is a multi-level game, and each level presents a different mission. As submarine captain, your object is to destroy merchant ships. The submarine is fully maneuverable beneath the surface by joystick control. Torpedoes can be fired upward at enemy submarines, or at ships on the surface. Red Cross hospital ships must be avoided.

Your sub has a limited fuel supply and must be resupplied frequently from a friendly supply ship that passes near the bottom. A trained dolphin will resupply your vessel. However, it takes very quick maneuvering to intercept the dolphin before a giant clam steals his supply pack. The dolphin doesn't linger long, since it needs air from the surface to breathe.

The upper levels are incredibly difficult. Destroyers harass your underwater position with depth charges in level two, while in upper levels you'll have to survive magnetic mines and shots from enemy submarines. The normally safe, deep waters become a very menacing and deadly environment. Altogether, the game is very good, has detailed graphics (very colorful for a translated Apple game), and is fun and challenging to play.



THRESHOLD



CROSSFIRE

BETA FIGHTERS

Company: Artworx

Language: Basic

Hardware Requirements: 32K disk; 16K cassette.

Department: Entertainment

Sugg. Retail: \$20.95 disk, \$16.95 cas.

Availability: 3

Disk or Tape: Both

OVERALL RATING	D	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	C-	SKILL INVOLVED	C-	DOCUMENTATION	C
CREATIVITY	D	CHALLENGE	C-	HOLDS INTEREST?	F
GAME DEPTH	D	GRAPHICS	C	VALUE FOR MONEY	D

Beta Fighter is a simple, boring shoot-'em-up game for one or two players. The object is to defend a Martian base against alien craft using a joystick-movable laser base located on the surface. Aliens, who enter from the left side of the screen, must be destroyed before they reach the right side. If they escape, there is a small flash in one of the background colors, and you lose one of your bases. There is some skill involved here, as the aliens vary their speed. Shooting must be accurate, because you can only have one shot on the screen at a time. The background screen is one of the most beautiful landscapes seen to date; but, unfortunately, the game doesn't live up to expectations.

SPACE ACE

Company: London Software

Language: Machine

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 5

Disk or Tape: Both

OVERALL RATING	C	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C-	SKILL INVOLVED	C-	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	C	HOLDS INTEREST?	C-
GAME DEPTH	C-	GRAPHICS	C	VALUE FOR MONEY	C-

Space Ace is an arcade-style space warfare game in which you navigate through an asteroid field while simultaneously fighting off attacking Silurian ships and space bombs. The asteroid field, a smooth-scrolling field, moves down the screen as your ship penetrates it. Blasting a pathway through the asteroids is fairly easy; but the Silurians have mined the field in several places, and occasionally they launch an attack with cunning accuracy.

The enemy launches "space vortexes," which you must avoid. These runaway, whirling blades travel straight down the screen towards your ship and can't be destroyed. But the "space bombs" are even more deadly. They traverse the top of the screen until they are directly above your ship. With a terrifying shriek, they plunge toward you. You're either a sharper shooter, quick to move, or a dead space captain. And finally, a Silurian warship that crosses the top of the screen launches a deadly rain of missiles. The only way to defeat this ship is to hit its small atomic core.

The game has multiple difficulty levels. In the tougher levels your ship traverses the field at a faster pace. *Space Ace* can be considered somewhat challenging, but is not a very exciting game to play.

THRESHOLD

Company: Sierra On-Line
Language: Machine
Hardware Requirements: 48K, Disk Drive

Department: Entertainment
Sugg. Retail: \$39.95
Availability: 9
Disk or Tape: Disk*

OVERALL RATING	B	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	B	DOCUMENTATION	C
CREATIVITY	C+	CHALLENGE	B+	HOLDS INTEREST	B
GAME DEPTH	B+	GRAPHICS	B+	VALUE FOR MONEY	C+

Threshold closely resembles the arcade game, *Astro Blaster*. The object is to destroy waves of attacking aliens with a joystick controlled space ship. It's the usual scenario, with this exception: the game offers substantial depth and variety. There are 24 types of attackers. Some present easy targets, while others consist of vicious kamikazes who are very durable and elusive. Some fly in formation, while others bounce around the screen erratically. Each has a personality and shape of its own. There are flying fish, revolving spaceships that turn smoothly on their axes, maple tree helicopters, and Volkswagen Bugs.

The player has five expendable ships for the battle. Aiming and shooting is precise and effective, but one's gun may become overheated from rapid firing. If this occurs, one must bide his time dodging bullets while the guns cool. There is a rest period every four levels when the game accesses the disk for the next set of shapes.

The graphics animation is exceptionally smooth for a game that doesn't use player missile graphics. Objects have no problem passing in front of each other. The only complaint is that the moving star field can be confused with the rain of alien bullets. The bullets on a color set appear as colored objects; but they should be made to appear more distinct if not larger to distinguish them from the star field. The sound effects are good and add to the game's enjoyment.

The game will appeal to many dedicated space game fans. The contest has many levels, so that only a few players will reach the end; yet most, driven by curiosity, will make the attempt as the pseudo-addictive element takes hold.

CROSSFIRE

Company: Sierra On-Line
Language: Machine
Hardware Requirements: 32K

Department: Entertainment
Sugg. Retail: \$29.95
Availability: 8
Disk or Tape: Disk

OVERALL RATING	B+	CONTROLLABILITY	B	ERROR HANDLING	A
GAME CONCEPT	B+	SKILL INVOLVED	B	DOCUMENTATION	C
CREATIVITY	C+	CHALLENGE	B+	HOLDS INTEREST?	B+
GAME DEPTH	C	GRAPHICS	C	VALUE FOR MONEY	B

Crossfire, a shoot-'em-up contest in which you defend a city's streets from attacking aliens, has its roots in the arcade game, *Targ*. But whereas *Targ* allowed you to shoot only in the direction toward which you traveled, *Crossfire* has expanded the possibilities by allowing you to stop at any intersection and shoot in any of four directions. This has resulted in a more complex game.

You patrol the block-like, grid-oriented streets of a city surrounded by alien creatures. Your gun contains 35 missiles. As you play cat-and-mouse with the advancing forces, you move into an intersection and fire. If you hit an alien, it metamorphoses into another creature worth more points. Occasionally, a bonus shape appears on one of the central streets. If you reach it before firing six more rounds, it is worth points; otherwise it disappears. When your ammunition runs low, a fuel depot appears in the city. With nearly a dozen laser armed creatures gunning for you, the fuel depot is not an easy spot to reach.

Crossfire, a translation of an Apple game, is very challenging, offering effective, smooth, but non-colorful graphics. The joystick control works well. You can remain stationary at an intersection, depress the fire button, and shoot by positioning the joystick in the direction that you wish to fire. (The stick doesn't fire when centered.) You can also shoot on the run in the direction you move. If you can defeat all of the aliens on level one (48 kills), then you advance to the next faster, and more deadly level.

There is little doubt that this is one of the best strategy shoot-'em-ups to come along in a long while. It's a game requiring considerable practice; it remains tough, and one that you won't tire of easily.

CENTIPEDE

Company: Atari

Language: Machine

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$44.95

Availability: 10

Disk or Tape: Cartridge

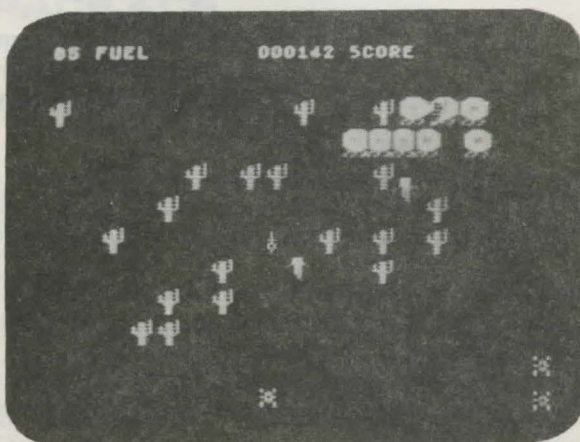
OVERALL RATING	B	CONTROLLABILITY	C-	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	C+	DOCUMENTATION	C+
CREATIVITY	C	CHALLENGE	B	HOLDS INTEREST?	B
GAME DEPTH	B-	GRAPHICS	B-	VALUE FOR MONEY	B+

Centipede takes you into the deadly world of garden bugs where an endless stream of jumping spiders, poisonous scorpions, frenzied fleas, and slithering centipedes thread a mushroom garden. They're out to get your dreaded bug blaster in this fast action, shoot-'em-up arcade game. The object is to stay alive, kill as many bugs as possible, and score high.

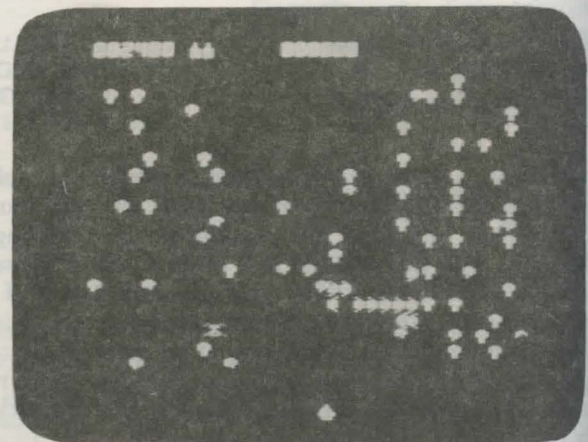
Staying alive sounds simple, but every time a bug is killed it turns into a mushroom that clutters the playfield. These can be removed by shooting twice at each mushroom; however, a frenzied flea, which drops toward the bottom of the screen like a kamikazee pilot, has a magical power to create mushrooms wherever it lands. The centipede snakes back and forth through the garden until it bumps into a mushroom. When this happens, it reverses direction and drops down one row. You must destroy every segment of the Centipede before it can reach the bottom of the screen, otherwise the segments can break up into many new Centipedes. Centipedes, like worms, will split in two when cut in the middle, each part with a head taking a separate path. With the addition of a scorpion that poisons mushrooms in its path, and centipedes that become insane on contact and charge your bug blaster, the game can become a real challenger.

Played with a joystick on a horizontal screen rather than on a vertical screen with a trackball, *Centipede* is not as difficult as the original arcade game. Beginners might find this hard to believe since fast, precise positioning is difficult to achieve with a joystick. Also, the horizontal screen gives you slightly less reaction time. However, some have managed to turn the score over 1,000,000 points with practice. This is possible because you receive a bonus blaster every 10,000 points, and can accumulate up to six reserve blasters.

The game is similar to the arcade version; the graphics and sound effects are close. Joystick control is irksome, as you often need to tap the controller to accurately position the blaster beneath a mushroom. (The new trackball controllers perform this effortlessly.) The game is fun to play, and, surprisingly, appeals to women who normally shun shoot-'em-up games. Could this be because women despise creepy bugs and don't mind destroying them? Then too, this game was designed by a woman.



BUG ATTACK



CENTIPEDE

BUG ATTACK

Company: Cavalier
Language: Machine Language
Hardware Requirements: 16K

Department: Entertainment
Sugg. Retail: \$29.95
Availability: 5
Disk: Both

OVERALL RATING	C+	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C	DOCUMENTATION	B-
CREATIVITY	B	CHALLENGE	C+	HOLDS INTEREST	C
GAME DEPTH	C+	GRAPHICS	C+	VALUE FOR MONEY	C+

Bug Attack takes one to the whimsical world of garden bugs in this Hi-Res arcade shoot-'em-up game. The object of the battle is to defend your garden of mushrooms, clover, and flowers against vicious ants, killer millipedes, and destructive Medflies. Your joystick-controlled spider can launch deadly stingers at the enemy insects, while they attack with daggers as they descend in insect-like fashion down the top of the screen. As you advance to harder levels, you must defeat the Master Millipede and the Queen of the Medflies.

The animation is cute and colorful. The millipedes wind their way through the garden like caterpillars, and the Medflies bounce around like flies (possibly because that is what they are). There is also a cartoon between levels that would amuse children, for whom the game is obviously intended. Background music is also an integral part of the game. The ants enter the screen to the tune of "When the Saints Go Marching In," which in certain children's circles is known as "When the Ants Come Marching In." Each insect has its own sounds.

The game is well-implemented, but the graphics lack the smoothness that you would expect from a machine language game. The game isn't very difficult at the cactus garden level, but you will have a nearly impossible time killing the Queen of the Medflies at the end. It's a fun game, and one that can really bug you.

MOON PATROL

Company: Avalon Hill
Language: Assembly Language
Hardware Requirements: 16K, cassette.

Department: Entertainment
Sugg. Retail: \$25.00
Availability: 5
Disk or Tape: Tape

OVERALL RATING	D+	CONTROLLABILITY	D	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C-	CHALLENGE	C+	HOLDS INTEREST?	F
GAME DEPTH	D	GRAPHICS	C-	VALUE FOR MONEY	D-

Moon Patrol is yet another shoot-'em-up arcade game. Here the object is to guard the Moon against a fleet of attacking alien craft. Your patrol ship's job, as it flies over the scrolling landscape below, is to shoot these aliens down with your laser cannon before they land, or obliterate them on the ground. Your objective is to complete twenty missions. A mission begins each time you take off from the launch pad. If you can defeat what appears to be an endless stream of ships, eventually another launch pad appears, and you must land there at your slowest speed. You have five ships.

Your patrol ship is joystick controlled. Left movement speeds up and right movement slows down the ship. However, the up and down movement is backwards, because climb is down on the joystick and dive is up. Pulling back on a joystick is appropriate for any craft where the view is forward out of the front window, but it doesn't work in a "side view" game in which the ship moves up and down. In these type of games, it is considered natural to push the joystick up to go up. It is easier to play with the joystick upside down even if the speed control is then backwards. The controls are also much too sensitive to do any fine maneuvering in the moon valleys, which is necessary to kill landed craft.

The game has four levels of difficulty, ranging from alien ships that never shoot back, to those that both shoot while landing and while on the moon's surface. You must be careful not to shoot at anything too close, because any collision, even if it's with the explosion debris, will destroy you. And you must learn to dodge ground fire effectively by speeding up and slowing down or you will have a very short game. To make things even more difficult, a random red ship appears that tries to collide with your patrol ship. Overall, the game is a bit simplistic in scope, lacks excitement, and is repetitious. The control system as described above is a problem, and the graphics are plain. It is fun for a while, and can be challenging, but wears thin too quickly.

ATTANK!

Company: APX

Language: Basic

Hardware Requirements: 24K, cassette; 32K, disk.

Department: Entertainment

Sugg. Retail: \$22.95

Availability: 6

Disk or Tape: Both

OVERALL RATING	C-	EASE OF USE	D+	ERROR HANDLING	N/A
GAME CONCEPT	B-	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C-	CHALLENGE	C+	HOLDS INTEREST?	C
GAME DEPTH	C-	GRAPHICS	C	VALUE FOR MONEY	D+

Attank! is a two player arcade-style game in which each player battles using two tanks. Because of the inclusion of interconnecting tunnels, which you can either move or fire through, and because you control one tank at a time, the game requires more strategy than the average shoot-'em-up game.

The game is played on a battlefield filled with character graphics terrain features like trees, walls, land mines, rocks, tunnels and rubble. Some of these objects can be blasted away by the tank's guns. Each player's tanks are controlled by one joystick. Left and right turns the tank, forward drives it forward, and back fires the gun. Holding the button down operates the alternate tank. The tanks are character graphics figures rather than player-missile shapes; thus, they move crudely, in eight-pixel jumps. Direction control is also rather limited, as the tank can only move and fire in one of eight directions. Tanks usually have to be maneuvered into firing position, rather than simply aimed (as in tank arcade games).

The interconnecting tunnel system adds an element of strategy to a standard game of tank tactics. The ability to enter a tunnel and magically appear at the enemy's unguarded rear can add an element of surprise. Tanks can also fire through tunnels, so gunfire can be effective in guarding the exit tunnel. The game also has a number of options, such as "night fighting" (in which the battlefield only lights up when a gun is fired), and random aerial bombings that could turn the game into a chance win. Once your two tanks are lost, after ten hits, the enemy wins.

Attank! is a step towards a more intriguing tank battle. The tunnel system is a great idea, but the two tank control system is difficult to use effectively. Four players operating their tanks in teams might be a better solution. Another problem is that tank control is not very responsive. Part of the problem is that the program is written in BASIC. Finally, character graphics animation is not quite suitable for a tank game, whereas player-missile graphics would have produced a more exciting and realistic tank game.

ATTACK AT EP-CYG-4

Company: Bram, Inc.

Language: Machine Language

Hardware Requirements: 16K cassette/24K disk.

Department: Entertainment

Sugg. Retail: \$29.95 cassette/\$32.95 disk

Availability: 4

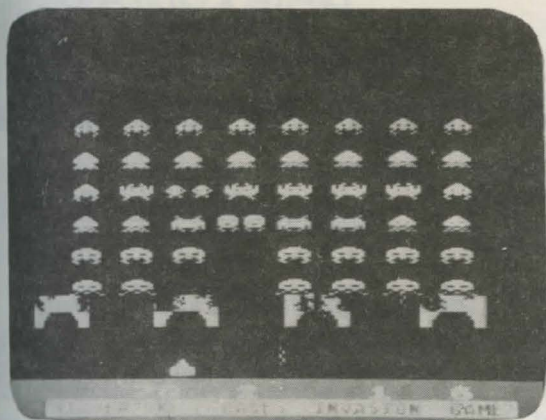
Disk or Tape: Both

OVERALL RATING	D	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	C-	SKILL INVOLVED	C-	DOCUMENTATION	C
CREATIVITY	D	CHALLENGE	C	HOLDS INTEREST?	D
GAME DEPTH	C-	GRAPHICS	C	VALUE FOR MONEY	D

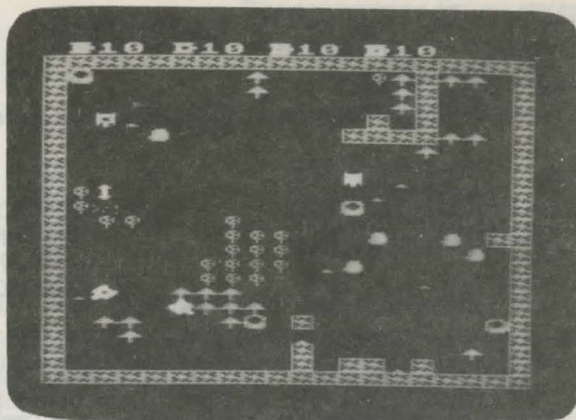
Attack At EP-CYG-4 is a space shoot-'em-up game in which the object is to wreck havoc on the Tartillian cities on the fourth planet of Epsilon CYGnus. In a sense it is a game of mindless destruction. Your joystick controlled ship flies over sector after sector of alien terrain, and destroys any or all standing buildings with your lyso-blast weapon. There is even a bonus award for total destruction of everything standing within a sector.

There are actually three different scenarios to this game. Each is named after a different starting portal on the planet's surface, and the terrain is different. The terrain, which consists of either flat land with buildings or mountains, doesn't scroll, but instead pages as your ship moves left across the planet. Flight is toward the left only, since flying off the right side of the screen results in wrap-a-round. The only thing that prevents you from rapidly flying deep into enemy territory is an occasional fighter craft or two that must be destroyed before you can proceed to the next sector. These ships are fairly tame on lower levels and are easy to destroy. They do shoot back with very tiny, hard to see bullets. Your ship has shields. However, they are turned off when firing. If you do take a hit, your ship will abruptly drop in altitude, staying aloft long enough to be hit again. Your lasers are aimed with the joystick, which also controls the targeting cursor that moves relative to your ship. Control is a little tricky, but you get used to it.

The game is a little on the dull side. Although it offers some challenge (especially on upper levels where enemy craft are more lethal, and barely discernable ground lasers can pick you off), it isn't a very exciting game. Rather, it is a game of mindless, systematic destruction requiring little thought or skill.



DELUXE INVADERS



ATTANK!

DELUXE INVADERS

Company: Roklan
Language: Machine
Hardware Requirements: 16K

Department: Entertainment
Sugg. Retail: \$34.95 disk / \$39.95 cartridge
Availability: 8
Disk or Tape: Disk & Cartridge

OVERALL RATING	C+	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C+	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C+	CHALLENGE	C+	HOLDS INTEREST?	C
GAME DEPTH	C-	GRAPHICS	C	VALUE FOR MONEY	C-

Deluxe Invaders is an improved version of the original *Space Invaders* game. It is a game in which you must shoot down an advancing horde of alien creatures who are continuously shooting back. They march across the screen in orderly ranks, and drop down one level when they reach the edge. You must defeat them before they land on your mobile gun turret base (which can be moved behind four castles for temporary protection). The turrets, however, are temporary shelters because the aliens soon destroy them.

This version can be played by either one or two players alternating turns. On advanced levels, the invaders split in two if they aren't shot exactly on center. This makes the game more difficult, since there is a limited amount of time to destroy the aliens before they land.

Deluxe Invaders is very faithful to both arcade versions of *Space Invaders*. The graphics and sound effects are well presented. Although it is an older game, it still catches on and has a very faithful following.

HAUNTED HILL

Company: Swifty Software
Language: BASIC
Hardware Requirements: 16K; disk drive or cassette players.

Department: Entertainment
Sugg. Retail: \$24.95 cassette / \$29.95 disk
Availability: 3
Disk or Tape: Both

OVERALL RATING	D	CONTROLLABILITY	D	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	D	CHALLENGE	C	HOLDS INTEREST?	D+
GAME DEPTH	D+	GRAPHICS	C-	VALUE FOR MONEY	D

Haunted Hill is a shoot-'em-up game somewhat reminiscent of *Centipedes*, but this takes place in a cemetery. A string of vampire bats snake their way toward you. The object is to destroy the bats before they reach the bottom of the screen. However, if you accidentally hit an intervening cemetery headstone several times it will release an angry ghost. Up to three ghosts can be on the screen at any one time. You can kill these ghosts with your rifle as they randomly move about the screen, but if either a bat or ghost touches you, you die.

Your player is controlled with the joystick. The player can wrap-around and appear on the other side of the screen if he goes off the edge, but he cannot move up or down. Positioning is rather coarse, making the vampire bats difficult to hit. The game itself is not very original; and, with its none-too-accurate control system, it's not much fun to play.

GUNS OF FORT DEFIANCE

Company: Avalon Hill

Language: BASIC

Hardware Requirements: 32K; disk drive or cassette player.

Department: Entertainment

Sugg. Retail: \$20 cassette / \$25 disk

Availability: 4

Disk or Tape: Both

OVERALL RATING	D-	CONTROLLABILITY	D	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	D	DOCUMENTATION	C
CREATIVITY	D	CHALLENGE	C	HOLDS INTEREST?	F
GAME DEPTH	D	GRAPHICS	D	VALUE FOR MONEY	D-

Guns of Fort Defiance is a game in which a single artillery piece attempts to defend a half finished stockade in the War of 1812 against a slowly advancing infantry regiment stretched out in a thin line. The object is to decimate these soldiers with various types of projectiles loaded and fired from your cannon.

The display, which has been adapted from the TRS 80 version of the game, is on the text screen. The animation is cleverly done by printing text characters while inhibiting the scroll. When the gun is fired, you can see the steps taken by each gunner (represented by numbers) as they perform their jobs of loading and aiming the cannon. The player's job is to choose the type of projectile: ball, cannister, double cannister, shell, and spherical case are available. You then choose the elevation, either long range or point blank. Aiming left or right is done with the caret keys at the top of the keyboard. Since elevation is rather crude, the game becomes a learning process. You need to remember where a particular type of projectile falls, then wait for the soldiers to reach that position.

While the game might be historically instructive as to the difficulty and inaccuracies of cannon warfare, the game is soon boring and not much fun to play. It is certainly not the type of game that Atari owners are accustomed to seeing on the Atari. The introduction with two slow tunes from the Napoleonic Wars should have the option to be eliminated. The graphics could have been vastly improved.

INTRUDER!

Company: In Home Software

Language: Basic

Hardware Requirements: 16K; disk drive or cassette player.

Department: Entertainment

Sugg. Retail: \$29.95 cass./\$34.95 disk

Availability: 4

Disk or Tape: Both

OVERALL RATING	D	EASE OF USE	C-	ERROR HANDLING	N/A
GAME CONCEPT	D+	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	D+	CHALLENGE	B	HOLDS INTEREST?	D
GAME DEPTH	D+	GRAPHICS	D+	VALUE FOR MONEY	D

The mission in this arcade-style game is to shut down four nuclear-powered reactors in the basement of a super secret research installation which have been damaged by an earthquake. The trouble is, that particular level is guarded by two deadly robots, and you are the *Intruder*.

The game, written in BASIC, is entirely animated with character graphics. Movement is a little sluggish, but you and the two robots rapidly take turns moving. The floor space is littered with packing crates. You can push these around to form walls to trap the robots. This strategy, if you can master it, is necessary if you are to survive longer than twenty to thirty seconds. Unfortunately, your speed is the same as that of the pursuing robots, and this gives you precious little time to construct a trap, lure a robot into it, and close the trap again before one or the other of them kills you. There seems to be no way to reach all four reactors with two robots chasing you.

The game is indeed tough, if not impossible. And that is just the apprentice level. Upper levels include replacement robots when one is captured, or as many as eight on the more advanced levels. Even the apprentice level has a time limit.

The game has a good concept, but it may prove too difficult to master before the player becomes frustrated and moves on to another game. The graphics are so-so; and it takes too long to randomly place the scattered packing crates in the room at the start of the game. If you get killed in twenty seconds, you don't want to wait more than thirty to start the next game.

SPIDER INVASION

Company: Cosmi

Language: Machine

Hardware Requirements: 16K cassette, 32K disk

Department: Entertainment

Sugg. Retail: \$9.95 cassette / \$14.95 disk

Availability: 4

Disk or Tape: Both

OVERALL RATING	C+	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	C+	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	C+	HOLDS INTEREST?	C
GAME DEPTH	C	GRAPHICS	C	VALUE FOR MONEY	B

To swell the ranks of shoot-'em-up games, add *Spider Invasion*. The object here is to destroy deadly alien spider mutations, their eggs, and the nest as you creep through a four screen, underground labyrinth. Your joystick controlled player can shoot only up and down. Baby spiders and spider eggs are everywhere and are fairly easy to kill. The mother spider is another story. Get out of this mother's way as she moves horizontally across the screen. The nest, when you find it, requires repeated shots before it is destroyed. When you have destroyed all eggs, baby spiders, and the nest, you advance to a more difficult level.

The graphics features four-way fine scrolling. The maze itself is two screens high by two screens wide, but the game puts you much too close to the top and bottom screen edges before it begins scrolling. This gives you very little reaction time against objects moving toward you. Therefore, you must proceed with caution. Although many players would like to be able to shoot in all four directions instead of just up and down, this would, I think, make the game too easy. It is, at any rate, a good game for children.

STELLAR SHUTTLE

Company: Broderbund

Language: Machine Language

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$29.95

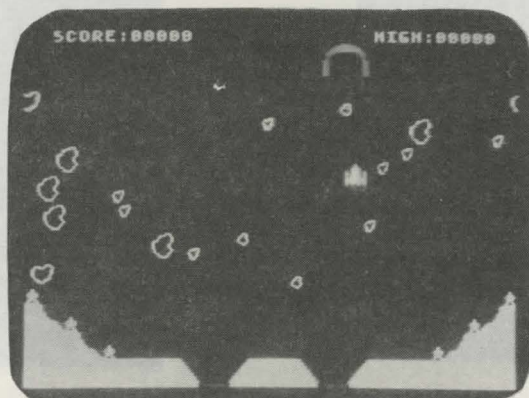
Availability: 8

Disk or Tape: Both

OVERALL RATING	C+	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	C+	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	C+	HOLDS INTEREST?	C+
GAME DEPTH	C-	GRAPHICS	C+	VALUE FOR MONEY	C

Stellar Shuttle resembles the arcade game *Lunar Rescue*. The object is to rescue six stranded space explorers on the planet's surface. Your shuttle craft is released from a mother ship that hovers patiently above as you descend to the surface through a deadly asteroid belt. The craft is joystick maneuverable, has thrusters for slowing the approach when maneuvering through the asteroids, and lasers that can be used to clear a path during the ascent. The ship must be landed at either of two bases, and your descent speed is not important since the ship can be landed without retrothrusting. What is important is that you make six round trips, rescuing three men from one base and three from the other. During the ascent, when the speed is constant, you must avoid or shoot comets, alien ships, and asteroids that block your path. Upper levels sport a dragon on the surface who devours your captives before they reach your ship. The instructions hint that you receive 200 points for killing the dragon, but so far it isn't clear how this is accomplished.

Stellar Shuttle is a nicely implemented game with good graphics and sound effects. It offers a fine challenge, but doesn't have much depth, becoming repetitious after extended play.



STELLAR SHUTTLE

ARCADE STYLE GAMES

RASTER BLASTER

Company: Budge Co.

Language: Machine

Hardware Requirements: 32K, Disk Drive

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 8

Disk or Tape: Disk*

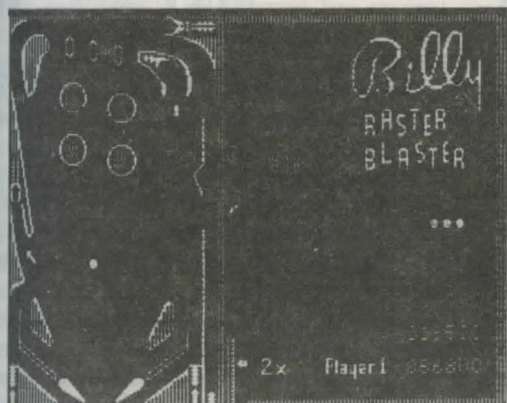
OVERALL RATING	A-	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	A	SKILL INVOLVED	B	DOCUMENTATION	B
CREATIVITY	B	CHALLENGE	B	HOLDS INTEREST	B
GAME DEPTH	B	GRAPHICS	A	VALUE FOR MONEY	A

The sensation of playing an actual pinball machine is now available with the introduction of *Raster Blaster*. Bill Budge worked for over six months to faithfully reproduce the Bally's pinball game, *Firepower*. His attention to detail is astonishing. The rubber bands on the bumpers jump and the action of the claw mechanism and the spinners act like their electromechanical counterparts. Two joystick buttons activate the pair of flippers. The strength of the spring ball launcher is set with the joystick. The ball behaves amazingly like that of a real game. Except for an occasional freaky bounce, the ball is true. Aiming the shot is a little harder with the flippers than in the real game. Judging the strength of a shot is nearly impossible unless you trap the ball with the flipper.

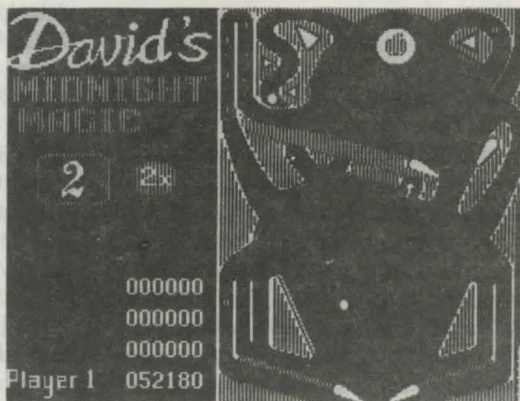
The game is for one to four players with two levels of play. On "easy," the side chutes are closed, while in the "hard" mode, they close after you activate two sets of center targets. Filling all six center targets enables the *Raster Blaster* claws. Any balls shot into claws are caught, and the player is given another ball. If all three are caught, they are released simultaneously for multiple ball play. There are lane lights at the top, a set of targets on the right side and, of course, a spinner.

Budge's Hi-Res raster graphics are superb. He has included numerous sound effects to enhance the simulation of the newer electro-mechanical pinball machines. It is *the definitive* pinball game for the Atari. Hopefully, Budge will convert other popular arcade pinball games to the Atari.

Budge's Hi-Res graphics on mode eight are superb, but lack much of the color they had in the original Apple version. Because of the speed differences between machines, the ball in the Atari version moves about 30% faster, just a little too fast for a real pinball game. They had to sacrifice the tilt feature in the translation because of differences in the controllers. The sound effects are a great disappointment. While they should have been better on the Atari, they are instead an annoying series of bleeps. Nevertheless, *Raster Blaster* is a superb recreation of a pinball game.



RASTER BLASTER



DAVID'S MIDNIGHT MAGIC

DAVID'S MIDNIGHT MAGIC

Company: Broderbund

Language: Machine

Hardware Requirements: 48K, disk drive.

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 9

Disk or Tape: Disk*

OVERALL RATING	A	CONTROLLABILITY	A	ERROR HANDLING	N/A
GAME CONCEPT	A	SKILL INVOLVED	B	DOCUMENTATION	C+
CREATIVITY	B	CHALLENGE	B+	HOLDS INTEREST	B+
GAME DEPTH	B-	GRAPHICS	B+	VALUE FOR MONEY	A

David's Midnight Magic is a spectacular, double-decker pinball game. It is absolutely realistic in its approach to pinball games like *Black Knight*. These games, which have both upper and lower sections, are interconnected by ramps. There are sets of flippers on the bottom and top levels. These flippers respond as accurately as any of their electromechanical equivalents, with no erratic bounces.

The game is action-packed, with a variety of targets included on both levels. There are various drop targets, some of which activate the Magicsave, which can save a ball that falls through at the side chutes. Unfortunately, these are activated from the keyboard, as is Tilt. This makes things somewhat awkward in use, and requires you to hold two paddles and their buttons. Other targets trigger the multiple bonus feature, or release balls that are trapped in the upper ball collector. If you can trap three balls in this S-shaped collector, all three balls can be played simultaneously. There is also a loop that connects one level to the next. This is worth extra bonus points. Kicking a ball through the loop after obtaining a 5X bonus results in being awarded an extra ball.

High scores can be saved to the disk if it is unprotected; otherwise, high scores are maintained only temporarily for the evening's play. There is also a pause control in case the phone rings; fine, if you are going for a record score.

The simulation and graphics are great, although not as colorful as the Apple version. Colors on GR.8 are limited to blue, green and white. It is a little more difficult to discern which targets are still up, especially on the top level, as the targets blend into the screen.

If you are a pinball fan or loved *Raster Blaster* this game is worth owning.

SALMON RUN

Company: APX

Language: Machine

Hardware Requirements: 16K cassette, 24K disk

Department: Entertainment

Sugg. Retail: \$22.95

Availability: 7

Disk or Tape: Both

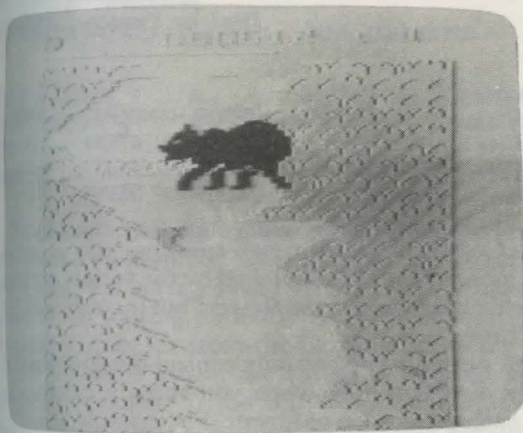
OVERALL RATING	B-	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	C	DOCUMENTATION	C+
CREATIVITY	B	CHALLENGE	B-	HOLDS INTEREST?	C+
GAME DEPTH	C+	GRAPHICS	B-	VALUE FOR MONEY	B

Salmon Run is a cute little game in which the object is to guide a salmon to his upstream spawning ground. The vertical river course is treacherous. The shoreline is jagged, and the swift moving water has numerous waterfalls. Bears, seagulls, and young fishermen are deadly enemies to the salmon.

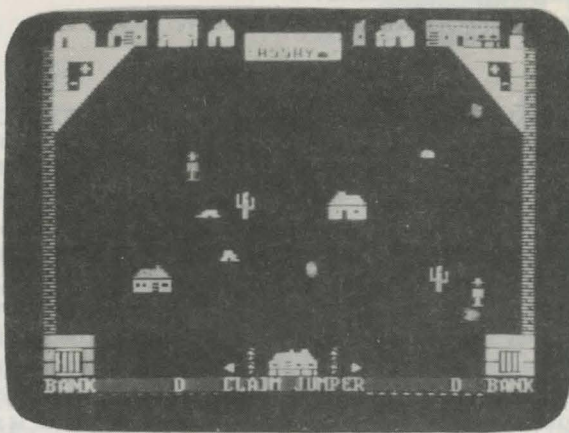
The entire river course scrolls downward as one to four players take turns guiding their fish to the spawning grounds. They race a shrinking horizontal line that represents the last moments of the fish's life. They accumulate points for swimming each foot of the river, and ten points for each waterfall successfully jumped. The fish will lose points for mistiming their leaps (activated by joystick), and striking the waterfall itself. If one reaches the headwaters of the river, the salmon mates and produces a baby salmon (worth an extra fish).

With bears and seagulls chasing your salmon, it sometimes pays to dive deep and hide. But you can't do this too long for that timer keeps ticking away the fish's life. You must be brave and guide your salmon slowly upstream, while being careful to avoid the children fishing, and those quick, hungry, black bears. The game becomes harder the longer you play. It can also be started on more difficult levels — these have more waterfalls and faster enemies.

The graphics and sound effects here are very good. In particular, sound effects simulate flowing water, hungry growling bears, and squawking sea gulls. Colorful, smooth scrolling add to the game's charm — an effective and enjoyable one, especially for the kids.



SALMON RUN



CLAIM JUMPER

CLAIM JUMPER

Company: Synapse Software

Language: Assembly

Hardware Requirements: 16K; disk drive or cassette player.

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 5

Disk or Tape: Both

OVERALL RATING	B	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	C+	DOCUMENTATION	B-
CREATIVITY	C+	CHALLENGE	C	HOLDS INTEREST	B+
GAME DEPTH	C	GRAPHICS	B-	VALUE FOR MONEY	B

Claim Jumper is a two player action game in which the object is to collect gold nuggets, trade them in for cash, and deposit that in the bank. It is a competitive game: while you are trying to accumulate wealth, your opponent is trying to steal your money before you reach the bank. He is armed with a pistol; but that isn't your only concern.

The strategy in the game would be rather simplistic if the game were simply a shooting match. But the addition of a number of snakes and tumbleweeds that chase cowboys of the opposite color (i.e., light colored snakes chase the dark cowboy, dark colored tumbleweed chase the light cowboy) make this game challenging. If a player is touched by these perils, he is paralyzed for several seconds, long enough for your opponent to steal the loot. If you successfully shoot at what is chasing you, it turns the opposite color and chases your opponent. And if you hit your opponent, he ends up temporarily in the hospital. You can only shoot while moving. If you shoot while stationary, you lay eggs or seeds. So if, for example, five tumbleweeds were pursuing the light colored cowboy and they were lured into hitting one of the eggs, it would turn into a snake.

The game is complicated, because there are a number of rules, more than most shoot-'em-up games have. But this added complexity is what makes the game unique and fun to play. There is a definite strategy to playing this game. What makes it fun is that simply to run to the bank is fraught with perils, and the money changes hands numerous times before one cowboy reaches the safety of the bank. The game can be handicapped for one player or the other if playing abilities are disparate; and there is an option that requires you to buy bullets from the general store, to add to the difficulty of the game.

The game's graphics are simple yet nice. Control, which is by joystick, is good. My only complaint lies with the scoring system. The game doesn't end when the first player accumulates 10 bills, but that does allow the player to buy a house worth 20,000 points. With a score requiring 25,000 points to win (1 house plus 50 conversions of snakes into tumbleweeds or vice versa), finishing a game is really anti-climatic.

There is also a one player version that is a simple shoot-'em-up, and so not much fun. The object is to destroy all snakes and tumbleweeds. In this game you must accumulate money in order to buy bullets. If you're touched three times, the game ends. Stick to the two-player game, which is very enjoyable.

ALIEN GARDEN

Company: EPYX [Automated Simulations]

Language: Run time FORTH

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$39.95

Availability: 6

Disk or Tape: Cartridge

OVERALL RATING	C-	CONTROLLABILITY	C-	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C+	DOCUMENTATION	B
CREATIVITY	B-	CHALLENGE	B-	HOLDS INTEREST	D+
GAME DEPTH	C+	GRAPHICS	D+	VALUE FOR MONEY	D

Alien Garden is a rather bizarre game in which you maneuver a Cosmic Critter through row upon row of crystal flowers. These flowers, all first generation initially, mutate, grow, or explode when touched by the various portions of your body (mouth, wings, and stinger). Points are gained for eating the pieces of the flower, but increase with the number of different generation flowers in the garden at any one time.

The garden continually scrolls up and down as you wander about. Actually you can only control the direction that your head faces as you steer from side to side. Scrolling changes direction only when you cause a mutation or explosion. The challenge occurs in learning what is safe to do with each generation of flower. For example, if you try to eat a first generation flower, it mutates to a second generation flower. This one is edible, but if it is bumped with your wings, it explodes and you lose the part with which you touched it. On the other hand, you could sting it, turning it into a third generation flower. If you sting it again it grows. It can grow too big and fizzle out permanently. If you try to eat this third generation flower, it explodes; you lose your head and die. If you had just bumped it with your wings it would have mutated to a fourth generation flower. You can get back one of your missing body parts by creating a new flower that has never been in the garden before. There are twenty different generations of flowers possible, and you must learn to recognize each. These shapes don't change from game to game within a single session, but if you re-boot the machine they appear in a different random order.

Alien Garden is definitely an unusual game, one that simply can't be compared to any other game that you have encountered. It is a game that requires good memory and pattern recognition abilities rather than hand-eye coordination. It is more likely to appeal to adventure game fans rather than arcade game players. It has been a game that people either have enjoyed after catching on quickly to the game's rules, or one that was shunned after several quick deaths. The fact that it takes over one minute for the game to restart, because it goes through a series of weird patterns before growing new crystals, becomes very discouraging. Most people who lose want to immediately try again. The long wait becomes intolerable. In sum, *Alien Garden* is an intellectual game that has merit, but seems to be one that few will ever learn to enjoy.

SNAKE BYTE

Company: Sirius Software

Language: Machine

Hardware Requirements: 48K, disk drive.

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 8

Disk or Tape: Disk*

OVERALL RATING	C+	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	C	DOCUMENTATION	C+
CREATIVITY	C	CHALLENGE	B	VALUE FOR MONEY	C
GAME DEPTH	C+	GRAPHICS	C-	HOLDS INTEREST?	B-

Snake Byte is a rather challenging keyboard or joystick controlled game where the object is to devour apples with a steerable snake. But as the snake consumes each apple, it grows longer. Soon you have a snake with a body so long that it becomes a challenge to maneuver without running into the snake's tail. The game begins with ten apples, but if you don't eat fast enough, you're penalized with extra apples. Once you have eaten all of the apples, you advance to the next maze level.

The upper levels, which have barriers or internal walls, are much harder. There is an option to add either one or two bouncing plums to the game. The added challenge is to avoid hitting the plums with the snake's head. A collision costs you one of your three snakes.

Joystick control is very easy to master. The snake turns in the direction you push the stick and it is impossible to double back on yourself. Keyboard control uses two arrow keys to control clockwise and counterclockwise turns, and is slightly more responsive. The graphics are adequate, nothing fancy, where the apples just look like moving signs. *Snake Byte* is a very simple, yet challenging game.

CHOPLIFTER

Company: Broderbund Software

Language: Machine

Hardware Requirements: 48K, disk drive.

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 9

Disk or Tape: Disk*

OVERALL RATING	A +	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	A +	SKILL INVOLVED	B	DOCUMENTATION	B
CREATIVITY	A	CHALLENGE	B +	VALUE FOR MONEY	A +
GAME DEPTH	B	GRAPHICS	A +	HOLDS INTEREST?	A +

Occasionally an arcade game comes along that is so unique, so well executed, and such a joy to play that it can be considered a masterpiece. *Choplifter* is such a game. The game involves flying a helicopter into the desert in order to rescue sixty four hostages held prisoner in four barracks. One of the barracks has been blown open and sixteen of the prisoners are waiting patiently for your arrival. Unfortunately, tanks are patrolling the area so the hostages are reluctant to stray far from the burning barracks.

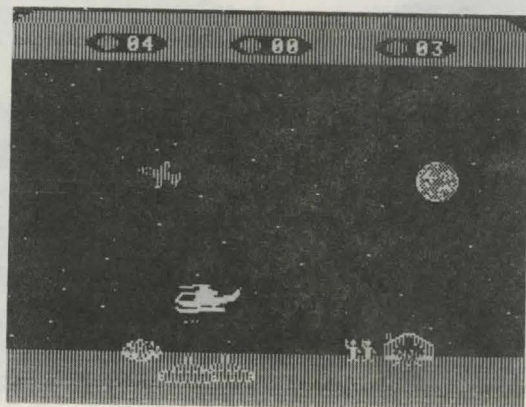
Your helicopter (there are three) is warmed up on the heliport next to the post office near the border. The helicopter responds to the up, down, and sideways movements of the joystick. Although helicopters can fly backwards in a limited fashion by pitching the direction of the rotating blades, control is provided for turning the helicopter around in order to aim its guns. Holding the fire button down reverses direction, and a medium long press puts it into tank attack position directly facing you on the screen. The gun is fired by pressing the button momentarily. This one button control system causes problems that the two button approach on the Apple computer avoided. If in the heat of battle against a tank or jet fighter you fire by holding the button just a little too long, the helicopter turns sideways or around completely. This can result in the loss of a helicopter. The helicopter is easy to fly, and impossible to crash on level one.

It is important to set the helicopter down as near to the prisoners as possible without landing on one. The shorter their run to the copter the better, for tanks are always moving up on your position, and you often have to make a quick getaway. It is always best to destroy a tank quickly, but first lure it away from any prisoners still on the ground, for they are often killed by exploding shells.

The animation in these sequences is incredible. These prisoners actually run towards your chopper. The chopper's blades are rotating and the craft is bouncing slightly as if you were gunning the engine in anticipation of a quick takeoff. As the moving tanks lob shells closer to your craft, the exploding shells sometimes kill a running prisoner. When the prisoners are aware of your leaving, or if your chopper is full, they wave goodbye. There is detail in their animation as they run after your hovering helicopter, or as they run from an advancing tank. You'll watch in amazement as your helicopter is hit by an enemy shell just after it lifts off and it turns into a ball of fire and descends as flaming wreckage.

After rescuing as many as sixteen hostages (the copter only holds sixteen), you return to your base and the second level of the game begins. Enemy jet fighter craft guard the airspace above your advancing craft. They turn and bank sharply while firing rockets at your chopper. Sometimes it is best to maneuver into position and try to shoot them down. Just flying along is like being a sitting duck. A quick attack on a barracks usually frees another group of hostages. Rescue is more difficult at this point as missiles can still hit you from above. The only consolation at this point is that enemy aircraft stay on their side of the border. However, on level three, enemy drone air mines that are capable of homing in on your craft don't care what side of the border you're on.

The helicopter is extremely easy to fly. You do have to be more careful of your descent rate on the upper levels or you will crash the copter. The maximum score is obtained by rescuing all sixty four prisoners. Since this is a formidable task, I would consider this a very challenging game. Overall, the concept, graphics, and animation make this a delightful game. If you are seeking something novel and a game that doesn't quickly bore you, then buy *Choplifter*!



CHOPLIFTER

PROTECTOR

Company: Synapse Software

Language: Machine

Hardware Requirements: 32K; disk drive or cassette player.

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 8

Disk or Tape: Both

OVERALL RATING	C	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B-	SKILL INVOLVED	C	DOCUMENTATION	C+
CREATIVITY	C	CHALLENGE	C	HOLDS INTEREST?	C
GAME DEPTH	C	GRAPHICS	A	VALUE FOR MONEY	C-

The arcade game *Protector* creates an unusual alien world of space cities, sputtering volcanoes, burning lava, falling meteors, dangerous laser bases, and UFO's. Set on a wide screen with a smoothly scrolling landscape, *Protector* is more a showpiece of Atari's graphics capabilities than a challenging game.

Playing the hero, your mission is to rescue the inhabitants of this luckless planet from the clutches of an alien ship that abducts them, dropping them into a nearby volcano. And since only 18 people remain alive when the game begins, time is not on your side.

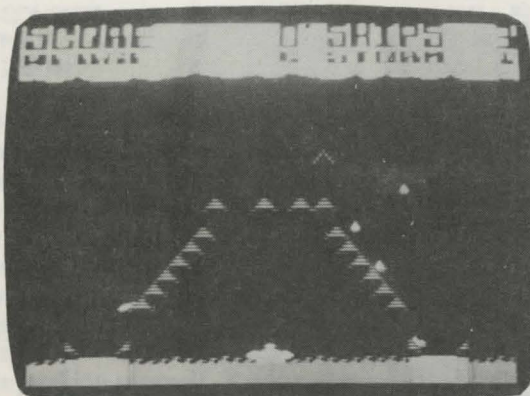
The initial objective is to navigate past the city's laser defenses, and transport as many people as possible from the city on the left to temporary safety in the city on the right. Starting at your refueling base, you carefully navigate your ship past the city's defense posts. (On lower levels these installations can be bypassed.) As the screen scrolls, a multi-colored landscape of tunnels, mountains, and buildings stretches out before you. Sounds of trouble percolate in the background. Aliens hover around the frightened inhabitants who have gathered outside. The big alien mother ship maneuvers into position, engages its tractor beam, and kidnaps another victim. It's a almost hopeless situation as your laser fire bounces harmlessly off of the retreating ship.

Transporting these people to the city beyond the volcano can be accomplished by maneuvering your ship just above any man. He will signal that he can be lifted by dropping his hand. When your ship reaches the other city, pressing the fire button will drop the man. It is also possible to rescue people as they are dropped into the volcano—a rather tricky maneuver that must be timed just right, or you will be hit by the falling man. It is best to concentrate on transporting people, because a mistake costs you precious time by requiring you to start back at the refueling base minus one ship.

The volcano erupts once all inhabitants are evacuated from the first city. The alien ship doesn't give you any more trouble, but the creeping lava forces you once again to evacuate the people from the city on the right. These few must be transported across hostile territory where meteors fall and laser bases fire, to the safety of pneumatic tubes at the far right of the screen.

The game's graphics are superb and very detailed. They rely heavily on character set graphics, using a colorful, redefined character set. Your space ship and the alien ship use player missile graphics. From a programmer's point of view, the game uses almost every Atari graphics feature, and is a splendid example of machine language programming. The sound and music routines are dramatic and appropriate.

As a game, *Protector* has a rather weak scenario. This is not to say that the game isn't challenging, for at upper levels, when the game is speeded up, the time constraint is such that you are unlikely to save anyone without considerable practice. However, the game does begin to become tiring after several plays. It is a game that suffers from a dearth of immediate scoring goals, considerable repetition, and a general lack of excitement.



SLIME



PROTECTOR

PROTECTOR II

Company: Synapse
Language: Machine Language
Hardware Requirements: 32K

Department: Entertainment
Sugg. Retail: \$34.95
Availability: 6
Disk or Tape: Both

OVERALL RATING	B	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B-	SKILL INVOLVED	C+	DOCUMENTATION	C+
CREATIVITY	C	CHALLENGE	C+	HOLDS INTEREST?	B-
GAME DEPTH	C	GRAPHICS	B	VALUE FOR MONEY	C+

Protector II is an improved and more playable version of the author's original game. The object remains the same: to rescue the inhabitants of a city under alien attack, transport them beyond the volcano to safety in the city of New Hope, and later to the Verdann Fortress after the volcano erupts. However, the new version is much wider on screen; many of the terrain obstacles that previously made high speed flying risky have been removed. With the addition of enemy rocket bases capable of firing in all directions, alien chompers, and xytonic pulse-trackers that pursue your needelfighter across the sky, *Protector II* has become an arcade game with a mission.

There have likewise been a number of subtle changes that make flying easier. You need no longer worry about accidentally bumping into buildings when rescuing inhabitants of the cities. Collisions are ignored. Your ship gradually sinks to the ground when left in an unattended, hovering state, and you no longer drop a messenger when shooting at enemy craft with your laser. The game now features complete wrap-around. Gone are the banks of laser beams that guarded the entrance to the underground cities and the safety of the transport tubes. The Verdann Fortress, which can be reached in either direction, is protected from view by invisibility shields until Dragonmaw erupts. Only then does its armaments and the escape chute that they guard become visible.

The game is definitely more interesting to play now that it has more of a shoot-'em-up flavor to it. The first version had a rather unique look to it that has here been sacrificed for unobstructed maneuverability, allowing for faster play. The game is less difficult, but with added scoring possibilities. *Protector II* holds your interest longer.

SLIME

Company: Synapse Software
Language: Machine Language
Hardware Requirements: 16K

Department: Entertainment
Sugg. Retail: \$34.95
Availability: 7
Disk or Tape: Both

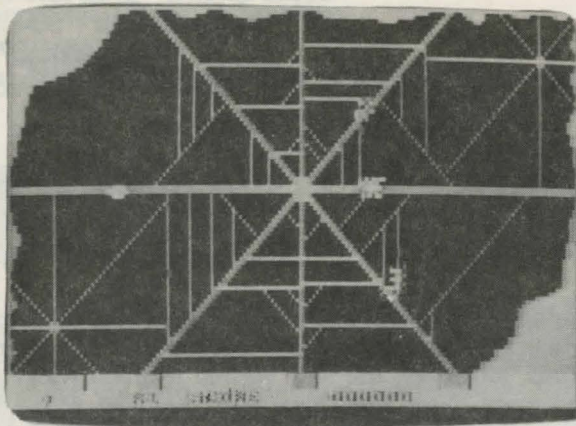
OVERALL RATING	C+	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C+	CHALLENGE	C+	HOLDS INTEREST?	C+
GAME DEPTH	C-	GRAPHICS	B	VALUE FOR MONEY	C

Slime can certainly lay claim to originality. In it, an alien ship has just seeded the clouds with embryonic slime nurdles. As they mature, they begin to fall toward the oceans below. The object is to channel the corrosive slime using wedges into the two gamma-tube absorber drains on either side of the screen. Otherwise, the fully mature nurdles will cause the oceans to swell and rise. The twenty available wedges are fired into position from a warship stationed below. Positioning is achieved with a joystick-controlled flashing triangle. The number of wedges is limited, and they can be repositioned with the joystick controlled cursor. If you don't manage this and run out of wedges, the wedge in the first position will be removed.

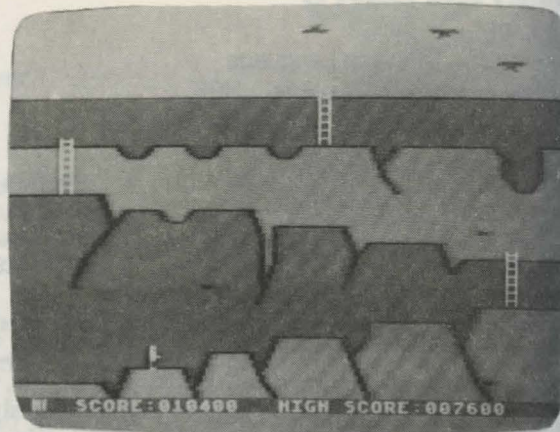
You must survive fifty slime storms to win the game. The lightning that accompanies these can wreck your deflector wedges. So too can the saucers and fireballs launched from the lightning. These latter weapons weaken your defenses, and can be lethal to your warship below as they will lock onto its position should they get past the wedges.

Since it drifts at the mercy of the wind and the tides, your warship's only defenses are the wedges. Oozing slime will also destroy your ship, and occasionally a saucer will plug your drain. When this happens, make sure that your helicopter is not hit by any slime drops, fireballs, or saucers.

The game is novel and features nice graphics, especially during the lightning storms. While *Slime* offers an initial challenge, it doesn't wear well over extended play. The fault may be that it is a defensive game subject to the mentioned effects of repetition.



THE GUARDIAN OF GORM



CANYON CLIMBER

GUARDIAN OF THE GORN

Company: In-Home Software

Language: Machine

Hardware Requirements: 16K cassette; 24K disk.

Department: Entertainment
Sugg. Retail: \$29.95 cassette/\$34.95 disk

Availability: 6

Disk or Tape: Both

OVERALL RATING	C	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	C	HOLDS INTEREST	C
GAME DEPTH	C-	GRAPHICS	C	VALUE FOR MONEY	C

Guardians of The Gorn is an arcade game in which you have to rescue four space ships caught in a gigantic spider web. As you wander around the web, collecting each of the ships, deadly spiders pursue you to prevent you from returning to your base at the bottom left of the screen. Although you aren't strong enough to kill a spider directly, you can blow up the strand of the web behind you on which the spider is pursuing you. But you must reach a safe junction first, or both you and the spider will die an untimely death. The Gorn, a huge butterfly, is also to be avoided. It tries to snatch you from the web as it flies across the screen.

The game is similar in theme to many of the chase/maze games, except that the maze is a random web of diagonal connections. As you proceed to more advanced levels, each maze is randomly generated, and guarded by more intelligent spiders that zero in on you much more quickly. The game is graphically interesting, but lacks the cuteness or excitement to make it widely appealing.

ROBBY THE ROBOT CATCHER

Company: Sublogic

Language: BASIC

Hardware Requirements: 32K, disk drive.

Department: Entertainment

Sugg. Retail: \$24.95

Availability: 5

Disk or Tape: Disk

OVERALL RATING	C	CONTROLLABILITY	C	ERROR HANDLING	C
GAME CONCEPT	C-	SKILL INVOLVED	C-	DOCUMENTATION	C-
CREATIVITY	C-	CHALLENGE	C-	HOLDS INTEREST	C
GAME DEPTH	D	GRAPHICS	C	VALUE FOR MONEY	D+

Robby the Robot Catcher is an arcade game suitable for ages four through adult. The theme here is not a new one and has been used before in games like *Avalanche* and *Kaboom* the player controls Robby with a joystick, and attempts to catch falling "baby" robots. The speed of the robots' fall increases along with the difficulty levels. The game is over when ten are missed.

The game is simple enough for young children. My daughter (age four) had no problem sticking with the game but did have problems with the joystick, especially with the button that makes Robby's head bob. She also had trouble with little baby robots that go "splat" on the ground.

CANYON CLIMBER

Company: Datasoft

Language: Machine

Hardware Requirements: 16K; disk drive or cassette.

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 7

Disk or Tape: Both

OVERALL RATING	B-	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	C	DOCUMENTATION	C+
CREATIVITY	B-	CHALLENGE	C	HOLDS INTEREST?	C+
GAME DEPTH	B-	GRAPHICS	B	VALUE FOR MONEY	C+

Escaping from the bottom of a danger-filled Grand Canyon in the Wild West is the goal of *Canyon Climber*. You must overcome big-horned mountain goats, Indian archers, and eagle-eyed birds that drop bricks. It requires keen timing and skill to reach the top of this three level game.

On the first level of the ascent, the task is to lay dynamite charges under the support pillars of four towering bridges. Each bridge is connected by ladders, and a plunger to detonate the charges is located at the far right on the top span. Unpredictable, horned mountain goats patrol the spans in pairs. The only way past them is to leap over their sharp horns. Your timing has to be just right, or they will knock you down to the bottom of the gorge. Jumping over them is sometimes a matter of luck, since they will unexpectedly turn around just as you are about to push the button of your joystick.

The second level, which contains a long zig-zag ramp, is guarded by Indians armed with bows and arrows. You have a choice of using a shield, or just jumping the arrows. The shield, which looks safe, isn't. It has a nasty habit of disappearing just when you need it most. And jumping over the arrows requires careful timing and considerable practice.

Level three opens up to a wide sky above the mesa-like bluffs that you must scale. Athletic dexterity is needed here, as you leap from one mesa to the next across open gorges. One miss and you have lost another man. Meanwhile, danger lurks overhead as eagles continually drop bricks. You must remain on constant alert to dodge them should they venture too close. If you succeed in getting to the top of the canyon, a goat awaits to kick you back to the very bottom. This first fall to the bottom is very disconcerting; but after awhile, you shrug and decide it must be the programmer's method to keep the game going.

The game is supposed to be tougher on the second level. The goats are slightly faster and more unpredictable here, but the other two levels appear to remain the same in terms of difficulty. The graphics are good, although nothing out of the ordinary. The game, finally, is fun, and appeals to the climbing instinct in many of us.

DOG DAZE

Company: APX

Language: Machine

Hardware Requirements: 16K cassette, 24K disk

Department: Entertainment

Sugg. Retail: \$22.95

Availability: 6

Disk or Tape: Both

OVERALL RATING	B-	DIFFICULTY	B	ORIGINALITY	N/A
PUZZLE QUALITY	B	EASE OF USE	C	DOCUMENTATION	C
TEXT QUALITY	C	VOCABULARY	B	HOLDS INTEREST?	B
GRAPHICS QUALITY	C	SAVE/RESTORE	C+	VALUE FOR MONEY	C+

Dog Daze is a fun, competitive children's game for two kids to play simultaneously. The object is to maneuver your dog with a joystick toward blue fire hydrants that appears randomly on the screen. The first to reach it claims that hydrant. Another hydrant soon appears and the race is on. If you accidentally brush your dog against another dog's fire hydrant, he must stop and sniff it for a few seconds; this causes a delay in your game. Meanwhile, your opponent is busy claiming new hydrants. The second method for claiming hydrants is to throw your dog's bone at them. This must be done while running toward the hydrant, either vertically or horizontally. Since the computer doesn't guide the bone to the target, you must be in direct line to hit it. If you hit the target, you automatically recover the bone; otherwise, you have to chase after it again.

Each time you claim a hydrant you score one point. You also receive a point when your opponent runs into your hydrant. The scoreboard at the top of the screen consists of eight hydrants for each player. When a point is awarded to you, half of a hydrant turns your color. You win when all the hydrants become your color. With this scoring method it is easy to see who is ahead.

One way to lose this game is to be hit by one of those reckless cars that appear unexpectedly on the left side of the screen. A honking horn gives a definite warning, but sometimes there is little maneuvering room, and you become stuck to your opponent's hydrant at the wrong moment.

The game is very well done, with good sound effects (including the theme music, "A Doggie in the Window"). It is a welcome relief for children from the usual space shoot-'em-ups that fill their game libraries.

PUSHOVER

Company: APX
Language: BASIC
Hardware Requirements: 32K

Department: Entertainment
Sugg. Retail: \$22.95
Availability: 5
Disk or Tape: Both

OVERALL RATING	B	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B-	SKILL INVOLVED	C	DOCUMENTATION	C+
CREATIVITY	B	CHALLENGE	B	HOLDS INTEREST?	B
GAME DEPTH	C	GRAPHICS	C+	VALUE FOR MONEY	B

Pushover is a two player game in which opponents battle atop a sheer cliff and attempt to push each other off of the edge. The first to do this three times wins. Obviously, the game isn't a test of physical strength, but a game of will power involving the interpretation of symbols in a test of coordination and fast reaction time.

Each player is presented with a symbol in the shape of a colored arrow. The joystick is moved in the direction of the arrow, and if the color is red, rather than blue, the red fire button is pressed. If one player makes a mistake, his opponent pushes him closer to the precipice. Thus, two players of fairly equal skill will push and shove in a test of endurance until one triumphs.

At first glance, *Pushover* appears to be a simple reaction time-test game requiring little involvement. Instead, it becomes a game of intense concentration in which the player takes on the role of a warrior whose very life depends upon winning. The levels of difficulty can be adjusted, and one can even play against a computer opponent. Different symbols are available, such as numbers, letters, or arrows from which to choose. Surprisingly, different types of players will respond to the different types of symbols. The game is unique in many aspects, and worth considering for your library.

AZTEC CHALLENGE

Company: Cosmi
Language: Machine
Hardware Requirements: 16K cassette, 32K disk

Department: Entertainment
Sugg. Retail: \$9.95 cassette / \$14.95 disk
Availability: 4
Disk or Tape: Both

OVERALL RATING	B	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	B	DOCUMENTATION	C
CREATIVITY	A-	CHALLENGE	B+	HOLDS INTEREST?	B+
GAME DEPTH	B+	GRAPHICS	B	VALUE FOR MONEY	A

Aztec Challenge is an arcade game in which one or two players, attempting to escape their sentences of being sacrificed to the gods, compete in an obstacle course known as the "Aztec Challenge." The course consists of 99 obstacles spread over 7 successively harder skill levels. The height of the jump is controlled by positioning the joystick (up for a high jump, centered for a medium, and down for a low jump). You must jump over the various obstacles that scroll past by depressing the joystick button.

The first phase, consisting of platforms of different heights, is relatively easy. Level two is more difficult, with its barriers of different heights. It is important to keep your jumps low; otherwise you will soar right into the next barrier, or smack your head into the post directly above the barrier that you attempt to clear. Level three is a combination of the preceding two levels. But the real challenge begins on level four. Not only do you have to have perfect timing to leap from box to box and past very sharp spikes, but a miss lands you right in the fire pit below. These maneuvers require much practice. Fortunately, the game has a "Continue mode," which allows you to continue your game where you left off after you have expended your three players. At this point, however, the score starts over. In this manner, you can practice on the upper levels until you become proficient.

Two players can compete simultaneously, with the second player running just behind the first. While this method alleviates the long wait between player turns, it is somewhat frustrating with two players of unequal abilities. The game restarts on the same level after each player's demise. The one saving feature of the two player mode is that the death of one opponent sometimes saves the other who just made a fatal error, but hasn't yet collided with an obstacle.

(This is a fun game and one you'll enjoy playing). The stick figure graphics and the strange collisions with obstacles are humorous. The game, with its fine horizontal scrolling, makes excellent use of the Atari's graphics. At its price, *Aztec Challenge* is an outstanding buy.

BLOCK 'EM

Company: Atari Program Exchange

Language: BASIC

Hardware Requirements: 16K cassette, 24K disk.

Department: Entertainment

Sugg. Retail: \$15.95

Availability: 9

Disk or Tape: Both

OVERALL RATING	D+	CONTROLLABILITY	C-	ERROR HANDLING	N/A
GAME CONCEPT	C+	SKILL INVOLVED	C-	DOCUMENTATION	B-
CREATIVITY	C-	CHALLENGE	C	HOLDS INTEREST?	C-
GAME DEPTH	D	GRAPHICS	D	VALUE FOR MONEY	D+

Block 'Em, although offered for one or two players, is strictly a two-player game which provides excitement and challenge in head-to-head conflict. Your objective is to build a wall around your opponent, and to either box him in, or force him to crash his own wall. You must keep in constant motion, and every crash you cause your opponent gains you a point (the score selection, which determines the game length, ranges from 1 to 99 points). Two choices in brick size, small or large, and six different speeds at which you build your wall provide variety. The element of fiercely competitive conflict makes this a challenging encounter.

JAX-O

Company: Atari Program Exchange

Language: Basic

Hardware Requirements: 16K cassette; 24K disk.

Department: Entertainment

Sugg. Retail: \$15.95

Availability: 3

Disk or Tape: Both

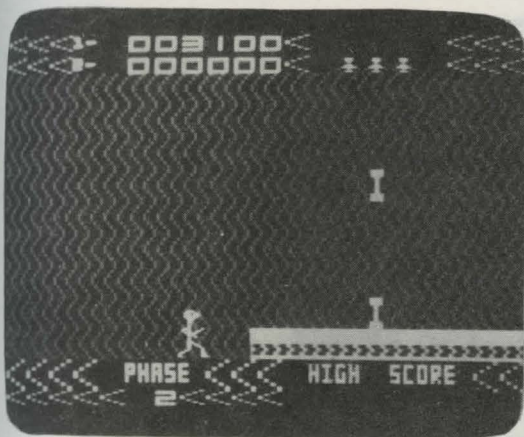
OVERALL RATING	D	CONTROLLABILITY	D	ERROR HANDLING	C-
GAME CONCEPT	C	SKILL INVOLVED	C-	DOCUMENTATION	C
CREATIVITY	C-	CHALLENGE	C-	HOLDS INTEREST?	D
GAME DEPTH	D+	GRAPHICS	D+	VALUE FOR MONEY	D

By alternating turns, one to four players can play *Jax-O*. *Jax-O* is the modern copy of the game we all played as kids, Jacks. The object of this game is to collect jacks with your hands and then catch the bouncing ball before it hits the ground.

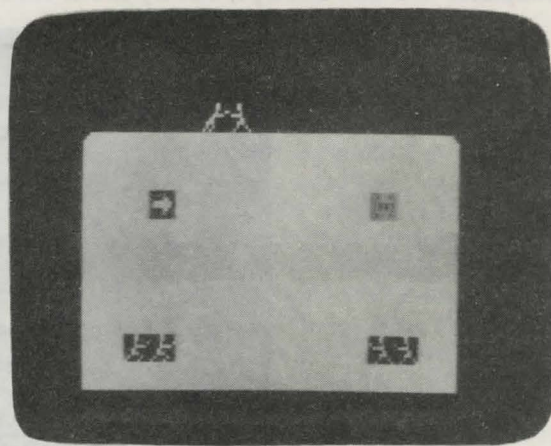
Your joystick controls the directions your "hands" travel, moving in any of eight directions. A number of jacks are pictured on the screen, and, depending on the turn, you must collect from 1 to 9 of them (by twos, then threes, etc), then retrieve the ball before it lands. You keep going until you fail to get the right number in the time allowed.

The variations of the game include the floor size and the speed of the ball. There are four possible sizes of the floor. The ball can go at two speeds, and with each level completed can progress to a faster rate.

The controllability of the joystick is very difficult, and the graphics and sound are poor. Very little is here to hold your interest, or improve your dexterity.



AZTEC CHALLENGE



PUSHOVER

JUMBO JET PILOT

Company: Thorn, EMI

Language: Machine Language

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$49.95

Availability: 7

Disk or Tape: Cartridge

OVERALL RATING	D+	CONTROLLABILITY	D	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C-	DOCUMENTATION	C
CREATIVITY	C-	CHALLENGE	C-	HOLDS INTEREST?	D
GAME DEPTH	C	GRAPHICS	C	VALUE FOR MONEY	D

You can take your turn piloting a Jumbo Jet with this flight simulator. The object is to take off from your local airport, and fly your aircraft to another about 45 minutes flying time away. The plane's cockpit is equipped with a full set of flight instruments that show airspeed, heading, vertical climb rate, altitude, the status of landing gear, brakes and lights, and the position of elevator and rudder controls. There is also an artificial horizon indicator, and a map displaying the aircraft's current position that can be called up when needed. The narrow window at the top of the screen shows the ground moving below.

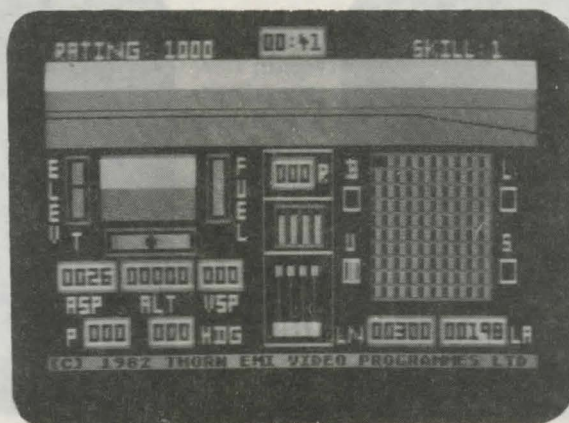
The first point to be made is that this aircraft is sluggish, and very difficult to control and land. While you expect a large jet to behave much differently from a small, single-engine aircraft, the response is so slow that you begin to overcompensate.

The jet initially begins at the airport's terminal building to be driven to the end of the runway before takeoff. The plane does not turn very quickly, but picks up speed the faster you go; therefore, you must throttle fairly high just to taxi, and brake often to slow down. Incidentally, the throttle key is right next to the landing gear key so if you aren't careful, the gear retracts and you crash on the ground. When you do get into position (you actually don't need a runway to take off), it takes nearly two minutes to accelerate to liftoff speed of 400 KPH. Even when you pull back on the joystick, the plane rises very slowly, taking several minutes just to gain several hundred feet. Strange as it may seem, it is possible to stall this craft if you climb too fast. When this happens, airspeed drops rapidly, even at full throttle with much less angle of attack.

Landing is near impossible, although I'm sure someone has managed it. Instructions say that you are to slowly throttle back from an altitude of 1,000 feet, and lower your airspeed to less than 100 MPH at touchdown. This plane doesn't have flaps or speed brakes to slow you down. It accelerates very rapidly on landing even with the engines off. I've tried to practice landing by first taking it up only 30 feet above the runway. Shutting the engine off does little for the first minute; the plane hardly slows down. By using elevator control you can eventually make the vertical climb rate negative. The yellow background, which indicates negative values, is very difficult to see, and you need moderate negative values to drop the 30 feet within several minutes. You can't try to zero it at the last moment because it takes nearly 30 seconds to respond. While I don't think values of -6 are excessive the plane does crash. Perhaps it is my high velocity that refuses to drop which causes the crash.

The graphics in the game are nice. There is a three-dimensional view of the ground represented by a grid. Everything becomes smaller as you gain altitude, and remains in true perspective. The runway is detailed, but often difficult to distinguish.

Again, the plane is sluggish and difficult to fly. The controls, on the other hand, are fairly easy to work with. The joystick controls both the rudder and elevators. Five keys control the various other functions like brakes, engine throttle, and landing gear. You have an option for night flight if you prefer to fly by instruments alone. Landing could be even more of a challenge with limited landing lights. Each game should last, barring crashes, for 45 minutes. The game is a little boring during midflight, but you could call the stewardess for cake and coffee. *Jumbo Jet Simulator* is a nice attempt, but try it out once in the store before you buy it.



JUMBO JET PILOT

SPACE SHUTTLE — MODULE ONE

Company: Swifty Software

Language: Basic

Hardware Requirements: 32K; disk drive.

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 3

Disk or Tape: Disk

OVERALL RATING	D+	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	C+	SKILL INVOLVED	D	DOCUMENTATION	C-
CREATIVITY	C	CHALLENGE	C+	HOLDS INTEREST?	D
GAME DEPTH	C+	GRAPHICS	C+	VALUE FOR MONEY	D+

Space Shuttle Module 1 is a three part simulation of the launch, descent, and final runway approach of our newest space vehicle. The program allows you to choose between flying a complete mission, or flight training on any one of the mission's three parts. The player also keeps a flight log on a separate data disk.

Much of the simulation is, of course, controlled by on-board computers. For instance, computers automatically monitor and control the power level of the three engines. However, the pitch and roll of your craft during lift-off must be manually corrected. Depending on the level of difficulty, the craft either has to be nudged occasionally with your joystick control, or flown continuously.

The Attitude Direction Indicator (ADI) displays your present course as indicated by two moving bars that form a cross hair. They must remain centered, and centering them is difficult for beginners. The pitch axis presents no problem. When the bar is up, the nose is angled too low and you must pull back on the stick. It would seem logical to push the joystick in the opposite direction to correct the pitch, but the roll axis is different. When the bar is to the left of center, you have drifted to the right. This requires correction by pushing the joystick to the left. Beginners will often mistakenly push the joystick the wrong way and terminate the mission.

The screen views the cockpit during launch and final approach. Since there is little but sky to see at launchtime, the CRT display shows an exterior view of your ship while your main boosters and external fuel tanks are jettisoned. But at descent, the view shifts to the distant runway about 100 miles ahead. A chase plane is first to appear through the windows. Soon the runway appears and grows larger as the shuttle craft nears touchdown.

Control of the craft through descent from orbit is in the pitch axis only. This portion of the flight is presented in the form of a graph of the trajectory, and a blip indicating your current position. Control on the final approach goes back to two axes, and variations from nominal appear on the Attitude Direction Indicator. While control on the roll axis alters the horizontal position of the chase plane and runway as seen through the windows, changing pitch alters nothing. There is no overflying the runway or landing short. If your pitch or roll is not on target, the program terminates the mission. This is not realistic. Moreover, while the program does award points for accuracy, it should also allow the pilot to experience the consequences of straying off course. Shuttle simulators on other micro computers have these features.

While the graphics and cockpit display are well done, the actual flight simulation is much too automatic and unrealistic to seriously learn anything from it. The simulation is entirely mechanical for the player: you must keep on target or your mission is terminated. There is no allowance for experimentation to correct errors because the program does not calculate your in-flight position. The runway approach, while nice to look at, is a disappointment. It would have been relatively simple to have included pitch as a factor in the landing. Also, it is irksome to have to repeat the flight phase that you are practicing on during training by having to return to the main menu, and then reload the same program that you were just using.

Space Shuttle Module 1 is the first of a series of planned modules for the space shuttle. In the future look forward to being able to construct a space station, and fight the enemy with lasers against killer satellites.



SPACE SHUTTLE

747 LANDING SIMULATOR

Company: APX

Language: Basic

Hardware Requirements: 24K cas, 32K disk

Department: Entertainment

Sugg. Retail: \$22.95

Availability: 6

Disk or Tape: Both

OVERALL RATING	C-	CONTROLLABILITY	C-	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	B	DOCUMENTATION	C-
CREATIVITY	C-	CHALLENGE	A-	HOLDS INTEREST?	D+
GAME DEPTH	C	GRAPHICS	D	VALUE FOR MONEY	C-

In *747 Landing Simulator* you try to land a jet airliner on its runway approach from an altitude of 5,000 feet. Initially, the plane is 20 miles out and traveling at 600 mph. It must follow a 3 degree glide slope on its approach within close tolerances, or risk collision with a plane flying in another corridor. In addition to the pitch control, you must also take care to correct the heading so that it lands parallel and on the runway. The plane must touch down at an airspeed of 100 mph, and at a point not more than half way down the 10,000 foot long runway. Fuel and time are added constraints in a complex calculation that determines your final score. There are a number of difficulty levels (some include instrumentation), and the choice of flying with or without an automatic pilot.

The game is a very frustrating and difficult simulation. Since it is hard to keep the plane within the glide slope even on the beginner's level, a midair collision usually occurs within the first minute of play. The instructions suggest that beginners should fly the approach part of the way on auto-pilot. However, the auto-pilot does not keep the plane within the glide slope corridor, so a mid-air collision occurs immediately upon release of that mode. There is no way to avoid the oncoming plane except to get back within the glide as quickly as possible. The off-course indicator consists of a single arrow; however, this single arrow approach has a fault: when the plane's heading is off, the pitch heading arrows don't appear until the heading is correct again. This lack of information can be fatal if you stray vertically out of bounds at that crucial point.

The graphics are rather sparse. The runway is shown as three distant converging lines, and becomes larger as your plane approaches the runway. These move about the screen as the plane's pitch and heading change. A two line instrument panel next appears at the bottom of the screen containing all of the necessary information needed to land the plane. The aircraft is controlled by joystick, except for airspeed and brakes, which are controlled by the number keys. You can change its altitude by 50 ft/sec if the trigger button is up, and 3 ft/sec on the landing if the button is depressed.

While the simulation has many fine points and is realistic enough, it is much too difficult for beginners. There should have been a practice mode without crash planes. It is difficult enough to keep within the glide slope, and correct altitude errors before touching down without fearing that you will be terminated by a stray aircraft. Moreover, the error indicator should preferably have been "indicators," and should have included two arrows, or one with a cross hair. The program has its merits, but let the buyer beware.

PILOT

Company: Artworx

Language: BASIC

Hardware Requirements: 32K disk, 16K cassette

Department: Entertainment

Sugg. Retail: \$20.95 disk / \$16.95 cassette

Availability: 3

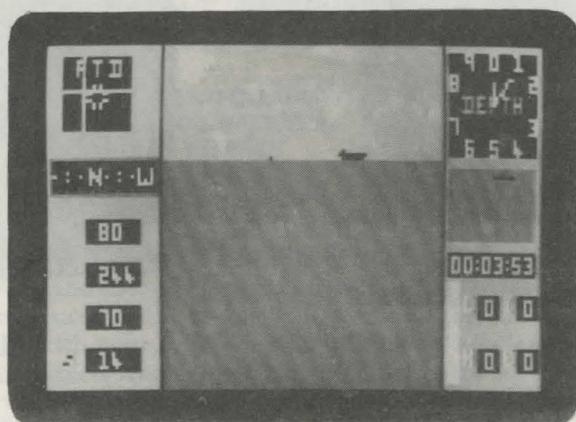
Disk or Tape: Both

OVERALL RATING	D-	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	D+	SKILL INVOLVED	D	DOCUMENTATION	C
CREATIVITY	D	CHALLENGE	C	HOLDS INTEREST?	D-
GAME DEPTH	D	GRAPHICS	D-	VALUE FOR MONEY	D

Pilot is a simplistic flight simulator used for practicing straight-on landing approaches and touchdowns on an airport runway. Each attempt begins at a randomly set altitude and distance from the runway. The approach is viewed from the cockpit of the plane; the upper three-quarters of the screen shows the runway, the lower portion gives the instrument readout.

The plane is controlled by two joysticks. The right controls engine thrust, while the left acts as a control stick for pitch or angle of attack. Pushing forward drops the nose of the plane, and pulling back causes the plane to climb. The plane must land at about 20% throttle, with a descent of less than 150 feet per minute. The best approach is to lose altitude rapidly, then glide slowly into the airport at reduced speed. The graphics, or view, is rather sparse. The runway appears as a dot in the distance, but begins to take form upon close approach. It stays in perspective in accordance with your altitude and angle of attack.

Although there isn't much to this game, it does take some practice to land properly every time. The first ten attempts will likely result in a crash. Also, an advanced mode presents instrument and mechanical failures in addition to a shorter runway.



SUBMARINE COMMANDER

SUBMARINE COMMANDER

Company: Thorn, EMI

Language: Machine

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$44.95

Availability: 7

Disk or Tape: Cartridge

OVERALL RATING	B-	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	C	DOCUMENTATION	C+
CREATIVITY	C	CHALLENGE	B	HOLDS INTEREST	C+
GAME DEPTH	B	GRAPHICS	B+	VALUE FOR MONEY	C

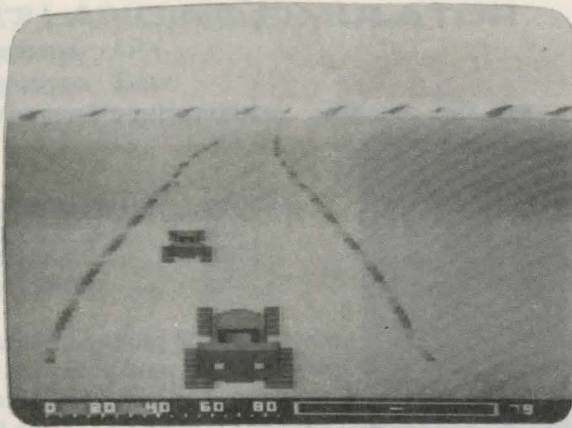
Submarine Commander is a tactical simulation game. You are the captain of a submarine who must find, attack, and destroy enemy convoys that sail the Mediterranean Sea. Depending on the skill level, the goal is to sink between five and nine convoys. Naturally, more fuel, battery charges, and torpedoes are available on the easier levels.

The game has three view screens, a map showing the current locations of all convoys, your current location, and a periscope view showing passing ships when the submarine is within 25 feet of the surface. An instrument panel has both sonar and hydrophone charts, as well as gauges and damage indicators that display the ship's current status. It is very important to pay attention to the ship's air supply, and the chart showing the depth below the keel when travelling submerged.

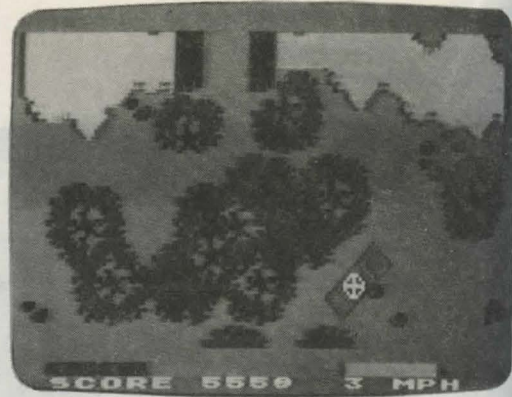
A winning strategy requires stealth. You are up against enemy destroyers and patrol boats that accompany the convoy's cargo ships and tankers. You need to continually determine the pros and cons of moving either on the surface or underwater. Remember: your greatest advantage over the enemy is your ability to travel underwater, but you can still be detected if you fire your torpedoes or use your sonar. Should you be detected, enemy guns can cause severe damage if you are near the surface. Evading them by diving deep and cutting your engines will usually end the attack.

The submarine's movement is controlled by the joystick. Rudder control is left and right, and the ship will dive or surface by moving the stick away from you or toward you. Controls seem sluggish to arcade players, but remember that submarines turn very slowly underwater. Torpedoes are fired with the joystick button. There are also a number of keyboard controls. The various view screens are toggled by the M, P, and S keys. Number keys control the engine speed, the C key will crash dive, and the B key blows the ballast tanks to surface rapidly.

Submarine Commander is a very good simulation - type game. It is fairly realistic, except that the enemy calls off its attack all too easily when you dive deep. It requires planning and careful management of limited resources: fuel, battery power, air supply, and torpedoes. The game has nicely detailed graphics that do much to add a touch of realism. Game buyers should be aware that while *Submarine Commander* has some arcade game qualities in certain sequences, it is a long game that lasts from 20 minutes to more than an hour. Not a game of instant gratification, but a fun tactical game requiring time and thought to really play well.



BAJA BUGGIES



HAZARD RUN

BAJA BUGGIES

Company: Gamestar
Language: Machine Language
Hardware Requirements: 16K

Department: Entertainment
Sugg. Retail: \$31.95
Availability: 4
Disk or Tape: Both

OVERALL RATING	B-	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	B-	HOLDS INTEREST?	C+
GAME DEPTH	C	GRAPHICS	B	VALUE FOR MONEY	B

Baja Buggies is a road racing game in which the object is to finish a grueling cross-desert race in one of the top six places. You start the race in 80th place. This means that, while not driving recklessly enough to crash, you really have to haul ass to win this race. It requires intense concentration, because you must avoid crashing into other cars that are bent on forcing you off the road.

The road course, which vanishes off in the distant hills, moves toward you. Its simulated 3-D effect is much like the old *Night Driver* arcade game. The course, which twists and turns, requires you to steer with the joystick controller. The firing button acts as a brake; and it must be used often, to avoid rear-end collisions with slower vehicles, and to hold the road in sharp turns. The background hills and fluffy-clouded sky add realism and the feeling of space to the game by shifting on the turns.

Beginning drivers will have a tough time finishing the race. If you run off the road too often, or have too many crashes, your buggy will break down, ending the race. More seasoned drivers, who manage to pass all cars behind the eight race leaders (shown as moving white lines on the radar screen), will find the pack difficult to catch before they cross the finish line. In one particular race, I managed to reach 9th place with a good quarter of the course to go, but I was unable to see or pass another buggy while driving the car flat out for over 45 seconds. I was expecting to pass a car at any moment because the radar showed that my car had caught the rear of the pack a good ten seconds before the race ended. These long gaps between passing the last of the trailing cars and catching the leaders cause you to lose interest in the game. Another drawback is that once the winners have finished, you can no longer improve your place because the game abruptly ends.

There are three racing courses. They are randomly created, and so put more emphasis on driving skills than on strategy. There are also two levels of difficulty, pro and amateur. At the amateur level opponents are more predictable, and they travel at a slower average speed. *Baja Buggies* is a nice looking game, and definitely a blast for one player. Continually breaking down may be frustrating during your first few races, but the game will grow on you as your skill increases.

HAZARD RUN

Company: Artworx

Language: BASIC

Hardware Requirements: 16K; disk drive or cassette player.

Department: Entertainment

Sugg. Retail: \$27.95 cassette / \$31.95 disk

Availability: 3

Disk or Tape: Both

OVERALL RATING	D+	CONTROLLABILITY	D	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C+	DOCUMENTATION	C
CREATIVITY	C+	CHALLENGE	C+	HOLDS INTEREST?	C-
GAME DEPTH	C	GRAPHICS	C	VALUE FOR MONEY	D

Outrunning the good ol' Sheriff through a hazardous course of tree trunks, boulders, fences, barnyard chickens, canyon wall, and the Deputy's car blockading the entrance to the bridge is the object of *Hazard Run*. It sounds like the plot of a Burt Reynolds movie, and the only escape is to put the pedal to the floor and jump Moonshine Creek. If the game had even half the excitement of the movie it might have been a winner.

You control an unwieldy car with your joystick. It continuously accelerates, unless the joystick button is held down to brake it. The car, which steers from side to side by moving the joystick, pivots when turning, rather than turning smoothly as a real car would. The car's wide profile hits objects that you would rather avoid. Combine this with a car that is very sluggish to control the faster you drive, and you have a game that isn't much fun to play because you constantly have to slow it down.

Each of the four different courses scrolls vertically downward as you drive. Your car stays level with the bottom of the screen. If the Sheriff is chasing you, he is never seen. If you hit an obstacle head on, the car flips and you lose a man. But sometimes you sideswipe one that tips you up on two wheels. This is great for clearing narrow gaps; but if you turn your wheels the wrong way, the car will flip. The longer courses require extra gas. To survive, your car must touch hazardously placed gas cans.

When you are trapped, and must jump any of the various creeks and ponds, your car must be going top speed. The view shifts to a side view of the car slowly sailing from one high bank to the other across the water. If you aren't going at least 60 MPH, the car plows into the opposite bank and drops into the drink. Because you can't get up to that speed in one screen length, you need to memorize the course to make the jumps.

The game has its moments, but in general is too frustrating to want to play for very long. The graphics are alright; but the car steering system and response must be considered primitive. Not a good bet.

MOTOCROSS

Company: Bank, Inc.

Language: Machine

Hardware Requirements: 16K; disk drive or cassette player.

Department: Entertainment

Sugg. Retail: \$24.95

Availability: 2

Disk or Tape: Both

OVERALL RATING	D-	CONTROLLABILITY	C-	ERROR HANDLING	N/A
GAME CONCEPT	D+	SKILL INVOLVED	D+	DOCUMENTATION	C-
CREATIVITY	D	CHALLENGE	D+	HOLDS INTEREST	F
GAME DEPTH	D	GRAPHICS	C-	VALUE FOR MONEY	D-

Motocross is a one or two player motorcycle racing game. The scrolling obstacle course consists of a trench with a narrow crossing, a bridge, a small jump, and some chickens. The object of the game is either to outlast your opponent. In the rare event that both players cross the finish line, the one with the least time on the clock wins. The motorcycles are joystick controlled, allowing you to steer, slow down, or speed up, as well as jump and do wheelies. Wheelies stop the player's clock, and hitting a chicken adds a five second penalty. These are important delays in a game in which one player obviously can't get more than part of a screen length ahead of the other. The game does not work well in a two-player mode where a crash (and there are many) stops the clock while an ambulance carts off the injured driver.

In one-player games the opponent is a computer controlled bike. The computer does not know how to jump the trench, so it either fights you for the narrow crossing, or just plain crashes. Control is sensitive, and there's no way of telling if this has to do with the dynamics of the bike. The left and right positioning tends to change the scrolling speed, but when one bike moves forward and the other back you get rather unpredictable results. The game's hazards are unchallenging except at the trench. The bridge is rarely fatal unless you hit the very bottom side, and the jump not even worth the effort. The most effective feature is the scrolling, and even that has a discontinuity at the wrap-around point. *Motocross* may be fast paced, but it is a frustrating and uncontrollable game that just isn't very well made.

SPACE CHASE

Company: Atari Program Exchange

Language: Atari BASIC

Hardware Requirements: 16K, cassette; 32K, disk drive.

Department: Entertainment

Sugg. Retail: \$22.95

Availability: 5

Disk or Tape: Both

OVERALL RATING	C	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	C+	SKILL INVOLVED	B	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	B	HOLDS INTEREST?	C
GAME DEPTH	C-	GRAPHICS	C	VALUE FOR MONEY	C-

Space Chase is a one-player space strategy game. Your objective is to conquer all of the planets belonging to the Galactic Federation in each of three galaxies. Your enemies are the hundreds of Clone Robot Ships that zero in on your position. Fortunately, the enemy can launch only one ship at a time from an active base; but the more difficult upper levels have two or more active bases. Your only defense is to plant nuclear charges between your ship and the robot ships, then lure them into these traps.

You must approach the game with some plan in mind or it will not last more than fifteen seconds. Perhaps the major flaw in this game is that three galaxies must be conquered by only one ship. Make one mistake, and the game ends abruptly. To survive, you must take advantage of the wrap-around feature: here your ship appears on the opposite side of the screen after going off-screen. The robot ships won't follow, and you can use the boundary as a means of gaining enough time to capture a planet or two on the far side. You gain points for the planets you capture, and lose points for planets that are destroyed by the enemy.

The game is otherwise well-conceived, and its graphics are fair. However, it provides no acceptable beginner's level. It is so easy to lose your only ship within seconds of the start that the game becomes frustrating. It takes time to become proficient, but by then you have worn out the Start key.

RACE IN SPACE

Company: Analog Software

Language: Machine

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$21.95 cassette / \$24.95 disk

Availability: 5

Disk or Tape: Both

OVERALL RATING	B-	CONTROLLABILITY	B-	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	B-	HOLDS INTEREST?	C
GAME DEPTH	C	GRAPHICS	C+	VALUE FOR MONEY	C+

Race in Space is a competitive space game for two players. The object is for both players to navigate their ships from the bottom of the screen to the top, passing through a dynamic moving asteroid field. The player with the most laps when time is up, wins.

While the game doesn't sound very exciting, it has enough variations to hold the interest of two players. This is especially true if the missile option is selected, allowing both players to fire "space boomerangs" at each other as they traverse the asteroid field. These missiles lock on target only when the two ships are close, requiring a great deal of maneuvering to avoid the asteroids.

Other game options allow the difficulty to vary from easy to tough. You can steer the ship in all directions (saucer), or up and down (rocket), or you can use shields and a double-speed warp drive activated by the joystick trigger. You can vary the asteroid field to up to four times its standard density. Zooming comets and even a negative universe can be added. The latter addition suddenly changes the screen from all black to a flashing white. The effect of this on your ship is negligible, except that you are momentarily blinded, and often collide with one of those sideways moving asteroids.

The game's concept is sound, and it can be regulated as difficult as you like. However, the play tends to become repetitious unless you opt for the missile option described above. The graphics and sound effects are good.

SPEEDWAY BLAST

Company: Innovative Design Software

Language: Machine

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$39.95

Availability: 7

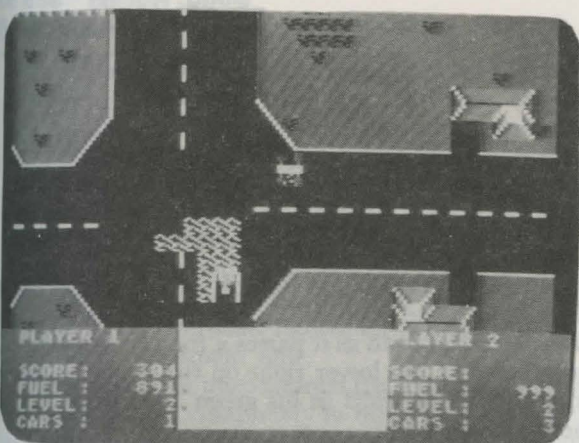
Disk or Tape: Cartridge

OVERALL RATING	C+	CONTROLLABILITY	B-	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C-	DOCUMENTATION	C
CREATIVITY	C-	CHALLENGE	C-	HOLDS INTEREST	C+
GAME DEPTH	C	GRAPHICS	A-	VALUE FOR MONEY	C-

Speedway Blast is a nicely animated scrolling arcade game in which you speed around the neighborhood in an attempt to destroy the invading asphalt-eating monsters and their eggs. The location of the monsters and their hatchable eggs are displayed on a map at the bottom of the screen, much in the same manner as in *Rally X*. As you drive and blast your way around the neighborhood streets, fuel is expended. This is replenished by running over the eggs. Although monsters don't shoot back, your car can be lost by hitting them or their holes, or by crashing into other objects (e.g., houses, trees, or bridges). When you clear the board of all monsters and eggs, you go on to the next level: it is the same neighborhood, just more monsters and eggs.

The car is fast and slightly difficult to control. Unlike most arcade racing car games that reverse direction immediately, this car requires a small radius U-turn. It just takes a little practice to learn to avoid hitting obstacles. The car is accelerated and decelerated by pushing forward and pulling back on the joystick.

The graphics are the best thing about this game. The neighborhood is a very colorful rendition of streets, houses, and landscaping, all smoothly scrolling as the car patrols the streets. The car is pretty much centered during the movement. The game, although fast-paced, lacks excitement. There is no chase, as in *Rally X*, or even any worry about return fire. The monsters merely hatch, then slowly move around digging up the streets. Your job is to kill them as fast as possible without crashing or running out of fuel. You have three cars with which to gain as many points as possible. It is a nice game, but one that has little going for it in terms of prolonged play.



SPEEDWAY BLAST



RACE IN SPACE

MATCH RACER

Company: Gebelli

Language: Machine

Hardware Requirements: 16K; disk drive or cassette player.

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 7

Disk or Tape: Both

OVERALL RATING	C+	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C+	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	C	HOLDS INTEREST?	B
GAME DEPTH	C	GRAPHICS	B-	VALUE FOR MONEY	C+

Match Racer is a racing car game for either one or two players. It uses the Atari's fine scrolling graphics capabilities to produce a realistic obstacle race course. The course, which scrolls vertically from top to bottom, is filled with barricades, oil slicks, ice patches, tunnels, and rocks. The two cars, which jockey for position, can lock wheels and force each other off the road. When a car is bumped on an oil slick, it slides from side to side with a whooshing sound. A car struck while traveling on ice can lose control. And cars that bounce up and down on the brick surface portions of the course actually sound like they are driving across brick.

The two cars are rather large for the size of the course. It becomes obvious that if the car in front crashes in some of the winding sections, the trailing car can't get past, and will crash into the wrecked car. Reaction time, as in most racing games with vertical scrolling, is very short — especially for two cars following one another. Thus, it would have been much better to have scrolled the game horizontally.

The game can be adjusted for initial skill level, and speeds up as it progresses. The speed changes at 5, 15, and 45 miles on the odometer. Negotiating the course at the highest speed level seems impossible.

Match Racer is an enjoyable game for two players who want to vent their aggressions on each other. However, the game is very boring in the single player mode. The bad feature of the game is that you can't restart it once the game has already begun. You will either have to play the game to the finish, or deliberately crash all of your cars to end it. The graphics and sound effects are the best features of this game.

TRACK ATTACK

Company: Broderbund Software

Language: Machine

Hardware Requirements: 32K, Disk Drive

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 8

Disk or Tape: Disk*

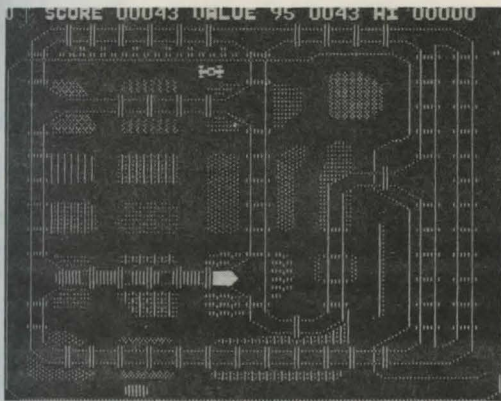
OVERALL RATING	D+	CONTROLLABILITY	B-	ERROR HANDLING	N/A
GAME CONCEPT	C-	SKILL INVOLVED	C	DOCUMENTATION	C-
CREATIVITY	C+	CHALLENGE	B-	VALUE FOR MONEY	D+
GAME DEPTH	C-	GRAPHICS	C+	HOLDS INTEREST?	D+

Track Attack's game concept is both novel and challenging. Picture a railroad switching yard where a train is shuttling gold loaded at the freight yard's depot. You, the train robber, have a souped up 1982 Pierce Arrow that is capable of ramming the side of the train's boxcar. The trick is to catch the train as it passes a road crossing, ram it, and make off with the gold. You must deposit it at your storage area at the lower right on the screen. It sounds simple, but I forgot to mention that a night watchman patrols the freight yard in his green 1952 DeSoto. If he catches you, you are a dead man. He shoots first and asks questions later.

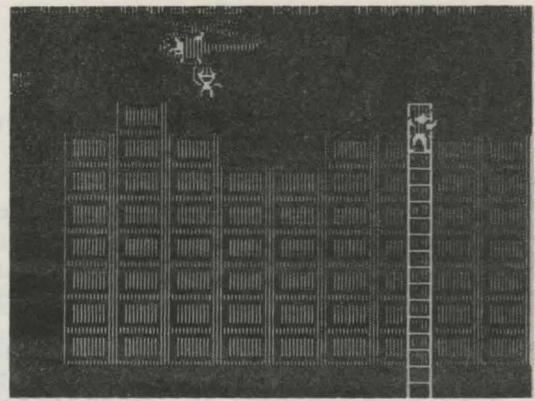
This watchman is a sneaky devil. He sometimes discovers your gold and attempts to take some of it back to the depot. If he succeeds, you lose the value of that gold plus a penalty of 100 points. However, you can try to steal it back by ramming into him. You can reach bonus levels by aligning your car with the train as it heads north or south on the track on the screen's left side. At that point you press the fire button and jump on the train.

Jumping and running from car to car in an attempt to gain control of the engine is somewhat tricky and requires precise timing on the Atari version. The animation in this segment is superb. The thief jumps and summersaults from one car to the next. When he has control, the game advances to level three. This is a bonus level. The train robber, in a twist of fate, tries to recover eleven pieces of gold scattered on the tracks. He steers the train while the night watchman attempts to prevent the train robber from collecting all of the scattered gold by derailling the train.

As cute and novel as the game is, it suffers from a somewhat crazy control system. It is impossible to reverse the direction of your car, and turns must be executed well in advance of an intersection. If you don't make a turn, the car's steering automatically goes into a series of default turns. Thus, your car appears to be on some random course irrespective of your desired goal. Add this to the randomness of the night watchman's car and a somewhat random train, and the game sometimes appears to be playing by itself. There is no doubt that this game takes getting used to. Despite the excellent graphics and game concept, this is not likely to catch on with the general public.



TRACK ATTACK



FIREBIRD

FIREBIRD

Company: Gebelli Software

Language: Machine

Hardware Requirements: 16K, cassette player.

Department: Entertainment

Sugg. Retail: \$39.95

Availability: 7

Disk or Tape: Cartridge

OVERALL RATING	C	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	B-	CHALLENGE	B	HOLDS INTEREST	D+
GAME DEPTH	C-	GRAPHICS	B	VALUE FOR MONEY	C

A firefighting pig scurries up and down a ladder in *Firebird* while attempting to douse flames set by firebombs dropped by a malicious bird. Yes, its Piggio, the amazing firefighting pig, racing against time to save a burning building and its frightened occupants who would rather leap to their deaths than face the cruel and infernal flames.

Your job is to control Piggio's firefighting abilities. The game is joystick-controlled with up and down movement for ascending and descending the ladder, right and left for positioning the ladder, and the button for activating the hose. It is a high-paced game with firebombs landing every 8-10 seconds. It takes practice to keep ahead of the bombs. You must race into position just after each bomb sets an apartment on fire. If you douse the flames quickly with a squirt from your hose, you can save a section of the floor; however, if you are slow your efforts are hampered by fleeing victims who fall into your arms. Since you can't douse flames while holding a victim, they must be escorted to an overhead helicopter which will whisk them to safety. On its return, the helicopter will drop a replacement apartment unit.

This is a game of uncontained frenzy, one which you are inevitably destined to lose quickly. When two sections of the building burn completely to the ground, it collapses and the game ends. Points are awarded for dousing flames and saving victims. More points are awarded for saving victims and escorting them to the roof than for fighting the fire. However, this is just a short-term gain since, if the building goes, so does the game. If you are skillful enough to keep the bottom row of nine apartments intact with no upper units in existence (seemingly impossible), *Firebird* will award you with 5,000 bonus points and a new building.

The game's graphics are very good and whimsical. I think this game is much more suited to children than adults; however, children might find the game's speed somewhat intimidating, especially beginners. An option of different speed levels would have been appropriate. There is no doubt that the game is challenging, but it becomes an effort to give it your best shot when your fate is sealed in a losing performance. One's ego gets damaged once to often for this contest to sustain any long-term appeal. Piggio simply has too much to handle with this one.

PICNIC PARANOIA

Company: Synapse Software

Language: Machine

Hardware Requirements: 16K; disk drive or cassette player.

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 8

Disk or Tape: Both

OVERALL RATING	C +	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C +	SKILL INVOLVED	C	DOCUMENTATION	C +
CREATIVITY	B -	CHALLENGE	C +	HOLDS INTEREST?	B -
GAME DEPTH	C	GRAPHICS	B	VALUE FOR MONEY	C

Protecting the food on the picnic tables from hordes of ants and spiders is what you must do in *Picnic Paranoia*. Actually, George has a rather rough time of it, as the ants are organized and persistent. The spiders aren't particularly interested in his food, but will bite him if he gets in the way while they spin their webs. The wasps, on the other hand, are out to make George's life miserable. They follow him around and attempt to sting him. If they do, George is deposited in the center of the screen, paralyzed for five seconds.

George, who is joystick controlled, is armed with a fly swatter. Unfortunately, there are a lot of ants, and those that reach the center of the table are often beyond George's reach. Once enough ants have collected, they will attempt to push the food off the table and then off the screen. George's job is to stop them, and, after swatting them all, to push the food back on the table. It sounds simple, but spiders clutter the screen with their webs, and that nasty wasp is always harrasing him and paralyzing him at just the wrong times. Each round lasts 90 seconds, and the next is even harder. The game ends when all of the food is stolen.

Picnic Paranoia is a cute game. It has good graphics, and remains fun to play. The game is probably more suited to children; but adults might enjoy it for a time as well, understanding better what real picnic paranoia is all about.

FROGGER

Company: Sierra On-Line

Language: Machine Language

Hardware Requirements: 16K cassette, 32K disk

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 8

Disk or Tape: Both

OVERALL RATING	A	CONTROLLABILITY	B -	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	B -	DOCUMENTATION	B
CREATIVITY	B +	CHALLENGE	B +	HOLDS INTEREST?	B
GAME DEPTH	B	GRAPHICS	A +	VALUE FOR MONEY	A -

Frogger for the Atari is an exact translation of the popular Sega-Gremlin arcade game of the same name. The object is to move your frog in a limited amount of time across four lanes of traffic, then jump on the backs of diving turtles and moving logs across a pond to the safety of home. The frog can jump in any of four directions by moving the joystick controller. Success in the game is strictly a matter of timing: traffic moves in opposite directions in alternating lanes, and the turtles and logs move in opposing directions and at different speeds. When all five frogs have reached home, the game advances to a more difficult level of play. After five levels you are rewarded with an extra frog.

Advanced levels threaten you with tightly spaced cars in the one fast lane, deadly snakes that patrol the bank and some of the logs, and hungry alligators and otters that move with the current. Logs become faster and fewer, and the diving turtles are prone to vanish just when you need them. Bonuses are awarded for escorting a lady frog home, and for gobbling insects. The game has a slow and a fast speed mode to suit all players.

Frogger's sound and graphics exploit the machine's potential to the fullest. Layered scrolling character graphics and player-missile animation are apparent throughout the game. The author was able to get more than the usual number of colors on the screen by changing them part way down the screen during a display list interrupt. Sounds include multi-part harmony. Most of the music is identical to that of the parent arcade game; but several additional tunes have been added, so the music isn't as repetitive. Even so, the jingle becomes tiring after long play. Mercifully, you are allowed to toggle the music off without eliminating the necessary sound effects.

Frogger is an addictive and enjoyable arcade game, especially to children. It is absolutely first rate in graphics and sound. It is a good choice for your game library.

PREPPIE

Company: Adventure International

Language: Assembly

Hardware Requirements: 16K, cassette; 32K, disk drive.

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 7

Disk or Tape: Both

OVERALL RATING

B-

GAME CONCEPT

B-

CREATIVITY

C+

GAME DEPTH

B-

CONTROLLABILITY

B

SKILL INVOLVED

C+

CHALLENGE

B+

GRAPHICS

B-

ERROR HANDLING

N/A

DOCUMENTATION

A

HOLDS INTEREST?

C

VALUE FOR MONEY

B

Preppie involves retrieving out-of-bounds golf balls at the Nasty Nine golf course. It seems that this task is the booby prize for losing the Skeezer's Loop, the annual Freshman oyster-eating bash. The groundskeeper delights in torturing his latest victim, making the out-of-bounds area at Nasty Nine a dangerous place indeed.

Your *Preppie* must be maneuvered by joystick across a fairway crisscrossed by speeding golf carts and lawn-mowing maintenance men. If he reaches the river bank (and you better hope he doesn't encounter a giant frog), he must jump from moving canoes to drifting logs to the rough on the river's far side. That's where most of the missing balls will be found. You must then get your *Preppie* safely back to the course before the timer runs out. The quicker you fetch the stray balls, the more points you receive.

It seems apparent that *Preppie* is loosely based on the arcade game *Frogger*, as are several other games. Animation graphics are very good, and the sound is nicely done using two-part harmony. I can't say that it's very original in design; but, like *Frogger*, it is lots of fun.

PACIFIC COAST HIGHWAY

Company: Datasoft

Language: Machine

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 7

Disk or Tape: Both

OVERALL RATING

C+

GAME CONCEPT

B-

CREATIVITY

C

GAME DEPTH

C+

CONTROLLABILITY

B

SKILL INVOLVED

B-

CHALLENGE

B

GRAPHICS

B-

ERROR HANDLING

N/A

DOCUMENTATION

C+

HOLDS INTEREST?

C+

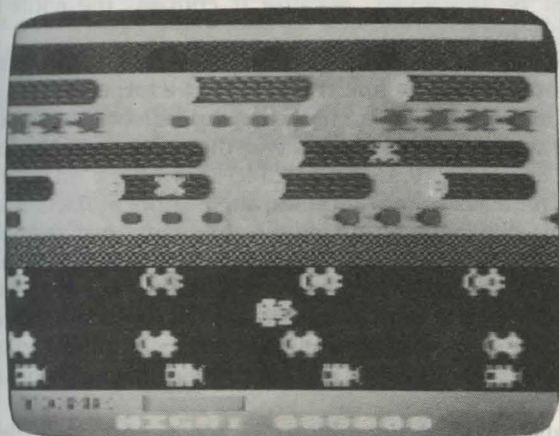
VALUE FOR MONEY

C+

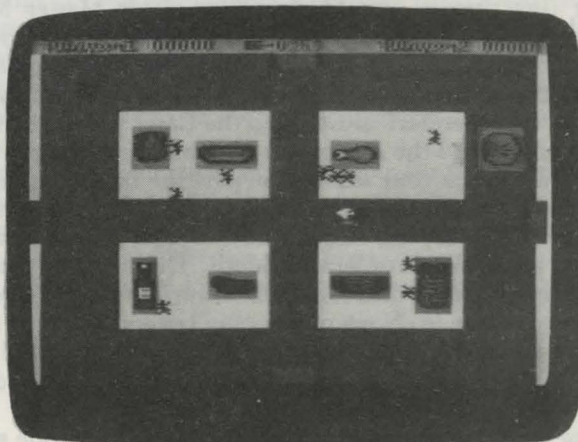
Picture a little rabbit at rush hour trying to cross two four-lane highways separated by a medium strip. And if he is successful he must next hop across a pond from one moving boat to another, each going the opposite way, until he has crossed the pond to his home. Well, that brave little wabbit has nothing to fear, for he has three lives in this challenging arcade game.

Pacific Coast Highway is a variation of the popular *Frogger* and *Freeway*-type games. It is animated on two distinct screens: one highway and one water. The game becomes trickier with each level. The medium strip between the two highways offers no resting spot for a gap in the traffic. All you can do is jump off the curb and hope for that wabbit. Level three's medium strip, meanwhile, is constantly changing direction.

The graphics and sound are fair in this game; but although it offers something of a challenge to the uninitiated, it cannot lay claim to originality.



FROGGER



PICNIC PARANOIA

MELTDOWN

Company: Cosmi
Language: Machine Language
Hardware Requirements: 16K

Department: Entertainment
Sugg. Retail: \$9.95 cassette/\$14.95 disk
Availability: 4
Disk or Tape: Both

OVERALL RATING	C+	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B-	SKILL INVOLVED	B-	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	A-	HOLDS INTEREST?	C
GAME DEPTH	C+	GRAPHICS	C+	VALUE FOR MONEY	B

The goal in *Meltdown* is to deactivate the five nuclear reactors at the top of the screen before they reach meltdown. The thermometer at the bottom of the screen indicates their temperature. It slowly creeps upward, but as you deactivate each reactor the temperature drops slightly, buying you more time.

Game play is very much like *Frogger*. You must first proceed through three levels of moving radioactive clouds in order to enter the corridor leading to the reactor chambers. This corridor often hits you with a random bolt of atomic energy which you must avoid at all costs. You next enter a series of rows of moving reactor chambers beneath the five cores. Movement is up, down, left, and right; but once you leave a rectangle by moving up or down, it disappears (unless it was one of the specially marked free chambers). If you can make it all the way up to the reactor tower and back down again without losing one of your five men, then that reactor core is deactivated.

Meltdown is a very challenging game, although not fundamentally different from other games of this type. The graphics are colorful, but the sound leaves something to be desired. It is a high-pitched, pulsating, reactor-like sound. Unfortunately, it is obnoxious and irritating. I'd advise turning the sound off, except you need to hear the warning sound of the energy bolt in the central corridor. For sanity's sake, turn it down as low as possible. One final point: although the game lacks the appeal of its competition, it is less than half the price.

SEA DRAGON

Company: Adventure International
Language: Machine
Hardware Requirements: 16K

Department: Entertainment
Sugg. Retail: \$39.95
Availability: 7
Disk or Tape: Disk

OVERALL RATING	B+	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	B	DOCUMENTATION	B-
CREATIVITY	B-	CHALLENGE	A	HOLDS INTEREST	B+
GAME DEPTH	B+	GRAPHICS	B	VALUE FOR MONEY	B

Sea Dragon is a scrolling underwater arcade game. In it, you must guide your submarine past deadly mine fields, through narrow underwater tunnels guarded by laser gun turrets, and along stretches of depth-charged waters to your final target, the Master Mine. This Master Mine must be destroyed, because it controls the entire impenetrable mine field effectively cutting off your fleet's supply lines.

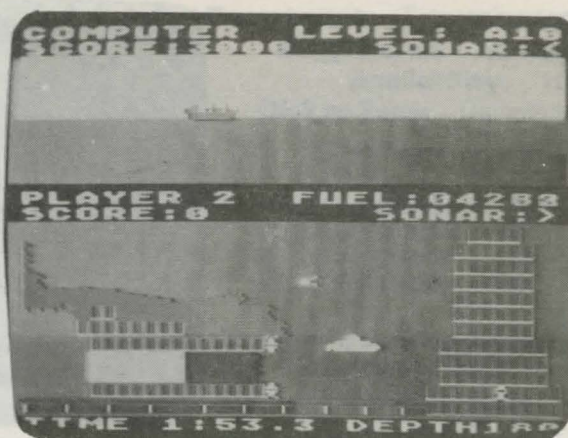
Your nuclear submarine, "Sea Dragon," is completely maneuverable by joystick. It can only remain submerged for a limited time, because its life support systems have a restricted supply of air. It can only fire torpedoes straight ahead, and therefore must avoid the Laser Bases that fire straight down in the tunnels, the Supershooters which fire at an angle, and the Destroyers which drop depth charges. The strategy is to outmaneuver them. You will also have to learn to pace your submarine past the firing patterns of the Supershooters, and learn to "drop back" in order to avoid collision to the rising mines and falling depth charges. There are other obstacles, such as the Stalactites and Force Fields near the end of your voyage; but these are sections that none of our play testers have ever reached.

The game has considerable depth. There are six separate segments of the game spread over 30 screens. Each portion is increasingly difficult. Each time one of your five subs has been hit you will be returned to the beginning of the section you are in. None of our play testers managed to get through the first three sections of the game on the easy levels; and those arcade players who find these kind of games "a piece of cake" will have to contend with three harder skill levels. We tried the hardest level. Mines don't just float up towards you, they're shot toward your sub, and there is no time to move out of the way.

Sea Dragon is nicely animated using player-missile graphics and a smoothly scrolling character graphics playfield. The game, while not fast-paced, is engrossing and quite a bit of fun to play. The game has depth and is very challenging.



SEA DRAGON



NAUTILUS

NAUTILUS

Company: Synapse Software
Language: Machine
Hardware Requirements: 32K

Department: Entertainment
Sugg. Retail: \$34.95
Availability: 7
Disk or Tape: Disk

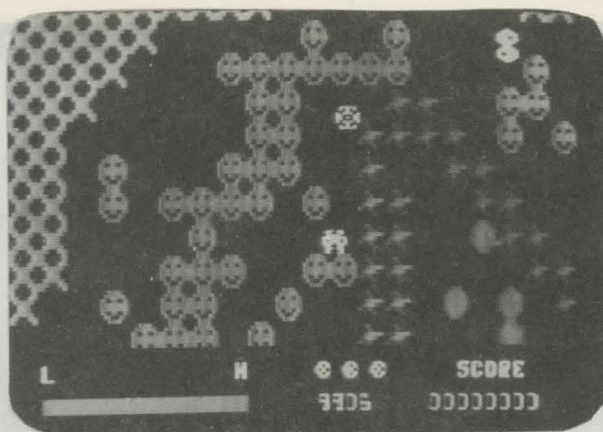
OVERALL RATING	C-	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	D+	SKILL INVOLVED	C-	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	C	HOLDS INTEREST?	D+
GAME DEPTH	C	GRAPHICS	B+	VALUE FOR MONEY	C-

Nautilus is a submarine-against-the-destroyer, arcade-style game in which the object is for the submarine to destroy underwater cities and steal their energy cores while the destroyer hunts the sub and delivers crews to rebuild those cities. The game is innovative in that it employs a split screen view to depict the two commanders' views. Both views scroll independent of each other, showing a rather narrow depth for the commander of the destroyer "Collosus" and a larger underwater view of the area around the submarine "Nautilus." Only when the two ships are above each other and the sub near the surface do the two views coincide. The main advantage of this graphics approach is to create an illusion of partially hidden movement, essential to this type of game.

The game's graphics are typical Mike Potter style, in that an entire underwater world is created. There is a visual richness to the scene. There are underwater cities, subterranean passages, and small fish swimming about in a sea of blue. Depth charges tumble down realistically, and the submarine even has a spinning propeller at the stern.

The game can be played by either one or two players. In the one player game mode the computer plays the destroyer. Although the submarine has a helicopter escort that automatically harasses the destroyer, the game is heavily weighted against the submarine in both game modes. While the sub commander has plenty to do (destroying cities, and evading depth charges and mines), the "Collosus" commander has little to do. He guides his ship from left to right, picking up repair crews on one shore and delivering them to the shaft at the left. Occasionally, he has to drop some depth charges, and elude a helicopter or two; but the penalty for failure is starting over on the right shore. This really wears very thin in short order, for there is no real challenge involved. The submarine gets no points for killing cities, only for stealing energy cores.

Nautilus is a very tough game to play if you command the submarine, but ridiculously simple for the destroyer. The submarine has to work extremely quickly to destroy cities while evading depth charges, barracuda missiles, and limit lurkers. There is no way to stop the enemy; you can only delay him. The game has its good points. It is undoubtedly a graphics showpiece; but I don't think it works very well, as either an arcade or strategy game. It is one of those games that goes on and on. The submarine is the only possible loser; and no one wants to play the destroyer captain, whose job is dull.



ANDROMEDA

ANDROMEDA

Company: Gebelli Software

Language: Machine

Hardware Requirements: 32K, disk drive.

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 4

Disk or Tape: Disk

OVERALL RATING	D	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C-	SKILL INVOLVED	D	DOCUMENTATION	C
CREATIVITY	D+	CHALLENGE	C-	HOLDS INTEREST?	D-
GAME DEPTH	C-	GRAPHICS	C+	VALUE FOR MONEY	D-

In *Andromeda* you play the part of a voracious renegade cell that has invaded an organism. You must continuously destroy fat and blood vessel cells in order to gain strength and keep moving. As you move around the scrolling field, various antibodies attempt to track you down and kill you. Every time you devour 5,000 points in cellular structure, you grow briefly in size, and can attack these pursuing antibodies.

Movement is by joystick. The button kills off the cells. Opposite to what you would expect, you will soon discover that travel is more slow through blood vessels. But since you need blood cells to prolong your own cell's life, the slow movement factor is a penalty. A gauge at the bottom of the screen indicates how much life you and the organism have left. When you kill the organism you advance to a harder level with more persistent antibodies.

There isn't much to this game. You simply travel around killing things off as quickly as possible. This gets tiring after awhile. This "improved" version is not a very good game, and if it weren't for the fine Atari style scrolling graphics, wouldn't be worth the price of a disk.

AVALANCHE

Company: APX

Language: Machine

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$22.95

Availability: 5

Disk or Tape: Both

OVERALL RATING	C-	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	B-	HOLDS INTEREST?	C-
GAME DEPTH	D	GRAPHICS	C-	VALUE FOR MONEY	C-

Avalanche is a simple but challenging game requiring good manual dexterity and lightning fast reflexes. Six layers of different sized rocks poise at the top of the screen. You maneuver a stack of six rectangular shields at the bottom of the screen with a paddle controller. The object is to absorb the rocks with your shields without letting one hit the ground. Part of the difficulty encountered is that your shields become worn away from the impact of the endless stream of rocks.

The game can be played competitively by two players taking turns. Both the difficulty level and the number of rocks you are allowed to miss can be adjusted for each player. Overall, the game is fast, simple, and challenging.

SUPER BREAKOUT

Company: Atari

Language: Machine

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 10

Disk or Tape: Cartridge

OVERALL RATING	C+	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C+	SKILL INVOLVED	C-	DOCUMENTATION	C+
CREATIVITY	C	CHALLENGE	C	HOLDS INTEREST?	C
GAME DEPTH	C-	GRAPHICS	C+	VALUE FOR MONEY	B

Super Breakout is an advanced version of the classic game, *Breakout*, in which the object is to score points by knocking out colored bricks from a wall with a ball deflected off of a movable paddle at the bottom of the screen. The ball must be kept in continuous motion, or it is lost. Very popular when it first appeared on the market several years ago, the game is still a classic.

This version offers four variations of the original game. Each can be played by up to eight players (assuming you have four sets of paddles). *Breakout* and *Progressive* are single paddle, single player ball games. *Progressive* is by far the most interesting game on the cartridge. As you play two groups of bricks five rows deep move up slowly towards your paddle. This makes the game more difficult, since it decreases your reaction time. Eventually, as you clear the bottom rows of bricks, others begin appearing at the top of the screen in an endless procession.

Double and *Cavity* are two paddle, multiple player ball games. The two paddles are arranged one above the other. If you can keep two balls in play at the same time, the point values of the bricks are doubled. While *Double* serves two balls, one after the other, *Cavity* doesn't release a second ball until you break into the bricks surrounding the cavity where they are trapped.

Super Breakout is a nice upgrade of the original VCS game cartridge. The graphics are slightly better. The game, as I mentioned, is a classic. With the addition of *Progressive*, it seems well worth adding to your collection.

CHICKEN

Company: Synapse Software

Language: Machine

Hardware Requirements: 16K; disk drive or cassette player.

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 8

Disk or Tape: Both

OVERALL RATING	C	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	B	HOLDS INTEREST?	C
GAME DEPTH	C	GRAPHICS	C+	VALUE FOR MONEY	C-

Chicken is a children's game, close in its concept to games like *Avalanche* on the Atari computer, and *Kaboom* on the Atari VCS. They are all reflex games requiring you to catch dropped objects before they touch the ground. *Chicken* is by far the cleverest and cutest of the pack.

You control the chicken and your object is to catch all of the falling eggs in your movable cart at the bottom of the screen. Meanwhile, a fox at the top steals eggs and drops them through the gaps between three rows of moving bricks. Your cart is positioned for the catch with either a joystick or paddle; paddle control is recommended. If you miss an egg, it hatches into a baby chicken. Now, as you rush back and forth attempting to catch these falling eggs, you must remember to jump over those baby chicks or risk losing a hen. Lose, and the farmer gives you the boot.

Chicken is definitely well-animated and cute. It can be played by two players alternating turns. Unfortunately, the paddle or joystick must be passed between them — an annoying inconvenience. The game is very well suited to children, although some adults who like reflex games will either want to challenge the kids, or sneak a game or two after "lights out."

CLOWNS & BALLOONS

Company: Datasoft

Language: Machine

Hardware Requirements: 16K; disk drive or cassette player.

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 7

Disk or Tape: Both

OVERALL RATING	C+	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	C+	SKILL INVOLVED	C-	DOCUMENTATION	C+
CREATIVITY	C-	CHALLENGE	C	HOLDS INTEREST?	C+
GAME DEPTH	C	GRAPHICS	B-	VALUE FOR MONEY	C+

Clowns and Balloons brings a touch of circus ambience to the Atari screen. The object is to pop three rows of moving balloons at the top of the screen with a clown who jumps up and down off of a movable trampoline. The two clowns holding the trampoline are positioned by either a joystick or paddle. Paddle control is definitely recommended, since joystick control never moves the clowns into position fast enough.

The clown, who leaps onto the trampoline from a high ladder on the side, has to be bounced higher and higher until he can reach the overhead balloons. If the clown is bounced off center, and you can't reposition the trampoline in time, you have one squashed clown. Moreover, all of the balloons in the bottom row must be popped before all the balloons in the row above, or you are penalized with another complete row of balloons appearing on the screen. There are also several difficulty levels; but the intricate levels, which are faster and bounce the clown at a near vertical angle, are actually easier to handle.

Clowns and Balloons then, with its delightful circus music and cute character and missile graphics, is a very enjoyable rendition. The game, finally, can be played by either one or two players alternating turns.

PLATTERMANIA

Company: Epyx

Language: Assembly Language

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$39.95

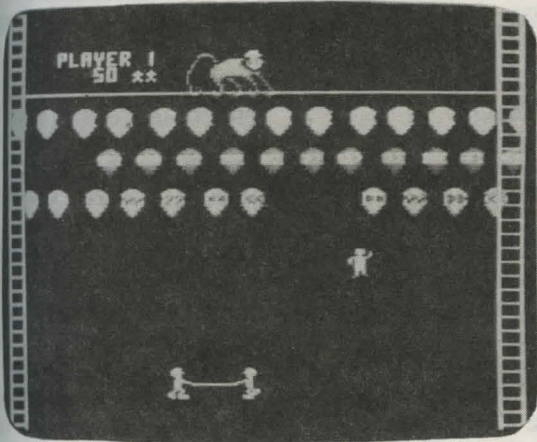
Availability: 7

Disk or Tape: Cartridge

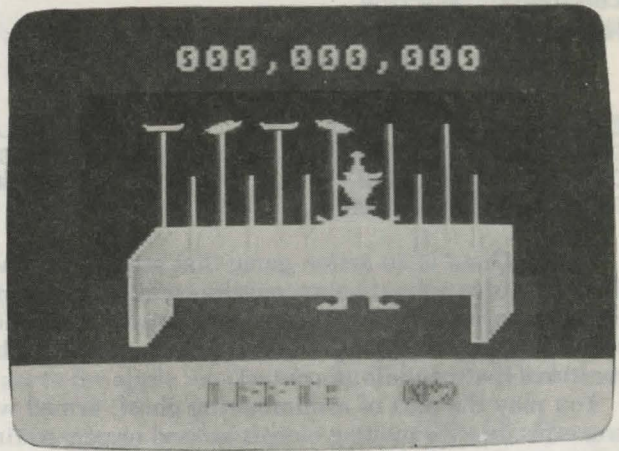
OVERALL RATING	C+	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C+	SKILL INVOLVED	C-	DOCUMENTATION	C+
CREATIVITY	C	CHALLENGE	C	HOLDS INTEREST?	B
GAME DEPTH	C-	GRAPHICS	C+	VALUE FOR MONEY	C-

Plattermania is a fun circus game in which you play a clown trying to keep a number of platters spinning on top of a table containing twelve poles. The goal is that you must spin either four, eight, or twelve platters per level for eight seconds. A paddle or joystick controlled clown (paddle is preferable) moves back and forth behind the table. He tries to keep the platters from slowing down their spin. Pressing the button either puts out a new platter, or gives the platter next to where he is standing a little more spin. Too much spin will knock a platter off, and not enough will cause it to wobble until it falls. Thus, it requires timing and agility to keep the platters up. The round ends when you have lost three platters before the eight seconds are up, or one thereafter. Extra bonus points are awarded for the number of spinning platters, times the number of seconds up, times the bonus multiplier. The object is to accumulate as many points as possible without running out of platters. Fortunately, only those platters lost before the eight second goal are subtracted.

The game has a very simplistic nature, yet offers something of a challenge and is fun to play. The graphics and sound are colorful and lend a circus ambience. But while the game is somewhat addictive it has little depth, lacks action, and may not hold your interest long.



CLOWNS & BALLOONS



PLATTERMANIA

RABBOTZ

Company: Atari Program Exchange

Language: BASIC

Hardware Requirements: 16K cassette, 24K disk.

Department: Entertainment

Sugg. Retail: \$22.95

Availability: 8

Disk or Tape: Both

OVERALL RATING	C+	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	B-	SKILL INVOLVED	C+	DOCUMENTATION	C
CREATIVITY	C+	CHALLENGE	B	HOLDS INTEREST?	B-
GAME DEPTH	C	GRAPHICS	C	VALUE FOR MONEY	C+

Rabbitz is an entertaining, madcap evasion game for one or two players. You score points by destroying hungry rabbits, or by catching a bonus ball in play. The single player version keeps single scoring, and in the two-player mode, individual scores are accumulated by alternating turns.

You begin play with three lives and a set number of mines. Your joystick controls your movement and when the button is pressed, you lay a mine. If one of the hungry rodents touches a mine, it is consumed. More mines are obtained at the ammunition house, which changes location every time it is used. One extra life is given for every 10,000 points scored.

In the center of the field is the Rabbit Transit System that can transport you around the board. It also transfers the rapidly multiplying rabbits (they reach a maximum number of 24). There are an unlimited number of difficulty levels. Each higher level gives you one less mine to start with, and one more rabbit to deal with. The speed of play also increases. The graphics, finally, are above average, and the game is fairly entertaining.

ACTION QUEST

Company: JV Software

Language: Machine

Hardware Requirements: 16K, cassette or disk drive

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 7

Disk or Tape: Both

OVERALL RATING	B-	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	B-	SKILL INVOLVED	B	DOCUMENTATION	C
CREATIVITY	B	CHALLENGE	B	HOLDS INTEREST?	B
GAME DEPTH	C+	GRAPHICS	C+	VALUE FOR MONEY	C+

Action Quest is an action game that attempts to meld the arcade game concept with a maze-adventure format. The goal is to solve twenty puzzles, which are located in six rooms on each of five levels. The puzzles vary in complexity from the simplistic to the very difficult. Most have as goals touching a treasure in a single or linked set of rooms, and then escaping before the clock runs out. These treasures are often guarded by hidden traps or by very fast creatures that can kill on contact.

You play the part of a shimmering ghost, armed with a gun. This gun is useful not only against the paralyzing creatures, but for moving objects around or penetrating barriers. The gun, aimed with a joystick, "remembers" the last position, so that bursts of shots can be fired in the same direction simply by depressing the firing button. Aiming is not as controllable as it should be, especially while defending against two fast-moving creatures approaching diagonally. It takes considerable practice to master the technique of staying alive.

There is a time limit for each puzzle. Your ghost gradually fades to nothing as the timer approaches zero. If you can't exit the room in time, you lose one of your ten "lives." In many cases you can abort the mission just by exiting a doorway and trying again. In one of the puzzles, you must quickly navigate a maze to a door leading into the treasure room before the timer runs out. Of course, there are deadend passages and false doors. One room has objects that must be touched in the correct sequence before you can reach the treasure. Another has walls that close in to crush you. A clue to each puzzle is displayed at the bottom of the screen.

After retrieving all four treasures on the current floor, the game progresses to the next level. However, you can press the select key to reach any higher level that you wish to try. The game's sounds and graphics are fair. The puzzle content is high enough that it will take several hours to retrieve all twenty treasures. Beyond that, you can try for the best time. In sum, while it should not be classified as an adventure, it is a creative game and one that's fun to play.

GHOST ENCOUNTERS

Company: JV Software

Language: Machine

Hardware Requirements: 16K; cassette, or disk drive.

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 8

Disk or Tape: Both

OVERALL RATING	B	EASE OF USE	C	ERROR HANDLING	N/A
GAME CONCEPT	B-	SKILL INVOLVED	B-	DOCUMENTATION	C
CREATIVITY	B	CHALLENGE	B+	HOLDS INTEREST?	B
GAME DEPTH	B	GRAPHICS	C+	VALUE FOR MONEY	B

Ghost Encounters, an action game that melds the arcade game style with an adventure format, is the sequel to an earlier game, *Action Quest*. In many ways, *Ghost Encounters* is a superior game, because its puzzles are more complex and the ghost can transform itself into any of the tools needed to complete the quest if you press the appropriate key. Sometimes it needs to become a key to open a lock, or a shovel to dig a hole, a thin line to fit through a narrow pipe, or possibly a torch, hammer, or magnet.

Like its predecessor, the game consists of five levels which contain 20 treasures in thirty rooms. There is a time limit for each of the puzzles, and your ghost will gradually fade to death as the timer expires. If you can't exit in time you lose one of your ten lives, as you do if any creature or object kills you in any room. The arcade-style action requires considerable dexterity to handle the gun, which is somewhat difficult to aim accurately while fleeing.

The puzzles are more complex since your ghost can become a number of useful tools. Some are very obvious, others require some insight to the clue offered in the text window at the bottom of the screen. In one part you enter a maze where two creatures are chasing you. The message appears "always one left." You paralyze the first creature with your gun, only to find that it comes alive when the other is paralyzed. Another room has a trapped Pac Man-like creature that, although deadly if released, can be helpful in obtaining the treasure.

The game is intriguing and fun to play. It should take more than a few hours to solve all of the puzzles. In fact even if you manage to solve all of the puzzles through extensive play, it is unlikely that you can complete all twenty within the ten life game limit. That is an added challenge for the dedicated arcade fun.

APPLE PANIC

Company: Broderbund

Language: Machine

Hardware Requirements: 16K cassette, 48K disk.

Department: Entertainment

Sugg. Retail: \$29.95

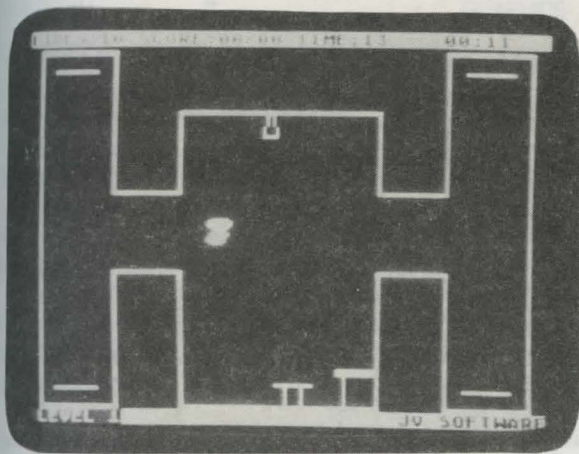
Availability: 8

Disk or Tape: Both*

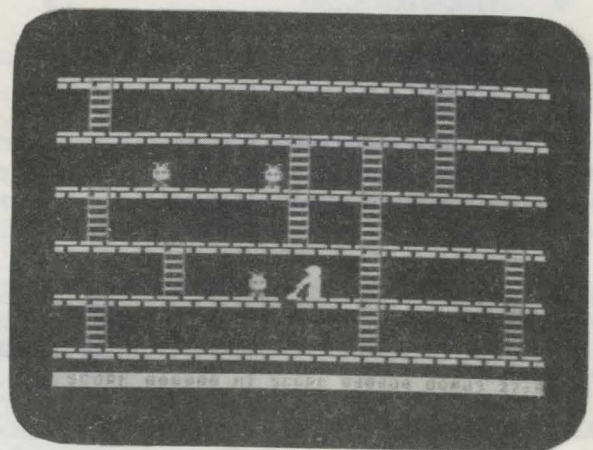
OVERALL RATING	B+	EASE OF USE	B-	ERROR HANDLING	N/A
GAME CONCEPT	B+	SKILL INVOLVED	C+	DOCUMENTATION	B
CREATIVITY	B	CHALLENGE	B+	HOLDS INTEREST	A
GAME DEPTH	B	GRAPHICS	C+	VALUE FOR MONEY	B

Apple Panic is an intriguing arcade game that is virtually identical to *Space Panic*. You are in a six story brick-floored building. The floors are interconnected by a maze of ladders. The object is to destroy the little apples that are chasing you by digging holes in the brick floors for them to fall into. Once an apple gets stuck in the hole, you have to knock it through the hole by beating it over the head. If you get to the apple too late, it may crawl out of the hole and get you.

Movement control is by joystick and is very responsive. The trigger button digs and fills the holes. The game strategy is very simple. Lure an apple into a hole by letting it chase you, fall through the hole to the next level without injury, then climb back up out of the hole in order to hit it over the head. Kill off all the apples and you advance to a harder level. The main difference from the original Apple version is that other apples can cross the hole to kill you while you are pounding the apple to death. A Green Butterfly, which proves difficult to kill, can appear on some of these harder levels. In one of these levels, you confront the Mask of Death, a real bummer. You have three lives but you can earn a bonus life. The game is clever and fun.



ACTION QUEST



APPLE PANIC

JEEPERS CREEPERS

Company: Quality Software

Language: Assembly Language

Hardware Requirements: 36K cassette; 32K disk.

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 7

Disk or Tape: Both

OVERALL RATING	B	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	B-	DOCUMENTATION	C+
CREATIVITY	B+	CHALLENGE	B+	HOLDS INTEREST	B+
GAME DEPTH	B+	GRAPHICS	B	VALUE FOR MONEY	B

Jeepers Creepers is an arcade chase game in which you attempt to fill in the rectangles in four different mazes while deadly wasps pursue you. As you guide your bug around the maze it draws a line. If you completely surround a rectangle, it fills in. Now, some of these rectangles (shown with a picture) contain bonuses, some a free jump, some a helpful beetle, a rare few a key or some other item. There are also one to three secret squares containing super beetles. Normal beetles are slow, able only to eat one wasp before vanishing at the top of the screen. For a limited period of time super beetles can eat many wasps before reverting to regular beetles. Wasps are always reappearing; but if you use wisely your ability to jump to a new random spot on the grid, and make use of the help of your beetle friends, you should be able to completely fill in all of the rectangles on the grid without losing one of your three men.

This chase game is extremely fun and intriguing to play. It is a simple game offering a lot of choices and good depth. It is a game that has some surprises (such as stubborn rectangles that refuse to fill unless another rectangle has been filled first), and ways to earn bonus lives. Each of the first three mazes differs widely in difficulty. They appear randomly. Whenever you get a maze a second or even third time (if you are that good), the wasps swarm more fiercely. The author recommends playing the game with "coast off," to obtain higher scores. Remaining still often confuses the pursuing spiders and so gets them off of your tail. If you ever expect to see the kill run maze, which appears after clearing two Brick Wall mazes, you will need to use this control mode. In sum, *Jeepers Creepers* is a super fun game with good graphics and sound effects. It is a game that will hold your interest in repeated play.

KID GRID

Company: Tronix Publishing, Inc.

Language: Assembly

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$29.95

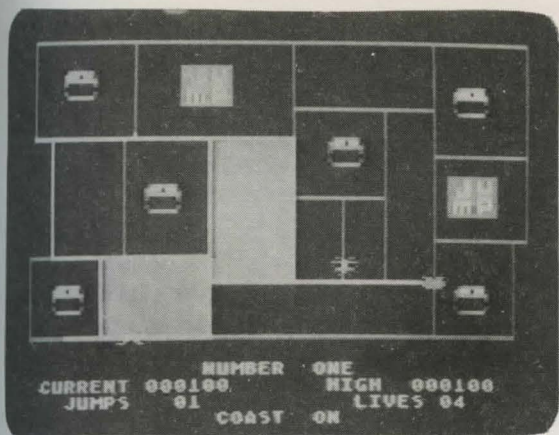
Availability: 4

Disk or Tape: Both

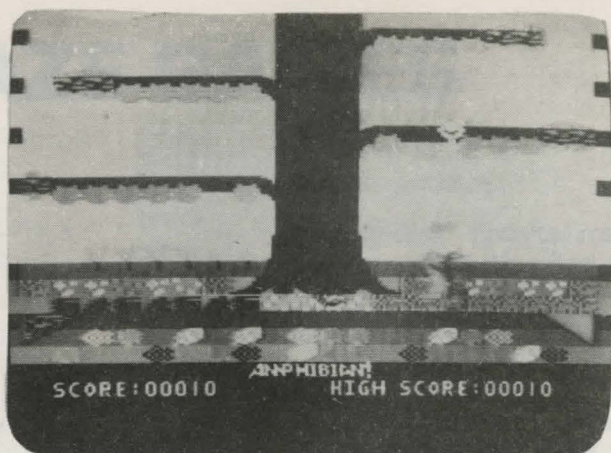
OVERALL RATING	C-	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C-	SKILL INVOLVED	C-	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	C	HOLDS INTEREST	D+
GAME DEPTH	C-	GRAPHICS	C-	VALUE FOR MONEY	D+

Kid Grid is an arcade-type game in which you attempt to fill in each of the 35 small squares in the rectangular grid. The square will automatically fill if you completely draw a line around its boundaries. It sounds simple, but there are four creatures chasing you around the grid. These creatures can't be killed, although they can be momentarily stunned if you are about to be cornered. You can choose 3, 5, or 7 stuns and five progressively faster levels of difficulty (on initialization only). Unfortunately, you can't change these parameters after one or more games without rebooting or reloading the games.

Kid Grid is a fun chase game that requires you to be on your toes to survive. However, the game's utter simplicity works against it after repeated play. There is only one maze and a simple strategy to keep one step ahead of the pursuing creatures. Although it is a good game, with nice graphics, there are similar games that are better.



JEEPERS CREEPERS



AMPHIBIAN

AMPHIBIAN

Company: Business Data Center

Language: Machine

Hardware Requirements: 16K; disk drive or cassette player.

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 3

Disk or Tape: Both

OVERALL RATING	C+	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	B-	CHALLENGE	C	HOLDS INTEREST	C
GAME DEPTH	C-	GRAPHICS	B+	VALUE FOR MONEY	C

Amphibian is a cute and colorful game in which a frog climbs out of a pond and up a fruit tree, where it drops fruit on unsuspecting dinosaurs below. If the dinosaur is killed, an extra fruit appears on the tree. The object is to kill as many dinosaurs as possible without running out of fruit.

The frog can't be out of water very long or it overheats and turns red. This necessitates a quick return to the pond to cool off. A bird flies by and eats some of the fruit, usually on an upper branch, and must be killed by ramming it. A climbing monster can also pursue you in your tree. Fortunately, the frog can jump down from one branch to the other, and safely to the water from the lowest branch. Hiding in the water isn't always safe either; one curious looking monster probes the water with a long stick as it passes.

This is a cute game (not a tough one) that would more likely appeal to young children because of its limited depth, and its choice of fast and slow levels of play. The game does get progressively faster as you play. The graphics are colorful and nicely implemented, and the program provides a very catchy tune. This is definitely a quality product for the children.

ARCADE MAZE GAMES

PAC-MAN

Company: Atari

Language: Machine

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$44.95

Availability: 10

Disk or Tape: Cartridge

OVERALL RATING	A	CONTROLLABILITY	B+	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	B	DOCUMENTATION	A
CREATIVITY	B	CHALLENGE	B	HOLDS INTEREST?	A-
GAME DEPTH	B	GRAPHICS	B	VALUE FOR MONEY	B+

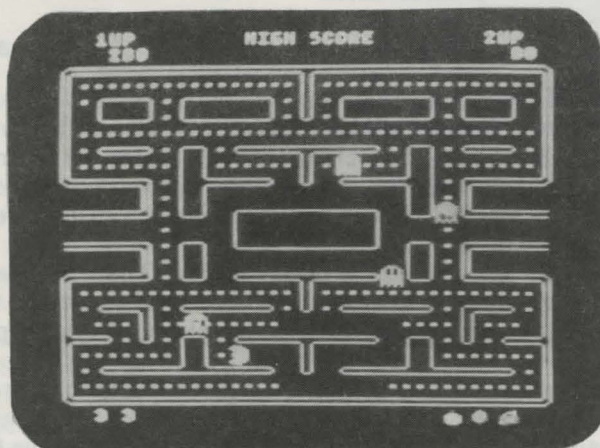
Pac-Man is the "official" version of the popular arcade game that has captured the American public's fancy over these past two summers. As in the arcade version, you play the yellow Pac-Man who gobbles dots as he navigates through the corridors of a ghost infested maze. Those lovable ghosts — Blinky, Pinky, Inky, and Clyde — each in their own inimitable way, pursue Pac-Man in a wild and merry chase. Pac-Man's only defenses are the four pills in the corners of the maze. Upon gobbling one of these, your Pac-Man becomes invincible for a few precious seconds, and allows you to hunt down your pursuers.

At first glance the maze looks different. But relax, the maze has only been stretched a little horizontally to fill the home screen's wider format. Rather than turn the maze on its side, as other copiers of the game have done, Atari kept it intact with the tunnels correctly on the sides. In fact, the game sounds and plays almost like the arcade version minus the cartoons. The game plays the *Pac-Man* theme music at the start, and those distinctive *Pac-Man* arcade sounds are identical.

This version allows one player, or two alternating players to start the game on upper levels. Beginners can start on the slow cherry level, while seasoned veterans can start on the fast-paced key levels. The relative speeds between Pac-Man and the ghosts vary with each level. Pac-Man is much faster than the ghosts on the cherry level, about even on the strawberry level, and slower on the bell and key levels. The bonus fruits that appear beneath the ghost's pen remain for a short time, and are worth the same number of points as in the original game.

Joystick control is a little sluggish on the first two levels, but becomes satisfactory on the upper levels. The ghost patterns, which many have learned after playing the arcade version repeatedly, are unfortunately not the same in the home computer version. The characters, however, do take on the same personalities as their counterparts in the arcade. Blinky follows you closely, while Pinky, who is the fastest, always tries to cut you off. And bashful Inky will suddenly reverse direction in the midst of following you.

Overall, this is the best rendition of the game I know. Some players will be disappointed that the cartoons were omitted, but this was due to the lack of space in the 8K cartridge.



PAC MAN

GHOST HUNTER

Company: Arcade Plus

Language: Machine

Hardware Requirements: 16K; disk drive or cassette player.

Department: Entertainment

Sugg. Retail: \$29.95 cassette / \$34.95 disk

Availability: 3

Disk or Tape: Both

OVERALL RATING	B	CONTROLLABILITY	B+	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	B	DOCUMENTATION	C
CREATIVITY	B	CHALLENGE	B	HOLDS INTEREST?	B
GAME DEPTH	B	GRAPHICS	B-	VALUE FOR MONEY	C+

Ghost Hunter is a one or two player eat-the-dots maze game with a joystick controlled character. Like *Pac-man*, you are pursued by four ghosts while you chomp the dots on the maze floors. It is very similar to the arcade game, but has enough differences to make it unique.

Although the game can be played by two people, the players don't alternate turns. Instead, the players play simultaneously, competing in a head-to-head contest. Since players can't pass each other, a player can trap his opponent between himself and a ghost. This mode is best played with two players of near equal ability. Bonuses appear frequently in the game, and if six are eaten by one player, he earns an extra man.

The game offers a choice of sixteen different mazes. Maze #1 is the original maze turned sideways, with the connecting tunnel at top and bottom. This is the longest tunnel that I've seen. Players appear to be lost somewhere between the bottom and top of the screen. Although most of the mazes are rather non-descript, several have lengthy cul-de-sacs where a ghost can easily trap your dot muncher. There is an option that gives you a new maze at random each time you clear a particular maze.

Ghost Hunter has the best control of all of the "Pac-Man"-type games. But despite this advantage, ghosts tend to catch you on corners because of the player-missile collision registers. One minor flaw involves the colors of the players and their associated scores. In the two-player mode, the brown colored player scores on the white colored score, and the white colored player on the brown colored score. This is very confusing. In the one player-mode, however, the mismatch is unimportant. Overall, *Ghost Hunter* is very well done. Although the ghosts lack the personalities of its competition, it is the only version that allows two player, head-to-head contests. The game has enough variations to make it a nice addition to one's game library.

JAWBREAKER

Company: Sierra On-Line

Language: Machine

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 8

Disk or Tape: Both

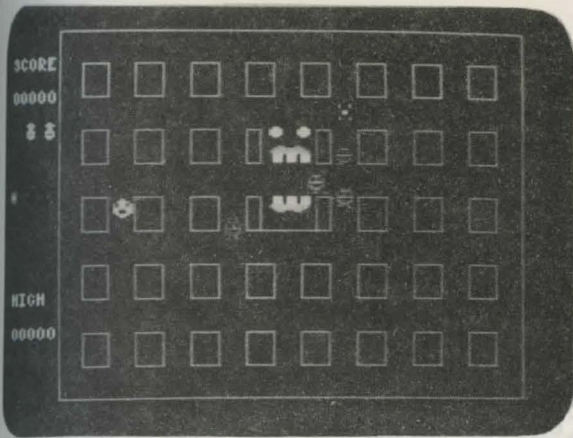
OVERALL RATING	C	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	B-	DOCUMENTATION	C
CREATIVITY	B	CHALLENGE	C+	HOLDS INTEREST?	C
GAME DEPTH	C+	GRAPHICS	B+	VALUE FOR MONEY	C

Jawbreaker is a clever variation of the popular eat-the-dots maze game. You guide a chomping set of teeth through the corridors of a candy factory. Instead of ghosts, in pursuit of you this time are four happy faced "life savers" that roll, tumble, and spin as they patrol the factory. They exit from the centrally located starting box, and move around the maze looking for you. Your defenses, as usual, are the four power dots at the corners of the maze. Eat one of these and you can eat the "life savers." Otherwise, if they get you first, there goes your man and his teeth. When you lose three men, the game ends.

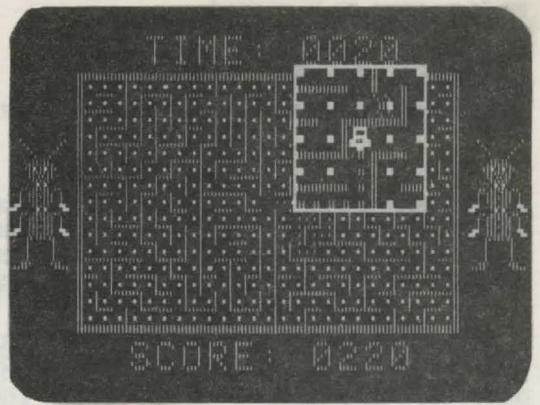
There have been two versions of this game since the initial release. The first release has the "Pac-Man" maze turned on its side. Because of legal problems, subsequent versions had an altered maze which is horrible. The graphics in both versions are very slick and smooth, using extensive player missile graphics. The "life savers" appear to float over the dots on the floor.

The sound is very well done. Besides the distinctive "gulp" that fans expect to hear when munching the dots, the game plays the song "Candy Man" at its start. In addition, an amusing cartoon appears after clearing each level.

Joystick control is satisfactory, although it is probably the least acceptable of the three "Pac-Man"-type games. The game doesn't become much harder as you advance between levels. Overall, the game has been nicely implemented, especially if you were lucky enough to own the game when it had the real Pac-Man maze; otherwise it isn't a very good choice. Although I would rate the first version a B+, the latest version only deserves a C-, or less.



HOT LIPS



TUMBLE BUGS

TUMBLEBUGS

Company: Datasoft
Language: Machine Language
Hardware Requirements: 24K, disk drive.

Department: Entertainment
Sugg. Retail: \$29.95
Availability: 6
Disk or Tape: Disk*

OVERALL RATING	D+	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C-	CHALLENGE	C	VALUE FOR MONEY	C-
GAME DEPTH	C-	GRAPHICS	C+	HOLDS INTEREST?	D

Tumblebugs, or *Dung Beetle* as it was originally called, is another maze game involving eating the dot-like tanna leaves. But this game is a little different with a rather unique graphics twist: the maze is about four times as detailed as the usual maze, and thus uses a magnifying glass in the section where your player is in order to enhance the small, detailed pathways. As your tumblebug consumes dots, it leaves a dung trail. The pursuing bugs (creepy-crawlers), which normally wander aimlessly, latch on to your scent upon encountering your trail. They immediately follow the trail, consuming it as they track you. The object is to eat all the dots, while avoiding getting killed. You only have one life.

The game can be played with either a joystick or a keyboard. While the controls are very responsive, the magnifying glass which is intended to help you also blocks the view of your pursuers who are often just beyond the edge of the lens. Thus there is a blind spot between the edge of the lens and the main map. When the enemy finally does get you, it audibly says, "I gotcha." *Tumblebugs* has its merits, but isn't a very exciting maze game, or much fun to play.

HOT LIPS

Company: London Software
Language: Machine
Hardware Requirements: 16K, disk drive.

Department: Entertainment
Sugg. Retail: \$29.95
Availability: 5
Disk or Tape: Disk

OVERALL RATING	C	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	C+	HOLDS INTEREST	C
GAME DEPTH	C-	GRAPHICS	C	VALUE FOR MONEY	C

Hot Lips is an arcade chase game played on a grid-like maze. The object of the game is to lure or lead pursuing critters through chomping teeth so that they get eaten. Of course, if you aren't too careful, you could end up as dinner too. As you move around the grid, bonus boxes appear worth extra points if you reach them quickly; otherwise, they mutate to blockers. These red blocks slow you down when your joystick controlled man moves across them. They can cause your doom, especially if a critter is close behind — blockers don't slow them down at all.

Hot Lips is a game requiring fast thinking to outmaneuver the four or five pursuing critters on the grid. You are continually moving unless you hold the button down to stop. While the first level is easy, upper levels are fast-paced with many blockers to slow you down.

DODGE RACER

Company: Synapse Software

Language: Machine

Hardware Requirements: 16K cassette, 32K disk

Department: Entertainment

Sugg. Retail: \$34.95

Availability: B

Disk or Tape: Disk

OVERALL RATING	C	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	C+	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	B	HOLDS INTEREST?	C
GAME DEPTH	C	GRAPHICS	C-	VALUE FOR MONEY	C

Dodge Racer is the home computer version of the arcade game *Head On*. In it you gather points by running over dots in a six lane square track with dividers for lane changes. A computer "jam" car runs the course in the opposite direction, bent on colliding with your car. You can change lanes in the gaps with your joystick controller, and speed up by holding down the firing button. Once you clear all of the dots you move to a more challenging level, encountering either a faster jam car, or two slow jam cars. These continue to maneuver into your lane, requiring intense concentration to find a clear path. Note that at the fast speed you can change two lanes at once.

Dodge Racer has a number of game options. One or two players can alternate turns, or two players can challenge each other by having one take over the control of the computer's car. Perhaps this version is the most enjoyable for two friends to play. There are four other options to the main game. The Restore option restores all of the dots — even the ones you ran over after you crashed each of your five cars. The Speedup option is for the masochist. After eight seconds the jam car, or cars, reach a frenzied pace. If you combine this with the two-car option, even the most cunning and skillful driver will meet his doom all too quickly.

It is an addicting game, although I think it is a bit too fast and frustrating for beginners. It has decent graphics, presents a challenge, and the price is right.

WIZARD OF WOR

Company: Roklan, Inc.

Language: Assembly Language

Hardware Requirements: 16K; disk drive.

Department: Entertainment

Sugg. Retail: \$39.95 disk/\$44.95 cart.

Availability: B

Disk or Tape: Disk & Cartridge

OVERALL RATING	A-	CONTROLLABILITY	A-	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	B	DOCUMENTATION	C-
CREATIVITY	B+	CHALLENGE	A-	HOLDS INTEREST?	B
GAME DEPTH	A-	GRAPHICS	B+	VALUE FOR MONEY	B-

Roklan has done an outstanding job in recreating the arcade game *Wizard of Wor* for the Atari home computer. It has the look and feel of the original game, introducing only minor changes. Basically, it's a maze game in which one or two warriors challenge worlings, worluks, and a wizard on each of 21 increasingly deadly levels. The player's warrior, controlled by joystick, hunts down the Burwor, a creature that patrols each dungeon level. As time passes, the Burwors move faster and are joined by fish-like Garwors and their dragon-like Thorwor allies. The latter two creatures are invisible unless they are within your line of sight. However, they do appear on a small radar display at the bottom of the screen. The Worluk appears after these creatures have been dispatched. He moves around quickly, attempting to kill your warrior and then escape. If you can destroy it before it escapes, the next dungeon is worth double points. Finally, the Wizard himself may appear. He teleports very quickly to random spots in the dungeon, staying around only long enough to hurl lightning bolts.

One or two players can participate. In the two-player mode, the warriors are supposed to act as allies. But warriors are worth 1,000 points, so occasionally intentional fatal "mistakes" are made, or outright feuds develop with the object of killing your partner. It will take cooperation, however, to advance to the upper levels. The Worlings begin shooting back on level 2, and become increasingly dangerous the deeper you penetrate the maze. The fourth level is called the Arena, because of the open area in the center. All levels have a passageway at the end that leads from one side to the other. The passageway closes for seven seconds after anything passes through it.

The game's graphics and sound are excellent. It is an action-packed shoot-'em-up without a single dull moment, and is a game that will hold your interest for a very long time.

PATHFINDER

Company: Gebelli
Language: Assembly Language
Hardware Requirements: 32K

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 6

Disk or Tape: Disk

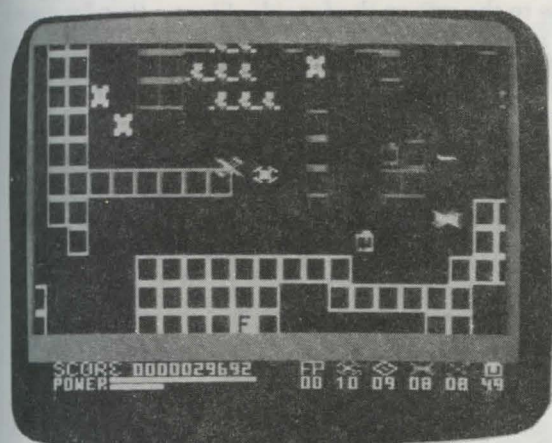
OVERALL RATING	C	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C-	DOCUMENTATION	C
CREATIVITY	C-	CHALLENGE	C-	HOLDS INTEREST?	C
GAME DEPTH	C	GRAPHICS	C+	VALUE FOR MONEY	C-

The object of *Pathfinder* is to rid an underground maze of canisters of radioactive waste. These canisters are strewn about everywhere, and can be absorbed on contact by the Pathfinder as he is guided around the maze by your joystick controller. The maze is large and scrolls smoothly as you move about. There are Nukes, Minelayers, and Phantoms out to destroy you. Of course, you are armed with a plasma gun that can be fired in any of eight directions, but these enemies flit all around the screen, making mischief as they go. The Minelayers aren't as deadly as the Nukes that pursue you, but they do make a mess by laying mines that block your path. If you hit one of their mines with your plasma gun, you start a fire that quickly spreads. Fortunately, there are nearby fire stations where you can fill your gun with fire retardant pellets. While these are great for putting out fires, they are useless against your enemies.

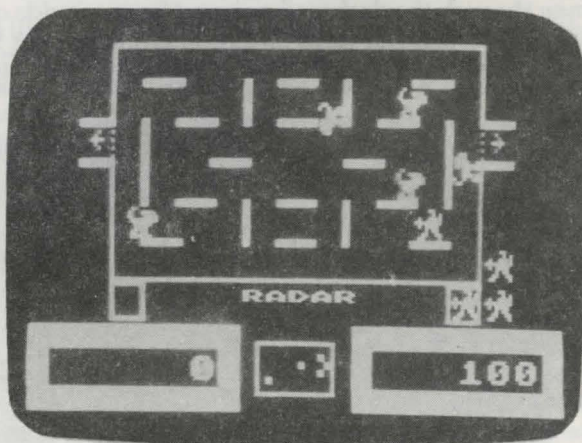
The scoring system is questionable. While there are a certain number of Nukes, Phantoms, and Minelayers worth several points, destroying anything else is also worth points. It is certainly easier to accumulate a million points by mindlessly shooting down walls, or setting large fires and putting them out, than by tracking down your enemies. Collecting the radioactive waste becomes almost secondary except to obtain more energy to keep up your destructive pursuit of points.

The game has nine play levels, each characterized by color changes, sound warnings, and sometimes changes in the structure of the maze itself. Upper levels have teleport chambers for moving rapidly from one side of the maze to the other.

It's very hard to classify this game as either good or bad. While on the one hand it appeared to be a superficial and repetitious game, many of the teens who played it enjoyed seeing half the maze on fire and then trying to put it out. Although this isn't what was intended, it sure racked up plenty of points. Five million points is a pretty poor showing in a game where the score indicator has room for 10 billion. In short, the game has some merit and may find an audience.



PATHFINDER



WIZARD OF WOR

MONSTER MAZE

Company: Automated Simulations (EPYX)

Language: Machine

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$39.95

Availability: 7

Disk or Tape: Cartridge

OVERALL RATING	C+	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	B-	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	B-	HOLDS INTEREST	C
GAME DEPTH	C+	GRAPHICS	C-	VALUE FOR MONEY	C

Monster Maze is a 16 floor, "Pac Man"-styled maze filled with various pursuing monsters. The game is played with a three-dimensional viewpoint as if you were wandering down the corridors. The entire floor map of each level can be toggled with the joystick button, to re-orient you if you are lost and to see the location of the monsters, uncollected gold bars, vitamin charges, and the trap doors to the lower levels. Unfortunately, you need to stare at the screen for some time before you find your character. It is a very dull orange and hard to see. The position of the man shows which way you are heading. The direction you move while inside the corridors is also color coded.

The object of the game is to collect as many gold bars as possible before losing all of your nine lives. The monsters move around each of the levels in pursuit. On lower difficulty levels they move very slowly, and so it is easy to escape. There are a total of 48 monsters scattered on the 16 levels, and also 48 vitamin pills that you can eat. When you are vitamin charged, you can chase a monster for 30 steps and kill it if you catch it. You also have to watch out when travelling in the lower levels, because monsters leap on you from the trapdoors overhead. It is best to stay clear of all overhead doorways.

Monster Maze is an interesting variation of the "eat the dots" maze games. Navigating a maze from the inside is a lot more difficult than doing it from an overhead viewpoint. The graphics are straight line 3-D, showing the various doorways and corridors with gold bars on the floor. The game has a good overall concept, is a little less exciting than the usual Pac-Man type game, but is still enjoyable to play.

THUNDER ISLAND

Company: Analog Software

Language: Basic

Hardware Requirements: 16K; disk drive or cassette player.

Department: Entertainment

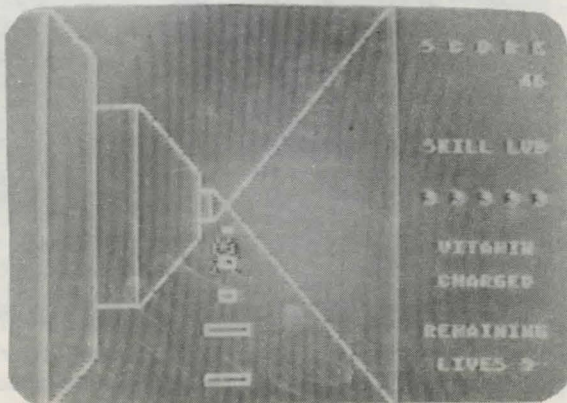
Sugg. Retail: \$15.00 cassette/\$17.00 disk

Availability: 4

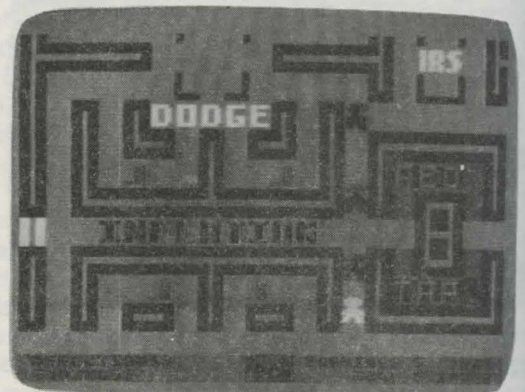
Disk or Tape: Both

OVERALL RATING	D+	EASE OF USE	C	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C-	CHALLENGE	C	HOLDS INTEREST?	D
GAME DEPTH	D	GRAPHICS	C	VALUE FOR MONEY	D

The object of *Thunder Island* is to traverse an invisible maze in as fast a time as possible. The maze is quickly generated in a random manner, shown for ten to fifteen seconds, then darkened. Using a joystick, the player guides his man through the darkened passages from one side of the maze to the exit on the far side. Since a thunder storm is raging, an occasional flash of lightning illuminates the walls for a fleeting moment. Overall, the game is quite simplistic, with little depth. The graphics are fair, but one will most likely tire of this after a few plays.



MONSTER MAZE



TAX DODGE

K-RAZY ANTICS

Company: CBS Software
Language: Machine
Hardware Requirements: 16K

Department: Entertainment
Sugg. Retail: \$49.95
Availability: 8
Disk or Tape: Cartridge

OVERALL RATING	B -	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	B -	DOCUMENTATION	B
CREATIVITY	B -	CHALLENGE	B	HOLDS INTEREST?	C +
GAME DEPTH	C	GRAPHICS	C +	VALUE FOR MONEY	C -

K-Razy Antics is a very challenging and involved maze-type arcade game. There are six different mazes available for play. The object in this one-player game is to guide your white ant through a maze of tunnels in an anthill, while avoiding four hostile invading ants, the Anteater, and an occasional torrential rain flood. As you guide your ant through the tunnels, you must pick up enemy eggs to prevent their hatching, while simultaneously depositing your white eggs to insure the perpetuation of your species. The enemy ants are just as vulnerable to the flooding and Anteater as you are, but they can also be killed by picking up one of their eggs, luring them behind you, and dropping it so that it explodes and destroys any ants that have been following close behind. The Anteater who sticks his long tongue down the tunnels is dangerous. Hopefully he'll eat a few enemy ants. If all four ants are destroyed without having any enemy eggs remaining, you advance to the next harder level.

When the game begins, you have forty white eggs in reserve. They must be deposited sparingly, and in safe places where enemy ants won't eat them. They are not affected by flooding. Whenever you get killed, you must have at least one white egg remaining in the anthill for you to rehatch. If you don't, the game ends.

The game is interesting and strategy oriented. The graphics are fair, yet a little crude when it rains, or the Anteater sticks out his tongue. Overall, *K-Razy Antics* is a fine game to hold your interest. This one offers a real challenge.

TAX DODGE

Company: Island Graphics
Language: Machine
Hardware Requirements: 32K, disk drive.

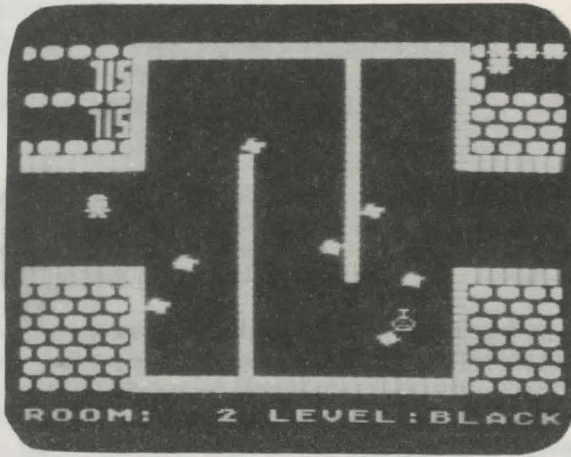
Department: Entertainment
Sugg. Retail: \$39.95
Availability: 3
Disk or Tape: Disk

OVERALL RATING	C +	CONTROLLABILITY	C -	ERROR HANDLING	N/A
GAME CONCEPT	C +	SKILL INVOLVED	C	DOCUMENTATION	B -
CREATIVITY	C	CHALLENGE	C +	HOLDS INTEREST?	C
GAME DEPTH	C	GRAPHICS	B	VALUE FOR MONEY	C -

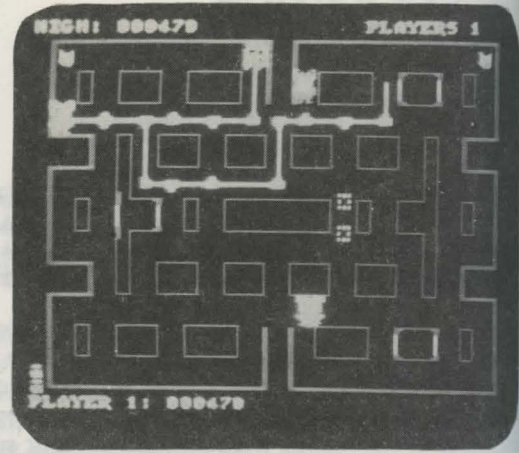
Tax Dodge is a maze game that in many ways mirrors real life. The object of the game is to steer your man through the corridors of the maze while trying to collect as many of the dollar piles as possible. Having accumulated money, you then try to keep as much of it as possible out of the hands of four IRS agents who are in constant pursuit.

The game is played in rounds, each round consisting of one year in the life of the taxpayer. Wealth is accumulated from January 1st to December 31st in this timed game. During that time, the player has a specific cash goal to put in his savings account. He must return to the starting point by April 15th, tax time, or the game ends. The game also will terminate if the player doesn't reach the preset goal. There are a number of tax dodges. If a player moves over the letters which spell "Deductions," he saves \$100 per letter; and if he moves over the area marked "Accountant," he doesn't lose any earnings the next time a Taxer touches him. There is a safe spot on the board marked "Tax Haven," where the Taxers can't touch you, and "Loopholes" (or doors) between corridors which you can pass through but the Taxers can't. And, of course, there are bad spots like those letters that spell "Inflation" (the cruellest tax of all), costing you money every time you pass over them, and the red areas marked "Red Tape" that slow you down.

The game is played on a scrolling screen, two screens wide by two screens deep. Besides allowing a much more detailed playfield, it adds excitement, because you are never sure if the Taxers are just off screen ahead of you as you move. There is very little reaction time, since your man moves nearly to screen edge before the screen scrolls. Joystick control is somewhat unresponsive. You have to be exactly at the intersection to change directions. The instructions suggest to use diagonal movements on turns, but sometimes tapping the joystick to center him in the intersection is the only way to make the turn. This is unfortunate, because playing the game for any length of time becomes fatiguing on a number of different joysticks. Overall, the game has good graphics, and is somewhat challenging if you like arcade-style maze games.



SHAMUS



MOUSEKATTACK

MINOTAUR

Company: Atari Program Exchange

Language: Atari BASIC

Hardware Requirements: 24K cassette; 32K disk.

Department: Entertainment

Sugg. Retail: \$15.95

Availability: 6

Disk or Tape: Both

OVERALL RATING	D-	CONTROLLABILITY	F	ERROR HANDLING	D-
GAME CONCEPT	D+	SKILL INVOLVED	D	DOCUMENTATION	C
CREATIVITY	D+	CHALLENGE	D-	HOLDS INTEREST?	F
GAME DEPTH	F	GRAPHICS	D	VALUE FOR MONEY	D-

Minotaur is a simple maze-type game based on the ancient Greek legend. What you must do, controlling your player with a joystick, is run through each maze as quickly as possible. At the same time, you must avoid contact with the powerful, player-devouring Minotaur.

Each new maze is depicted with a different color, but the difficulty factor varies only slightly from level to level. Upon completion of each maze, there is very little if any reward: you simply get to try another randomly-selected maze. The response to joystick control is best described as "sluggish" (i.e. slow and erratic).

Other areas that need improvement are the sound routine, which is mediocre and wants the ability to be switched off, and the error handling, which is very poor indeed. Best give maze-running a miss, at least until they come up with a better challenge and reward system for successful runs.

CYCLOD

Company: Sirius Software

Language: Machine Language

Hardware Requirements: 48K, disk drive.

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 8

Disk or Tape: Disk

OVERALL RATING	D	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B-	SKILL INVOLVED	C+	DOCUMENTATION	C
CREATIVITY	D	CHALLENGE	D	VALUE FOR MONEY	D
GAME DEPTH	D	GRAPHICS	C-	HOLDS INTEREST?	D

Cyclod pits an eyeball against a roomful of snakes. If this sounds interesting, read on. In each level of the game, seven snakes randomly meander about a maze while seeking to destroy a solitary eye. Fortunately they don't all appear at once, and you can use any of the maze's red bricks as weapons to crush the snakes. Some of the maze walls are stationary, while others, consisting of red bricks, can be moved by pushing the eyeball against them with the joystick. Once you have killed all seven snakes, you advance to the next level of difficulty where more snakes inhabit the maze. Skilled players can even start at a much harder level if they choose. The game ends when all three eyeballs are lost. *Cyclod*, finally, is a rather uninspired, strategy-oriented game, and an Apple translation.

MOUSEKATTACK

Company: On Line Systems

Language: Machine Language

Hardware Requirements: 32K, disk drive.

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 8

Disk or Tape: Disk*

OVERALL RATING

B

CONTROLLABILITY

B

ERROR HANDLING

N/A

GAME CONCEPT

B-

SKILL INVOLVED

B

DOCUMENTATION

C

CREATIVITY

B

CHALLENGE

B+

VALUE FOR MONEY

B-

GAME DEPTH

C+

GRAPHICS

B

HOLDS INTEREST?

B-

Dreaming up variations of the ever popular maze games has become a profitable endeavor for software authors. *Mousekattack* reverses the strategy of endless consumption. You play Larry Bain, ace plumber. Your job is to lay pipe in a rat infested maze where rats are bigger than your trusty cat. Cats will scare off the mice — well, most of them, except Super Rat. He has a big red S on his chest. He eats cats WHOLE. Then there are your two traps which can temporarily hold a rat until it gnaws its way through the mesh. If you're quick, you can beat it over the head with your pipe wrench. Of course, if a mouse gets you, you're a dead plumber. Fortunately, you have three plumbers on your staff.

The game can be played by either one or two players. The game's controls are rather simple. Pipe is laid by guiding your man around the maze with a joystick. The button allows you to pick up your cat and set it down wherever you like. The cat can be placed in a strategic position that will allow you refuge from those killer rats. Laying pipe is generally easy, except you sometimes make mistakes. You often need to double back to repair bad plumbing joints that leak, and some of these are very difficult to spot.

The game is not as simple as it sounds. Many will find that two players are a better match against rats of this size and ferocity, especially if you plan to complete the task and advance to the next level. In summary, *Mousekattack* is just an average maze game with a slightly different twist. In some ways it is harder than most games of its type, and one of the few cooperative arcade games. The graphics, music, and sound effects are very good.

SHAMUS

Company: Synapse Software

Language: Machine

Hardware Requirements: 16K; disk drive or cassette player.

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 8

Disk or Tape: Both

OVERALL RATING

A

CONTROLLABILITY

A

ERROR HANDLING

N/A

GAME CONCEPT

B+

SKILL INVOLVED

B

DOCUMENTATION

C+

CREATIVITY

B

CHALLENGE

A

HOLDS INTEREST?

B+

GAME DEPTH

B+

GRAPHICS

A

VALUE FOR MONEY

A

Shamus is a Real-Time adventure game that combines the shoot-'em-up aspects of an arcade game with the puzzle-map qualities of an adventure. The object is to reach the very heart of the Shadow's lair and destroy him. This is accomplished by exploring the various colored levels of the lair.

There are four levels, each containing thirty-two rooms. The rooms (which are mappable) contain dangerous whirling drones, robo-droids, and snap-jumpers. These creatures must be defeated with your ion-shiv (vaporizer) before you can proceed to the next room. Some of these rooms also harbor mysterious and extra life bonuses; and in a few, a colored key will open more passages into the lair — if you find the corresponding lock.

You play the *Shamus* (slang for detective), and must have sharp reflexes to defeat the Shadow's henchmen. There is danger in every room, and a quick exit leads to another room filled with more shooting enemies, even if it is the room that you just rid of the last robo-droid. Linger too long and your nemesis, the Shadow, appears. One touch and you're dead; however, a quick shot will stun him long enough for you to escape.

As with most adventures, this game should be mapped as you explore the maze by joystick control. Each room is numbered. Since the game doesn't have a pause control and the action is nonstop, it is difficult to draw a map without a friend's help. Even with a map, unless you can read it during the brief lulls, it is best to either have a friend navigate, or develop a good memory.

The sound and graphics are very good. A variety of sounds alert you to danger, success, and failure. A combination of player missile and re-defined character set graphics are used throughout. The game concept itself is very viable, with the play becoming more difficult and rapid as you advance through the blue and green levels until the speed becomes insanely fast on the red level. I assume the game is possible to beat, although it's going to take considerable practice. *Shamus* is really more of an arcade shoot-'em-up than a true adventure game. If you have the skill this can be a fun game. If not, you'll never see much more than the first level.

ASTRON IV

Company: Synchro

Language: BASIC

Hardware Requirements: 16K, cassette; 24K disk.

Department: Entertainment
Sugg. Retail: \$22.95 cassette / \$27.95 disk

Availability: 4
Disk or Tape: Both

OVERALL RATING	C-	CONTROLLABILITY	C	ERROR HANDLING	B
GAME CONCEPT	C+	SKILL INVOLVED	C	DOCUMENTATION	B
CREATIVITY	C	CHALLENGE	C	HOLDS INTEREST?	C-
GAME DEPTH	C+	GRAPHICS	C+	VALUE FOR MONEY	C-

Astron IV is Synchro's first attempt at an arcade-type game. Like so many action games in BASIC it falls short in several respects.

Its objective is similar to *Shamus* by Synapse. There are four levels on an asteroid which must be explored by one or two players alternating turns. The idea is to destroy all of the power panels and get out as fast as you can before your energy supply runs out. You are given three lives in which to accomplish this, and be forewarned: everything you do requires energy, from simple movements to shooting the guards. Luckily, you can recharge at various points in the maze.

The problem with the game is that it must be done in turns. The BASIC routines do not allow simultaneous movement, so you make your move, then the robots make theirs. This is a shoot-'em-up, not an adventure, and this type of play is not only frustrating, but inexcusable. While the game has a decent concept, it is executed poorly.

MAZE OF DEATH

Company: Synchro

Language: BASIC

Hardware Requirements: 24K, diskette; 16K, cassette.

Department: Entertainment
Sugg. Retail: \$19.95 disk / \$14.95 cassette

Availability: 3
Disk or Tape: Both

OVERALL RATING	C	CONTROLLABILITY	B	ERROR HANDLING	B
GAME CONCEPT	C	SKILL INVOLVED	C+	DOCUMENTATION	B-
CREATIVITY	C+	CHALLENGE	B-	HOLDS INTEREST?	C+
GAME DEPTH	C	GRAPHICS	D	VALUE FOR MONEY	C

Maze of Death is a challenging one-player graphics game. It is written in BASIC, using Lo-Res graphics. There is no control problem that so often crops up in BASIC programs using game controllers.

Maze of Death is a timed game in which the player starts in a nuclear reactor room, and must return the control rods to the reactor before the time limit expires and the reactor destroys the city. Time limit varies depending upon the difficulty level selected (the harder the game, the more time you are given).

The maze is seen only one room at a time, you will find a variety of objects in the rooms, such as control rods (glowing blocks); deadly robots (blue blocks), deadly pits (black lines), and electric zaps (white lines). Because it is a timed game, finally, rather than a game with a limited number of lives, it might be fine for younger game players.

PUZZLE & STRATEGY GAMES

Department of
Game Research
V. Analysis
Dist. to Tech.

UNIVERSITY OF
SOUTH ALABAMA
MOBILE, ALABAMA
36688

LOST COLONY
Company: Adventure
Language: English
Hardware Requirements: 40K Disk Drive

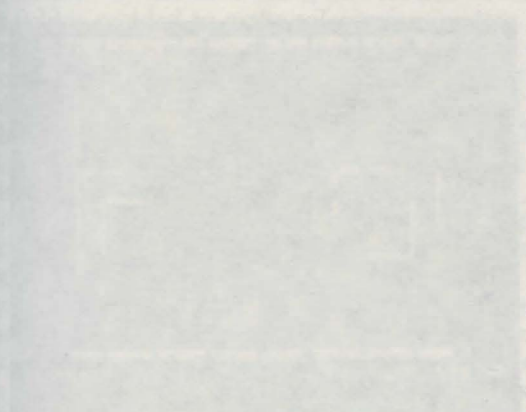
The game is a puzzle and strategy game. It is designed to be played on a computer system with a disk drive. The game is set in a colony on a planet. The player's goal is to survive and expand the colony. The game is played on a grid. The player can move units and build structures. The game is a puzzle and strategy game. It is designed to be played on a computer system with a disk drive. The game is set in a colony on a planet. The player's goal is to survive and expand the colony. The game is played on a grid. The player can move units and build structures.

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MOCHET SOLAM

PUZZLE & STRATEGY GAMES

LOST COLONY

Company: Acorn Software

Language: Atari BASIC

Hardware Requirements: 40K, Disk Drive

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 4

Disk or Tape: Disk

OVERALL RATING	C+	EASE OF USE	C	ERROR HANDLING	B-
GAME CONCEPT	B-	SKILL INVOLVED	B+	DOCUMENTATION	B-
CREATIVITY	C+	CHALLENGE	B+	HOLDS INTEREST?	C
GAME DEPTH	B-	GRAPHICS	C	VALUE FOR MONEY	C

Back in the days when computer games were written in BASIC for large timesharing systems, most computer folk were familiar with a game known as *Kingdom*. This game, which was also known by the names *Sumer* and *Hammurabi*, was a rather simple-minded simulation of an agricultural society. The object was to allocate a limited number of resources in order to feed your people, and, in some versions, maintain an army to protect your borders from invasion. Rule wisely, and your nation would expand and prosper. An inept monarch would be forced to sell off land in order to buy food, and would eventually be removed from office by his subjects.

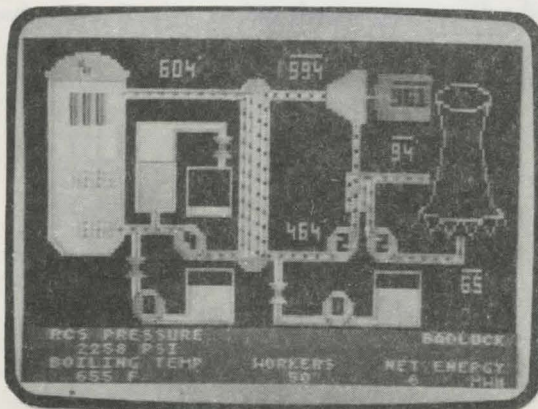
Lost Colony is a modern industrial version of *Kingdom*. You are the administrator of Warren's World, mankind's first attempt at colonizing another planet. Thanks to a major global war back on Earth, your world has been left to go it alone. Your job is to divide available raw materials, manpower, and production facilities among a number of industries which are necessary to the survival of your colony. Your goal is to keep your population well fed and happy (the latter being related to the number of consumer goods you produce and allocate).

During each game turn, you determine how your resources will be used for the upcoming year. By assigning sufficient manpower, raw materials, and production facilities to each of your necessary industries (farming, manufacturing, mining, transportation, and energy), you determine the success of future production. One year of bad planning may damage your colony's prosperity for many years to come.

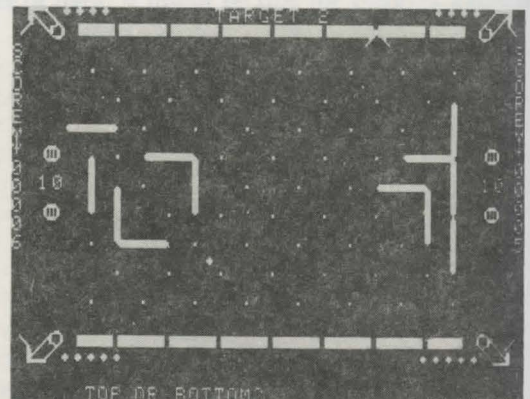
This is a complex simulation, which is made even more difficult by the lack of information in the documentation. While all of the commands and options are described in detail, only the most meager of guidelines are offered on which to base your decisions. For example, you are given a chart listing the amounts of consumer goods needed for your people — a very useful piece of information. Equally useful would have been such information concerning the number of farm workers required to produce enough food for a given number of people. Without this last item, you may find yourself starving most of your subjects in the first year. This makes for a very short game.

There is a limited use of graphics here, and no use of sound. Some versions contain a built-in calculator, an invaluable tool in this game. Sadly, the Atari version does not contain this feature. Even more valuable would have been some form of printer support, which would enable you to learn from your mistakes.

Still, if economic concepts make your pulse race, and the thought of guiding the destiny of the masses excites you, there is a good chance that you will enjoy taking control of *Lost Colony*.



SCRAM



RICOCHET

SCRAM

Company: Atari

Language: Atari BASIC

Hardware Requirements: 16K

Department: Entertainment

Sugg. Retail: \$24.95

Availability: 7

Disk or Tape: Tape

OVERALL RATING	A	CONTROLLABILITY	B-	ERROR HANDLING	A
GAME CONCEPT	A	SKILL INVOLVED	B+	DOCUMENTATION	A+
CREATIVITY	A	CHALLENGE	A	HOLDS INTEREST?	B
GAME DEPTH	A	GRAPHICS	A+	VALUE FOR MONEY	A

Scram is a nuclear power plant simulation. Excellent use is made of character graphics to show fluid motion in the three main cooling loops in a nuclear power plant. The temperature at various points in each loop is displayed on the screen. You control valves, pumps, and the reactor control rods by means of a single joystick. As you open and close valves, or turn pumps on and off, you see the effects as the temperatures change in the cooling loops. You can even melt the reactor core, resulting in a brilliant color display. Experience gained in operating the system provides an intelligent understanding of the workings of such a plant.

After you are thoroughly familiar with the functions of the various pumps and valves, you can test your skill in the game mode. You set a risk level from 1 to 9. The risk level sets the frequency at which earthquakes occur. Each earthquake damages a component in the system. From the temperature changes that occur, you must locate the damaged part. You then send work crews to fix it. You have a limited number of work crews, and earthquakes can occur frequently at the higher risk levels. The only minor flaw in the program is a slow response when you move the cursor around the screen to work the valves and pumps.

The documentation is excellent. It describes the program and the operation of a nuclear power plant. Not only is this a first rate simulation, but it also makes excellent use of computer graphics to teach a complex subject.

RICOCHET

Company: Automated Simulations

Language: Machine Language

Hardware Requirements: 32K, disk drive

Department: Entertainment

Sugg. Retail: \$19.95

Availability: 7

Disk or Tape: Disk*

OVERALL RATING	B-	CONTROLLABILITY	B	ERROR HANDLING	B
GAME CONCEPT	B	SKILL INVOLVED	B	DOCUMENTATION	B-
CREATIVITY	B-	CHALLENGE	B+	VALUE FOR MONEY	B
GAME DEPTH	C	GRAPHICS	C+	HOLDS INTEREST?	C+

Ricochet somewhat resembles bumper pool played by two players or one player against the computer on a frictionless table. Each opponent has two-five shot launchers set in each corner. There are also two bumpers, or goals, set midway between them, and six deflectors initially positioned in a triangle to guard the player's goal. The entire field is gridded to make calculations easier.

A player has the choice of launching a ball, or rearranging his defensive deflectors. During rearrangement, all deflectors must be moved in the same direction for that turn. When a ball is launched it travels until it either reaches the playfield boundary, or strikes a deflector and flips it from one orientation to another. In each case the ball ricochets at a 90 degree angle and continues until it leaves the playfield at the left or right sides. When the ball strikes a launcher, that launcher is put out of commission for two turns.

Points are scored for striking bumpers, launchers, and deflectors of either player. The game ends when the player runs out of launcher balls. A match consists of a group of games. What is interesting is the handicapping that the computer does to even out the match. At the conclusion of a game in a match, the bumpers on the winner's side of the board increase in value, thus the next game is easier for the loser. The average match takes between ten and thirty minutes, and in addition, a clock is used to penalize players who take too much time in choosing their moves.

The game has a number of variations including extra bonus targets. In all there are five variations with the fifth lacking the customary grid. While the game at first appears to the novice to be a game of random luck, like chess this game requires the ability to think and plan moves far ahead. The ricochets can be predicted, although they are difficult for the average player to visualize after several bounces, especially when deflectors shift orientation from vertical to horizontal. Like most strategy games, *Ricochet* requires a lot of experience, and skilled players will find it a real challenge.

CONTROLLER

Company: Avalon Hill

Language: Machine

Hardware Requirements: 32K disk drive.

Department: Entertainment

Sugg. Retail: \$30.00

Availability: 5

Disk or Tape: Disk

OVERALL RATING	B	EASE OF USE	B	ERROR HANDLING	B
GAME CONCEPT	B	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	B-	HOLDS INTEREST	B
GAME DEPTH	C	GRAPHICS	B-	VALUE FOR MONEY	C+

This game is well suited to the novice controller. In it, you have the choice of controlling either one or all eight of the available aircraft. After choosing the number and type of aircraft, you are greeted by a status board of all eight craft, and a graphic display of the aircraft and surrounding area. You are able to switch between a ten or one hundred mile radius display, with the status board listing the aircraft, direction of flight, altitude, and airspeed. The amount of fuel left is also displayed at the bottom of the screen, along with any commands you may have given up to that point. Screen command display is a real plus in this game.

Play one or two games with a single aircraft before venturing to multiple aircraft control — that's where the real controllers are separated from the private pilots.

AIR TRAFFIC CONTROLLER

Company: Creative Computing Software

Language: Machine

Hardware Requirements: 32K, disk drive.

Department: Entertainment

Sugg. Retail: \$19.95

Availability: 6

Disk or Tape: Disk

OVERALL RATING	C+	EASE OF USE	C	ERROR HANDLING	B
GAME CONCEPT	B	SKILL INVOLVED	C	DOCUMENTATION	B
CREATIVITY	C	CHALLENGE	B	HOLDS INTEREST?	B-
GAME DEPTH	C	GRAPHICS	C	VALUE FOR MONEY	C+

As rookie air traffic controller, you have been assigned the responsibility of guiding 26 aircraft to a safe destination within your sector. Some will be landing at one of two airports, some are taking off, and still others are just passing through. Your only option is to choose the amount of time needed to complete this task.

The control sector is represented by a grid of dots. The letters "A" through "Z" designate the aircraft. A pad of paper and pencil to keep track of aircraft type and destination will help to keep things at a manageable level, so keep them handy.

The documentation is good, but the commands should have been displayed on the screen to help keep your attention where it belongs. Graphically speaking, there are none: the display is pure text. It seems to me that a good chess player who can look ahead three or four moves will do well in this game; otherwise, my advice is to pass.

VAULTS OF ZURICH

Company: Artworx

Language: BASIC

Hardware Requirements: 32K disk, 24K cassette

Department: Entertainment

Sugg. Retail: \$21.95 cassette / \$25.95 disk

Availability: 3

Disk or Tape: Both

OVERALL RATING	B	CONTROLLABILITY	B	ERROR HANDLING	B
GAME CONCEPT	B	SKILL INVOLVED	C+	DOCUMENTATION	C+
CREATIVITY	C+	CHALLENGE	B	HOLDS INTEREST?	B
GAME DEPTH	B	GRAPHICS	C-	VALUE FOR MONEY	B

Vaults of Zurich is a well-conceived, nine level strategy maze game. The object is to enter a powerful banking institution (a place where the rich and powerful deposit their wealth in secrecy), and penetrate its defenses to the innermost sanctum of the chairman's office in order to rob him. You, playing the master thief, face a difficult challenge: the bank is protected by a formidable security system of armed guards and hidden TV cameras.

The strategy to winning this game is to collect a following of fellow thieves from among the tourist and bank employees who are in each of the vaults that you encounter on each particular floor. Since you can't just enter a vault and abscond with the securities without dealing with the characters there, you must either attempt to bribe them into joining you, or fight with them. Once you gain control of the vault, you are entitled to the treasure and may take any tools you find. These tools consist of explosives, drills, keys, maps, and wires for disabling the TV cameras.

A combination of joystick control and keyboard commands are used in this game. The joystick guides the thief through the maze. Keyboard commands such as FI for fight, TA for take, and DR for drill are used when appropriate. There are stairways between levels which can be used by pressing the joystick button. The location of these unguarded stairways is important, for if you trip the alarm, you have only twenty-five seconds to elude the guards by changing levels. In your hurry, you often drop tools and loot. Obviously, the lower levels are more difficult; although the guards are easy to beat on upper levels, it is safer to attempt to sneak past them on levels four through nine.

You have exactly two hours to reach your objective: the chairman's office on level nine — and it's guarded by four vault doors. You'll have to drill when your keys don't work, and that takes time. If you successfully defeat anyone who might be lurking in his office, you still must escape past nine levels of guards before the clock runs out.

Vault of Zurich is a very challenging and fun game to play. The maze is different each time you enter in, so it doesn't become boring after repeated tries. The graphics, a combination of text characters and maze walls, are adequate. I'd say it's a very well designed game.

CODECRACKER

Company: Atari Program Exchange

Language: Basic

Hardware Requirements: 8K cassette; 16K disk.

Department: Entertainment

Sugg. Retail: \$15.95

Availability: 6

Disk or Tape: Both

OVERALL RATING	C	CONTROLLABILITY	C+	ERROR HANDLING	B-
GAME CONCEPT	C	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C-	CHALLENGE	C+	HOLDS INTEREST?	C+
GAME DEPTH	C-	GRAPHICS	D+	VALUE FOR MONEY	C

The object of this one or two player game is to guess, through a process of elimination, the hidden number or code. In *Codecracker* a three, four, or five digit number may be selected. Using clues supplied by the computer, you must come up with the correct number within twelve guesses. In the two player version, you should keep track of all attempts, and so avoid hitting obvious duds. The player who uses the fewest guesses to hit the right number wins.

The other variable to the game is the time factor. You can set a time limit for guesses to be input. The penalty for exceeding the limit is the loss of chances to guess. There is also a setting in which no time limit is involved.

Codecracker is controlled by your keyboard. Error handling is very good, enabling you to change your guess as many as three times before finally entering it. The computer lets you know when a number is right and in the proper sequence before the whole code is broken, eliminating some of the guesswork after a time.

The game concept couldn't be simpler, and the single player game mode gets old in a hurry. But the two player mode holds your interest better, because the players each make up the code number for their opponent to crack. Not a thrill a minute, but it can be diverting.

BLOCK BUSTER

Company: Quality Software

Language: QS FORTH

Hardware Requirements: 32K; disk drive or cassette player.

Department: Entertainment

Sugg. Retail: \$15.95

Availability: 7

Disk or Tape: Both

OVERALL RATING	B	CONTROLLABILITY	B+	ERROR HANDLING	B
GAME CONCEPT	B	SKILL INVOLVED	C	DOCUMENTATION	B
CREATIVITY	C	CHALLENGE	B	HOLDS INTEREST	C+
GAME DEPTH	C	GRAPHICS	B+	VALUE FOR MONEY	B

Block Buster is a program that can help you solve the mixed-up Rubick's Cube that has been hiding in your desk drawer these last couple of months. Or, if you would like to solve a scrambled cube on screen, the computer will time your effort and keep track of the number of moves. The program is a good one in that it is the first to show the hidden three sides as an "exploded view" in the form of a mirror reflection. Other programs have always resorted to flipping the cube over to uncover the missing faces. The cube faces here are shown in six Hi-Res colors using a special display technique that makes the colors appear as if they are vibrating.

The program is very easy to use. Input can be by paddle, yellow console keys, or keyboard. The paddle and console keys move an arrow around the three front faces of the cube. Depressing the button or Start key briefly rotates the section of the cube 90 degrees. Direction can be changed by holding down the button or start key longer. Keyboard commands are a little more difficult since they require you to learn the notation devised in Douglas Hofstadter's article published in *Scientific American* called "Metamagical Themes." No matter which input system you use, the moves are displayed in that notation in a scrolling set of command lines at the bottom of the screen. This information can be sent to the line printer — a very helpful addition if you need the solution to your cube, and you don't wish to follow the on-screen solution a step at a time.

Inputting a cube to solve is easy. A movable cursor shows the current block position, and the color is toggled by paddle button or console keys. The program checks to see if the cube is legal before proceeding with a solution. A set algorithm (clearly outlined in the documentation) solves the cube. The program makes no attempt to determine if a cube has been rotated before proceeding with a solution. A typical solution of a cube scrambled twice took 236 moves in 4 minutes, 26 seconds. Speed isn't a concern because the computer could have solved it in 15 seconds if the display was off. The program can also solve two alternate patterns: the Checkers pattern and the Christmas Cross.

Rubik's Cube fans will like this program. Certainly users could work a cube on screen, but most will use it to solve scrambled cubes. I personally think it is more satisfying to manipulate a physical cube in your hands than on a TV screen (and it might be cheaper, too).

FOREST FIRE TWO

Company: Artworx

Language: BASIC

Hardware Requirements: 24K

Department: Entertainment

Sugg. Retail: \$20.95 disk / \$16.95 cassette

Availability: 3

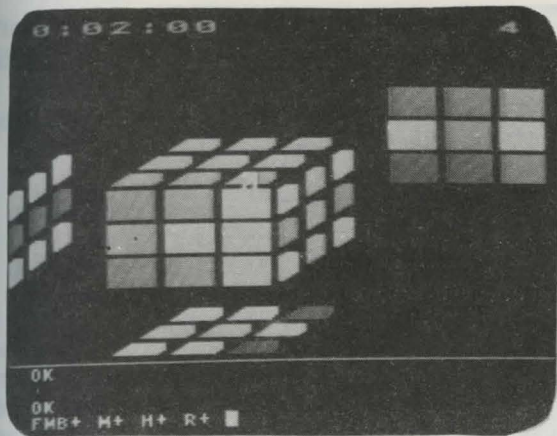
Disk or Tape: Both

OVERALL RATING	C	CONTROLLABILITY	C	ERROR HANDLING	B
GAME CONCEPT	C+	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	C+	HOLDS INTEREST?	C-
GAME DEPTH	C-	GRAPHICS	C	VALUE FOR MONEY	C

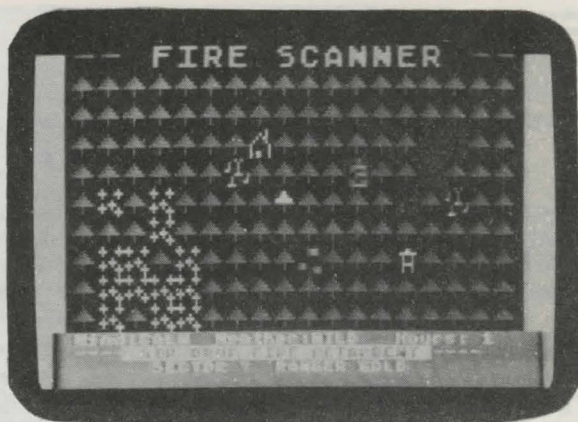
Forest Fire Two is a one or two player game in which the object is to contain forest fires started as a result of a severe thunder storm. You are located in an isolated forest lookout tower, in an area that contains a gasoline tank farm, your supply center, and the governor's estate. You have at your disposal three fire fighting crews and a fire scanner showing the status of your 20 mile wide fire district. This scanner reveals the severity of the fire throughout the terrain, and works with mode two (BASIC) character graphics. It indicates four intensity levels of the fire.

The three fire fighting crews consist of a unit capable of dropping fire retardant from a plane, a unit with heavy equipment capable of cutting a fire break, and one with shovels and backpack sprayers to hold the line against advancing fires. You position these three crews with a joystick. After their placement, the computer calculates prevailing weather conditions, the strength of the flames, the time the fire has already burnt, and your ability to contain it. It then displays these results on the next fire scan. When you have fully contained the fire, assuming you can stop it without losing your fire tower and landing strip, the computer shows the amount of damage and the winner (if two are playing).

Forest Fire Two is interesting to play, and has numerous difficulty levels. The graphics and documentation are fair to good for a game of this type. When two players are competing, the scanner moves from one player's fire to the other. Since the two opponents' fires start equally, it becomes intriguing to watch the differences develop between the two fires. The game has an educational element as well.



BLOCK BUSTER



FOREST FIRE II

SUPER CUBES and SLIP

Company: Thorn EMI
Language: Assembly
Hardware Requirements: 16K, cassette player.

Department: Entertainment
Sugg. Retail: \$29.95
Availability: 3
Disk or Tape: Tape

OVERALL RATING	D	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C+	DOCUMENTATION	C-
CREATIVITY	D	CHALLENGE	B	HOLDS INTEREST?	D
GAME DEPTH	D	GRAPHICS	C	VALUE FOR MONEY	D

Super Cubes and Slip is a package containing two separate programs. *Super Cubes* is a puzzle game, very similar to Rubik's cube except that the cube can vary from two blocks wide to four blocks wide. Once you choose the level of difficulty, the computer begins to scramble the cube. The object is for you to unscramble the cube by rotating the blocks on each side back to their original solid colors. Input is through the joystick. Moving the stick up and down moves an arrow to the appropriate layer to be moved, and moving the stick sideways makes the move. Pressing the joystick button turns the cube over to show the bottom three sides. This game is a puzzle for the user to solve, and will not solve cubes for you. While it might be an interesting diversion, manipulating a physical cube in your hand is more satisfying.

Slip is the old game of *Tilt*, in which you have to roll five balls into their appropriate holes by tilting a board on which they roll around. The board also has maze-like passages for added challenge. The computer version has various degrees of difficulty, timing your game until you succeed in putting them in their proper places. The notches are not very deep, so that tilting the board too much causes them to move out of their holes. The games are not worth more than several plays.

3-D TIC-TAC-TOE

Company: Atari, Inc.
Language: N/A
Hardware Requirements: 16K

Department: Entertainment
Sugg. Retail: \$24.95
Availability: 7
Disk or Tape: Cartridge

OVERALL RATING	C	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	B+	DOCUMENTATION	B
CREATIVITY	C-	CHALLENGE	B	HOLDS INTEREST	C-
GAME DEPTH	C-	GRAPHICS	C+	VALUE FOR MONEY	C-

3-D Tic-Tac-Toe is actually two games in one: "Tic-Tac-Toe" and "Bottom-up." Both games utilize a 4x4x4 grid which is represented on your screen by a perspective of four square boards, or planes. As opposed to the standard game, you must place 4, not 3, X's or O's in one horizontal, vertical, or diagonal row. You then must use one, or all four planes before your opponent in order to win. "Bottom-up" is simply a version of the game in which you must start at the bottom level or plane, and work your way to the top.

You may select to play against another opponent, or just yourself against the computer. The graphic display is very good to excellent. If you enjoy the standard game, this computerized implementation is highly recommended.

CROSSWORD MAGIC 2.0

Company: L & S Computerware
Language: Machine Language
Hardware Requirements: 40K, disk drive.

Department: Entertainment
Sugg. Retail: \$49.95
Availability: 5
Disk or Tape: Disk*

OVERALL RATING	A	EASE OF USE	A	ERROR HANDLING	A-
GAME CONCEPT	B	SKILL INVOLVED	N/A	DOCUMENTATION	B+
CREATIVITY	B	CHALLENGE	N/A	HOLDS INTEREST?	A-
GAME DEPTH	N/A	GRAPHICS	B+	VALUE FOR MONEY	B+

Crossword Magic 2.0 presents a fun way to create crossword puzzles. The puzzles that it creates from lists of words that you provide are of the British format, rather than the kind you are used to working in newspaper columns. These puzzles, lacking a tight interlocking symmetrical form, have many more black spaces because the words, although interconnected, are more strung out. The puzzle can range in size from a 3x3 square to a 20x20 square.

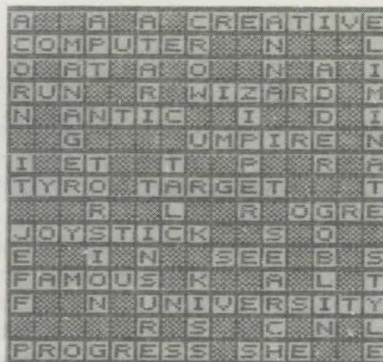
The package consists of a double sided disk: a maker program on one side and a player disk on the other. The process of making a puzzle is both interactive and creative. You can arbitrarily choose a theme, enter words one at a time, and watch the computer instantly insert the word in the puzzle. The puzzle can be a fixed size, or can be expanded to fit in new words. If the computer cannot use the word immediately, it stores the word for later use. Because the process is interactive, you can choose words as you go, either to connect to the chain of linked words or to bridge a gap. The computer is quite capable of filling in the letters for SPAN if the P and A were missing, or the P and N were missing. There is no guarantee, however, that the computer won't decide that SPAN should cross the word EGRESS instead. In this latest version, you can press the R key to Reposition the word for another possible fit, if one is available. You may also delete the last word should you make a mistake.

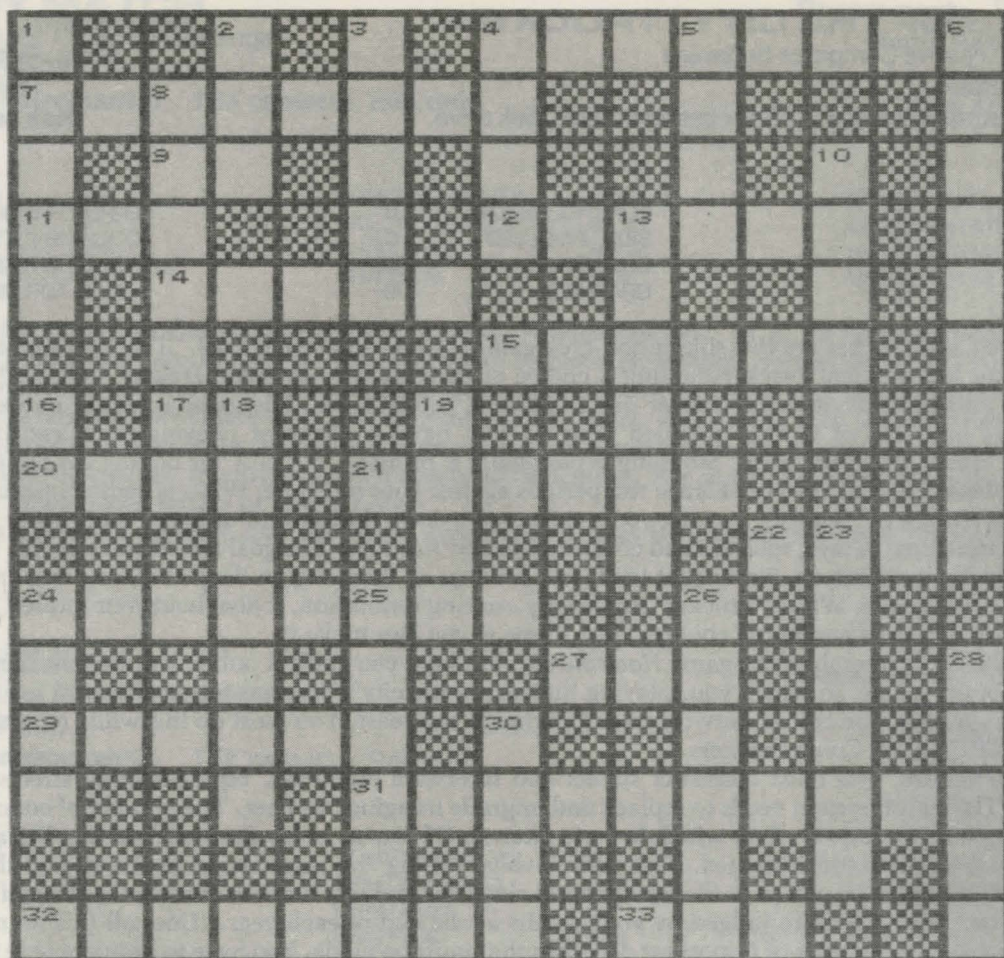
After you have inserted all the words in the puzzle, it's clue time. This is where children have the most fun. You may dream up strange or humorous clues, limited only by your imagination. When the clues are finished, the computer will step through them, enabling you to edit any errors.

Puzzles can be saved to either the maker disk, or to any other formatted storage disk for later play. They can also be dumped to any printer (supports 30 printers and 14 interface cards) that has graphics capabilities. The printout contains the blank puzzle, with clues listed below and the answers at the very bottom. The answers can be clipped before distributing for player solution.

The player disk allows you to solve a puzzle. Puzzles are first transferred to this disk from the master disk. You use the arrow keys for movement over the crossword pattern; the space bar toggles the direction. When the cursor is on any black or filled-in square, the clue is displayed. You can type the answers in, or correct any mistakes. The computer will keep track of your errors. If you finish, or choose to peek at a solution, the correct answer will be identified with inverse lettering, with the errors in normal lettering.

Crossword Magic is exceptionally easy to use, fast and suitable for both home and educational application of all levels; it seems particularly useful for children who rebel at any program which teaches verbal skills. The documentation includes a large section of tips and techniques for forming better puzzles. The program provides an attractive display and user interface, and without doubt is the best crossword puzzle program available. Considering the difficulty of the algorithm, it is an amazing feat in programming.





ACROSS CLUES

- 4. ORIGINATIVE
- 7. CALCULATOR
- 9. PREPOSITION
- 11. MOVE SWIFTLY
- 12. SORCERER
- 14. GRAPHICS CHIP
- 15. ARBITRATE
- 17. VCS CARTRIDGE
- 20. NOVICE
- 21. GOAL
- 22. MONSTER
- 24. CONTROL STICK
- 27. LOOK
- 29. RENOWNED
- 31. INSTITUTE OF LEARNING
- 32. ADVANCEMENT
- 33. PRONOUN

DOWN CLUES

- 1. OAK SEED
- 2. INCLINED
- 3. COMPUTER
- 4. BLACK BIRD
- 5. MONEY IN INDIA
- 6. REMOVE
- 8. BUSINESS LEADER
- 10. SNAKE
- 13. METAL FASTENER
- 16. INDEFINITE PRONOUN
- 18. ACT OF TWISTING
- 19. SOFT STONE
- 23. HAS BLACK BLOOD
- 24. EDITOR'S NICKNAME
- 25. GUARANTEE
- 26. SEEK
- 28. TYPE
- 30. TOUCH WITH LIPS

STREETS OF THE CITY/TRUCKER

Company: Creative Computer Software

Language: Basic

Hardware Requirements: 16K, cassette; 32K, disk drive.

Department: Entertainment

Sugg. Retail: \$24.95

Availability: 5

Disk or Tape: Both

OVERALL RATING	C-	CONTROLLABILITY	C	ERROR HANDLING	C
GAME CONCEPT	C	SKILL INVOLVED	C-	DOCUMENTATION	C-
CREATIVITY	C-	CHALLENGE	C+	HOLDS INTEREST?	D
GAME DEPTH	C	GRAPHICS	D	VALUE FOR MONEY	C-

Streets of the City/Trucker are two simulation-type games offered in one package. "Trucker" simulates a coast-to-coast trip by an independent trucker hauling a choice of three cargos: oranges, freight, or U.S. Mail. Each has different risks and rewards, and the trucker has a choice of three routes. The game is almost entirely in text.

As you drive each leg of the pre-planned journey, you have a choice of obeying the speed limit or resting periodically at one of the truck stops. Stopping occasionally is prudent, not only for buying gas but to avoid falling asleep at the wheel. But you have to balance rest periods against your schedule. While speeding may make up for lost time, there is a chance of "Smokie" writing you a ticket, or a crash during rain or foggy conditions. Then there are always those unplanned delays, such as road construction and flat tires. The goal is to make a profit. Sometimes this requires taking chances with an overweight load, fast driving, or skimping on sleep. Yes, you may not make it, but that is all part of the game. While "Trucker" isn't a very exciting simulation, it does hold your interest long enough to complete one or two trips across the country, just to see if you can make it.

"Streets of the City" resembles the game *Hammurabi*, but here you control public works rather than a city-state. It is primarily a text game, in which you, playing the part of the city's Transportation Director, are to improve the city's streets, highways, and transit network over a period of ten years. You must do this while retaining the support of a majority of the City Commissioners.

During your tenure, you must construct streets and interstate highways, repair existing streets, and improve traffic safety. The transit system needs to replace and upgrade its aging bus fleet. The number of commuters must be increased along with an improved on-schedule performance. Of course, every decision has its political implications. Revenues must be raised and allocated. This may involve raising the taxes levied in the city or the transit fare. Construction Bonds must be passed at the next general election. And city workers threaten to strike if their demands aren't met. Worst of all, you are judged by your results at the end of each year. (Does all this sound familiar?)

Each year there are a number of important decisions that must be made. You have to decide where the money is to be spent, and ways to raise the additional revenues needed to meet your goals without driving off commuters or offending the taxpayers and politicians. There is a definite cause-effect relationship in all choices, making the simulation very educational, if somewhat nerve-wracking.

THE MIDAS TOUCH

Company: Atari Program Exchange

Language: BASIC

Hardware Requirements: 32K disk and cassette

Department: Entertainment

Sugg. Retail: \$15.95

Availability: 8

Disk or Tape: Both

OVERALL RATING	C	CONTROLLABILITY	N/A	ERROR HANDLING	D+
GAME CONCEPT	C+	SKILL INVOLVED	C+	DOCUMENTATION	C-
CREATIVITY	C-	CHALLENGE	C	HOLDS INTEREST?	C+
GAME DEPTH	C	GRAPHICS	N/A	VALUE FOR MONEY	C+

The object of *Midas Touch* is to solve various hidden word puzzles. This is done by guessing single consonants, and accumulating money for successful responses.

From one to four can play *Midas Touch* by alternating turns. The time limit for each turn can also be set from 30 seconds, to a high of 240 seconds. There are four levels of difficulty in each of the two game types. In game one the hidden word or words are the solution, while in game two the blue is hidden. Each turn begins with the spin of the roulette-like wheel that sets the monetary value of the guessed letter. Incorrect letters mean less money, and a correct solution brings in 1,000 points.

The concept behind the game is simple, and at best provides a low level of entertainment for a competitive group.

MEMORY MATCH

Company: Atari Program Exchange

Language: BASIC

Hardware Requirements: 16K cassette, 24K disk

Department: Entertainment

Sugg. Retail: \$22.95

Availability: 8

Disk or Tape: Both

OVERALL RATING	D+	CONTROLLABILITY	N/A	ERROR HANDLING	D-
GAME CONCEPT	C-	SKILL INVOLVED	C	DOCUMENTATION	C-
CREATIVITY	D+	CHALLENGE	D+	HOLDS INTEREST?	D
GAME DEPTH	D	GRAPHICS	N/A	VALUE FOR MONEY	D+

Memory Match resembles the popular television game, "Concentration." In it, 42 numbered boxes appear on screen hiding 21 matching pairs of objects. The objects can be pictures, symbols, letters, or words. You are required to make a "memory match" between the numbered square and the correct object behind the number.

One to four players can participate with the computer taking names, and calling each for his or her turn. Scoring is kept by the number of turns taken in the one player version, or number of matches when more players are added.

The game's difficulty varies only by your own ability to remember. For some, it's easier to recognize symbols or pictures, while others recall letters or words faster.

The game is simple in concept and execution, and players tend to lose interest in it over extended play.

LOOKAHEAD

Company: Atari Program Exchange

Language: BASIC

Hardware Requirements: 16K cassette, 24K disk.

Department: Entertainment

Sugg. Retail: \$15.95

Availability: 8

Disk or Tape: Both

OVERALL RATING	C-	CONTROLLABILITY	C	ERROR HANDLING	D
GAME CONCEPT	C	SKILL INVOLVED	C+	DOCUMENTATION	C
CREATIVITY	D+	CHALLENGE	C	HOLDS INTEREST?	C
GAME DEPTH	D	GRAPHICS	N/A	VALUE FOR MONEY	C-

Lookahead is a one or two-player strategy game in which your choice of opponents is the computer or a friend. There are three difficulty levels in the game, ranging from easy to hard. The object is to move your man to the highest point total while forcing your opponent into a lower score. Rows of numbers are arranged vertically and horizontally on the screen. One of you must move only horizontally across a row, the other vertically. You obtain points by landing on your numbers, and "lookahead" to finish the game by landing on the last number in any column or row. The strategy comes in the later stages of the game when, if ahead, you try to end the game as quickly as possible, or if behind, you try to prolong it.

All in all, this one does not have the staying power to hold your interest for very long.

VALDEZ

Company: Dynacomp

Language: Atari BASIC

Hardware Requirements: 24K

Department: Entertainment

Sugg. Retail: \$17.95 cassette / \$21.95 disk

Availability: 4

Disk or Tape: Disk

OVERALL RATING	C-	EASE OF USE	D+	ERROR HANDLING	B
GAME CONCEPT	C+	SKILL INVOLVED	C	DOCUMENTATION	D+
CREATIVITY	C-	CHALLENGE	C+	HOLDS INTEREST	D+
GAME DEPTH	C	GRAPHICS	D+	VALUE FOR MONEY	C-

Valdez is a computer simulation where one navigates a super tanker through the straits of Valdez to the Alaskan Harbor in order to pick up crude oil. Using engine speed, rudder control, and a simulated radar screen, one maneuvers his ship through the narrow passages, past oncoming super tanker traffic, and floating icebergs. The simulation takes into account tidal flows, currents, and ship dynamics. The simulation is keyboard controlled and not in Real Time. The program should be reworked to use graphics screens, instead of using text characters to form the display map.

STOCKS AND BONDS

Company: Avalon Hill Game Co.
Language: Atari Basic
Hardware Requirements: 40K Atari, Joystick

Department: Entertainment
Sugg. Retail: \$25.00
Availability: 6
Disk or Tape: Disk

OVERALL RATING	C+	CONTROLLABILITY	C	ERROR HANDLING	A
GAME CONCEPT	B	SKILL INVOLVED	C	DOCUMENTATION	A
CREATIVITY	B+	CHALLENGE	C	HOLDS INTEREST?	C+
GAME DEPTH	C-	GRAPHICS	B	VALUE FOR MONEY	C+

Stocks and Bonds is a stock market simulation. Starting with \$5000 each, up to four players speculate in shares of ten investments. The investments range from municipal bonds to growth company stocks. The object is to accumulate the most money in ten investment sessions, simulating a ten year period. Each player enters data using a joystick.

Novel features of the game are the ability for all players to input data more or less simultaneously, charts showing the performance of each company as the game progresses, and a colorful ticker tape containing the current quotation for each stock.

This program is more successful as an educational program to teach investing than as a challenging game of investing and risk-taking. The ten types of investments appear to be well simulated, so that the player learns about the behavior of the different stocks. The program does not hold interest as a game, however, because the outcome does not seem to be strongly affected by the player's skill.

Two aspects of the program are annoyingly slow. The response of the cursor to the motions of the joystick is very ponderous. Also, a teletype simulation, which could be very effective, runs too slowly and so becomes boring. It does not seem to be a game suited for children, nor of really absorbing interest to adults.

BISHOP'S SQUARE/MAXWELL'S DEMON

Company: Datasoft
Language: Machine Language
Hardware Requirements: 48K, disk drive.

Department: Entertainment
Sugg. Retail: \$29.95
Availability: 3
Disk or Tape: Disk

OVERALL RATING	D	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	D+	SKILL INVOLVED	D	DOCUMENTATION	C-
CREATIVITY	D	CHALLENGE	C+	HOLDS INTEREST?	D-
GAME DEPTH	D	GRAPHICS	C	VALUE FOR MONEY	D

Bishop's Square consists of two programs. I hesitate to call them "games," since the second program, *Maxwell's Demon*, is a demonstration with which the user can interact, and the first is a puzzle.

The object of *Bishop's Square* is to allow the computer to take a Hi-Res picture, divide it into a number of smaller squares, scramble it, and have you rearrange it by shifting entire rows of columns until it is solved. The proper row or column to be moved is chosen by joystick, or keyboard control. The joystick button or Start key shifts the blocks with a wraparound feature. The Atari key will allow you to look at the original picture. Levels of difficulty range from dividing the picture into 4 squares up to 64 squares.

Maxwell's Demon illustrates the Second Law of Thermodynamics. It states that molecules of different mass, when mixed together, can not be separated without the help of a third party. Maxwell argued that these molecules could be separated if a demon sat at the gate of separation and allowed only molecules of a certain speed or density to pass. You play the demon, and try to separate the faster moving hydrogen molecules from the slower moving helium molecules by opening and closing a movable gate between the two chambers with a joystick. Both of these programs are fun to try once or twice, but neither has any lasting appeal.

MUSIC

MUSIC COMPOSER

Language: English
The book is written in English

Author: A
Editor: A
Publisher: A

Department: Music

Subject: Music
Availability: Available
Date of Issue: 1988

The book is written in English and is available in English. It is a book about music composition. The author is A. The editor is A. The publisher is A. The book is written in English and is available in English. It is a book about music composition. The author is A. The editor is A. The publisher is A.

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MUSIC

MUSIC COMPOSER

Company: Atari
Language: Machine
Hardware Requirements: 16K

Department: Entertainment
Sugg. Retail: \$39.95
Availability: 9
Disk or Tape: Cartridge

OVERALL RATING	B	EASE OF USE	B+	DOCUMENTATION	A-
CONCEPT	B	GRAPHICS	A-	HOLDS INTEREST	B
CREATIVITY	B+	ERROR HANDLING	B	VALUE FOR MONEY	B-

Atari's *Music Composer* is a ROM cartridge program designed to help you create and play music through Atari's built-in sound generating hardware. Notes are entered at the keyboard in the order: key, sharp or flat, octave, length of note. (So the form FS3Q would mean F sharp, octave 3, a quarter note.) The program covers a three octave range. Notes in the current measure are displayed on the screen using standard musical notation, and are played through the speaker on your television or monitor.

The user enters notes into one of ten phrases. Each of the four voices is assigned some combination of phrases to play. When setting up this voice information, the user can control volume, repeat a phrase, or transpose the phrase a specified number of half steps up or down. When the Listen option is selected, each of the four voices plays whatever phrases were selected for it. In addition, those notes being played by one of the voices are displayed on the screen. The sound quality is that of an inexpensive organ (although the use of three and four note chords can produce some rather impressive effects).

Phrases, voice information, or entire compositions can be saved to cassette or diskette. The documentation gives a detailed description of the data storage format, which makes it possible to manipulate music files with a BASIC or assembly program.

There are some problems with *Music Composer*, however. The tempo and volume adjustments are extremely coarse. One would wish for a greater degree of control here. In addition, tripled notes are not supported. This means that the user must generate a complex combination of tied notes to produce the same result. Also, there is no facility for copying all or part of a phrase. If two verses of a song are nearly identical, the user must manually duplicate the phrase. (This is one of the places where a short BASIC program can save a great deal of time.) Nor is there a way to play part of a composition. This makes correcting mistakes a much more time-consuming operation than it needs to be.

In addition to missing features, there are a few annoying bugs. The Check Measure routine, which prevents the user from entering a measure with an incorrect number of beats, does not always catch errors when the notes are initially entered. It's a good idea to run through the measures a second time. A second problem concerns measure deletion. When you delete the last note in a measure, the measure is deleted and all of the higher numbered measures are moved down one position. Unfortunately, the current measure number is incremented, which causes you to skip a measure. (For example, if you are on measure 42 and delete all of its notes, measure 43 becomes measure 42 in its place, 44 becomes 43, and so on. You are then sitting on new measure 43, which used to be measure 44. You will have skipped old measure 43.) If you need to delete a group of measures, be very careful, and keep a copy of the unmodified composition, just in case.

My biggest complaint concerns the diskette load routine, which is painfully slow. *Music Composer* can take several seconds to load each disk sector. A composition of twenty or more sectors may take nearly as much time to load as it does to play.

Despite these problems, *Music Composer* is well worth owning. It can be a great deal of fun to use. Its low memory requirements permit even the smallest system to play complex tunes. It's also a great way to impress those people who aren't excited by computer games.

ADVANCED MUSICSYSTEM

Company: Atari Program Exchange
Language: Atari BASIC & Machine
Hardware Requirements: 32K, disk drive

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 7

Disk or Tape: Disk

OVERALL RATING	A	EASE OF USE	A-	DOCUMENTATION	B+
CONCEPT	B+	GRAPHICS	B-	HOLDS INTEREST	A-
CREATIVITY	A-	ERROR HANDLING	A	VALUE FOR MONEY	A+

Advanced MusicSystem is a program for music generation. The user enters the notes to be played by each of the Atari's four voices, including volume information. The program remembers and displays the duration, octave, and volume of the last note entered. These values are used as the default settings for the next note you enter. This means that you enter new values for these settings only when a change is desired. Track is kept of the number of beats used in the current measure which are too short or too long.

The *Advanced MusicSystem* permits notes over a range of five and a half octaves. It also has a copy feature, which permits the duplication of previously entered notes or measures. In addition, it supports direct entry of most types of musical notation. It permits the user to indicate notes to be emphasized, and is at present the only system for the Atari which allows you to specify tripled notes.

The playback mode permits the playing of any group of measures by any combination of voices. During playback, the screen displays a piano keyboard. Each voice is assigned a color; and when a note is played by a particular voice, the key corresponding to that note takes the voice's color. This has the advantage of letting you see as well as hear what all four voices are doing. You can even use a paddle to vary the tempo of a piece while you are playing it.

The program is supplied with five sample Classical pieces. All are good demonstrations of the power of this system, which produces the most pleasing sound I have heard come out of an Atari computer. The documentation is both understandable and complete. But of course it does assume the user is reasonably familiar with musical notation and has some knowledge of musical theory.

The only complaint I have with this program concerns the speed of the note entry routine. Since this part of the system was written in Atari BASIC, and has a fair amount of validation and processing to perform, the response time is poor. To avoid problems with lost notes, the *Advanced MusicSystem* produces a clicking sound on the internal speaker when it is ready for another note. As long as you wait for this sound before typing, you should have no problems.

This is without question the best music package for the Atari home computer. With its wealth of features and the high quality of its sound, it is an excellent value. Highly recommended.

JUKEBOX #1

Company: APX
Language: BASIC
Hardware Requirements: 32K, disk drive.

Department: Entertainment

Sugg. Retail: \$15.95

Availability: 5

Disk or Tape: Disk

OVERALL RATING	A	EASE OF USE	A-	DOCUMENTATION	B+
CONCEPT	B+	GRAPHICS	B-	HOLDS INTEREST	A-
CREATIVITY	A-	ERROR HANDLING	A	VALUE FOR MONEY	A+

The *Advanced Music System* has become a showpiece of musical virtuosity. The author has now created a disk version that can play several classical selections. *Jukebox #1* contains eight classical pieces from such masters as Bach, Beethoven, and Tchaikovsky. Each of the pieces can be selected from an option menu, and graphically displayed on a five and one-half octave piano keyboard. Four colors, each corresponding to the Atari's four voices on the sound chip, indicate the notes.

The following musical selections are offered on this disk: *Overture to the Nutcracker*, by Tchaikovsky; *Flight of the Bumblebee*, by Rimski-Korsakov; *String Quartet in Eb*, by Mozart; *Brandenburg Concerto #5 in D*, *Well Tempered Clavier*, *Air on a G-String*, and *Fugue in C Minor*, by J. S. Bach; and *Fur Elise*, by Beethoven. Each can be played separately, or the entire collection can be played successively in the jukebox mode. The tempo can also be varied by paddle input.

The sound and graphics in this package are excellent. The selections were input using the *Advanced Music System*. It is obvious from listening to his error free pieces that the author is an expert in classical music. NOTE: The musical selections in this package cannot be modified by the *Advanced Music System* because the author used data compression techniques to squeeze this many selections onto disk.

NAME THAT SONG

Company: Quality Software

Language: Atari BASIC

Hardware Requirements: 24k disk; 16K cassette

Department: Entertainment

Sugg. Retail: \$17.95 disk / \$14.95 cassette

Availability: 7

Disk or Tape: Both

OVERALL RATING	C-	CONTROLLABILITY	B	ERROR HANDLING	C
GAME CONCEPT	C	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	C	CHALLENGE	C	HOLDS INTEREST?	C-
GAME DEPTH	C-	GRAPHICS	D	VALUE FOR MONEY	D

Name That Song is a two-player version of the television game show by the same name. In it, two players attempt to score points by identifying songs played by the computer. The first one to signal the program by pressing his joystick button (or a key on the keyboard), has the opportunity to name that song. The smaller the number of notes played before someone signals, the greater the number of points received. The first player to reach 50, 75, or 100 points (specified at the start of the game) wins.

There are two modes of play. The first requires that the title of the song be typed. You can take no liberties in the way you enter the title. Typing "Roll out the Barrel" instead of "Beer Barrel Polka," or "My Bonnie Lies over the Ocean" instead of "My Bonnie," will not get you any points. In the second mode, as soon as one of the players has signaled, four song titles are displayed on the screen. Select the correct title with joystick or keyboard to score.

Nothing about *Name That Song* is particularly novel or interesting. The music is generated using a single voice synthesizer, which gives it a harsh and unattractive sound. The display contains a limited amount of text, with no graphics to add life or interest. It's the sort of program that would have held more merit at a time when high quality software for the Atari was less prevalent than is the case today.

PLAYER PIANO

Company: Atari Program Exchange

Language: Atari BASIC

Hardware Requirements: 24K [cassette]
40K [diskette]

Department: Entertainment

Sugg. Retail: \$22.95

Availability: 5

Disk or Tape: Both

OVERALL RATING	D	EASE OF USE	C	DOCUMENTATION	B
CONCEPT	C	GRAPHICS	D	HOLDS INTEREST	F
CREATIVITY	C	ERROR HANDLING	B-	VALUE FOR MONEY	C-

Player Piano turns an Atari computer into a very simple piano. A picture of a truncated piano keyboard is drawn on the screen. Above each white key is the name of the corresponding note; below each black and white key is the letter or symbol on the computer keyboard which will produce that tone.

The program may be used in either of two modes. In its standard piano mode, each key you strike will generate a tone. This tone will be held until you hit the next key, which gives you the ability to "play" your computer, one note at a time.

The second mode permits tunes to be saved, and then played. You enter a note as above, and then enter a duration for that note. This duration is in terms of some internal time, which means that a change to the tempo of a tune requires a re-entry of *every* note.

Note that editing is possible but difficult. Deletion of a note is not possible, nor is insertion into the middle of a composition. The note change routine is not designed to change more than one note at a time. There is no command to clear memory in order to start a new tune.

The limitations of *Player Piano* are common to both modes. The user is limited to a single voice playing one note at a time. No attempt has been made to manipulate the tone generated by the Atari, which tends to be rather harsh. There is no facility for adjusting the volume. The graphics, which consist of the aforementioned keyboard and a treble clef which marks the note being played, are very uninteresting.

The disk version contains two sample songs: "Happy Birthday" and "Take Me Out To The Ball Game." Either one clearly shows the limitations of this program.

PERSONAL ENTERTAINMENT

PERSONAL FITNESS PROGRAM

Department: **PERSONAL FITNESS**
 Language: **ENGLISH**
 Course: **PERSONAL FITNESS**
 Level: **LEVEL 1**

The Personal Fitness Program is designed to help you achieve your fitness goals. It includes a variety of exercises and activities that can be done at home or in a gym. The program is suitable for all ages and fitness levels. It is a fun and effective way to stay healthy and active.

The program consists of several components:

- Cardiovascular Exercises:** These exercises help improve your heart and lung health. Examples include walking, jogging, and swimming.
- Strength Training:** This helps build muscle and increase your metabolism. Exercises include squats, lunges, and push-ups.
- Flexibility Exercises:** These help improve your range of motion and prevent injuries. Examples include stretching and yoga.
- Balance Exercises:** These help improve your balance and coordination. Examples include standing on one foot and heel walking.

The program is designed to be flexible and can be adapted to your schedule and preferences. It is a great way to stay active and healthy.

Department: **PERSONAL FITNESS**
 Language: **ENGLISH**
 Course: **PERSONAL FITNESS**
 Level: **LEVEL 1**



BIOLOGY

Department: **BIOLOGY**
 Language: **ENGLISH**
 Course: **BIOLOGY**
 Level: **LEVEL 1**

The Biology program is designed to help you understand the living world. It covers topics such as cells, tissues, and the human body. The program is suitable for all ages and fitness levels. It is a fun and effective way to learn about the natural world.

BIOLOGY

PERSONAL ENTERTAINMENT

PERSONAL FITNESS PROGRAM

Company: Atari APX

Language: Atari Basic

Hardware Requirements: 24K Atari 800, disk drive,

Department: Entertainment

Sugg. Retail: \$22.95

Availability: 6

Disk or Tape: Disk

OVERALL RATING **A**
USEFULNESS **A**
VENDOR SUPPORT **C**

DOCUMENTATION **A**
VISUAL APPEAL **A**
EASE OF USE **A-**

RELIABILITY **A-**
ERROR HANDLING **A-**

Move over, Jack LaLanne! With your Atari computer and this program, you'll be whipped into shape in no time. (Well, actually, assume a couple of months, and then maintenance thereafter.)

Seriously, this package represents a pretty good, if lightweight fitness program, not to mention a healthier use of your Atari than spending all those indolent hours playing games. The program will first ask you for information concerning your age, sex, and heart rate in order to make a determination of your current fitness level. (You must take your own pulse relaxed and then after some warm-ups.) The program will then adjust its 8-exercise cycle to accommodate that level.

Exercise sessions are designed to last from 15 to 30 minutes, depending on your speed and the number of exercise repetitions. The eight basic exercises required are: (1) overhead stretch; (2) jumping jacks; (3) sit-ups; (4) hip lifts; (5) push-ups; (6) trunk twisters; (7) running in place; and (8), toe touches. These routines are much in the order of "limber up" exercises. But if followed at least every other day they will greatly improve stamina and muscle tone.

You cannot input different exercises as you progress, only change the speed of the routines. You will be gradually required to perform more repetitions of these exercises and increase your pace. Graphics are very good with this package, providing a sort of mechanical exercise companion on screen, a tireless figure who shows you how to perform the required exercise. You may adjust the speed at which the figure does the exercises according to your level.

The program will also store and report to you on a daily and weekly basis (up to 30 weeks) the rate of your improvements, measured primarily through heart rate at rest and after exercise.

As with any exercise plan, you only benefit to the extent that you consistently invest the effort. But this program, which isn't too time-consuming or a terrible strain, makes it attractive to follow through with exercises and provides a regular measurement of your progress as an added incentive. All it seems to lack is music to exercise by.

BIORHYTHM

Company: Atari Inc.

Language: Atari BASIC

Hardware Requirements: 16K, cassette player.

Department: Entertainment

Sugg. Retail: \$14.95

Availability: 8

Disk or Tape: Cassette

OVERALL RATING **C**
USEFULNESS **C**
VENDOR SUPPORT **B+**

DOCUMENTATION **B**
VISUAL APPEAL **C+**
EASE OF USE **C**

RELIABILITY **A**
ERROR HANDLING **A**
VALUE FOR MONEY **B**

Biorhythm is one of those programs that will only be of interest to you if you believe in its concept. As for this particular program, it will indeed chart your physical, emotional, and intellectual cycles. The graphics are ordinary, but adequate. A nice option is the ability to print out your biorhythm. Another nice feature is the concise explanation provided of biorhythm theory, both on audio and on screen. But unless you are an advocate of biorhythm theory, this program will only be of passing interest.

ASTROLOGY

Company: APX

Language: BASIC

Hardware Requirements: 40K; disk drive.

Department: Entertainment

Sugg. Retail: \$22.95

Availability: 3

Disk or Tape: Disk

OVERALL RATING **B**
 USEFULNESS **B-**
 VENDOR SUPPORT **C**

DOCUMENTATION **B**
 VISUAL APPEAL **B-**
 EASE OF USE **A**

RELIABILITY **B+**
 ERROR HANDLING **A-**
 VALUE FOR MONEY **C+**

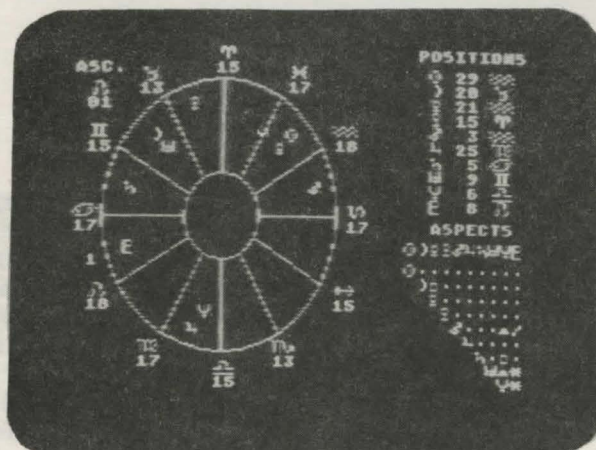
Astrology programs define the mathematical relationships and patterns of planetary bodies in our solar system at the time of one's birth. Its premise is that there is a connection between planetary locations at birth and the way in which an individual's life unfolds. Why there should be such a connection is unknown. But several astrologers have proven statistically, through the charts of successful doctors, scientists, artists, sports figures, soldiers, business executives and politicians, that the location of Jupiter, Mars, Saturn and the moon were not randomly positioned at birth. While this does not prove astrology works, it is something more serious than the "stuff" you see in daily newspaper columns.

Being essentially mathematical in nature, astrology lends itself ideally to the computer. *Astrology* can calculate a natal chart at one's birth accurately to within one degree for any individual born since 1900. All that is required is the date and time of birth, plus the geographical coordinates of the place of birth. Since the latitude and longitude generally need to be looked up in an atlas, the authors have provided an alternative method. A map either of the United States or the world is displayed. The user can move a cursor around the map to locate his or her birthplace with the keyboard's arrow keys. When it is found, the return key is pressed and the computer automatically enters that position as the coordinates. Likewise, where the input of the correct time zone might be troublesome, this program simplifies input with a table of American and European time zones for both standard and daylight savings times.

The circular natal chart is plotted in Hi-Res detail using the standard astrological symbols and conventions. A redefined character set is implemented. This chart shows the sun, moon, and planets as they appear in the twelve astrological houses along the zodiac at the time of one's birth. The symbols of the zodiac appear on the lines (cusps) between each house. Each of the planets appear in the proper house, and the Ascendent (house that was rising at birth) is displayed at the upper left corner. The exact positions to the nearest degree for all solar system objects are tabulated at the upper left of the screen. The program also generates a chart of all strong planetary aspects. This takes into account whether two planetary objects are in conjunction or opposition to each other. This is quite important in astrological interpretation.

Astrology does very little to interpret one's chart. The documentation includes several lists of attributes associated with each planetary object as it appears in each house. But since proper interpretation requires you to consider both the good and bad aspects, it is best to consult one of the astrological reference books.

Astrology is a nicely implemented program. It is very easy to use, quite suitable for the amateur. Screens can be saved to disk and later printed out on a line printer (with graphics, if one owns a screen dump utility). Its accuracy, which is within one degree, is fine for amateur use, but probably not suitable for professional astrologers, who prefer to generate charts to the nearest minute.



ASTROLOGY

PERSONAL ENTERTAINMENT PROGRAM
 Department: ...
 Sugg. Retail: ...
 Availability: ...
 Disk or Tape: ...

The text in this section is extremely faint and largely illegible. It appears to be a detailed description or review of a program, possibly related to the 'PERSONAL ENTERTAINMENT PROGRAM' mentioned in the header. The text is arranged in several paragraphs, but the specific content cannot be discerned due to the low contrast and blurriness of the scan.

PERSONAL ENTERTAINMENT
 Department: ...
 Sugg. Retail: ...
 Availability: ...
 Disk or Tape: ...

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Department: ...
 Sugg. Retail: ...
 Availability: ...
 Disk or Tape: ...

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MISCELLANEOUS ENTERTAINMENT

TRIVIA TREK

Company: Swifty Software

Language: Basic

Hardware Requirements: 32K, disk drive.

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 5

Disk or Tape: Disk

OVERALL RATING	C	CONTROLLABILITY	B	ERROR HANDLING	B
GAME CONCEPT	C-	SKILL INVOLVED	N/A	DOCUMENTATION	C
CREATIVITY	N/A	CHALLENGE	N/A	HOLDS INTEREST?	D+
GAME DEPTH	C-	GRAPHICS	N/A	VALUE FOR MONEY	C-

Trivia Trek is a multiple choice trivia test for one or, preferably, two players. Each test consists of 10 questions pertaining to a particular subject. Each question has four possible answers. If the player answers correctly, he scores 10 points; otherwise his opponent gets a chance to answer for five points. In the one player game, the second choice is worth five points if correct.

Trivia is defined as inconsequential facts about things. The program comes with a full disk of 50 different subjects, including: pop music, antiques, phobias, baseball, shopping, body language, dying, movie stars, and inventors. Can you name the person who invented condensed milk? Or do you know that 41% of shoppers carry a shopping list? Some of the questions, and their answers, are amusing. For example: What do most people do while sitting on the toilet? (1) smoke, (2) count tiles, (3) sing, (4) read.

Once you have tried all of the categories, it is time to create a trivia test. Each test consists of ten questions each with four answers. Each question can be 70 characters long, and the answers up to 20 characters apiece. Atari full screen editing is supported. The files are saved to a DOS compatible data disk.

The program is suitable for entertainment at small parties, or for a diversion on a rainy evening. The program is easy to use: input is entirely controlled by joystick. What is surprising about the program is the unnecessary amount of disk access required to load each question. Memory shouldn't be a problem, since each question only requires 150 characters or bytes. Ten questions need only 1,500 bytes. Finally, the buyer should be aware that programs of this type remain useful only if new questions are always added. Once you have seen the test questions, you don't try them again.

MAR TESORO

Company: Synchro

Language: BASIC

Hardware Requirements: 32K, disk; 24K, cassette.

Department: Entertainment

Sugg. Retail: \$24.95 Disk / \$19.95 Cassette

Availability: 6

Disk or Tape: Both

OVERALL RATING	C+	CONTROLLABILITY	B	ERROR HANDLING	B
GAME CONCEPT	C+	SKILL INVOLVED	C+	DOCUMENTATION	B-
CREATIVITY	C-	CHALLENGE	C-	HOLDS INTEREST	B
GAME DEPTH	C-	GRAPHICS	C	VALUE FOR MONEY	B-

Although I find little depth to this game, I am amazed at the way this little treasure hunt captivates so many players to the point of addiction. It is a family game, non-violent, relaxing, and one that doesn't require fast reflexes.

Mar Tesoro is a treasure hunt game. You start with \$10,000, and with this amount you must hire a boat, select diving equipment, and crew members. You are then greeted with a Lo-Res display of an island and surrounding water, and it is your goal to discover the sunken treasure. Be sure to return to port before your time is up on your rented boat, or the game is over. However, you can cash in any treasure and use this to rent the boat for a longer period of time.

Unfortunately the screen changes to a view of your joystick controlled diver in his gear. The display here is in higher resolution redesigned character set graphics. The more expensive your gear, the deeper you can go. Once on the ocean floor you begin searching for treasure. Be careful to avoid sharks and giant clams. If you run out of money you can still get a loan from the loan sharks (if you don't pay them back, they break your legs) — a clever and fun way to make a killing.

PRESCHOOL GAMES

Company: Atari Program Exchange
Language: BASIC
Hardware Requirements: 16K, disk drive.

Department: Entertainment

Sugg. Retail: \$15.95

Availability: 7

Disk or Tape: Disk

OVERALL RATING	B-	CONTROLLABILITY	B	ERROR HANDLING	A-
GAME CONCEPT	C	SKILL INVOLVED	B	DOCUMENTATION	A+
CREATIVITY	B	CHALLENGE	C	HOLDS INTEREST?	B
GAME DEPTH	C	GRAPHICS	C	VALUE FOR MONEY	C-

Preschool Games is a set of 8 very simple games recommended for children 3 to 6 years of age. The games include "Tic-Tac-Toe," "Musical Chairs," "Touch-Me," "Battleship" and others. To play these games the players must use the Atari keyboard controllers.

The games are written in graphics mode 4, and use very little graphics within the programs. The game concepts are simple and easy for young children to comprehend. For example: "Musical Chairs" displays nine multicolored asterisks, and plays a simple tune. When the music stops, one asterisk turns into a small square and the children compete to try and locate on their individual keyboard the corresponding number. The computer waits patiently until a correct number is pressed.

After only a few minutes of parental instructions, the children can master the strategy needed. Unfortunately, because of the the lack of entertaining graphics, and of a running tally in all but "Counting," the child could lose interest in the games after only a few short attempts. Overall, the games are very simple and, although not of good quality, should give the child a good learning experience. It introduces youngsters to the use of the computer keyboard, which is useful, and so can be considered to have some educational value as well.

VIDEO EASEL

Company: Atari
Language: Machine
Hardware Requirements: 16K; joystick recommended.

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 8

Disk or Tape: Cartridge

OVERALL RATING	D	EASE OF USE	B	ERROR HANDLING	B+
GAME CONCEPT	N/A	SKILL INVOLVED	N/A	DOCUMENTATION	B
CREATIVITY	C-	CHALLENGE	N/A	HOLDS INTEREST?	D+
GAME DEPTH	N/A	GRAPHICS	C	VALUE FOR MONEY	D

Video Easel is an introduction to computer art. While its features are rather simplistic by today's standards, you have to remember that this cartridge was introduced three years ago, when nothing else was available. The program consists of two drawing modes, a preprogrammed painting mode that automatically operates six different kaleidoscope-type patterns, and Conway's game, "Life."

Both drawing modes can be accessed from the menu. Using the regular DRAW command you can guide a cursor about the Hi-Res screen. The cursor draws a colored line when it is depressed. There is no choice of colors, nor any features for filling color or automatically making geometric shapes. QUAD DRAWING is similar, except that four lines are drawn in a symmetric pattern.

Actually, the only interesting feature of this cartridge is Conway's game, "Life". "Life" is not a game in the usual sense, for in it there are no opponents or strategies. Rather, it is a simulation of cellular growth and evolution. You create a pattern (or colony), then observe the computer generate symbolic patterns representing the life and death patterns of the colony for each generation. Each successive generations of a colony are reproduced according to the following rules: any organism with 2 or 3 neighbors survives to the next generation; but an organism with 4 or more neighbors dies from overcrowding. Likewise, an organism with one or no neighbors dies from isolation. Each empty space (cell) with exactly 3 neighbors has a birth in the next generation. The "game" continues until either all cells have died or the colony reaches a stable configuration. The user can place many of the standard shapes (Big X, I Beam, Factory, Glider, Diagonal, Line) in positions on the screen, then watch them evolve in colorful stained-glass patterns.

While the cartridge is easy to use, it is certainly not a very comprehensive drawing program, even for beginners. If the cartridge didn't include "Life," it would hold little interest.

KALEIDOSCOPE

Company: Artworx

Language: Machine

Hardware Requirements: 16K; disk drive or cassette player.

Department: Entertainment

Sugg. Retail: \$14.95 cass./\$18.95 disk

Availability: 2

Disk or Tape: Both

OVERALL RATING	D	CONTROLLABILITY	C-	ERROR HANDLING	C+
GAME CONCEPT	N/A	SKILL INVOLVED	N/A	DOCUMENTATION	C
CREATIVITY	N/A	CHALLENGE	N/A	HOLDS INTEREST?	D
GAME DEPTH	N/A	GRAPHICS	C	VALUE FOR MONEY	D

Kaleidoscope is a machine language program that generates kaleidoscope designs on the screen in ever-changing patterns. These patterns are generated by nine user-defined parameters. While the program can design some interesting patterns, the very symmetrical nature of the display in both the horizontal and vertical axis begins to wear thin on the viewer all too quickly.

BUSINESS

ABUSE

Company: Don't Ask Software

Language: Machine

Hardware Requirements: 40K, disk drive.

Department: Entertainment

Sugg. Retail: \$19.95

Availability: 2

Disk or Tape: Disk*

OVERALL RATING	C-	CONTROLLABILITY	B	ERROR HANDLING	B
GAME CONCEPT	C	SKILL INVOLVED	N/A	DOCUMENTATION	C
CREATIVITY	B	CHALLENGE	N/A	VALUE FOR MONEY	C
GAME DEPTH	N/A	GRAPHICS	N/A	HOLDS INTEREST?	C-

Abuse essentially offers a program that allows the user to trade insults with the computer. It has its roots in the program *Eliza*, where the computer responds to your input as if it were a psychiatrist. The computer acts on key words in any input sequence, and attempts to top your last insult. It even tends to be obnoxious, keeping at you if you ignore it. While most of its insults appear to be random, occasionally it produces a clever put down.

I'm not sure how to rate a program like *Abuse*. Certainly one man's pleasure is another man's poison. I've talked to some people who enjoy the program and others who hate it. Those who hate it become bored with it after five minutes, while those who like it will trade insults with the computer for hours. It certainly will relieve frustrations if you've had an altercation with your micro.

TERRY

Company: Atari Program Exchange

Language: BASIC

Hardware Requirements: 32K; disk drive or cassette.

Department: Entertainment

Sugg. Retail: \$15.95

Availability: 5

Disk or Tape: Both

OVERALL RATING	D	CONTROLLABILITY	D-	ERROR HANDLING	C-
GAME CONCEPT	D+	SKILL INVOLVED	F	DOCUMENTATION	C
CREATIVITY	C-	CHALLENGE	D-	HOLDS INTEREST?	D-
GAME DEPTH	D-	GRAPHICS	N/A	VALUE FOR MONEY	D-

Terry is an Artificial Intelligence-oriented program designed with the idea of carrying on an intelligent conversation, in an "analyst" setting, via keyboard inputs and screen responses. It touches lightly on intelligence, and heavily on artificial.

The author's comments indicate that it is livelier than the well known program of the same type, *Eliza*. But neither program is very well done. The answers to keyboard input are clever the first time, if you don't get into more than four word sentences, but they rapidly become boring after a short time or inappropriate for complicated input. That it was created for ten year olds and up may give you some idea of its repartee.

It might be well received at a cocktail party after inputting a few libations. But I think the money would be better spent on other programs, such as Texas Instruments' *Speak-N-Spell*.

Department of
 2175
 2175
 2175

10K disk drive or cassette player
 10K disk drive or cassette player
 10K disk drive or cassette player

ERROR HANDLING
 DOCUMENTATION
 VALUE FOR MONEY
 HOLD INTEREST

CONTROLABILITY
 SKILL INVOLVED
 CHALLENGE
 GRAPHICS

RISK RATING
 RISK RATING
 RISK RATING

This is a machine language program that generates a laboratory dataset on the screen in your computer. The program is controlled by nine user-defined parameters. Within the program you define some of the parameters, the very symmetrical nature of the display in both the horizontal and vertical directions.

The program is written in BASIC and runs on an IBM PC or compatible system. It is a simple program for you to modify. The program is written in BASIC and runs on an IBM PC or compatible system. It is a simple program for you to modify.

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5	ERROR HANDLING	5	CONTROLABILITY	5	RISK RATING
5	DOCUMENTATION	5	SKILL INVOLVED	5	RISK RATING
5	VALUE FOR MONEY	5	CHALLENGE	5	RISK RATING
5	HOLD INTEREST	5	GRAPHICS	5	RISK RATING

This program essentially offers a program that allows the user to trade hands with the computer. It has its roots in the... The program is written in BASIC and runs on an IBM PC or compatible system. It is a simple program for you to modify.

5	ERROR HANDLING	5	CONTROLABILITY	5	RISK RATING
5	DOCUMENTATION	5	SKILL INVOLVED	5	RISK RATING
5	VALUE FOR MONEY	5	CHALLENGE	5	RISK RATING
5	HOLD INTEREST	5	GRAPHICS	5	RISK RATING

This program is written in BASIC and runs on an IBM PC or compatible system. It is a simple program for you to modify. The program is written in BASIC and runs on an IBM PC or compatible system. It is a simple program for you to modify.

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BUSINESS

BUSINESS

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BUSINESS

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182	BOOKING
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190	BOOK PROCESSING
202	DATA BASE MANAGEMENT SYSTEMS
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BUSINESS

As you read this section of *The Book*, it will be readily apparent that business programs designed to run on the Atari computer are few and far between. This dearth of quality business software for the Atari computer (specifically, the Atari 800) is even more dramatically apparent when compared to the availability of business software for the Apple II computer, which is commonly accepted as the biggest competitor of the Atari 800.

On the face of it, there appears to be no good reason for this to be the case. Functionally, the two computers are quite similar. The Apple II does allow a 40 character screen, rather than Atari's 32 character capability; and Apple disk drives do store a bit more, and can be accessed a little more quickly. However, these rather minor differences can hardly be the cause for the Apple to have hundreds of "practical" programs available for it, while "practical" programs number only a few dozen for the Atari.

The real reason for this situation can probably be attributed to Atari, Inc. itself rather than to any of the inherent capabilities or limitations of the Atari 800. It seems obvious that somewhere along the line Atari, Inc. decided to promote and merchandise their computers as "home" machines. There is no doubt that their marketing strategy has succeeded. Atari is indeed the dominant force in the home market. The Atari VCS is at present *the* home entertainment machine. Unfortunately, in our opinion, this "game" mentality has carried over into the Atari 400/800 market. While indeed these computers are excellent entertainment and educational machines, it's time to recognize that they can be as useful and perform as well as an Apple II in terms of general purpose computers.

If you, as an Atari 400 or 800 owner, feel as we do that more practical software should be available for your computer, then do something about it. Write to Atari requesting software in areas of interest to you. Write to software publishers that have programs you like but at present will only run on other machines. Let them know of your interest in an Atari version of their product. Or, if you like, write to us and we'll forward your comment to those vendors whom we think will make best use of your suggestions.

It will be very interesting to see what new products will make a significant impact on the Atari market during the next year. New disk drives that are both faster and can store more data are just beginning to appear. Eighty column boards and larger memory boards that have been on the market for some time are opening the way for the production of more sophisticated software. New and better software alone might make the coming year a significant one.

Perhaps the best news is the advent of the Atari 800's big brother, "The Atari 1200XL." It is a 64K machine that is completely software-compatible with the older machines. It is a sleek and stylish machine done in earth tones; it has one cartridge slot, and joystick ports placed on the side. All cables connect in the rear of the machine. A strip of recessed Function Keys are placed above the keyboard. In addition to the standard four function keys are four user-programmable keys. They default to one button cursor control for homing the screen to any corner, toggle the keyboard on/off, and turn the display off (for added speed). Users will notice immediately on power up that the memo pad has been replaced with a Help key that can perform machine diagnostics. All this is available at a slightly higher price than the Atari 800, and it looks to be a very exciting upgrade to the Atari product line.

BUSINESS

If you read this section of the book, it will be readily apparent that business programs are not on the Atari computer are few and far between. The dearth of quality business programs for the Atari computer (especially, the Atari 800) is even more dramatically apparent when compared to the availability of business software for the Apple II computer, which is almost always accepted as the biggest competitor of the Atari 800.

On the face of it, there appears to be no good reason for this to be the case. Functionally, the two computers are quite similar. The Apple II does allow a 30 character screen, rather than the 23 character capability of the Atari 800, and Apple disk drives do have a bit more, and can be accessed a bit more quickly. However, there are other differences that can hardly be the cause for the Apple's preponderance of "practical" programs available for it, while "practical" programs number only a few dozen for the Atari.

The real reason for this situation can probably be attributed to what, in fact, is not the case. The Atari 800 is not an inherent competitor or limitation of the Atari 800. It is a more advanced computer, but one that the line Atari has decided to promote and market as a "business" computer. There is no doubt that their marketing strategy has succeeded. Atari is not the only company in the home market. The Atari VCS is at present the more prominent name. Unfortunately, in our opinion, the "game" mentality has carried over into the Atari 800 market. While indeed there are excellent entertainment and educational programs available, it is time to recognize that they can be as useful and perform as well as an Apple II in a general purpose computer.

If you are an Atari 800 or 800 owner, feel as we do that more practical software should be available for your computer, then do something about it. Write to Atari requesting software in the form of letters to you. Write to software publishers that have programs you like but at present only on other machines. Let them know of your interest in an Atari version of their product. Or, if you like, write to us and we'll forward your comment to those vendors whom we will make best use of your suggestions.

It will be very interesting to see what new products will make a significant impact on the Atari 800 during the next year. New disk drives that are both faster and can store more data are just beginning to appear. Eighty column boards and larger memory boards that have been on the drawing boards for some time are opening the way for the production of more sophisticated software and better software alone might make the coming year a significant one.

Among the best news is the advent of the Atari 800's big brother, "The Atari 1300X". It is a machine that is completely software-compatible with the other machines. It is a sleek and fast machine done in earth tones; it has one cartridge slot, and cartridge ports placed on the side. Cartridges connect in the rear of the machine. A strip of recessed function keys are placed above the keyboard. In addition to the standard four function keys are four user-programmable keys. By default, one button control for holding the screen in any corner, toggle the screen on/off, and turn the display off (or added speed). Users will notice immediately on how up that the mouse pad has been replaced with a Help key that can perform machine functions. All this is available at a slightly higher price than the Atari 800, and it looks to be a cutting upgrade to the Atari product line.

GENERAL BUSINESS

HOW TO CHOOSE BUSINESS SOFTWARE

The first priority to consider when choosing business or professional software is to do your homework. This necessitates that you sit down and carefully evaluate your requirements before visiting your local computer store and/or calling on software houses. If you are looking for general accounting software, some questions you might ask yourself might be:

- (1) In a general ledger system, how many chart-of-accounts must I have?
- (2) How many transactions a month are necessary?
- (3) If you need billing, does the program generate invoices as well as statements?
- (4) How many invoices or statements do you produce in a month? How many a year from now?
- (5) How many checks do you write per month (Accounts Payable)?
- (6) If a payroll package is required — does the program handle state and local taxes? How many employees? Maximum number of deductions? Voided checks handling? Print modification allowable for pre-formatted checks?

This is just a very rough idea of the preparation you should do in understanding your own needs. And, unless you do analyze and comprehend your requirements, you have very little chance of selecting the appropriate software for your needs.

The next step is visit your local computer store and ask questions based on the homework that you've done. If by chance your local store does not carry any of the major brands or cannot reasonably answer your questions, do yourself a favor and go to another store. If they can't help you before the sale, how much support do you think you will get after the sale?

Assuming that your local dealer has recommended a program to fit your needs, take a look at the manual — is it easy to follow? Are the instructions clear?

One highly recommended task to perform before actually making your purchase is to call the company that publishes the software in which you are interested. As you may know, there are some software companies that cannot be reached by phone. That augurs well for support, doesn't it? When you call the company, ask a couple of questions that may not have been covered in your visit to the dealer. Ask about their back-up disk policy. Find out about updates. Most importantly, find out who to talk to should you have a problem your dealer can't solve. Remember, no matter how good the package might look to you superficially, it's worthless unless it is supported.

Remember, however, as an end user of a product, you also have certain responsibilities. Before complaining to a software vendor about a problem, be sure that the problem is not your lack of familiarity with your equipment. Be sure that you have read your Atari manuals and know how to use your machine, how to initialize disks, make copies, and operate your printer. Also, read thoroughly the manual that accompanies the software that you've purchased. If you do have a problem, remember to write down exactly what you were doing when the problem occurred, as well as any error message that might have appeared on your screen. Lastly, *always* make disk or tape copies of your data. If something happens and you have to re-do a lot of information because you have no back-up copy, it's back to the drawing board as a part of your responsibility in assuming that Murphy's Law ("If anything can go wrong, it will.") is a myth.

THE BOOKKEEPER

Company: Atari, Inc.

Language: BASIC

Hardware Requirements: 32K, disk drive.

Department: Business

Sugg. Retail: \$149.95

Availability: 6

Disk or Tape: Disk

OVERALL RATING **A**
EASE OF USE **B+**
VENDOR SUPPORT **B+**

DOCUMENTATION **A**
VALUE FOR MONEY **A**
VISUAL APPEAL **A**

RELIABILITY **A**
ERROR HANDLING **A**

When a discussion centers on accounting or bookkeeping, the four major areas of discussion most often are: general ledger, accounts receivable, accounts payable, and payroll.

A general ledger may be briefly defined as a series of reports or records that shows the current overall financial picture of a business. Information relating to sales, monies spent, and monies received are entered into a general ledger journal. At the end of a set period, usually a month, this information is used to produce a number of reports. The two most important of these reports are a profit and loss statement, and a balance sheet. The profit and loss statement shows, for the period covered, the total sales or revenues, and the costs associated with production which, when subtracted, yields the gross profit. After gross profit, a list of expenses, such as salaries and advertising, is then subtracted leaving the net profit or loss for that period. The balance sheet then shows the sum total of the current and long term assets and liabilities of the business. Accounts receivable records who owes you money. A full (A/R) program tells you the duration of the loan. Accounts payable presents the situation in reverse. That is, who do you owe money to and when is it due? Payroll of course, is self-explanatory.

Some controversy arises as to the degree of importance of these four major bookkeeping areas. Customers often ask computer store employees which bookkeeping function should be computerized first. The answer settles on either the general ledger, or the accounts receivable. If sales of bookkeeping modules are any indication, most people seem to prefer starting with the general ledger by a ratio of 2 to 1 over accounts receivable.

As to, *The Bookkeeper*, you can, to an extent, "have your cake and eat it too." Although *The Bookkeeper* is primarily a general ledger system and not a full bookkeeping package, it will allow you to record and produce accounts receivable and accounts payable information.

The Bookkeeper will do the following:

- 1) Allow up to 350 total accounts which include any customers and/or vendors you wish the system to record.
- 2) Account names may be up to 30 characters in length, although only 20 will appear on a printed report.
- 3) Up to 1,000 distributions are permitted in any month. However, be aware that every entry in the journal requires at least two distributions, a debit and a credit.
- 4) Account numbers that you assign in your chart of accounts if limited to four digits.
- 5) The system will accommodate up to 10 departments, or profit centers, with the ability to produce a (P&L) statement for each, as well as a consolidated (P&L).
- 6) The maximum dollar figure that can be input is 999,999.99, although two more digits can appear as a total on a report.

In addition to the normal reports produced by a general ledger system, this program will also record and produce the following:

- 1) Checks written — records all checks written during the period.
- 2) Cash received — records all checks, and/or cash received during the period with totals.
- 3) Invoices written — records all cash sales and bills sent to customers with totals, although it does not "age" these receivables by the length of time that the monies are due.

If after careful examination of your requirements you determine that this program's features can handle your job, then *The Bookkeeper* is highly recommended as an excellent investment for your business.

BENSON & ASSOCIATES

BENSON & ASSOCIATES

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GENERAL JOURNAL PAGE 1

DATE	JE#	DESCRIPTION	DEBIT	CREDIT
02/11/82	1 1020	CASH ON DEPOSIT 9999 INCOME TRANSFER	1,426.44	1,426.44
02/11/82	2 1110	ACCOUNTS RECEIVABLE BLANDIN, ERNIE 9999 INCOME TRANSFER	1,800.00	1,800.00
02/11/82	3 1110	ACCOUNTS RECEIVABLE REYNOLDS, DON 9999 INCOME TRANSFER	1,208.74	1,208.74
02/11/82	4 1110	ACCOUNTS RECEIVABLE MORRIS, HARVIN 9999 INCOME TRANSFER	56.00	56.00
02/11/82	5 1110	ACCOUNTS RECEIVABLE STAZ, JANICE 9999 INCOME TRANSFER	702.00	702.00
02/11/82	6 1110	ACCOUNTS RECEIVABLE DARMS, BEN 9999 INCOME TRANSFER	1,010.00	1,010.00
02/11/82	7	1130 INVENTORY 4,547.00 1150 PREPAID INSURANCE 1,165.34 1510 MACHINERY AND EQUIPMENT 5,343.90 1530 ACCUMULATED DEPRECIATION 759.10 1810 DEPOSITS 2,000.00 9999 INCOME TRANSFER 12,297.14		
02/11/82	8	2010 ACCOUNTS PAYABLE JONES, PAULA 9999 INCOME TRANSFER	100.00	100.00
02/11/82	9	2010 ACCOUNTS PAYABLE SMITH, LARRY 9999 INCOME TRANSFER	200.00	200.00
02/11/82	10	2010 ACCOUNTS PAYABLE DEPT OF WATER AND POWER 9999 INCOME TRANSFER	27.00	27.00
02/11/82	11	2010 ACCOUNTS PAYABLE THE TELEPHONE COMPANY 9999 INCOME TRANSFER	19.80	19.80
02/11/82	12	2010 ACCOUNTS PAYABLE NATIONAL SUPPLY 9999 INCOME TRANSFER	33.10	33.10
02/11/82	13	2030 SALES TAX PAYABLE		127.92

AS OF 02/28/82
GENERAL LEDGER PAGE 2

ACCT NO	ACCOUNT NAME	JOURNAL	BALANCE FORWARD	CURRENT MONTH	BALANCE
2030	SALES TAX PAYABLE JE # 13 SALES SUMMARY	GJ IH	.00	127.92- .70	127.22-
2050	FICA PAYABLE JE # 13	GJ	.00	60.46-	60.46-
2090	INCOME TAX PAYABLE JE # 13	GJ	.00	208.72-	208.72-
2610	NOTES PAYABLE JE # 13	GJ	.00	9,101.78-	9,101.78-
3010	CAPITAL STOCK JE # 13	GJ	.00	8,257.34-	8,257.34-
3030	RETAINED EARNINGS JE # 13 PERIOD NET PROFIT OR LOSS	GJ	.00	809.28- 1,172.97	363.69
4011	SALES JE # 14 SALES SUMMARY	GJ IH	.00	26,597.66- 3.33	26,594.33-
5011	COST OF SALES JE # 14	GJ	.00	16,289.27	16,289.27
6511	SALARIES AND WAGES JE # 14	GJ	.00	3,028.51	3,028.51
6521	RENT JE # 14 SMITH, LARRY	GJ CW # 2	.00	1,400.00 200.00	1,600.00
6531	UTILITIES JE # 14	GJ	.00	453.38	453.38
6541	PAYROLL TAXES JE # 14	GJ	.00	242.96	242.96

BENSON & ASSOCIATES

BENSON & ASSOCIATES

AS OF 02/28/82
ACCOUNTS PAYABLE LEDGER PAGE 1

ACCT NO	ACCOUNT NAME	JOURNAL	BALANCE FORWARD	CURRENT MONTH	BALANCE
1	JONES, PAULA JE # 8	GJ	.00	100.00-	100.00-
2	SMITH, LARRY JE # 9	GJ	.00	200.00-	200.00-
3	DEPT OF WATER AND POWER JE # 10	GJ	.00	27.00-	27.00-
4	THE TELEPHONE COMPANY JE # 11	GJ	.00	19.80-	19.80-
5	NATIONAL SUPPLY JE # 12 CHECK # 1	GJ CW	.00	33.10- 33.10	.00
TOTALS			.00	346.80-	346.80-

AS OF 02/28/82
GENERAL LEDGER PAGE 3

ACCT NO	ACCOUNT NAME	JOURNAL	BALANCE FORWARD	CURRENT MONTH	BALANCE
6561	INTEREST JE # 14	GJ	.00	228.42	228.42
6571	INSURANCE JE # 15 JE # 16	GJ GJ	.00	502.82 479.56	981.58
6591	MISCELLANEOUS JE # 15 ACE PLUMBING	GJ CW # 3	.00	417.28 45.88	462.28
8011	OFFICE RENTAL JE # 15	GJ	.00	423.18-	423.18-
8511	FEDERAL INCOME TAX JE # 15	GJ	.00	455.28	455.28
9999	INCOME TRANSFER JE # 1 JE # 2 JE # 3 JE # 4 JE # 5 JE # 6 JE # 7 JE # 8 JE # 9 JE # 10 JE # 11 JE # 12 JE # 13 JE # 14 JE # 15 PERIOD NET PROFIT OR LOSS	GJ GJ GJ GJ GJ GJ GJ GJ GJ GJ GJ GJ GJ GJ GJ	.00	1,426.44- 1,800.00- 1,208.74- 56.00- 702.00- 1,010.00- 12,297.14- 100.00- 200.00- 27.00- 19.80- 33.10- 33.10- 18,565.50- 4,955.12- 951.32- 1,172.97-	3,275.91
TOTALS			.00	.00	.00

AS OF 02/28/82		BENSON & ASSOCIATES GENERAL LEDGER			PAGE 1
ACCT NO	ACCOUNT NAME	JOURNAL	BALANCE FORWARD	CURRENT MONTH	BALANCE
1020	CASH ON DEPOSIT		.00		
	JE # 1			1,426.44	
	CHECKS FOR MONTH	CJ		278.10-	
	RECEIPTS FOR MONTH	CW		415.07	
	SALES SUMMARY	CR		41.05	
		IW			1,604.46
1110	ACCOUNTS RECEIVABLE		.00		
	JE # 2	GJ		1,800.00	
	JE # 3	GJ		1,208.74	
	JE # 4	GJ		56.00	
	JE # 5	GJ		702.00	
	JE # 6	GJ		1,010.00	
	REYNOLDS, DON	CR 02/06/82		276.02-	
	DAHMS, BEN	CR 02/06/82		104.85-	
	BLANDIN, ERNIE	CR 02/06/82		34.20-	
	SALES SUMMARY	IW		45.08-	
					4,316.59
1130	INVENTORY		.00		
	JE # 7	GJ		4,547.00	
					4,547.00
1150	PREPAID INSURANCE		.00		
	JE # 7	GJ		1,165.34	
	JE # 16	GJ		479.56-	
					685.78
1510	MACHINERY AND EQUIPMENT		.00		
	JE # 7	GJ		5,343.90	
					5,343.90
1530	ACCUMULATED DEPRECIATION		.00		
	JE # 7	GJ		759.10-	
					759.10-
1810	DEPOSITS		.00		
	JE # 7	GJ		2,000.00	
					2,000.00
2010	ACCOUNTS PAYABLE		.00		
	JE # 8	GJ		100.00-	
	JE # 9	GJ		200.00-	
	JE # 10	GJ		27.00-	
	JE # 11	GJ		19.80-	
	JE # 12	GJ		33.10-	
	NATIONAL SUPPLY	CH # 1		33.10	
					346.80-

AS OF 02/28/82		BENSON & ASSOCIATES TRIAL BALANCE FEBRUARY 28, 1982			PAGE 1
ACCT NO	ACCOUNT NAME	JOURNAL	BALANCE FORWARD	CURRENT MONTH	BALANCE
	CURRENT ASSETS				
1020	CASH ON DEPOSIT				1,604.46
1110	ACCOUNTS RECEIVABLE				4,316.59
1130	INVENTORY				4,547.00
1150	PREPAID INSURANCE				685.78
	FIXED ASSETS				
1510	MACHINERY AND EQUIPMENT				5,343.90
1530	ACCUMULATED DEPRECIATION				(759.10)
	OTHER ASSETS				
1810	DEPOSITS				2,000.00
	CURRENT LIABILITIES				
2010	ACCOUNTS PAYABLE				(346.80)
2030	SALES TAX PAYABLE				(127.22)
2050	FICA PAYABLE				(48.40)
2090	INCOME TAX PAYABLE				(208.72)
	LONG TERM LIABILITIES				
2610	NOTES PAYABLE				(9,101.78)
	CAPITAL				
3010	CAPITAL STOCK				(8,257.34)
3030	RETAINED EARNINGS				363.61
	INCOME				
4011	SALES				(26,597.66)
	COST OF SALES				
5011	COST OF SALES				16,289.27
	EXPENSES				
6511	SALARIES AND WAGES				3,028.51
6521	RENT				1,400.00
6531	UTILITIES				453.38
6541	PAYROLL TAXES				242.96
6561	INTEREST				228.42
6571	INSURANCE				479.56
6591	MISCELLANEOUS				462.29
	OTHER INCOME				
8011	OFFICE RENTAL				(423.10)
	OTHER EXPENSES				
8511	FEDERAL INCOME TAX				455.20
9999	INCOME TRANSFER				3,275.91
	TOTAL				0.00

AS OF 02/28/82		BENSON & ASSOCIATES GENERAL JOURNAL			PAGE 2
DATE	JE#	DESCRIPTION	DEBIT	CREDIT	
		2050 FICA PAYABLE		60.46	
		2090 INCOME TAX PAYABLE		208.72	
		2610 NOTES PAYABLE		9,101.78	
		3010 CAPITAL STOCK		8,257.34	
		3030 RETAINED EARNINGS		809.28	
		9999 INCOME TRANSFER	18,565.50		
02/01/82	14	4011 SALES		26,597.66	
		5011 COST OF SALES	16,289.27		
		6511 SALARIES AND WAGES	3,028.51		
		6521 RENT	1,400.00		
		6531 UTILITIES	453.38		
		6541 PAYROLL TAXES	242.96		
		6561 INTEREST	228.42		
		9999 INCOME TRANSFER	4,955.12		
02/01/82	15	6571 INSURANCE	502.02		
		6591 MISCELLANEOUS	417.20		
		8011 OFFICE RENTAL		423.10	
		8511 FEDERAL INCOME TAX	455.20		
		9999 INCOME TRANSFER		951.32	
02/28/82	16	6571 INSURANCE	479.56		
		1150 PREPAID INSURANCE		479.56	
		EXPENSED INSURANCE			
		TOTAL		.00	

AS OF 02/28/82		BENSON & ASSOCIATES ACCOUNTS RECEIVABLE LEDGER			PAGE 1
ACCT NO	ACCOUNT NAME	JOURNAL	BALANCE FORWARD	CURRENT MONTH	BALANCE
1	BLANDIN, ERNIE		.00		
	JE # 2	GJ		1,800.00	
	02/06/82	CR		34.20-	
					1,765.80
2	REYNOLDS, DON		.00		
	JE # 3	GJ		1,208.74	
	02/06/82	CR		276.02-	
					932.72
3	MORRIS, MARVIN		.00		
	JE # 4	GJ		56.00	
					56.00
4	DIAZ, JANICE		.00		
	JE # 5	GJ		702.00	
	INVOICE # 101	IW		48.75	
					750.75
5	DAHMS, BEN		.00		
	JE # 6	GJ		1,010.00	
	02/06/82	CR		104.85-	
	INVOICE # 102	IW		93.83-	
					811.32
	TOTALS		.00	4,316.59	4,316.59

BENSON & ASSOCIATES
BALANCE SHEET
FEBRUARY 28, 1982

BENSON & ASSOCIATES
PROFIT AND LOSS STATEMENT
FEBRUARY 28, 1982

		CURRENT		YEAR-TO-DATE	
			%		%
ASSETS					
CURRENT ASSETS					
CASH ON DEPOSIT	1,604.46				
ACCOUNTS RECEIVABLE	4,316.59				
INVENTORY	4,547.00				
PREPAID INSURANCE	685.78				
TOTAL CURRENT ASSETS		11,153.83		26,594.33	100.0
FIXED ASSETS					
MACHINERY AND EQUIPMENT	5,343.90				
ACCUMULATED DEPRECIATION	(759.10)				
TOTAL FIXED ASSETS		4,584.80			
OTHER ASSETS					
DEPOSITS	2,000.00				
TOTAL OTHER ASSETS		2,000.00			
TOTAL ASSETS		17,738.63			
LIABILITIES					
CURRENT LIABILITIES					
ACCOUNTS PAYABLE	346.80				
SALES TAX PAYABLE	127.22				
FICA PAYABLE	60.46				
INCOME TAX PAYABLE	208.72				
TOTAL CURRENT LIABILITIES		743.20			
LONG TERM LIABILITIES					
NOTES PAYABLE	9,101.78				
TOTAL LONG TERM LIABILITIES		9,101.78			
TOTAL LIABILITIES		9,844.98			
CAPITAL					
CAPITAL STOCK	8,257.34				
RETAINED EARNINGS	(363.69)				
TOTAL CAPITAL		7,893.65			
TOTAL LIABILITIES & CAPITAL		17,738.63			
INCOME					
SALES					
		26,594.33	100.0	26,594.33	100.0
COST OF SALES					
		16,289.27	61.3	16,289.27	61.3
GROSS PROFIT		10,305.06	38.7	10,305.06	38.7
EXPENSES					
SALARIES AND WAGES	3,028.51	11.4		3,028.51	11.4
RENT	1,600.00	6.0		1,600.00	6.0
UTILITIES	453.38	1.7		453.38	1.7
PAYROLL TAXES	242.96	.9		242.96	.9
INTEREST	228.42	.9		228.42	.9
INSURANCE	981.58	3.7		981.58	3.7
MISCELLANEOUS	462.20	1.7		462.20	1.7
TOTALS		6,997.05	26.3	6,997.05	26.3
PROFIT (LOSS)		3,308.01	12.4	3,308.01	12.4
OTHER INCOME					
OFFICE RENTAL		423.10	1.6	423.10	1.6
OTHER EXPENSES					
FEDERAL INCOME TAX		455.20	1.7	455.20	1.7
NET PROFIT (LOSS)		3,275.91	12.3	3,275.91	12.3

ACCOUNTS RECEIVABLE

Company: The Computer Seen

Language: BASIC

Hardware Requirements: 48K, 810 disk drive or 410 program recorder,
BASIC cartridge, optional line printer.

Department: Business

Sugg. Retail: \$24.95 cassette/\$39.95 disk

Availability: 5

Disk or Tape: Both

OVERALL RATING	C	DOCUMENTATION	B	RELIABILITY	C
EASE OF USE	C	VALUE FOR MONEY	B	ERROR HANDLING	C
VENDOR SUPPORT	B	VISUAL APPEAL	C		

This program does what its title implies — it keeps track of the accounts receivable of a small business. The program is simple and straightforward to use, and can be customized to suit a variety of individual needs.

One of the program's advantages is that it can be either cassette or disk based, making it one of the very few accounting programs available for the program recorder. The documentation is relatively clear, although a couple of spots could stand improvement.

Now to the disadvantages. First, the capacity of the program (30 customers maximum per disk, at 15 transactions each, and \$9999.99 maximum dollars on totals) makes it unsuitable for anything but a very small business. Secondly, to customize the program requires re-programming in BASIC, making it inconvenient for the less experienced user. The program can be inadvertently abandoned by accidentally pressing the Break key. Recovery is possible through a BASIC command, but information prior to the break is terminated, or lost. Also, once customer information is input (name, address, phone number), the only way I found to change it was to delete the entire record and start from scratch. Lastly, although menu driven, the program is a bit user-unfriendly; and unless one remembers the precise sequence of events to perform a particular function, it might be necessary to return to the menu and start again.

All in all, the program seems a good value for the money, costing a fraction of the price of other programs which accomplish similar duties. For a small concern, this program could be a valid consideration.

MILES PAYROLL SYSTEM

Company: Miles Computing

Language: BASIC

Hardware Requirements: Atari 800, 10K ROM, 32K RAM,
2 Atari drives, 850 module, printer.

Department: Business

Sugg. Retail: \$179.95

Availability: 2

Disk or Tape: Disk

OVERALL RATING	B +	DOCUMENTATION	B	RELIABILITY	B +
EASE OF USE	B	VALUE FOR MONEY	B +	ERROR HANDLING	B +
VENDOR SUPPORT	C	VISUAL APPEAL	B +		

One of the most infrequent business programs to be seen on microcomputers is Payroll. The reasons for this are apparent. First, the tax laws in this country appear to have been deliberately written to be as complex, illogical, and incomprehensible as possible. They are obviously designed for the sole benefit of accountants, lawyers, and tax preparers. To add confusion to an already confusing situation, the government changes the rules and forms and changes them often. This is particularly true on the state and local levels. Secondly, any computer payroll program must contend with the fact that the tax laws are different in every state. In view of this, it is little wonder that so few programmers or software publishers attempt to market a payroll program for microcomputers.

There is another aspect that you, as a potential purchaser of a payroll program for your microcomputer, should consider. Over the past several years outside payroll services designed for the small business have become very popular. I'll use the company for which I work as an example. Our company, a relatively small one, has about 50 employees. Some of our employees are paid on a weekly basis, some monthly, some on a flat weekly or monthly rate, and still others are paid by the hour. At one point we did our payroll on a small microcomputer (not on an Atari and not using the payroll program being reviewed here). It took one person approximately 25 hours a month to tend to our payroll needs. A few months ago we switched to an outside service, and it now takes one employee approximately one hour a week to call in the necessary information. The checks are then delivered the next day. Also, the service provides us with all of the necessary forms that have to be filed with the federal and state authorities. The cost to us is approximately eighty dollars a month. Is an outside payroll service for everyone? Perhaps not, but it should be considered before you make your decision on how to best fulfill your payroll needs.

On the other hand, if you, as an Atari 800 owner would like to use your computer to help prepare your payroll, my opinion is that the *Miles Payroll System* is worth your consideration.

The general features and specifications of the program are as follows:

- (1) maintains up to 50 employees
- (2) allows weekly, biweekly, semimonthly, or monthly pay periods
- (3) accomodates regular, overtime, doubletime, sick, holiday, vacation, bonus, and commission earning categories
- (4) deducts federal withholding tax, state withholding tax, city withholding tax, FICA, SDI, group insurance, and three user defined deductions.
- (5) offers a tax sheltered annuity deduction capability
- (6) maintains state and federal unemployment insurance
- (7) prints payroll checks
- (8) maintains pay period, monthly, quarterly and yearly cummulative totals for each employee
- (9) allows for manual payroll check writing

In order to get around the problem of having to change federal and state tax rates, the program allows the user to set up a "table" of rates which he can then modify as circumstances dictate. Of course, it is the user's responsibility to be aware of new changes in the tax laws, and to make the necessary modifications to the program.

Reports generated by the program include:

- (1) period-to-date standard deductions
- (2) month-to-date standard deductions
- (3) year-to-date standard deductions
- (4) period, month, and year-to-date group insurance
- (5) month-to-date worker's compensation
- (6) quarterly report
- (7) tax sheltered annuity deduction
- (8) yearly report
- (9) yearly earnings
- (10) employee pay history
- (11) time card entries
- (12) mail and time card labels printed
- (13) W2 forms report, but no provision is made for form 941

In general the program is sufficiently well designed and documented to allow for efficient, accurate usage.

MORTGAGE AND LOAN ANALYSIS

Company: Atari

Language: Atari Basic

Hardware Requirements: 16K Atari 400/800, cassette, printer helpful

Department: Business

Sugg. Retail: \$19.95

Availability: 9

Disk or Tape: Tape

OVERALL RATING **B+**
EASE OF USE **B+**
VENDOR SUPPORT **B+**

DOCUMENTATION **C+**
VALUE FOR MONEY **B**
VISUAL APPEAL **B-**

RELIABILITY **A-**
ERROR HANDLING **A**

Atari's *Mortgage and Loan Analysis* is a simple but useful one-function program: it computes the amount of a monthly payment for any amortized loan. The program handles such variables as the amount of the loan, interest rates, and the length of the loan. Its computations are based on a twelve month year, making it more difficult to figure out rates for short-term loans.

If, for instance, you were considering buying a car, you could key in any loan amount with as many interest rates as you liked over an infinite number of years and get the monthly payment you would owe in each case. By doing so, you then have a clear idea of which financial package to take. This holds true for the home buyer and his choice of mortgage. You can show at least ten separate calculations on the screen at one time, which should be more than adequate for most purposes.

The program is a good tool for anyone in a small or medium sized business who is frequently involved with installment sales requiring amortized monthly payments. For example, I can see a strong use for this program in automobile sales or in a real estate office. But once you get it up and running, I suggest you leave it on. Because it comes on a cassette, it takes several minutes to load the program; this could soon become annoying if you use it a lot.

MAIL LIST, VER 3.0

Company: Artworx

Language: BASIC

Hardware Requirements: Unknown.

Department: Business

Sugg. Retail: \$49.95

Availability: 4

Disk or Tape: Disk

OVERALL RATING **D**
USEFULNESS **D+**
VENDOR SUPPORT **F**

DOCUMENTATION **F**
VISUAL APPEAL **C**
EASE OF USE **D**

RELIABILITY **D**
ERROR HANDLING **D**
VISUAL APPEAL **D**

Mail List, version 3.0, seems to be a unique program. The documentation accompanying the package indicates on the first page that the package was also for use on the Apple and the North Star personal computers. The third page of the manual indicates that care should be taken by Apple, CPM, and TRS-80 users when employing a particular punctuation mark in a "keyword." Nowhere in the documentation does it show what the proper hardware requirements are for any of the above machines, nor does it indicate if there is any limitation or difficulty when using various printers. A program capable of running on so many different computers and apparently any of the printers currently available must be an unusual program indeed.

What this seems to be is a good idea poorly executed. The sad thing is that the program has several features that would be worthwhile if only they were presented in a more logical and orderly fashion. It is capable of sorting zip codes in a "range" (for example, from Zip 14600 low to Zip 14700 high). It can sort alphabetically, and delete duplicates (as long as they are exact in both name and zip code). It can search by a name, zip code, a special "key" such as a month, and so on. The problem with the "key" is that it is inconvenient: it must be at least three characters long, or a multiple of three characters (i.e., 3, 6, 9, 12, 15, etc).

When printing labels, you have the choice of printing up to three labels. However, the manual tries to illustrate how to change variables on line 15 of the program. If you are a hobbyist or a programmer, this is fine; but for the occasional user, or computer novice, this is just a little bit much.

I feel that the program has some good features, useful for an experienced Atari user who has some basic programming knowledge and a limited business application. However, I cannot recommend it to the Atari home user who wants a simple Christmas mailing list, or, as the manual recommends, a simple data base. It is dismaying to note that nowhere in the manual was there a phone number where the company or author could be reached. This tends to make for rather slow vendor support when the need arises. And it will.

MAILING LIST

Company: Atari, Inc.

Language: BASIC

Hardware Requirements: 24K disk drive or cassette, printer optional.

Department: Business

Sugg. Retail: \$24.95

Availability: 7

Disk or Tape: Both

OVERALL RATING **A-**
EASE OF USE **B+**
VENDOR SUPPORT **B+**

DOCUMENTATION **B**
VALUE FOR MONEY **A-**
VISUAL APPEAL **A**

RELIABILITY **A**
ERROR HANDLING **A**

The name of this program, *Mailing List*, is something of a misnomer. The program really has capabilities that extend beyond its use solely as a mailing list keeper.

To begin with its mail list capabilities, the program will accommodate a name list in the following fashion:

LAST _____
FIRST _____
MIDDLE _____
STREET _____
AREA _____

CITY _____
STATE _____
ZIP _____
PHONE _____
EXTRA _____

The "EXTRA" field can be used for any kind of identifying phrase you might desire. For instance, if you were a salesman and were using this program to keep a customer list, then this field might be used to identify the specific product that the customer purchased, an area of interest, or some other significant note.

Information that you have in your list can then be sorted based on any of the fields. For example, you could print out a list of just those customers that reside in California; or only those customers who purchased a specific product.

Also included in this package is another program which essentially is a variation of the *Mailing List* program called "General List." With this program, you may make up any kind of a customized list you might desire. You may wish to build a list to keep track of your record collection, recipes, coins or stamps, or anything else. However, the program will only allow up to 6 characters per field, and up to 10 fields per "index card."

Although this package can be used with either a cassette or a diskette, a diskette is infinitely more efficient, as in any kind of information storage and retrieval program. In general, this package is a good one, though there are a few criticisms:

(1) It is not apparent, either in documentation or in the program just how much information can be stored on cassette or on diskette.

(2) Sorting can be done on only one item at a time. For instance, if a multi-field sort were available for our example of a customer list, then we could ask for and receive a list restricted to California customers who bought a specific product and are in a specific zip code area. With this program, we would have to make at least three separate lists to obtain this information.

(3) The process by which sort criteria are selected is somewhat awkward and should be simplified.

In sum, criticism notwithstanding, this is a good program. The average buyer should find sufficient uses for this program to justify its purchase.

WEEKLY PLANNER

Company: APX

Language: Atari BASIC

Hardware Requirements: 32K, disk drive.

Department: Business

Sugg. Retail: \$22.95

Availability: 8

Disk or Tape: Disk

OVERALL RATING **B**
EASE OF USE **B**
VENDOR SUPPORT **C**

DOCUMENTATION **B**
VALUE FOR MONEY **B**
VISUAL APPEAL **B**

RELIABILITY **A**
ERROR HANDLING **A**

This excellent little program allows you to record anniversaries, birthdays, dates of monthly mortgage payments, and schedule business meetings on a calendar spanning 1981 through the year 1999. A very nice feature is that the program lets you print out a three day appointment schedule. I've found the program very useful on the job when I'm setting up employee work schedules.

The author of the program made a clever addition with the use of wild cards ("X"). This in essence allows you to set up date reminders in the calendar that are accurate up to 1999. For instance, if a birthday falls on July 3, set the date up as 07/03/XX and it will then be printed out in the calendar on the correct day up to the year 1999.

This is an easy program to use and it's actually fun. If you have trouble remembering an anniversary or a birthday, give this system a try.

SOURCE

Company: Source Telecomputing Corporation
Language: N/A
Hardware Requirements: 32K + modem

Department: Business
Sugg. Retail: \$100.00
Availability: 8
Disk or Tape: N/A

OVERALL RATING	B-	DOCUMENTATION	A	RELIABILITY	B
EASE OF USE	C	VALUE FOR MONEY	B	ERROR HANDLING	B-
VENDOR SUPPORT	B	VISUAL APPEAL	C		

The *Source* is a timesharing system, rather than a specific program, for the Atari computer. With this system, the user has access to a large number of programs and databases housed in several mainframe computers located in Virginia. The \$100 price noted above is the signup charge. In addition to this, there are hourly charges which vary by time of day and baud rate used. Both 300 and 1,200 baud are available through the local TYMNET or TELENET data network. The *Source* is a subsidiary of The Reader's Digest Association, Inc.

There are many features of the *Source*. These include several modes of communication: electronic mail, chat (realtime conversations), post (a public bulletin board), voicegrams, and mailgrams. The information services include: *Source *Plus* (added cost features), business databases, shopping by catalog, education and careers, government and politics, home and leisure, news and sports, science and technology, and, finally, travel, dining, and entertainment.

The *Source *Plus* features *Media General*, a way of obtaining historical and current performance comparisons for common stocks. The commodity *News Service* tracks activity in the major future markets. Management Contents, Ltd. makes abstracts available from 27 business publications. *Comp-U-Star* is a discount catalog electronic shopping center. The *Legi-Slate* system, a legal information service, was to be added; but they are presently having problems with that database and so it was recently dropped from *Source *Plus*.

With the business programs, you are able to access current stock information and create portfolios that may be kept up to date on a daily basis. In addition to those functions available through *Source *Plus*, the *Unistox* database of UPI is available. Command files will access this database automatically. For general information, the *Source* accesses the UPI business news and obtains opinions from Raylux Financial Services. In addition to the *Comp-U-Star* database, you are able to use the *Source* to barter, order records and tapes, order books, and get tapes of classic radio programs. There are educational programs ranging from simple counting drills to sophisticated computations in math and science. Methods of obtaining college financial aid are on the *Source* for callup. Finally, for employers to access, there is a database of resumes of people looking for work. You can keep track of the government on a daily basis through many of the UPI entries. If you wish, you may even set your computer up as a teletype and get a running UPI newswire on your desk (of course, computer hookup costs will be running!). Further, many games may be played through the *Source*. There is also a home medical guide where you respond to a variety of general questions and the computer returns descriptions of various ailments. Should you be interested in traveling, the *Source* can help you plan your trip. Both international and domestic air schedules are in the system. When you have your trip set up, there is a travel club through which you make your reservations and get the tickets via regular mail. Once at your destination, use the *Source* to find a good restaurant or learn about what local wine to order. For after dinner entertainment, you may consult the *Source* for the latest movie reviews. If you are interested in doing something out of the ordinary, the *Source* allows you to create your own files and programs in several languages. Text editing may also be performed, with very professional results. Some users offer other services, such as typesetting, so using the *Source* you can write, edit, check for spelling, and then transmit to a typesetter. You will be returned a camera ready copy of your work. The *Source* also encourages public use of the system for information exchange. To that end, they have set up a public area where users establish "magazines." As other users read the material, the original publisher is credited with a royalty from the reader's usage fee. The *Source* is now experimenting with a computer conferencing capability termed *PARTICIPATE*. It is only now in the experimental stage, but promises to provide users with common interests a forum for conferencing and exchanging ideas. As of this writing, the *Source* has over 20,000 users. Using the old operating system, this was starting to result in rather slow response times. At the end of 1982, the *Source* will be moving its computers and will begin to use a new operating system which is supposed to greatly reduce the user response time. Instead of using each computer by itself, they will all be tied together as a unit. Time will tell if this will be successful.

COMPUSERVE

Company: Compuserve Communication

Language: N/A

Hardware Requirements: 32K Atari, 300-Baud modem

Department: Business

Sugg. Retail: \$20 + hr. fees

Availability: 10

Disk or Tape: N/A

OVERALL RATING **B**
EASE OF USE **B**
VENDOR SUPPORT **B**

DOCUMENTATION **D**
VALUE FOR MONEY **A-**
VISUAL APPEAL **C-**

RELIABILITY **B**
ERROR HANDLING **A**

Compuserve Information Service is a subscription service which any microcomputer owner can use if he has a modem and has received his password from a Compuserve representative. Like the Source, Compuserve has a one-time subscription fee. At the present time, the fee for a non-prime time user is only \$20.00, and thereafter you are charged \$5.00 per hour (last I knew) for on-line service. Non-prime time is reckoned to be after business hours, or after 6 pm in your particular time zone.

The hourly fees of Compuserve are less than those charged by the Source, and Compuserve does not charge a monthly minimum, as the Source does. At the time of this review Compuserve had more subscribers, less expensive rates, and faster response time than the Source — and yet remains less well-known. In addition, Compuserve gave three free hours to every subscriber when he first signed on. (It isn't clear, however, whether this "free time" policy will be continued indefinitely.)

Compuserve offers similar services to those of the Source: electronic mail, electronic catalog shopping, education, games, Dow Jones updates, word-processing, entertainment — in fact, over 1200 different functions are available to subscribers. These services are all easy to access and use on Compuserve. One nice feature that Compuserve offers which the Source does not is a simulation of "CB" radio channels. People on the service can talk to each other via keyboard, just as CB radio users do over the airwaves. The user has over 30 channels to choose from and can talk to anyone across the continent who happens to be on the "CB" at the same time.

Compuserve users must re-subscribe to the service if they wish to have the ability to use the Compuserve Services during the day. At the time of this review, Compuserve subscriptions were available through Radio Shack stores (or call direct toll free, 800-848-8990, if you are interested). The reference manual for the Source is a model of good documentation, and unfortunately Compuserve's manual falls far short of this ideal. But, like the Source, Compuserve makes extensive use of help menus which more or less make the reference manual unnecessary.

Currently, Compuserve appears to be very good value to the Atari owner looking to explore the realm of telecommunications and information service networks.

MODELING

Models are a representation of reality. They exist in many forms. Perhaps the most common models are architectural types which show in scaled format what the final construction will look like. Recently, with the advent of high speed computers, a new form of model is appearing — the math model. For a considerable period of time, scientists have been attempting to describe reality using mathematical terms in the form of a description which would predict what is likely to happen in the future, given certain input assumptions. Such modeling attempts met with much frustration until the invention of the high speed computer, since many of these modeling techniques require statistics and repetitive processing when the conditions of the model are changed and the computations are run many times in order to obtain the most optimal result. These types of computational requirements lend themselves to applications areas in which the computer best excels.

So, given this, we can see that the elements of a computer modeling system are the actual mathematical representation of the system to be modeled and provide some way to manipulate that representation. We now have to investigate what part of this process the Atari computer could best be utilized.

First, let's look at the mathematical representation of reality. If we attempt to model a complex system in any detail at all, we find that the representation very rapidly becomes quite difficult to build, interpret, and has a mathematical construction that is beyond the capability of an eight-bit machine to handle easily. That leads us to having the small computer handle only the simplest of mathematical representations — those that require rather simple and straightforward computations. Fortunately, there is a class of models that fit this category quite well, and has a large market following: financial models. They're simple, straightforward, and the computations are generally not beyond the capability of eight-bit machines.

This judgment is reflected in the marketplace, since most of the modeling programs are directed at financial modeling (either business or personal) and those areas that are somewhat broader in scope which generally center their examples around a financial situation.

The second major consideration is the manipulation of the model. It's here that the computer really excels. Mass storage and data manipulation techniques are quite well developed for the small computer and are constantly being improved. There are many clever programmers who are producing data structures and manipulation techniques that are very appropriately suited for small models.

The next question which must be investigated is in what way the computer can help the user. The same two areas are subject to question.

Can the small computer help in the generation of models? Of course, the simple answer would be yes; however, on consideration, it is also important to ask if it is economically feasible to produce programs of the complexity required. The answer to that is probably no. For this reason, we should go back to the definition of a model: which is "a representation of reality." Reality is different for every person and often each person has to deal with many different applications (or realities). To develop a program that will model each of these different realities is just the way each person desires would require an insight by the programmer on the nature of the application or a computation technique required for the application that defies imagination. The best we may expect for now is a modeling technique that gives the user tools to work with. Perhaps in the future, processing techniques will be developed which will allow the computer to learn in real-time and turn general desires into specific model constructions.

What the user should look for, then, are constructions that will assist in developing the specific type of model that is of interest. For example, if the model type is to be of an engineering system or some other type of scientific application, then look for such techniques as integration plus various statistical constructs. If a financial model is to be developed, then such things as depreciation schedules, net present value, and internal rate of return should be available for use. In short, those computational techniques that are generally difficult to program, but necessary to a great many models that might be developed, should be in any good modeling package.

OK, now how about the program to manipulate the model once it is developed? There are several things that such a program should be able to do and many more that would be beneficial. In the necessary category falls the ability to accept the model and rapidly change it as required. The program should also be able to implement the model calculations and then report the results in a variety of ways. It would be advantageous if the program were able to create graphics and assist in checking the model logic for you. Other nice features would be the ability to edit data and/or model files, use multiple data files with any given model, and create data files from the model runs for later use in other models (or whatever). In short, the model manipulation program must be as flexible as possible in its ability to handle data so that the user may do whatever is necessary to implement the model.

Now, let's investigate some of the ways that a modeling program could be used. First, the user must make a very basic decision — what to model. This is more difficult than it may seem. It's rather easy to want to model something and quite something else to do it. Assumptions that go into the model will have a profound effect on the outcome — and assumptions will be necessary for just about anything more difficult than $2 + 2 = ?$. Keep the requirements simple to begin with.

When you know what the end product is to be, sketch out the calculations that must go into getting to the result. Find out what the last step is that gets you to the single number you want; then find out what step(s) enter into obtaining the variables that apply to that calculation; then back up from the calculation, and so forth until you get to the variables that are to be input. If you have kept good notes, you now have (in reverse order) a summary of the model calculations.

Given the results from the last step, go back to pencil and paper and sketch an outline of the type of report you would like to see that includes all of the variables to be entered into the calculations — usually with the variables toward the top, intermediate calculation steps and results below, and the final result at the bottom. You now have the logic of the model on paper along with at least one report format.

NOW TURN ON THE COMPUTER!

That's right, to this point you have not (or should not have) used the computer! Until you know what you want to do in outline form the computer will only get in the way. There is no program yet on the market in the microcomputer field that will really act like a scratch pad — although some are closer than others.

From here on, the way you proceed is largely program-dependent. In general, you would enter the model logic in some form; either on a spreadsheet (like *Visicalc*) or in a logic file (like most others). Then you would enter data and the program would use the logic of the model to manipulate the data and come up with an answer. Note that this is just *an* answer, not necessarily the right answer or the answer that you want. Everything depends on the logic and assumptions that went into building the model.

Given this, the program now should give you options for output — either in report form or graphics form (or both).

Now comes the fun. Using the model and data already entered, you should be able to do sensitivity analyses by varying one variable at a time to see how the answer changes in response. In this way you can see which of the variables has the most control over the model. Chances are, in the real world, this variable will be the one you have to watch.

That's the essence of model building and use in today's Atari environment. Who knows what the future will bring? Many programs exist which are structured to work in the way described above — most of them oriented toward the financial model. The real differences lie in the versatility of handling the model and data, along with the ease of entry and manipulation of those items. Use the data that results to narrow down your choice and then ask to use the software before making a purchase. You are the one who is going to have to be satisfied.

As a parting caution, remember one important point. Models are only a representation of reality and are only as good as YOUR modeling data and parameters. If you are not familiar with the calculations that go into the type of model you want to create, have someone who is do it for you. Unlike game programs, these system models demand that you know what you are doing going in. There are very few other types of programs where the maxim "garbage in, garbage out" applies more directly.

VISICALC 3.3

Company: Visicorp
Language: Assembly
Hardware Requirements: 40K, disk drive

Department: Business
Sugg. Retail: \$250.00
Availability: 9
Disk or Tape: Disk*

OVERALL RATING	A +	DOCUMENTATION	A	RELIABILITY	A
EASE OF USE	A +	VALUE FOR MONEY	A	ERROR HANDLING	A
VENDOR SUPPORT	A	VISUAL APPEAL	A		

Let's assume you're in marketing and do financial modeling; or you're a businessman or accountant and need a quick accounting statement or cost analysis study considering the effects of variable interest rates; or you're an engineer who needs to do repetitive formula calculations. If so, then *VisiCalc* is not merely a useful program for you, it's indispensable. This program, which initially won an award as the single piece of software that most influenced the growth of the microcomputer industry, has been described as "The program worth buying a computer for."

Briefly, *VisiCalc* is an electronic worksheet. It employs up to 63 columns and 254 rows to work with. You may create any format you wish within these parameters, and perform whatever calculation or manipulation of figures you find desirable. Quite literally, any problem that can be solved by using a calculator or pen and paper can be done by *VisiCalc* better and much, much faster.

Any position on the *VisiCalc* worksheet can be defined as a label, value, or formula. More importantly, any formula can relate to any other positions or combination of positions on the sheet. Whenever any position's value changes, all other items that depend on that value change automatically, without further action on the user's part. For example, say you were doing business forecasting and wanted to increase sales 10% per month. By taking the sales value of the first month at, say, position B1, and simply defining the new month's sales at position C1 as "B1 * 1.1," the C1 value for the second month's sales would be instantly calculated. You may carry on projections through the rest of the year, using constant or variable values. Fortunately, *VisiCalc* has a series of commands, such as "Replicate," which enable the user easily to create rows or columns of repetitious values or formulas, even if each calculation is related to the previous formulas in preceding rows or columns.

VisiCalc features a complete set of arithmetic operations (+, -, ×, ÷) and exponentiation; financial functions, such as Net Present Value, Sum, Avg., Min., Max.; and trigonometry and logarithmic functions. In addition, the "Lookup" command allows the comparison of a value to the successive values in a given range, and returns the corresponding value from the column or row immediately to the right or below the entries in that range.

Other commands allow the user to fix titles while scrolling the locations in the table, or split the screen in sections so they can see only the portions of the table that they are currently using. Values can be formatted in dollars and cents, scientific or interger numbers, and flushed right or left. New editing features allow you to edit formulas without bothering to retype them from scratch. And one can easily move the cursor around the screen with the standard keyboard commands.

Files can be saved to a disk for later retrieval. Files can be stored as formulas for the calculations on the worksheet or in Data Interchange Format (DIF) for use with *VisiCalc*-compatible programs or other programs using the DIF format. The program also features full compatibility with all line printers. The system allows commands that will suppress or add line feeds and adjust the column width. One simply decides which section of the worksheet is to be printed, places the cursor at the top left, indicates the bottom right of the appropriate block, then prints. Large worksheets, of course, have to be printed in sections. Either the calculations or the formulas can be sent to the line printer.

The documentation is excellent. Its manual contains a good tutorial for users who have absolutely no experience in programming. It takes between one and two hours to master. A 4 lesson tutorial offers many practical examples and illustrations. The 144-page command reference section offers very good explanations, and some examples of each command using screen illustrations. Best of all, VisiCorp includes a superbly organized chart of all the commands, and a handy foldout reference chart.

To sum up, *VisiCalc* is a uniquely versatile product applicable to a wide variety of uses and users. VisiCorp has provided retail stores with an excellent demo of *VisiCalc*'s capabilities. Check it out. This is a straight "A" classic, and well worth investigating.

A	B	N	D
1 PERIOD	1	TOTAL	PERCENT
INCOME	1800	23000	
MORTGAGE	600	7200	0.31
UTILITIES	140	1630	0.04
TELEPHONE	75	900	0.04
FOOD	350	4200	0.18
CLOTHING	120	1440	0.06
CAR EXPEN	80	960	0.04
CAR INSUR	160	320	0.01
SAVINGS	150	1800	0.08
LEISURE	125	5150	0.22

STOCK MARKET PROGRAMS

STOCK CHARTING

Company: Atari

Language: Atari Basic

Hardware Requirements: 24K Atari 800, disk drive

Department: Business

Sugg. Retail: \$29.95

Availability: 8

Disk or Tape: Disk

OVERALL RATING **B-**
EASE OF USE **C**
VENDOR SUPPORT **B+**

DOCUMENTATION **C+**
VALUE FOR MONEY **B**
VISUAL APPEAL **B**

RELIABILITY **B**
ERROR HANDLING **B**

When it comes to stock market investing, even if you're a die-hard fundamentalist (i.e. one who believes that the future course of stock prices relies primarily on their underlying value, or earnings), graphing stocks can still be a useful tool for you. The Atari *Stock Charting* program, for the most part, adequately performs its task.

For each stock (and up to 50 stocks may be recorded), the program asks for:

- 1) The ticker symbol.
- 2) The last 4 quarter earnings (optional).
- 3) The last 4 quarter dividends (optional).
- 4) Daily volume.
- 5) Closing quotes (high, lows).

In return for this information, the program will provide you with a clearly organized graph. In addition to the actual graph, the screen will display the calculated price/ratio, stock yield (if applicable), earnings for the last 4 quarters, and dividends for the last 4 quarters. The bottom of the screen will display the low and high for the stock along with the beginning and final day that has been graphed. Up to 120 trading days may be viewed on the screen in this manner. The graph itself displays high, low, and volume. A 10 day moving average and a 6 day oscillator may also be imposed on the graph.

The only major complaint that should be voiced is the fact that the entry of information is, at best, awkward and unnecessarily cumbersome. Screen menus could also be improved.

Additional features that would be nice in this type of program might include some elementary record keeping functions aside from the graph information. And, like most similar programs on other computers, a Dow Jones link-up option for retrieval of information via the phone lines would be welcomed. Documentation is adequate, but could stand further expansion.

BOND ANALYSIS

Company: Atari

Language: Atari Basic

Hardware Requirements: 24K Atari 800, disk drive; printer optional

Department: Business

Sugg. Retail: \$24.95

Availability: 9

Disk or Tape: Disk

OVERALL RATING **B-**
EASE OF USE **B**
VENDOR SUPPORT **B+**

DOCUMENTATION **B**
VALUE FOR MONEY **B-**
VISUAL APPEAL **B+**

RELIABILITY **A**
ERROR HANDLING **A**

Atari's *Bond Analysis* program represents a fairly useful tool for fixed income investors. The program is comprised of two sections:

(1) Bond Yield - This will give you the total yield of a bond held to maturity. It also includes the current yield. Entering the call date instead of the maturity date will give you a yield to call.

(2) Bond Price and Interest - This feature presents you with the correct price and accrued interest for a specific bond when given the annual coupon payment, redemption price at maturity, time to maturity, and the desired rate of return.

The program does not, however, allow for such niceties as calculating yield after taxes, or equivalent taxable returns, which would obviously be important for doing a true bond analysis. I found this too limiting for so complex a subject, and so I cannot give it an unreserved recommendation; but, recognizing that at present there are few other choices for Atari owners interested in doing bond analysis, I would certainly say that the program is worth looking into.

Within its limits, the program is fairly simple to use. Documentation is somewhat better than average, and includes a glossary and bibliography.

FINANCIAL ASSET MANAGEMENT SYSTEM

Company: Atari Program Exchange

Language: Atari BASIC

Hardware Requirements: 40K, disk drive, printer recommended.

Department: Business

Sugg. Retail: \$29.95

Availability: 9

Disk or Tape: Disk

OVERALL RATING	C	DOCUMENTATION	B	RELIABILITY	D
EASE OF USE	B	VALUE FOR MONEY	A	ERROR HANDLING	D
VENDOR SUPPORT	C	VISUAL APPEAL	C		

Financial Asset Management System is a program designed to evaluate asset portfolios of items such as stocks, bonds, cash assets, real estate, or virtually any other monetary-based asset. Its functions are: (A) to input information forming an asset portfolio and storing that info on disk (i.e. name, cost, quantity, expected annual yield, etc.); (B) to calculate yields, profits, new quantities and costs by virtue of dividend re-investment; and (C) to print out this information, with appropriate subtotals and totals, in various forms such as asset reports (alphabetic and magnitude), dividends year-to-date, and a user-customized data input form. A full data file print form is also available for troubleshooting.

F.A.M.S. performs its functions in a usable but rather rudimentary form. Although menu driven and fairly user-friendly, the program becomes unclear and complicated in some places. The data input routines do their job, but are rather inflexible and aesthetically unpleasing. The sample forms included in the documentation look nice, but on two of the Epson printers tested with the program, the output came out messy and incorrectly spaced. On an ATARI 825 printer the output would probably be more acceptable.

F.A.M.S., in comparison with other programs which perform comparable functions, is a good value for the money. However, there are some inconveniences with using the program. For instance, the Break key is enabled, and if pressed inadvertently, the program exits to BASIC, most likely losing all the updates in that session. Furthermore, if the printer is not on-line and a report is attempted, the program will bomb out into BASIC instead of advising the user that the printer is inactive. Another funny error occurs if the user gives one of the data files the same name as one of the programs, thereby erasing that program on that particular diskette. Frustrating!

Aside from these problems, *F.A.M.S.* is a fairly useful program, once you learn the bugs and how to avoid them. It presents a fair value for the price, and could be an asset (if you'll pardon the pun) if used carefully and correctly.

STOCK ANALYSIS

Company: Atari

Language: Atari Basic

Hardware Requirements: 24K

Department: Business

Sugg. Retail: \$24.95

Availability: 9

Disk or Tape: Disk

OVERALL RATING	C	DOCUMENTATION	C	RELIABILITY	C-
EASE OF USE	C	VALUE FOR MONEY	B-	ERROR HANDLING	D+
VENDOR SUPPORT	B+	VISUAL APPEAL	A-		

Stock Analysis evaluates stock portfolios by using statistical measures, figures the annual rates of return for investments, and calculates the intrinsic value of a stock by computing the discounted present value of estimated future dividends.

There are three primary sections to this program:

- 1) Portfolio Analysis — This performs evaluations using statistical methods such as arithmetic mean and standard deviation of log returns, and geometric mean of period returns.
- 2) Stock Rate of Return — Computes the annual rates of return, compounded annually, for specific investments.
- 3) Stock Dividend Analysis — Applies the Nicholas Molodovsky method of computing the present discounted value of the estimated dividends. It will also calculate the length of time a growth rate must be maintained, or the price/earnings ratio required for equating the intrinsic value to the current market price.

This program can only be recommended for sophisticated long-term investors who are thoroughly familiar with mathematical models for computing statistical parameters, rates of return, and present value. Although formulas are given in the reference manual, there is no explanation of their meaning. The terminology is very confusing. For example, the "holding period" is defined as a specified period of time in which the investor plans to hold an asset; but you must enter prices and dividends for each holding period. This confuses past and future activity.

Error-trapping could be much better. At one point this reviewer tried to add data to a portfolio and received the error message that the diskette was full. But in fact 127 sectors were free on the disk. At another point, your input data is lost if you forget to chose the save option from a menu. Some caution is advised in considering this one.

STOCK CHARTING

Company: Atari

Language: Atari Basic

Hardware Requirements: 24K, op. printer

Department: Business

Sugg. Retail: \$29.95

Availability: 9

Disk or Tape: Disk

OVERALL RATING **C+**
EASE OF USE **C**
VENDOR SUPPORT **B+**

DOCUMENTATION **B**
VALUE FOR MONEY **B-**
VISUAL APPEAL **C+**

RELIABILITY **B**
ERROR HANDLING **B**

Stock Charting produces graphs of four different charts to provide a history of a stock's price and volume performance, to determine trends in the price, and to call attention to unusual price or volume activity. The four charts are the daily high/low closing quotes, the volume, a ten-day moving average of the closing quotes, and a six-day oscillator. The program is written in five modules. These modules allow you to define or revise a stock in the portfolio, to enter closing quotes for each stock, to list the closing quotes, to delete a stock, and to graph the four charts.

Stock Charting is relatively tedious to use. It is configured for one disk drive only, and you must continually exchange the program and data disks as you use the modules. The closing quotes must be typed into the program, and there is no provision for correcting a value after it is entered. The manual states that "once a disk is full, the files are locked and no more data can be added." The overlaid graphs are difficult to read because of the colors chosen. There are a large number of relatively slow disk manipulations in several of the modules.

The program does generate correct graphs of the data, and the closing quotes can be listed on a printer. But the program can only be recommended for people who are willing to carefully input all of the stock data correctly the first time, and who can live with the other limitations listed above.

WORD PROCESSING

The word processing software is designed to help you create, edit, and format documents. It allows you to type text, insert graphics, and format text in various ways. The software is designed to be easy to use and to provide a wide range of features. It is available on a variety of computers, including PCs, Macs, and minicomputers. The software is designed to be flexible and to allow you to customize it to your needs. It is a powerful tool for anyone who needs to create professional-looking documents.

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THE EDITOR FULL SCREEN EDITOR

The editor is a full screen editor that allows you to edit text directly on the screen. It is designed to be easy to use and to provide a wide range of features. It is available on a variety of computers, including PCs, Macs, and minicomputers. The editor is designed to be flexible and to allow you to customize it to your needs. It is a powerful tool for anyone who needs to edit text.

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WORD PROCESSING

In order to choose intelligently word processing software for a micro-computer, the prospective buyer should have a good understanding of the concept of word processing, and an idea of what features can go into a word processing system. In many cases, your own word processing needs will determine which features are more important to you making it imperative to know what you are buying before you invest in a product.

A word processing system can be defined to be a program or collection of programs which are designed to allow a computer user to enter and edit textual matter, stored within the memory of the computer or on some external media (e.g., diskettes), for the purpose of ultimately producing a typewritten document. Word processing's advantages over the lowly typewriter are beginning to make themselves felt in all areas of text handling both in business and in the home. By entering a business letter with a word processor, it is possible to quickly correct minor mistakes, move words, lines, or entire paragraphs around, and perform complicated formatting tasks, without the necessity for hand retyping of each revision.

A typical word processor consists of three major components:

- an editor
- a file manager
- a formatter

Each of these will be discussed separately in the sections to follow, although they may all be parts of a single large program.

THE EDITOR

The editor is perhaps the most important part of a word processing system. It is the editor which provides the primary interface to the user, allowing him to type in text and modify it as needed. A good editor can make word processing effortless, a bad one can make it almost more difficult than using a typewriter. Most micro based editors operate upon a collection of text, held in the memory of the machine, and allow the user to display sections of the text on a terminal, add or insert additional text, change, delete, copy, or move existing text, and scan for selected strings.

There are two major classes of editors: the line oriented editors and the full screen type. Attached to early computers one would always find the popular teletype terminal. This device was essentially a computer driven typewriter, printing messages from the computer on a roll of paper and accepting input from a keyboard. Based upon this device, early editors were line oriented; in other words, input from the user was accepted in the form of a series of lines, each ended by pressing the carriage return key. When the user was not typing input, the computer could send output, also in the form of lines. A line oriented editor is generally command driven, allowing a user to instruct the computer to accept input lines of text, list selected lines as output, delete lines, substitute strings, and scan. The advantages of such an editor are that it can run on almost any terminal, hardcopy or video, and, being command driven, it is somewhat easier to learn to use. The disadvantages are that it is at times hard to find one's place in the text being edited, making changes can be awkward, and lines must constantly be listed so that the user is aware of the changes he has made.

Full screen editors, on the other hand, were based upon the video or CRT terminal. A video terminal allows several lines to be displayed upon a TV-like screen, and, depending upon the terminal, these can be selectively erased or rewritten by the computer, not necessarily in the order that they were originally written. This design allows a full screen editor to "throw" a large number of lines of text up on the screen and through the use of a cursor and cursor movement keys, the user can move around on the screen making changes in the text. Add to this capability special editing commands (usually invoked with control characters), and a very powerful editor is the result.

Many word processing editors are available for micros today, employing both the line and the full screen orientations. In addition there are editors which fall somewhere in between (let's call them command driven screen editors) which are line oriented editors in every sense except that a portion of the screen is set aside to display an updated image of the text after each command. For the purposes of this discussion, though, they may be considered line oriented.

LINE ORIENTED EDITORS

There are several commands one expects to find in a good line oriented editor. Line oriented editors allow the user to refer to a line by either a numbering scheme (such as the BASIC editor) or by a "current line pointer" concept. In the first case, should a user want to list the first twenty lines of text in his document, he might say "LIST 1,20" or list lines 1 through 20. In the second case he would position an imaginary current line pointer to the top of the document (with a TOP command) and then he might issue the command "LIST 20" or list the current line and the lines following up to 20 lines. There is usually a line adding command which, when invoked, allows the user to enter lines of text automatically, one after another. Also, there are commands to delete a line or a range of lines and insert lines (similar to the adding command) between other lines. To facilitate finding a line which needs changing, there should be a scan command which searches the document for a given string, and, once found, a string substitution command, to allow minor changes to a line to avoid retyping it.

In addition to these basic commands, there are several possibilities. A very useful feature is the ability to globally change a given string to another. Suppose you have entered a form letter written to a Mr. Lee. Now you want to send the same letter to Mr. Green but Mr. Lee's name appears all throughout the letter. A global replace command would change all occurrences of the string "Mr. Lee" for "Mr. Green", shifting the remaining text on each line to the right to make space for the longer name.

Another useful command is one which permits copying of a line or group of lines from one place in the document to another. This is done, usually, by specifying the starting and ending line numbers of the lines to be copied and the number of the line after which they are to appear.

With the advent of the CRT some line oriented editors support a "local edit" command. With this command it is possible to ask the computer to list a line of text, placing the cursor upon it for updates. The user may then move the cursor over the line, making selective changes, inserting characters or deleting characters at will, and when the return key is pressed, the modified line replaces the old one in memory. An "edit" command can become the most useful in the line oriented editor's command set.

Other commands can set tabs (as on a typewriter), erase all text in memory to begin entering a new document, and display the amount of memory left in which to enter text. There are also many word processing functions which can be included as commands which will be covered in more detail in the next section.

FULL SCREEN EDITORS

Most full screen editors operate similarly, at least on the surface. A group of text lines is displayed upon the screen and the user may move his cursor around at will to make changes. The screen can be thought of as a window or "viewing port" on the text in memory. Using control commands, the user can move this window around over the text in memory, allowing him access to different parts of the document. In general there can be commands to move the cursor up, down, right, left, to the upper left corner of the screen, the bottom left corner, the end or beginning of a given line, or to preset tab positions. In each case the movement of the cursor does not affect the text in any way. In addition, there might be commands to move the screen window "down" or forward through the document, "up" or backward, and, if horizontal windowing is supported, to the right or left. This latter movement would only be necessary if lines in the document could be longer than the line length of the screen. Commands to move the window to the beginning and end of the document, or to the 31st line (for example) are also useful.

Other necessary commands include a searching capability similar to that in the line oriented editors. When the target string is found in the text, the cursor is left over it to make changes easier. A global search and replace is also a must. It should be possible to delete characters in a line and have the editor shift the remaining characters over to take up the space occupied by the deleted ones. Conversely, an "insert mode" should be provided to allow characters to be inserted in the middle of a line, shifting remaining characters over to make room. In the vertical direction, there is a need for a line delete command and a line insert command or mode as well.

Most full screen editors provide a means for moving or copying blocks of text lines from one place in the document to another. This is usually done by first "marking" the first and last lines to be moved with a special command, saving the block thus marked in an internal holding area, moving the cursor to the new place, and recalling the saved block of text. This mechanism is virtually universal for full screen editors which do not use line numbers.

Other commands can allow for the shifting and tabulating of text, splitting or joining lines, and setting, clearing, and using tabs. Ringing a bell (or beeping) when text is entered past a certain column is also a nice feature. Some editors allow commands to operate on words. A control key might delete the word under the cursor, for instance.

Since there are only so many control keys on the keyboard, it is possible that the editor must operate in different modes. Some editors have a "cursor movement mode" in which the control keys move the cursor or the window. Entering another control key might place the editor in "change" mode, redefining the control keys to have entirely different meanings. In general it is better to avoid this design due to the added complication in memorizing all these commands, but some use of modes should be expected.

Some editors set up for word processing will automatically prevent the splitting of words across line boundaries. This means that as you type, should the last word on a line not fit (as is usually the case) the editor will automatically move it to the beginning of the next line for you. Some editors operate only in this mode, others provide it as an option. Editors which only operate in this mode are at times hard to deal with when you are trying to place data in fixed positions on a line.

Another important consideration in all forms of editors is the handling of upper/lower case. Some keyboards (notably the Apple II and others) do not allow case discrimination with a shift key. Various schemes can be used to get around this. One is to assume all letters entered are lower case and require that upper case letters be preceded by a special character. When the document is "run through" the print formatter program, these two character sequences are replaced with upper case characters. Another, more agreeable way is to use a special key on the keyboard (such as ESC) as a "shift" key and to represent upper case characters on the screen with inverse video (unless an upper/lower case character generator chip has been installed). In either case, it is nice to have a "caps lock" mode as well.

THE FILE MANAGER

Once a document has been entered into the computer's memory via the editor, a provision is needed to save it to disk or tape. The file manager within the word processing package is provided for this purpose. Commands are usually available to load a document into memory which had been previously stored on diskette or tape, or, conversely, save a document which has been entered into memory with the editor as a file on a diskette. A command to list the documents stored on a given diskette is needed, as well as commands to copy, delete, or rename these files. Some of the more sophisticated file managers will allow the user to save a portion of the memory image (lines 250 through 273, for instance) as a file on the diskette, or to load a file from diskette as an insertion into the middle of the document in the editor's memory. Using this feature it is easy to piece together a document from "canned" pre-written segments.

One important consideration when evaluating a file manager is its use of a standard file format. Some word processors use a non-standard format for files, either to provide more efficiency, special purpose capabilities, or to protect the software from being illegally copied. If such a word processor is being considered, the user must ask himself if he intends to use the package for anything other than word processing. If the file manager supports a standard file format (one which can be accessed by Basic or other computer languages), then the editor can be used to type in programs as well as text documents. Also, although many such packages also offer a form letter or mailing list capability, it may be desirable or necessary to interface your own mailing list files, written by other software, to the word processor. Non-standard file formats can also limit your flexibility when it comes to copying files and making backups.

THE PRINT FORMATTER

Second only to the editor in importance is the formatter part of the package. The print formatter accepts as input your edited document (either from the memory image created by the editor or directly from disk or tape) and creates as output a typewritten result on the printer. This may seem very simple, and it can be. Usually, however, the job of the print formatter is quite complex. A good formatter must keep track of how many words will fit on an output line, never allowing a word at the end of the line to be broken in half. It can justify the resulting line so that both the right margin and left margins appear even (more on this later), and it can determine when a page is full, and automatically go to the top of the next page and print a title and/or page number.

In the simplest case, input to the formatter is just pure text lines which are dumped to the printer without change. To cause the formatter to "massage" the text into a more presentable form, the user must insert formatting commands into the text at strategic places. This concept is also used by computer typesetting software (which is remarkably similar to word processing software) and the commands are the "mark-up" language. Thus, the user enters his text and "marks it up" with special commands to tell the formatter when to explicitly go to a new line where a paragraph is to begin, and when to underline or overprint. In order to better understand the capabilities of a formatter, certain terms need to be defined.

LINE FILLING

Usually, the line length of the editor will not be the same as the final output image (although this need not be true). On a system that does not have a video screen capable of displaying a full 80 columns, a "line filling" technique is most commonly used. To allow for this, the formatter can be made to do 'filling' or, to put it another way, it can be put in 'fill' mode. This means that, if after moving an input line to the output line buffer, if there is room for more characters on the output device, the formatter fills the output line by "stealing" words from the next line(s). On the other hand, if the output line is shorter than the input lines, the formatter will only use as many words on an input line as will fit, and will use the remainder as the first part of the next output line. Another use for filling is in updating documents. Suppose you have entered a document with the editor but now realize you left out a word. After inserting the word into a line, if filling was not available, you would have to either live with a line that is little longer than any of the others or else retype the remainder of the paragraph. With a filling option it doesn't matter what the input looks like, the output lines will be filled and look normal. When filling, some word processors will "eat" or throw away excess blanks between words reducing down to one blank between words and two following sentences. This practice can be either an asset or a liability, depending upon the types of documents being entered.

JUSTIFICATION

Related to filling is the concept of justification. Lines can be left justified, right justified, centered, or fully justified ("even margins"). Using a typewriter, everyone should be familiar with left justified lines. This just means that the text starts on the left margin and words are separated on the line by one space. Left justified lines have what is called a "ragged" right margin, since it is unlikely that every line will end in the same column. Right justification, rather less useful, is the opposite of left justification. All the lines appear to have been shifted over to the right so that the last character in each falls on the right margin column. A fully justified line is similar to the appearance of typeset material such as one would find in a book. To justify such a line the formatter adds spaces between the words on the line (as evenly distributed as possible) to force the last word to end on the right margin. You could do this on a typewriter but this would require typing the line once, computing the number of spaces to add, and then retyping the line, adding the proper number of spaces between each word. Examples of normal left justified text and fully justified text are shown in EXAMPLE A and EXAMPLE B respectively. EXAMPLE B may appear better than ordinary typewritten text but it is still a long way from the appearance of typeset material. This is largely due to the limitations of a typewriter. An ordinary typewriter (and most computer printers) will "escape" or move the carriage a fixed distance after each character is typed. Thus, the carriage moves the same distance for the letter "i" as for the letter "D". Newer printers, such as the Qume, Diablo, and Spinwriter, allow this "escapement" to be varied, depending upon the last character typed. This is called "proportional spacing". The result is a product much more akin to typesetting (EXAMPLE D). Since these printers can, under computer control move their "carriage" in very small increments, it is possible to justify lines much more evenly than before also. This practice is called "incremental justification". EXAMPLE C is the result of both proportional spacing and incremental justification. At the time of this review there is no word processing software which takes full advantage of these new printers. The closest any comes is in providing incremental justification — none supports proportional spacing.

Getting back to our discussion of word processing formatters, there should be a capability for filling and left or fully justified lines. Some word processors will operate only in the filling mode (it can not be turned off). This can be a disadvantage when tabular information is being entered (especially if the formatter "eats" blanks as mentioned earlier). In general, it is best if data can be entered either as a stream of words to be made into paragraphs, filling with or without justification, or as an exact image of the output (such as a table or chart), with filling and justification off.

Other formatter commands allow the user to specify left and right margins, the number of lines to skip at the top and bottom of a page, the title that is to appear at the top and/or the foot of each page, the position of any page number, line spacing (single, double, etc.), underlining, bold face or overprinting, centering lines, and paragraph indentation. Also useful in most formatters and mandatory in those which insist upon "eating" blanks is the ability to set up printer tabs so that columnar information can be printed.

Some of the more sophisticated word processing systems provide additional formatting capabilities. Among these is a "widow" prevention feature. A widow is a portion of a paragraph, usually only the first line or two, which may appear at the end of a page, with a remainder of the paragraph appearing on the top of the next page. This is considered undesirable. Some word processors will not start a new paragraph if only two lines are left on a page, but will automatically go to the next page. Trailing widows are also possible, but these are a lot harder to eliminate and usually only expensive typesetting software can deal with them.

Another advanced feature is the ability to process a form letter, reading insertions of name and address data into specific places in the letter. Some packages offer this as a separately purchased option, others provide it as standard. Also, some treat form letters specifically, while others allow a more general ability to read "records" from an external file, skip blocks, and loop.

Other features to look for in a formatter include support for special characters which may be available on a printer but not necessarily in the character set of the editing keyboard. Another useful capability is that of turning the formatter's output on or off. Many times, while "debugging" a document, it is desirable to print only a selected portion (in the middle or at the end) while still processing the beginning of the documentation for pagination, etc. This feature can also be used to insert comments to the person editing the document that are not to be printed on the final output. Lastly, some formatters allow commands to pause printing, prematurely abort printing, and obtain strings of text from the terminal for insertion into the documents (example: the document can prompt the person printing it for its output line length).

A final capability which can be much more useful than it might appear is the ability to "proof" a document by running it through the formatter and placing the output on the CRT exactly as it will appear on the printer. This can save paper and time.

A part of each formatter is its interface to the user. The interface should allow the specification of default margins, page sizes, whether forms are continuous or single sheets requiring a pause after each page in spacing, and, most importantly, the address of the printer interface. Some word processing systems will also automatically load the printer interface routine as well. It should also be possible to abort printing at any time.

EXAMPLES

The Association for Computing Machinery (ACM), which has long advocated freedom of expression for scientists around the world, now stands accused of censorship. The brouhaha erupted late last month when the 37,000 member society was accused of "censoring" two candidates' ballot statements for the association's upcoming election of national officers. The accusations were made by present office holders. They have accused the ACM "establishment" of trying to rig the election by this effort.

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(4)

A Cautionary Word

The programs available for microcomputers vary widely in performance and in cost. None of them will give the micro user all of the capabilities of a \$15,000 standalone word processing system. If you have experience using one of these dedicated machines, you may be disappointed in the performance of even the best of the programs for personal computers. Remember, this machine is a general purpose, low cost machine that allows you to accomplish many different tasks. Word processing is only one of them. The dedicated word processors were designed specifically for this job and provide many extras, including function keys, that are not available on microcomputers.

But if you are not experienced with the dedicated machines you will find most of the programs presently available to be functional, many times more useful than an office typewriter, and considerably more fun.

CHOOSING A WORD PROCESSING SYSTEM

Depending upon the degree of intended use of the software, one should emphasize either functionality or ease of use. If you plan only occasional use or simple word processing such as correspondence, your primary concern should be ease of use. Price is not always a good indicator of the quality of a word processor. A powerful word processing system with lots of commands could be a burden if you must re-learn it each time you use it. Pay special attention to the degree to which the editor conforms to conventions to which you are familiar in your other uses of the computer. For instance, one word processor uses the return key to move the cursor up rather than the usual downward motion. The occasional user might find this much more of a liability than the same software's ability to add columns of numbers is an advantage. On the other hand, if you intend to do lots of word processing or if you will be entering books or manuals, a more powerful word processor might be a better choice. With extensive use, even the most unconventional editor can become familiar and easy to use; however, one which does not support a formatting function you need, requiring extra effort during editing, can be very limiting. In either case, you should see each piece of software you are considering demonstrated in a way approximating your use before purchasing.

FUTURE WORD PROCESSING SYSTEMS

No overview of word processing would be complete without a look at what the future holds. As good as word processors are now (especially when compared to a typewriter), they can be better, and, having this perspective can make your selection better informed. Most of the following features are now available on word processing or typesetting software for larger computers. There is no reason that they could not be implemented on a micro.

EDITOR

PROGRAMMABILITY — Some more advanced editors allow a limited programming capability. This could be used, for example, to run through the document, looking for a string, and then shifting text around in the lines where it is found.

USER DEFINABLE KEYS — The choice for the function behind a given control character ought to be left up to the user. Also, he should be able to define a key to be a string of characters; a commonly typed word (such as "the"), a string of editing commands, etc.

HORIZONTAL WINDOWING — Most word processors do not need more editor line length than the width of a screen but the use of the editor on other files with various record lengths would require the ability to move the full screen editor's window to the right as many times as is necessary to view the longest line.

TEXT COMPRESSION — Since storage on floppy disks is limited, a useful feature would be to compress duplicate characters (such as several blanks in a row) into a "compressed format" for storage on the disk. When the file is loaded later these sequences can be expanded again.

SPLIT SCREENS — This feature allows the user to divide his full screen editor screen into two or more windows, each viewing a different portion of the file or different files. With a given command he can switch between these windows, giving the effect of having several (smaller) terminals.

FORMATTER

MACROS — This could be the most important of all new features in a formatter. A macro is a collection of formatting information and text, all collected under a single special word. Whenever this word is entered into the text, it is replaced with the text and formatting commands it represents. Use of macros makes the setting up of standard chapter headings very easy, for example. Macros can be written to simplify a complicated formatting command set for a specific purpose, such as legal documents. Macros should be able to accept parameters at the time of their invocation as well (such as the title of the chapter).

TOP/BOTTOM PAGE EXITS — Used in conjunction with macros, this feature would invoke a given macro whenever the top or bottom of a page is reached to allow special formatting.

RECTO/VERSO — This allows a different head or foot title and page number placement for even or odd numbered pages. A capability for ejecting to an even or odd page should be provided so that chapters will begin on a right hand page.

KEEPS — If illustrations or diagrams are to be added after the document is typed, space must be left for them. This space is called, in typesetting terms, a “keep.” Keeps can be as simple as skipping a few lines or as complex as allowing text to “flow” all around a rectangle in the middle of a page. The formatter should also allow for keeping a reference to an illustration on the same page (or its recto or verso page) as the keep for the illustration.

MULTIPLE COLUMNS — It should be possible to specify text to be put into several columns across the page like a newspaper. Doing this is complicated, since widows must be avoided on a column level and keeps must be handled properly.

PROPORTIONAL SPACING — To more closely approximate the look of typesetting on a Diablo printer or its equivalent, software should support true proportional spacing as shown in an earlier example.

INCREMENTAL JUSTIFICATION — Along with proportional spacing, justification should be at the 60th of an inch level with inter-word as well as inter-letter justification possible.

HYPHENATION — To improve the justification of short lines (especially columnar text), a good hyphenation algorithm and exception dictionary for the automatic hyphenation of words is a must.

WIDOWS — Leading and trailing widows should be avoided both on a page and column basis.

SUB/SUPERSCRIPTS — For printers which can handle them, subscripts and superscripts should be supported.

MULTIPLE TYPE FACES — It should be possible to switch fonts or, in the case of a printer, pause to switch the daisy, ball, or thimble for headings and italics.

SPECIAL SYMBOLS — Support for math thimbles for producing formulae may be required.

SPELLING CHECKER — Algorithms and dictionaries could be used to check spelling of common words.

TABLE OF CONTENTS/INDICES — A computer is well suited for compiling an index or table of contents from keywords embedded in the text.

BOXES, LINES, AND RULES — With the graphics capabilities of the Diablo type printers, drawing boxes or lines for tables and charts should be part of the formatter’s command set.

PAGE VS. GALLEY — Most word processors produce pages. A “galley” is a continuous stream of text which is later cut up and pasted-up into pages for reproduction. Although one would expect the production of galleys to be a subset of page production, this is not always the case, since some formatters insist upon skipping lines or sending form feeds.

FOOTNOTES — In addition to superscript support, the footnote information should be made to fit at the bottom of the page on which it is referenced.

REVISION BARS — When revisions are made to program documentation, a vertical bar is sometimes placed in the margin to indicate to the reader where additions or changes have been made since a previous version.

COUNTERS — If several numbered paragraphs appear in a document, it is sometimes better to have the formatter assign these numbers sequentially so that insertions will not require extensive hand renumbering.

ABSOLUTE TABS — This is the ability to tab directly to a column on the line both forward or backward, within the margins or outside of them. This allows the overwriting of a row of periods with text by tabbing back to the beginning of a line to produce table of contents entries, e.g.:

CHAPTER 1 — I AM BORN	1
CHAPTER 2 — I GO TO SCHOOL	15

OUTPUT TO A TYPESETTER — It should be possible to produce an output file on the diskette from the formatter in a format acceptable as input to computerized typesetting equipment. Having this capability can save money when typesetting work is sent out to a typesetting service and reentered there. Since there are many kinds of typesetters and no industry standard for their input, this capability may not appear in micro-based word processing software for sometime to come.

VERTICAL JUSTIFICATION — Just as a line containing words can be justified by adding spaces between words and letters, so a page can be justified by adding small increments of space between paragraphs and lines.

WORD PROCESSOR

Company: Atari

Language: Assembly Language

Hardware Requirements: 48K, disk drive. Printer recommended.

Department: Business

Sugg. Retail: \$149.95

Availability: 9

Disk or Tape: Disk

OVERALL RATING **B+**
EASE OF USE **A**
VENDOR SUPPORT **B+**

DOCUMENTATION **A**
VALUE FOR MONEY **B+**
VISUAL APPEAL **A**

RELIABILITY **A**
ERROR HANDLING **A**

There are, unfortunately, only a few word processors available for the Atari 800 computer. The *Word Processor*, from Atari, is truly the cream of the crop. The program offers most of the major features required by most users, and presents them in such a way that even newcomers to computers will feel comfortable using the system. The program is completely menu-driven, and almost literally holds your hand through the different sections of the program.

The *Word Processor* is designed for use on an Atari 800 computer with one disk drive; but the addition of a second drive eliminates the need for disk swapping. You must also have 48K of RAM to use the program. An Atari 825 printer is needed for final output of your documents. The user's manual makes no mention of compatibility with other printers, which could prove hazardous to Atari considering the popularity of other printers, such as the Epson MX series. The only other piece of hardware required is the 10K ROM cartridge, necessary for running the training disk supplied with the program.

Word processors are generally divided into two distinct sections. The first is the Editor, where your text is entered and modified to suit your needs, and the second is the Printing/Formatting section. This section takes the text from the Editor and sends it to the printer (or other output device) according to your specifications. The *Word Processor* follows this format, with one difference. Formatting specifications can be set up prior to entering your text. This gives a good idea how your final document will look when printed at the time you enter text into the Editor.

The Editor. Most time using a word processor is spent in the Editor. Atari, taking this into consideration, has created an Editor that's very easy to use and even easier to learn. The Editor is menu-driven: instead of having to tell the program what you want to do, the program offers you choices which are selected by a single keystroke. The *Word Processor* uses what is referred to as a "Moving Window" for text entry. One of the major drawbacks of the Atari 800 is the inability to put more than 40 characters on one line. The *Word Processor* compensates nicely for this. When you reach 40 columns of text on one line, the display scrolls to the left, which simulates movement of the window to the right. This feature allows you to see where your text will be placed in the document relative to the rest of the text, a feature treasured by those who need to see the format of a page before it is printed. For example, this is desirable for users trying to enter data in a columnar fashion. The one disadvantage to this method is the inability to see entire lines of text at one time.

The editing commands in this program run the full gamut of those needed for some of the most sophisticated applications. Of course, full cursor movement (up, down, left and right) is provided, as well as specialized cursor movement commands. These include beginning and end of line, top of page, bottom of page, and end of text. Also included are commands for moving the text window. One welcome feature is the ability to leave the Editor and see a graphic representation of your document, with the position of the text window shaded to a different color. This allows you to see what portion of the document you are editing relative to the rest of the text. Movement of the text window can also be done while in this mode.

Other commands in the Editor allow for the insertion both of characters and entire lines. The insert feature is extremely useful when additions need to be entered in the middle of pre-existent text. One nice touch is the ability to recall lines of text to their previous state after being edited. *Word Processor* also has specialized commands for deleting specific words, parts of a line, entire lines, or entire blocks of text.

Advanced Editing Features. Extra features included in the program set it apart from the rest. Although other programs have some of these features, the implementation and execution of these in Atari's *Word Processor* are excellent. One of the most useful features is "Block Moves," which allows you to put an entire block of text into a special portion of the computer's memory called a Buffer. Once the text is in the Buffer, you can insert it into any portion of your document. This is similar to the cut and paste method when editing on paper. Another advanced feature is the Search command which will move your cursor to any specified word or phrase. When used in conjunction with the Replace command, the program will replace any desired word or phrase with a new one of your choice. A nice addition to the Search and Replace command is the Verify command. This command allows for selective Search and Replace on the same word or phrase. With the Verify command on, the user must verify each replacement by striking a key. If the replacement is not desired in a particular place, the program will search to find the next occurrence of the word or phrase in question.

Printing and Formatting. Once your document has been entered into the Editor, and you have made any necessary corrections, it's time to print the document. *Word Processor* gives you menu selections which allow you to change the specifications as mentioned, controlling the final printed appearance of your text. These specs, as mentioned, can be defined before entering your text, allowing you to see your text in a final form while editing. The specifications can also be changed, if necessary, at the time you print. By selecting many options when it is time to print, you may change the appearance of the whole document, or specific pages. Since your documents are saved as

a series of separate pages, there are commands for pagination which allow you to control the allocation of text on each page. It requires a little more thought and time to execute, but the final output is well worth the time spent.

When actually printing, *Word Processor* allows for the printing of specific pages in a multi-page document, and multiple copies. There are only two things about this program that keep it from being a truly first class word processing system. First, it will not right-justify the proportional type of the Atari 825/Centronics 737 printer. This is not that serious, as the user can see how lines will be broken when entering text. This way the proper decisions can be made as to where lines should end and where hyphenation is needed. The second drawback is that the program will not print a multi-page document straight through without pausing at the end of each page and waiting for you to roll the paper to the top of the next page. You then need to type a single keystroke to start printing on the next page. This is because the Atari 825/Centronics 737 does not have a form feed function. This problem may be eliminated with the use of other printers; but, as previously stated, the manual makes no mention of compatibility with other printers. Other than those two minor drawbacks, the output of the *Word Processor* is top notch.

Documentation. The documentation supplied with the *Word Processor* is by far the most complete among all of the word processors for the Atari. It consists of six lessons at the front of the manual, which familiarize the user with the program. In addition, a very thorough reference section describes all of the system's capabilities in great detail. Also included is a demo disk and audio tape, used in conjunction with the first two lessons in the manual. The tape and lessons assume that the user has never used or seen a computer before, making this an excellent teaching tool.

Conclusion. When all is said and done, *Word Processor* is the most powerful, and the easiest to use, of all the Atari word processors currently available. Aside from the two drawbacks mentioned in the printing section, this program could be used for almost any word processing application, rivaling the capabilities of some dedicated standalone systems. This is one program which is definitely worth the money.

TEXT WIZARD

Company: Datasoft

Language: Machine

Hardware Requirements: 32K, disk drive, printer.

Department: Business

Sugg. Retail: \$99.95

Availability: 5

Disk or Tape: Disk

OVERALL RATING **A-**
EASE OF USE **B+**
VENDOR SUPPORT **B**

DOCUMENTATION **B+**
VALUE FOR MONEY **A**
VISUAL APPEAL **N/A**

RELIABILITY **A**
ERROR HANDLING **B**

Text Wizard is a versatile word processor available from Datasoft, Inc. The program incorporates all of the standard features found on most microcomputer word processing systems, as well as including some nice extras. The program requires 32K of RAM (48K of RAM is recommended for use with large data files), and is compatible with both the Atari 825/Centronics 737 printer and the Epson MX-80. Compatibility with other printers is not mentioned in the manual.

Like the other word processors available for the Atari, *Text Wizard* is broken into two separate sections. The first is the Editor, where the user inputs text and makes any necessary changes. The second is the Print section, which takes the text that has been entered and sends it to a printer to produce the final hardcopy.

The entire program (both Editor and Print sections) are not Menu Driven, as are *Word Processor* and *Letter Perfect*. With *Text Wizard*, the user is required to type in the selection desired from the program. This allows the user to go to any section of the program at any time, without lengthy delays waiting for different levels of menu selections. Users must decide which approach they prefer, the convenience of menu selection or the speed increase offered by a Command Driven system such as *Text Wizard*.

The Editor in *Text Wizard* has been designed to be as easy to use as possible. The screen display for text editing uses the full 40 columns available on the Atari. With *Text Wizard*, all the text that you are entering is visible at one time. When typing, the program will automatically wrap-around any words which have to be split to the next line of text. Using this technique, the user does not need to worry about where a line should end, the program takes care of this.

Text Wizard offers all of the cursor controls which are available on standard word processors. Standard cursor movement (up, down, left, and right) is controlled by the Control key and the four arrow keys on the keyboard. Other cursor controls include movement to the beginning and end of your text, as well as the beginning and end of the page you are currently editing. Also, the program allows for the deletion of individual characters, entire lines of text, and blocks of text. An Insert mode is also included in the program. The implementation of the Insert command is extremely good. By entering the Insert mode, the program automatically moves any text after the current cursor position to make room for the new added text. The wrap-around feature of the program is preserved in this mode, allowing for the continuous insertion of text without worrying about whether or not the inserted text will fit all on one line.

Other desirable features found in the *Text Wizard* editor include the ability to move entire blocks of text from one location to another in your document. This is accomplished by placing the designated piece of text in a special buffer, moving the cursor to the appropriate place in your text, and then inserting the stored piece of text. This feature can also be used to duplicate portions of your text in other places in the document. Another powerful combination of commands are the Search and Replace functions. The Search command, when used alone, allows you to find specific instances of a word or phrase in your document. When used with the Replace command, the two become a very useful editing tool. This combination permits you to change each occurrence of a word or phrase with a new one. When using this function, the program required the user to verify each change, making it very easy to incorporate selective changes in your text. Another very powerful feature is the ability to merge text files stored on your disks, creating documents which include portions from any number of different files.

Overall, the Editor of *Text Wizard* gives the user most of the basic functions required by the average user. It is easy enough to learn that new-comers to computers will be able to take advantage to even the most sophisticated commands almost immediately.

Once your document has been entered in the Editor and any changes that are necessary have been made, it is time to print. *Text Wizard* has default values that control such items as right and left margins, and page length. These values can be changed by inserting formatting commands in the body of your text. The default values may be selected at the beginning of the text, and then later changed by using these formatting lines; or the entire piece of text may be changed at the very beginning of the print process.

Text Wizard uses dot widths for setting right and left margins. This allows for extremely fine adjustments. Another nice feature is the ability to define headers and running feet to be printed at the top and bottom of each page. The program will also handle page numbering at either the top or bottom of the page. One feature found in *Text Wizard*, which I have not seen in any other microcomputer word processing system, is the program's ability to set a second set of right and left margins, allowing the program to print out the text in a double column format.

One disadvantage in the Print section of *Text Wizard* is that it will only allow you to print from the beginning or middle of a document to the end. You cannot, for example, specify a selected printout of pages 3 to 7 in a twenty page document. Another disadvantage is the inability to specify more than one copy of a document while printing. You must individually print each copy that you want. Aside from these two disadvantages, however, the Print section of *Text Wizard* forms admirably. It evens right-justification in the proportional print of the Atari 825/Centronics 737 printers. This extra is something that the word processor from Atari will not do.

The documentation supplied with *Text Wizard* steps the user through an entire editing process. There are clear and understandable explanations of all the system's capabilities. A reference card is also provided, which summarizes the instructions for each command.

Datasoft will allow you to purchase a back-up copy of the program for a cost of \$5.00. Any replacements after that cost \$30.00.

In conclusion, *Text Wizard* is a very powerful, easy to learn word processing system containing most of the features needed by serious users, and is yet simple enough for the computer novice to learn quickly and easily. When the price of \$99.95 is considered, it would be hard to find a word processor which offers so many features for the money.

LETTER PERFECT

Company: LJK Enterprises, Inc.

Language: Machine

Hardware Requirements: 24K, disk drive.

Department: Business

Sugg. Retail: \$149.95

Availability: 7

Disk or Tape: Disk

OVERALL RATING **B**
EASE OF USE **B**
VENDOR SUPPORT **C+**

DOCUMENTATION **B**
VALUE FOR MONEY **C**
VISUAL APPEAL **B**

RELIABILITY **A**
ERROR HANDLING **B**

Letter Perfect represents reasonable value in a basic, easy to learn and use word processor which incorporates a number of special features. It offers a straightforward menu system for easy access to all editing, printing, and file management functions; a full screen editor; and imbedded editor commands for all formatting. Special features include document merging, database merging for form letter production, on-screen format previewing, a safety file locking function, and also support and easy access to special printer characters and functions.

Letter Perfect uses the standard 40 column Atari video screen for data entry. Text that is entered beyond 40 columns is automatically wrapped around to the next line. Lower case characters can be viewed on-screen, accessed through the Shift key. There is also a Shift Lock feature included. The program is compatible with two types of printers. The first is the Atari 825 (similar to Centronics 737/739 printers) and the second is the Epson MX series of printers. Since different configurations are required for each, two versions of the program are provided on the one disk, one on each side. You simply use the side needed for your particular printer.

Letter Perfect's editor uses Control characters for a full range of cursor and text movements, insertions, deletions, search, search and replace, buffer creations, and additions for block text moves, underlining, boldfacing, and so on. Unfortunately, though, there is little apparent logic to the Control characters selected for each command, so memorizing them is more of a chore than it should have been. (However, since the full range of typical editing functions can be performed using a fairly limited number of commands, a relatively small investment of time is required to learn them.) The editor further lacks an easy insertion mode for incorporating additional text in the middle of existing material: you can insert a single blank space or line at a time, but can't instruct the program to automatically move subsequent material ahead to make room for new text. Editor-related functions include the ability to merge any file already on disk to the end of the current file in memory, and to lock files to prevent accidental over-writing.

Letter Perfect offers a complete set of formatting capabilities, which you can assign by imbedding commands in your document while entering text in the editor. These commands enable you to vary from the system defaults (such as pre-set margins, tab stops, etc) established when you configure the program. Since all document formatting is handled in the editor, there are no extra steps needed between editing and printing. This enables you to move quickly from one to the other without any delays. Multiple formatting commands can be entered on a single line, along with comments. These include directions for variable margins and line spacing; headers and footers; page numbering and resetting with optional alternating page position; full justification or left justification of text; centering or right justification of individual lines, headers, or footers; printer supported subscripts, superscripts (super and subscripting are not supported on the MX series of printers); and other special characters or capabilities. Tabs are provided, but there is no automatic paragraph indentation feature. A negative indent is available, but must be requested on each occasion. You can preview formatted documents on the screen from the main menu.

Letter Perfect's most outstanding feature is its database merging capability for form letter and report production. This easy-to-use module lets you merge *Letter Perfect* documents with all or selected records from a database you created either in LJK's Data Perfect database program, or within *Letter Perfect* itself. (Creating a database within *Letter Perfect* is basically a matter of entering data strings in consistent order.)

The program uses its own disk operating system, and includes a module for formatting disks. The disks formatted by the program are to be used for data storage. LJK Enterprises advises against using the program disk for data storage.

The contents of *Letter Perfect's* manual are adequate, but they are poorly organized and formatted for both reading and reference purposes. Some stylistic improvements, type variety, proper headings, and better contents listing are needed to make the current text usable, and to do justice to the program. LJK Enterprises will replace a damaged disk for \$10 on the first occasion, but charges \$30 for backup copies and subsequent replacements.

Letter Perfect itself lacks some of the more sophisticated features such as hyphenation, footnotes, macros, and indexing) of other word processors in the same price range. It has the virtue, though, of being quick and easy to learn and use. It could be a good choice for a user needing basic functions and form letter production capabilities.

DATA BASE MANAGEMENT SYSTEMS

Author: [Illegible] Date: [Illegible]

WHAT IS A DATA BASE MANAGEMENT SYSTEM?

A Data Base Management System, in formal terminology, is a controlled collection of data files which are organized in such a way as to permit the efficient retrieval of information. The files are organized in a way that allows the user to access the data in a logical manner. A Data Base Management System is a program which allows the user to store, retrieve, and update data in a logical manner. The system is designed to be flexible and to allow the user to change the structure of the data as needed. The system is also designed to be secure and to allow the user to control access to the data.

The Data Base Management System is a program which allows the user to store, retrieve, and update data in a logical manner. The system is designed to be flexible and to allow the user to change the structure of the data as needed. The system is also designed to be secure and to allow the user to control access to the data. The system is designed to be efficient and to allow the user to retrieve data quickly. The system is also designed to be easy to use and to allow the user to interact with the data in a simple and intuitive way.

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DATA BASE MANAGEMENT SYSTEMS

WHAT IS A DATA BASE MANAGEMENT SYSTEM?

A Data Base Management System, in formal terminology, can be defined as a centralized collection of data stored for use in one or more applications, utilizing hardware and software facilities to produce information in a display or hard-copy report format. That's fine as far as it goes as a generalized definition. However, a DBMS infers different meanings to various users. A businessman with a general ledger, inventory or sales analysis requirement will look at the management of a data base system on a more grandiose and sophisticated scale than the average user of a personal or microcomputer system. Hierarchical file structures, esoteric data access methods, data redundancy, data security and multi-terminal usage all fall within the realm of data base management systems as utilized by large organizations. Compare this with a data file a microcomputer may process, a record keeping system involving a personal checking account, book collection catalog or even a small business products inventory system. The differences are monumental. The ideal DBMS falls somewhere in between; one that can handle personal and business applications using the microcomputer with some of the approaches adopted by the large computer system users.

A data base basically consists of elements called fields, records and files. A "field" is nothing more than a unit or piece of information, such as the author's name in a book collection. The next building-block item is the "record," which contains a number of related fields involving a person, place, thing or (even) idea. A book, in itself, could be the equivalent of a record as defined in the above example, containing fields for author, publisher, copyright date, number of pages and any other element that pertains to what constitutes, a book. To go one step further concerning the building blocks for a data base, the "file" is composed of records which, in turn, make up a meaningful whole, much as a library contains a collection of books. A micro data base management system, then, is made up of a file or files which contain related records embodying associated fields. These elements are identified by other terms (sometimes dependent on the mood of the overwrought user) such as data items, elements, segments and domains in larger systems, but they still are basically known and referred to as fields, records and files (in spite of IBM).

A DBMS is only as good as its inherent features. Primarily included among those features are the following attributes:

EASE OF USE — for short learning curve, menu design, and user-oriented operating features.

DATA RELIABILITY — for integrity of data, back-up procedures, and checkpoints for system failures.

FLEXIBILITY — for input and output formats.

DATA SEQUENCING CAPABILITY — for sorting in ascending or descending order involving multiple fields.

ARITHMETIC CAPABILITY — to add, subtract, multiply, divide, and exponentiate.

EDITING CAPABILITY — applied to date formats, decimal specifications, monetary formats, and numeric/non-numeric testing.

SELECTION CAPABILITY — for specified field or string values, record numbers, and numeric range searches for record retrieval.

DEFAULT OPTIONS — for processing values and automatic report formatting.

REPORTING CAPABILITY — to display and hard-copy options, totals by control break fields, final totals, and columnar and vertical heading reports, label formats.

EXPANDABILITY — for field size, record size and file size.

MODIFICATION CAPABILITY — for system and program accessing (non-protection) for customized applications.

Looking further into the future involving the ideal micro DBMS, an idealized system would incorporate the following:

MATCHING, MERGING OR UPDATING WITH TWO OR MORE FILES — by processing options within a DBMS package.

TABLE LOOK-UP CAPABILITY — utilizing sequential, binary or displacement methods, depending on the look-up values (arguments) and how they are sequenced.

SPANNED DISK FILES — allowing for virtually unlimited file capacity and sorting range. (Currently implemented in some systems, but not all.)

SOURCE MASTER FILE EXTRACTION FOR BUILDING OTHER FILES VIA USER SPECIFICATIONS — either in the source master record format or "rearranged, added-or-deleted field" format (also included in some systems on a limited basis — i.e., "Data Factory 4.0").

HIERARCHICAL OR RELATIONAL FILE STRUCTURES — currently implemented in many CP/M systems, but not on the Atari because of memory restrictions. The IBM Personal Computer, with its 16-bit architecture, will be a prime candidate for these file formats — so, come on, Atari, start hustling.

FILE MANAGER 800 +

Company: Synapse Software

Language: Atari BASIC and Machine

Hardware Requirements: 40K, disk drive.

Department: Business

Sugg. Retail: \$99.95

Availability: 8

Disk or Tape: Disk

OVERALL RATING	A	DOCUMENTATION	A -	RELIABILITY	A
EASE OF USE	A	VALUE FOR MONEY	A +	ERROR HANDLING	A
VENDOR SUPPORT	B	VISUAL APPEAL	A		

Filemanager 800 + is an excellent disk-based file management program, providing great versatility in storing and retrieving information. Applications include mailing labels, stock portfolios, recipe files, home inventory, business inventory, and several others.

The program is menu driven, and commands are selected from one of several full-screen menus or from abbreviations displayed in a "command line" at the top of the screen. This ensures that you are never left wondering what to do next. Normally, pressing the Select key will return you to the last menu.

As records are entered into the file, an index key is updated and the record is stored on the disk. The maximum capacity is one file per disk (typically, several hundred files can be stored on a disk). The key contains characters from as many as three fields, allowing rapid random access to records which are searched for using these fields. Searches on other fields require each record to be read from disk, and this is a fairly slow process. You may redefine the index, but this again takes some time. However, searches using the new index will be considerably faster.

Creating fields and entering data is exceptionally easy with *Filemanager 800 +*. Field names can be up to twelve characters long. The fields and types are entered in a single list when you create a new form. The field types, among several, include: alphabetical, numerical, dollars and cents, number repetition, alphabetical repetition, and computed dollars and cents. The excellent screen editing capabilities of the Atari are used to correct errors, both while defining the fields and while entering data into the records. You may compute field entries from other fields, using not only the standard arithmetic functions but also more advanced functions such as trigonometric, square root, absolute value, and so on.

When entering data, the field names are displayed on the left of the screen and lines delineating the field follow. If you press the Return key, the cursor moves to the beginning of the next field, skipping over computed fields. After completing the data record for an entry, press the Start key to enter that record. The computed fields are now evaluated, and the results displayed on the screen. This process is slow and will annoy a professional typist.

A very useful feature in *Filemanager 800 +* is its ability to completely redefine the form after you have entered data into the records. This is very important if you have typed in several hundred records, and find that you need a new field or a different computation. In the re-definition process you can add and delete fields, change field sizes, and rearrange their order on the form. You can also convert numeric fields to any other type of numeric field, but they cannot be converted to alphabetic fields or (vice versa). There is a serious defect in this conversion process. If you define a new computed field, the program does not automatically compute the values of that field for each record. You must instead display each record on the screen, enter the update command, then re-save the record. This is a very tedious task if you have a large data base. Plan ahead and be sure that you have correctly included all computed fields when you create the form the first time around.

Reports can be generated by searching the file using search criteria on up to four fields. You can specify which fields and the order of the fields to be printed. If the heading is longer than the field, the heading is truncated. Printer controls select type fonts, spacing, and character size for most printers. The printer control for condensed print for the Atari 825 printer is given incorrectly on page 100 of the manual. The correct sequence is: <ESC> <ESC> <CTRL> <T>.

A very useful feature for reports is the program's ability to sum up a numeric column. For example, this can be used to compute the value of a collection, or an investment portfolio.

The manual is tutorial in form and very easy to follow; the main menu items are listed on index tabs. Its main drawback is the lack of a comprehensive index.

The program, finally, is highly recommended for file systems containing a few hundred records or less.

DATA PERFECT

Company: LJK Enterprises, Inc.
Language: Machine
Hardware Requirements: 32K, disk drive

Department: Business
Sugg. Retail: \$99.95
Availability: 6
Disk or Tape: Disk

OVERALL RATING **A -**
EASE OF USE **B**
VENDOR SUPPORT **C +**

DOCUMENTATION **B -**
VALUE FOR MONEY **A**
VISUAL APPEAL **B**

RELIABILITY **A**
ERROR HANDLING **A**

Data Perfect is a very professional disk-based file management system. The program is extremely versatile allowing many sophisticated features. The user can define his own screen format for entering data. Fields may be placed anywhere on the screen, and reports have a similar formatting flexibility. The program is suitable for most filing applications that are appropriate to perform on a microcomputer. The file is limited to the storage capacity of one disk.

The program is menu driven, with the main menu providing a selection of program functions. At each point in the program, an Option line presents the abbreviations for the allowed commands; but the abbreviations are not contained in the index, and a new user will frequently have to page through the manual to find the instructions for the options. The sophistication of the program is also its major drawback for the new or infrequent user in that it involves many more commands and options than are found in the other data management programs available for the Atari Computers.

The data is apparently stored in sorted order on the disk. The disk files are not accessible using Atari DOS 2.0S. Typically, several hundred records can be stored on a disk. Several thousand small records are possible. The first field in the upper left corner of the screen provides a key field for sorting. Data searches span up to four fields, using at most two criteria per field. Moreover, subfields can be marked for merging with the *Letter Perfect* word processor, also marketed by LJK Enterprises.

The screen format should be carefully planned before you create a new form. Field types include the following: alphabetical, numeric with fixed decimal options, formulas, and date fields. The most common mathematical functions are allowed for the formula fields. Long fields wrap-around and extend into the left margin — a minor annoyance. The fields are identified by a preceding character to remind you of the type of data to enter, and the cursor moves from field to field as you enter the data. Full screen editing is not available, and is probably not desirable with this type of data entry.

This program provides the best report customization available for the Atari computers. A seven line heading and two lines of detail per record are permitted, text may be included in the detail, and up to nine lines of detail can be accommodated under the label option. The screen scrolls horizontally over an 80 column width, so that the page may be set up on the screen in exactly the same format as it will be printed. The program also provides convenient customization for use with different printers. A very nice feature is its ability to save several report formats for printing future reports.

The format can be completely redefined after data has been entered. Fields can be added or deleted, their length and screen position changed, and new formula fields added and redefined. The merging operation is complicated, because you must direct each field by number from the old data base into the new data base. The manual does not say whether or not the formula fields are computed during the merging process, and I did not test the function. The manual itself is tutorial in form, and I found it moderately difficult to follow. In many places the tutorial format bogs down in details. It contains a large index, but there is no quick reference to the command prompts that appear on the screen. The main menu functions are contained on index tabs on the pages of the manual.

Data Perfect is recommended for data that will benefit by either its excellent screen formatting, or its report formatting features. It is not appropriate for small or moderate data bases that do not need the sophistication provided here.

DATA MANAGEMENT SYSTEM

Company: Atari Program Exchange
Language: BASIC and Machine
Hardware Requirements: 32K, disk drive.

Department: Business
Sugg. Retail: \$22.95
Availability: 6
Disk or Tape: Disk

OVERALL RATING **B**
EASE OF USE **B**
VENDOR SUPPORT **C**

DOCUMENTATION **B +**
VALUE FOR MONEY **A**
VISUAL APPEAL **B**

RELIABILITY **A**
ERROR HANDLING **B**

Data Management System is a small data management program with limited features. It is suited for the storage and retrieval of short records, such as telephone and address directories, and home inventories. A summary report can be printed for records retrieved by searching the data base. The size of the data base is limited to one disk, and the program uses only one disk drive. You are advised to copy the program onto a newly formatted disk before using it.

The program is completely menu driven, a feature which works very smoothly. Easy to follow prompts on the screen direct you through the procedure of setting up a data base. Only eight fields are allowed, and a record may

not exceed 140 characters. You are prompted to enter the headings, field length, and field type one at a time on the screen. After the data dictionary for the data base is created, you can only change a field heading, or delete the entire data base.

Because of the small size of each record, you must be careful to plan each field. I recommend that you define the data base characteristics on paper *before* entering them into the program. Enter only a few test records and experiment with these before you begin to work with a large number of records only to find that the format is unsuitable.

When you type data into a record, the fields are displayed one at a time in the order received. Requiring you to enter a value for every one of these fields is an annoying feature. For instance, you must enter a value into a date field reserved for a future event (such as the date you expect to sell a stock), even though a null value is appropriate.

Records are stored on the disk as they are entered. They can later be sorted on one field in ascending or descending order. You can sort fields in sequence, and maintain earlier sorts — a useful feature if, for example, you want to catalog record titles in alphabetical order under composers that are also in alphabetical order. The disk files are accessible using Atari DOS.

The program provides a simple list format for printing the results. You can select the fields, but they will appear in the order that you entered them into the data dictionary. The format is nicely designed with a title, page number, and column headings. The maximum width is 130 columns. You must change one line of code in the program to use an Epson MX-80 printer.

The manual is very easy to follow. It steps you through each example, using a sample data base provided on the original disk. The program, finally, is best recommended for very small data base applications.

DATA BASE/REPORT SYSTEM

Company: Atari Program Exchange

Language: BASIC and Machine

Hardware Requirements: 40K, Disk Drive

Department: Business

Sugg. Retail: \$22.95

Availability: 6

Disk or Tape: Disk

OVERALL RATING	B -	DOCUMENTATION	B +	RELIABILITY	A
EASE OF USE	B -	VALUE FOR MONEY	A	ERROR HANDLING	B
VENDOR SUPPORT	C	VISUAL APPEAL	C		

Data Base/Report System is a small data management program. The program's capabilities are similar to those in *Data Base Management*, also sold by the Atari Program Exchange. *Data Base/Report System* defines numeric fields, and produces reports that can summarize such fields over the records printed on the report. This makes it suitable for the storage and retrieval of investment data, such as stock or real estate portfolios; it might also be used to compute the value of coin or stamp collections. The size of the data base is limited to one disk, but the program does allow you to use a second disk drive for the data disk.

Program functions are selected from a main menu. The functions include the following: updating a file; printing standard reports; initializing a new file; printing customized reports; utilities; and changing the date and drive used for data. Both the record creation and the record display are field oriented. When you create a new file, you are prompted to enter the field heading and field type, one line at a time. The entire format is never displayed. If you exceed 255 characters, an error message is displayed, and you must start over to create the file. After the format is created, you can later add fields at the bottom, lengthen or shorten fields, or change field headings. Fields cannot be deleted. When you enter data into a record, the screen displays the fields sequentially in the order entered; and records are similarly stored on disk as they are entered.

The memory maintains a key which can be formed from up to three fields, sorted in ascending or descending order. The disk fields are accessible using Atari DOS. When printing, deleting, or changing records, a variety of search criteria are allowed on each of the three key fields. Temporary keys can be created in RAM to facilitate searching the data base; these do not interfere with the permanent keys that are stored on the disk.

Only three fields are displayed on the screen at a time. This poses a serious limitation when you try to read the records on the screen. The program also includes a global-field change function, which changes the same field in a large number of records. Select the records by using the search function, but remember that only the selected field is displayed on the screen for updating.

The program provides both vertical and horizontal report formats. The vertical formats may be printed in two columns, and the horizontal formats are well designed. A printed field width is the larger of the heading length or the field length, and these fields appear in the order you select. The same data base can thus be searched and printed in a variety of different formats. Be advised that the maximum allowed width is 121 columns.

The data base can be modified to print with an Epson printer. This modification involves listing 36 lines of BASIC code to the screen, and changing the printer Control characters on each of these lines. The appendix lists a table of 825 Atari Control character functions; however, the Epson Control characters are not listed.

The manual describes the operation of the program very well. A glossary of data base terms would have been useful, since a person unfamiliar with file management terminology may have some difficulty understanding the instructions.

I'd recommend this program for small data base applications that require summing up numeric fields, or that want some versatility in formatting the printed reports.

DATA BASE MATHEMATICS WITHIN RECORD

FUNCTION	DATA BASE	DATA MANG.	DATA PERF.	FM 800+
Sums	N	N	Y	Y
Means	N	N	Y	N
Minimums	N	N	N	N
Maximums	N	N	N	N
Roots	N	N	Y	Y
Weights	N	N	Y	Y
Count	N	N	N	N
Statistics	N	N	N	N
Average	N	N	Y	Y
User Defined	N	N	N	Y
Record Numbering	Y	N	Y	N

DATA BASE REPORTS

FUNCTION	DATA BASE	DATA MANG.	DATA PERF.	FM 800*
Horizontal Columns	Y	Y	Y	Y
Standard Format	Y	N	Y	Y
Math Formulas	N	N	Y	Y
Subtotals	N	N	Y	Y
Summary Reports	Y	N	Y	Y
Printer Customization	Y[9]	Y[7]	Y	Y
Title	Y	Y	Y	Y
Heading	Y	Y	Y	Y
Footing	N	N	N	N
Selectable Column Widths	N	N	N	N
Text Inserts	N	N	Y	N
Margin Justification	N	N	N	N
Variable Left Margin	N	N	Y	N
Number of Lines Skipped	Y	N	Y	Y
Characters Between Records	N	N	N	N
Number of Records Across Page	Y	N	N	N
Number of Lines per Record	N	N	Y	N
Summary Breakpoints	N	N	4	N
Sum Columns	Y	N	Y	Y
Mailing Labels	N	N	Y	Y
Clmn from Operation on 2 clmns	N	N	N	N

Key:

- [1] Add/Delete files only.
- [2] A-Strings, D-Date, N-Numeric, C-Computed, \$-Dollars and cents.
- [3] Add new fields and change the size of existing fields only.
- [4] Up to two each on four fields.
- [5] Change field headings only.
- [6] At beginning of field only.
- [7] One line of code in the program must be changed as described in the manual to use the Epson MX-80 printer.
- [8] Stable sort.
- [9] User should be programmer to convert printer control characters from Atari 825 to other printers.

DATA BASE SPECIFICATIONS

FUNCTION	DATA BASE	DATA MANG.	DATA PERF.	FM 800 +
Logical File Size	1 Disk	1 Disk	1 Disk	1 Disk
Protected	N	N	Y	Y
Maximum Field Size	100	30	127	100
Maximum Fields per Record	10	8	32	20
Maximum Record Size	255	140	511	2000
Record Selection/Search	Y	Y	Y	Y
Sort Fields	3	1[8]	4	3
Minimum Memory Required	40K	32K	32K	32K
Language	Basic/ML	Basic/ML	ML	Basic/ML
Field Types [2]	A,N,\$	A,D,N,\$	A,D,N,C,\$	A,N,C,\$
Multi-key Fields	3	N	N	3

DATABASE FEATURES

FUNCTION	DATA BASE	DATA MANG.	DATA PERF.	FM 800 +
Field/Record Reformat	Y[3]	N[5]	Y[1]	Y
Password Protection	N	N	N	N
Purge/Compact Records	Y	Y	Y	Y
Storage Transparent to User	Y	Y	Y	Y
User Designed Screens	N	N	Y	N
Help Command	N	N	N	N
Sort Maintained	Y	Y	Y	Y
Ascending and Descending Sort	Y	Y	Y	N
Derived Data	N	N	Y	Y
User Should be Programmer	N[9]	N	N	N
Error Recovery	Y	Y	Y	Y
Subfile	N	N	Y	Y
Combination of Files	N	N	Y	Y
Multi-record Updates	N	N	Y	N
Search Conditions	3	1	8[4]	4
Range	Y	Y	N	Y
Substring	Y[6]	Y[6]	Y	Y
Null Value	?	N	Y	Y
Predefined Queries	N	N	N	N
Full Screen Editing	N	N	N	Y
Command Entry	Menu	Menu	Menu	Menu

DATA BASE REPORTS

REPORT NAME	DATA BASE	DATA NAME	DATA REPORT	TIME PERIOD
Accounting	Y	Y	Y	Y
Inventory	Y	Y	Y	Y
Order Entry	Y	Y	Y	Y
Customer	Y	Y	Y	Y
Product	Y	Y	Y	Y
Supplier	Y	Y	Y	Y
Employee	Y	Y	Y	Y
Department	Y	Y	Y	Y
Job	Y	Y	Y	Y
Project	Y	Y	Y	Y
Contract	Y	Y	Y	Y
Order	Y	Y	Y	Y
Invoice	Y	Y	Y	Y
Receipt	Y	Y	Y	Y
Statement	Y	Y	Y	Y
Summary	Y	Y	Y	Y
Analysis	Y	Y	Y	Y
Forecast	Y	Y	Y	Y
Comparison	Y	Y	Y	Y
Trend	Y	Y	Y	Y
Detail	Y	Y	Y	Y
Summary	Y	Y	Y	Y
Analysis	Y	Y	Y	Y
Forecast	Y	Y	Y	Y
Comparison	Y	Y	Y	Y
Trend	Y	Y	Y	Y
Detail	Y	Y	Y	Y

DATABASE FEATURES

FEATURE NAME	DATA BASE	DATA NAME	DATA REPORT	TIME PERIOD
Accounting	Y	Y	Y	Y
Inventory	Y	Y	Y	Y
Order Entry	Y	Y	Y	Y
Customer	Y	Y	Y	Y
Product	Y	Y	Y	Y
Supplier	Y	Y	Y	Y
Employee	Y	Y	Y	Y
Department	Y	Y	Y	Y
Job	Y	Y	Y	Y
Project	Y	Y	Y	Y
Contract	Y	Y	Y	Y
Order	Y	Y	Y	Y
Invoice	Y	Y	Y	Y
Receipt	Y	Y	Y	Y
Statement	Y	Y	Y	Y
Summary	Y	Y	Y	Y
Analysis	Y	Y	Y	Y
Forecast	Y	Y	Y	Y
Comparison	Y	Y	Y	Y
Trend	Y	Y	Y	Y
Detail	Y	Y	Y	Y
Summary	Y	Y	Y	Y
Analysis	Y	Y	Y	Y
Forecast	Y	Y	Y	Y
Comparison	Y	Y	Y	Y
Trend	Y	Y	Y	Y
Detail	Y	Y	Y	Y

- Key:
- (1) Accounting
 - (2) Inventory
 - (3) Order Entry
 - (4) Customer
 - (5) Product
 - (6) Supplier
 - (7) Employee
 - (8) Department
 - (9) Job
 - (10) Project
 - (11) Contract
 - (12) Order
 - (13) Invoice
 - (14) Receipt
 - (15) Statement
 - (16) Summary
 - (17) Analysis
 - (18) Forecast
 - (19) Comparison
 - (20) Trend
 - (21) Detail

PERSONAL HOME FINANCE

THE HOME ACCOUNTANT

Company: Continental Software

Language: BASIC

Hardware Requirements: 48K, Disk Drive (Printer optional but recommended)

Department: Personal/Home

Sugg. Retail: \$74.95

Availability: 7

Disk: Disk

If you have ever had occasion to read articles or books pertaining to personal financial planning, I'm sure that you have noticed that there is a common theme that always appears: you cannot plan on where you are going (financially speaking) unless you know where you are now. So, if you are concerned about planning for your financial future, this program is a *must* first step.

The Home Accountant will handle your checkbook and budget, and is capable of processing up to five checkbooks and 60 budget categories. Checks may be printed if desired. *The Home Accountant* will assimilate and print a personal balance sheet showing your current net worth, as well as a monthly income statement. The Balance Sheet can be compared to a current or previous month's budget. The income statement shows the current month's financial resources; additionally, it can be used for comparison of the previous month's income.

A very powerful feature included in the system allows a complete listing of every transaction for any budget category. For example, you can obtain information on all checks written to the same person in any budget category or all checks that may be tax deductible in any category.

The program allows for approximately 600 transactions per disk. It also allows for the use of multiple diskettes. You may set up your program for either a calendar or fiscal year.

To borrow from the old Chinese proverb, "One picture is worth a thousand words." *The Home Accountant* allows not just one, but three ways of charting any account in Hi-Res graphics. Bar graphs may be used, for example, to show relationships between actual expenditures and budgeted amounts. Trendline graphs can be used to dramatically show current trends for your assets. Lastly, any three categories can be plotted at the same time.

In short, if you wish to keep tabs on your current financial position in order to effectively plan your financial future, get this program. It is the most flexible and versatile personal financial budgeting and planning package on the market today for the Atari computer.

THE JOHNSON FAMILY
PERSONAL BALANCE SHEET
DEC 31, 1981

ASSETS	THIS MONTH	LAST MONTH	NET CHANGE
CHECKBOOKS			
M. JOHNSON	1500	1000	500
R. JOHNSON	1000	750	250
TOTAL	2500	1750	750
CASH			
M. JOHNSON	100	200	100-
R. JOHNSON	50	100	50-
TOTAL	150	300	150-
OTHER ASSETS			
HOME STOCK	75000	75000	0
	5000	4000	1000
TOTAL	80000	79000	1000
TOTAL ASSETS	82650	81050	1600

THE JOHNSON FAMILY
PERSONAL BALANCE SHEET
DEC 31, 1981

LIABILITIES	THIS MONTH	LAST MONTH	NET CHANGE
CREDIT CARDS			
MASTER CARD	400	200	200
VISA	200	50	150
TOTAL	600	250	350
OTHER LIABILITIES			
AUTO LOAN	7550	8600	1050-
HOME LOAN	59000	60000	1000-
TOTAL	66550	68600	2050-
TOTAL LIABILITIES	67150	68850	1700-
NET WORTH	15500	12200	3300

** HOME ACCOUNTANT **
CHECKBOOK
STEVE SEP 1981
RECONCILE SECURITY

	\$AMOUNTS
STATEMENT BALANCE	264.00
OUTSTANDING CHECKS	34.00 (-)
OUTSTANDING DEPOSITS	0.00 (+)
NET BALANCE	230.00
CHECKBOOK BALANCE	230.00
YOUR CHECKBOOK: RECONCILES...CONGRATULATIONS	

THE JOHNSON FAMILY
PERSONAL INCOME STATEMENT
MONTH ENDED DEC 31, 1981

	THIS MONTH	PCT.	BUDGET	PCT.	NET DIF.	PCT. DIF.
INCOME						
SALARY	3000	95.2	3000	95.2	0	0
BANK INTEREST	100	3.2	100	3.2	0	0
STOCK DIVIDENDS	50	1.6	50	1.6	0	0
TOTAL	3150	100.0	3150	100.0	0	0
EXPENSES						
FOOD	400	12.7	350	11.1	50.00-	14.3-
CLOTHING	200	6.3	150	4.8	50.00-	33.3-
UTILITIES	150	4.8	200	6.3	50.00	25.0
TOTAL	750	23.8	700	22.2	50.00-	7.1-
NET INCOME	2400	76.2	2450	77.8	50.00	2.0-

HOUSEHOLD FINANCE

Company: Creative Software

Language: BASIC

Hardware Requirements: 32K; disk drive or cassette player.
Printer optional.

Department: Personal/Home

Sugg. Retail: \$39.95 disk / 24.95 cassette

Availability: 3

Disk or Tape: Both

OVERALL RATING **D**
USEFULNESS **C+**
VENDOR SUPPORT **C**

DOCUMENTATION **C**
VISUAL APPEAL **B**
EASE OF USE **B**

RELIABILITY **B**
ERROR HANDLING **B**
VALUE FOR MONEY **C**

Household Finance is a title that implies much broader capabilities than the program actually delivers. Specifically, this program only tracks, records, and reports on your personal household budget. Anything that will assist you to manage personal finances more effectively will normally get a positive vote from us. But, in this case, the program does not have enough capability to really handle well even its single function, household budgeting.

General categories and expense categories are limited to 15 each, far too few in my opinion. Another drawback is that the categories are fixed, and can not be changed or created according to your desires. The graphic representations of the information are nice, though not extraordinary. All in all, though a good concept for a computer program, *Household Finance* just does not take the idea far enough to offer the average householder much assistance.

CAR COSTS

Company: Creative Software

Language: BASIC

Hardware Requirements: 32K; disk drive or cassette player.
Printer optional.

Department: Personal/Home

Sugg. Retail: \$24.95 disk / \$19.95 cassette

Availability: 3

Disk or Tape: Both

OVERALL RATING **D-**
USEFULNESS **D**
VENDOR SUPPORT **C**

DOCUMENTATION **D**
VISUAL APPEAL **C+**
EASE OF USE **C**

RELIABILITY **B**
ERROR HANDLING **B**
VALUE FOR MONEY **D**

The purported objective of this program is to allow you to conveniently keep track of the cost of operating your family car. The key word here is convenient. With this program, unfortunately, it's not. The program allows up to five expense categories (which are not enough to meet most needs); and it will also give you fuel consumption data, trip costs, and a history of expenses.

The problem arises from the fact that you have to keep a note book in your car and write all this information down anyway. Thus, the only thing the computer does for you is to add up the figures. It would be faster and more flexible with a calculator.

The program itself is confining in the way it's set up. It does not allow you to record enough information, and its overall structure is too inflexible. Documentation may at best be described as "mediocre."

FAMILY VEHICLE EXPENSE

Company: APX

Language: Atari Basic

Hardware Requirements: 48K Atari 800, disk drive

Department: Personal/Home

Sugg. Retail: \$22.95

Availability: 3

Disk or Tape: Disk

OVERALL RATING **A-**
EASE OF USE **B+**
VENDOR SUPPORT **C**

DOCUMENTATION **B**
VALUE FOR MONEY **A-**
VISUAL APPEAL **B+**

RELIABILITY **A-**
ERROR HANDLING **A-**

Although titled *Family Vehicle Expense*, this program could be of use to either a small business or a large family. The program is designed for, and does a credible job in, keeping track of vehicle expense. It accommodates up to six vehicles, and allows for up to nine associated expense categories. Information is given on a monthly basis for up to a full year. You may keep track of up to ten credit cards. The program will also convert liters to gallons automatically, and allows twelve fuel entries per vehicle per month.

I found this program relatively easy to operate, and it produced informative and nicely designed reports. It can be a very worthwhile budget tool for either the moderate income family with several cars, or the small business that must keep track of car rental expenses, gas cost, and related items.

DECISION MAKER

Company: Creative Software

Language: BASIC

Hardware Requirements: 32K Atari 440/800, disk drive; or cassette.

Department: Personal/Home

Sugg. Retail: \$24.95 [disk]

Availability: 5

Disk or Tape: Both

OVERALL RATING **B-**
USEFULNESS **C**
VENDOR SUPPORT **C**

DOCUMENTATION **C+**
VISUAL APPEAL **C+**
EASE OF USE **B-**

RELIABILITY **B**
ERROR HANDLING **B**
VALUE FOR MONEY **B-**

Most of us probably arrive at our decisions in much the same manner. Using a mixture of logic and emotion, we mentally weigh the arguments for and against proceeding with a certain course of action, and, usually with intuition predominating, reach a conclusion. Then again, there are those who wait for a full moon, spin three times counter-clockwise at midnight, spit into the wind, then flip a coin...

If you are among those for whom reaching decisions is almost impossible, then perhaps this program could be of some marginal benefit. Essentially, the program computerizes the procedure most of us follow mentally, weighing pros and cons, but here the arguments are assigned numerical values. You may enter up to 10 possible alternatives, and an equivalent number of factors. For example, you might list 10 different cars that you're considering purchasing, along with those factors which might influence your choice (such as price, styling, service guarantees, quality, or loan terms). You then assign a number (1 to 100) indicating to you the relative importance of that factor. (Of course, if you can assign numerical values to your choice-factors, then you're 90% of the way toward making the decision without the aid of machines.) Push the button, and *presto!*, the program produces a "logical" decision.

So is this program truly of use? Having waited for the full moon, spun three times at midnight, spit into the wind, and flipped a coin, I couldn't decide.

NEWSPAPER ROUTE MANAGEMENT

Company: APX

Language: Atari BASIC

Hardware Requirements: 40K, disk drive. Joystick. Printer optional.

Department: Personal/Home

Sugg. Retail: \$22.95

Availability: 3

Disk or Tape: Disk

OVERALL RATING **B**
USEFULNESS **B**
VENDOR SUPPORT **C**

DOCUMENTATION **B**
VISUAL APPEAL **B**
EASE OF USE **B+**

RELIABILITY **B**
ERROR HANDLING **B**
VALUE FOR MONEY **B**

When I started looking at this program, my first thought was "if I had only had an Atari computer and this program when I was a kid, perhaps I'd own the *New York Times* by now." Then I got to the part defining the program's capabilities, and changed my mind. The program allows for 100 customers on 12 streets. Now, I know that would have been too small for me when I had a paper route. Being a city kid, I had fewer than 12 streets but a lot more than 100 customers. However, if in your case the numbers fit (you could always split the route up, I suppose, among several disks), then this program might be worth your attention.

The program will store such appropriate customer information as name, address, and whether the customer takes the daily or Sunday paper (or both). One nice feature is the fact that the programs will search and sort using this information to create the appropriate billing list. You may also obtain information on active or inactive customers (including who is away on vacation). Receipts may be printed and recorded to keep track of monies paid and monies due.

An interesting feature is the fact that you may create a visual map of your route, specifying your customer's houses on it by joystick control. I believe I could have done without this feature if in return I could have added more customers.

In sum, if the program's restricted data storage capabilities meet your particular requirements, then I'd say it is not a bad practical application for your budding newspaper man.

FINANCIAL WIZARD

Company: Computari

Language: Atari BASIC

Hardware Requirements: 24K, disk drive, printer optional.

Department: Personal/Home

Sugg. Retail: \$59.95

Availability: 6

Disk or Tape: Disk

OVERALL RATING **B**
USEFULNESS **B**
VENDOR SUPPORT **B**

DOCUMENTATION **B**
VISUAL APPEAL **A**
EASE OF USE **A-**

RELIABILITY **A**
ERROR HANDLING **A**
VALUE FOR MONEY **B+**

Financial Wizard is in many respects a well-conceived and useful program. It is both a checkbook program and home budget program. For budgeting, the program will accommodate 21 major expense categories, 1 income category, and 4 record-keeping categories. For your checkbook — and you are limited to one — the program can handle up to 100 transactions per month with a one disk drive system, and up to 220 transactions with two drives. Information pertaining to your checkbook may be “filed” and subsequently searched for using as many as 7 search parameters. Additional features include printing personalized checks and bar graphs.

In general, my recommendation is a favorable one, with some reservations. My primary dissatisfaction is simply that, for my purposes, the program isn't powerful enough. For instance, in my family, and I'm sure this is by no means uncommon, we have more than one checkbook. We also have more than one source of income: both my wife and I work. And what about income from non-salary sources, such as savings account interest, stock gains, and so on? In this program, I'd have to lump everything together. I also found that I would run out of categories in *Financial Wizard* if I really wanted a detailed expense record.

What the program does, it does well. It is easy to use, and, within its distinct limitations, well designed. Unfortunately, for my family it just doesn't go far enough.

THE HOME FILING MANAGER

Company: Atari, Inc.

Language: BASIC

Hardware Requirements: 16K, disk drive. Printer and drive optional.

Department: Personal/Home

Sugg. Retail: \$49.95

Availability: 9

Disk or Tape: Disk

OVERALL RATING **B+**
EASE OF USE **B+**
VENDOR SUPPORT **B+**

DOCUMENTATION **B+**
VALUE FOR MONEY **B**
VISUAL APPEAL **B+**

RELIABILITY **A**
ERROR HANDLING **A**

The Home Filing Manager is a well documented and easy to use program intended for the beginning computer user. The graphics, what there are of them, are clear and sharp. The upper and lower case characters are easy to read even on a 10" television screen, and are even crisper on a color monitor. The program itself is similar to having a file box that can store addresses, recipes, or other minor filing items. In fact, the layout on the screen is that of a lined file card. A limitation of the program is that you can fill up a card with information (i.e., a recipe), but once you have reached the end of the card it will not continue automatically onto another card for the same file. The reason for this is that the program will sort entries sequentially for information only on the first line of the card. If your first card starts with an “S,” and the second card started with an “R” the “R” card would automatically be filed in front of the first card marked “S.”

The program will also allow you to sort by titles or specific phrases in an entry. If the user wishes to sort by a specific phrase, the program will flag the card with that phrase with a graphic “paper clip,” which will then allow you to go through all cards and review those with the “paper clip.” This can be handy indeed if you have a large amount of cards and are looking for a specific item: for example, an ingredient in a recipe like marshmallows. Any recipe in your file that had marshmallows would be flagged with the “paper clip,” and assist you in finding the particular file you wanted.

The program has the ability to insert letters, phrases, or complete lines. With a simple keystroke you can add or delete files. For the suggested retail value of this program, this reviewer feels that the enduser is presented with good value for his/her money with a fast utility home program that has many potential, although limited, applications.

LOAN ANALYZER

Company: Creative Software

Language: BASIC

Hardware Requirements: 32K, disk drive or cassette player.
Printer optional.

Department: Personal/Home

Sugg. Retail: \$19.95

Availability: 3

Disk or Tape: Disk

OVERALL RATING **B+**
USEFULNESS **B**
VENDOR SUPPORT **C**

DOCUMENTATION **C+**
VISUAL APPEAL **B**
EASE OF USE **B**

RELIABILITY **B**
ERROR HANDLING **B**
VALUE FOR MONEY **A-**

In simpler times (financially speaking), this program could have been even more useful than it is. But even now, if the loan you are considering is a conventional type (that is, of a fixed interest rate, monthly payments, and a specified term), then this program could be valuable to you. It offers some flexibility other than a standard amortization program, power which is a welcome addition to the loan analysis programs normally available. An amortization table will show you:

- (1) Number of payments
- (2) Current interest
- (3) Total interest paid
- (4) Amount paid to principal
- (5) Total amount of your payments
- (6) Your loan balance

The program is flexible in that it will ask for four items:

- (A) Principal, or amount of loan
- (B) The monthly payments
- (C) The term of the loan
- (D) The annual interest rate

You may then input any three of these items, and the program will calculate the missing variable.

Naturally, the usefulness of this program is directly proportional to the number of times in a year you need to calculate different kinds of loans (mortgage, car payments, buying items on credit, etc), or re-figure interest and repayment schedules with variable data. But the program works well, and seems reasonably priced.

HOME INVENTORY

Company: Creative Software

Language: Atari BASIC

Hardware Requirements: 32K; disk drive or cassette player,
Printer optional.

Department: Personal/Home

Sugg. Retail: \$24.95 disk / \$19.95 cassette

Availability: 3

Disk or Tape: Both

OVERALL RATING **B**
USEFULNESS **B**
VENDOR SUPPORT **C**

DOCUMENTATION **C**
VISUAL APPEAL **C**
EASE OF USE **B**

RELIABILITY **B**
ERROR HANDLING **B**
VALUE FOR MONEY **B**

As the title of the indicates, *Home Inventory* is designed to help you in the rather tedious job of keeping track of your household possessions. As a concept, it addresses a worthy goal. I'm sure that the majority of us do not take the trouble to perform this dreary and time consuming function, however valuable it might be for insurance or estate reasons. This is something that should be done. If having this program prompts you to perform this task, then it's worth having.

The first small (but annoying) point is that you have to load the program yourself, rather than having the main menu automatically appear on the screen when you boot up. The program will allow the retention of all necessary inventory data, such as serial numbers, name, description of the item, purchase date, and current value. You are also able to search for specific information using these categories. This is helpful for retrieving information, and altering data where appropriate (e.g. listing new replacement costs). If you have a printer available, you may print out lists of your inventory to store in a safety deposit box or for insurance purposes.

Any good stationary store can supply you with a home Inventory Book that would perform this task adequately. But the convenience, and more importantly, the flexibility, of having your computer keep track of it makes the program a rather attractive one.

DECISION MAKER

Company: APX

Language: Atari Basic

Hardware Requirements: 8K Atari 400 + cassette or 16K Atari 800 + drive

Department: Personal/Home

Sugg. Retail: \$15.95

Availability: 3

Disk or Tape: both

OVERALL RATING **C**
EASE OF USE **B-**
VENDOR SUPPORT **C**

DOCUMENTATION **B-**
VALUE FOR MONEY **C**
VISUAL APPEAL **B**

RELIABILITY **B**
ERROR HANDLING **B**

The logic behind *Decision Maker* appears to be in a structured approach to choosing between several alternatives. Or, to put this another way, it presents a variety of circumstances and then you must make the decision.

Here's an example. Assuming you only have sufficient money to do one of the following, would you: take an expensive vacation, buy a new car, or put the money in your savings account? The program will prompt you for the various pros and cons of each choice, which it calls "attributes." In our example, suggested attributes are: (1) need for a rest; (2) the condition of existing car; and (3) the need for a rainy day fund, and so on. You would then be asked to assign a "weight" to each attribute by choosing a number from 1 to 99. The program will then calculate your needs and indicate the "logical" choice. In my case, I should have logically put the money into a savings account, but I decided to take a vacation instead.

In sum, *Decision Maker* is a program of questionable practical value for the home user.

EDUCATION

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READING & LANGUAGE SKILLS	280
MATHEMATICS & SCIENCE	287
GEOGRAPHY & SOCIAL STUDIES	290
MISCELLANEOUS EDUCATION	290

DECISIONMAKER

Company: ADP

Language: Ada/Basic

Hardware Requirements: OK Altair 400 + cassette or IBM Altair 500 + disk

Department: Personnel

Supp. Material: 2000

Availability:

Disk or Tape:

OVERALL RATING: 2

EASE OF USE: 2

WORKSUPPORT: 2

EXPLANATION: 2

VALUE FOR MONEY: 4

VISUAL APPEAL: 2

RELIABILITY: 2

DEVELOPMENT: 2

The logic behind Decision Maker appears to be in a structured approach to choosing between several alternatives. Or, to put this another way, it presents a variety of circumstances and then you must make the decision.

Here's an example. Assume you've got some sufficient money to do one of the following, would you take a expensive vacation, buy a sofa, or put the money in your savings account? The program will prompt you for various rates and cost of each choice, which it calls "alternates." In our example, suggested alternatives are: (1) for a rest, (2) the cost of a sofa, and (3) the cost for a rainy day fund, and so on. You would then be asked to assign a "weight" to each alternative by choosing a number from 1 to 99. The program will then calculate the costs and indicate the "best" choice. In my case, I should have logically put the money into a savings account. I didn't. It takes a variable format.

In any, Decision Maker is a program of questionable practical value for the home user.

EDUCATION

EDUCATION

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EDUCATION

218	INTRODUCTION
220	READING & LANGUAGE SKILLS
222	MATHEMATICS & SCIENCE
228	GEOGRAPHY & SOCIAL STUDIES
240	MISCELLANEOUS EDUCATION

EDUCATION

One of the most important as well as gratifying uses for the Atari computer is in the field of education. It can provide an interactive learning experience for students and easily adjust to their learning speed. It is little short of amazing to watch children from the ages of five years old and up literally sit for hours mesmerized in front of the computer. And, as long as an adult does not tell them that they are "learning", they will continue to use the computer indefinitely.

The object of a good educational piece of software obviously is to teach. It must also challenge the learner while entertaining them at the same time. Programs often have to lead the student while at the same time test and adjust the skill level in order to be successful in conveying knowledge. These are formidable tasks that cause many programs to fail. Fortunately, children are quite used to learning and absorbing information from the medium of television. Programs that take advantage of the Atari graphics and successfully avoid being condescending toward the student will most likely succeed.

Educational programs are currently in their infancy. AP-PILOT is an example of a language that has been specifically developed for educational programming. As new and better programming tools become available for the educator, they, not programmers, will cause a mushrooming in the volume of available software. Educational uses for the computer do not have to be solely directed towards children. The potential for adult education is just as enormous.

Currently, the available educational programs for the Atari computer as reviewed in the following section represent, we hope, just a small beginning of what will be on the market in the near future.

Programmers take note: the education market is huge and is only awaiting the results of your creative and imaginative efforts.

READING & LANGUAGE SKILLS

COMPU-READ

Company: Edu-ware
Language: Atari BASIC
Hardware Requirements: 32K cassette, 48K disk.

Department: Education
Sugg. Retail: \$19.95 cassette / \$29.95 disk
Availability: 4
Disk or Tape: Both

OVERALL RATING	A-	EASE OF USE	B+	ERROR HANDLING	A
EDUCATIONAL VALUE	B+	DOCUMENTATION	B+	RELIABILITY	A
VENDOR SUPPORT	A-	VISUAL APPEAL	A	VALUE FOR MONEY	A-

Compu-Read consists of a series of four programs designed to aid one's reading ability. The four programs are as follows:

Compu-Read I - A skill building series in which you respond to three letters at a time as displayed on the screen. When they disappear, you try to key in what they were. The participant controls the number of tries and the speed at which the letters are presented. Upon finishing the number of trials requested, a performance report is given upon request.

Compu-Read II - Designed to improve skills in rapid recognition of words and phrases. The participant has control of the word list and the number of trials. A performance report is given at the end of the program.

Compu-Read III - This program is designed to improve skills in vocabulary by identifying synonyms and antonyms. The participant has control of the word list, and the number of trials and speed of the display. As in other programs, confirmation of correct answers appears, as well as corrections for wrong answers.

Compu-Read IV - Four sentences are presented at random. The words are changed each time a new sentence appears. The participant must answer a question about each sentence after it leaves the screen. Again, the participant controls the number of trials, the speed, and the score is posted at the end of play.

The objectives for the aforementioned programs are: (1) increase reading speed, and (2) increase memorization of reading material. In addition, two other programs exist which enable you to build your own word list and generate these lists for the *Compu-Read* program. This program can be an asset to the teacher as a skill builder and a motivational device. Both children and adults can benefit from it by increasing their reading skills. Adequate documentation is provided in this flexible program.

Teachers can use the learning manager to adjust the program's difficulty and to keep track of each student's progress. The teacher can adjust the speed of response, number of trials, percent required to pass the test, and order of sequence of the units. Using the report card feature, the teacher can later check a student's progress which has been saved to disk.

NOTE: The cassette version has no learning manager.

CONVERSATIONAL SPANISH/ FRENCH/GERMAN/ITALIAN.

Company: Atari
Language: Atari BASIC
Hardware Requirements: 16K; cassette.

Department: Education
Sugg. Retail: \$59.95 each
Availability: 6
Disk or Tape: Tape

OVERALL RATING	C	EASE OF USE	A-	ERROR HANDLING	C
EDUCATIONAL VALUE	C	DOCUMENTATION	C	RELIABILITY	B-
VENDOR SUPPORT	B+	VISUAL APPEAL	B-	VALUE FOR MONEY	B

Atari has put out a series of four separate but identical language courses designed to introduce beginners to Spanish, French, Italian, or German. Each package looks, costs, and operates the same; in fact, the phrases, the order in which they appear, and names of the lessons are the same. It is therefore not inappropriate to review the group of packages by concentrating on one, *Conversational Spanish*. The following remarks are generally applicable to each language course.

Conversational Spanish is a package of five cassettes containing an audio/computer learning program and a coursebook of twenty-seven pages. The computer serves as tutor and a guide which gives practice in understanding, speaking, listening, and reading. Each cassette contains two units, one on each side, and each unit is divided into two or three learning phases, or sections. The book is the reference manual for use after each learning phase on the computer. Each unit in the book contains: study (language notes); practice (writing exercises); and activities (reading and writing assignments). There is also a grammar summary, a vocabulary list, and the answers to the exercises.

Various techniques involving computer technology are used. Some are quite simple, such as listening, or listening and repeating. Most sessions require making choices and decisions. The computer tells you that you are correct by flashing the Spanish equivalent of "Very Good" along with a musical chord, or wrong by flashing the word "No" and sounding one low note. Only once does a correct answer get a different response — a colored flash. The only other use of the Atari's sound capabilities is a beep to passages as part of an exercise, and a glissando while erasing the screen at one point.

The program is not at all visually exciting, although it alternates print sizes and colors and has some line and block "drawings." It employs conventional pattern practice formats, but does have a crossword puzzle and a slot machine game (although the instructions for both are lengthy and easily confused, which invalidates the end-of-unit assessment of performance score).

The course presents Spanish as spoken in Latin America, particularly in Mexico. It is modern, everyday language, appropriate for dealing with situations when travelling in Spanish-speaking countries or meeting Spanish speakers. The verb forms presented are limited to the yo, usted, el, ella, and ellos, omitting the familiar tu, the nosotros and the ustedes persons. The Spanish which appears on the screen is not completely accurate. There are several accents missing, the tilde over the "n" is straight rather than curved, and there are no upside down question marks at the beginning of questions. For some strange reason there are no periods at the end of sentences, either. Words, sentences, and conversations are authentically pronounced by both a man and a woman. The main fault in the course is the lack of spoken examples. There should be twice to three times as many repetitions on the audio portion in order to reinforce learning, and to avoid the boredom caused by the extremely slow pace of the lessons.

Each learning phase is broken up into different activities, such as LOOK AND LISTEN, THINK AND CHOOSE, etc. Most of the exercises include synchronized audio, to train you to understand and speak; but some require you to work silently on the screen. The program itself controls the sound track, to repeat them, in which case there is no sound because the tape does not rewind automatically, and it is quite complicated to keep track accurately of the numbers on the recorder counter. If you want to run through a unit again, you must rewind the cassette and reload it.

It is recommended that you study little and often, which is sound advice in learning a foreign language. Supposedly you can stop the program at any point and continue when you are ready, but if you turn the computer off at the end of a learning phase (despite your having made note of the counter number or having left the tape where it was), there are no instructions about how to load the next section, namely to type CLOAD. If you get an error message while loading a section by the usual instruction to press RETURN, nowhere does it say how to use CLOAD after rewinding the loading point of that section. Since one side of a cassette takes from forty to fifty minutes to complete, it is a real disadvantage to have to start at the beginning each time. It is frustrating to an adult, let alone to a youngster of fourteen, which is the lowest age for whom the program is recommended.

Many of the flaws of the program are inherent in the use of the tape recorder. Tapes are necessary, however, to provide the audio portion essential in a foreign language program. Several sections were troublesome, one completely refusing to load no matter what I did to it. It is most annoying to have to go back to the retailer to get a replacement, which you do not know will function properly until you try it — another long process.

The reliability of the program is also diminished somewhat by the fact that the BREAK key was not disabled. If a student accidentally hits it, there are no instructions to type CONT or to type RUN after hitting SYSTEM RESET.

The quality of the program is uneven, ranging from overly long pauses provided to read the screen, and confusing instructions for several exercises, to an excellent presentation in lesson eight. Despite the unevenness of the program, it is educationally sound; and, if you have the patience, it can provide the basis for further learning of the language. I found the coursebook to be outstanding, full of fascinating realia, which imparts the cultural flavor so necessary to language learning.

ASTRO-QUOTES

Company: Program Design, Inc.
Language: Atari BASIC
Hardware Requirements: 16K, disk drive

Department: Education
Sugg. Retail: \$16.95 cassette / \$23.95 disk
Availability: 5
Disk or Tape: Both

OVERALL RATING	C	EASE OF USE	B	ERROR HANDLING	D
EDUCATIONAL VALUE	B	DOCUMENTATION	B	RELIABILITY	B
VENDOR SUPPORT	B	VISUAL APPEAL	C	VALUE FOR MONEY	B-

Astro-Quotes offers an interesting concept: a vocabulary-building game that also familiarizes the user with some well-known quotations. Unfortunately, the program execution is less than ideal.

The disk includes three separate programs, each containing 170 words and 30 to 40 quotations. In each, the student is presented with the definitions of four words; their length is indicated by blanks, and with a set of blanks representing the quotation. If he guesses any word correctly, the word is printed out, and any of its letters that occur in any other words of the quotation are printed in the appropriate blanks, making subsequent guesses easier (much as in the game, "Hangman"). Words and quotations are randomly paired with each game play, so even after all four words are guessed correctly, some blanks may remain in the quotation. The student may guess the quote at any time, but can only achieve a perfect score by getting all four words correct. Once the quote is guessed (or the student gives up), all answers are printed out, and the student may choose another set or quit.

Most of the words should be within the range of a literate high school student. The set of words in each game is so small that repetitions begin to occur after a few plays. Perhaps the programmers would have had space for more had they omitted the distracting flashes and sounds that accompany the program. Setup is annoyingly slow, no doubt because the program is in BASIC.

Reliability is a major weakness in this package; it failed to run any of the games on two 16K computers on which it was tested. On a third (48K), it automatically selected the first game, regardless of the user's wishes.

ANALOGIES

Company: Program Design, Inc.
Language: Atari BASIC
Hardware Requirements: 8K, disk drive

Department: Education
Sugg. Retail: \$16.95 cassette / \$23.95 disk
Availability: 5
Disk or Tape: Both

OVERALL RATING	B-	EASE OF USE	B+	ERROR HANDLING	B
EDUCATIONAL VALUE	B	DOCUMENTATION	A	RELIABILITY	C
VENDOR SUPPORT	B	VISUAL APPEAL	B	VALUE FOR MONEY	C+

This program attempts to teach high school students problem solving skills needed on examinations such as the SAT and the College Board Entrance Exam. It is a cram course, and a rather good one. The program incorporates six lessons and a quiz, and is accompanied by an excellent pamphlet. This program is part of PDI's "IQ Builder" series, and the pamphlet begins by defining the term "IQ" and its imperfect relationship to achievement testing; it then goes on to discuss analogy strategies, outlining 27 categories of analogy. The first two lessons ask the student to fit word pairs into the proper category; the remaining four lessons are standard analogies. If the student misses a question, the program tells him which of the 27 categories applies, and gives him a second chance; if he fails again, he is given the correct answer.

The analogies in this program suffer from the same flaws as those on the tests for which it seeks to prepare the student: some are arguable, and a few are just plain wrong. (Battles may be an effect of war, as the program asserts, but rain is really not an effect of thunder.) Both program and pamphlet are marred by inadequate proofreading ("condition and it's effects," "desease," "the first answer that looks like it might be correct," etc). But despite these shortcomings, *Analogies* should prove quite effective in sharpening students' test-taking skills.

HODGE PODGE

Company: Dynacomp
Language: BASIC
Hardware Requirements: 32K

Department: Education
Sugg. Retail: \$14.95 Cass / \$18.95 Disk
Availability: 4
Disk or Tape: Both

OVERALL RATING	B+	DOCUMENTATION	C	RELIABILITY	B+
EDUCATIONAL VALUE	B	VISUAL APPEAL	B	ERROR HANDLING	B
VENDOR SUPPORT	C	VALUE FOR MONEY	B		

Hodge Podge is an educational program for pre-school children. It does an admirable job of teaching the child to associate keyboard letters with words that begin with those letters. Yet it is not necessarily an alphabet learning program since the words used are often abstract. For example, while "A" gives a picture of an apple, "Q" demonstrates the difference between quick and slow using a worm that first crawls fast then slowly. *Hodge Podge* holds a child's interest much longer than *My Alphabet*. The music is more varied, and there are animated sequences. The pictures, however, are less colorful, and have nowhere near the artistic quality of its competition. The music has some problems with meter, but a child should have no problem trying to sing along with the "Alphabet Song."

In sum, the program is a good teaching tool for children in kindergarten, or younger.

LETTERMAN

Company: APX
Language: Atari Basic
Hardware Requirements: 16K cassette; 32K disk.

Department: Education
Sugg. Retail: \$22.95
Availability: 5
Disk or Tape: Both

OVERALL RATING	B	EASE OF USE	A	ERROR HANDLING	A
EDUCATIONAL VALUE	B	DOCUMENTATION	B	RELIABILITY	A
VENDOR SUPPORT	C	VISUAL APPEAL	B	VALUE FOR MONEY	B

Letterman is similar to the old favorite, "Hangman." The object is to guess a word one letter at a time. The computer can generate words from its list, or players can choose words for each other. A blank line for each letter in the word appears at the top of the screen, and a man with an apple on his head appears on the bottom of the screen. With each guess, the arrow moves one shot closer to the apple on the man's head. After six guesses, if the word has not been successfully identified, the arrow strikes the apple and the message, "Oh no, applesauce" appears, accompanied by cute sound effects. There is a short pause required between each guess, which discourages typing in lots of random letters.

The program contains more than 400 words and three difficulty levels. Instructions are included for changing words in the list, or adding to it (this is subject to memory restrictions). Users with even fairly limited experience with computers should be able to successfully alter the list. The disk version (not the cassette) allows you to request hints, choose to play with time limits, and keep track of as many as nine players' turns and scores.

WORDMAKER

Company: Atari Program Exchange
Language: Atari Basic
Hardware Requirements: 32K cassette; 40K disk; joysticks recommended.

Department: Education
Sugg. Retail: \$22.95
Availability: 8
Disk or Tape: Both

OVERALL RATING	A	EASE OF USE	A	ERROR HANDLING	A
EDUCATIONAL VALUE	B	DOCUMENTATION	A	RELIABILITY	A
VENDOR SUPPORT	C	VISUAL APPEAL	B	VALUE FOR MONEY	B+

Wordmaker is a game in which two players compete against each other, or one player races the clock in order to put together as many short words as possible within the time frame. Words are of 3-4 letters, and the time limit runs from 2-5 minutes. Players use joysticks to select letters. If a player's word is legal, it is displayed in his space; if it is illegal, a message appears and points are deducted from his total score. If the word duplicates one already in either player's box, the program rejects it, but points are not deducted.

When the game ends and the winner is declared, the words used may be printed out on a printer. The game moves fast, appears to be clean and bug-free, and the vocabulary of short words is extensive (although it thought "hake" was fishy, and rejected it). This one should be a winner for rainy-day recess.

WORD RACE

Company: Don't Ask Software

Language: BASIC

Hardware Requirements: 32K, disk drive.

Department: Education

Sugg. Retail: \$19.95

Availability: 5

Disk or Tape: Disk*

OVERALL RATING **B**
EDUCATIONAL VALUE **C+**
VENDOR SUPPORT **B**

EASE OF USE **B**
DOCUMENTATION **C+**
VISUAL APPEAL **B**

ERROR HANDLING **A**
RELIABILITY **A**
VALUE FOR MONEY **B+**

Word Race is a competitive dictionary word game for 1 to 4 players. Words are presented to each player and he must choose the correct definition among six choices. Since the value of the correct answer is linked to a counter that is constantly counting down, the quicker the correct answer, the more points awarded. Conversely, answering incorrectly subtracts the number of points on the counter. Thus there is a strategy to the game: one should either answer quickly, or, if in doubt guess only when the penalty is minimal.

The game has three levels of play. The beginner's level is for youngsters aged 9-14. Common words like "nuzzle," "swift," "daffy," and "coast" are used. The regular level is for high school students and beyond, and it is good review for students studying for the college entrance exam. Sample words include "disdain," "paeon," "pugnacious," "charisma," and "decapitate." The really challenging level uses words that are not commonly encountered. Several of these are "larrikin," "scatch," "oriel," and "mymy." As an example, the word "scride" is given with choices like "living in hedges, dance step for horses, crawl on all fours," etc. This level requires shrewd guesswork and a go for broke strategy.

The disk contains 2000 words, or about 650 words per level. There are plans to include additional word modules and a "Famous Names" game in the future. *Word Race* might be classed more as an educational program than a game, but either way it is a painless method of increasing one's vocabulary.

CLAIM TO FAME & SPORTS DERBY

Company: Don't Ask Software

Language: Machine

Hardware Requirements: 32K & Word Race

Department: Education

Sugg. Retail: \$19.95

Availability: 5

Disk or Tape: Disk

OVERALL RATING **B**
EDUCATIONAL VALUE **C+**
VENDOR SUPPORT **B**

EASE OF USE **B**
DOCUMENTATION **C+**
VISUAL APPEAL **B**

ERROR HANDLING **A**
RELIABILITY **A**
VALUE FOR MONEY **B+**

Word Race - Claim to Fame & Sports Derby is an add on module to the *Word Race* system. You must own the original *Word Race* master disk to run this package. Each of the three modules contains 600 questions.

Claim to Fame is a trivia test about famous people. A personality must be matched against six possible choices. Many of these names are quite recognizable. They include people like Earl Warren, Xerxes, Rudyard Kipling, and Alexander Fleming. Before you rush to your encyclopedia, Fleming invented penicillin.

Sports Derby presents trivia questions concerning sports personalities. It is a great game for those fans who claim to know obscure sports' facts. Many of the personalities that you must identify have either set a sport's record; for example, one may have been a coach of a famous team.

Intermediate Word Race is a module suited to children aged 11 to 16. You must match definitions to words like "slither," "puncture," and "tinker." It is similar to games on the first disk.

SAMMY THE SEA SERPENT

Company: Program Design, Inc.

Language: Atari BASIC

Hardware Requirements: 16K, disk drive, and joystick

Department: Education

Sugg. Retail: \$16.95 cassette / \$23.95 disk

Availability: 5

Disk or Tape: Both

OVERALL RATING **A**
EDUCATIONAL VALUE **B**
VENDOR SUPPORT **B**

EASE OF USE **A**
DOCUMENTATION **A**
VISUAL APPEAL **B**

ERROR HANDLING **A**
RELIABILITY **B**
VALUE FOR MONEY **B-**

This program is a computerized storybook for young children. Simple but appealing graphics illustrate a story about Sammy, a sea serpent who is thrown from the sea by a storm. He is trying to return to the sea, and along the way the child must "help" him by using the joystick to guide him through tunnels, along paths, and so on. The story plays over the cassette, while the computer handles the graphics and interactive sections. The storyline and accompanying background music are pleasant, and the program is a very nice introduction to computers for preschool age children. The level of eye-hand coordination required to handle the joystick during interactive sequences is appropriate.

In addition, the child may play two other simple games with the Sammy character: catching flies and guiding Sammy through random mazes. The "Flies" game is appealing, with just the right amount of challenge. The mazes, however, are less successful, partly because they are generated on the spot, which takes much too long, and often produces uninteresting mazes.

Yet from storyline, to challenge and age applicability, *Sammy the Sea Serpent* is a charming and worthwhile program.

SPEEDREAD +

Company: Optimized Systems Software

Language: Assembly Language

Hardware Requirements: 16K; disk drive. Joystick recommended.

Department: Education

Sugg. Retail: \$59.95

Availability: 5

Disk or Tape: Disk

OVERALL RATING **B+**
EDUCATIONAL VALUE **B**
VENDOR SUPPORT **B+**

EASE OF USE **B**
DOCUMENTATION **B-**
VISUAL APPEAL **B-**

ERROR HANDLING **A**
RELIABILITY **A-**
VALUE FOR MONEY **B**

SpeedRead + is a two-disk package designed to enable you to train yourself to read faster and with better comprehension. The program is suitable for both home and classroom use. Supplying three classic American short stories as text, "The Outcasts of Poker Flat," "Rip Van Winkle," and "The Legend of Sleepy Hollow," the program flashes text on the video screen in various ways and at different speeds to develop phrase recognition, eye movement, and peripheral vision. *SpeedRead +* provides several modes of displaying text: single phrases, double phrases, "random" (primarily side to side display for developing eye movement), and blocks of text. Blocks of text can fill the screen, or can be narrowed down to imitate magazine or newspaper columns. I found the blocks of text with justified margins something of a pain, because it often spread the words out unnaturally widely in order to achieve justified margins; but this is a relatively minor nuisance. Reading speeds can vary from 5 to over 1,000 words per minute. An optional joystick controller can be used to pause, slow down, or speed up text display from the set speeds, and narrow the block display from full screen to column formats. This is slightly more convenient than doing the same thing using keyboard commands, because you don't have to look away from the screen at all with the joystick in your hand.

SpeedRead + does a good job of conducting an individual reading enhancement program. You are advised to begin slowly, and advance a little each day. Suggestions are provided for daily exercise patterns, word-per-minute rates, and the length of time to devote to each exercise. You can use any Atari DOS-compatible text editor, or even Atari's Assembler cartridge, to enter new text and store it on disk. Limited instructions are given for re-programming the texts used with *SpeedRead +*.

This ability to add/change text materials makes the program suitable for classroom instruction in speed reading as well. With some programming knowledge, teachers can add exam material to the program, and so test students' reading speed and comprehension. Example exam sessions are included. But the rub comes in that the average teacher may not have the necessary skills with text editors to re-program texts easily. This could prove a serious drawback in situations of classroom education. The concept is good, however, and the program does fulfil its design reasonably well. I look forward to the implementation of a simple method for changing the *SpeedRead +* texts; but it is a good program nevertheless.

WHAT'S DIFFERENT

Company: Program Design, Inc.

Language: Atari BASIC

Hardware Requirements: 8K, disk drive

Department: Education

Sugg. Retail: \$16.95 cassette / \$23.95 disk

Availability: 5

Disk or Tape: Both

OVERALL RATING	C	EASE OF USE	B	ERROR HANDLING	D
EDUCATIONAL VALUE	B	DOCUMENTATION	B	RELIABILITY	B
VENDOR SUPPORT	B	VISUAL APPEAL	C	VALUE FOR MONEY	B-

What's Different is a series of ten games. In essence, they all work the same way by presenting the user with four-word groups, and asking which word is out of place, or "what's different" in that particular group. The games present words from standard graded reading lists, with the words in Game 1 being of second grade level, and those of the last three games matching sixth grade achievement. If a child fails to select the correct word, the problem is presented again and again until he either "lucks out" or gives up. Each game consists of 25 words, although the student may choose to stop at any time. If he stops, his score is read — right answers and wrong guesses.

The program is relatively free of distracting bells and whistles, except for the frequent intrusion of the PDI logo. But it appears to have some reliability problems. When I tested it on the 48K computer, the program continually selected the first game, while on 16K, it allowed me access to only 1 to 3 of the 25 words before cheerfully terminating with a, "let's play again some other time."

Later, maybe.

MATHEMATICS & SCIENCE

EDU-WARE FRACTIONS

Company: Edu-Ware

Language: Atari BASIC

Hardware Requirements: 32K cassette, 48K disk.

Department: Education

Sugg. Retail: \$29.95 cassette / \$39.95 disk

Availability: 6

Disk or Tape: Disk*

OVERALL RATING	B+	EASE OF USE	A	ERROR HANDLING	A-
EDUCATIONAL VALUE	A-	DOCUMENTATION	A-	RELIABILITY	A-
VENDOR SUPPORT	A-	VISUAL APPEAL	B	VALUE FOR MONEY	B-

Edu-Ware Fractions is a graphically-enhanced version of the previously released *Compu-Math Fractions*. The problem in reading fractions formed from inverse blank spaces has been overcome by the use of a very readable set of characters and figures in a shape-table. The use of color is minimal, and not vital to the working of the programs, so that it is quite possible to use black and white monitors for this package.

There is an extensive, well-prepared Learning Manager Master Menu which is designed for the teacher/parent to set up the package and present it to the student/child. It is possible to pre-program the units to be tested (definitions and parts of the fraction, denominators, addition of fractions, subtraction of fractions, multiplication of fractions, and division of fractions). Administration of a pre-test or post-test can be chosen, as can the number of questions in each unit. Sound effects can be "on" or "off" for answer entry and correction feedback. The number of incorrect responses for a practice problem before being taken back to review the material can be pre-planned. There are other very desirable controls available as well.

A previous review pointed out a very serious flaw in the earlier package. Namely, in using the common denominators formed by multiplying all of the denominators together rather than using the lowest (least) common denominator. This has not been completely corrected. If anything, there are some additional shortcomings introduced in the current version. On parts of the package, determining the reduced form of the answer is encouraged, in fact demanded — even when the answer was already in that form. The use of zero as a numerator when the result of the problem was a whole number answer is also questionable.

In addition to the inconsistent attempt at simplifying techniques, there are serious problems with the way user-responses are accepted by the program. In an attempt to control input, fields have been established on the screen. This would be a valid approach if there was a way of controlling the length of those fields as determined by the question. For example, if the field length is set for 3 digits, and the correct response was 100, then upon pressing 1, 0, and 0, the program would automatically continue; but if the correct response is 9, the user would have to press the space bar twice before the program would accept the answer and continue. To compound this difficulty, some parts of the package do not accept input without pressing (return).

The difficulty, or more precisely, the danger in allowing this package to be used by students can best be seen by an actual example:

(Note: underlining indicates my response)

$$1 \quad 2/4 \quad x \quad 1 \quad 2/6 \quad = \quad ?$$

$$1 \quad 2/4 \quad = \quad \underline{3/2} \quad \quad \quad 1 \quad 2/6 \quad = \quad \underline{40/30}$$

$$3/2 \quad x \quad 40/30 \quad = \quad \underline{\underline{240/120}}$$

2 ??/?? (?'s were input prompts, pressing spaces produced

"Try again.") Finally the correct answer was shown:

One answer is 2 0/120

What is probably most annoying is the realization that this package could have almost been an ideal tool to use in the classroom and in the home. To this reviewer, the shortcomings could have been overcome by more care in coding. The use of random problem generation is the chief culprit in producing these bizarre results. Admittedly, the program would be longer, and repetitive, but some topics require absolute control — fractions is obviously one of those topics.

NOTE: The learning manager which records teacher adjustments of difficulty and lesson sequence to the disk, and also keeps track of each student's progress, is not available on the cassette version.

COMPU-MATH DECIMALS

Company: Edu-Ware
Language: Atari BASIC
Hardware Requirements: 32K cassette, 48K disk.

Department: Education
Sugg. Retail: \$29.95 cassette / \$39.95 disk
Availability: 6
Disk or Tape: Both

OVERALL RATING	B+	EASE OF USE	A-	ERROR HANDLING	A
EDUCATIONAL VALUE	B	DOCUMENTATION	B	RELIABILITY	A
VENDOR SUPPORT	A-	VISUAL APPEAL	A-	VALUE FOR MONEY	B+

Compu-Math Decimals is the final program in the Compu-Math series, and is intended to teach decimal arithmetic plus related skills — decimal to fraction conversions, rounding off, and percentages. The program has a pre-test and option menu which proceeds by providing general instructions plus examples and practice for the student, followed by a proficiency test.

The program possesses mixed qualities. Its explanation of decimals and conversion of decimals to fractions is excellent, although it ignores entirely the problem of changing common fractions (e.g. 1/4 or 3/8) to decimals. Beyond the very first part of the program, the examples are unnecessarily complex and, in several cases, wrong! The examples for decimal division use results which are infinite decimal series, and which the program simply truncates after an arbitrary number with no explanation whatsoever.

As in all education programs, the basic question is, "Will the student learn from it?" Here the answer is yes, up to a point. Utilizing the definitions, and simple addition and subtraction, the program is an excellent learning tool — though not as good as the *Fractions* program in the same series. Beyond that point, the program definitely needs work. The concept has good potential, and, in a revised version, this could be an excellent program.

NOTE: The learning manager which records teacher adjustments of difficulty and lesson sequence to the disk, and also keeps track of each student's progress, is not available on the cassette version.

NUMBER BLAST

Company: APX
Language: Atari Basic
Hardware Requirements: 16K cassette, 24K disk.

Department: Education
Sugg. Retail: \$15.95
Availability: 8
Disk or Tape: Both

OVERALL RATING	B	EASE OF USE	B	ERROR HANDLING	B+
EDUCATIONAL VALUE	B	DOCUMENTATION	B	RELIABILITY	B+
VENDOR SUPPORT	C	VISUAL APPEAL	C	VALUE FOR MONEY	B

Number Blast is a multiplication and addition drill involving one or two players. Students will enjoy using joysticks to compete for the most points, or, in the single player mode, to compete with oneself. The program presents multiplication and addition tables as well, which are helpful to the student's progress. A shortcoming to the program's overall effectiveness is its poorly done graphics, which could stand improvement. Though not specified in the documentation, *Number Blast* is most appropriate for ages 6-16.

THREE R MATH SYSTEM

Company: Atari Program Exchange
Language: Atari BASIC
Hardware Requirements: 48K, disk drive; printer recommended.

Department: Education
Sugg. Retail: \$22.95
Availability: 8
Disk or Tape: Disk

OVERALL RATING	A	EASE OF USE	A	ERROR HANDLING	A
EDUCATIONAL VALUE	A	DOCUMENTATION	A	RELIABILITY	A
VENDOR SUPPORT	C	VISUAL APPEAL	A	VALUE FOR MONEY	A

This versatile and flexible math program can be used for an entire school system, an individual classroom, or at home. Probably its single most worthwhile feature is its ability to create customized math drills for the student. One hundred and one difficulty levels of addition, subtraction, multiplication, and division are presented. They are sequentially designed so that the student can work on problems at his proper ability level and own pace. In addition, the speed, number of problems, and total time allowed can be specified and controlled. The student's results are summarized on the screen, saved, and printed at a later time; therefore, the teacher has a minimal amount of bookkeeping to attend to. *Three R Math System* is appropriate for kindergarten through eighth grade, and the package includes excellent documentation.

EDUFUN! PROGRAMS

Company: Edufun, a division of
Milliken Publishing

Language: BASIC

Hardware Requirements: 16K cassette, 32K disk

Department: Education

Sugg. Retail: \$32.95 per package
of 2 programs

Availability: 7

Disk or Tape: Both

OVERALL RATING **A**
EDUCATIONAL VALUE **A**
VENDOR SUPPORT **B**

EASE OF USE **A**
DOCUMENTATION **A**
VISUAL APPEAL **A**

ERROR HANDLING **A**
RELIABILITY **A**
VALUE FOR MONEY **A**

Edufun has produced a unique series of educational arithmetic programs that are both challenging and fun to operate. Not only are the concepts presented appropriate for the age level intended, but a wide range of difficulty levels are provided for the student. Every package includes a creative reward system with excellent visual appeal. One of the most positive features of this series is Edufun's documentation. Re-usable scorecards, game cards, and useful suggestions for teachers and parents are included with every program. These serve to enhance and reinforce the concepts presented.

There are two programs included in each package. *Aliencounter* and *Faceflash* are appropriate for ages five through nine. The student must land the appropriate number of aliens on earth by counting correctly and recognizing numbers to score in *Aliencounter*. Counting is also required in *Faceflash*; however, here the student must also rely on his memory to recall when the smiling faces are flashed on the screen.

Elementary probability, direction, and color and shape discrimination are presented in the *Jar Game* and *Chaos*. Six through ten year old students are required to land a buzzing fly on the correct jar in the *Jar Game*. *Chaos* requires careful movement and placement of a spaceship in order to capture alien satellites.

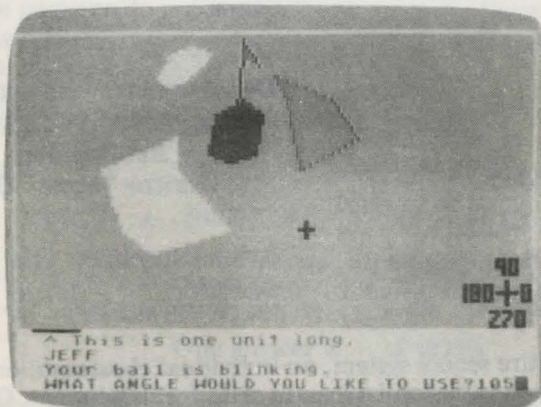
Answer the multiplication and addition problems correctly or the big fish will "gulp" the little ones in the program neatly titled *Gulp*. Follow the traveling arrow and retrace its path in *Arrow Graphics* and you'll accumulate points. These games are appropriate for children between the ages of seven and twelve.

Angle and measurement estimation are required in *Golf Classic*. One must read graphs while playing *Compubar*, as well as construct arithmetic expressions. Both games are appropriate for ages nine through ninety-nine.

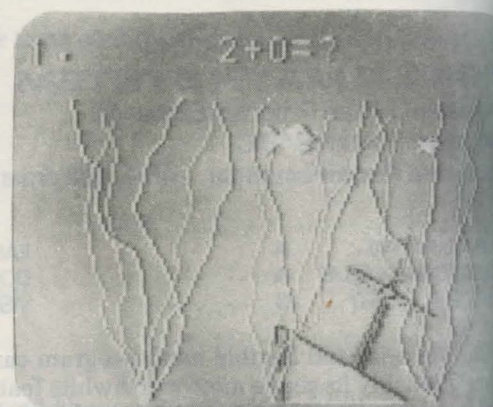
In *Frenzy*, quickly subtract or divide to avoid the "frenzy" of the fish being eaten by an alligator. Transformational geometry is presented in *Flip Flop*, as the student decides to flip, turn, or slide the geometric figures. Nine through twelve year olds will enjoy *Frenzy* and *Flip Flop*.

Finally, the student must battle the bugs with positive and negative numbers, and play concentration with fractions in the *Battling Bugs* and *Concentration* disks, respectively.

With the use of simple key input commands, children will discover that these clever programs are easy to use, as well as enjoyable to play. Parents and teachers will find them extremely worthwhile in their educational value.



GOLF CLASSIC



GULP & ARROW GRAPHICS

ALGICALC

Company: Atari Program Exchange

Language: Basic

Hardware Requirements: 24K [tape]
32K [disk]

Department: Education

Sugg. Retail: \$22.95

Availability: 8

Disk or Tape: Both

OVERALL RATING **B+**
EDUCATIONAL VALUE **C+**
VENDOR SUPPORT **C**

EASE OF USE **B+**
DOCUMENTATION **B-**
VISUAL APPEAL **C+**

ERROR HANDLING **A-**
RELIABILITY **A-**
VALUE FOR MONEY **B+**

Algicalc performs operations in both algebra and calculus. It is NOT a teaching or learning device, but can be used by both students and professionals who have some background in algebra or calculus.

Those experienced in these areas will have little difficulty familiarizing themselves with the features of *Algicalc* by reading the manual or reviewing the seven HELP topics. Both the manual and the HELP topics give good examples which will eventually lead, with a little experimenting, to understanding the various uses of this program. (There are, however, some minor errors in the manual which can be misleading to the beginner.)

The manual would be a more helpful learning tool if it gave graduated examples, and more of them. That is, when a HELP topic appears on the screen, the correct answer should appear in order to verify the user's response. As it is, the first HELP screen is illustrated in the manual, and all of the answers are given; but the other HELP screens are not illustrated and lack corresponding answers. Thus, there is no way for the user to be sure that he is correctly executing the example problems. It would also be useful if more examples were given of how an algebraic expression, such as,

$$\frac{X^4 - 1}{X^3 + 2X^2 + X + 2}$$

should be entered in the computer. The format required is,

$$(X^4 - 1)/(X^3 + 2X^2 + 2)$$

but this is not clearly presented.

It is essential that the user read the section of the manual on "expressions" to see how *Algicalc* treats such things as variables and the order of operations. Those who must evaluate algebraic expressions will find this feature of *Algicalc* interesting and useful. Expressions to be dealt with must contain only one variable (which must be "X"), and are limited only by the memory in the computer and the imagination of the user. In order to work with more than one variable, manual substitutions must be made, and are not usually dealt with satisfactorily by *Algicalc*.

The factoring feature is very good with some expressions, but not too helpful on others, particularly those polynomials which do not have a coefficient of one for the first term. There doesn't seem to be much rhyme or reason to what happens with others.

The one small page in the manual devoted to calculus deals only with the subject of derivatives. Those expecting more may be disappointed. Some other areas covered by HELP topics are: Assignments, Non-display, Substitution, and Compound Lines. The Substitution feature allows the user to evaluate the simplified expression for any value of the variable, X.

Even though *Algicalc* is not a particularly good teaching device, it can be used to great advantage by the teacher to demonstrate the capabilities of the computer in dealing with algebraic expressions. The students will find it most helpful in taking the drudgery out of calculations and in verifying the accuracy of their work.

POLYCALC

Company: APX

Language: Atari Basic

Hardware Requirements: 24K cassette, 32K disk.

Department: Education

Sugg. Retail: \$22.95

Availability: 8

Disk or Tape: Disk

OVERALL RATING **B**
EDUCATIONAL VALUE **B**
VENDOR SUPPORT **C**

EASE OF USE **B**
DOCUMENTATION **B**
VISUAL APPEAL **N/A**

ERROR HANDLING **A**
RELIABILITY **A**
VALUE FOR MONEY **B**

Polycalc is a program designed to aid students, teachers, and professionals with algebraic and calculus operations. It is not a tutorial or teaching device, but a computational tool for performing symbolic algebra and calculus functions. *Polycalc* does not require numerical values to be assigned to all variables before evaluating an expression. Instead, it operates a polynomial system which permits fractional and negative powers of variables — an advantage to the professional and student alike. Simply type in an expression and the program will expand, integrate, or differentiate the expression at the user's request. It is a versatile program capable of assigning results to variables for use in later expressions. Excellent documentation provides a thorough explanation of the program.

MATHEMATIC TIC-TAC-TOE

Company: Atari Program Exchange

Language: Atari BASIC

Hardware Requirements: 16K cassette, 24K disk

Department: Education

Sugg. Retail: \$15.95

Availability: 8

Disk or Tape: Both

OVERALL RATING **A**
EDUCATIONAL VALUE **A**
VENDOR SUPPORT **C**

EASE OF USE **B**
DOCUMENTATION **A**
VISUAL APPEAL **B**

ERROR HANDLING **A**
RELIABILITY **A**
VALUE FOR MONEY **A**

Mathematic-Tac-Toe is a math facts drill program turned into an interesting game. The screen displays a standard tic-tac-toe grid, and associates each cell with a math problem (not visible on the screen). The player chooses a cell, and the screen displays the associated problem. If it is answered correctly within the time limit, that cell is filled with an X or O, depending upon whose turn it is. If it is not answered within the time limit, the player loses his turn, and the opponent has the opportunity to choose the same cell or another.

There are 15 levels of difficulty and 15 time limits. The lower levels have longer time limits, and are appropriate for beginning students; but the upper levels should have been more challenging — the most difficult subtraction problems consist of only two and three digit numbers.

This program is an excellent way to sharpen math skills. The competition adds a new dimension to the drill, while the possibility of losing a turn makes tic-tac-toe a more interesting game.

STATISTICS I

Company: Atari

Language: BASIC

Hardware Requirements: 16K cassette; 24K disk

Department: Education

Sugg. Retail: \$19.95

Availability: 8

Disk or Tape: Both

OVERALL RATING **C**
EDUCATIONAL VALUE **C+**
VENDOR SUPPORT **B+**

EASE OF USE **B**
DOCUMENTATION **B**
VISUAL APPEAL **C**

ERROR HANDLING **A**
RELIABILITY **A**
VALUE FOR MONEY **C**

Statistics is considered by many to be a rather dull and uninteresting subject, and this introductory program further fosters that view. Not that the program doesn't provide an adequate introduction to such statistical terms as mean, mode, median, standard deviation, variance, skew, and root mean square. It does. However, by just going a little further, the learning process could have been a lot more interesting. Specifically, the program allows you to enter a database of information and will then proceed to calculate the results. That's fine as far as it goes, but a fuller treatment could have included a workbook of several problems to be solved by statistical analysis.

It would have also been a relatively simple matter to graph the statistical results, and thus visually demonstrate some of the useful applications to which statistics can be applied.

VIDEO MATH FLASHCARDS

Company: Atari Program Exchange

Language: Atari BASIC

Hardware Requirements: 8K cassette; 24K disk

Department: Education

Sugg. Retail: \$15.95

Availability: 8

Disk or Tape: Both

OVERALL RATING **C**
EDUCATIONAL VALUE **B**
VENDOR SUPPORT **C**

EASE OF USE **B**
DOCUMENTATION **B**
VISUAL APPEAL **C+**

ERROR HANDLING **A**
RELIABILITY **A**
VALUE FOR MONEY **C+**

Video Math Flashcards is a no frills program to drill students on basic math facts. The drill lasts for two minutes, and you may choose from addition, subtraction, multiplication, or division, either in 0-9 order or in random order. You may also choose to practice a particular number, or to mix all the function for all numbers.

A review follows the drill. The computer presents up to 20 unsolved or incorrect problems. If you enter the wrong answer a second time, the correct answer is supplied, and will be presented once more during the run of the program. A score next appears consisting of wrong answers subtracted from right ones, and the student's performance is finally ranked.

This program is a bit boring, but it gets the job done, and is a more efficient system than flash cards made by the student. The computer's potentials could be more effectively utilized, however, if the student were to write his own program and drill himself on these math skills.

MUGWUMP

Company: APX

Language: Atari BASIC

Hardware Requirements: 8K cassette, 16K disk

Department: Education

Sugg. Retail: \$15.95

Availability: 8

Disk or Tape: Both

OVERALL RATING **C**
EDUCATIONAL VALUE **C**
VENDOR SUPPORT **C**

EASE OF USE **C**
DOCUMENTATION **C**
VISUAL APPEAL **C**

ERROR HANDLING **A**
RELIABILITY **A**
VALUE FOR MONEY **B**

Mugwump is a creative title with an initially appealing game concept. Unfortunately, the programmers did not make full use of the Atari's capabilities, and the program quickly loses the student's interest.

Basically, the user is given a ten by ten grid on which to enter numbers from the keyboard. The object is to find the "mugwumps" hidden in the horizontal and vertical coordinates of the grid. Clues are provided; however, educational objectives are not stated, S and Y coordinates are never explained, and the visual appeal is barely average.

METRIC & PROBLEM SOLVING

Company: APX

Language: Atari Basic

Hardware Requirements: 16K, disk drive.

Department: Education

Sugg. Retail: \$29.95

Availability: 8

Disk or Tape: Disk

OVERALL RATING **B**
EDUCATIONAL VALUE **B**
VENDOR SUPPORT **C**

EASE OF USE **B**
DOCUMENTATION **B**
VISUAL APPEAL **B-**

ERROR HANDLING **B**
RELIABILITY **B**
VALUE FOR MONEY **B-**

Metric and Problem Solving presents seven challenging games encompassing a variety of math concepts applicable to second through sixth grade students. The concepts include metric length and conversion, graphing, number lines, direction, estimating metric measurement, numerical order, prime numbers and factors, place values, and logic. Documentation includes a good support booklet with handouts for duplicating lessons and suggestions for the teacher to reinforce the lessons presented. The visual appeal could stand some thought and improvement.

STARWARE

Company: APX

Language: Atari Basic

Hardware Requirements: 40K, disk drive

Department: Education

Sugg. Retail: \$22.95

Availability: 6

Disk or Tape: Disk

OVERALL RATING **A-**
EDUCATIONAL VALUE **A-**
VENDOR SUPPORT **C**

EASE OF USE **B+**
DOCUMENTATION **B-**
VISUAL APPEAL **B+**

ERROR HANDLING **A**
RELIABILITY **A**
VALUE FOR MONEY **A-**

If you or your child have an interest in learning the basics of astronomy, then this program is a good bet.

With *Starware*, you may locate the constellations in both the Northern or Southern hemispheres. There is a quiz format to assist you in learning about the constellations, and to help you identify them. The planets, the sun, and the moon can also be plotted with respect to star locations.

A "finder option" is available to assist you in locating an object. However, a basic astronomy book is definitely needed because the accompanying documentation does not go into sufficient detail to learn the necessary basics that are needed to fully utilize this program.

An interesting option allows you to display the night sky on the screen from your time and location anywhere from the year 1900 to 2000 A.D. This option, however, made me wish that the time span could have been longer; that is, I wished for an extension in time that would have allowed me to see how much the stars have changed position since, say, the birth of Christ.

All things considered, *Starware* is a good educational program for school age children as well as adults.

FROGMASTER

Company: APX

Language: BASIC

Hardware Requirements: 24K, disk drive. Joystick recommended.

Department: Education

Sugg. Retail: \$22.95

Availability: 3

Disk or Tape: Disk

OVERALL RATING **C-**
EDUCATIONAL VALUE **C-**
VENDOR SUPPORT **C**

EASE OF USE **C-**
DOCUMENTATION **B**
VISUAL APPEAL **C+**

ERROR HANDLING **B**
RELIABILITY **B**
VALUE FOR MONEY **C**

Frogmaster should be classed as an educational (rather than game) program because it demonstrates that animals, in this case tadpoles and frogs, can learn by conditioning. Inside each tadpole or frog shown on the screen is a primitive brain, entirely simulated by the computer. When an animal moves in a certain direction (and is rewarded by pressing the joystick button), it has a higher tendency to move in that direction in the future. If an animal is rewarded successively, then it begins to learn that jumping that way is the preferred direction.

Frogmaster gives this concept a game-like quality. Each player has a team of tadpoles. The team can consist of as many as nine. As the tadpoles begin to jump randomly, each player rewards their frogs for jumping in the correct direction, toward their opponent's goal. Each player has a joystick-controlled goalie to prevent any tadpole from scoring a goal.

While this game might have been played in a very straightforward way, it is complicated by the fact that none of these animals have any team loyalty. When a tadpole jumps, either player can reward a tadpole. Thus, a blue team member, after jumping the wrong way several times, may suddenly become a yellow team member. This is very disconcerting to a player, because only the tadpole's primitive brain knows whose order it received first. While this feature may make the game more interesting, it doesn't make the game very predictable, and so confuses younger players.

Besides being able to play at various speeds, the game offers levels in which tadpoles grow to become frogs that lay eggs and later die. If frogs can be properly guided, they can eat their opponent's eggs. On this level of play, frogs or tadpoles that are intercepted by the goalie die. A number of blockading walls can also be added to increase the difficulty.

I think the program is somewhat instructive to younger children. Teachers have the option of using the "tank" portion of the program to demonstrate conditioned learning without using the program as a game. But *Frogmaster* as a game wears thin after a few plays, and children soon become confused with the results.

ELEMENTARY BIOLOGY

Company: APX

Language: Atari Basic

Hardware Requirements: 16K, disk drive.

Department: Education

Sugg. Retail: \$29.95

Availability: 8

Disk or Tape: Disk

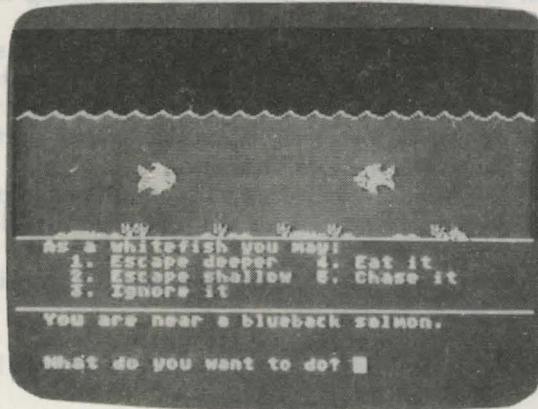
OVERALL RATING **B**
EDUCATIONAL VALUE **B**
VENDOR SUPPORT **C**

EASE OF USE **A**
DOCUMENTATION **A**
VISUAL APPEAL **B**

ERROR HANDLING **A**
RELIABILITY **A**
VALUE FOR MONEY **B**

Elementary Biology includes three programs for the elementary through junior high school student. They are as follows: (1) "Circulation" — this program describes the circulatory system of a fish. Color graphics are used to display the movement of a blood cell throughout the circulatory system. "Circulation" is appropriate for grades seven through nine. (2) "Odell Woods" aids the student in understanding food chains. As the student assumes the roles of animals found in the northern portion of the United States, food chains become of manifest importance. Students in grades two through eight will enjoy this simulation. (3) "Odell Lake" requires students to "role play" fish, and thus discover the food-web relationships by experimentation. As they encounter fish and other organisms in the environment, they must select appropriate actions in order to survive.

Elementary Biology is an informative and enjoyable package with excellent documentation. The objectives for each lesson are clearly stated. In addition, handout sheets are provided which may be duplicated by the teacher for use with the students. Ecological concepts are clearly explained with fine visual appeal.



BIOLOGY

GEOGRAPHY & SOCIAL STUDIES

STATES AND CAPITALS

Company: Atari, Inc.

Language: Atari BASIC

Hardware Requirements: 16K, cassette player.

Department: Education

Sugg. Retail: \$14.95

Availability: 9

Disk or Tape: Tape

OVERALL RATING **B**
EDUCATIONAL VALUE **B**
VENDOR SUPPORT **B+**

EASE OF USE **B**
DOCUMENTATION **A**
VISUAL APPEAL **B**

ERROR HANDLING **B**
RELIABILITY **B**
VALUE FOR MONEY **B**

Atari's *States and Capitals* is a graphic geography lesson suited to children aged 6 and up. An outline map of the continental United States is printed on the screen, and outlines of each state are added one by one in random order. (Alaska and Hawaii appear off the West coast when their turns come up.) The capital of each state, when requested, appears as a blinking dot. The student is then prompted first to name the state, then its capital, while the program determines if the response is correct or not, and prints the right answer on the screen. The student can give only one response to each question, but can correct potential misspellings by hitting the "Backspace" key. (Note: if he accidentally hits the adjacent "Break" key, the program terminates.)

The state being queried appears in white, while previous states remain on the screen in a different color to avoid confusion. Once begun, the program cycles through all 50 states unless terminated with the Break key. A running total of correct answers is continuously displayed. Unfortunately, the program evaluates only the first five letters of each response. Thus "North Moscow" would be a correct response for either North Dakota or North Carolina; and "New Yuck" will do for New York (though "New Muck" will not).

Side one of the tape contains audio instructions delivered with overblown hype. Side two contains the program itself. The audio instructions are really unnecessary, since the printed instructions are comprehensive, and even include a set of screen displays.

Despite its flaws, *States and Capitals* offers a quick and painless way to learn simple U.S. geography, and will no doubt prove entertaining to its young users.

EUROPEAN COUNTRIES & CAPITALS

Company: Atari, Inc.

Language: Atari BASIC

Hardware Requirements: 16K, cassette player

Department: Education

Sugg. Retail: \$14.95

Availability: 9

Disk or Tape: Tape

OVERALL RATING **B**
EDUCATIONAL VALUE **B**
VENDOR SUPPORT **B+**

EASE OF USE **B**
DOCUMENTATION **A**
VISUAL APPEAL **B**

ERROR HANDLING **B**
RELIABILITY **B**
VALUE FOR MONEY **B**

Similar in approach to Atari's *States and Capitals*, this program displays 26 European countries and their capitals, one at a time, on an outline map of Europe. Not all European nations are displayed, and the student will search in vain for Liechtenstein, Andorra, and San Marino.

The student is asked to identify first the country, then its capital, which appears as a blinking dot. The program, however, suffers from the same shortcoming as the United States tutorial in that it evaluates only the first five letters of a response. Also, the program is often arbitrary in the answers it accepts. These programming quirks produce curious results. For instance, "Romania" is correct and "Rumania" is wrong; "Roma" is incorrect, but "Helsingfors," "Lisboa," and "Warsawa" are right. (So is "Lisbox" correct, counting only the first five letters.)

Despite these flaws, this program performs its task of familiarizing students with basic European geography in a pleasing and adequate manner.

GLOBE MASTER

Company: Versa Computing

Language: Basic

Hardware Requirements: 32K

Department: Education

Sugg. Retail: \$29.95

Availability: 4

Disk or Tape: Disk

OVERALL RATING **B+**

EDUCATIONAL VALUE **B+**

VENDOR SUPPORT **B**

EASE OF USE **A**

DOCUMENTATION **C**

VISUAL APPEAL **A-**

ERROR HANDLING **B+**

RELIABILITY **B+**

VALUE FOR MONEY **B+**

Globe Master uses high resolution color maps to drill and test a student's knowledge of world geography. This educational package consists of nine separate lessons on two disks. These lessons cover specific continents, large countries like the United States and Canada, and two cover world geography.

The lessons present highly detailed maps of particular areas of the globe. The student has a choice of identifying countries, states, capital cities, and bodies of water, using either the full spelling, or just the first letter of the name of each. The single letter is for beginners and can lead to some lucky guesses. I typed an "S" to identify what I thought were the Solomon Islands only to discover that the small blinking dot was actually pointing to Somoa. The program counted the answer as correct. Incorrect identifications are repeated later until the student gets them right. The final score indicates the number of attempts made to correctly identify all of the locations on the map. Scores can be improved by answering bonus questions about the local mountains and bodies of water.

It is difficult to locate the small blinking cursor on some maps where there is very small detail. This is true of Europe (especially the Benulux countries), the New England states on the map of the U.S., and on portions of the world map. Even the pixel-sized cursor at times becomes lost in the details.

Globe Master is a very comprehensive package for the geography class. Its lessons cover the entire world in sections, and drill the student either on a country's name or its capital. The maps are excellent. Versa offers a better buy than either of the two Atari-brand geography packages on the market.

ENERGY CZAR

Company: Atari, Inc.

Language: BASIC

Hardware Requirements: 16K, cassette player.

Department: Education

Sugg. Retail: \$14.95

Availability: 8

Disk or Tape: Tape

OVERALL RATING **A-**

EDUCATIONAL VALUE **B+**

VENDOR SUPPORT **B+**

EASE OF USE **A**

DOCUMENTATION **A**

VISUAL APPEAL **B-**

ERROR HANDLING **A**

RELIABILITY **A**

VALUE FOR MONEY **A**

A simulation models or represents the function or process by means of the functioning of another. An example is flight simulation that duplicates, to a degree, the reality of actual flight; or a war game that recreates a famous battle. *Energy Czar* creates a model simulation of the existing energy sources in the United States. It must be remembered that the usefulness of any simulation is directly related to its ability to faithfully represent reality. *Energy Czar* should not be considered an "absolute" representation of our complicated energy resource situation, but it is nonetheless sufficiently accurate and thorough in its approach to be a valuable, entertaining, challenging, and useful educational tool.

The premise of the program is that the user has been appointed the "absolute Energy Czar" of the United States. The Czar has complete power to decide energy policy, and is mandated to solve the energy crisis. If he can do so, he'll be declared a national hero. As Czar, he must choose between fossil, nuclear, or solar power. Prices must be set or allowed to react to market conditions. Questions of supply must be answered, taxes have to be levied, and laws must be enacted. Fatal consequences of various policies must also be considered. Finally, the public (i.e., the computer) will judge your decisions in terms of how they have affected the growth of the economy, inflation, and overall quality of life. At this point, you are either voted out of office, or you become the hero.

Overall, *Energy Czar* is an entertaining, thought provoking, and nicely implemented educational program. It is especially suited for ages eight and up.

ATLAS OF CANADA

Company: APX

Language: Atari Basic

Hardware Requirements: 16K cassette, 32K disk.

Department: Education

Sugg. Retail: \$22.95

Availability: 8

Disk or Tape: Both

OVERALL RATING	C	EASE OF USE	B	ERROR HANDLING	A
EDUCATIONAL VALUE	C	DOCUMENTATION	C	RELIABILITY	A
VENDOR SUPPORT	C	VISUAL APPEAL	C	VALUE FOR MONEY	C

Atlas of Canada is a geography program for the student who is studying the provinces, cities, and various topographical points of interest of Canada. The user is required to identify the position outlined on the map, such as provinces, capitals, lakes, islands, bays, rivers, and so on. Each time the program is run, a different order of positions is presented.

Atlas of Canada would have been an excellent program had the author expanded it with handouts, and included these in the documentation. The program, as is, is just too limited, and could have been much improved by offering more explanations, better graphics, and a variety of tests.

KINGDOM

Company: Atari, Inc.

Language: Atari BASIC

Hardware Requirements: 8K, cassette.

Department: Education

Sugg. Retail: \$14.95

Availability: 9

Disk or Tape: Tape

OVERALL RATING	C	EASE OF USE	A	ERROR HANDLING	A
EDUCATIONAL VALUE	C	DOCUMENTATION	C	RELIABILITY	A
VENDOR SUPPORT	B+	VISUAL APPEAL	C	VALUE FOR MONEY	B

Versions of this program have been around for many years on a number of different computers. In fact, the program originated on large mainframe computers, and has been shortened to run on today's small personal computers.

The premise of this simulation game is that you are appointed manager of a small, ancient city. Your main objective is to be sure that your people have adequate food for survival. You must decide, therefore, how much land to either sell for food (reducing the amount of land available for future planting), or how much land to purchase (paid for from current food revenues). Other variables to contend with include rats that destroy your food, harvests that are not reliable, and an ever increasing population of the inhabitants of your city. The program, finally, is entirely textual, and only of average challenge or interest.

LEMONADE

Company: APX

Language: N/A

Hardware Requirements: 16K; disk drive or cassette.

Department: Education

Sugg. Retail: \$15.95

Availability: 4

Disk or Tape: Both

OVERALL RATING	B	EASE OF USE	B	ERROR HANDLING	B-
EDUCATIONAL VALUE	C+	DOCUMENTATION	B-	RELIABILITY	B-
VENDOR SUPPORT	C	VISUAL APPEAL	C	VALUE FOR MONEY	C+

At first I was tempted to dismiss this program as a rather inconsequential game. However, after watching a few children (ages 6 to 10) use the program, I changed my mind.

Lemonade, in the guise of a game, is a useful program for explaining a few concepts of small business to children. The goal is to make money, and the method of doing so is to operate your own lemonade stand. It is up to the child to determine how many glasses of lemonade to produce, what to spend on "advertising," and how much to charge for the lemonade. The proper "mix" of these business decisions will result in the largest profit. The child will also be subjected to certain random, uncontrollable factors, such as heatwaves, inflation and traffic diversion, that will effect sales.

A better implementation of graphics to complement the program would be desirable. But otherwise this is not a bad early introduction to the world of business.

MISCELLANEOUS

EDUCATION

1-1	1-1	1-1	1-1
1-2	1-2	1-2	1-2
1-3	1-3	1-3	1-3

The following information is provided for the purpose of providing a general overview of the various educational programs and services available to students. This information is intended to provide a general overview of the various educational programs and services available to students. This information is intended to provide a general overview of the various educational programs and services available to students.

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MISCELLANEOUS EDUCATION

TRICKY TUTORIALS

Company: Santa Cruz Educational Software
Language: BASIC
Hardware Requirements: 16K, cassette; 24K disk.

Department: Education
Sugg. Retail: \$19.95 ea. (#5 \$29.95)
Availability: 5
Disk or Tape: Both

OVERALL RATING	B	EASE OF USE	B	ERROR HANDLING	N/A
EDUCATIONAL VALUE	B+	DOCUMENTATION	B-	RELIABILITY	B
VENDOR SUPPORT	B-	VISUAL APPEAL	B-	VALUE FOR MONEY	A

Tricky Tutorials is a series of six programs that attempts to make the inner workings of Atari sound and graphics understandable. In many regards, these programs do a commendable job through their many working examples and explanations provided in the documentation. The friendly style sometimes isn't the clearest, but with a little bit of re-reading and some patience on your part the explanations will eventually become clear. Programs on the disk provide ready-to-use routines for the beginner.

There are six units: (1) Display Lists; (2) Horizontal/Vertical Scrolling; (3) Page Flipping; (4) Basics of Animation; (5) Player-Missile Graphics; and (6) Sound. Each is self-running, in that when one part of the lesson is finished, the user need only press the Option or Start key to load the next portion in automatically. Each did a thorough job of presenting useful information, and the following two programs are the most representative of those in the series.

Player-Missile Graphics – Tricky Tutorial #5 is an excellent introduction to player-missile graphics for the BASIC programmer. Through the design and explanation of a simple arcade game, the reader begins to understand the concept of player-missile graphics. This concept is re-inforced by the use of small segments in simple examples. These examples show, for example, how the collision register can detect a collision with a particular playfield color (eating the dots in Pac Man), how animation alternates between two different player shapes, and what might happen if player data is put in the wrong place. There are a total of twenty-five different examples in 14 programs. Most of these are controlled by the student with joysticks.

There are also three simple utilities that hopefully will make designing playfields, player-missile shapes, and the choice of colors an easy task. None of these utilities is very sophisticated, but they are adequate. The player-missile editor is probably the most useful of the utilities. It is completely keyboard operated, and will save string data to the disk.

The documentation is good. The 50 pages discuss all aspects of player-missile graphics, and present many of the program listings on the disk. It is thorough and easier to understand than the brief explanation in the book *De Rey Atari*. In sum, this tutorial is one of the more instructive of the series. It makes a fairly difficult subject understandable.

Sound – Tricky Tutorial #6 is a set of lessons to teach you all about the Atari's sound registers, and their capabilities for producing sound effects and music. This is an on-screen tutorial where each concept is actually demonstrated. After demonstrating what each of the registers does in the sound statement, it encourages the user to use the paddles to vary each register value. Thus it is very easy, for example, to discover the sounds of hyperwarping through space (as in the *Star Raiders* game). The program goes on to explain how to store noted and duration numbers as data statements, then proceeds with a discussion on how to construct a wait subroutine using the machine's internal clock. The actual BASIC code is shown on screen. There is no need to write this down as all listings are in the documentation. A practical music example is illustrated with the tune "Do-Re-Mi" from the *Sound of Music*. There is also an example of how to produce chords, and a demonstration of how the distortion register can make much deeper sounds just by adjusting pitch.

Some sound effect examples are also shown, both in code and in sound. These include a machine gun, telephone ringing, bomb falling followed by the customary explosion, and laser fire. Finally, there is a joystick-controlled sound editor that will easily allow you to change any of the values in three of the sound channels.

This tutorial is much better written than the five previous tutorials. It is self-running, user interactive, and instructive. It is a very easy and painless way to learn about the Atari's sound capabilities.

PILOT

Company: Atari

Language: Pilot

Hardware Requirements: 8K [home]
16K [school]

Department: Education

Sugg. Retail: \$129.95

Availability: 9

Disk or Tape: Cartridge and tape

OVERALL RATING	A -	EASE OF USE	A	ERROR HANDLING	A -
EDUCATIONAL VALUE	A +	DOCUMENTATION	A -	RELIABILITY	A
VENDOR SUPPORT	B +	VISUAL APPEAL	A +	VALUE FOR MONEY	A

Those familiar with the concept of *Logo* will welcome Atari's version, *Pilot*. Atari's *Pilot* (Programmed Inquiry, Learning or Teaching) is a programming language with "turtle graphics." It is easy to learn and easy to use, with simple syntax and textual rather than a mathematical orientation. *Pilot* utilizes the extensive capabilities of the Atari computer, including full screen editing, lower as well as upper case characters, the graphics keyboard, and full sound and color features. *Pilot* is recommended for ages 8 to adult, and most users should be able to write simple, but interesting programs after a short working session.

There are two packages available: the Home package and the School, or Educator's package. The Home package contains the Pilot Language in the easy to use cartridge form, a 107 page spiral bound Student Pilot reference guide, and a Pocket reference card. The School package, which comes in a heavy duty loose-leaf binder with a plastic holder for the cartridge and tapes, contains all of the above materials plus the 191 page spiral bound Pilot Demonstration Programs User's Guide.

One feature of *Pilot* that makes it very user friendly, particularly to younger students, is the use of abbreviations for commands. Almost all of the text commands are abbreviated to one or two letters followed by a colon. These include T (type to screen); A (accept from keyboard); M (match command); J (jump command); and SO (sound command), to list only a few.

The Student Reference Guide is interesting and easy to follow. It gives numerous, full-color illustrations on screen. The cartoon turtles used throughout the manual to illustrate points and to instruct are an added attraction. The Guide begins with simple programs and carries the student easily along, introducing first T (TYPE) in several short programs, then on to add A (ACCEPT) and M (MATCH). Just these 3 commands make many different programs possible. The executive commands include AUTO, which will automatically number program lines, and REN which will renumber program lines by any increment.

Pilot graphics are easy to use and are well explained. Even the beginner can quickly begin to draw boxes, triangles, circles, and perform simple, animated graphics. Three different "pen" colors can be used in TURTLE GEOMETRY, and PEN ERASE will remove lines. The absolute commands GOTO, TURNT0, DRAWTO, and FILLTO use simple coordinates to tell the turtle where to go. Relative commands like GO, TURN, DRAW, and FILL all operate in relation to the present position of the turtle.

Pilot allows straightforward use of sound. It can support up to four voices at one time, and will play a range of two and one-half octaves. Music does, of course, add great interest and variety to any program.

The simplicity of the *Pilot* language, together with a natural curiosity about the workings of the computer, will lead most students into more complex and creative programming. From simple patterns, they will expand concepts. For instance, a star becomes a star that changes colors, next a moving star, and finally, great numbers of moving stars.

Pilot permits use of peripheral devices. It can be used in conjunction with a disk drive, a cassette player, joysticks, paddles, or a printer. There is a CALL command for utilization of machine language routines, and an equivalent of PEEK and POKE; therefore, the door is open for advanced programmers to experiment with BASIC or other languages.

The Pilot Primer (for teachers, parents, or older students) covers the information in the Pilot Student Manual. However, it goes into more depth and introduces a lot of new material. At the end of each section is a summary of the material, terms and commands, and a review quiz. These are well done, and could easily be used by teachers in the classroom, by parents guiding their own youngsters, or by students who are mature enough to work their own way through both manuals.

Teachers will find *Pilot* helpful in preparing classroom programs for virtually any subject. Tests, interactive stories, and review lessons in math, grammar, and science are only a few of the types of programs which can be developed. The easily added sound, color, and graphics capabilities provide depth and interest to the program.

Pilot also offers an excellent language to introduce students to computers. The simplicity of the commands, the logical syntax, and the wide range of capabilities are easier to learn and use than BASIC. In addition, students who later discover that they want to go on to learn BASIC should find it reasonably easy to transfer the knowledge.

Overall, there is a very good software package. The manual is a little choppy in spots, but it is not difficult for even a child of 8 to 10 to make progress through the selections. *Pilot* is a simplified language, and as such, does not directly support all the things BASIC will do. However, this is what makes the language so suitable for students and for teachers. A relatively small amount of study and work will produce impressive results.

QUIZ MASTER

Company: Atari Program Exchange

Language: Basic

Hardware Requirements: 32K, joystick optional

Disk or Tape: Disk (can be placed on tape if desired)

Department: Education

Sugg. Retail: \$22.95

Availability: 8

OVERALL RATING **B+**
EDUCATIONAL VALUE **A-**
VENDOR SUPPORT **C**

EASE OF USE **B-**
DOCUMENTATION **B+**
VISUAL APPEAL **B+**

ERROR HANDLING **B**
RELIABILITY **A-**
VALUE FOR MONEY **B+**

Quiz Master enables you to create quizzes. It produces vocabulary reviews, true-false quizzes, and multiple choice quizzes with 3, 4, or 5 possible answers. *Quiz Master* is available only on disk, but the manual includes instructions for transferring it to a set of 6 blank cassettes.

The quizzes developed with this program could be very effective study and review tools. However, with the limitations of the program, they are not very useful as scored quizzes for classroom grading. There is no provision for recording the student's score on disk, tape, or printout; the number or percent correct only remains on the screen for about 15 seconds. Another feature enables the student to retake the test for a higher score if he or she wishes.

The program provides a step by step procedure for each kind of test administered. There are demo quizzes to illustrate each type, and the manual guides you through the production of sample quizzes. For the most part, this is well done, and very easy to follow. To create a vocabulary quiz the program will prompt "What is word #1?" and then, "What is its definition?" After typing these, it will ask whether you wish to Edit (which means retype) the word and definition, or Enter them.

As easy as this appears, there are places where problems arise. The manual instructs you to record your quiz, when the program indicates, on your own disk or tape. But the program never tells you to do so. You must guess when to insert your diskette or tape, and when to reinsert the *Quiz Master* disk. When saving a vocabulary quiz to your disk, the program will end with an ERROR because it can't find the *Quiz Master* program. It is almost necessary to copy the program onto a working disk where you can store the quizzes. However, this would result in many unusable sectors. It would also have been helpful had the manual mentioned sooner what should be done about errors and breaks. Troubleshooting is not covered until page 18, *after* you have worked through all the demo programs and sample quizzes.

A problem occurs when typing in questions for a quiz. If the break key is accidentally pressed, everything is lost. It would be more convenient if each question (or at least every two or three), was saved when entered. This would prevent having to retype the entire test.

On the whole, this program has many uses as a study aid. The great variety of responses, both in text and sound, when a student answers correctly, is excellent at keeping up the student's interest. He begins to wonder what it will say next. The feature which allows review of words missed during the vocabulary quiz is a nice addition. The manual is, finally, quite good.

HANGMAN

Company: Atari, Inc.

Language: Atari BASIC

Hardware Requirements: 16K, cassette player.

Department: Education

Sugg. Retail: \$14.95

Availability: 7

Disk or Tape: Cassette

OVERALL RATING **B**
GAME CONCEPT **B+**
CREATIVITY **B+**
GAME DEPTH **B-**

CONTROLLABILITY **B+**
SKILL INVOLVED **B**
CHALLENGE **B-**
GRAPHICS **B-**

ERROR HANDLING **B**
DOCUMENTATION **B**
HOLDS INTEREST? **B**
VALUE FOR MONEY **B**

Most of us are familiar with the popular child's word game, *Hangman*. This Atari version offers a nice implementation of the classic game, the object of which is to fill in blanks with letters and guess the correct word. Each incorrect guess adds one more portion to a man hanging in a noose.

Of course, being on a computer allows for some entertaining enhancements, such as an expanded forty word vocabulary in each of the beginner, intermediate, and expert modes.

The graphics of *Hangman* are adequate, though one could have hoped for more. The audio instructions are clear and useful, and complement the written documentation. The game, finally, is suitable for ages eight to adult.

HICKORY DICKORY

Company: APX

Language: Atari BASIC

Hardware Requirements: 16K cassette, 24K disk.

Department: Education

Sugg. Retail: \$15.95

Availability: 8

Disk or Tape: Both

OVERALL RATING **C**
EDUCATIONAL VALUE **C-**
VENDOR SUPPORT **C**

EASE OF USE **C**
DOCUMENTATION **B**
VISUAL APPEAL **C**

ERROR HANDLING **B+**
RELIABILITY **B+**
VALUE FOR MONEY **C**

In a post-digital world, *Hickory Dickory* assists children in learning to tell time on the old fashioned, round-faced clock (remember those?). The program is appropriate for children in kindergarten through the sixth grade level, and is set up to be used with either joystick or keyboard. A clock face appears with the hour and minute hands set according to the chosen difficulty level. In brief, the student must identify the correct time. Unfortunately, the visual appeal is minimal, and no tests or quizzes are included to test the student or provide incentive or rewards. There are other programs available that have more educational value than this one.

TEACHER'S AID

Company: Dynacomp

Language: BASIC

Hardware Requirements: 24K

Department: Education

Sugg. Retail: \$13.95 cassette/\$17.95 disk

Availability: 6

Disk or Tape: Both

OVERALL RATING **C-**
EDUCATIONAL VALUE **D+**
VENDOR SUPPORT **B**

EASE OF USE **B**
DOCUMENTATION **C-**
VISUAL APPEAL **C+**

ERROR HANDLING **B-**
RELIABILITY **A**
VALUE FOR MONEY **C+**

Teacher's Aide is a math program which provides problems for reviewing the fundamental math operations of addition, subtraction, multiplication, and division. The program advances from single digit problems at Level 1, to four and five digit problems at Level 5.

A student selects a series of problems which are displayed one at a time on the screen. Since there is no time limit involved, a student may proceed at his own pace. Three attempts at the correct answer are allowed before the computer provides that answer. At the end of a series, the score is displayed, first with color and sound lighting up a portion of the screen corresponding to the percentage of correct answers, then by giving out the correct and incorrect numbers, and the final correct percentage. The pupil is given a chance to review the problems missed the first time around, which provides a nice feature of learning reinforcement. A score of 100 percent, finally, produces some extra hoopla involving mediocre graphics.

The manner by which *Teacher's Aide* calculates the correct percentage is unusual. Normally, scoring counts only the number of correct answers in relation to the number of questions. This system counts the correct responses in relation to the number of attempts which were made. This could be as high as 3 per question, resulting in some strange numbers.

One interesting feature of this program is the multiplication module. This allows the student to answer the entire problem at once, or to work out the sub-products in the longhand procedure. In the division module a similar procedure is available. The manual states that these features make the program a learning experience rather than a drill. However, when the student is unable to perform one of the steps correctly, the program does not present an explanation of the logic for solving it. Instead, it merely gives the answer for that step. From Level 3, most students will probably need to work out the problems on paper and then enter their answers.

Teacher's Aide provides a workbook-type drill in addition, subtraction, multiplication, and division, for home or elementary classroom use. The Break key should have been disabled to prevent accidental disruption of the program. Since it has not been, students would have to be instructed to type CONT if they accidentally pressed it. Other than that, students are automatically returned to the Main Menu at the end of every exercise, or by pressing "B." The graphic displays are uniform and lack variety, and the anticipation value is rapidly diminished. Improved graphics would add to the program's educational value.

Teacher's Aide is an unimaginative program consisting of mere math drills. Where much is possible with the Atari computer, from game to adventure formats, math can also be made enjoyable and even exciting. This program has missed the boat.

MORSE CODE TUTOR

Company: Atari Program Exchange

Language: Atari BASIC

Hardware Requirements: 16K cassette, 24K disk

Department: Education

Sugg. Retail: \$22.95

Availability: 8

Disk or Tape: Both

OVERALL RATING **B**
EDUCATIONAL VALUE **B**
VENDOR SUPPORT **C**

EASE OF USE **B**
DOCUMENTATION **B**
VISUAL APPEAL **N/A**

ERROR HANDLING **A**
RELIABILITY **A**
VALUE FOR MONEY **B**

Morse Code Tutor allows you to learn the Morse code signals at your own pace. Transmission can be slowed down or accelerated. The program includes a tutorial section and five practice options. The former includes eleven four-character lessons; the latter instructs you to specify the character to be sent, to identify characters or words, to increase space between characters or word transmission, or listen to randomly generated ham radio call signs.

This program provides thorough and yet fun instruction, while setting a good preparation for the FCC code test for ham radio operation.

TOUCH TYPING

Company: Atari

Language: Atari Basic

Hardware Requirements: 16K Atari 400/800, cassette

Department: Education

Sugg. Retail: \$24.95

Availability: 9

Disk or Tape: Tape

OVERALL RATING **B**
EDUCATIONAL VALUE **B**
VENDOR SUPPORT **B+**

EASE OF USE **B+**
DOCUMENTATION **B+**
VISUAL APPEAL **C**

ERROR HANDLING **B**
RELIABILITY **B-**
VALUE FOR MONEY **C+**

Typing is one of those subjects far more boring to teach than to study, and seems an ideal subject for the individual tutorial possible with a home computer. Of course, since you are loading the program through the Atari keyboard, used as your practice typewriter, you must at least be able to hunt-and-peck enough to get started. Once *Touch Typing* is loaded (and you must be patient, as it takes several minutes to "boot up" each cassette), the program offers a series of exercises that will take you from beginning through advanced typing levels. How quickly you learn typing accuracy, rhythm, and speed is determined by the rate at which you master the practice routines. The program isn't on a schedule or timed in any way, except that as you progress it will calculate the Words-Per-Minute rate at which you type (from 10 up to 80 wpm).

Finger drill is the program's main thrust, moving eventually to duplicating test paragraphs. To start, the keyboard is displayed on-screen, divided for lefthand and righthand practice. A set of keys is designated for practice, and you are asked to duplicate a pattern following those letters displayed beneath the keyboard, then go on to the next drill. You cannot "correct" yourself by backspacing and typing over letters, because the program tracks these and lets you know your error and wpm rates. I found it rather annoying that you could not repeat an exercise but only go on to the next. To repeat a drill you'd have to re-boot the whole program and start again. At more advanced levels, the program prompts you with a metronomic bleep on the keystroke to reinforce the proper wpm tempo (the wpm rate is adjustable), it gives you an error count, and it points out your worst mistakes, so you have at least three areas to improve on as you advance.

The basic teaching method is sound, and *Touch Typing* is a good tool for learning a necessarily mechanical subject (after all, you cannot get far with computers if you cannot type). I wanted to see a much greater flexibility in moving around to different exercises, so that one could repeatedly practice in problem areas (a limitation of the cassette system, I suppose). There is no real provision to train you to keep your eyes on the page you're working from and not look at the keyboard; this would be hard to achieve, admittedly, but this facet of "touch" typing should be stressed more. I was also disappointed that more was not made of Atari's graphics capabilities: color could have been used to much greater effect to distinguish keys designated for drill, for example. But on the whole the program is simple to follow, and teaches the fundamentals of touch typing in a relatively short time.

HI-RES MASTERTYPE

Company: Lightning Software

Language: BASIC

Hardware Requirements: 32K, disk drive

Department: Education

Sugg. Retail: \$40.00

Availability: 6

Disk or Tape: Disk

OVERALL RATING **A-**
EDUCATIONAL VALUE **A-**
VENDOR SUPPORT **A-**

EASE OF USE **A-**
DOCUMENTATION **A-**
VISUAL APPEAL **B**

ERROR HANDLING **A-**
RELIABILITY **A-**
VALUE FOR MONEY **C-**

Hi-Res MasterType is yet another progressive typing program, but with a difference. It incorporates an Invader type game as it presents opportunities to practice typing skills.

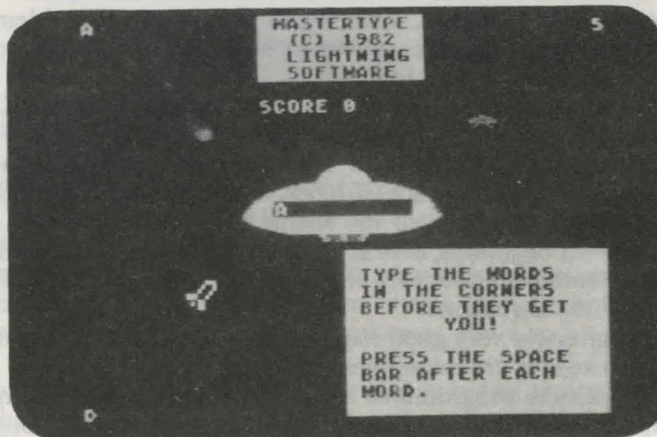
The typist is in command of the space ship at center screen. In the four corners of the screen appear letters, words, numbers, and/or other combinations that the typist must quickly enter, in order to prevent their slow, but constant movement towards the ship, resulting in a collision that will produce damage. The collisions and/or the successful typing of one of the "enemy" phrases is rewarded with sound and color displays. There is a sequence of 10 such trials before a message appears to report both on the status of the ship and the speed of the typist in words per minute.

The diskette provides 17 lessons. Lesson #1 starts with the letters ASDFGHJKL, and presents each letter in this home row as an "enemy" word. Lesson #2 presents two or three letter words of that row. Lesson #3 uses three, four, or five letter words of the same row. Lesson #4 moves to the third row, with the letters, QWERTYUIOP. Lesson #5 provides short words using the home and third rows together, and so on up to lesson #17, which gives practice with difficult numbers and symbols. There is a MAKE LESSON on the diskette which allows the user to create lessons. They can be saved on the program diskette (never a wise option), or on a pre-initialized, 13-sector diskette.

Although the instructions specify that, in any mode other than Beginner, the typist should press (SPACE) to show completion of input, it is actually more desirable to press (RETURN). Another suggestion in the manual states that to correct mistakes in typing, "press the space bar and try again. You will be penalized a few points for making a mistake, but you should have enough time to type the word again." It then states, "another way to correct your mistakes is to use the left-arrow key to backspace over your mistake and retype it." In a word-processing environment, the power of the computer is to simplify corrections. The use of the backspace to correct errors is to be encouraged, not avoided!

The advertising for this package implies that this form of play-teaching is effective, if not addictive. This reviewer has seen exactly such events take place — with a typing teacher and with students.

The price is somewhat high for this package. If that is not a major consideration, *Hi-Res MasterType* is highly recommended.



MASTERTYPE

INSTRUCTIONAL COMPUTING DEMONSTRATION

Company: Atari Program Exchange
Language: Atari BASIC
Hardware Requirements: 16K, disk drive

Department: Education
Sugg. Retail: \$29.95
Availability: 8
Disk or Tape: Disk

OVERALL RATING	B	EASE OF USE	A	ERROR HANDLING	A
EDUCATIONAL VALUE	B	DOCUMENTATION	A	RELIABILITY	A
VENDOR SUPPORT	C	VISUAL APPEAL	B	VALUE FOR MONEY	B

Not only does this program provide an introduction to the Atari's capabilities, it also demonstrates how computer instruction can be made an integral part of the school curriculum. Different modes of instruction, such as drill and practice, simulation, and problem solving are displayed for individuals and groups of up to six students. Samples of areas of study include math, music, science, and social studies.

Most students and teachers will appreciate *Instructional Computing Demonstration* as an aid in becoming acquainted and more versatile with their computer. Excellent documentation reinforces the concepts presented.

AN INVITATION TO PROGRAMMING #2

Company: Atari, Inc.
Language: Atari Basic
Hardware Requirements: 8K, cassette player.

Department: Education
Sugg. Retail: \$29.95
Availability: 9
Disk or Tape: Tape

OVERALL RATING	A	EASE OF USE	A	ERROR HANDLING	B+
EDUCATIONAL VALUE	A	DOCUMENTATION	B+	RELIABILITY	A
VENDOR SUPPORT	B+	VISUAL APPEAL	A	VALUE FOR MONEY	A

The developers of *An Invitation to Programming* have that rare ability to make learning entertaining and painless. A two-part programmed lesson, divided into "Writing Programs One" and Two," goes step by step from beginning BASIC into advanced programming techniques.

The package contains two cassettes and a workbook manual. Each lesson is loaded into the computer from cassette following very explicit instructions in the manual. This should not present a problem, even to a beginner. Each lesson initially makes good use of sound and graphics, giving an idea of the capabilities of programming in BASIC as well as providing motivation to continue with the lesson.

Each cassette includes a complete unit of instruction. The first, "Writing Programs One," provides seven lessons, beginning with an explanation of, and experimentation with the keyboard. The student is then taken through the six lessons that follow, learning about and working with commands, variables (including string variables), and computer logic with IF/THEN, GOTO, and FOR/NEXT loops. There is an excellent quiz at the end of each cassette which should give the student an idea of how well the lesson has been understood. The second part, "Writing Programs Two," provides eight lessons, beginning with screen formatting instructions. This program then goes on to cover READ/DATA, arrays, some interesting aspects of PEEK and POKE, ATASCII, string handling, multiple statements, and then finishes up with subroutines.

These two programs give the beginner a very good foundation from which to continue the study of BASIC. The only major flaws in this excellent program are those inherent in the use of the cassette recorder. Loading problems can be very frustrating. Having both the programmed screen lesson and the audio instructions on the same tape requires keeping track of the tape counter in order to know where the audio portion begins. In the event the student is interrupted, or would like to review a lesson, it is difficult to coordinate the audio with the screen action short of going back to the beginning of that particular lesson. These programs make good joint use of screen and manual. The lessons on the screen refer to "frames" in the workbook for further information, and also for extensive, well-developed practice sessions.

An Invitation to Programming #2 is best used by individuals who like to work at their own speed, and tend to acquire a thorough understanding of each subject before going on to the next. It can also be adapted to classroom use by an imaginative instructor, who could apply it as an individual student tutorial, or an entire class lesson.

Though one might argue with the order in which topics are introduced in the lessons, or the particular subjects chosen for emphasis, it is difficult to find fault with the overall program. This package is a very well-presented, enjoyable set of lessons which will be a valuable asset to either the individual student or classroom instructor.

AN INVITATION TO PROGRAMMING #3

Company: Atari, Inc.

Language: Atari Basic

Hardware Requirements: 8K, cassette player.

Department: Education

Sugg. Retail: \$29.95

Availability: 9

Disk or Tape: Tape

OVERALL RATING **A -**
EDUCATIONAL VALUE **A -**
VENDOR SUPPORT **B +**

EASE OF USE **A -**
DOCUMENTATION **B +**
VISUAL APPEAL **B +**

ERROR HANDLING **B +**
RELIABILITY **A**
VALUE FOR MONEY **A -**

This is a two-part lesson divided into "An Introduction to Sound" and "An Introduction to Graphics." Budding young composers or artists, as well as teachers of art and music, will particularly enjoy working through these programs. Potential game programmers can also get a good look at the Atari's capabilities in sound and graphics.

The first cassette, "An Introduction to Sound," covers in seven lessons, sound registers, sound effects, sound routines, sound programs, musical ABC's, identifying notes, and sound routines with multiple registers. There is an excellent quiz at the end of each cassette which should give the student an idea of how well the lesson has been understood. The second part, "An Introduction to Graphics," also covers seven lessons (from a graphics demonstration to character graphics).

This is an excellent program with minor flaws (for which I refer the reader to the review of *An Invitation to Programming #2*). The manual, with its tables on musical notes, color registers, graphics modes, and keyboard diagrams, stands as a good reference source by itself.

The program, finally, is best used as a self-tutorial on an individual basis. However, a creative instructor should have little difficulty adapting it to classroom use.

PRESIDENTS OF THE U.S.

Company: Atari Program Exchange

Language: Atari BASIC

Hardware Requirements: 24K cassette; 32K disk

Department: Education

Sugg. Retail: \$15.95

Availability: 8

Disk or Tape: Both

OVERALL RATING **A**
EDUCATIONAL VALUE **A**
VENDOR SUPPORT **C**

EASE OF USE **A**
DOCUMENTATION **A**
VISUAL APPEAL **B**

ERROR HANDLING **A**
RELIABILITY **A**
VALUE FOR MONEY **A**

This is a nice, clean program that does just what it claims, with no frills or fuss. The student is prompted with four clues (dates of office, order of succession, one significant event in the life, and political party), and asked to identify from these the president concerned. On the easier level, the program displays a selection of four names, such as George III, John Calhoun, and Jefferson Davis. On the more difficult level, no names are given, and the student must type in the correct name, correctly spelled. The program cycles through all 40 presidents (Cleveland comes to bat twice), keeping visible score throughout. Partial credit is given for guessing the last name, and additional credit for guessing the correct first initial. The program is somewhat arbitrary about middle initials and middle names: Chester Alan Arthur is correct, but Dwight David Eisenhower and Lyndon Baines Johnson are wrong. Middle initials usually pass, with the surprising exception of Franklin Roosevelt's "D." Each question allows only one response before awarding points and passing on. The student may restart the program without completing the cycle.

One may quibble with the choice of clues. A second significant fact about each president would probably have been of more interest, and of greater pedagogical value than his order in the succession. Moreover, the author of the program is kinder to some presidents than to others: Richard Nixon's "significant event" is the lunar landing; Jimmy Carter's is the Iranian crisis. Since this program is unprotected (as all educational programs *should be*, and most are not), an aspiring young programmer can easily change the applicable lines to read "barely escaped impeachment" in the first case, to "Camp David agreements" in the second. Depending upon the student's ingenuity, he can substitute interesting facts about any president he wishes.

I can recommend this program, finally, for its high educational value, its ease of use, and its accessibility.

MUSICAL COMPUTER — A MUSIC TUTOR

Company: Atari Program Exchange
Language: Atari BASIC
Hardware Requirements: 40K, disk drive

Department: Education
Sugg. Retail: \$15.95
Availability: 5
Disk or Tape: Disk

OVERALL RATING	C	EASE OF USE	B	ERROR HANDLING	B-
EDUCATIONAL VALUE	B-	DOCUMENTATION	B-	RELIABILITY	B-
VENDOR SUPPORT	D+	VISUAL APPEAL	B-	VALUE FOR MONEY	C+

Musical Computer — A Music Tutor is a computer-aided instruction (CAI) program which teaches the fundamentals of musical notation. The course is divided into ten chapters. Some of these are straight "lecture," others are review tests, and the remainder combine the two. The entire course can be completed in under an hour, and is recommended for musicians aged 6 six years and up.

The major problem with this program is that it makes little use of the capabilities of the computer. The text is brief, and is displayed in a frustrating character-by-character style. (Perhaps someone ought to tell the author that people read a word at a time, not letter by letter.) The graphics are attractive, but would not have suffered had they appeared in a book instead of on-screen. If a user does badly in a quiz, the only options are to replay the same lecture or to try some more questions. A good CAI program should have some facility for providing a more detailed explanation of a topic, in case you don't pick it up on the first try.

The text itself is very brief. It tells you what symbols mean, without ever explaining why anyone would use them. If you ever learned mnemonics like "Every Good Boy Deserves Favor" and "F-A-C-E" to remember where notes reside on a staff, you already know most of what *Musical Computer* attempts to teach.

MUSIC 1 TERMS AND NOTATIONS

Company: APX
Language: Atari Basic
Hardware Requirements: 16K, disk drive.

Department: Education
Sugg. Retail: \$29.95
Availability: 8
Disk or Tape: Disk

OVERALL RATING	B	EASE OF USE	B	ERROR HANDLING	A
EDUCATIONAL VALUE	B	DOCUMENTATION	B	RELIABILITY	A
VENDOR SUPPORT	C	VISUAL APPEAL	B	VALUE FOR MONEY	B

Music 1 Terms and Notations is the first in a series of three modules introducing music theory through drill and practice. It is designed to enhance a music theory class, and works as a demonstration program, enabling students to utilize a variety of Atari computer commands.

The concepts presented include note types, note identification, enharmonics, definitions of musical terms, and major and minor key signatures. The documentation provides recording sheets for evaluation of the student's progress, as well as program explanation. Both the visual and sound effects of this program are clever and effectively reproduced.

KEYBOARD ORGAN

Company: Atari Program Exchange
Language: Machine
Hardware Requirements: 24K, disk drive.

Department: Education
Sugg. Retail: \$22.95
Availability: 8
Disk or Tape: Both

OVERALL RATING	B	EASE OF USE	B	ERROR HANDLING	A
EDUCATIONAL VALUE	B	DOCUMENTATION	B	RELIABILITY	A
VENDOR SUPPORT	C	VISUAL APPEAL	B	VALUE FOR MONEY	B

This program allows you to use the computer keyboard as if it were an organ keyboard. Not only do you play songs, you can change the sounds, record the songs, play back songs, and store recorded songs on disk or cassette. Although you can only play one note at a time, it is an enjoyable way of making music.

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MUSICAL COMPUTER — A MUSIC TUTOR

Company: Acorn Program Exchange
Language: Alan BASIC
Hardware Requirements: 40K, disk drive

Department: Education
Sugg. Retail: \$19.95
Availability: 5
Disk or Tape: Disk

OVERALL RATING	C	EASE OF USE	B	ERROR HANDLING	B-
EDUCATIONAL VALUE	B-	DOCUMENTATION	B-	RELIABILITY	B-
VALUE FOR MONEY	B-	VISUAL APPEAL	B-	VALUE FOR MONEY	B+

Musical Computer — A Music Tutor is a comprehensive instruction (CALL) program which teaches the rudiments of musical notation. The music is stored in a set of tapes. Some of these are straight "lecture" tapes, and the remainder contain exercises. The entire course can be completed in under an hour, and is recommended for students aged 6 or 7, 8, and 9.

The major problem with this program is that it makes little use of the capabilities of the computer. The text is typed, and is displayed in a monospace spaced-out character style. (Perhaps someone ought to tell the student that people read a word at a time, not by the column.) The graphics are attractive, but would not have suffered had they appeared in a book instead of on screen. The user's only help is a card; the only options are to replay the same lesson or to try other music exercises, a given program should have some facility for providing a more detailed explanation of a topic, or one that will guide the user on the next try.

The disk card is well done, but appears to lack music, without ever explaining why anyone would use them. If you ever learned something about "Good Good By, Dearie Polly" and "F.A.C.H." to remember where your mother's mail, you should be a part of what *Musical Computer* attempts to teach.

MUSIC 1 TERMS AND NOTATIONS

Company: APX
Language: Apple II
Hardware Requirements: 10K, disk drive

Department: Education
Sugg. Retail: \$29.95
Availability: 5
Disk or Tape: Disk

OVERALL RATING	B	EASE OF USE	B	ERROR HANDLING	A
EDUCATIONAL VALUE	B	DOCUMENTATION	B	RELIABILITY	A
VALUE FOR MONEY	B	VISUAL APPEAL	B	VALUE FOR MONEY	B

Music 1 Terms and Notations is the first in a series of three modules introducing music theory through disk and printer. It is designed to either replace a music theory class, and work as a deconstruction program, showing what the world's variety of sheet music are composed of.

The concepts presented include staff lines, note identification, intervals, definitions of musical terms, and basic and minor key signatures. The documentation provides recording tracks for evaluation of the student's progress, as well as program evaluation. Both the visual and aural effects of this program are clear and effectively reproduced.

KEYBOARD ORGAN

Company: Acorn Program Exchange
Language: Machine
Hardware Requirements: 20K, disk drive

Department: Education
Sugg. Retail: \$29.95
Availability: 5
Disk or Tape: Disk

OVERALL RATING	B	EASE OF USE	B	ERROR HANDLING	A
EDUCATIONAL VALUE	B	DOCUMENTATION	B	RELIABILITY	A
VALUE FOR MONEY	B	VISUAL APPEAL	B	VALUE FOR MONEY	B

This program allows you to use the computer keyboard as if it were an organ keyboard. Not only do you play songs, you can change the sounds, record the songs, play back songs, and store recorded songs on disk or cassette. Although you can only play one note at a time, it is an enjoyable way of making music.

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UTILITIES

Utility programs are an integral part of making the easiest use of the Atari Computer. They run the gamut from disk repair programs to player-missile editors to mathematical programs and assemblers. Some of these programs are extremely useful, and will save the user hours of tedious work, not to mention frustration.

But what must you consider important when you look at the dozens of offerings that fill the dealers' shelves? Of course, it depends on your needs, and in which programming language you usually write. For BASIC programmers, you need a renumber utility. Machine language programmers need a good assembler and possibly a debugger. Disk drive owners might consider disk utility programs that are capable of editing and rewriting sectors on the disk.

Game programmers definitely need a good player-missile editor, and possibly a graphics package for creating Hi-Res pictures. For those who want to work in the third dimension, there are several programs that will create, rotate, and animate three-dimensional pictures.

Naturally, there are those who like languages. There are more advanced BASIC's as well as Pascal, FORTH, and C. And finally, there are mathematical utilities designed to help engineers or scientists solve formulas and equations simply.

The utility program market has burgeoned in the last year. Programs which were developed by individuals to make their work easier, and which were originally traded among friends, have been refined and offered commercially. The next year should produce programs that will meet every user's needs.

BASIC LANGUAGE UTILITIES

BASIC RENUMBER UTILITY

Company: Atari Program Exchange

Language: Atari BASIC

Hardware Requirements: 24K, disk drive, printer helpful

Department: Utilities

Sugg. Retail: \$15.95

Availability: 7

Disk or Tape: Disk

OVERALL RATING **B**
EASE OF USE **A**
VENDOR SUPPORT **C**

DOCUMENTATION **B+**
VISUAL APPEAL **B**
ERROR HANDLING **B**

RELIABILITY **B**
USEFULNESS **B+**
VALUE FOR MONEY **B**

All programmers need one of these! Here's a utility that will renumber the statements in your BASIC program, makes them neat in appearance, and allows you to easily insert additional program statements.

This package uses default values (or lets you over-ride them) for a range of lines to be renumbered, new starting line number, and increment. It will automatically renumber references to any line numbers changed in GOSUB's, GOTO's, and IF/THEN's. You can direct the input to your disk, to cassette, or to your printer. By proper use of these features you can also merge in blocks of code or subroutines from other programs, as well as shift blocks of code around in your own program. But you must be careful when moving code around in blocks, because it is easy to overwrite other sections of your programs if you choose the line numbers carelessly.

The *BASIC Renumber Utility* takes a very long time to execute if your program is large: figure 8 minutes for every 250 lines. But, tedious or not, if you must renumber code, this package works well. It is an extremely useful program, second only to the *APX BASIC Crossreference Utility*.

BASIC CROSSREFERENCE UTILITY

Company: Atari Program Exchange

Language: Atari BASIC

Hardware Requirements: 40K, disk drive, printer helpful

Department: Utilities

Sugg. Retail: \$15.95

Availability: 8

Disk or Tape: Disk

OVERALL RATING **A**
EASE OF USE **A**
VENDOR SUPPORT **C**

DOCUMENTATION **A**
VISUAL APPEAL **B**
ERROR HANDLING **B**

RELIABILITY **A**
USEFULNESS **A+**
VALUE FOR MONEY **A**

Next to your BASIC language cartridge, this is the most important program you can have in order to program in Atari BASIC. If you do any programming at all, grab this one immediately.

I found *BASIC Crossreference Utility* to be an essential tool for debugging programs efficiently, as well as helpful in creating a more efficient program in terms of memory use and speed. In connection with a program listing, *XREF* is a virtual necessity if you ever have to go back and modify a program.

The utility will display on the screen, or, more conveniently, can be dumped to a printer. If you work with the *APX MASHER* (BASIC Program Compactor), *XREF* will tell you how many variables are in your program, one of the necessary inputs to *MASHER*. In addition to telling you the number of variables in a program, their names, and where they are used, the utility gives you the number of constants in the program and how many times they are used as well. Unfortunately, it doesn't tell you where these constants are, so it doesn't quite do everything for you.

The error handling is well-documented in the manual, although I would prefer it to have been integral to the program. In the non-printer version, it would have been nice to have the option at the program's end to take you back to line 3050. To prevent a *BREAK* from interrupting the program, add "POKE 16,64:POKE 53774,64" after all *GRAPHICS* statements.

Like most of the *APX* programs I've seen, this one is well-conceived and very well documented. But it lacks a few "friendly" touches: for example, I found this utility can take quite a long time to run with larger programs; so you may also want to consider the four utility version on the BASIC utility diskette (*APX 20036*).

High marks for this package. It is essential to programming, and performs its functions well. An excellent value.

BASIC UTILITY DISKETTE

Company: Atari Program Exchange

Language: BASIC and Machine

Hardware Requirements: 40K, disk drive

Department: Utilities

Sugg. Retail: \$49.95

Availability: 8

Disk or Tape: Disk

OVERALL RATING **B+**
EASE OF USE **A-**
VENDOR SUPPORT **C**

DOCUMENTATION **B**
VISUAL APPEAL **B**
ERROR HANDLING **B**

RELIABILITY **A**
USEFULNESS **A-**
VALUE FOR MONEY **B+**

The *BASIC Utility Diskette* represents a bargain for those who program a great deal. It combines four utilities that are often used in programming and modifying code. These are also sold individually as *Ultimate Renumber Utility*, *Variable Changer*, *BASIC Crossreference Utility*, and *BASIC Program Compressor (MASHER)*. Each of these is reviewed individually elsewhere in *The Book*.

All four are fine, well-documented utilities; and all of them except the *Ultimate Renumber Utility* give you the ability to modify routines in BASIC. It may be that you only need one or two of these programs. But this is like getting four utilities for the price of three, and so gives you good value for your money. I'd recommend the package, because the chances are you will find all of these programs useful eventually.

ULTIMATE RENUMBER UTILITY

Company: Atari Program Exchange

Language: Machine

Hardware Requirements: 8K, cassette; 16K, disk.

Department: Utilities

Sugg. Retail: \$22.95

Availability: 9

Disk or Tape: Both

OVERALL RATING **B**
EASE OF USE **A**
VENDOR SUPPORT **C**

DOCUMENTATION **B**
VISUAL APPEAL **B**
ERROR HANDLING **B**

RELIABILITY **A**
USEFULNESS **A**
VALUE FOR MONEY **B**

What would the ultimate renumber utility look like for your BASIC programs? This package claims to be that, and it is in many ways — if you can live within its limitations. This useful utility is fast, well documented, well-written, and very sophisticated in its use of Atari architecture.

I find its good points to be:

1. Speed (you have to see it to believe it!).
2. Invisibility (it doesn't appear on the program listing).
3. Residency (it comes in as an Autorun.sys file).
4. It works on resident programs (you don't have to LIST, ENTER, etc).
5. It reduces memory by only 599 bytes.
6. It is not affected by a SYSTEM RESET.
7. It changes references within lines, and flags variable GOTO's, etc.

However, the negative trade-offs are:

1. It uses Page 6, so you can't use this area while it is there.
2. In cassette-oriented machines of 16K, even 600 bytes less might hurt — it takes this space up unless you re-boot.
3. You can't use RS232C ports on your 850 Interface while this utility is in memory. You must re-boot.
4. Four is the maximum number of disk drives that it can handle (this isn't a big deal, but it might affect someone out there. One version of the utility is used for 1 or 2 disk drives, and another one for 3 or 4 drives).
5. It rennumbers from a specific point (or default) to the END of your program. You cannot specify an upper line number. This is a big weakness in my experience.
6. Moving blocks of code around is quite cumbersome.

Still, this is one of the best-designed utilities that I have seen. It is well-written, very forgiving, self-correcting where possible, and above all, quick. Consider this utility carefully, or the *Basic Utilities Diskette*, which includes it with 3 other utilities.

BASIC PROGRAM COMPRESSOR

Company: Atari Program Exchange
Language: Atari BASIC
Hardware Requirements: 32K, Disk Drive

Department: Utilities
Sugg. Retail: \$15.95
Availability: 8
Disk or Tape: Disk

OVERALL RATING	C+	DOCUMENTATION	B	RELIABILITY	B
EASE OF USE	B+	VISUAL APPEAL	B-	USEFULNESS	C
VENDOR SUPPORT	C	ERROR HANDLING	C	VALUE FOR MONEY	B-

If you are already a crack programmer, know BASIC memory usage inside out, and disdain using REMark statements, then you won't have much use for this utility. Most the rest of us, however, can benefit from the *BASIC Program Compressor (MASHER)*. As most programmers are aware, it is difficult to achieve a fine balance between making BASIC programs easy to read and still making them low in memory requirements and so swift to execute. One of the unhappy tradeoffs in a structured, well-documented (REMarked) program is even slower execution in an already slow language; this also consumes more memory. The MASHER helps you to get the best of both worlds. You write your program with lots of comments and with one statement per line for easy readability. Then, when this version works well, you set aside a copy for documentation, revision, and maintenance. Using MASHER, you create a second copy with lower memory requirements and faster execution.

This utility merges short statements into multi-statement lines, removes REMark statements, and substitutes variables for frequently used constants. But it is *extremely* slow! Settle down for a long winter's nap when you run it on a large program. A BASIC compiler is needed to speed this one up.

Let me also caution you to avoid line numbers 3 through 9, and variables Q0 through Q999 in your programs, if you use this utility on them. Further, the statement CLR in your program will cause trouble unless you re-execute statements 3 through 9. You must replace "by hand" any GOTO's, etc., that refer to a variable rather than a constant, if these are affected by the compression process.

To run this program you need to know the number of variables in your program. You may count them (ugh!), make a good guess, and add a little for safety's sake. Or you may want to run either the *BASIC Crossreference Program* or *Variable Changer* programs from APX, since both give you this information more quickly and accurately.

The user manual's instructions are very good, and you will also find included some seldom-mentioned ways for you to reduce memory usage. Remember to test your program thoroughly after compressing it, to ensure that the logic hasn't been altered in the process. A pity it doesn't run faster.

VARIABLE CHANGER

Company: Atari Program Exchange
Language: Atari BASIC
Hardware Requirements: 24K, disk drive.

Department: Utilities
Sugg. Retail: \$15.95
Availability: 7
Disk or Tape: Disk

OVERALL RATING	B+	DOCUMENTATION	B+	RELIABILITY	A
EASE OF USE	A	VISUAL APPEAL	B	USEFULNESS	B
VENDOR SUPPORT	C	ERROR HANDLING	A	VALUE FOR MONEY	B+

APX's *Variable Changer* is designed to change the names of BASIC variables throughout a program by modifying the internal symbol table. This allows you to change variables in your code, to save RAM space by shortening variables, and to protect parts of your program from being listed. While not everyone will have a use for the *Variable Changer*, those who do will enjoy the fact that this program is self-documenting, menu driven, flexible, and broad in its capabilities. In addition, the manual is well-written, even displaying flashes of humor — a rare thing indeed in this field.

The *Variable Changer* can perform all of the following:

- (1) Tell you the number of variables in your program, and their names.
- (2) Change a single variable name.
- (3) Change several or all variable names.
- (4) Convert all variable names to 2-character names.
- (5) Convert all variable names to 1-character ASCII codes.
- (6) Convert all variable names to the same single character.
- (7) Generate a copy of the result on-screen, on disk, to cassette, or to a printer.

I found this to be a very fast, simple, and efficient program. But be warned: *Variable Changer* is best left to experienced programmers, because, due to possible ramifications in your program, you can really foul up the works if you aren't absolutely sure of what you're doing.

DEVELOPER'S DISKETTE

Company: APX

Language: BASIC/Machine Code

Hardware Requirements: 32K; Disk drive.

Department: Utilities

Sugg. Retail: \$22.95

Availability: 7

Disk or Tape: Disk

OVERALL RATING	C	DOCUMENTATION	D	RELIABILITY	C
EASE OF USE	C	VISUAL APPEAL	C	USEFULNESS	B
VENDOR SUPPORT	C	ERROR HANDLING	C	VALUE FOR MONEY	A

Developer's Diskette offers an excellent bargain, but be sure to read the cautions carefully. First, you may not be able to get this one at all stores. Second, it is not documented even fractionally as well as most other Atari Program Exchange packages. Last, many of these routines are preliminary versions of software programs later released separately, and therefore may have some of what Atari lightly calls "rough spots." If you have an adventurous spirit, reasonable programming and debugging skills, and want a real bargain, then try this one.

Perhaps Atari calls this one the *Developer's Diskette* in order to set it apart from products aimed at a much larger market. On my copy of this program potpurri they provide an index of the programs that are supposed to be on the diskette, and then a brief description of each program. The only problem is that four of the programs included among the descriptions were not on the diskette, and two of them weren't even in the index at the front of the manual. Then again, two of the programs on the diskette and in the User Manual index had no description at all. This becomes a major problem with one of the routines, which is a preliminary copy of APX *Supersort* — tough to use if you can't get a peek at the APX documentation concerning *Supersort*. The other routine is a preliminary copy of *Disk Fixer*. It is mostly self-documenting, and so not a problem. Both of these products are reviewed elsewhere in *The Book*.

Here's the rest of what you get:

"BUILD24." This makes self-booting BASIC programs (see the review of *Load N' Go*).

"DIV." This is an integer divide routine (assembler).

"BMUL" is a signed integer multiply routine (assembler).

"SMUL" is an unsigned integer multiply routine (assembler).

"CHRGEN" offers a custom character generator (very simplified variation of *Instedit*).

"XREF" is a crossreference utility for BASIC (see the review of XREF).

"MASHER." This is a compressor utility for BASIC programs used to reduce memory needs (see the review of *Masher*).

"RENUM" is a renumber utility for BASIC programs (again, see the review elsewhere).

"FORMTR." If anyone has an Atari 825 printer, this program formats the output of the *Assembler/Editor* cartridge by Atari so that it will look nice on your printer.

"M8TXT" is a demonstration of how to create text on a Graphics 8 screen.

"BCDSAV" allows you to write fixed length records to disk instead of the ones of variable length normally produced by BASIC.

"HOBBY1" provides a simple example of player/missile graphics. It is slow, because it is entirely in BASIC.

"HOBBY2" shows an example of using display list interrupts.

"SCRL19" presents a good example of a complete fine scrolling module (this one works in Graphics 2 with a redefined character set. It is called "MAPSCROLL" in the description). Both machine code and assembler source code are provided.

"FIX" see the review elsewhere of *Disk Fixer*.

"SCRLH" is a demonstration of course horizontal scrolling.

"MDIR" gives you a routine to display disk directories from BASIC. It loads into memory with the "L" command in DOS, and takes up Page 6.

"SUPER" see the review of *Supersort*, elsewhere.

"HORSE20" presents a good graphics demonstraton of what can be done with redefined characters in order to achieve animation.

"AUTORUN.SYS" is the RS232C device handler for your Atari 850 interface.

"DEMO3" gives a demonstration of player/playfield priority, used to increase player resolution.

"DEMO4" presents a demonstration of using a player to give an additional character to the standard character set.

"DLISTA" demonstrates the use of alternate display lists for modifying how you display items on your screen.

"SCRLF" is a demonstration of the use of fine scrolling.

Let me re-emphasize at this point (as Atari does in their User's Manual): none of these are finished products. Definitely not for the faint-hearted programmer. You need to expect imperfect code and potential problems with bugs. However, the price is certainly right. And you can treat the whole thing as a learning experience (or, if impressed with a utility, buy the finished products for those items that are now in the APX or Atari product lines).

MONKEY WRENCH

Company: Eastern House Software
Language: Machine
Hardware Requirements: 48K Atari 800 only

Department: Utilities
Sugg. Retail: \$49.95
Availability: 4
Disk or Tape: Cartridge

OVERALL RATING	A	DOCUMENTATION	B	RELIABILITY	A
EASE OF USE	A-	VISUAL APPEAL	N/A	USEFULNESS	A
VENDOR SUPPORT	B	ERROR HANDLING	A-	VALUE FOR MONEY	A-

Monkey Wrench is a valuable programming tool especially for the Atari 800 BASIC users. This ROM fits into the right-hand cartridge slot, and allows you to do many of the functions that should have been built into Atari BASIC in the first place. Its best features, a BASIC programmer renumberer, an automatic line numberer, and the ability to delete a range of lines, are worth the price alone. It also includes a monitor among its other useful features.

The *Monkey Wrench* comes as a printed circuit board that is inserted in the right cartridge slot. This is a "bare bones" card with one 4K ROM; the other is empty. There is no enclosure, and for this reason, inseting may be prone to error. The documentation clearly shows the bottom of the circuit board facing the keyboard, but most users don't read the documentation every time they boot a program, and may wind up inserting it backwards. The board should have been clearly marked "top" and "bottom." Although the card is unlikely to be damaged if inserted improperly, there are no guarantees. The product's empty socket will likely be used in the future as an upgrade.

BASIC programmers will like the convenience of readily accessible utilities that normally have to be loaded from another program. All commands are transparent to normal BASIC editing. They are accessed with a "P" character followed by the command. Thus, to renumber a program starting with line 10 and incremented by 5's, type P R 10 5. This renumber feature automatically takes care of all referenced GOTO's, except those referenced by variables. And it is exceptionally fast, able to renumber a 250 line program in eight seconds. It can also change the margins of the screen and toggle the keyboard, so that you can use the arrow keys without holding down the control key. The program also has the ability to convert hex numbers to decimals and vice versa, without leaving the BASIC language.

A machine language monitor contains 15 commands. It allows you to display and alter both memory locations and registers. Commands are included for hunting for groups of hex, or ASCII characters of up to 20 bytes in length. It will disassemble memory, and save and load portions of memory to cassette. It also includes a memory test; one that is extremely slow, but accurate.

This circuit board can be used with or without the BASIC cartridge. It does use 8K of available memory. Thus, 48K machines that normally have 40K of user space with the BASIC cartridge now have only 32K of user space. The utility also uses portions of page 6 memory for a scratch pad, and may interfere with any user routines stored there. This feature may be accessed if the 850 Interface Module is on.

Monkey Wrench is a very good utility package for the price. The concise, 15 page manual is clearly written, and the product is certainly worth buying if you do a lot of BASIC programming.

COLORTRACK AND SOUNDTRACK

Company: Advanced Computing Enterprises
Language: BASIC
Hardware Requirements: 16K; cassette player or disk drive.

Department: Utilities
Sugg. Retail: \$19.95 cass./\$29.95 disk
Availability: 3
Disk or Tape: Both

OVERALL RATING	C-	DOCUMENTATION	C	RELIABILITY	B
EASE OF USE	C+	VISUAL APPEAL	C-	USEFULNESS	C-
VENDOR SUPPORT	C+	ERROR HANDLING	B	VALUE FOR MONEY	D+

Colortrack and Soundtrack is a two program utility package that takes the guesswork out of using Atari's color and sound capabilities. Each of the BASIC programs are very easy to use and almost entirely controlled by joystick.

Colortrack allows the user to adjust any of the color registers being used in the eight graphics modes controllable directly from BASIC. The joystick button selects the appropriate register; moving up and down changes the color (0-15); and moving the joystick back and forth sets the luminance (0-14). In most graphics modes an enlarged number illustrates the effect of the color changes. In graphics mode 8, a cube is shown with the three faces each showing a different color. This is accomplished by "artifacting," or drawing the colors on every other line. By changing the color and two luminances, the colors on the cube can change dramatically. The values of each color register for all graphics modes are displayed at the bottom of the screen, so the user can write these down for later use in his program.

Soundtrack works in a similar way with the sound registers. The pitch is varied by moving the joystick up or down, while the distortion is changed by moving the joystick left or right. Each time the button is pressed the sound register values are displayed. These values also include the note value, if appropriate. The volume can be adjusted with the "+" and "-" keys. Normally, the sound comes from sound register 0. If the user wishes to develop a chord he can hit the Break key, type "SOUND 1, 121, 10, 4" to keep the sound running for the first note, type CONT, then work with the joystick to find the second part of the chord.

While the program should have allowed the user to switch between voices and so develop multi-voice sounds automatically (much like they do with color), it can't really be faulted for its lack of flexibility. Although it is simplistic, it is helpful for developing simple sound effects, like explosions, that rely on distortion values in the sound register. As far as helping to determine pleasing color combinations in the eight BASIC graphics modes, the program is very helpful. In sum, both programs, while not very sophisticated, are easy to use and helpful to beginning programmers.

PAGE SIX

Company: Synapse Software

Language: Machine & BASIC

Hardware Requirements: 24K, disk drive.

Department: Utilities

Sugg. Retail: \$29.95

Availability: 5

Disk or Tape: Disk

OVERALL RATING	C -	DOCUMENTATION	B -	RELIABILITY	B +
EASE OF USE	B -	VISUAL APPEAL	N/A	USEFULNESS	C
VENDOR SUPPORT	B	ERROR HANDLING	B	VALUE FOR MONEY	D +

Page Six is a collection of twelve short machine language subroutines that reside on page six of memory. While some of these are very useful, enhancing the power of BASIC, others have very limited applications for the average user. Here are a few of the more important tools offered.

"Musician" is a utility designed with the game programmer in mind. It allows you to play a musical jingle somewhere in your program by entering the note (including sharps) as a string called MUSIC\$. The string can be up to 159 notes long. Each note can be played with a different duration as they are entered in a string called TIME\$. Both volume and tempo controls can be set.

"Joystick Expander" reads STICK(n) and returns a value between 0 and 8. This allows a simple ON...GOTO instruction used for handling the different directions.

"Mini Dos" is a BASIC program that is appended to the end of your program that implements the most common DOS functions, such as Directory, Rename, Lock, Delete, and Unlock files. It also formats the disk for use directly from BASIC. This is called up by a simple GOSUB 32700. This program has been listed in several magazine articles.

"Informer II" displays various status flags on a display line above the top line display of the TV monitor. This includes the amount of free memory, the status of upper/lower case, pause mode status, and the cursor column and row.

Other utilities include a routine to allow the advanced programmer to AND, XOR, and OR two bytes together, a utility to Slowlist, and one to enhance the number of functions available with the Start, Option, and Select keys by combining them with the Shift key. There are two utilities for printing banners with 1 and 1/2 inch high lettering, and one that will allow up to four different colors to be displayed on the Gr.O text screen.

The package contains some useful and some not so useful routines. Each is thoroughly documented in a 39-page instruction booklet. While it isn't clear which utilities can run concurrently, "Mini-Dos" and "Joystick Expander" worked together. My only advice as to whether the package is worthwhile is this: if you need these utilities, then buy it. Otherwise it isn't that valuable a package.

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DISK UTILITIES

DISKEY

Company: Adventure International

Language: BASIC & Machine

Hardware Requirements: 32K disk, 48K, 2 drives recommended.

Department: Utilities

Sugg. Retail: \$49.95

Availability: 6

Disk or Tape: Disk

OVERALL RATING

B

EASE OF USE

C+

VENDOR SUPPORT

B

DOCUMENTATION

B

VISUAL APPEAL

B

ERROR HANDLING

B

RELIABILITY

B

USEFULNESS

A-

VALUE FOR MONEY

B

Diskey is one of the most comprehensive disk utilities that I have ever seen. It was designed with the knowledge that disk files get damaged through negligence or drive errors, and these files should be recoverable if at all possible. With this in mind, they put in some very powerful disk search capabilities and a copy routine that can copy virtually any disk that would normally be unreadable under DOS 2.0. This was necessary since a damaged disk may also have a damaged catalog, VTOC, or a marginally readable or bad sector that prevents a file from being read. In addition, there is a routine that will make auto-boot disks from most tapes.

Diskey is a keyboard command driven utility. While it is helpful and somewhat easy to use, if you know what you are doing, it can be potentially damaging to a disk if the user isn't careful. Since these ZAP-type disk utilities read, modify, and write individual sector data on a disk, if used improperly, they can cause more harm than good. Most of the write commands require a "Sure Response" prompt to initiate them (a feature that can be disabled if not needed). The author recommends that you make a copy of your damaged disk before writing to it, since the potential of further damage is ever-present while you work.

The utility has a number of routines that are purely informational. It can scan a disk and determine which sectors are good and bad. It can trace a file while looking for a break in the sector link. When it catalogs a disk, it can show which files have been left in an opened state but haven't been closed, and which files have been deleted. Data in any sector can be displayed on screen or dumped to the printer. This print feature is available for any screen display. There are also routines that will allow you to adjust your disk drive speed, and ones for converting decimal to Hex and Hex to decimal.

Diskey has a number of search routines. It can search a part or all of a disk for any ASCII or Hex string, or even search through a particular file for that string. Moreover, it is powerful enough to find the code that goes into a memory address.

In most cases errors or information are repaired by modifying data within a particular disk sector. Any sector can be read into the buffer where it is displayed in both hex and ASCII. While in the modified mode the cursor is moved around the screen with the arrow keys, and advances automatically after changing any byte. You exit by moving the cursor off the bottom or top of the screen. A sector can also be quickly zeroed, if necessary, with a single key stroke. This, and the write back to the disk, require a confirmation prompt.

Although many errors require considerable user insight and experience, *Diskey* offers a number of automatic repair routines. There is a pseudo-erase routine that updates the boot sectors, the VTOC, and the disk directory without actually reformatting the disk. This is generally of use to people with slow format drives. There is also a VTOC repair routine that traces each file and, if in order, updates the VTOC record. The most complicated routine is the special file copy routine, this attempts to salvage a file on a disk with dead directory sectors. You must know, or determine, the starting sector. Many of these copy routines require two disk drives, and there is an alternative set of routines that will work on single drive systems at a much slower speed where numerous disk swaps are required.

The documentation is most informative. In 60 pages the author discusses how the disk operating system and its file manager works, methods of repairing blown disks and bad files, and the operation of each of the commands. While the information is likely to be over the heads of most users, it is explained in a clear, straightforward manner.

In the eyes of software vendors, *Diskey* may have gone too far in allowing users to copy and modify all disks. Nonetheless, it has a rightful place in everyone's library. It is an important utility that is useful to anyone who needs to recover files or data from damaged disks. *Diskey* may not be the easiest to use utility, but it is a powerful one.

DISK FIXER

Company: Atari Program Exchange

Language: Machine

Hardware Requirements: 24K, disk drive.

Department: Utilities

Sugg. Retail: \$22.95

Availability: 9

Disk or Tape: Disk

OVERALL RATING	B+	DOCUMENTATION	B+	RELIABILITY	A
EASE OF USE	A-	VISUAL APPEAL	C+	USEFULNESS	A-
VENDOR SUPPORT	C	ERROR HANDLING	A	VALUE FOR MONEY	A-

Here is a disk fixer utility that is better in the features category than *Disk Detective* by Datasoft. It isn't quite as high on the visual appeal scale (and could have been with very little effort — a pity the author didn't bother); but it is even more user-friendly: that is, easy to use, and forgiving of slips of the finger.

Because it gives you the power to go in and modify virtually anything on your diskette, you **MUST PROCEED WITH CAUTION** when using this utility. This power can make it a real life-saver, however, when you're in need of a global kind of override for data stored on diskette, and the file structures maintained by DOS/FMS. I once misused one of the DOS wild card parameters, and ended up with 11 files on a diskette all having the same name — and no backup copy. This utility could have saved my hide in 2 minutes flat. Other programmers have probably had similar hair-raising experiences.

This utility will:

1. List the files in your directory, or any subset, by file number. It also shows whether they are locked or DELETED. Hence, you can easily "undelete" files.
2. Trace the sector chain of the file for you. This helps spot sector damage in a file. Note that this utility works with both single and double density disks (including the Percom, but treats them as single density in both modes).
3. Modify the directory entry. This is where you can undelete files you previously deleted (provided they haven't been overwritten by new files). You can also change the file name directly here — remember my 11 files all with the same name?
4. Check the sector allocation map. This tells you which sectors DOS thinks are free when they are actually used in a sector chain, and which one's DOS thinks are used when they really aren't.
5. Modify sector links. The main use of this feature is to recover the portion of a file that appears ahead of a damaged sector. It sets the sector prior to the damage as the end of the file.
6. Set the drive number. This allows you to work with a diskette other than in drive = 1 (the default).
7. Dump the contents of a sector, or several consecutive sectors. Note that both Hex and ASCII values are shown.
8. Modify a sector. Yes, you can change anything in the sector at this point, including the forward sector pointers, etc. Again, both Hex and ASCII values are shown.
9. Return to DOS.

This is quite a range of capabilities for the price, and it comes very well documented, including examples. The description of error messages in the back of the manual are almost worth the price alone.

Disk Fixer is menu driven, fast to execute, user-friendly, inexpensive, and is well-documented (including sections about DOS's diskette structure, and DOS error messages that are very lucid). Sounds good to me.

TACH MASTER

Company: Swifty Software

Language: BASIC

Hardware Requirements: 16K, disk drive.

Department: Utilities

Sugg. Retail: \$29.95

Availability: 4

Disk or Tape: Disk

OVERALL RATING **A-**
EASE OF USE **A-**
VENDOR SUPPORT **B-**

DOCUMENTATION **B**
VISUAL APPEAL **B-**
ERROR HANDLING **A**

RELIABILITY **A**
USEFULNESS **A-**
VALUE FOR MONEY **B+**

Tach Master is a utility for testing and adjusting the speed of your Atari 810 disk drive. Since disk speed is critical in reading and writing data, and the 810 drive is not noted for its ruggedness or stability, it is quite likely that your drive will need adjustment from time to time. *Tach Master* does this quickly, easily, and accurately using any formatted disk. Its accuracy is to 1/4 RPM, and it updates the graphical display 5 times a second.

Adjusting the drive requires taking off the cover and turning the speed potentiometer located on the board at the left rear of the unit with a screwdriver. This is shown very clearly in the documentation. Optimum speed is highlighted on the speed display. The utility supports any of four connected drives. While there have been numerous public domain disk speed programs, this is by far the most accurate.

DISKMANAGER

Company: Synapse

Language: Atari BASIC and Machine

Hardware Requirements: 32K [40K recommended], disk drive.

Department: Utilities

Sugg. Retail: \$29.95

Availability: 7

Disk or Tape: Disk

OVERALL RATING **B-**
EASE OF USE **A**
VENDOR SUPPORT **B**

DOCUMENTATION **B**
VISUAL APPEAL **B+**
ERROR HANDLING **C**

RELIABILITY **D**
USEFULNESS **B**
VALUE FOR MONEY **B-**

Diskmanager can catalog approximately 700 program titles and print lists of disk directories, a list of disks organized by topic or disk number, or an alphabetical list of all of the programs in the catalog. You can also make labels containing the disk number and topic for each disk.

This program is very easy to use. First, you are prompted to enter a disk into a disk drive. The program reads the directory and prints it on the screen. You may save the information for your catalog, or continue without saving it. If you save it, you are then prompted for a disk number and a topic. The program has a main menu from which you choose the function you wish to perform. The functions are: input/update, save data, list/delete, load data, search, and index/labels. The catalog is treated as a data base. In searching for programs you can use the "*" wild card just as it is used in DOS. For example, *.SYS will list all programs with the "SYS" extender.

Unfortunately, the program falls short of its excellent promise. While reviewing it I encountered several problems, the first of which was that the disk failed to boot three times out of six on a disk drive running at 285 RPM. This speed is at the low end of the specification range. Next, after cataloging thirty disks, the number of free sectors printed for the next ten disks was incorrect. It read r24, which is meaningless. The correct values were obtained after rebooting the main program disk. An error message was encountered that indicated that a string length error had occurred. This was trapped by the program, but it was unsettling to discover after entering almost 40 disks. The printed reports are nicely formatted; however there is no provision for a left margin on the pages, and the long alphabetical list is printed continuously right through the page creases. Programs that appear many times, such as MENU or DOS.SYS are listed separately for each entry.

Diskmanager is recommended for small libraries of 40 disks or less. Hopefully, Synapse will clear up the problems mentioned above in this potentially excellent cataloging program.

DISKETTE LIBRARIAN

Company: Atari Program Exchange

Language: BASIC

Hardware Requirements: 24K; disk drive; printer recommended.

Department: Utilities

Sugg. Retail: \$22.95

Availability: 9

Disk or Tape: Disk

OVERALL RATING	B	DOCUMENTATION	B	RELIABILITY	B+
EASE OF USE	A-	VISUAL APPEAL	B+	USEFULNESS	B
VENDOR SUPPORT	C	ERROR HANDLING	B	VALUE FOR MONEY	B

If your computer library consists of *Pac-Man* cartridge, and a couple of cassette tapes and/or diskettes, read no further. However, most of us have a substantial and growing collection of diskettes, cassettes, and cartridges, and subsequently the need to find a way to organize all of this to find things quickly. This is the function of *Diskette Librarian*, which catalogs brief descriptions of diskette files, updates entries, searches and sorts specified data fields, and prints out screen displays if you have a printer.

This package organizes your computer software according to the following areas of information:

1. The volume number of the disk, tape, or cartridge.
2. The program or file name.
3. Brief description.
4. The type of software (utility, game, etc).
5. The source of software.
6. The date acquired.
7. The number of disk sectors, or the tape counter.

The system is very user-friendly. It is menu-driven, with up to 3 levels of nested menus, each returning you to the next higher one in the tree when you exit. Error handling is reasonable, though not always 100% clear in specifying exactly what you did wrong (you must check it out and try again). The manual is very well done. Human engineering shines throughout this package. It also uses a machine language sort for speed in sorting your catalog entries. In fact, its speed is satisfactory throughout. Be sure you give volume numbers of Cnnn to your cassette tapes, since it does a CLOAD instead of a LOAD based on this leading character. Also, it prompts you about the starting tape indicator based on the value you stored in "sectors." Disks are identified as Dnnn. Cartridges are suggested as Xnnn. Since you can sort the file on any of the fields (this is very easy, no technical knowledge required at all), you can produce reports of your library by diskette, by alpha name of your file/program, by the type of software, by the source of the software, by the date obtained, and so forth.

Program options include:

1. AUTOCATALOG — this will automatically pull off the volume number of your diskette (or ask you to select one if this has not been done before), and then get the filenames and number of sectors for each file. It will then copy this information to your Librarian database, and ask you to provide description, type, source, and date. All of these data fields are options. This makes the process of creating your original database, and of maintaining it, much easier. When you search a diskette you have previously entered into the library, it will pull off the new entries, and delete any existing entries that you have removed from the diskette since the last run.
2. LIST DIRECTORY — shows you all the files on the disk in Drive #1.
3. ADD NON-DOS — this is used for entering diskettes without a DOS VTOC (i.e., GHOST HUNTER), or for cassettes and cartridges. All fields are optional except the volume number. For cassettes, show the starting footage in the sector variable.
4. INQUIRY/LIST — allows you to specify search criteria, and then examine one complete entry at a time, 19 abbreviated entries at a time, or print the results of the search on a printer.
5. UPDATE — this allows you to modify fields in a record, or to delete entire records.
6. SORT — re-orders the records in your catalog. This is useful to print in some desired order (probably volume number, filename, or type of software).
7. RUN PROGRAM — provides for the direct running of a program on diskette or cassette tape.
8. END SESSION — returns you to BASIC.

You can store over 1,100 entries on a single diskette, and can use more than one diskette for *Librarian* if you need to. If you use the SORT feature, then you will be limited by memory constraints to around 500 entries on a 48K system.

It's an easy and efficient way of getting your software organized, and it's cheap at the price.

DISK BOOT MAKER

Company: Computer Age Software

Language: Assembly Language

Hardware Requirements: 32K, disk drive.

Department: Utilities

Sugg. Retail: \$21.95

Availability: 4

Disk or Tape: Disk

OVERALL RATING	A	DOCUMENTATION	C	RELIABILITY	A
EASE OF USE	A	VISUAL APPEAL	N/A	USEFULNESS	B
VENDOR SUPPORT	B-	ERROR HANDLING	N/A	VALUE FOR MONEY	A

Disk Boot Maker is a utility for transferring a machine language program on a cassette to one on a disk, to run automatically when loaded into memory. This program is ideal for people who have bought commercial software on cassette and have later upgraded their system to one or more disk drives. It is also convenient for people who have purchased programs from vendors who provide their software on cassette only. The advantages of disk loading over the tedious, five minute loading time of a 16K cassette are obvious.

This utility is possibly the easiest to use that I have ever encountered. The program is loaded when the disk is booted. It only requires 500 bytes of RAM. It instructs you to rewind the tape and put the recorder into the play position. Hit the Return key, and the utility signals the cassette recorder to load the tape. After it is finished, you put in a formatted disk and the program automatically creates a boot load program. It's that simple.

While there is no guarantee that this utility will work with cassettes that use a tricky boot loader, it does work with cassettes supplied from several major software houses. If you have a number of cassettes that need to be transferred to disk, this utility will likely be just what you're looking for.

COMMUNICATIONS

TELE TARI

Company: Don't Ask Software

Language: BASIC & Machine

Hardware Requirements: 32K, [48K recommended]

Department: Utilities

Sugg. Retail: \$39.95

Availability: 8

Disk or Tape: Disk

OVERALL RATING **A+**
EASE OF USE **A+**
VENDOR SUPPORT **B**

DOCUMENTATION **B+**
VISUAL APPEAL **B+**
ERROR HANDLING **A**

RELIABILITY **A**
USEFULNESS **A-**
VALUE FOR MONEY **A**

Tele Tari is the most "user friendly" telecommunications program around. First, it is totally menu driven, and so can be used by a rank novice who bought his computer yesterday. Second, its ability to control any parameter on the Atari 850 interface allows you to communicate with any outside device or computer that is compatible with the RS-232. Thus, it can be used to interface your Atari 800 with a laser disc, or to control machine tools.

Tele Tari automatically supplies a 20K buffer on 48K machines for uploading or downloading data to and from another computer. When the buffer has less than 1,000 bytes left, the screen border indicated this by turning red. Once a buffer has data in it, either from your own disk drive or from data received via the RS-232 port, it can be reviewed in all or part, printed, sent out the port (uploaded), or saved to disk. Data that is being reviewed can be quickly scanned, using the arrow keys to advance or backtrack by 500 bytes at a time. Parts or all of the buffer can be output to your line printer. If the printer has a large buffer, you could dump the entire buffer to the printer and return to the On Line mode while the printer was printing the file.

All parameters used by the Atari 850 Interface Module can be set and controlled by *Tele Tari*. These sixteen parameters include baud rate, word size, stop bits, control lines, input/output parity, line feed, hand shaking, etc. For example, the baud rate can vary between 0 and 9,600. You can store 10 full sets of user defined parameters per user disk.

This utility will work with any regular or smart modem. Modem commands for using a smart modem can be entered directly while using the program. And for those who have plans to install an 80-column card, *Tele Tari* supports the BIT 3 card. It also supports two disk drives. It is totally error trapped, and, for example, will detect whether or not the 850 interface is off. In sum, this communications package is the most versatile and the best available package currently on the market.

TELELINK I

Company: Atari, Inc.

Language: Machine

Hardware Requirements: 16K, cassette player

Department: Utilities

Sugg. Retail: \$29.95

Availability: 7

Disk or Tape: Cartridge

OVERALL RATING **D**
EASE OF USE **B+**
VENDOR SUPPORT **B**

DOCUMENTATION **C**
VISUAL APPEAL **N/A**
ERROR HANDLING **C**

RELIABILITY **B**
USEFULNESS **C-**
VALUE FOR MONEY **D**

Telelink I allows the user to communicate with another computer over standard telephone lines. It was designed to be used with the Atari 830 Acoustic Modem.

Its major disadvantage is that while it is extremely easy to use, it cannot download to a disk drive or upload (that is, transmit to another computer). It was designed specifically to take data received over the modem and print it on a line printer. Since the memory buffer is small (1.5K bytes), one must remain on-line for considerable periods of time. While this might not present a problem when communicating with a friend's computer, users who are downloading information on either *Dow Jones Information Service*, *The Source*, or *Compuserve* will have to pay for expensive connection charges while their computer slowly prints the information. In sum, this product lacks versatility and is not recommended. Along with these drawbacks the program, overall, lacks versatility and is not recommended.

DATALINK

Company: Swifty

Language: Atari BASIC

Hardware Requirements: 24K, disk drive.

Department: Utilities

Sugg. Retail: \$39.95

Availability: 7

Disk or Tape: Disk

OVERALL RATING **B**
EASE OF USE **B**
VENDOR SUPPORT **C+**

DOCUMENTATION **B**
VALUE FOR MONEY **B**
VISUAL APPEAL **C**

RELIABILITY **A**
ERROR HANDLING **A/C**

Datalink is a telecommunications program that offers several advantages when compared with the Atari *Telelink I* computer program. *Datalink* has a large internal buffer that depends on the amount of memory in your computer. The data from the telecommunications fills this buffer. You can save the data to disk, print the data on the screen, or print the data on a printer after you hang up the phone. This saves you time and connection charges. The program will work with any 300 baud modem that uses Port 1 of the Atari 850 Interface Module. *Datalink* will also send and receive both text and binary files in ASCII or ATASCII format.

The program is essentially menu driven. The main menu contains the primary functions. These are: Terminal, Send Program, Receive Program, Screen Dump, and Printer Dump. The function is selected by moving a pointer using the Select key then pressing the Start key to begin the function. The term Screen Dump does not have the standard microcomputer meaning. The *Datalink* Screen Dump prints the contents of the buffer to the screen, rather than printing the screen image on a printer in the conventional sense of the term.

The program is generally easy to use. The function keys enter commands when the menu isn't on the screen. As with most programs using these keys, you must remember the different functions for the keys in the different program modes. Some confusion arises because you do not always return to the main menu in the same way. Sometimes you press SELECT, sometimes RETURN, and sometimes BREAK followed by SELECT. Reentering the Terminal mode from the menu automatically clears the buffer. This can be annoying because you must exit the terminal mode to print the buffer on the screen. When you return to the Terminal mode, *Datalink* begins to overwrite the data in the buffer. Old data is left in the buffer. What's not overwritten can be printed to the screen, but it cannot be printed on the printer. You must be very careful not to press the wrong key at the wrong time. The program seems to be well protected against input errors, but not against human error. For instance, pressing the START key erases the buffer. Also, pressing one key to exit the Terminal will erase the buffer as well.

The manual describes the function of the program very well, but it does not describe the myriad of problems that can confront a person trying to use a "nonstandard" telecommunications system. Most of the functions available from the Atari 850 Interface Module are set to default values by *Datalink*. For example, it is not clear if baud rates slower than 300 can be used for older teletype printers.

The program is a significant improvement over *Telelink I*, and is recommended for simple telecommunications applications.

CHARACTER SET & PLAYER MISSILE EDITORS

THE NEXT STEP

Company: Sierra-On Line
Language: BASIC
Hardware Requirements: 32K

Department: Utilities
Sugg. Retail: \$39.95
Availability: 6
Disk or Tape: Disk

OVERALL RATING **B**
EASE OF USE **B+**
VENDOR SUPPORT **B**

DOCUMENTATION **B**
VISUAL APPEAL **B**
ERROR HANDLING **A-**

RELIABILITY **A**
USEFULNESS **B**
VALUE FOR MONEY **B-**

The Next Step is a utility program used for editing Atari character sets. It is a powerful package, and extremely user friendly. It is entirely joystick controlled, both in menu selection and in editing characters. But although the author's intent was to make this program easy to use for beginners who may be intimidated by the Atari keyboard, they went overboard. The program becomes awkward at times, and the use of the select, option, and start keys might have been a better choice for changing some menu and color select options.

You can edit character sets previously saved on disk, or from ROM, if you wish to modify the Atari set. There are 64 to 128 characters displayed at the bottom of the screen, from which you choose a character to edit by joystick selection. This character is then displayed in an enlarged, eight-by-eight grid at the top of the screen, with the decimal value of the character appearing to the side. This is true if you are in a single color graphics mode. Multiple colored characters are displayed either short and squat, or tall and narrow if you choose those modes from the main menu. The cursor is moved with the joystick. It alternately blinks from black (background) to white. If you press the cursor when it is the appropriate color, you draw a pixel of that color. If you can press it at just the right moment, moving the cursor simultaneously, you can produce a line of the proper color. Yet this is a little awkward, and even more so in the four color modes where the cursor colors alternate between four. I think this color selection should be controlled by the select key on the keyboard.

When the cursor moves above or below the eight-by-eight editing block, it moves into menu selection. The menu below the block allows you to manipulate the entire character. The colors can be complemented, or can be flipped (or mirrored) along either axis. Characters can be shifted one or more pixels up, down, left, or right, with wraparound or without. And once you are through editing a particular character, it can either be saved, aborted without change, or placed in another position within the character set. It is also possible to see the final characters as they would appear if placed next to one another in what is called the "experimental display." This is something of a help, since this program lacks a matrix editing feature in which a group of characters making up larger shapes are edited together.

Since this program is ostensibly designed for beginning BASIC programmers, a code generating option is available. It produces data statements for the character set you have edited. It also contains several lines of code that will load your character set from disk if you wish. This code can be merged with your own program with the ENTER command. The disk also contains several files that will help you set up your program for custom display lists that use the multiple color character sets, Antic modes 4 and 5.

The package also contains a color palette program. This allows the user to vary the colors and luminosity of two foreground colors with a background color. This is helpful when choosing colors for your characters; it makes you wonder why all three foreground colors weren't used instead of just two.

The program is very clearly documented in a 34 page booklet. Many of its pages offer a tutorial on Atari graphics suitable for the beginner. However, the program lacks both the ability to edit characters in a block, and the ability to merge characters from different character sets. All things considered, it is definitely an excellent character editor.

PLAYER GENERATOR

Company: APX

Language: Basic

Hardware Requirements: 24K, cassette; 32K, disk.

Department: Utilities

Sugg. Retail: \$15.95

Availability: 3

Disk or Tape: Both

OVERALL RATING	C-	DOCUMENTATION	C-	RELIABILITY	B+
EASE OF USE	C+	VISUAL APPEAL	B-	USEFULNESS	C-
VENDOR SUPPORT	C	ERROR HANDLING	B	VALUE FOR MONEY	C

Player Generator is a utility for easily creating player shapes for use in player missile graphics. Shapes are created on an 8-wide by 22-deep enlarged grid. A pixel, or point, is drawn by depressing the joystick button as the cursor is guided about the grid. Points can be removed by pressing the button once again. The player shape is displayed to scale at the left of the grid. Its horizontal width can be toggled to double or quadruple size with S key.

Actually, there is an entire series of parameters that can be altered using keyboard commands. A menu of the current settings is displayed to the right of the grid. You can change the background and player colors, the luminance, and invert the shape. If you wish to see how the shape looks in motion, there is a Move command. Curiously, this Move command is the only way to reach the main command menu. This menu allows you to save and retrieve designs from disk, print the data on screen, or list the data to disk for later use in a demonstration program.

Designing a single player is very straightforward and easy to use with this program. It is, unfortunately, not very suited for designing large players where several players are linked together. This is due to a single player sized grid.

PLAYER MISSILE EDITOR

Company: Artworx

Language: BASIC

Hardware Requirements: 16K; disk or cassette.

Department: Utilities

Sugg. Retail: \$29.95 cassette/\$33.95 disk

Availability: 3

Disk or Tape: Both

OVERALL RATING	B-	DOCUMENTATION	B	RELIABILITY	A
EASE OF USE	B	VISUAL APPEAL	C+	USEFULNESS	B-
VENDOR SUPPORT	C+	ERROR HANDLING	B+	VALUE FOR MONEY	B-

Player Missile Editor is a utility designed to facilitate the creation of players for use in player-missile graphics in user-written BASIC programs. The advantages in using this program to create player shapes are: the ease of designing the shapes on an enlarged 8-wide by 20-deep grid, and that the data generated is saved as strings.

The whole system of moving players rapidly in the vertical direction is based on the fact that data stored in strings can be moved at machine language speed though built-in routines in the BASIC cartridge. This is nicely explained and shown in several listable demo games on the disk. Once string data is generated for one or more players, the data is saved on certain line numbers within the program. These lines can be listed to the disk, and later entered in the user's BASIC program.

The player editor can design player shapes in either single or double line modes. Either a single player can be designed at one time, or four players can be designed next to each other, so that they could later be linked into one large player shape. The joystick moves the cursor around the grid, and the button plots the point. Points are erased in a similar manner. The display also shows each of the player shapes in their actual size and color. The color can be modified, in both color and luminance, by activating the color select option on the keyboard. All option keys are activated by one-keystroke commands.

The program is very easy to use; and the documentation is clearly written, using examples. While the program is suited to the BASIC programmer, the data generated is not in the form suitable for machine language programmers who need HEX data for their shape tables. A separate utility would need to be written to translate the string data to HEX. The program does have the advantage that it is one of the few that allows all four player shapes to be designed on screen at one time. In sum, it is a very useful program for the beginning game designer programming in BASIC.

INSTEDIT, Rev.2.

Company: Atari Program Exchange

Language: Atari BASIC

Hardware Requirements: 16K, tape; 24K, disk and joystick.

Department: Utilities

Sugg. Retail: \$22.95

Availability: 9

Disk or Tape: Both

OVERALL RATING **B**
EASE OF USE **B+**
VENDOR SUPPORT **C**

DOCUMENTATION **B**
VISUAL APPEAL **B+**
ERROR HANDLING **B**

RELIABILITY **A-**
USEFULNESS **B**
VALUE FOR MONEY **B+**

Instedit is a character set generator. With it, you can create custom character sets very easily, including the code to automatically include them in your programs (BASIC or Assembler). You can also design player-missile graphics characters for your applications.

Excellent attention has been paid to visual appeal and people-friendly features in this application package. A large scale version of the character you are modifying is displayed on center screen, as well as the entire character set you are working on, in a window immediately below. Below that is the character you are working on in Graphics modes 0, 1, and 2, as well as O.S. modes 3, 4, and 5. Also on the screen are a Main menu and an Edit menu. Not only is this program menu-driven, it gives you prompts to guide you along. The actual character editing is done with the joystick and fire button, making it simple to create your own special shapes, graphics, and text characters.

You may save or load a custom character set, write special statements from the program to be used as ".BYTE" statements in Assembler, "Data" statements in BASIC, or a complete subroutine for BASIC to recreate your special characters. Within the Edit phase, you can revert to the Atari standard character, the shape you originally loaded for this character from a previous "Save" file, copy over the shape of any other character in your custom set, invert the character, mirror image it, rotate it 90 degrees, or blank it out to start over. You can also go into a special mode that lets you type a series of your custom characters in any one of the 6 text modes on the Atari, in order to examine their appearance.

At the back of the User Manual, several good hints are provided, including text on Graphics 8 screens, and the use of artifacting on your video monitor. The manual also gives insight into the program's workings, and Atari's 3 special character modes, and concludes with a good set of bibliographic references.

If you do games, custom graphics, or special text applications, take a close look at this utility.

GRAPHIC GENERATOR

Company: Datasoft

Language: BASIC

Hardware Requirements: 32K, disk drive.

Department: Utilities

Sugg. Retail: \$24.95

Availability: 6

Disk or Tape: Disk

OVERALL RATING **A**
EASE OF USE **B+**
VENDOR SUPPORT **B**

DOCUMENTATION **B+**
VISUAL APPEAL **B+**
ERROR HANDLING **A-**

RELIABILITY **A**
USEFULNESS **A**
VALUE FOR MONEY **A**

Graphic Generator is a powerful, comprehensive utility package that edits character sets in BASIC and machine language programs. Character set graphics are often used in animation when more than five objects need to be moved around the screen simultaneously; or when objects need to change shape during animation as, for example, when a horse gallops. Obviously, a utility package capable of modifying the existing Atari character set, or creating new sets from scratch, can be a very useful item indeed.

This utility is entirely menu driven. Characters can be edited as individual units, or as part of matrices. A matrix is a group of characters forming a larger image. These can be so many characters wide by so many deep. The characters making up the matrix are chosen before editing. The editing process itself is done on an enlarged grid in any of six Antic graphic modes. This includes modes 4 & 5, which contain four color modes.

When editing in color, the color register is chosen with the option key. The colors in these registers can be changed, in turn, by using the color palette option in the program. The editing itself is done by moving a joystick and pressing the button when you want to draw pixels, or by moving and holding down the shift arrow keys to draw.

Many features have been incorporated into the edit mode which conveniently allow you to produce a large number of characters. You can do single pixel shifts up, down, left or right, without having to recreate the character; or you can produce a mirror image (left or right) of the character. You can view an entire character set, or just the matrix of characters as they would appear in actual size and color on the screen. There is also a merge option that allows you to move characters within the character set, or even to another set. Because as many as five sets can be loaded using a 48K Atari (only one with 32K), you must "steal" characters from other character sets.

Although the disk is protected, all character sets are loaded and saved using normal DOS files. Thus, created character sets can easily be used in one's own programs. The author has also included several demonstrations of character set animation in BASIC that can be listed. *Graphic Generator* is an excellent program, easy to use and clearly documented.

GRAPHICS PACKAGES

PAINT

Company: Reston Publishing Co.
Language: Machine Language
Hardware Requirements: 48K, disk drive.

Department: Utilities
Sugg. Retail: \$39.95
Availability: 4
Disk or Tape: Disk

OVERALL RATING	A +	DOCUMENTATION	A	RELIABILITY	A
EASE OF USE	A +	VISUAL APPEAL	A	USEFULNESS	A -
VENDOR SUPPORT	B	ERROR HANDLING	A	VALUE FOR MONEY	A

Paint is a remarkable drawing program developed by the staff of the Capital Children's Museum in Washington, D.C. It allows both the child and adult to explore some of the rich possibilities of artistic expression on the home computer. What is best about the program is that it is entirely menu driven, by either joystick control or simple one letter keyboard commands. The mnemonics are easy to remember; for example, Z for zoom; E for erase; P for paint; R for rectangle; and M for mix colors.

There are actually two drawing programs on the disk. First, *Paint* is a simplified version of *Super Paint*, and is primarily for young children. Four paint pots and five brush sizes are arranged at the bottom of the drawing screen. The joystick, which can be moved around the screen to draw, can also be moved to one of the paint pots and dipped in. Pressing the joystick once activates the color in the paint pot, indicated by a line beneath the pot. This furnishes an inexhaustible supply of paint as the brush is moved around the screen. It can be positioned anywhere, and draws only when the joystick button is depressed. Likewise, the size of the brush can be varied by moving the joystick cursor to the appropriate brush size. The colors (one background and three foreground) can be changed by dipping the cursor brush into the different paint pots, pressing the button twice until it blinks, then moving the joystick up or down until you obtain the desired color. Since there can only be four colors on the screen at any one time, changing the color in a pot alters all lines or splotches made in the previous color. If you need to erase your drawing, simply move the cursor to the E block on the screen and the picture erases.

The second program, *Super Paint*, is a much more versatile version, allowing the created picture to be saved to disk and displayed later in an art show or slide show presentation. It can draw circles, lines, and rectangles, paint with textured splashes of color, and paint with brushes that give the leading edge different profiles. By using the Zoom function (which can magnify a portion of the picture four or sixteen times), you can work in very high detail while also changing single-screen color pixels.

The color/texture menu mode, which allows you to blend the shades and hues in your palette, is one of the most fascinating features of the entire program. Both the color and luminance can be varied with the joystick. A sixteen color band, and a band showing the eight luminances of the chosen color, are displayed on the left portion of the screen. A movable bar connects the two settings, and indicates exactly where you are on the chart. When the colors are changed, you will notice that the picture looks quite different both in color and shape. It is an effect that artists spent years exploring, and one that you can now achieve in a matter of moments.

The textured menu controls the five additional paint pots at the bottom of the drawing screen. The large, variably-textured mosaic screen area has a seemingly endless variety. As the cursor is moved, a magnified portion is displayed at the top of the screen. When a texture is picked, it appears in the paint pot. This mosaic pattern will be repeated along any line you trace with a brush dipped into its "color." The effect is impressionistic — much like that of the artist Seurat's paintings.

Although any portion of the menu can be reached and controlled by joystick, it is often easier to use keyboard commands to achieve the same effect. For example, if you choose to draw a circle, press the O key (sorry, C was already used to designate "color," so O was chosen because it resembles a circle). Move the joystick cursor to the center, press the button, then move the cursor to the outside and press again. Voila! A circle appears as round and true as if you had used a compass. To return to regular drawing, press P for paint.

The documentation is very easy to read, breezy, and light in tone. It was apparently written to disarm those who are frightened or intimidated by computers. The 100+ page manual also contains a brief history of art, and several additional profiles of computer artists.

Paint is a first rate package for any would-be computer artist. It allows the child as well as the adult to explore the visual potential of small computers, and enhances the creative process.

DRAW PIC

Company: Art Worx

Language: BASIC

Hardware Requirements: 16K; disk drive or cassette player.

Department: Utilities

Sugg. Retail: \$29.95 cass/\$33.95 disk

Availability: 4

Disk or Tape: Both

OVERALL RATING	C+	DOCUMENTATION	C	RELIABILITY	A-
EASE OF USE	B+	VISUAL APPEAL	B	USEFULNESS	B-
VENDOR SUPPORT	B-	ERROR HANDLING	B+	VALUE FOR MONEY	C

Draw Pic is a drawing utility for creating screen images in Graphics modes 3 to 7. They are constructed primarily by using a joystick and a few keyboard commands. These images, which are saved as string data, can be later used as images in your own programs.

There are three drawing modes: plot point, draw line, and the "rubberband" mode. The latter shows the line as you move the cursor, but without actually drawing it. When you press the joystick button, the line is permanent — at least until you erase it. Colors are chosen by picking a color register. The user has the option of modifying each of these four registers with the joystick (three plus a background, except in mode 4). When in the Draw Point mode, depressing the joystick button leaves a trail of dots as you move your cursor. The Draw Line mode draws a line between the first point and the current point. You must be careful, when switching from the Draw Line mode to the Plot Point mode, that you don't move your cursor before making the switch or you will accidentally draw a line to the new position. Pictures can be stored as entire images, or merely portions. The screens are saved as string data, which is much more efficient than as DATA statements. Since a number of screens can be saved, you must be careful when deleting those that you no longer need: if you delete the third image, all those following it will also be deleted. The line numbers that contain these strings can be listed to the disk or to cassette and later entered in or appended to your BASIC program. If you use the hybrid BASIC program listed in the Appendix, then the image can be drawn to the screen at machine language speed.

The program is convenient for producing low to medium resolution screens for use in your programs. While it doesn't have all of the bells and whistles for conveniently forming geometric shapes, it eliminates the drudgery in creating images using BASIC statements from within one's program.

GRAPHIT

Company: Atari

Language: BASIC

Hardware Requirements: 16K

Department: Utilities

Sugg. Retail: \$19.95

Availability: 7

Disk or Tape: Tape

OVERALL RATING	B	DOCUMENTATION	B	RELIABILITY	B
EASE OF USE	B	VISUAL APPEAL	B+	USEFULNESS	B-
VENDOR SUPPORT	B	ERROR HANDLING	C+	VALUE FOR MONEY	B-

Graph It is a set of plotting programs that comes on both sides of two cassettes. It can plot statistical information such as bar or pie-charts, and mathematical relationships such as two or three-dimensional plots. Each of the programs is completely menu driven.

Bar charts can have ten columns of data. The data can comprise three different factors, so that the combined column length is shown as a three color stack. The computer automatically scales the data to make it fit on the screen. Labels are applied last, giving the chart a finished look.

The relationship of a single item to the total is made clear in pie graphs. This chart works best if there are wide differences between segments. Up to twelve segments can be displayed in three colors. During display, if one or more of the wedges occupies less than 1/14th of the pie, it is grouped together with the label, and so on.

Two dimensional mathematical functions can also be graphed. Three different functions can be overlaid on the screen. The program has automatic scaling, and can plot at four different speeds. Faster speed obviously plots less points. One option allows the joystick to be used to find the slope of a section of the curve between two points.

Finally, it is possible to simulate three-dimensional plots on the two-dimensional screen. The effect resembles a blanket thrown over the object, but without eliminating the underlying lines. While these plots are, at best, experimental, the computer should be allowed to scale them automatically, or portions will fall off screen. Many functions take 5 minutes to plot.

Graph It is useful, but somewhat limited in that there is no supplied utility that will dump screen images to the printer. The program is easy to use, and will present data in a neat organized form.

GRAPHIC MASTER

Company: Datasoft
Language: Assembly
Hardware Requirements: 40K, disk drive

Department: Utilities
Sugg. Retail: \$39.95
Availability: 5
Disk or Tape: Disk

OVERALL RATING	B-	DOCUMENTATION	C	RELIABILITY	B+
EASE OF USE	C+	VISUAL APPEAL	B	USEFULNESS	C+
VENDOR SUPPORT	B-	ERROR HANDLING	B	VALUE FOR MONEY	C+

Graphic Master allows you to easily create professional looking graphics mode eight displays (320 pixels by 192 pixels). The heart of the system is a double screen working area which allows the user one screen as a scratch pad, and the other for finished work. With the ability to transfer sections of the working screen via a variable size window to the second screen, there is less likelihood of ruining your work of art.

There are basically three working modes to this program. A drawing mode enables you to use a joystick to make Hi-Res drawings on the screen. Various sub commands make drawing straight lines, circles, and polygons easy. The text mode allows the addition of three sizes of text letters to the drawing. While the larger sizes can be in color, you are limited to the two-color artifacting in graphics mode eight. This is true of any of your drawings.

The edit mode is versatile and powerful. For instance, it allows you to errase errors without starting over. Second, it allows you to move parts of your design around on the screen, and even duplicate them via a variable sized window. The window is joystick positioned and objects inside can be skewed, rotated, mirrored, and offset. When the image in the window is moved to another portion of the screen, it can allow underlying images to show through transparently wherever black portions appear, or remain completely opaque to the previous screen image. The portion in the window can even underlie the screen image. Objects can also be enlarged or reduced within the window, but this doesn't always work since color may be lost.

The program has a number of screens of template symbols stored on the disk. They are very useful for designing electronics schematics, and later dumping these screens to the printer. The program supports both the Epson MX-80 with Graphtrix and the NEC 8023-A printers. The owners of NEC printers will have to configure their disks with the BASIC program supplied. Those who don't own printers can save their masterpieces to disc for latter view.

While *Graphics Master* has some very good features, it certainly isn't as useful as one would like. First, it is limited to graphics mode eight. Second, while powerful, it isn't as easy to use as any of the demonstrations indicate. The documentation is only fair, and certainly can't cover all of the possibilities or problems that you may encounter while working with the program. There are plenty of ways to make mistakes

3-D SUPERGRAPHICS & COLOR GAME DEVELOPMENT SYSTEM

Company: United Software of America
Language: Machine
Hardware Requirements: 40K; disk drive or cassette player.

Department: Utilities
Sugg. Retail: \$39.95
Availability: 6
Disk or Tape: Both

OVERALL RATING	C-	DOCUMENTATION	D	RELIABILITY	B+
EASE OF USE	C-	VISUAL APPEAL	C	USEFULNESS	B
VENDOR SUPPORT	C-	ERROR HANDLING	B	VALUE FOR MONEY	C

The *3-D Supergraphics* package, by Paul Lutus, is a tool for animating games or demonstration programs. It allows you to define 3-dimensional shapes, either in black and white or in three Hi-Res colors (blue, green, and white). You can move these objects around the screen, rotate them about their X, Y or Z axes, change the overall scale, or stretch the shape by scaling the axis unequally. Supplementary text can be placed anywhere on the Hi-Res display in any scale or color.

The machine language algorithm for rotating objects using matrix transformations is quite fast. The technique of ping-ponging between two graphics screens provides flicker-free animation. Because of the extra calculations required during color display, the animation frame rate for large databases tends to slow down considerably. Lutus provides two versions of the program. The one in black and white is for faster framing. The color version is definitely slower, especially as normally interfaced in BASIC. Lutus does gain some speed by providing commands for executing loops within his code rather than the distinctively slow FOR-NEXT loop command. As usual, you have to be particularly careful with an object near the edge of the screen. This package has no line clipping; therefore, objects tend to wrap around near the screen's edge. And for those users who need missile algorithms, there are none. You must also be aware that the package places 3-dimensional objects on a 2-dimensional screen. There is no Z-axis. The effect of objects moving away from the viewer is entirely accomplished by scaling.

Lutus includes a graphics editor (GRFBAS) for entering values for the data base. It is not a very good editor, but it is easy to use and beats calculating values by hand. It also allows you to view and save your data files.

To use *Supergraphics*, you must first load it into memory by using the DOS command "L." You enable it with X#USR (22016), and must open a control block for input/output to the device "G." "G" will activate the statement OPEN #1, 12, 0. *Supergraphics* must then be allowed to control all text printing and graphics through the channel open to "G." Commands take the following form:

```
PRINT #1; "% ND, NW, SH28736, SC5"
PRINT #1; "% PX10, PY52, RYOTZOSZ
```

which simply says: "Draw a new shape starting in memory location 28736, scaled to 5, position it at X # 10, Y # 52, and rotate around the axis from 0 to 20 stepping Z." It may throw beginners at first, but it can be learned.

The documentation comprises a 44-page bound booklet that has been completely rewritten for Atari users. Although difficult to understand until read through several times, it is thorough. It offers a competent discussion on a very confusing topic: that is, the difference between objects that are moved in translation, versus those moved by position. It contains several examples, finally, that help to make a language or system with difficult notation more understandable.

The disk is unprotected, so if you want to use the package in your own program, simply load the graphics package from the disk or cassette. However, if you want to incorporate the package into a commercial program, you will have to arrange for a royalty-use fee with United Software.

This package has applications for game programmers, especially if they prefer to try a 3-D game. However, the program is more difficult to understand and apply to your own game than would first appear.

MICRO PAINTER

Company: Datasoft

Language: Machine

Hardware Requirements: 48K, disk drive.

Department: Utilities

Sugg. Retail: \$34.95

Availability: 7

Disk or Tape: Disk

OVERALL RATING	A -	DOCUMENTATION	B +	RELIABILITY	A
EASE OF USE	A -	VISUAL APPEAL	B +	USEFULNESS	B
VENDOR SUPPORT	B	ERROR HANDLING	A	VALUE FOR MONEY	B

Micro Painter, by Bob Bishop, is a graphics package that lets you design original drawings and then paint them in, much like an electronic coloring book. The diskette comes with nine practice drawings for you to color.

The joystick controlled cursor can be toggled into three different drawing modes using the Select key. There are fill, draw, and line modes. Each has a differently shaped cursor, and the mode is displayed with a big letter in the upper left corner. The draw mode is much like any other drawing package. Color can be selected from one of the four paint pots at the top of the screen. The cursor is guided around the screen, and it leaves a trail of colored dots when the button is depressed. The line mode is the rubberband type: essentially you can preview the new line as you move the cursor around. When you want the line to be permanent, you press the button.

The coloring book or fill mode is the most fun to work with. You can choose a single solid color, or two different colors blended in either a checkered pattern, or one with horizontal or vertical stripes. This gives you many shades of color in addition to the four solid colors. These four solid colors can be changed much as in SETCOLOR. Once a pot has been picked by keyboard command, the color can be changed in hue and luminance using either the joystick controller or the four arrow keys. When you change the color in a pot, any color in your drawing that used that color also changes. It is easy to fill an area defined by the boundary line of another color. You choose your color, then place your cursor in the area to be colored and press the button. The "fill" begins as a small diamond and expands to fill the area. If it looks like you made a mistake you can either stop it with the Break key, or press the U key which will erase the last fill or all lines since the last fill. A part of the screen that has been painted can remain, if you press the Atari key.

The most useful feature of the program is the microscope mode, where a portion of the picture is enlarged. This section, which shows only a 48 wide by 48 high dot area, is toggled on and off with the space bar. It can be used for repairing small areas of your picture. You can easily move the cursor by single pixels and draw single colored dots by pressing the joystick button.

The Option key will place you in the main program menu. From here, any picture can be loaded or saved to disk. These pictures could even be printed to the line printer if you purchase their companion program, *Color Print*. The documentation seems to be written for the novice. It uses the step-by-step approach to guide the user through a sample session. The documentation is very good, but has one potentially troublesome error. During the session they ask you to load a picture named MICRO-MAN. It can't be done with the hyphen; and, if the user catalogs the disk, he will discover that it has no hyphen.

Micro Painter, in sum, is a very entertaining program for budding artists of all ages. While it produces drawings more suited to the "coloring book" approach to art, it is indeed a well designed product.

GRAPHICS COMPOSER

Company: Versa Computing

Language: BASIC

Hardware Requirements: 32K; cassette player or disk drive.

Department: Utilities

Sugg. Retail: \$39.95

Availability: 6

Disk or Tape: Both

OVERALL RATING **B+**
EASE OF USE **B+**
VENDOR SUPPORT **B**

DOCUMENTATION **B-**
VISUAL APPEAL **B**
ERROR HANDLING **A-**

RELIABILITY **A-**
USEFULNESS **B+**
VALUE FOR MONEY **B**

Graphics Composer is a very comprehensive graphics package for creating medium resolution (GR.7) or High Resolution (GR.8) screens which can be saved to cassette or disk for later use in a program. The program is very versatile in that geometric figures can easily be created, colors filled in, and text added (Hi-Res mode only). In many ways it closely resembles the software available with the *Versa Writer Tablet*, at a fraction of the cost.

The normal drawing mode consists of a dot cursor that can be moved around the screen by joystick without damaging the existing image. This is a multi-speed cursor in that when it first moves it does so very slowly but gradually speeds up. This allows rapid access to different portions of the screen while allowing very detailed work. When the joystick button is depressed, the cursor enters the drawing mode and leaves a trail of colored dots in the chosen color. Colors can be varied, as in *SETCOLOR*. You must remember that you have little control of color in the Hi-Res mode, and that colors are determined by "artifacting." The space bar allows straight lines to be drawn quickly from the last plotted point to the current one. There are several different brush modes, and you can even draw with an airbrush effect to produce shading. Airbrushing requires considerable practice, however.

Two other programs can be called from the draw mode in the disk-based version. (Cassette owners will have to save their drawings first, then load the other programs.) *Geo Maker* allows geometric shapes to be quickly drawn. These include circles, rectangles, triangles, parallelograms, arcs between any three points, and a polygon of any number of sides. The text mode program will allow you to write standard sized text to the Hi-Res screen. It allows you to load your particular font.

One interesting feature is the ability to form player missile shapes from portions of the Hi-Res screen. This is more useful for duplicating narrow screen shapes on the screen than for actually producing player shapes usable in other programs. However, there is a separate utility that shows a microscopic view of the player, allowing you to modify single pixels. The data is actually saved as data statements.

The package does a nice job of creating professional looking screens in the two highest resolution graphics modes. It seems to be a little bit slow since it is written in BASIC, but this shouldn't detract from the package. The documentation is clear, except in the area of the form and in the use of created player missile data.

ATARI WORLD

Company: United Software of America

Language: Assembly

Hardware Requirements: 40K, disk drive.

Department: Utilities

Sugg. Retail: \$59.95

Availability: 6

Disk or Tape: Disk*

OVERALL RATING **C+**
EASE OF USE **C**
VENDOR SUPPORT **C-**

DOCUMENTATION **C**
VISUAL APPEAL **B**
ERROR HANDLING **B**

RELIABILITY **A-**
USEFULNESS **C+**
VALUE FOR MONEY **C**

Atari World is a three-dimensional graphics package especially useful in architectural design and for animation. The package is capable of showing three-dimensional objects in a predetermined series of moves specified in advance by the user. The boundaries of this system is a cube about 64,000 units on a side.

The program is relatively easy to use, as it virtually has a text editor that makes entering data simple; and the program avoids forcing you to understand any technical aspects. Data is entered by specifying a start point for the object in X,Y, and Z coordinates, then a point to continue that line in relationship to the previous point (e.g., +100X, -10Y). Any of three colors can be chosen. Once an object is completed and entered, one can view it by specifying a scale, a viewing position, plus angles (both horizontal and vertical) to point the viewfinder at the object.

Created objects can be saved for later animation, or can be used as basic building blocks for more complicated objects (e.g., chairs in a conference room). One can also save at any time the current view on the screen.

The program has a number of demonstrations that show the full potential of the package. The thirty-two page instruction booklet has been rewritten especially for the Atari. While the content and style isn't the clearest, it is adequate, and includes several examples.

Atari World's main disadvantages are that the program lacks Real Time interactive control, such as an interface with the paddles or joystick for game animation, and, as the number of projected lines increases, the animation speed bogs down (speed is approx. 100 lines or points/sec). However, it is very useful for examining complex objects from different angles or points of view.

ASSEMBLERS

ASSEMBLER EDITOR - ATARI - \$59.95

Atari's *Assembler Editor* cartridge is the assembler that most Atari owners whet their teeth on. It is a good beginner's assembler that doesn't need a disk drive, and it is relatively inexpensive. For ease of use, it was designed to be a co-resident assembler editor. This means that both the editor and assembler are in memory at the same time. While this has the disadvantage of limiting room for large source files, it eliminates the need to save the source file off to disk before swapping in the assembler which is assumed to be on another disk. This arrangement is ideal for those writing short programs that need to be assembled and debugged almost in tandem with the editor.

This cartridge has a line editor somewhat akin to BASIC. Each line is assigned a line number. Individual lines can be edited using the Atari's full screen editing feature. The editor has search and replace capabilities as well as the ability to renumber. Source code can be saved to tape or disk.

The assembler is not a very fast or powerful one. It lacks a large number of features, like the ability to chain source files, symbol table listing, and local labels. And it is interminably slow. Long assembly listings take ten or more minutes with the listing on. Let's face it, it was designed for people who want to write small assembly language routines that interface with BASIC. The assembler can save object code to disk, tape, or memory. One very nice time saving feature is that object files having multiple origins load into either cassette or disk in the proper memory locations. This eliminates the need to load and save your files in pieces.

It is very convenient to have a built-in debugger in the cartridge. It has most of the usual features: display and change either memory or registers, and step and trace. But the disassembler unfortunately doesn't support a printer, and the trace will lock up on encountering the CPY command.

The documentation is alright. While not tutorial in form, beginners will find it readable. Remember, the cartridge is an Atari product, and thus is fully supported. While this assembler may give a mediocre performance, it does have strong points in that it is a complete assembler that can be used by both Atari cassette and disk users. Since it is in cartridge form, it is very convenient to use.

MACRO-ASSEMBLER - ATARI - \$89.95

The Atari *Macro Assembler* is a serious package for professional programmers. It is a tremendous improvement over the Assembler Editor cartridge in terms of features, but is very cumbersome to use since it is entirely disk based. The editor and the assembler are two separate files on the disk, and must be loaded one at a time. This means that after editing, source code must be saved to disk before loading in the assembler, which then must re-read the source file before assembly. While this is O.K. for assembling a large project with multiple source files, it is inconvenient for small projects. And since this package does not offer a monitor and debugger, it is useless without either the Assembler Editor cartridge or Dunion's Debugging Tool form APX.

The editor is essentially the same text editor available from APX. It is a full screen editor and quite capable of writing moderate sized text files. There are no line numbers in the source code. The editor is adequate. It has search and replace commands, and can copy and move lines. Users familiar with word processing will like this type of editor.

The assembler is extremely fast and has a complete set of pseudo-ops. It supports conditional assembly, local labels, and has a complete macro facility. The macro commands allow the user to write new assembler instructions. When the assembler encounters the corresponding name in the instruction column, the saved lines will be substituted for the Macro name and assembled. In most cases the Macro has parameters passed to it. Size of macros is limited to 255.

The many paged documentation isn't for beginners. The structural format of everything is carefully explained, but there are too few examples and little detail. The disk itself is unfortunately protected. There is no way to back the disk up, and if it crashes, the user will need to wait several days at best for a replacement. The protection also precludes any use with the Ramdisk. In sum, while this is a powerful assembler, its disadvantages may far outweigh its speed and power.

MAC 65 - OPTIMIZED SYSTEMS SOFTWARE - \$80.00

Mac 65 is a very complete and powerful macro assembler that in many ways is the logical upgrade of the old *EASMD*, also from OSS, and Atari's *Editor-Assembler* cartridge. Both the editor and assembler are co-resident in memory. The debugger is a separate program, since it has more features and requires more memory than just a simple monitor. The debugger, however, can be resident along with the editor and assembler if it is loaded at LOMEM, and debug is used to alter the pointers to a much higher LOMEM. The entire package is meant to operate under OS/A + DOS, and is also supplied on the disk. It is a much more structured and easier to use DOS.

The editor is line oriented. Beginners will like its syntax checking mode that can catch most common entry errors. This feature can be disabled if you want to use the editor to enter straight text. The editor has the usual global find and replace, renumber, delete range of lines, copy or move lines, and auto numbering. String replacement can be localized to a range of lines. The editor even has a convenient hex/dec converter.

The assembler resides above HIMEN as most assemblers should. This gives the user an uninterrupted block of RAM for text, object code, and symbol table. You have to intentionally specify through a pseudo-op to write to memory. The assembler defaults to saving object code to disk. This is the safest method because putting the code in the wrong place can clobber the source file, *MAC 65* of DOS. This is probably just as well, because you can't debug without loading the debugger. The assembler has local labels, conditional assembly, and macros. There is a very nice macro library included on the disk. Macros can be any length, true also with labels. Since labels can be 127 characters long, and all characters are significant, they can be used as meaningful variable descriptions. Error messages are in English. The assembler also has a full range of pseudo-ops, and best of all, it is fast.

The debugger is the best included with any of the assemblers on the Atari. It is fully relocatable and can be placed anywhere in memory. It is protected, so that the user cannot monitor a command that would intentionally destroy itself. It has all the standard monitor features, and in addition, has break points included with its step and trace function. Individual disk sectors can be read and written. Moreover, the debugger has a mini-assembler for making quick on-line fixes without having to type in the hex equivalent.

The documentation is fair, but could stand more examples, and beginners will find it difficult. I suggest that beginners read a good tutorial on the subject. The package is suited to advanced users who need a fast assembler and one with considerable power. I think this one will fit the bill, and users will find it more convenient to use than the *Atari Macro Assembler*.

MAE - EASTERN SOFTWARE HOUSE - \$169.95

Eastern House's *Macro Assembler-Editor (MAE)* is a very powerful co-resident macro assembler, but has a non-standard file structure and a set of pseudo-op codes that make it incompatible with other assemblers. Yet its power and versatility are apparent in its macro capabilities, and its ability to generate relocatable object files.

The text editor is a full-screen editor. It is powerful, and has the ability to do conditional search and replace, as well as copy and move lines. Since the lines are numbered there is a renumber command. Normal, input of source code uses an auto line numbering scheme. Source code is entered in free form, with only a space between fields required.

The assembler exhibits several good features. It is very fast, and allows an option to continue assembling after encountering errors. It resides in memory at \$3000, splitting user RAM. The assembler should have been placed above HIMEM. Disk I/O is much slower than normal DOS loads because of its non-standard format. It further allows conditional assembly for both source and macros. The macros features are extensive. Local labels are also supported and, of course, the symbol table is sorted. The assembler is the only one that can generate relocatable object files. This is a powerful aspect, but is over-emphasized in the documentation at the expense of a good explanation of other features.

There is a standard debugger, or monitor. Surprisingly, for a package with this power, it does not have step and trace, nor the ability to set break points. These are important functions and neglected in this package.

The documentation is fair. Numerous items are either out of order, or just not explained. It certainly wasn't written for beginners. The assembler has considerable power that isn't properly explained, and requires user experimentation. In sum, MAE is a powerful and advanced assembler for the expert. Its non-standard pseudo-ops make this a difficult assembler for users who have built a library of routines on other assemblers and would like to upgrade to a more powerful one. Beginners will find this assembler too intimidating.

SYNASSEMBLER - SYNAPSE - \$49.95

Synassembler is a fine co-resident assembler much suited to beginners. Its design philosophy is to make assembly language programming as similar to BASIC as possible. Its editor is line oriented and fully supports the Atari screen editor. It does not use an auto-line editing mode, but instead uses the TAB key to enter the next line number. While this may seem awkward at first, it is useful for correcting a mistake in a previous line and then moving back to the line you were currently on without having to break out of, and re-enter an auto-number mode. The editor is complete and supports search and replace, copy and move lines, and renumbering.

The assembler itself is modest, but adequate for most uses. It supports conditional assembly, and uses local labels that save a lot of space in the symbol table. The symbol table (which can be listed) is sorted. Files can be chained and assembled to disk if memory is insufficient. Multiple ORG's aren't supported, but there is no problem in just advancing the program counter. Files are saved in contiguous blocks, and may require more disk space. Perhaps the best part about this assembler is that it is very fast. The assembler sits in high memory, as it should, and leaves a very big chunk of memory for source, object code, and symbol table. Source code starts at HIMEM and builds down; the symbol table starts at \$1D00 and builds upward. Object code can reside safely anywhere in between.

There is a very complete monitor that can step and trace through a program. It has a string search mode and a very helpful hex/dec converter. It can read and write binary files directly to disk from the monitor and, in addition, can read and write individual sectors from a disk. This is a very nice feature since it can be used in conjunction with the disassembler for examining errant files.

This assembler is a translation of the S.C. *Assembler II Version 4.0* that is on the Apple computer. Surprisingly, it is the only translation that I've ever seen that is fully integrated to the Atari system. For example, *Synassembler* uses standard filespec parameters when addressing any device such as the disk drive or the printer.

Synassembler is a very pleasurable assembler. Small source files can be edited, assembled, and debugged entirely within memory very quickly. It is very easy to use. The documentation, which can be read by beginners, is clearly written, but a bit sparse. There are instructions for converting assembler cartridge files to this program, so that those readers who are thinking about abandoning the cartridge for a faster assembler can do so.

EDIT 6502 - LJK - \$199.95

Edit 6502 is a co-resident editor assembler on cartridge. This in many ways makes the package very convenient to use, and would have been very useful to Atari 400 owners if it would have only supported cassette. The package is an Apple translation that has been partially integrated with the Atari system. The assembler supports standard filespec parameters when addressing any device, such as printer and disk drive; the editor does not.

The editor is line oriented. Its major fault is that it disables the Atari built-in screen editor, and uses the same form of text entry as the Apple. When a line has to be re-entered, it has to be completely copied over using the forward Arrow key. The Insert and Delete keys work at this point, but do not function except when in the line editor, or during actual program entry modes. The Tab key is supported. The pause during long listings still uses the Control-S key, as on the Apple. The editor does have most of the expected functions, like global search and replace, copy and move lines, plus renumbering.

The assembler is adequate and fast. While it supports conditional assembly and lists a symbol table, it lacks local labels which normally save considerable space in the symbol table. One has a choice of saving object code to memory or disk. This is convenient when debugging small programs in memory.

The monitor is also co-resident. It is a good monitor with step and trace, the ability to examine and change memory and registers, disassemble or move memory, and search for strings. It can also read or write sectors to and from disks. In addition, there is an interactive disassembler supplied on a separate disk.

The 38 page documentation is poor and sparse, and isn't meant for beginners. This is unfortunate since this is a beginner's assembler. The author wastes a lot of space discussing his programming philosophy, and a good third is taken up with instructions about using the disassembler. All in all, while this is a beginner's assembler, convenient to use and in cartridge form, it is still horribly overpriced and poorly documented.

ATARI ASSEMBLER COMPARISON

I — GENERAL INFORMATION

NAME	COMPANY	PRICE	MIN. HARDWARE
ASSEMBLER EDITOR	ATARI	\$ 59.95	16K
MACRO ASSEMBLER	ATARI	\$ 89.95	32K, DISK
MAC/65	OPTIMIZED SYSTEMS SOFTWARE	\$ 80.00	32K, DISK
SYNASSEMBLER	SYNAPSE	\$ 49.95	48K, DISK
MAE	EASTERN SOFTWARE HOUSE	\$169.95	32K, DISK
DATASM 65 2.0	DATASOFT	\$ 89.95	48K, DISK
EDIT 6502	LJK	\$199.95	32K

II — RATINGS

	ASSEM. EDITOR CART.	ATARI MACRO ASSEM.	MAC/65 OSS	SYN ASM	EASTRN (MAE)	DATA ASM D.SOFT	EDIT 6502 CART.
OVERALL RATING	B-	B	A-	A-	B	D+	C
FUNCTIONALITY & FEATURES	C+	B+	A	B	A-	C-	C+
EASE OF USE	B	C+	B	A-	B-	C+	B
DOCUMENTATION	B+	C-	C-	B-	B-	D-	D
VALUE FOR MONEY	B	B	B	A	C	D+	D

III — DOCUMENTATION

COMPLETE INSTRUCTIONS	YES	YES	YES	YES	YES	YES/NO	YES
WRITTEN FOR NOVICE	YES	NO	NO	YES	NO	NO	NO
SUFFICIENT EXAMPLES	YES/NO	NO	NO	YES/NO	NO	NO	NO
REFERENCE CARD/SHEETS	YES	YES	NO	NO	NO	NO	YES

IV — FILE HANDLING

SPEED OF FILE ACCESS	O.K.	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
FILE TYPE (B,T)	B,T	B,T	B,T	B,T	B,T	NOT COM- PATIBLE	B
PIECE FILE TOGETHER FROM SEGMENTS	YES	YES	YES	YES	YES	YES/NO	YES
CASSETTE SUPPORT	YES	YES	NO	YES	YES	NO	NO
APPEND LOAD	YES	YES	YES	YES	YES	NO	YES
UNMODIFIED DOS	YES	YES	YES	YES	YES	NO	YES

V — MISCELLANEOUS

	ASSEM. EDITOR CART.	ATARI MACRO ASSEM.	MAC/65 OSS	SYN ASM	EASTRN (MAE)	DATA ASM D.SOFT	EDIT 6502 CART.
RUN COMMAND	NO	NO	NO	YES	NO	NO	NO
BRK TO MONITOR OR MONITOR COMMANDS	QUIT	NO	QUIT	YES	YES	BRK	YES
RESET RECOVERY PROCEDURE	YES	YES	NO	NO	YES	NO	YES
USEFUL SUBROUTINES PROVIDED	NO	NO	YES	YES	NO	NO!	NO

VI — EDITOR

	LINE	SCREEN	LINE	LINE	SCREEN	SCREEN	LINE
FULL SCREEN OR LINE ORIENTED							
RESPONSIVENESS	GOOD	GOOD	GOOD	GOOD	GOOD	O.K.	O.K.
TAB SUPPORT	YES	YES	NO	YES	YES	NO	YES
AUTONUMBERING OR LINE COLLECTING INPUT MODE	AUTO	AUTO	AUTO	YES	YES	YES	AUTO
REQUIRES 4 DIGIT ZERO FILLED LINE NUMBERS	NO	NO	NO	YES	NO	NO	NO
STOP/ABORT LISTINGS	BOTH	BOTH	BOTH	BOTH	YES	BOTH	BOTH
REPLACE A LINE	YES	YES	YES	YES	YES	YES	YES
SCAN FOR STRING	YES	YES	YES	YES	YES	YES	YES
LOCAL/GLOBAL CHANGE	YES	YES	YES	YES	YES	YES	YES
COPY/MOVE LINES	NO	YES	NO	YES	NO	YES	YES
SHOW MEMORY LEFT	NO	YES	YES	NO	NO	YES	YES
PRINTER SUPPORT	YES	YES	YES	YES	YES	YES	YES
RENUMBER	YES	N/A	YES	YES	YES	N/A	N/A
SYNTAX CHECK INPUT	NO	NO	YES	NO	NO	NO	NO

VII — ASSEMBLER

	ASSEM. EDITOR CART.	ATARI MACRO ASSEM.	MAC/65 OSS	SYN ASM	EASTRN (MAE)	DATA ASM D.SOFT	EDIT 6502 CART.
SPEED OF ASSEMBLY	SLOW!	FAST	FAST	FAST	FAST	FAST	O.K.
FREE FORMAT OR COLUMN DEPENDENT	COL	COL	COL	FREE	FREE	FREE	FREE
STANDARD SYNTAX	YES	YES	YES	YES	YES	YES	YES
FLEXIBLE SYNTAX	NO	NO	NO	NO	NO	NO	SOME
LONGEST LABEL ALLOWED	106	127	127	32	31	6	10
EXTENDED BRANCH MNEMONICS (BGE, BLT)	NO	NO	NO	YES	NO	NO	NO
PAUSE/ABORT ON ERROR	NO	ABORT	YES	ABORT	YES	NO	YES
ENGLISH OR NUMERIC ERROR MESSAGES	NUM	ENG	ENG	ENG	NUM	NUM	ENG
SYMBOL TABLE PRINTED	NO	YES	YES	YES	YES	YES	YES
SYMBOL TABLE SORTED	NO	YES	YES	YES	YES	YES	YES
OBJECT ADDRESS/LENGTH PRINTED	NO	YES	YES	NO	NO	NO	YES
IMMEDIATE OPERAND TYPES (HEX, DEC, CHR, BIN, MSB, LSB, OCT)	HDCML	HDCB MLO	HDCBML	HDCBML	HDCB MLO	HDCB MLO	HDCBML
ADDITION/SUBTRACTION IN EXPRESSIONS	YES	YES	YES	YES	YES	YES	YES
MULTIPLICATION/DIVIS. IN EXPRESSIONS	NO	YES	YES	YES	YES	NO	YES
DEFAULT BASE	HEX	HEX	HEX	HEX	HEX	HEX	DEC
TERM TYPES (HEX, DEC, CHR, BIN, MSB, LSB, OCT)	HDCML	HDCB MLO	HDCB ML	HDCBML	HDCB MLO	HDCB MLO	HDCB
LOCATION COUNTER TERM [*]	YES	YES	YES	YES	YES	YES	YES
NUMBER OF PSEUDO OPS	11	25	17	12	26	9	20
ASSEMBLY ORIGIN OP [ORG] or [* =]	YES	YES	YES	YES	YES	YES	YES
OBJECT ORIGIN OP [OBJ]	YES	YES	NO	YES	YES	NO	YES
EQUATE OP [EQU]	YES	YES	YES	YES	NO	YES	YES
ZERO PAGE ADDRESSING HANDLED AUTOMATICALLY	YES	YES	YES	YES	YES	YES	YES
CHAR STRING OPS	YES	YES	YES	YES	YES	YES	SOME
RESERVE MEMORY OP	YES	N/A	YES	YES	YES	NO	YES
TWO BYTE CONSTANT OP	YES	YES	YES	NO	YES	YES	YES
ONE BYTE CONSTANT OP [MSB OR LSB]	YES	YES	YES	LSB	YES	YES	LSB
LISTING CONTROL [EJECT, SKIP]	YES	YES	YES	YES	YES	YES	YES

LANGUAGES

	ASSEM. EDITOR CART.	ATARI MACRO ASSEM.	MAC/65 OSS	SYN ASM	EASTRN (MAE)	DATA ASM D.SOFT	EDIT 6502 CART.
TURN LISTING ON/OFF	YES	YES	YES	YES	YES	YES	YES
END OF ASSEMBLY OP [REQUIRED?]	NO	OPT	OPT	OPT	YES	YES	OPT
LINK ASSEMBLY FILES	NO	YES	YES	YES	YES	YES	YES
SAVE OBJECT CODE AUTOMATICALLY	YES	YES	YES	YES	NO	YES	YES
MACROS WITH SYMBOLIC REPLACEMENT	NO	YES	YES	NO	YES	NO	NO
UNIQUE LABELS WITHIN MACROS	N/A	YES	YES	N/A	YES	NO	N/A
CONDITIONAL ASSEMBLY [IF, SET, ETC.]	YES	YES	YES	NO	YES	YES	YES
RELOCATABLE OBJECT CODE [EXTERNAL/INTERNAL LABELS]	NO	NO	NO	NO	YES	NO	NO
LOCAL LABELS/VARIABLES	NO	YES	YES	YES	NO	NO	NO
OBJECT CODE TO DISK, TAPE, MEMORY	D,M,T	D,T	D,M	D,M	D,M,T	D,M,T	D,M

SMALL PRINTING: A
 EASY TO USE: A
 QUICK SUPPORT: A-

VIII — MONITOR

DISPLAY MEMORY	YES	N/A	YES	YES	YES	YES	YES
CHANGE MEMORY	YES	N/A	YES	YES	YES	YES	YES
DIS — ASSEMBLER MEMORY	YES	N/A	YES	YES	YES	YES	YES
MOVING MEMORY	YES	N/A	YES	YES	YES	YES	YES
EXECUTE PROGRAM	YES	N/A	YES	YES	YES	YES	YES
EXAMINE & MODIFY REGISTERS	YES	N/A	YES	YES	YES	YES	YES
STEP & TRACE	YES	N/A	YES	YES	NO	YES	YES
CONVERT HEX/DEC & DEC/HEX	NO	N/A	YES	YES	YES	NO	YES
STRING SEARCH	NO	N/A	YES	NO	YES	NO	YES
DISK [READ & WRITE SECTORS]	NO	N/A	YES	YES	NO	NO	YES
BINARY LOAD & SAVE	YES	N/A	YES	NO	YES	NO	NO

A number of input/output commands have been added. Most of the DOS commands like DIR, COPY, ERASE, and RENAM can be called directly from BASIC A+. Many files can be listed and searched in language speed with the programs EPUT and RGET. Lists can be loaded or saved, and a word processor could easily save the text file. This normally requires a machine language program to call the CIO, which, EPUT and RGET are useful for. Most things are produced with NOTE and read with POINT by loading numbers automatically in a given byte internal storage format. It performs efficient word processing.

UNIT NO.	DATA NAME	DATA VALUE	DATA UNIT	DATA VALUE	DATA UNIT	DATA VALUE	DATA UNIT	DATA VALUE
001	ASSEMBLY	YES	YES	YES	YES	YES	YES	YES
002	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
003	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
004	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
005	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
006	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
007	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
008	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
009	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
010	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
011	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
012	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
013	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
014	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
015	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
016	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
017	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
018	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
019	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
020	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
021	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
022	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
023	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
024	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
025	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
026	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
027	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
028	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
029	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
030	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
031	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
032	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
033	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
034	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
035	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
036	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
037	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
038	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
039	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
040	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
041	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
042	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
043	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
044	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
045	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
046	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
047	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
048	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
049	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO
050	ASSEMBLY	NO	NO	NO	NO	NO	NO	NO

LANGUAGES

BASIC Languages

NAME	COMPANY	MEDIUM	USES MEMORY SPACE	PRICE
ATARI	ATARI	CARTRIDGE	8K	\$59.95
BASIC A +	OSS	DISK	14K	\$80.00
MICROSOFT BASIC	ATARI	DISK	19.5K	\$89.95

BASIC A +

Company: Optimized Systems Software, Inc.

Language: Machine

Hardware Requirements: 32K, disk drive.

Department: Utilities

Sugg. Retail: \$80.00

Availability: 7

Disk or Tape: Disk

OVERALL RATING **A**
EASE OF USE **A**
VENDOR SUPPORT **A-**

DOCUMENTATION **B+**
VISUAL APPEAL **N/A**
ERROR HANDLING **A**

RELIABILITY **A**
USEFULNESS **A-**
VALUE FOR MONEY **A**

Basic A + is an extension of Atari BASIC that offers a number of powerful features unable to fit in the original 8K ROM cartridge. The language is a little larger (14K), and requires a disk drive; yet is upward-compatible with 8K Atari BASIC. This means that any program written in Atari BASIC will run in *Basic A +*. This is fortunate, but no accident, since both languages were written by the same company. And while they were adding their "wish list" of features, they managed to fix bugs in the cartridge, such as the problem of not clearing out arrays or strings as it should when typing RUN.

Perhaps the most noteworthy new features are the ability to handle DOS commands from BASIC, extended I/O, trace commands with real error messages, Print Using, memory move commands, player missile graphics, and better string handling. No, they didn't put in string arrays, but they did include several structured programming features like IF...ELSE...ENDIF, and WHILE/ENDWHILE. With the ability to delete ranges of line numbers, and renumber a program, the user has a powerful language that is easy to use, and runs about 10% faster without even taking advantage of some of the advanced, speed-intensive features.

The ability to access player missile graphics without memorizing a nightmare of PEEKS and POKES, and the ability to move these players about the screen almost at machine language speed, have been added to the language. All operations are analogous to setting up simple drawing commands. The statement PMGRAPHICS does all the setup for you. PMWIDTH sets the players width, PMCOLOR(n) sets the color, and PMCLR clears out the color. PMMOVE positions the player anywhere on the screen. The horizontal and vertical positions can be set together or set separately. While the horizontal position is an absolute location (0-225), vertical positioning is done with a relative offset. PMMOVE 0,75;-3 would move the first player to horizontal position 75, and then move it down three lines. Likewise PMMOVE 0;1 would move the first player up on line. The MISSILE statement creates a missile which can then be moved with the PMMOVE statement. The BUMP statement will read the collision registers to detect collision between combinations of players, missiles, and playfields.

Reading the game ports have also been simplified. HSTICK and VSTICK return delta-X and delta-Y offsets for the joysticks. A zero value is centered, a +1 means the stick has been pushed, and a -1 if the stick is pushed left. Like values are obtained on the vertical axis. There is also a command for detecting the horizontal position of a light pen.

A number of input-output commands have been added. Most of the DOS commands like DIR, PROTECT, UNPROTECT, ERASE, and RENAME can be called directly from *BASIC A +*. Binary files can be loaded and saved at machine language speed with the commands BPUT and BGET. Entire screens can be loaded or saved, and a word processor could easily save the text file. This normally requires a machine language program to call the CIO. In addition, RPUT and RGET are useful for fixed length files produced with NOTE and read with POINT. By handling numbers automatically in a seven byte internal storage format, it performs efficient record processing.

Screen formatting is much easier using the PRINT USING statements. It is now very easy to format numbers that contain decimal points by specifying the format field in the form: PRINT USING "###.###". It automatically rounds numbers to fit the format field. This format is very useful in business applications in which it is important to have columns of figures line up at the decimal point. The user can also specify other format characters, such as the "\$" for quantities involving dollars; or ",", for inserting commas into large numbers; or "&" for filling unused digits with zeros. Other options will force the "+" sign for positive quantities, and string formatting with left or right justification by specifying "%" and "l". BASIC A+ also supports TAB, and can even work with the printer.

String manipulation has been enhanced slightly. A long string can be searched for with the FIND command. String concatenation has been simplified. For example, A\$#A\$+B\$ becomes A\$#A\$,B\$; and A\$#B\$: A\$(LEN(A\$)+)#C\$ becomes A\$#B\$#,C\$.

The language includes some very nice debugging features. There is a trace feature that displays the line numbers during the program's execution. LVAR will list to the screen all the variables in current use. This is quite helpful when approaching the 128 variable name limit. Error messages are non-cryptic English, such as DIM MISMATCH, instead of Error #25. Error handling is slightly easier when using TRAP, since ERR(1) returns the error number and line number, respectively. I should mention that this BASIC even has 16 bit PEEK and POKE commands. It is fairly easy, for example, to find the start of screen memory stored at location \$58 with the command, S#DPPEK(88). Atari BASIC would require the statement S#PEEK(88) + 256*PEEK(89).

Any program written in Atari BASIC can be run in BASIC A+. However, programs must be LISTed to the disk first then ENTERed with BASIC A+. Also you must be careful when using Page Six. This language uses \$600 - \$642 for system variable storage. This isn't a big problem, since you can move LOMEM to make room for any data needed to be stored at the program's old location. The language should be operated with the OS/A+ DOS. This is more convenient and versatile, and is now included with the package. Incidentally, there is a runtime package that can be licensed to software developers who write software in BASIC A+. It will run on either machine and is slightly faster.

The manual is rather unique in that its pages are meant to be inserted in the appropriate places in the Atari BASIC reference manual. There is even a new index for the combined manual. The documentation also contains several illustrations, including one on player missile graphics.

In sum, BASIC A+ is a powerful extension of Atari BASIC. While it might not have the string capabilities that Microsoft BASIC has, it is extremely easy to use. Beginning game programmers, who found using player missile graphics a formidable task, will love this language. BASIC A+ is truly a professional language and one that should be seriously considered by any owner with a disk drive.

ATARI MICROSOFT BASIC

Company: Atari

Language: Assembly Language

Hardware Requirements: 40K, disk drive.

Department: Utilities

Sugg. Retail: \$89.95

Availability: 9

Disk or Tape: Disk

OVERALL RATING	A	DOCUMENTATION	A	RELIABILITY	A
EASE OF USE	B+	VISUAL APPEAL	N/A	USEFULNESS	A-
VENDOR SUPPORT	B	ERROR HANDLING	B	VALUE FOR MONEY	A

Atari Microsoft Basic is a very powerful version of BASIC, written by the people who developed the language for the Pet, Apple, and Radio Shack microcomputers. Besides making it easier to convert programs from one machine to another, this language has powerful string handling features, greater speed and accuracy when working with mathematical functions, and I/O operations that are somewhat easier to use. It is quite complete, supporting all of the Atari's sound and graphics features, including player-missile graphics. It has auto line numbering, renumber, and delete range of lines commands.

Of course, any language that has advantages also has disadvantages, and Atari Microsoft Basic (AMSB) is no exception: it resides on a protected disk, it requires 40 seconds to load, and requires 19.5K of valuable user memory. This means that you have room for about 21K of program, or less if the 850 interface is booted in. The language does not do syntax checking during input. Further, users will be disappointed that those abbreviations of BASIC commands that you have become accustomed to typing (with the exception of ? for PRINT) are not valid in this BASIC. However, users who have used Microsoft's BASIC on other micros will find these constraints quite natural.

Perhaps the most significant difference between AMSB and Atari BASIC is in the area of string handling. While Atari BASIC allows DIMensioned one dimensional strings to be as large as the computer's memory, AMSB opts for true string arrays with a maximum string length of 255 characters. This greatly simplifies the task of character data manipulation. In addition to string arrays, there is a true concatenation operator (C\$#A\$+B\$). Strings are separated with LEFT\$, MID\$, and RIGHT\$ commands. INSTR performs a search for a string within a larger string. Programmers should be aware that strings are dynamic in memory (they move around), rather than static, as they are in Atari BASIC. They aren't dependable for hiding machine language code or player-missile shape tables.

I/O operations have been greatly overhauled. Many of the XIO functions have been replaced with easy to remember names like LOCK, KILL, UNLOCK, and FILL; however, you still can't read the directory or format a disk. Both these commands have to be done through an included disk file called CIOUSR. Microsoft has sacrificed flexibility for ease of use. For example, you can only OPEN a device for the READ, WRITE, UPDATE, and APPEND functions.

PRINT USING has been fully implemented, permitting you to right justify, insert decimal places, commas, dollar signs, and leading or trailing spaces. This is quite nice when formatting columns of numbers in a business ledger. The INPUT command will allow you to substitute your own Prompt message for the usual question mark. Output is easier with the TAB function, which lets you tab to a given print column, and SPC, that prints a designated number of blank spaces. Screen output now uses PRINT AT (X,Y) as a replacement for the POSITION command in Atari BASIC.

While player-missile graphics is supported moderately with commands like OPTION (PLM) that sets aside space for either single or double resolution PM graphics, and SETCOLOR for defining player colors, most of the other commands still need to be implemented with PEEKs and POKEs. This need to PEEK and POKE is also apparent when the user realizes that there is no AMSB command comparable to STICK(X) for reading the joystick.

None of the above-mentioned lack of easy features is insoluble, because ASMB has the advantage of accepting user-defined functions with the DEF command. Essentially, this means that you can make your own BASIC commands. The inconvenience in regard to the joystick could be solved by the line DEF STICK(X)#PEEK(632 + X). Similar functions could be defined for player-missile graphics. Surprisingly, this feature (which is glossed over in the documentation) is quite powerful.

Some of the other features that are quite useful are the time-dependent commands. The WAIT command allows you to pause the program until a location in memory takes on a specific value. This is useful if you need to wait for VBLANK before changing the display. The AFTER statement allows you to change the flow of a program after a given period of time. TIME\$ returns the time in hours, minutes, and seconds. They have also added a fifth parameter to the sound statement, which designates the duration of the note in 60ths of a second.

AMSB allows somewhat structured programming with IF...THEN...ELSE, and WHILE/ENDWHILE statements. Also, if programs become extremely long and need to be split, variables can be defined with the COMMON statement, and can be passed from one program to the next. I should mention that you can choose the precision of numeric values, making them double precision or define them as integers for added speed. All of the trig functions are available, but only in radians. The most different command is the USR statement. Rather than pass arguments to the machine language routine via the stack, ASMB passes only one integer argument directly to two zero page locations.

Well, there you have it, a powerful language that is somewhat compatible with the BASIC used in other micros. While it does have some disadvantages, such as large memory requirements, lack of syntax checking on input, and limited string length, AMSB offers features that far outweigh its disadvantages. In conclusion, I should mention that AMSB should soon be available on a 16K cartridge.

COMPARISON OF BASIC COMMANDS

Name	ATARI	BASIC A +	Microsoft	Name	ATARI	BASIC A +	Microsoft
System Commands							
AUTO		X	X	OPTION CHR			X
BYE	X	X		OPTION PLM		PMGRAPHICS	X
CLEAR	CLR	CLR	X	OPTION RESERVE			X
CLEAR STACK			X	PADDLE, PTRIG	X	X	
CLOAD	X	X	X	PEEK	X	X	X
CONT	X	X	X	PLOT	X	X	
CSAVE	X	X	X	PLOT [X,Y] TO [X,Y]	DRAWTO	DRAWTO	X
DEL		X	X	PMMOVE,PMWIDTH		X	
DIR		X		POKE	X	X	X
DOS	X	X	X	POP	X	X	
KILL		ERASE	X	PRINT	X	X	X
LIST	X	X	-nn,nn-	PRINT AT	POSITION	POSITION	X
LOAD	X	X	X	PRINT USING		X	X
LOCK		PROTECT	X	PUT	X	X	X
LOMEM		X		RGET,RPUT		X	
LVAR		X		READ	X	X	X
MERGE	ENTER	ENTER	X	REM	X	X	X
NAME		RENAME	X	RESTORE	X	X	X
NEW	X	X	X	RESUME			X
RENUM		X	X	SOUND	NOT TIMED	NOT TIMED	X
RUN	X	X	X	SPC			X
SAVE	X	X	X	STACK		X	X
SAVE w/LOCK			X	STATUS	X	X	X
TROFF		X	X	STICK,STRIG	X	X	
TRON		X	X	STOP	X	X	X
UNLOCK		UNPROTECT	X	TAB		X	X
VERIFY			X	WAIT			X
				XIO	X	X	
BASIC statements				WHILE,ENDWHILE		X	
AFTER			X				
BPUT,BGET		X		String Functions			
BUMP		X		ASC	X	X	X
CLOSE	X	X	X	CHRS	X	X	X
CLS			X	INKEYS			X
COLOR	X	X	X	INSTR		X	X
COMMON			X	LEFTS			X
DATA	X	X	X	LEN	X	X	X
DEF			X	MIDS			X
DEFINT			X	RIGHTS			X
DEFDBL			X	SCRNS	LOCATE	LOCATE	X
DEFSNG			X	STRS	X	X	X
DEPSTR			X	STRINGS			X
DPEEK,DPOKE		X		TIMES			X
DIM		X	X	VAL	X	X	X
END	X	X	X	VARPTR	ADR	ADR,PMADR	X
EOF			X				
ERROR			X	BASIC Functions			
FILL	XIO 18	XIO 18	X	ARS	X	X	X
FOR.TO.STEP.NEXT	X	X	X	ATN	X	X	X
GET	X	X	X	CLOG	X	X	
GOSUB,RETURN	X	X	X	COS	X	X	X
GOTO	X	X	X	DEG	X	X	
GRAPHICS	X	X	X	ERR[line]		ERR(1)	
HSTICK,VSTICK		X		ERR[type]		ERR(0)	X
IF.THEN.ELSE	NO ELSE	UNLIMITED ELSE	X	EXP	X	X	X
INPUT	X	X	X	FRE[X]	X	X	X
LET	X	X	X	INT	X	X	X
LINE INPUT			X	LOG	X	X	X
LPRINT	X	X		RAD	X	X	
MISSILE		X		RANDOMIZE			X
MOVE		X	X	RND[X]	0 < X < 1	0 < X < 1	X
NOTE	X	X	X	SGN	X	X	X
ON ERROR	TRAP	TRAP	X	SIN	X	X	X
ON..GOSUB	X	X	X	SQR	X	X	X
ON..GOTO	X	X	X	TAN			X
OPEN	X	X	X	TIME			X
OPTION BASE		SET	X	AND,OR,NOT,XOR	NO XOR	NO XOR	X

MISCELLANEOUS UTILITIES

S.A.M. (Software Automatic Mouth)

Company: Don't Ask Software
Language: Assembly Language & BASIC
Hardware Requirements: 32K

Department: Utilities
Sugg. Retail: \$59.95
Availability: 8
Disk or Tape: Disk*

OVERALL RATING	A-	DOCUMENTATION	A-	RELIABILITY	A
EASE OF USE	B-	VISUAL APPEAL	N/A	USEFULNESS	B
VENDOR SUPPORT	B+	ERROR HANDLING	B	VALUE FOR MONEY	A-

S.A.M., *The Software Automatic Mouth*, is a speech synthesizer. Unlike most speech synthesizers, which are expensive and rely on electronics, *S.A.M.* is entirely software drive. Speech no longer has to sound as if it were produced by a dim-witted robot speaking in monotone. Instead, stress can be applied to specific syllables to produce a more human sound.

Of course, there is a penalty to pay for this speech quality, and that is the loss of 8K of user memory and blanking of the screen during vocal output. This latter effect is necessary because gabs are inserted into the speech waveform each time the 6502 waits for ANTIC to access memory. Speech becomes distorted if the screen isn't blanked. The loss of available user memory is not a big problem since *S.A.M.* is not a very large machine language program. However, larger programs that utilize both speech and graphics might not fit. This is especially true if the user opts for a straight English text-to-speech input rather than the usual phoneme-to-speech input. The English text to speech version requires an additional 6K of computer memory.

The phoneme system for speech input is the most versatile, and sounds the best. It allows stress markers to be placed on any syllable for inflection. In addition, the pitch of *S.A.M.*'s voice can be altered and *S.A.M.* can speak slow or fast. The program also understands punctuation. For example, a period inserts a pause and causes the pitch to fall, while a question mark causes the pitch to rise after a brief pause.

The phonetic alphabet consists of 48 phonemes divided into vowels and consonants. Each produces a true speech sound. When these are combined, any word can be pronounced correctly and with the proper inflection. For example, the sentence "Why should I walk to the store?" would be written as "WAY2 SHUH7D AY WAO5K TUX DHAH STO5R." Each of the numbers represents the stress on a syllable. The number 2 indicates a very emphatic stress, while 7 drops the pitch. Six is neutral. While composing sentences looks difficult, it is easy to learn the phoneme system with practice. A dictionary of 1,500 common words is included with their phonetic spelling.

The English text-to-speech program call "Reciter" is extremely easy to use, although its speech isn't as understandable. All that one has to do is define a string called SAM\$, fill the string with English words, and make a CALL to the program. Each string can be up to 255 characters long. There must be a break somewhere in the string, because *S.A.M.* can only speak for 2.5 seconds without exhibiting a slight pause in his speech. The authors claim that it can speak 90% of the words input correctly. Actually, the program, which uses 400 rules for combining letters, can speak with very few errors. Words like "computer," "today," and "machine," which gave the *Votrax Type'n Talk* so much trouble, are no problem to *S.A.M.* However, words like "mouse," "nuclear," and "scream" are troublesome. Perhaps they do not follow *S.A.M.*'s sound rules.

The program can be used very effectively to interface with educational and adventure games. Perhaps it could be used during an arcade game to warn of imminent danger. It might even prove useful if interfaced to a telephone answering machine.

All in all, *S.A.M.* is the best sounding and least expensive speech synthesizer on the market. But while it produces understandable, inflected speech, it still sounds like computer-generated language. Its sampling rate of 7000 Hz. only produces sound with a high frequency of 3500 Hz. The drawback of having the screen blank during vocal output may be troublesome, but it can be overridden if the user is willing to accept coarser, degraded speech. Still, it is a breakthrough, and a fine piece of software that is extremely easy to use.

TALK TO ME

Company: Dynacomp
Language: BASIC
Hardware Requirements: 850 Interface & Votrax

Department: Utilities
Sugg. Retail: \$14.95 cassette / \$18.95 disk
Availability: 2
Disk or Tape: Both

OVERALL RATING	D	DOCUMENTATION	C-	RELIABILITY	C+
EASE OF USE	B	VISUAL APPEAL	C	USEFULNESS	D+
VENDOR SUPPORT	C	ERROR HANDLING	C+	VALUE FOR MONEY	D-

Talk to Me is a demonstration and tutorial of the capabilities of the Votrax *Type'n Talk* voice synthesizer. In addition to including a mode in which the user can type words and sentences into the computer and have the speech synthesizer pronounce them, it demonstrates the unit's inability to pronounce certain words as well as methods used to correct the sound. For example, "today" must be spelled incorrectly as "tuday" in order to be pronounced properly.

The disk automatically boots in the RS-232 interface, on the Atari 850 expansion interface module. The instructions, however, require you to set switch #5 on the Votrax at 1200 baud. When you do this, the unit is barely understandable, speaking only parts of words. Upon reading the BASIC program, it turns out that it requires 2400 bauds and switch #6 to be set.

Overall, this program is short and of little value. The people at Votrax provide adequate instructions, and a sample program that will put your computer into the *Type'n Talk* mode with no trouble.

AESD II

Company: Computer Age Software
Language: BASIC & Machine
Hardware Requirements: 32K, 850 interface, Epson printer.

Department: Utilities
Sugg. Retail: \$29.95
Availability: 5
Disk or Tape: Disk

OVERALL RATING	C+	DOCUMENTATION	C	RELIABILITY	B
EASE OF USE	C-	VISUAL APPEAL	N/A	USEFULNESS	B-
VENDOR SUPPORT	B-	ERROR HANDLING	B	VALUE FOR MONEY	B-

Aesd II is a bit-plot screen dump utility to be used with both MX-80 and MX-100 printers that have Graphtrax graphics chips installed. It will copy all of the standard Atari text and graphics display modes to the printer. The program can be used with BASIC, the Disk Operating System, and the Assembler-Editor Cartridge. Once loaded, it can be activated by simple, one-key commands which do not interfere with your keyboard operations.

The program which comes on the disk is in BASIC. It creates a machine language version using 1,981 memory locations, including 44 locations on either Page 4 or Page 6 (depending on which of the two supplied versions that you use). The program offers considerable flexibility in where you may load this program. You can either load it beneath the display list of any graphics or text mode that you will be using, or load it anywhere in memory that you prefer. In the latter case, the user must be careful that it isn't overwritten by the user's application. (Obviously, the above procedure doesn't work if you need screen dumps from your Assembler-Editor cartridge.) While early versions of this program only had a procedure for creating a cassette-loadable version, this version outlines a procedure for generating a self-activation file with the K-command in Atari DOS. The program will then run by loading it with the L-command in DOS.

The program was tested by printing a Graphics 8 screen. It was a saved screen from another program, and a short BASIC program had to be written to first load it in. It would have been nice if several utilities for doing this had been included, or at least an appendix with sample listings for these non-programming users. The key commands to start the printing and set the modes are toggled with the Shift key. For example, Shift-D produces a large screen copy using 480 dots per line-mode on the printer. There is a choice of large or small copies, with either 480 or 960 dots per line-mode on the printer. The screen can also be inverted. Screen dumps are printed sideways, even if it is text. While large copies are proportionally correct, small copies are elongated on the horizontal axis. The speed of printing is also rather slow, especially in the 960-dot mode. This is due to the slow serial bussing scheme used by Atari in transferring data to the 850 Interface.

There is no doubt that the program works, and it is useful; but I don't think this program is at all user friendly. For all but a few simple operations, such as dumping their current screen, beginners will have trouble using this screen dump. Novices certainly will have trouble printing any saved screens. While it might be too much to ask the creators of this utility to make the program easier to use, it might be nice to improve the documentation so that new users can understand what's happening. At the very least, there should be an Appendix of utility listings for loading various saved screens in different graphics modes.

SCREEN PRINTER INTERFACE

Company: Macrotronics, Inc.
Language: Machine
Hardware Requirements: printer

Department: Utilities
Sugg. Retail: \$79.95
Availability: 3
Disk or Tape: Disk

OVERALL RATING	A -	DOCUMENTATION	B +	RELIABILITY	B +
EASE OF USE	A -	VISUAL APPEAL	N/A	USEFULNESS	B
VENDOR SUPPORT	B -	ERROR HANDLING	B	VALUE FOR MONEY	A -

Screen Printer Interface — Version 2.0 allows Atari 400 and 800 owners to print both text and graphics screens to any of four graphics printers without an 850 interface module. This is good news especially to 400 owners, who up until now have been unable to interface well with a printer. This is also good news to 800 owners, since the price of this software-hardware combination is little more than a third of the retail price of the interface module alone.

The printer (Epson, IDS, Centronics or Trendcom) is connected by a hardware cable interface through joystick ports 3 & 4 of the computer. You must specify which computer-printer combination you own when ordering. The spacing between the ports is different on both computers, as is the connector on each printer.

The screen printer software comes on an unprotected disk that is completely compatible with DOS 2.0. Once loaded through the boot process, it is tucked safely away in memory and safe from BASIC, the Assembler Cartridge, and PILOT. It occupies less than 3K of memory. It is completely transparent to the user, and can be activated when needed by the Control P key. In addition, any commands that send information to device P: will cause this information to be printed. BASIC commands such as LPRINT behave just as they would if a printer were connected through the serial port.

The best part about the program is that it can print virtually any graphics screen while the host program is running. The utility automatically reads the display list to determine which information to print. The user can adjust the scaling, select positive or negative images, and determine the grey scale from either hue or luminance. Printing player-missile graphics and screens which have been fine scrolled are a little more difficult, but possible. In the case of player-missile data, 14 memory locations that contain player-missile parameters must be updated before printing. These are thoroughly documented. The only thing that I found the program unable to print properly is GTIA graphics modes. I tried printing BRASS from the GTIA demo disk and got a very poor representation. I noticed later that there is an error code for attempting to print this type of screen. I did not get an error during the attempt.

Since the printed image can be scaled independently on both axes, it is possible to both vary the aspect ratio to fit the printer and paper, and, if the user likes, create wide images that are printed in strips that can be glued together.

I found the software amazingly versatile. The user can control almost any parameter, although the graphics print mode is a little slow, possibly to prevent the print head from overheating when printing areas with lots of black. I was pleased that I didn't need to change any of the switches inside my Epson printer as I usually need to do when switching from printing on my Apple to printing on the Atari through the 850 interface. And I was pleasantly surprised that DOS was available immediately from BASIC without loading in.

The documentation is very good. There is a lot of information and examples in the 50 page manual. It explains how to interface with all language environments, and techniques for working with all types of graphics. The only thing that is not explained is whether or not the software could be booted in from OSS DOS that many use when working with BASIC A+. In conclusion, Macrotronics' *Screen Printer Interface* is a superior product that will save users attempting to produce graphics screen dumps to a printer both time and money.

6502 DISASSEMBLER

Company: Quality Software
Language: BASIC
Hardware Requirements: 16K, cassette; 24K, disk.

Department: Utilities
Sugg. Retail: \$14.95 Disk/\$11.95 Cassette
Availability: 6
Disk or Tape: Both

OVERALL RATING	B -	DOCUMENTATION	B	RELIABILITY	A -
EASE OF USE	B	VALUE FOR MONEY	B -	ERROR HANDLING	A -
VENDOR SUPPORT	B	VISUAL APPEAL	B -		

The *6502 Disassembler* is designed to enable you to disassemble Atari machine code into its equivalent assembler code, allowing you to easily dump the mysterious workings of the BASIC cartridge, the operating system, or that cute routine in Page 6 that someone gave you. This routine will display on your screen or dump to your printer either the ASCII translation for a section of the computer's address space, or a disassembly of the instructions at that point.

This package is easy to use and self-documenting. If you have a need for this kind of ability, check this package out.

MACHINE LANGUAGE MONITOR

Company: Easter House Software

Language: Machine Language

Hardware Requirements: 8K cassette; 16K disk

Department: Utilities

Sugg. Retail: \$29.95

Availability: 7

Disk or Tape: Both

OVERALL RATING **B**
EASE OF USE **A-**
VENDOR SUPPORT **B-**

DOCUMENTATION **B**
VISUAL APPEAL **C**
ERROR HANDLING **B**

RELIABILITY **B**
USEFULNESS **B+**
VALUE FOR MONEY **B-**

This utility is of benefit to the Machine Language/Assembler programmer as well as to advanced FORTH and BASIC programmers.

It provides 23 commands, including:

- (1) examine or alter memory
- (2) examine or alter microprocessor registers
- (3) branch to a program
- (4) save or restore memory
- (5) move contents of memory
- (6) initialize memory segments to any value
- (7) compare memory contents
- (8) search for ASCII or HEX strings in memory
- (9) disassemble or modify code

The instruction manual is compact, but thorough and well laid out. Even beginners could follow the load procedures and use of this product.

One feature which calls for special attention is its autoloading program, which boots itself up when the power is turned on. If the BASIC cartridge is installed, this program remains in memory (below the point at which BASIC is loaded). Also, memory and register features allow extended debugging.

This is a powerful utility. I would caution you to take care in modifying registers, etc. This is not for the beginner, although it will be useful at intermediate levels and invaluable at advanced user levels.

Finally, loading DUP.SYS (DOS command in BASIC) will overwrite this software unless you use the MEM.SAV feature of DOS.

In summary, this is one of those programs which you come to appreciate quickly, and wonder how you got along without it before.

DSEMBLER

Company: Atari Program Exchange

Language: BASIC, Machine

Hardware Requirements: 24K 400, cassette

Department: Utilities

Sugg. Retail: \$22.95

Availability: 8

Disk or Tape: Both

OVERALL RATING **B+**
EASE OF USE **B+**
VENDOR SUPPORT **C**

DOCUMENTATION **B**
VISUAL APPEAL **B**
ERROR HANDLING **A-**

RELIABILITY **A**
USEFULNESS **B**
VALUE FOR MONEY **A**

This is a general purpose utility for dealing with assembler programs and 6502 machine language code, disassembly, hex/decimal conversion, and loading small programs into memory. It is designed basically for studying and debugging assembler programs.

Specifically, it will:

- (1) Disassemble 6502 code on the Atari.
- (2) Convert hex numbers to decimal, and vice versa.
- (3) Regenerate assembler labels, rename existing labels, or delete them.
- (4) Display or print a list of label values and their names.
- (5) Store a file of labels to tape or disk, or load a previously saved file.
- (6) Load your own machine code into memory.
- (7) Display "pages" of memory for examination.
- (8) Jump to a machine language subroutine with X,Y, and A registers set to any desired value.
- (9) Search memory for any specified byte sequence, including wild cards.
- (10) Branch to a subroutine of your own design.

This utility is as flexible as it sounds. *Dsembler* makes liberal use of menus and submenus, includes default values wherever possible, and friendly input routines. Values may be input in Hex or Decimal. Documentation supplied with this program is good; and if you need some of the features this package offers, then it provides excellent value for money.

CALCULATOR

Company: APX

Language: Machine

Hardware Requirements: 24K, disk drive.

Department: Utilities

Sugg. Retail: \$29.95

Availability: 7

Disk or Tape: Disk

OVERALL RATING **B-**
EASE OF USE **C**
VENDOR SUPPORT **C**

DOCUMENTATION **A**
VISUAL APPEAL **C**
ERROR HANDLING **A**

RELIABILITY **A**
USEFULNESS **B**
VALUE FOR MONEY **B-**

Calculator turns your computer into a programmable pocket calculator with 145 functions ranging from simple arithmetic operations and conversions to complex mathematical, statistical, and financial functions. The program is indeed powerful, having the ability to work in either Reverse Polish Notation (RPN) or Algebraic. In addition to default decimal values, it will accept Hexidecimal and Octal numbers. You can choose to display numbers in up to eight decimal places. Large and small numbers are displayed in floating point notation. The program can save and load numerical data from disk or tape, and it will give a hard copy of all operations using any of the Atari printers (and Epsoms, too).

While people who are accustomed to working with programmable calculators, particularly those who use RPN on HP calculators, will find *Calculator* easy to adapt to, others will find the program cumbersome.

First, the display and all operations are register and stack oriented. There is an X register where the answer is displayed, a Y register, and a stack. The stack is for temporary storage of up to 42 numbers, of which 9 are displayed. The stack isn't like a memory location, in that numbers are pushed onto the stack like dishes being piled up, and, when needed, are pulled off the stack. There are 100 memory locations for storing numbers. The first ten are displayed.

Second, all entries are made in small one step operations, in much the same way as one uses a real calculator; for example, if you wished to do the following calculation in the Algebraic mode, $6 + (1 + 7)$. This is entered in five separate steps, each on a separate prompt line. First you enter "6*" then "(" then "1+" then "7)", and finally "=" to get the final answer in the X register. The last seven operations are displayed above the prompt line in a scroll area. Most functions are accessed by one or more mnemonic commands. For example, ROOT takes the square root of a number, and SUM adds the contents of the X register to a memory location that you specify. There are so many commands that the manual is a book 190 pages long. It includes a large number of financial and scientific examples, most of which can be programmed into *Calculator* for repetitive calculations.

I often question the value of a programmable calculator. Certainly it is easier to use for many people who refuse to learn how to program similar operations in BASIC; but learning to use the programmable functions of *Calculator* isn't that much easier. It does have an advantage in that many of the business and statistical functions would be hard to duplicate in BASIC without extensive programming features; but most of these features are available on an actual calculator, at comparable prices, which are easy to operate using single labeled keystrokes. I think what bothers me most is that I have to use desk calculators on other microcomputers. This one is far too complex for the average user.

ISOPLETH MAP-MAKING PACKAGE

Company: Atari Program Exchange

Language: Atari Basic

Hardware Requirements: 32K Atari

Department: Utilities

Sugg. Retail: \$22.95

Availability: 7

Disk or Tape: Disk

OVERALL RATING **B-**
EASE OF USE **C+**
VENDOR SUPPORT **D-**

DOCUMENTATION **B**
VALUE FOR MONEY **B**
VISUAL APPEAL **A-**

RELIABILITY **C-**
ERROR HANDLING **F**

Isopleths are contours of constant value plotted on a map. For example, they could be lines of constant height on a topographical map, lines of constant population on a geographic map, or lines of constant pressure on a weather map. The *Isopleth Map-Making Package* includes three programs to create and display isopleth maps. The first program enters and stores up to 99 sets of data for the three variables in making up the map. The second creates the isopleth map itself. The third can recall and display from a disk file a previously generated and saved map. It takes 45 minutes to an hour for the second program to generate the Hi-Res color map.

The program generates nine ranges of values, and the resulting maps are displayed in a "ten-color" map. An isopleth elevation map of the United States generated from 65 sample points of reference input by the reviewer created a reasonable facsimile of the United States, considering the coarseness of the data sample.

The program has very limited error-trapping. You must be careful to enter all data accurately and in the form expected. The maps have the appearance of a computer card with some holes punched, because the locations of the samples are plotted in the background color.

Obviously, this program will appeal to a very limited number of users. But if it is the kind of program you need, it is quite reasonably priced.

SUPERSORT

Company: Atari Program Exchange

Language: Machine

Hardware Requirements: 16K; disk drive.

Department: Utilities

Sugg. Retail: \$22.95

Availability: 9

Disk or Tape: Disk

OVERALL RATING **B-**
EASE OF USE **B+**
VENDOR SUPPORT **C**

DOCUMENTATION **B+**
VISUAL APPEAL **N/A**
ERROR HANDLING **D-**

RELIABILITY **B**
USEFULNESS **A-**
VALUE FOR MONEY **B**

Supersort is a fast, easy-to-use, and flexible sort routine to apply to and include in your BASIC programs. The major features are:

- (1) It autoloads (AUTORUN.SYS file), and stays below your BASIC program in memory, out of your way but easy to access through aUSR call.
- (2) It is not affected by pressing SYSTEM RESET.
- (3) It is VERY fast! (1000 30 character fields in under 4 seconds).
- (4) Records can be up to 256 bytes long (or longer if you modify the code — however, this change is for assembler programmers only).
- (5) You can sort up to 10,000 records (if you have enough memory).

I offer several cautions, however. This routine uses Page 6 on the Atari, so it conflicts with any of your programs that also use this busy area. While it will survive a SYSTEM RESET, if you load DOS and don't have a MEM.SAV file on your diskette, *Supersort* will be wiped out, and so will your program because a subsequent call to *Supersort* will crash the system. The manual tells you in very readable terms how to save memory space, and how to handle records greater than 256 characters — if you're up to modifying an assembler program (the source code is included). But there is no error trapping in *Supersort*, so be especially cautious in setting up your calling parameters.

The manual details for you the process of setting up a sort, and includes a sample program that you can run from diskette. To run it, you Poke into special locations of Page 6; the record length (maximum 32767); the number of sort keys (maximum 89!!!); and the position of each sort key (start and end). Then you input aUSR call to the location that contains *Supersort*, telling it where your sort data string is and where the last record in the data string is. BE SURE THAT THE FIRST AND LAST RECORDS IN YOUR DATA STRING ARE BLANK — otherwise very bad things will happen!!! Since *Supersort* stores the result back in your data string, save it elsewhere first if you want to preserve the original data.

If you need to sort much data, then you will find this routine very handy.

LOAD 'N GO

Company: Atari Program Exchange

Language: Atari BASIC

Hardware Requirements: 16K, disk drive.

Department: Utilities

Sugg. Retail: \$15.95

Availability: 6

Disk or Tape: Disk

OVERALL RATING **C+**
EASE OF USE **B+**
VENDOR SUPPORT **B**

DOCUMENTATION **B-**
VISUAL APPEAL **B-**
ERROR HANDLING **B**

RELIABILITY **A**
USEFULNESS **B**
VALUE FOR MONEY **B**

This is a utility designed to make your programs more user-friendly. *Load 'n Go* will help create an automatically executing menu-type program on your programming diskettes; and on programs for the kids, or those non-computer adults who enjoy games, it creates auto-executing games just like the professional software houses make. It is designed to eliminate the initial first steps usually required to load and boot up a program.

Previously, I'd used a more primitive method for making an "AUTORUN.SYS" file, instructions that automatically execute when you boot from diskette. Asked to review *Load 'n Go*, I found that with this program you place a set of BASIC commands (using the immediate mode execution format) into a disk file which will then automatically execute when you power up the computer. It represents a world of improvement over the older methods.

Yet I must caution you of one thing: although the program and documentation are written to allow up to 128 characters in the command string, the maximum length is actually 98 unless you modify the program. To increase this to 119 characters, add "GR.0:POKE 82,0:POKE 83,39" at the beginning of the program, and separate the "ENTER COMMAND" prompt from the input line by removing the ";" after the prompt. This takes you up to the maximum of 119 characters allowed by the BASIC Text Editor. To go beyond this you will have to read in the string in two parts, and then concatenate them. Note that the abbreviations allowed by BASIC will save you space in the command string (e.g., GR.18 is the same as GRAPHICS 18).

You should find this software simple to use, and very handy in streamlining the initializing steps you go through in booting up. It's an inexpensive and valuable addition to anyone's utilities library.

RPN CALCULATOR SIMULATOR

Company: Atari Program Exchange

Language: BASIC

Hardware Requirements: 16K, tape; 24K, disk.

Department: Utilities

Sugg. Retail: \$22.95

Availability: A

Disk or Tape: Both

OVERALL RATING **B**
EASE OF USE **B**
VENDOR SUPPORT **C+**

DOCUMENTATION **A**
VALUE FOR MONEY **B**
VISUAL APPEAL **B**

RELIABILITY **A**
ERROR HANDLING **A**

The *RPN Calculator Simulator* turns your computer into a reverse polish notation calculator. With this program you can use the mathematical power of your computer without writing programs in BASIC. In RPN, the function to be performed follows the values on which it operates. This sounds complicated, but it means that you typically enter fewer key strokes to perform a calculation compared with a standard algebraic calculator. The numbers are moved up and down in a stack as you enter them. Twenty storage registers are available for intermediate values, or constants, used in a complex calculation. The program only contains the standard functions such as addition, subtraction, multiplication and division, and the trigonometric functions normally found in a high school geometry or trigonometry course. The program can also calculate the arithmetic mean and standard deviation of sets of numbers.

Since the entire stack is printed on the screen, you can see the "internal" workings of the calculator as it performs each operation. This makes the *RPN Calculator Simulator* a powerful program for teaching reverse polish notation.

The major drawback of the program is the need to enter several key strokes to perform a function. For example, to compute the inverse cosine you must type ACOS. On an RPN calculator you would normally press only two keys to perform this function. A minor drawback is the failure to display the numbers in all of the storage registers. The program's ultimate usefulness is limited by its small number of functions, and by the inability to use it as a programmable calculator.

RPN CALCULATOR SIMULATOR

Company: Alt-Program Exchange

Language: BASIC

Hardware Requirements: 15K, Linc, 24K, etc.

Department: Unlabeled

Sugg. Retail: \$29.95

Availability: A

Disk or Tape: 8000

OVERALL RATING: **A**
EASE OF USE: **B**
VENDOR SUPPORT: **C+**

DOCUMENTATION: **A**
VALUE FOR MONEY: **B**
VISUAL APPEAL: **B**

RELIABILITY: **A**
EYEBROW HANDLING: **A**

The RPN Calculator Simulator turns your computer into a reverse polish notation calculator. With this program, you can use the mathematical power of your computer without writing programs in BASIC. In RPN, the function to be performed follows the values on which it operates. This sounds complicated, but it means that you typically enter fewer key strokes to perform a calculation compared with a standard algebraic calculator. The numbers are stored up and down in a stack as you enter them. Twenty storage registers are available for intermediate values, or constants, used in a complex calculation. The program only contains the standard functions such as addition, subtraction, multiplication and division, and the trigonometric functions normally found in a high school geometry or trigonometry course. The program can also calculate the arithmetic mean and standard deviation of any number.

Since the stack stack is printed on the screen, you can see the "internal" workings of the calculator as it performs each operation. This makes the RPN Calculator Simulator a powerful program for teaching reverse polish notation.

The major drawback of the program is that you must enter several key strokes to perform a function. For example, to compute the square of five or you must type ACOS. On an RPN calculator you could equally press only two keys to perform the operation. A minor drawback is the failure to display the numbers in all of the storage registers. The program offers no assistance in finding the key used to perform a function, and by the way, to use it as a "normal" algebraic calculator.

VCS GAMES

THE RIDDLE OF THE SPHINX

Company: Imagic
Language: Assembly
Hardware Requirements: VCS, 2 joysticks.

Department: Entertainment
Sugg. Retail: \$31.95
Availability: 7
Disk or Tape: Cartridge

OVERALL RATING	A -	CONTROLLABILITY	B +	ERROR HANDLING	N/A
GAME CONCEPT	A	SKILL INVOLVED	B +	DOCUMENTATION	B +
CREATIVITY	A	CHALLENGE	B	HOLDS INTEREST?	A
GAME DEPTH	B +	GRAPHICS	B +	VALUE FOR MONEY	A -

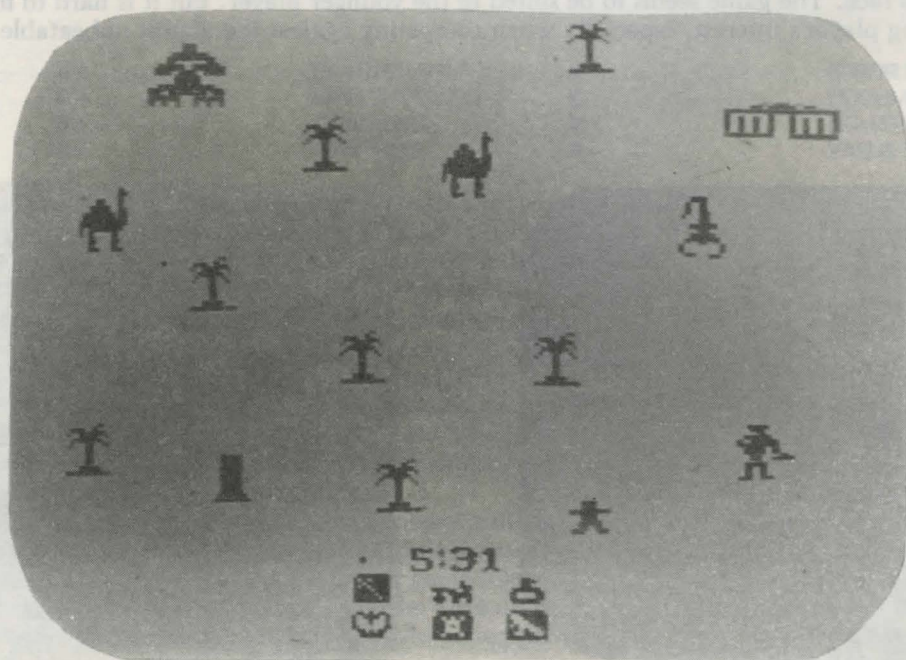
The Riddle of the Sphinx is one of the first adventure games produced for the Atari system. It is a single player game involving a desert journey in which points and treasures are gathered to barter for information and/or safe passage.

You play the part of the son of a Pharaoh, and must journey through the desert encountering obstacles (palm trees, camels, and obelisks), which must be circumvented. Other problems that you'll encounter include thieves, scorpions, and nomadic traders, all of which can inflict wounds. Receiving nine wounds kills you, the prince, ending the contest. The weapon given you for battle is a slingshot, and an unlimited supply of rocks to hurl. These rocks are released by pressing the joystick firing button, and your travel is controlled by the eight directions of the stick itself.

The longer you stay in the desert, the more your thirst factor increases, slowing your travel and eventually killing you. Thirst can be overcome by drinking at one of six oases, or from jugs obtained through barter with traders. Two ancient deities also roam the desert: Isis, the goddess of fertility and motherhood; and Anubis, the god of death. Isis cures all wounds and quenches thirst, while Anubis inflicts three wounds and the loss of life points. These life points are gathered by killing thieves and scorpions with your slingshot.

There are three levels of play, beginner to advanced. In the first contest, your journey ends with your final offering to the temple of Ra (all treasure or artifacts gathered). That, or your demise. These objects are gathered in several ways, which include dealing with nomadic traders, gifts from Isis, or using shovels acquired through the traders to dig for artifacts. The most difficult level has four temples in which to give offerings, and a final confrontation with the Sphinx. Your exit from the game must be earned with more treasure and the right offerings given at specific temples. The second level has fewer temples than the third, requiring less acquisition efforts.

Riddle of the Sphinx proves quite diverting, as adventure games go. Worth considering.



THE RIDDLE OF THE SPHINX

OUTLAW

Company: Atari, Inc.
Language: Assembly Language
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$22.95
Availability: 6
Disk or Tape: Cartridge

OVERALL RATING	D+	CONTROLLABILITY	C	ERROR HANDLING	A
GAME CONCEPT	C	SKILL INVOLVED	C-	DOCUMENTATION	B
CREATIVITY	C-	CHALLENGE	C+	HOLDS INTEREST?	D
GAME DEPTH	C	GRAPHICS	C	VALUE FOR MONEY	C-

Outlaw consists of 16 variations of a rather simplistic target-type game. You may have either a two person shoot-out that simulates an Old West gunfight, or play against the computer by attempting to hit moving targets. While there is not much to criticize in this program, neither is there much to praise. There are better game choices.

FISHING DERBY

Company: Activision
Language: Assembly
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$22.95
Availability: 5
Disk or Tape: Cartridge

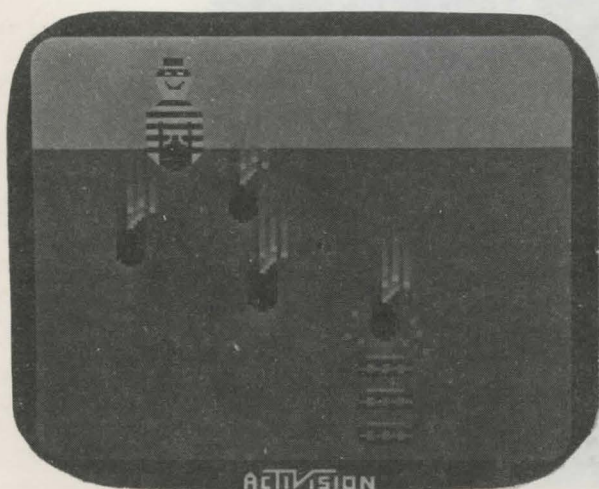
OVERALL RATING	D	CONTROLLABILITY	D+	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C-	DOCUMENTATION	C
CREATIVITY	C+	CHALLENGE	C	HOLDS INTEREST?	D
GAME DEPTH	C-	GRAPHICS	C	VALUE FOR MONEY	D

Four levels of point value, ranging from 1 to 4, are assessed in *Fishing Derby*. You are given a choice of two versions, one player against the computer or two against each other. The first player to reach 100 points is the winner.

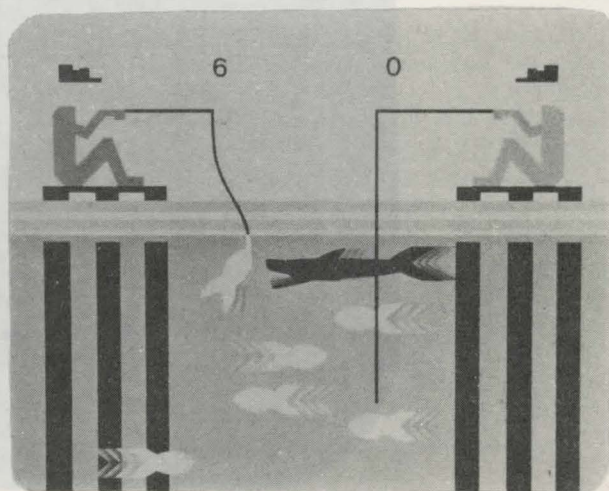
Complicating play is a scavenging shark cruising at the surface, waiting to rob you of your catch. Each fisherman sits on a pier, and the lengths both of rod and line are determined by joystick control. The button depressed is a fast reel up of your catch; an "up" on the button is slow.

By controlling the line and rod length, the end of the line or bait is dangled in front of the fish. Fish swim in the bottom four layers of water. Deep water takes more time; therefore, the reward is greater.

The difficulty switch, when set on "A," means that the bait has to be right under the fish's nose; on "B," it simply needs to be near its face. The game seems to be suited to the younger player. But it is hard to master, and so will likely lose the young player's interest, especially when competing against the almost unbeatable computer.



KABOOM



FISHING DERBY

SHARK ATTACK

Company: Apollo
Language: Machine
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$31.95
Availability: 4
Disk or Tape: Cartridge

OVERALL RATING	C+	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	C+	SKILL INVOLVED	C	DOCUMENTATION	C+
CREATIVITY	B-	CHALLENGE	B-	HOLDS INTEREST?	B-
GAME DEPTH	C	GRAPHICS	B	VALUE FOR MONEY	C+

Diamonds are normally a girl's best friend, not to mention your average scuba diver's, but the chance encounter of a man-eating shark or the indestructible Loch Ness monster makes diamond picking a rather hazardous occupation in the one or two player game, *Shark Attack*. You are given 4 divers, with a goal of collecting as many diamonds as possible. The game board is a green maze (described as a kelp bed), and in the center of the board is a green shark cage. The diver ventures out of his protective shark cage and gathers diamonds by simply touching them, returning them to the cage to collect points, one for each diamond.

Sharks patrol the waters continually, and they eat divers. Lose your 4 divers and the game ends. The only time the diver is safe is when he is in the cage. Additional divers are awarded with a score of 25 points, or when you gather up all of the diamonds in the maze.

In each corner of the board is the cave area where the Loch Ness monster ("Nessie" to her friends) is sleeping. By entering this cave you awaken Nessie, who gives chase. The monster cannot be killed so must be lead to another corner cave to be put back to sleep. Taking this risk allows you to collect more diamonds — if she doesn't eat you, that is.

In 16 different varieties you can change the game. There are four different ways of controlling the opening and closing of the shark cage, and the two different ways to collect diamonds. The diver can either snatch up all the diamonds (at great risk) or retrieve them one by one and return to his cage every time. As each new level is reached the speed of your undersea adversaries increases.

KABOOM

Company: Activision
Language: Assembly
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$22.95
Availability: 8
Disk or Tape: Cartridge

OVERALL RATING	B+	CONTROLABILITY	A	ERROR HANDLING	N/A
GAME CONCEPT	A-	SKILL INVOLVED	B+	DOCUMENTATION	B
CREATIVITY	B+	CHALLENGE	B+	HOLDS INTEREST?	B+
GAME DEPTH	B+	GRAPHICS	A-	VALUE FOR MONEY	B+

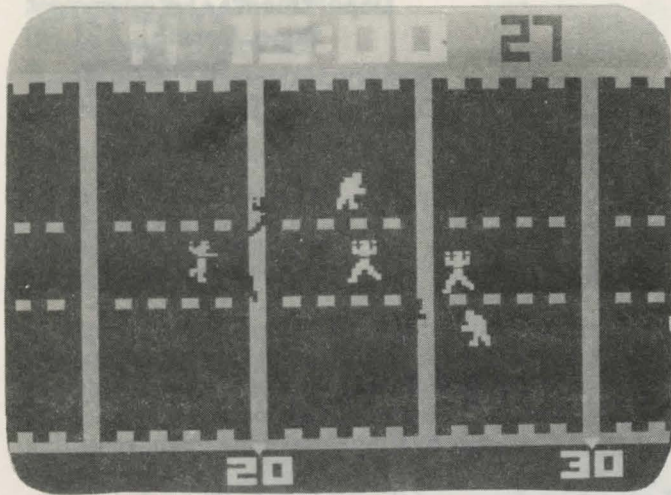
Kaboom is a stimulating and challenging game of skill for the Atari VCS system from Activision. Its graphics and animation are some of the finest and smoothest available to date.

The game must be started, as well as restarted, by using the game reset switch. At this point, the Mad Bomber, your enemy, is ready to do his job, which is to drop lighted bombs off the wall where he is perched so that they will detonate on the ground. Your task is to catch these bombs in one of the three buckets of water supplied to you.

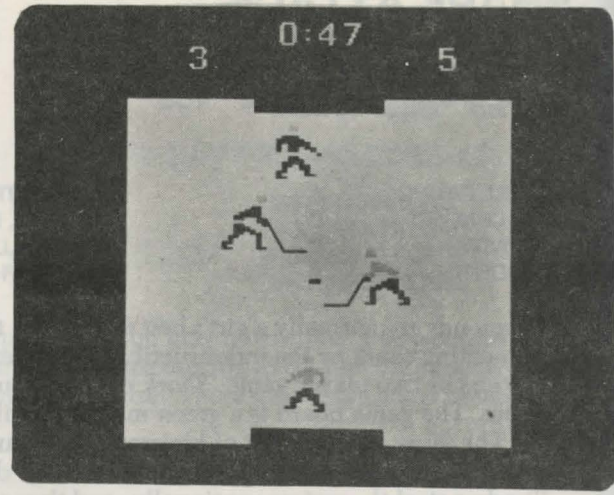
The Bomber is not content to sit still. He attempts to trip you up by moving back and forth across the top of the wall. The bombs are dropped one at a time in groups (10 at first), and increase by 10 on each level until you reach level 6, where there are 75 bombs. Level 7 has 100 bombs, and level 8, the highest, has 150 bombs. The point values for each bomb caught are equal to the level number. The speed at which the bomber drops the bombs increases dramatically at each level. By level 8, you reach the frantic pace of 13 bombs per second. Miss a bomb and you lose a bucket. Lose three buckets and it's all over.

Each time you lose a bucket, you are put back a level and are given half of that level's complement of bombs to catch. Each time you score 1,000 points or any multiple thereof, you are rewarded with a new bucket until you have your full complement again. There is a single player game (Game 1) and a two-player version (Game 2). If you think you're getting pretty good at it, you may change the difficulty switch and halve the width of your buckets.

All in all, this reviewer found this to be one of the better games available for this machine.



SUPER CHALLENGE FOOTBALL



ICE HOCKEY

ICE HOCKEY

Company: Activision
Language: Machine
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$31.95
Availability: 8
Disk or Tape: Cartridge

OVERALL RATING	B+	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	A-	SKILL INVOLVED	A-	DOCUMENTATION	B
CREATIVITY	A-	CHALLENGE	B+	HOLDS INTEREST	A-
GAME DEPTH	B	GRAPHICS	A-	VALUE FOR MONEY	B+

Ice Hockey is a good two-player sports simulation. There are two ways to play *Ice Hockey*, against the computer or another opponent, but the head-to-head conflict has the strongest appeal. You have two players (goalie and forward), and each has control of the puck in his area. The joystick controls the movement in eight directional axes, and the button swings the hockey stick. You can use the stick to shoot the puck in any of 32 different angles, or you can even use it to trip your opponent's players. A fallen opponent remains incapacitated for a few seconds, enabling you to take advantage of the situation. The computer is extremely difficult to defeat in the single player mode. The winner, in all versions, is the highest scorer in a three minute game.

The only things that keeps *Ice Hockey* from obtaining the highest rating are its lack of game depth and the controllability. There is not much depth and the controls (joystick) are lax. The game, however, is a fast-paced, hectic contest that will keep you coming back for more.

SUPER CHALLENGE BASEBALL

Company: Mattel M-Network
Language: Assembly
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$30.00
Availability: 3
Disk or Tape: Cartridge

OVERALL RATING	A	CONTROLLABILITY	A	ERROR HANDLING	N/A
GAME CONCEPT	A	SKILL INVOLVED	B	DOCUMENTATION	B
CREATIVITY	A-	CHALLENGE	B+	HOLDS INTEREST?	A-
GAME DEPTH	B+	GRAPHICS	B	VALUE FOR MONEY	A-

All the thrills of big league baseball are available for your Atari VCS with this offering by Mattel called *Super Challenge Baseball*. Pitching variations, hard and soft batting swing, and fielder selectivity make for a very controllable and enjoyable session on the diamond.

The graphics are excellent and the sound almost attains a rough speech simulation. Other play possibilities include base stealing, hit and run plays, double plays, etc. Defense and offense are both challenging to each player. The only shortcoming of this cartridge game is that it does not offer a single game option.

SUPER CHALLENGE FOOTBALL

Company: Mattel M-Nework

Language: Assembly

Hardware Requirements: VCS

Department: Entertainment

Sugg. Retail: \$30.00

Availability: 3

Disk or Tape: Cartridge

OVERALL RATING	A	CONTROLABILITY	A	ERROR HANDLING	N/A
GAME CONCEPT	A	SKILL INVOLVED	B	DOCUMENTATION	B
CREATIVITY	A	CHALLENGE	A	HOLDS INTEREST?	A+
GAME DEPTH	A	GRAPHICS	B	VALUE FOR MONEY	A

Super Challenge Football is a real must for the true sports fan. It requires 2 players, while a few kibitzers make it all that more enjoyable. The excitement of live football is definitely here.

This is a game of challenge, and the players must acquire skill along the way. No two games are alike, and the action is different with each play. There are two five-man teams pitted against one another with the status of play clearly displayed on the screen. This is not, however, a kicking game, and each quarter (15 minutes simulated) starts with the offensive team on its own 20 yard line.

The offensive player must first select his play from one of five running patterns. He then programs each of his linemen for blocking assignments, designates his receiver (if he intends to pass), and is ready to go. While this is going on, the defensive player selects one of the four defensive plays, and in turn, programs each of his linemen. From this point on, it is football at its best.

BASKETBALL

Company: Atari

Language: Assembly

Hardware Requirements: VCS

Department: Entertainment

Sugg. Retail: \$22.95

Availability: 8

Disk or Tape: Cartridge

OVERALL RATING	C+	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C+	DOCUMENTATION	B
CREATIVITY	C	CHALLENGE	B	HOLDS INTEREST?	C+
GAME DEPTH	B-	GRAPHICS	C	VALUE FOR MONEY	C+

Atari's *Basketball* is a one or two player game with your choice of opponents: the computer or a friend. Each game lasts four minutes, and the time and score are displayed on the screen. You are each given one player, who goes nose-to-nose with the opponent. Your player must do all the scoring and play all the defense. After each basket, the team who has just been scored on automatically gets the ball.

Your player's movement is controlled by the joystick, and to shoot you press the fire button. When on defense, the button permits you to jump for rebounds and to block shots. There are two kinds of shots, long or short, depending on the position of the ball. The shot will always go toward your goal and whether you score or not depends on the distance from the basket.

This game is a lot of fun, but requires practice to control. If your playing an experienced gamester you could be in for some long afternoons.

SKEET SHOOT

Company: Apollo

Language: Assembly

Hardware Requirements: VCS

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 6

Disk or Tape: Cartridge

OVERALL RATING	D-	CONTROLLABILITY	C-	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	D	DOCUMENTATION	C
CREATIVITY	D+	CHALLENGE	D	HOLDS INTEREST?	D+
GAME DEPTH	D	GRAPHICS	D	VALUE FOR MONEY	F

Skeet Shoot is an extremely simplistic block graphic game which involves single shot efforts at a flying skeet. The skeets are launched from any of three screen locations (left, right, or middle), and your location as marksman can be any of these three. The joystick controls your angle of shot and is limited to five positions. This is hard to control and restricts your possibilities in going after the skeet.

The 17 game choices consist of varying shooter locations, skeet locations, and to a lesser degree, speed of flight. They all have very little effect on the game. It won't be long before you have this game mastered and fall asleep or move on to something else. Even the kiddies will be yawning shortly.

TENNIS

Company: Activision
Language: Machine
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$22.95
Availability: 8
Disk or Tape: Cartridge

OVERALL RATING	A-	CONTROLLABILITY	A-	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	A	DOCUMENTATION	B
CREATIVITY	A	CHALLENGE	A-	HOLDS INTEREST?	A
GAME DEPTH	A	GRAPHICS	A	VALUE FOR MONEY	A

Tennis, by Activision, is a sure fire hit, both for the tennis fan or anyone looking for a great video game. *Tennis* has it all.

There are 4 game variations, 2 for the solitaire player and 2 for doubles (a slow and a fast paced game for each). The graphics and animation effects are first rate; and sound effects are quite good, helping to bring the game to life. Changing the difficulty switches from "B" to "A" allows either angles for passing shots and deflection (or lob) shots.

The playing and scoring are identical to tennis, except that you can not blow a serve. This speeds up the play, putting real emphasis where it belongs, on volleying. Really worth considering, for those rainy days when you can't get out on the courts yourself. Game, set, and match in favor of *Tennis*.

STREET RACER

Company: Atari, Inc.
Language: Assembly Language
Hardware Requirements: VCS, paddles.

Department: Entertainment
Sugg. Retail: \$12.95
Availability: 8
Disk or Tape: Cartridge

OVERALL RATING	D+	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	C+	SKILL INVOLVED	C	DOCUMENTATION	B
CREATIVITY	D+	CHALLENGE	C	HOLDS INTEREST?	C
GAME DEPTH	C-	GRAPHICS	C-	VALUE FOR MONEY	C+

A plus in this program's favor is the fact that it can be played by either one, two, three, or four players (assuming a paddle control for each person). The program itself offers some 27 variations of cars on a track racing through various course layouts, or skiers plowing through a downhill slope. The graphics and skill involved in any of the variations are average. Again, the best part of *Street Racer* is being able to have multiple players, and several variations in one game package.

SKIING

Company: Activision
Language: Assembly
Hardware Requirements: VCS

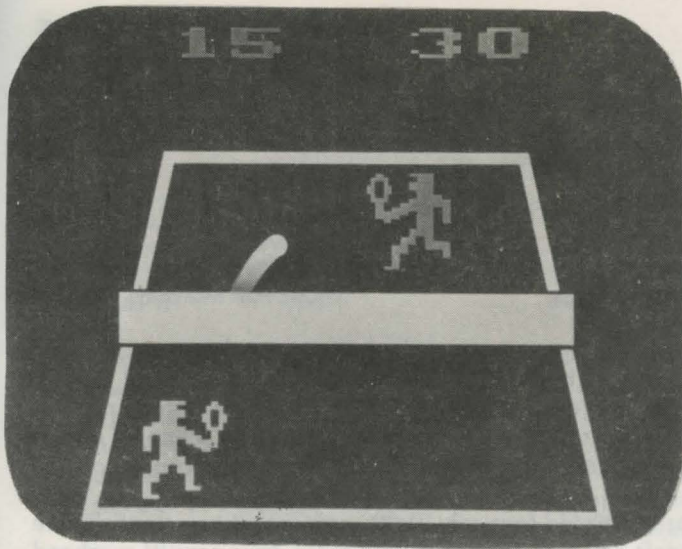
Department: Entertainment
Sugg. Retail: \$22.95
Availability: 8
Disk or Tape: Cartridge

OVERALL RATING	B	CONTROLABILITY	B-	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	C+	DOCUMENTATION	B
CREATIVITY	B	CHALLENGE	B	HOLDS INTEREST?	B-
GAME DEPTH	C+	GRAPHICS	B+	VALUE FOR MONEY	B

The speed and reckless abandonment of downhill racing and the challenge of slalom are to be found in Activision's *Skiing*. It's you against the clock in ten variations, five of which are downhill and five in slalom. Throw in the numerous pine trees and bumpy moguls that need to be dodged in the race, and this makes for a real challenging on-screen game.

The game's difficulty is increased by the addition of trees near the gate openings, and the demand that you time your jumps over the moguls. Moreover, the distance increases with each downhill race, as well as at the slalom gates where greater accuracy becomes a tricky key to the game.

As in all Activision games, the graphics are superb. The sound effects in this version almost make you feel the cold winter breeze in your face, the embarrassment of a fall, or the pain of slicing into the slalom flag. An additional bonus is given after you beat 28.2 seconds in the slalom run of game three — a certificate is issued to you welcoming you to the Activision ski team. See you on the slopes.



TENNIS



SKIING

BOXING

Company: Activision
Language: Machine
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$22.95
Availability: 7
Disk or Tape: Cartridge

OVERALL RATING	B-	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	B-	SKILL INVOLVED	B-	DOCUMENTATION	C+
CREATIVITY	C+	CHALLENGE	B	HOLDS INTEREST?	B
GAME DEPTH	C	GRAPHICS	C	VALUE FOR MONEY	B-

Your choice among the one or two player games of *Boxing* either pits you against the computer or against a soon-to-be-former friend. *Boxing* involves two boxers, each controlled by a joystick, with the punches thrown by pressing the button. An overhead view is shown of the boxers. Points are scored when a glove makes contact with the opponent's nose.

Two points are awarded when a connecting punch is thrown as the players are close together, and only one point is awarded when a longer punch is successful. The game is timed in two minute rounds. If 100 points are scored by any player, the bell sounds and a knockout is scored.

The difficulty switches on the game control the speed of the boxer's movement, and can handicap a more experienced player to even things up. The sound track is very good (glove contact sounds remarkably like the real thing). The pace is controlled by the players, and is one of the purest one-on-one games you will find. The outcome is based solely on the skill and reflexes of the players.

OTHELLO

Company: Atari, Inc.
Language: Assembly Language
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$22.95
Availability: 7
Disk or Tape: Cartridge

OVERALL RATING	A	CONTROLLABILITY	A-	ERROR HANDLING	N/A
GAME CONCEPT	A	SKILL INVOLVED	A	DOCUMENTATION	B
CREATIVITY	A	CHALLENGE	N/A	HOLDS INTEREST?	A
GAME DEPTH	B+	GRAPHICS	N/A	VALUE FOR MONEY	A

Othello is one of those "classic" games that, while simple in concept and easy to learn the basics of play, is in reality a very sophisticated and challenging game.

The game presents a field or board comprised of 64 squares. Each player has a color, and the object is to surround and capture your opponent's squares. This implementation of the game on the Atari VCS is well done. You have a choice of skill levels, and are able to play either against the computer or a more "human" opponent.

CHOPPER COMMAND

Company: Activision

Language: Machine

Hardware Requirements: VCS

Department: Entertainment

Sugg. Retail: \$31.95

Availability: 8

Disk or Tape: Cartridge

OVERALL RATING **A-**
GAME CONCEPT **B+**
CREATIVITY **B**
GAME DEPTH **B**

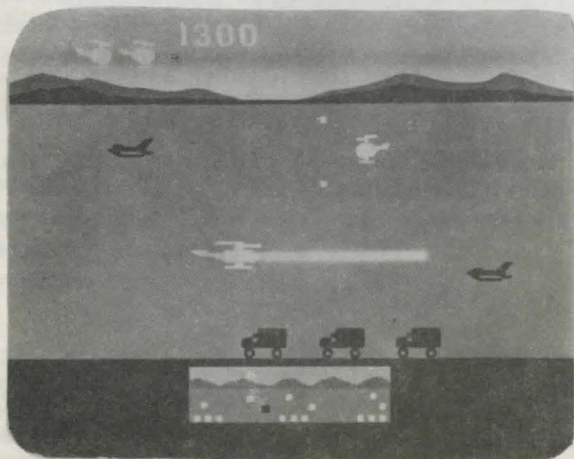
CONTROLLABILITY **B**
SKILL INVOLVED **B+**
CHALLENGE **A**
GRAPHICS **A**

ERROR HANDLING **B+**
DOCUMENTATION **A**
HOLDS INTEREST? **A**
VALUE FOR MONEY **A**

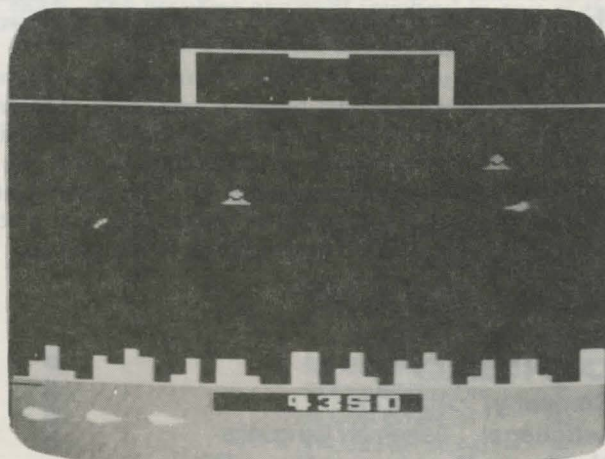
Chopper Command is a one or two player shoot-'em-up in which you command a helicopter whose mission is to defend a convoy of trucks from a pernicious swarm of enemy fighters and helicopters. Joystick control is very sensitive in this game, and may take a bit of getting used to. But once you get a feel for the helicopter's responsiveness, maneuvering it becomes very simple. It may also take a bit of time to cope with the "radar scanner" on the screen below the battlefield; this shows your position, the position of the enemy aircraft, and the position on the ground of the trucks you are defending.

You begin with three helicopters, and bonus helicopters are awarded for each 10,000 points that you score. There is a beginning and an advanced playing mode. Enemy aircraft come at you from both sides, firing multi-warhead missiles which split in two, one half aimed at you and one half aimed at the trucks in convoy. You must avoid these or shoot them down, and knock out the enemy aircraft with your laser cannons as they approach. Plus you must avoid crashing into your own trucks. Once you've cleared the skies of enemies, bonus points are awarded based on the number of trucks that survived the attack. Then you advance to the next level of play. The game will continue indefinitely, or until all of your helicopters are destroyed, whichever comes first.

If addition to a game is any indication of how good that game is, then I found this game to be very good. In my experience, virtually all of the Activision games have excellent graphics, and *Chopper Command* is no exception. The documentation is also very good, including playing hints from the program's author. This game is definitely worth the trip.



CHOPPER COMMAND



DEFENDER

DEFENDER

Company: Atari, Inc.
Language: Assembly
Hardware Requirements: VCS

Department: Entertainment

Sugg. Retail: \$37.95

Availability: 9

Disk or Tape: Cartridge

OVERALL RATING	B	CONTROLLABILITY	C-	ERROR HANDLING	B
GAME CONCEPT	B	SKILL INVOLVED	C	DOCUMENTATION	B
CREATIVITY	C+	CHALLENGE	C+	HOLDS INTEREST?	B-
GAME DEPTH	C+	GRAPHICS	C-	VALUE FOR MONEY	B-

Defender is an airspace battle game designed for one or two players (the two-player version alternates turns and compares scores).

Your mission in *Defender* is to protect your home city and its inhabitants from a continual alien onslaught. Your arsenal includes a laser cannon, and a limited supply of smart bombs (3 at the start of play). The laser cannon is fired in normal flight by using the joystick button. To explode the smart bombs, you need to fly alien vessels pictured on the screen. You can gain additional smart bombs every time you score 10,000 points, or multiples thereof.

You can increase the difficulty in other game selections, increasing the speed of the attacking fleet, and making the attacks and confrontations more frequent. Because of the limited graphics of the cartridge system, don't expect this to be an exact copy of the arcade game. The aircraft and aliens flicker, but the actual combat and theme are the same.

Another feature is the radar scanner at the top of the screen, which displays the position of all the aliens and the humanoids in relation to you. It is an aerial view that lacks much detail, and, in the heat of the battle, becomes a distraction. One good escape maneuver is the use of hyperspace warp. This you engage by going off the top of the screen and pressing the fire button. The landing ships swoop down and attempt to carry off your human inhabitants. If they successfully fly off the top of the screen with their captives, the humans will return as mutants and fight against you. The highest point values are scored by shooting these ships and then picking up the falling humans and gently depositing them back in the city (they can also free-fall to safety at the lower altitude levels).

PLANET PATROL

Company: Spectravision
Language: Assembly Language
Hardware Requirements: VCS

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 5

Disk or Tape: Cartridge

OVERALL RATING	B+	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	A-	SKILL INVOLVED	B+	DOCUMENTATION	B-
CREATIVITY	B	CHALLENGE	B+	HOLDS INTEREST?	B+
GAME DEPTH	A-	GRAPHICS	A	VALUE FOR MONEY	B+

Planet Patrol is a Hi-Res space shoot-'em-up that offers some excellent graphics, multiple phases of play, and some pretty good sound routines. It is playable by 1 or 2 players.

You are engaged in a search-and-destroy mission. You must travel to the planet "Spectra" in your advanced long range fighter craft, there to destroy the missile bases constructed by the enemy. These are well guarded by enemy fighters firing drone missiles at you, which fire heat-seeking missiles in turn. You score points by shooting down these drones and their missiles. But watch out for the heat-seeking missiles: they are indestructible to laser fire, your only defensive weapon. After you have survived one wave of enemy drones you must rescue a stranded pilot (in the black ship). The rescue gives you variable bonus points, depending upon the level of difficulty attained.

After the rescue (achieved by passing directly over the stranded ship), you must destroy a group of three missile bases. If successful in destroying them, you must avoid the heavy debris of their explosion. Failure to destroy the bases, or failure to navigate through the debris, will result in your destruction. If you have survived to this point, you must refuel by landing on the airstrips constructed by advance scout parties from your side. This is important, because your fuel supply is limited. Following refueling, you must face a wave of drones and missiles on the dark side of the planet, where the only illumination is provided by your laser cannon fire.

Survival to this point qualifies you for the next round, simply a repeat of the preceding sequence at a greater speed. Point values increase with the speed, and bonus ships are awarded to you for multiples of 10,000 points.

Offering 4 game variations, *Planet Patrol* is a challenger, and will hold your interest for a good while. Both a children's level and a more advanced children's level are set by the difficulty switch. At the advanced level, your ship is enlarged, making it a bigger target and so making it harder to survive.

MISSILE COMMAND

Company: Atari
Language: Machine Language
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$31.95
Availability: 10
Disk or Tape: Cartridge

OVERALL RATING	B+	CONTROLLABILITY	B+	ERROR HANDLING	N/A
GAME CONCEPT	A-	SKILL INVOLVED	B	DOCUMENTATION	B+
CREATIVITY	B+	CHALLENGE	B+	HOLDS INTEREST?	A-
GAME DEPTH	B-	GRAPHICS	B	VALUE FOR MONEY	B+

Missile Command is a one or two player game, the two player version requiring the alternation of turns. Your mission is to protect your planet and its six cities from destruction by incoming ballistic missiles. Your cities are attacked by successive waves of missiles, and your only hope is to direct your anti-ballistic missiles to intercept and destroy them.

The joystick controls the missile base gunsight, and can move in eight directions. Your ABM's are fired by the joystick button, and you can have as many as three missiles in flight at once. Points are scored for each enemy missile you destroy, and by counting how many of your six cities are still remaining at the end of each attack wave. You are allowed 30 rounds per wave, with new cities rewarded for every 10,000 points scored, plus bonus points for unused ABM's as an indication of your accuracy.

Each successive wave grows more difficult to knock out. The enemy missiles come in greater numbers and at increased speeds. The game ends when your cities are destroyed. The game variations deal with the speed of descent of the enemy fire, the numbers of enemy missiles, or inclusion of "Cruise" missiles used by your adversary. In more difficult games, these cruise craft descend in an evasive manner rather than a straight line. There are 34 variations of this game, including two speeds designed for novice players or children.

This home version is remarkably similar to the arcade version, which is known for its good sound effects. The effect of nuclear blast and the mushroom clouds over your destroyed cities draw you into the heat of battle. It's a game well worth considering, but you have to be kind of masochistic, really, because eventually you will be overwhelmed.

ATLANTIS

Company: Imagic
Language: Assembly
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$31.95
Availability: 6
Disk or Tape: Cartridge

OVERALL RATING	A-	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	A-	SKILL INVOLVED	B+	DOCUMENTATION	B
CREATIVITY	A-	CHALLENGE	A	HOLDS INTEREST?	B+
GAME DEPTH	B+	GRAPHICS	A	VALUE FOR MONEY	A-

"The Gorgons are attacking, Sir! What are your orders?"

"Man the laser cannon, quickly. We must save Atlantis!"

Ah, the beauty and graphic splendor of Atlantis. A city nestled delicately and terraced beneath the crystal clear ocean. This is a real challenger and charmer. A beautifully done, hi resolution, blow-'em-away game. There are four game variations, three for the single player and one for team play. The sounds are terrific, and this game manages to stay one step ahead of you as you strive to beat off the alien invasion from atop the Acropolis Command Post.

You receive points for each ship destroyed by any of your three guns. The center gun fires straight up and scores less points than the crossing angular fire of your side guns. Score over 10,000 points and a destroyed portion of Atlantis is restored. The attacks, moreover, come in waves, and just about the time you are recovered from one, the sound announces the advance of the next wave.

This game is well worth your investment.

YARS' REVENGE

Company: Atari

Language: Assembly

Hardware Requirements: VCS

Department: Entertainment

Sugg. Retail: \$31.95

Availability: 9

Disk or Tape: Cartridge

OVERALL RATING	B+	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	A-	SKILL INVOLVED	B+	DOCUMENTATION	B
CREATIVITY	B+	CHALLENGE	B	HOLDS INTEREST?	B
GAME DEPTH	B+	GRAPHICS	B+	VALUE FOR MONEY	B+

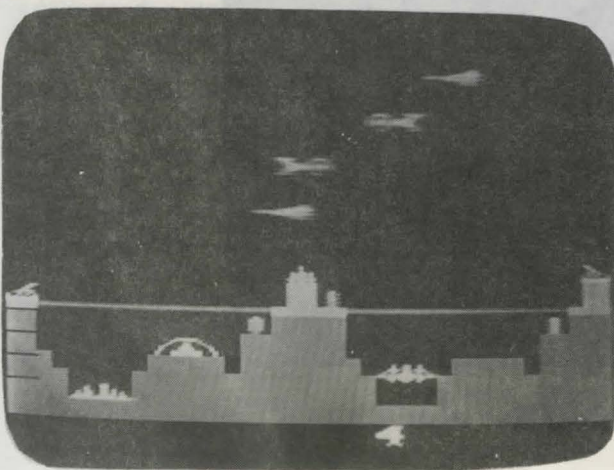
Yars' Revenge is a one or two player game in which, as Yars, your objective is to break through the enemy shield and destroy his base. Yars, an alien insect, is controlled with a joystick, and has much the same maneuverability as your average housefly.

The enemy base is surrounded by a shield composed of cells. To destroy these cells, you must hit them with energy missiles, or, more effectively, Yars must nibble away at the edges to the sound of rapid chiseling. When Yars has successfully chewed or blown a hole through the defenses, Yars acts as a "gunsight" to direct the fire of the formidable Zorlon cannon. You must buzz out of the way the instant you fire the cannon, or you'll end up shooting yourself down. The Zorlon cannon emerges more or less randomly for firing, not on command, so you may have to wait a bit before lining up a shot. A direct hit on the center of the base causes a colorful explosion on-screen and you progress to the next level of difficulty, in which the cells of the enemy shield move in a fluid way, sealing gaps in the defences if you're not quick. The sounds of Yars' chiseling, the various weapons, and the explosion are quite effective.

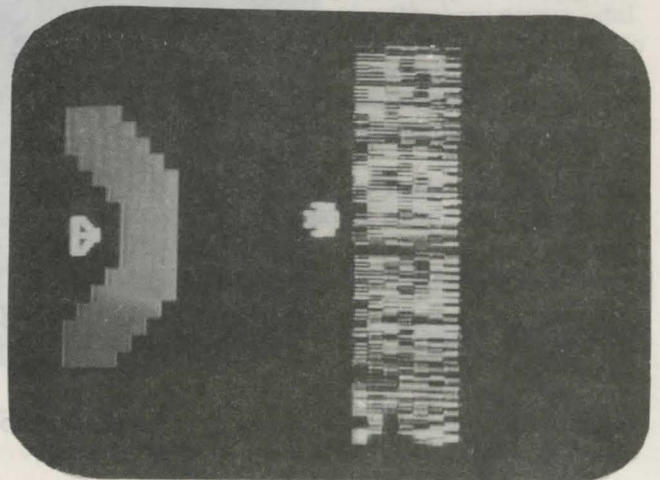
The shield is protected by enemy missiles which track you relentlessly (if slowly), and by rarer swirling explosives fired at you. These are very quick and noisy. The only escape from the tracking missiles is to lure them into the neutral zone in the middle of the screen; and you must dodge quick to avoid the whirling bombs. The graphics are block-like, but well done, especially the explosions. Yars is rather cute, too. When zapped by a missile, he stiffens upright, then falls down to the bottom of the screen like a cartoon insect clobbered by bug spray.

I found joystick control was sluggish, and so tended to cause over-reaction in movement around the screen. But, surprisingly, this only added to the challenge of the game. If Yars had really fine control, he could too easily elude the enemy's shots and win with no difficulty. Poor controllability actually adds to this game.

Seven game variations increase the difficulty by rotating the enemy shield and also making the Zorlon cannon blasts ricochet off walls and occasionally wipe you out. With all of this action and an enemy that continually pursues you, *Yars' Revenge* is played at a frenzied pace. It holds your interest so well that you don't have time to wonder who Yars is, where this drama is being enacted, and what he might be avenging.



ATLANTIS



YARS' REVENGE

GANGSTER ALLEY

Company: Spectravision

Language: Assembly Language

Hardware Requirements: VCS

Department: Entertainment

Sugg. Retail: \$29.95

Availability: 5

Disk or Tape: Cartridge

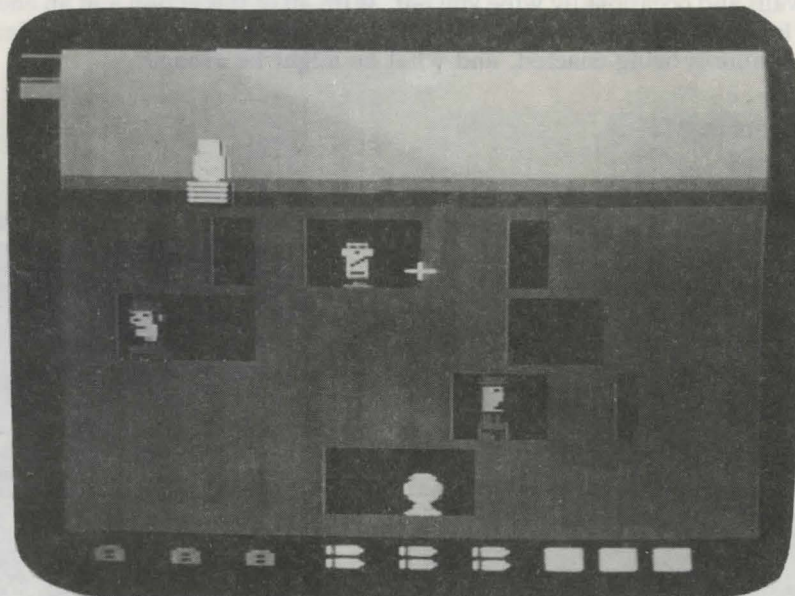
OVERALL RATING	B	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	B	DOCUMENTATION	B
CREATIVITY	B	CHALLENGE	A-	HOLDS INTEREST?	B-
GAME DEPTH	B	GRAPHICS	B	VALUE FOR MONEY	B

Gangster Alley is a game in which you play an agent of the SBI (Spectravision Bureau of Investigation). You have volunteered to face the gangsters Shifty, Scar Face, Mugsy, Lefty, and Nitro Ed in a showdown on their turf, "Gangster Alley."

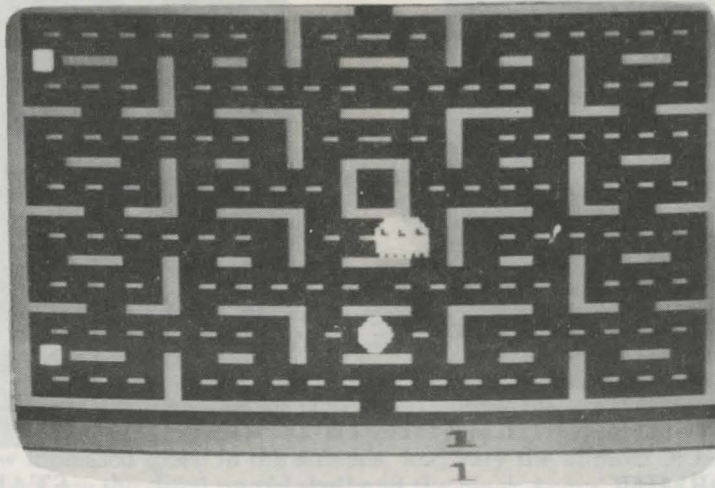
You are equipped with a rifle, 4 bullet proof vests, and 24 rounds of ammunition in each game round. You score dollars (points) for shooting these gangsters before they get a shot off at you from their vantage points in windows of a building where they appear momentarily and then disappear, only to reappear later in another window. To force you to think about blasting away at them, occasionally hostages (a woman and a child) appear in a window. Shooting them will cause points to be subtracted from your score.

You shoot the gangsters by placing your rifle's crosshair sight on the gangster in the window and pushing the button on your joystick. If they hit you first, you lose a vest. Lose all four vests and the game ends. Nitro Ed is on the roof, moving back and forth. You may shoot him any time, but you better shoot him when he holds one of his grenades over his head prior to dropping it on you. If you don't, the grenade will kill you in spite of your vest, ending the game immediately.

There are 4 game variations, a 1 or 2 player regular game and a 1 or 2 player children's version. Within each game variation, there are six levels of challenge, with each succeeding level moving faster. The fourth level is a night round, and the only illumination, which lasts a couple of seconds, comes from your special bullets.



GANGSTER ALLEY



PAC MAN

PAC MAN

Company: Atari

Language: Machine Language

Hardware Requirements: VCS

Department: Entertainment

Sugg. Retail: \$37.95

Availability: 10

Disk or Tape: Cartridge

OVERALL RATING **D+**
 GAME CONCEPT **B**
 CREATIVITY **B**
 GAME DEPTH **B**

CONTROLLABILITY **F**
 SKILL INVOLVED **D+**
 CHALLENGE **C**
 GRAPHICS **D-**

ERROR HANDLING **N/A**
 DOCUMENTATION **C**
 HOLDS INTEREST? **C**
 VALUE FOR MONEY **D+**

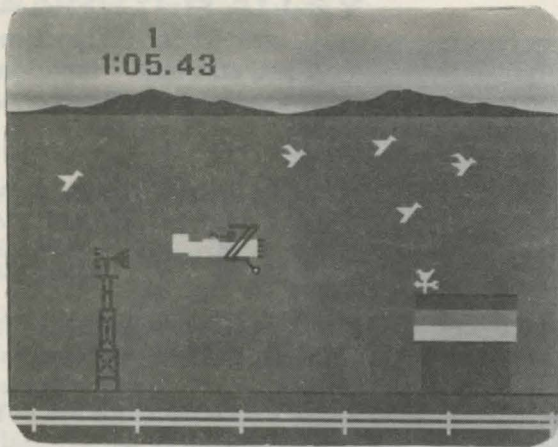
In an effort to reproduce the all-time favorite *Pac-Man* arcade game, Atari has fallen far short of expectations. If you have played the arcade game, the home version will be very disappointing. Limited graphics is the factor in its poor showing, causing all the characters to flicker. The second disappointing aspect of the home version is the very poor controllability allowed by the joystick.

The game is played basically the same as the coin-op version. Your Pac-Man moves about a maze, scoring points by eating video wafers. Four ghosts pursue you, and any contact (or even close encounters) with them proves fatal. There are, additionally, four power pills (one in each corner of the maze) that when eaten by Pac-Man allow you to turn the tables on the ghosts: for a limited time, you may eat them instead. Music signals the length of time you can pursue and destroy them. You score 200 for the first, 400 for the second, 800 for the third, and finally 1600 for the fourth. These high point scores are awarded only if they are all eaten in the short period permitted by the power pill's effects. You are provided four Pac-Men at the start of the game.

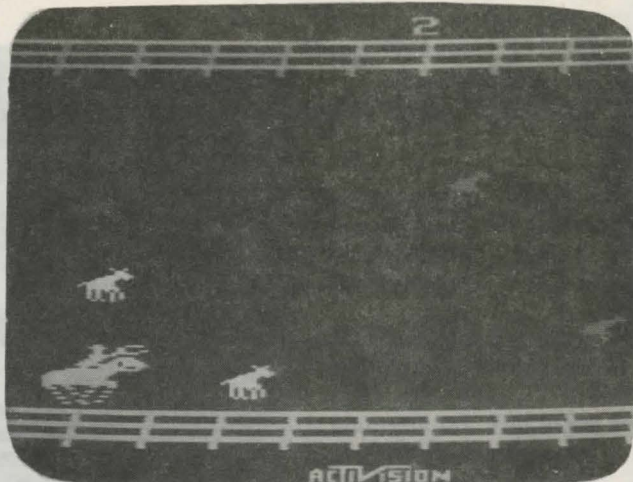
Vitamins, worth a higher score when consumed, appear periodically near the center of the maze. After the ghosts change colors (indicating an increased level of difficulty) a higher score is obtained after eating each successive ghost. Ideally you consume all four for the highest point totals.

The eight game variations deal with the relative speed of your opponents. The setting ranges from a crawling child's speed to that equal of your Pac-Man.

Game conception and creativity are the strong points, but the sorrowful control of your Pac-Man, and limited graphics, detract from its overall appeal.



BARNSTORMING



STAMPEDE

BARNSTORMING

Company: Activision

Language: Assembly

Hardware Requirements: VCS

OVERALL RATING **D+**
 GAME CONCEPT **C**
 CREATIVITY **C+**
 GAME DEPTH **D**

CONTROLLABILITY **C**
 SKILL INVOLVED **D+**
 CHALLENGE **D+**
 GRAPHICS **B**

Department: Entertainment

Sugg. Retail: \$22.95

Availability: 6

Disk or Tape: Cartridge

ERROR HANDLING **N/A**
 DOCUMENTATION **C**
 HOLDS INTEREST? **D-**
 VALUE FOR MONEY **C-**

One person can play *Barnstorming*, which is a timed game. You are the pilot of a bi-plane which you guide through barns or over windmills. The speed is regulated by the button, and altitude by the joystick, attempting to copy an old bi-plane's controls. The object of the game is to fly through a set number of barns in as short a time as possible. Other obstacles are birds in flight that slow you down when you hit them. There are four different settings of this game, each requiring a different number of barns to be flown through (10 up to a high of 25). The first three settings are the same course that, with practice, can be mastered. The fourth, and most difficult level, demands that 25 barns be conquered; and in each game the sequence of appearance is changed. The difficulty switch changes the barn clearance from low to high.

Activision, as is often the case, offers a certificate to players when the speed record for each game is broken. It seems to be the only challenge for this rather simplistic game.

CANYON BOMBER

Company: Atari, Inc.

Language: Assembly

Hardware Requirements: VCS

OVERALL RATING **C-**
 GAME CONCEPT **D+**
 CREATIVITY **D+**
 GAME DEPTH **D**

CONTROLLABILITY **C-**
 SKILL INVOLVED **D**
 CHALLENGE **D**
 GRAPHICS **D-**

Department: Entertainment

Sugg. Retail: \$22.95

Availability: 9

Disk or Tape: Cartridge

ERROR HANDLING **N/A**
 DOCUMENTATION **C**
 HOLDS INTEREST? **D-**
 VALUE FOR MONEY **C**

In *Canyon Bomber*, one or two players assume the role of airplane bombardier. Your objective is to release bombs over stationary bricks or moving sea vessels. Eliminating these scores you points.

The cartridge contains eight game variations. The first six games take you into a canyon filled with multi-colored bricks. These you eliminate as quickly as possible with your bombs. The final two selections bring you over moving sea vessels, and your paddle controls set the depth at which your bombs explode.

The graphics are block and too simplistic. Being unable to control the speed of your aircraft, the game offers little in the way of challenge.

STAMPEDE

Company: Activision

Language: Assembly

Hardware Requirements: VCS

Department: Entertainment

Sugg. Retail: \$22.95

Availability: 5

Disk or Tape: Cartridge

OVERALL RATING	C+	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	B-	SKILL INVOLVED	C+	DOCUMENTATION	B-
CREATIVITY	C+	CHALLENGE	C	HOLDS INTEREST?	C+
GAME DEPTH	C-	GRAPHICS	B	VALUE FOR MONEY	C+

Stampede brings a little bit of the Old West into the video game field. It is a one player game that lasts forever, so long as you don't allow three animals to stray behind you. Your point total is displayed on the screen.

You play the part of cowboy at round up time. Equipped with horse and lariat, you overtake various breeds of cattle and lasso them in order to score. Highest value ranges from 100 points for a black Angus, to a low of 3 points for a dark red Hereford. Jerseys at 25 and Guernseys at 15 are the remaining point values.

Variation in the difficulty switch lengthens or shortens your rope, depending on how hard you want to make it. The eight game levels show increased speed in the animals, and vary the number of beasts in the field.

Two obstacles to be wary of are the dried up old skull and the black Angus. These don't move, and can trip you up. If you fall, animals are sure to stray behind you and hasten the conclusion of the game. Overall, it is quite entertaining, and you can add to your playing time: with every score of 1,000, the stray animal limit is increased by one.

COSMIC ARK

Company: Imagic

Language: Assembly

Hardware Requirements: VCS

Department: Entertainment

Sugg. Retail: \$31.95

Availability: 6

Disk or Tape: Cartridge

OVERALL RATING	B+	CONTROLABILITY	B+	ERROR HANDLING	N/A
GAME CONCEPT	B+	SKILL INVOLVED	B+	DOCUMENTATION	B
CREATIVITY	B	CHALLENGE	B	HOLDS INTEREST?	B+
GAME DEPTH	B-	GRAPHICS	A-	VALUE FOR MONEY	B

Cosmic Ark is a real treat for those gamers seeking a hand and eye coordination challenger. The graphics are excellent and the controllability is superb, especially in the advanced versions of the game.

Cosmic Ark is a two part game in which your large spaceship (ARK) must fend off meteor showers in order to gain fuel and points. Should you survive the meteor shower, you may continue with your main mission, which is to pick up animals (in pairs) from the various planets throughout the universe. In order to do this, you must launch a shuttleship and capture these beasts in your tractor beam, but be sure to hold them in the beam long enough or they will wriggle out of your grasp. If you linger too long, the planetary defense systems will zero in on you and destroy your shuttle. And, if the alarm gong goes off, you had best get your shuttle back to the ARK to defend it against the next meteor shower.

There is a one and two players basic game, a one and two player meteor shower only variant, and a one or two player advanced version of both variants. The advanced game is a real challenge, and the game speeds up as you gain expertise. This reviewer had a rough time surviving even the first shower. You can make this level even harder by setting the left difficulty switch to A, so that the ARK becomes wider, and hence more difficult to defend.

This game is a must for every dyed in the wool, shoot-'em-up freak.

COMBAT

Company: Atari
Language: Assembly Language
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$22.95
Availability: 9
Disk or Tape: Cartridge

OVERALL RATING	C-	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	C-	DOCUMENTATION	C
CREATIVITY	C-	CHALLENGE	C-	HOLDS INTEREST?	C-
GAME DEPTH	C	GRAPHICS	D+	VALUE FOR MONEY	D+

As all Atari game owners know, *Combat* is the supplied game cartridge that accompanies the VCS when purchased. However, Sears VCS owners may consider purchasing the cartridge. It's strictly a two player game, and initiates you into the basics of joystick-controlled entertainment packages.

There are 27 two-player games included in this cartridge, divided into two groups: tank or aircraft battles. In the tank version you fire rounds at each other and score one point for every tank you blow up in the allotted time. Variations include range of bullets, visible or invisible tanks, ricochet of bullet (the most fun) and a choice between a wide open or "maze" battlefield.

The aircraft are either slow moving biplanes or fast jets. Your ammunition is either guided missile or machine gun fire; and the screen is either open or with clouds.

Control is entirely with the joystick. Tanks are steered left and right by pushing the stick side to side. Forward drives the tank. Control of the aircraft is similar, except pushing forward increases the air speed.

The game's graphics are Lo-Res, more block-shaped than smooth, and not very good. Most of the 27 variations are simple shoot-'em-up games that grow wearisome after repeated use. However, the tank "pong" games are extremely fun to play. Bullets ricochet off the walls for angled shots, and knowing how to calculate the angles makes these challenging games.

HUMAN CANNONBALL

Company: Atari, Inc.
Language: Assembly Language
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$12.95
Availability: 9
Disk or Tape: Cartridge

OVERALL RATING	C-	CONTROLLABILITY	D	ERROR HANDLING	C-
GAME CONCEPT	C	SKILL INVOLVED	D	DOCUMENTATION	C-
CREATIVITY	C-	CHALLENGE	C-	HOLDS INTEREST?	C-
GAME DEPTH	D	GRAPHICS	D-	VALUE FOR MONEY	C+

To safely fire your man from a cannon to an awaiting water tower is the goal in *Human Cannonball*. Arms and legs flailing, your man lands in the tower amidst cheers, or falls to earth while the computer taunts, "Ah, Oh!" In the one-player version score is kept by the ratio of successes to failures, while two players count only their successful ventures. The first to reach seven point in either game ends the contest.

There are eight variations to the same game with five variables. The theme remains the same, which is quite simple and easily mastered. The three settings in each shot (cannon position, speed of travel, and cannon angle) are either set by the joystick or computer, depending on the game selection. In some of the games the water tower can also be moved after your man is airborne. The fifth game variable is the addition of a moving window that must be shot through.

The sound track is fair at best, with the exception of the effects of bouncing your man off of the tower, or straight to earth, which are amusing. The lo-res graphics are unfortunately weak, and overall, I'd have to say the game is just below par.

WARLORDS

Company: Atari

Language: Machine Language

Hardware Requirements: VCS, paddles.

Department: Entertainment

Sugg. Retail: \$31.95

Availability: 8

Disk or Tape: Cartridge

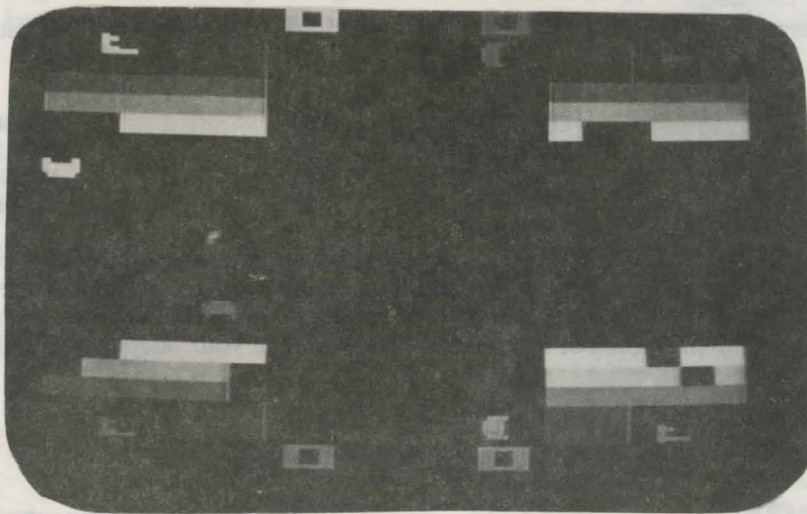
OVERALL RATING	A-	CONTROLLABILITY	B	ERROR HANDLING	N/A
GAME CONCEPT	A-	SKILL INVOLVED	B+	DOCUMENTATION	B
CREATIVITY	A-	CHALLENGE	B+	HOLDS INTEREST?	B
GAME DEPTH	B	GRAPHICS	B+	VALUE FOR MONEY	B

Up to four players can join or oppose forces in an effort to protect their king and castle in *Warlords*. In each corner of the playing board a brick wall is erected, with a warlord sitting behind it. Your paddle control blocks your own brick wall from destruction by the single fire ball bouncing about the board.

Selecting the number of players involves one (you against three computer rivals), two (each controlling two paddles), three (one computer rival), four (all single entries), or doubles (each team has one side of board). The shield protects from the fireball eating a path to each lord. The fireball eliminates one brick each contact until it touches and subsequently destroys your crown.

In 23 different game variations, the shield takes on different qualities, and the speed of the fireball changes. The shield, can either deflect fireballs, or catch and redirect them to a selected corner. The speed also has but two stages, fast or slow.

The sound effects are good; and with the possibility of as many as four participants, this game ranks high for entertainment and hectic action.



WARLORDS

SUPER BREAKOUT

Company: Atari, Inc.

Language: Assembly Language

Hardware Requirements: VCS, paddles.

Department: Entertainment

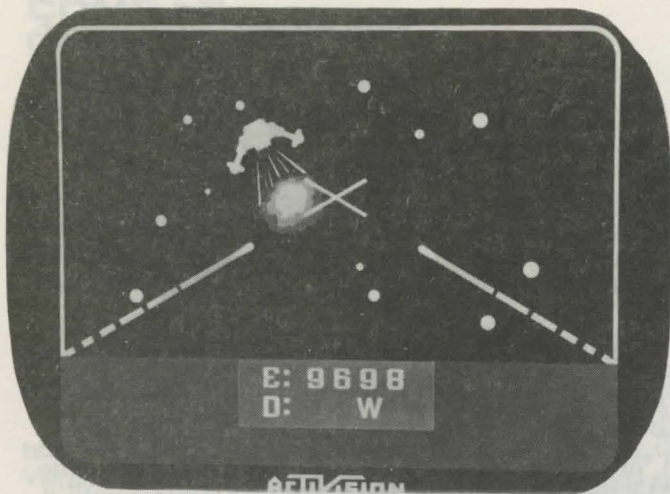
Sugg. Retail: \$31.95

Availability: 7

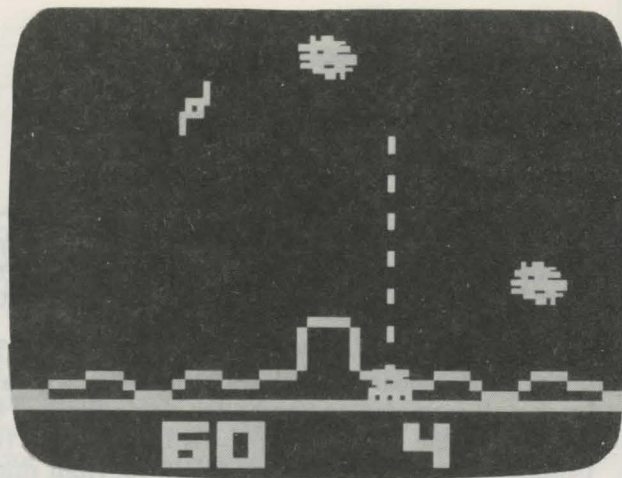
Disk or Tape: Cartridge

OVERALL RATING	C	CONTROLLABILITY	D	ERROR HANDLING	N/A
GAME CONCEPT	C+	SKILL INVOLVED	C-	DOCUMENTATION	B
CREATIVITY	C-	CHALLENGE	C+	HOLDS INTEREST?	C
GAME DEPTH	C+	GRAPHICS	C	VALUE FOR MONEY	C

The goal of *Super Breakout* is to control a moving "ball" with your paddle and knock down a row of bricks. Sound like a simple game? It is. Several variations of the game are included on this cartridge which help to add to its entertainment value. The game has been around for a while, but is still popular. See the review of the disk version of the game.



STAR MASTER



ASTROBLAST

STARMASTER

Company: Activision

Language: Assembly Language

Hardware Requirements: VCS

Department: Entertainment

Sugg. Retail: \$39.95

Availability: 6

Disk or Tape: Cartridge

OVERALL RATING	C	CONTROLLABILITY	B-	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	C+	DOCUMENTATION	B
CREATIVITY	B-	CHALLENGE	B-	HOLDS INTEREST?	C+
GAME DEPTH	C	GRAPHICS	C	VALUE FOR MONEY	B-

If I hadn't played *Star Raiders* on the Atari 800 first, I probably would have liked this game better. The object is to locate the enemy starship and shoot him down. The graphics, sound, and controllability aren't bad, but they lack the many additional features of *Star Raiders*. Yet there is enough in this VCS version, such as WARP TRAVEL, docking with a starbase for replenishment of fuel, and keeping track of your lasers, shields and radar situations, to make a pretty enjoyable game.

SPACE CAVERN

Company: Apollo

Language: Machine

Hardware Requirements: VCS

Department: Entertainment

Sugg. Retail: \$31.95

Availability: 4

Disk or Tape: Cartridge

OVERALL RATING	B+	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	C+	DOCUMENTATION	C
CREATIVITY	B	CHALLENGE	B-	HOLDS INTEREST?	B+
GAME DEPTH	C+	GRAPHICS	B	VALUE FOR MONEY	B+

Possibly the sound effects make *Space Cavern* such an enjoyable game. You can almost feel your skeleton disintegrate when you are struck by Electrosaurian fire power in this one or two player game. You are given a crew of four astronauts, and your assignment is to fight off flying aliens known as Electrosauri and the cave dwelling Marsupod which occasionally emerge to devour one of your astronauts. At ground level you have two types of weaponry: laser fire, released by the joystick button, to combat the flying aliens; and also disruptor-beam fire, activated by moving your stick up or down. Both destroy the ground attacks of the cave creatures.

There are three levels of difficulty. Each progressive level speeds the play. The two selections direct alien fire: one is straight down, and the other randomly angles down.

The graphics are well-defined and animation is smooth. Play is at a frantic pace, holding your interest and so making for good entertainment.

ASTROBLAST

Company: Mattel, Inc.
Language: Assembly
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$30.00
Availability: 6
Disk or Tape: Cartridge

OVERALL RATING	C+	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	B	DOCUMENTATION	B+
CREATIVITY	C+	CHALLENGE	A-	HOLDS INTEREST?	C-
GAME DEPTH	B	GRAPHICS	C+	VALUE FOR MONEY	C+

Astroblast is an adaptation for the Atari of Mattel's *Astroblast* designed for Intellivision, and it has suffered somewhat in the translation. It is of the "asteroids"-genre of space shoot-'em-ups. In this game, you are the "Chicken Little" of the Laser set: a plethora of space debris and gadgets rain down on your head. Your mission is to shoot them out of the sky before they land, and you are rewarded with survival and an accumulation of points. The debris consists of rocks, both large and small (the small ones are worth more than the large), and with the value of each increasing as your score increases. You may say this is nice; but their speed increases also, and their angle of descent changes, making it more difficult the longer the game lasts.

The game is a real challenger when speed increases, and if you change the difficulty switch to A, you're in for a trying time indeed. The gadgets that fall include pulsars, which try to home in on your base. There is no penalty if they land; but if you hit them, they are worth the points equivalent of 8 large rocks. Secondly, there are spinners, which cost you a laser base if they land; they have the value of 20 big rocks (or the value of two small rocks) when shot. Finally, there are UFOs to contend with when your score exceeds 20,000 points. They drop bombs on you. You score no points for shooting bombs, but you do score the value of 10 large rocks for hitting the saucer.

The sound effects are good. But although the game can be challenging, the concept and execution of it is unoriginal, and it soon becomes boring. *Astroblast* is not destined for the video game Hall of Fame by any means.

SPACE WAR

Company: Atari
Language: Assembly
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$12.95
Availability: 8
Disk or Tape: Cartridge

OVERALL RATING	D	CONTROLLABILITY	F	ERROR HANDLING	N/A
GAME CONCEPT	C-	SKILL INVOLVED	D	DOCUMENTATION	C
CREATIVITY	D	CHALLENGE	C	HOLDS INTEREST?	D-
GAME DEPTH	D	GRAPHICS	D-	VALUE FOR MONEY	D

The best thing that can be stated about *Space War* is that it provides good practice for your *Asteroids* game. There are two games in this cartridge, "Space War" and "Space Shuttle." In each, your spacecraft is exactly like the one in *Asteroids*, and is controlled in basically the same way. But here, unhappily, it is controlled with a great deal more difficulty.

There are 17 game variations in which "Space War" is strictly a two man game, while "Shuttle" lets you choose between a one or two player mode. "Space War" is a battle in which you attempt to destroy each other with laser fire, accumulating 10 kills before exhausting your limited fuel supply. In both games, four factors determine difficulty of play: galaxy boundry, warp drive, space sun, and hyperspace. They influence your ability to move off the screen as well as the speed of your craft.

"Space Shuttle" deals with guiding your ship in order to make contact with a module in constant motion. The same four factors, including the space sun factor (gravity simulator), are evident here. A couple of the game choices allow you to refuel, which is helpful and keeps the rendezvous effort from becoming completely frustrating.

This is quite a simplistic game, with simple block graphics to match. Not only is its concept yawningly simple, the game is uncontrollable. Joystick movement is sluggish and clumsy, and likely to drive an experienced player to irritation.

BRIDGE

Company: Activision
Language: Assembly
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$31.95
Availability: 8
Disk or Tape: Cartridge

OVERALL RATING	A-	CONTROLABILITY	A	ERROR HANDLING	N/A
GAME CONCEPT	A-	SKILL INVOLVED	A	DOCUMENTATION	A
CREATIVITY	A-	CHALLENGE	A	HOLDS INTEREST?	A
GAME DEPTH	A-	GRAPHICS	B	VALUE FOR MONEY	A

Bridge by Activision is a marvelous implementation of the game on a machine of so little addressable memory. Hats are off to Larry Kaplan, its designer, for the great job he has done.

The graphics display is very good and the controllability is complete with the use of joysticks. There are seven game choices available. Games 1 through 3 allow you to bid and play, and Games 4 through 7 let you set the contract and play without bidding. The difficulty switches enable you to use other options to review play possibilities.

This reviewer thoroughly enjoyed playing the game, and I highly recommend it to anyone who has more than a passing fancy for Bridge.

DRAGSTER

Company: Activision
Language: Assembly
Hardware Requirements: VCS

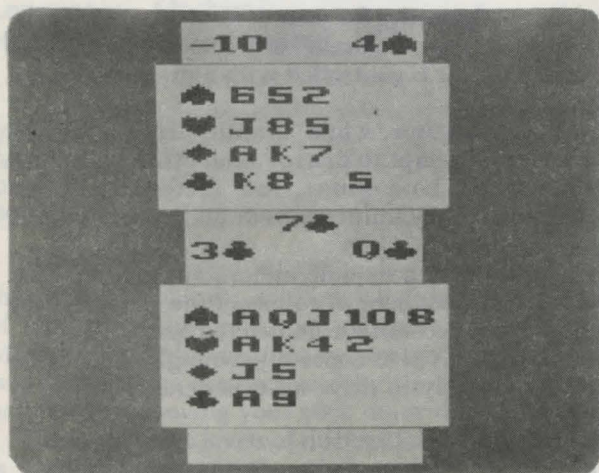
Department: Entertainment
Sugg. Retail: \$22.95
Availability: 8
Disk or Tape: Cartridge

OVERALL RATING	A-	CONTROLABILITY	A	ERROR HANDLING	N/A
GAME CONCEPT	B+	SKILL INVOLVED	A	DOCUMENTATION	B
CREATIVITY	A-	CHALLENGE	A	HOLDS INTEREST?	B+
GAME DEPTH	B	GRAPHICS	B+	VALUE FOR MONEY	A-

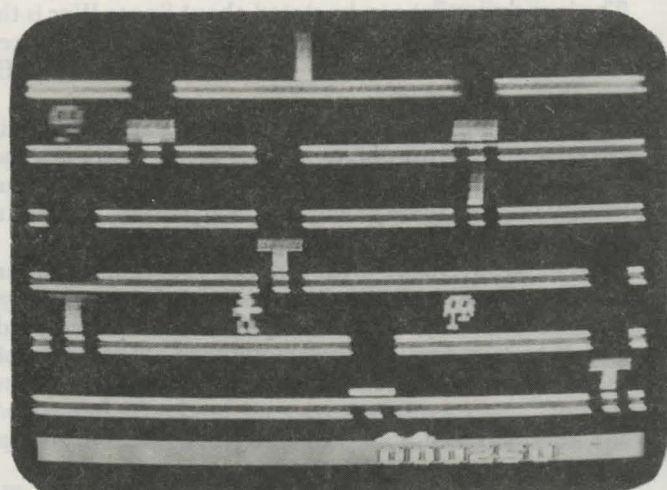
You can almost smell the nitro methane fuel on this one, which proves to be an excellent adaptation of a drag race scenario. *Dragster* has it all — from throaty engine roars to the quiet of a blown engine.

Dragster appeals to kids of all ages. It's a realistic confrontation between two fuel eating, fire breathing, AA dragsters, as they line up at the starting line for final eliminations. You play against the clock (or your buddy) in a test of speed and reflexes. The graphics are excellent (which is almost assumed on all of Activision's games), and the controllability is unsurpassed. Using a joystick, you clutch, accelerate, shift, and rev your way to victory. The documentation is excellent, and for further challenge, you can select game #2, which throws in steering as a game variation.

This one's a real winner.



BRIDGE



INFILTRATE

ASTEROIDS

Company: Atari

Language: Assembly

Hardware Requirements: VCS

Department: Entertainment

Sugg. Retail: \$34.95

Availability: 10

Disk or Tape: Cartridge

OVERALL RATING	B+	CONTROLLABILITY	B+	ERROR HANDLING	N/A
GAME CONCEPT	A	SKILL INVOLVED	B+	DOCUMENTATION	B+
CREATIVITY	B+	CHALLENGE	A-	HOLDS INTEREST?	B+
GAME DEPTH	B+	GRAPHICS	B+	VALUE FOR MONEY	B+

This is the home adaptation of the famous arcade game *Asteroids*. The mission remains the same as the coin-op version, to blast apart drifting asteroids blocking your path. They break up in three stages (larger to smaller), and can eventually be eliminated as an obstacle. Points are scored in each stage, with the higher total coming from the smaller target. The added advantages include color for the rocks, as well as added features and capabilities for your space craft.

Joystick control allows you to rotate, thrust, and fire your space craft in each game; but further selections allow three new features, including hyperspace (invisibility and relocation), shield (indestructible field), and flip (180 degree about face). To deploy these abilities, simply relocate your joystick.

Also, by adjusting the speed of attack of the two adversary UFO's and satellites, the difficulty factor changes. 66 variations are possible. Initially, four ships are provided. These are destroyed either by contact with the drifting asteroids or by enemy fire. Added ships are awarded at different point levels, depending on the game selection.

All in all, this is a good home version, one that has saved this reviewer a lot of quarters previously lost to the no-armed bandits at the arcade galleries.

INFILTRATE

Company: Apollo, Inc.

Language: Assembly

Hardware Requirements: VCS

Department: Entertainment

Sugg. Retail: \$31.95

Availability: 4

Disk or Tape: Cartridge

OVERALL RATING	A-	CONTROLABILITY	B+	ERROR HANDLING	N/A
GAME CONCEPT	A-	SKILL INVOLVED	B+	DOCUMENTATION	B
CREATIVITY	B	CHALLENGE	A-	HOLDS INTEREST?	A-
GAME DEPTH	B+	GRAPHICS	B	VALUE FOR MONEY	A-

"Your mission, Mr. Phelps, should you choose to accept it, is to infiltrate the enemy headquarters building, capture as many secret documents as possible, and get out alive. Three agents will help you accomplish this task."

Infiltrate, by Apollo, is an enjoyable spy-chase game. The graphics are very good, and the game concept and challenge are excellent. By using your joystick controls, you attempt to reach the documents stored on the top floor of the headquarters building, shooting enemy assassins en route as you hop from one elevator to the next. Many perils creep up along the way, such as being shot by enemy agents. Remember, though, that you have an unlimited supply of ammunition, and you may earn additional agents in the progress of the game.

You must move from the bottom level of the building to the 6th floor in order to score 3,000 points. You score an additional 3,000 points for reversing that route. Shooting assassins will earn you 250 points each, with an additional 75 bonus points earned if the assassin happens to be riding an elevator. For each 10,000 points scored, you acquire an additional agent — up to a maximum of six.

There are 6 game variations for the single player, as well as 6 game variations for the 2 player version. The difficulty switch allows you to add challenge to the game by giving the assassins more gun range. This game, in sum, is fun and addicting.

BERZERK

Company: Atari, Inc.
Language: Assembly
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$31.95
Availability: 10
Disk or Tape: Cartridge

OVERALL RATING	B-	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	C+	DOCUMENTATION	B
CREATIVITY	C+	CHALLENGE	B-	HOLDS INTEREST?	B
GAME DEPTH	C+	GRAPHICS	C+	VALUE FOR MONEY	B

Berzerk is Atari's VCS version of the famous arcade game of the same name. The only thing that is sorely missed is the onerous drone of "Quarter detected in pocket, play *Berzerk*."

You begin with three men, and you must fight your way out of a series of mazes inhabited by roving robots. You must shoot these robots while avoiding contact with either the robots or the walls, or face electrocution. Lose all three men and the game is over. You score 50 points per robot and a bonus of 10 per robot per maze if they are all killed. The robots do not mind running into walls or shooting each other occasionally, upping your score in the process. Watch out for "Evil Otto" (a happy face gone bad) when he appears in some of the game options to kill off everything in his path.

There are 12 game options. For example, you can have robots who do not shoot, robots who do shoot, an invincible "Evil Otto," an "Evil Otto" who can be shot, bonus lives for scoring multiples of 1,000 points, bonus lives at 2,000 points, or no bonus lives at all.

The control is very good, but not quite up to what I would like to see in this game. The fault must rest with the joysticks themselves. It is quite difficult to reach the corners of the screen. For instance, when your man appears on the screen and one of the robots is sitting off of his shoulder, he requires a shot between the upper right corner. This is very difficult with the game's present joystick control.

This is, however, a nice, playable game, and could add many hours of enjoyment to your video library.

FREEWAY

Company: Activision
Language: Machine
Hardware Requirements: VCS, joystick

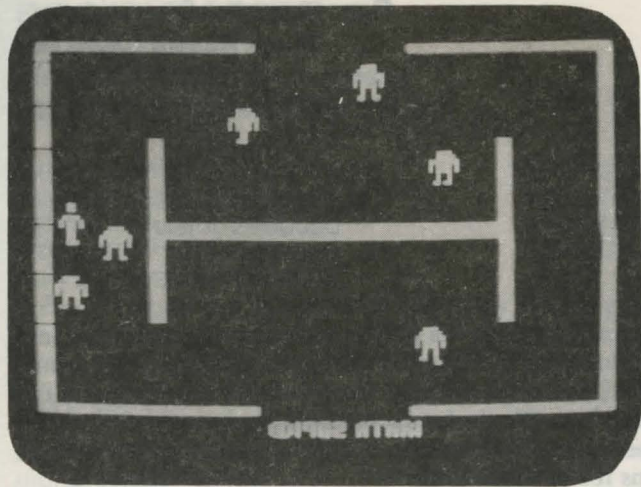
Department: Entertainment
Sugg. Retail: \$22.95
Availability: 8
Disk or Tape: Cartridge

OVERALL RATING	B	CONTROLLABILITY	B+	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	B	DOCUMENTATION	A
CREATIVITY	C+	CHALLENGE	B	HOLDS INTEREST?	C
GAME DEPTH	C-	GRAPHICS	B+	VALUE FOR MONEY	C+

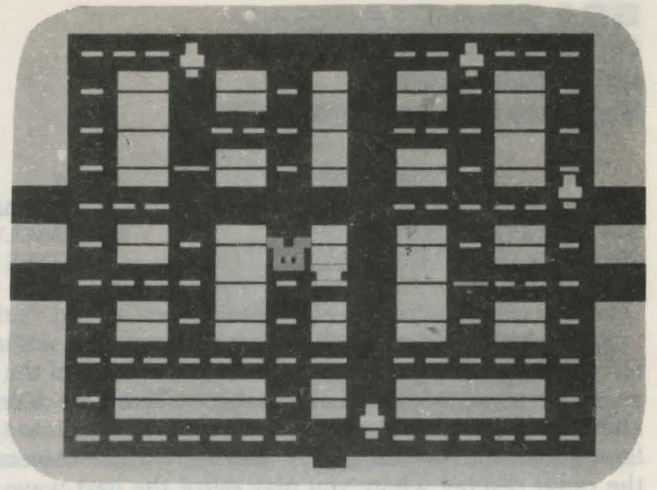
Why does the chicken cross the road? To score points! *Freeway* is a graphic representation of the old joke, and a cute one at that. The object of *Freeway* is to move your chicken across the eight lane highway without getting squashed, dodging in and out of traffic (four lanes move in opposite directions) and trying to beat the clock.

There are eight different levels of difficulty, chosen from various freeways around the country at particular times of day. Peak traffic hours, fast cars, and very busy freeways provide the greatest challenge. Game one starts you crossing Chicago's Lake Shore Drive at 3 am, and your daredevil chicken can advance to trying to survive Dallas's LBJ Freeway at 5 pm. Each game lasts two minutes and sixteen seconds, and you must try to cross as many times as you can without becoming a road casualty; one point is awarded for each successful trip. Your score flashes at the top of the screen when only eight seconds are left, warning you to hurry the last one. According to the level of difficulty you have chosen, your chicken may only bounce back one lane when hit or be thrown all the way back to the start.

The game is simplicity itself, and seems especially suitable for youngsters. The graphics are well done, but *Freeway's* sound effects are truly outstanding, the roar of traffic complete with honking horns and squealing brakes. It is a game all ages can enjoy, but I would recommend it for younger or beginning users.



BERZERK



LOCK 'N CHASE

LOCK AND CHASE

Company: Mattel M-Network
Language: Assembly
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$39.00
Availability: 3
Disk or Tape: Cartridge

OVERALL RATING	B-	CONTROLLABILITY	C+	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	C+	DOCUMENTATION	B
CREATIVITY	C+	CHALLENGE	C+	HOLDS INTEREST?	B-
GAME DEPTH	C	GRAPHICS	C+	VALUE FOR MONEY	C+

Lock and Chase is a "gobble-the-dots" game that is very reminiscent of the arcade favorite that we all know (and some of us love). The player assumes the role of a thief, and must collect all the gold bars on the maze without getting caught by any of the four policemen chasing him. Random treasures appear near the center of the screen that offer different bonus points. Once the screen is cleared of gold bars, the thief must escape through the disappearing red door at the top of the maze.

The speed of the game increases with your score. This provides a constant challenge. You earn additional men as you accumulate points; but there is no option to "take it out on the cops," meaning that there are no "power pills." There are good graphics here, and, as opposed to the other well-known version of this game, the policemen do not fade. There is also a two-player option that allows the players to alternate turns, each ending when their thief is captured. The game is enjoyable for the beginner, and a challenge for the hardened gamer.

SPACE CHASE

Company: Apollo
Language: Machine
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$31.95
Availability: 4
Disk or Tape: Cartridge

OVERALL RATING	D	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	D+	SKILL INVOLVED	C	DOCUMENTATION	C
CREATIVITY	D+	CHALLENGE	D	HOLDS INTEREST?	D-
GAME DEPTH	F	GRAPHICS	D	VALUE FOR MONEY	D-

One, or two players alternating turns, can engage in a *Space Chase*. You are given one fighter at a time, and encounter a set of alien craft over the surface of the Moon.

You are equipped with a rocket blaster. After destroying each set of alien fighters a new set appears, moving slightly faster and in greater numbers. You start out battling four, then reach a maximum of six. There are three levels of difficulty. Each level increases the speed of overall play and capabilities of the alien craft. Two other variables include the distance of your rocket's range, and whether you are fighting in the daylight or the dark.

Basically a simple game without much depth, it can be mastered in a short time. Considering what else is on the market in this same shoot-'em-up bracket, *Space Chase* seems both dull and overpriced.

SPACE ATTACK

Company: Mattel M-Network
Language: Assembly
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$30.00
Availability: 3
Disk or Tape: Cartridge

OVERALL RATING	C-	CONTROLLABILITY	C-	ERROR HANDLING	N/A
GAME CONCEPT	C-	SKILL INVOLVED	C	DOCUMENTATION	B
CREATIVITY	C	CHALLENGE	C	HOLDS INTEREST?	D
GAME DEPTH	D	GRAPHICS	B-	VALUE FOR MONEY	C-

Space Attack is a space shoot-'em-up game that sets up a scenario in which the player, as leader of the defense interceptor squadron, is responsible for the defense of the unseen Mother Ship. You must defend the Mother Ship from an attack by squadrons of alien saucers. Being the defense leader, you must assign your squadrons to each group of aliens, and then select which group you will take into the battle phase. You must shoot down the saucers with your laser guns while avoiding their return fire. After successfully destroying all saucers in one group, you are returned to the radar display where you may select the next wave of aliens for extermination.

Sound effects and graphics are very good, but as a shoot-'em-up game, it lacks an incentive due to the fact that there is no score. Nor is a time record kept of your conquests, so there is nothing on which to gauge the quality of your performance. Consequently, after a couple of games, boredom sets in and it is back to "gobbling the dots" on another cartridge.

MAZE CRAZE

Company: Atari
Language: Machine Language
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$26.95
Availability: 8
Disk or Tape: Cartridge

OVERALL RATING	C	CONTROLLABILITY	C	ERROR HANDLING	N/A
GAME CONCEPT	C+	SKILL INVOLVED	C	DOCUMENTATION	D+
CREATIVITY	C+	CHALLENGE	C	HOLDS INTEREST?	C
GAME DEPTH	D+	GRAPHICS	D+	VALUE FOR MONEY	C

Maze Craze is strictly a two player game. The basic game involves a race to see who can solve and leave a maze first. Each successive maze is different, and the difficulty levels vary. Your joystick control is limited to up and down or left or right movement.

During the run of the sixteen games choices several factors are added to challenge you and change the complexity of the game. You play the role of a cop, and various numbers of robbers are added in the maze (two, three, or five). They are also given different powers, either to wound or to kill you and so end the game. In other games, they must be captured by moving your man through the maze to make contact with them.

Also, there are four "visibility" factors to contend with. On the easiest setting the maze is totally visible; while the most difficult level (naturally) presents a maze that cannot be seen at all — until contact is made with one of the walls.

Although based on a simple concept, this game makes for some really fun occasions with friends involved in head-to-head conflict.

BRAIN GAMES

Company: Atari, Inc.

Language: Assembly Language

Hardware Requirements: VCS

Department: Entertainment

Sugg. Retail: \$22.95

Availability: 6

Disk or Tape: Cartridge

OVERALL RATING **B+**
GAME CONCEPT **B**
CREATIVITY **B**
GAME DEPTH **B**

CONTROLLABILITY **B**
SKILL INVOLVED **B**
CHALLENGE **B**
GRAPHICS **B**

ERROR HANDLING **A**
DOCUMENTATION **A**
HOLDS INTEREST? **B+**
VALUE FOR MONEY **A-**

Brain Games is a collection of relatively simple game/strategy programs suitable for very young children. They are, however, clever enough so that the child can have fun while learning some important motor skills. The package also assists in the development of logical thought processes.

The games are varied in content and difficulty. In "Touch Me," the computer plays a sequence of tones that the child must remember and later match. In "Picture Me," the youngster gets practice in memorizing objects on the screen; while in "Play Me Song Book," each key becomes a musical tone, and the documentation will assist in playing simple songs.

In all, this is a good beginning program for the children.

LOST LUGGAGE

Company: Apollo, Inc.

Language: Assembly

Hardware Requirements: VCS

Department: Entertainment

Sugg. Retail: \$31.95

Availability: 4

Disk or Tape: Cartridge

OVERALL RATING **B**
GAME CONCEPT **A-**
CREATIVITY **B**
GAME DEPTH **B+**

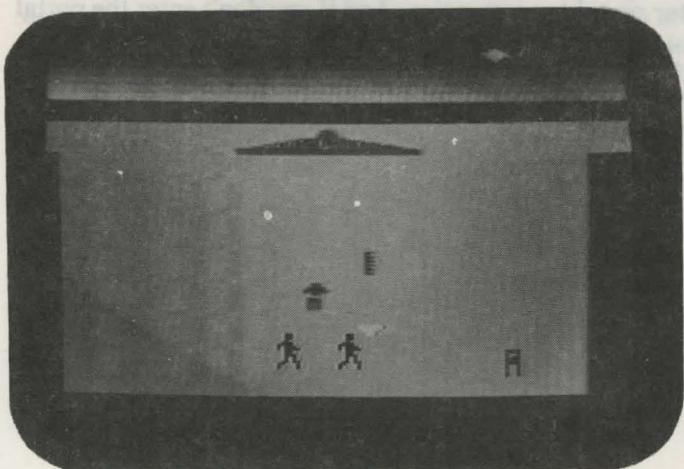
CONTROLABILITY **C+**
SKILL INVOLVED **B**
CHALLENGE **B+**
GRAPHICS **B**

ERROR HANDLING **N/A**
DOCUMENTATION **B**
HOLDS INTEREST? **B+**
VALUE FOR MONEY **B**

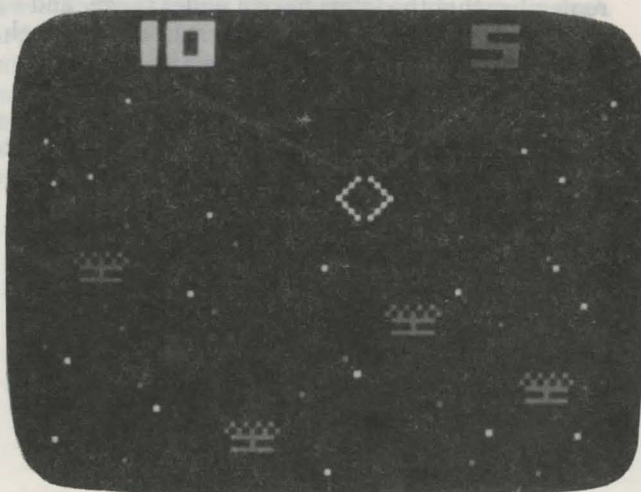
For those of you who are air travelers, you may have encountered this game in real life. *Lost Luggage* is a game in which you try to retrieve your luggage at an airport whose baggage carousel has run amok. As the carousel spews out luggage at an ever-increasing rate, it becomes your responsibility to catch it all.

Using your joystick, and moving in eight directions, you attempt to catch the luggage as it falls from the upper portion of the screen. If you fail to catch even one piece, it bursts open and spills out your most private unmentionables in one of the cutest routines that this reviewer has seen.

In a way, it's similar in concept to Activision's *Kaboom*. You begin with three suitcases already claimed, and have two men ready to do the catching for you. If you miss one of the falling cases, you forfeit one of yours. When all three of your suitcases are lost, the game is over. If you put the difficulty switch on "A" mode, you reduce the two catchers to one. There are 6 game variations: 2 for the single player and 4 for two players. One of the options includes random, black "terrorist" suitcases that explode on contact with the floor and end the game immediately. The sound effects with landing planes and parading unmentionables are very good, making this an infectious, habit forming game.



LOST LUGGAGE



SPACE ATTACK

SPACE INVADERS

Company: Atari, Inc.

Language: Assembly Language

Hardware Requirements: VCS

Department: Entertainment

Sugg. Retail: \$31.95

Availability: 9

Disk or Tape: Cartridge

OVERALL RATING	C+	CONTROLLABILITY	C-	ERROR HANDLING	N/A
GAME CONCEPT	C+	SKILL INVOLVED	C+	DOCUMENTATION	B-
CREATIVITY	C+	CHALLENGE	B-	HOLDS INTEREST?	B-
GAME DEPTH	C	GRAPHICS	C-	VALUE FOR MONEY	C+

Space Invaders is the home version of what was one of the first arcade video games on the market. The home version nearly duplicates the original (including its limited graphics), but goes a step further by adding 112 variations to this popular game. One or two players can participate and try out the many game variations obtained by adding features such as moving shields, zigzagging bombs, alien fire, and invisible invaders.

You are given three turns at fighting off the invading horde of aliens. Your base moves from side to side, and you fire with the joystick button. There are three protective shields to hide behind that are eaten away by the enemy fire, while the rows of aliens slowly advance toward you. Points are scored by hitting the aliens with your fire and eliminating them from the screen. An occasional saucer flies by and is worth bonus points if hit.

Space Invaders still has a nostalgic appeal. Part of this stems from the challenge of eliminating the enemy horde, and now from experimenting with the added features.

STAR VOYAGER

Company: Imagic

Language: Assembly

Hardware Requirements: VCS

Department: Entertainment

Sugg. Retail: \$31.95

Availability: 6

Disk or Tape: Cartridge

OVERALL RATING	B-	CONTROLABILITY	B+	ERROR HANDLING	N/A
GAME CONCEPT	C+	SKILL INVOLVED	C+	DOCUMENTATION	B
CREATIVITY	B-	CHALLENGE	C+	HOLDS INTEREST?	B
GAME DEPTH	B-	GRAPHICS	B-	VALUE FOR MONEY	B-

As commander of the ship in *Star Voyager*, your objective is to travel through hostile space to reach your starbase. You must pass through seven star portals to reach your destination; but be advised: between you and the star portals, the enemy awaits.

You are armed with lasers and photon torpedoes, and both will destroy anything in their path; however, remember that the lasers have a wider range, and subsequently use more energy. Should you run out of energy, you must attempt to evade the attackers until you reach the star portal to re-energize. And if you don't enter the portal properly, beware — the results can be disastrous.

The screen for the most part overlooks space, and there are four beeps to inform you that the enemy is approaching. A melody of sorts will announce the star portal is in the vicinity.

On the beginning level the game can become quite boring rather quickly. But mastering the more advanced level is a real challenge, and will prove to hold the interest of the player.

CHECKERS

Company: Activision
Language: Assembly
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$22.95
Availability: 7
Disk or Tape: Cartridge

OVERALL RATING	B	CONTROLLABILITY	A	ERROR HANDLING	N/A
GAME CONCEPT	B	SKILL INVOLVED	B	DOCUMENTATION	B
CREATIVITY	B-	CHALLENGE	B+	HOLDS INTEREST?	B
GAME DEPTH	B	GRAPHICS	B-	VALUE FOR MONEY	B

Checkers, from Activision, is an excellent implementation of the classic game on the VCS. The program is "smart," an able opponent for the player who seeks a solitaire game. The game will not let you pass up a jump of the opponent in favor of a move; this is in accordance with the basic rules of Checkers. It will not let you make illegal moves.

There are 3 levels of play for the single player (novice, intermediate, and expert); in addition, there is an option for two players. The red and white player positions can be reversed with the righthand difficulty switch. The movement of the pieces is accomplished by using the joystick, positioned over the checker with an "X" on the video board.

The program is a very able player, and is a real challenge to beat. The graphics are good and there is audible feedback to indicate the various processes. The screen blanks out while the VCS is "thinking" about its moves which it does with pretty good speed. All in all, a most enjoyable game for the *Checkers* fan.

LASERBLAST

Company: Activision
Language: Assembly
Hardware Requirements: VCS

Department: Entertainment
Sugg. Retail: \$22.95
Availability: 8
Disk or Tape: Cartridge

OVERALL RATING	C	CONTROLABILITY	B+	ERROR HANDLING	N/A
GAME CONCEPT	C	SKILL INVOLVED	B-	DOCUMENTATION	B
CREATIVITY	C	CHALLENGE	C+	HOLDS INTEREST?	C-
GAME DEPTH	C-	GRAPHICS	B	VALUE FOR MONEY	C+

Laserblast from Activision is a fast action shoot-'em-up game designed to be used on the Atari VCS system. This game can be traced back to the *Missile Command*TM genre of games, with one twist: in *Laserblast*, you command the invading forces who attempt to destroy the enemy bases on the ground.

You control your ships and rate of fire with an Atari joystick. The response is fast and accurate. But if you take a direct hit, don't despair. All is not lost, since you have maneuverability of your stricken ship, and can, in fact, destroy an enemy with your falling vessel. Bonus ships are awarded for every 1000 points scored; and there are four levels of play in this one player game, so even the heartiest gamer may stay interested.

The graphics and sound effects are good, as is true with practically all Activision games. The documentation is informative and even includes playing hints written by the author. In sum, an interesting game, but you might expect a little more in terms of depth and game concept.

FIRE FIGHTER

Company: Imagic

Language: Assembly

Hardware Requirements: VCS

Department: Entertainment

Sugg. Retail: \$24.95

Availability: 6

Disk or Tape: Cartridge

OVERALL RATING **C+**
GAME CONCEPT **B+**
CREATIVITY **B**
GAME DEPTH **C**

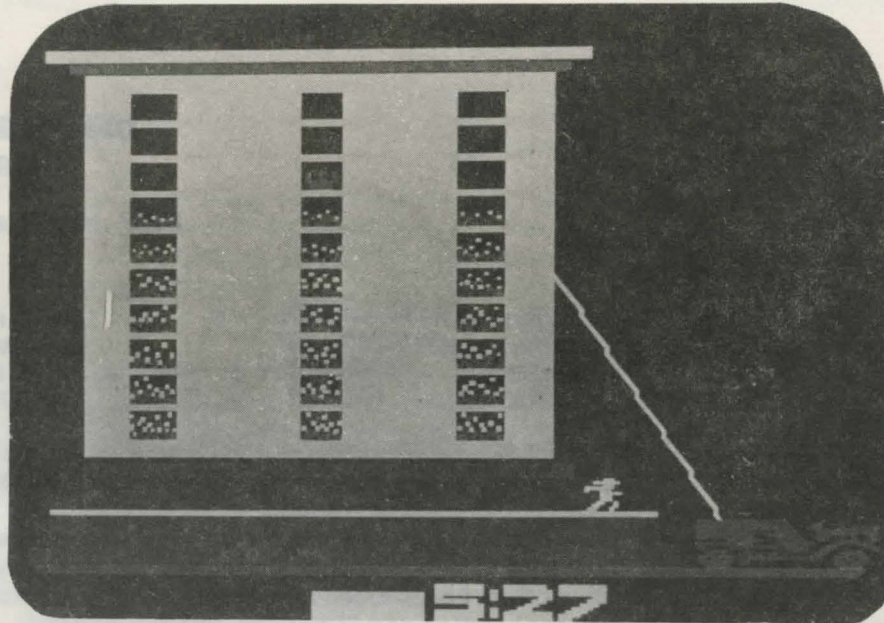
CONTROLABILITY **A**
SKILL INVOLVED **C**
CHALLENGE **C-**
GRAPHICS **B**

ERROR HANDLING **N/A**
DOCUMENTATION **B+**
HOLDS INTEREST? **C**
VALUE FOR MONEY **C+**

Fire Fighter is a game designed to appeal to all budding pyromaniacs in the crowd. Your mission, should you choose to accept it, is to put out the fire that is ravaging a high rise apartment complex, and to rescue its lone occupant with your hook and ladder.

The game is single player only, and is completely controllable with a single joystick. The screen indicates your dwindling water supply as you rush back and forth putting out the flames that are climbing the building. Meanwhile, a simulated clock keeps track of your elapsed time, and you must work on whittling it down. There is also a difficulty switch that can speed up the velocity of the flames.

The graphics are good and the sound is excellent; however, the challenge just isn't there. This is a game that would probably be well received by the younger child, but lacks the upgrading challenge of a well put together game.



THE ATARI

The Atari 400 and 800 computers are designed to be used with a joystick and a keyboard. The joystick is a very compact device that fits into a special slot on the front of the computer. The keyboard is a standard 48-key keyboard that fits into a special slot on the front of the computer. The Atari 400 and 800 computers are designed to be used with a joystick and a keyboard. The joystick is a very compact device that fits into a special slot on the front of the computer. The keyboard is a standard 48-key keyboard that fits into a special slot on the front of the computer.

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THE ATARI 5200

The Atari 5200, at a retail price of \$269.95, heralds a second generation in dedicated game machines. It is designed to replace the four year old 2600 system, offering improved graphics and larger, more complex software comparable to that offered in the arcades and on some home computer systems. As a non-expandable unit, it was designed to appeal to game enthusiasts who have no desire to own a more expensive computer. And with the addition of an adapter in May that will allow users to play Atari 2600 (VCS) cartridges, it is hoped that many of those owners will upgrade to a better game system.

The unit has a very streamlined appearance. The case is of smoked black plastic with a metallic silver trim. There is a concealed lid toward the back that houses the two controllers when not in use. Livingrooms may therefore have an uncluttered look when the unit is not in use.

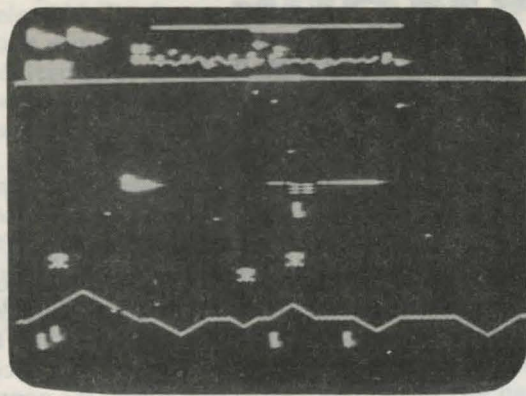
The two controllers combine a 360 degree analog joystick with a twelve button keypad. The controller has two trigger buttons on both sides, so that both left and right-handed users will feel equally comfortable. The unit also has reset, pause, and start controls. The joystick is analog rather than the old switch type. This allows better cursor positioning during play, but also allows accelerating movement (depending on how far from center the joystick is moved). While joystick game control is very good, games that require accurate and smooth paddle positioning, as in *Super Breakout*, don't work well with this stick. The old Atari type paddles and joysticks are not interchangeable because the pin configuration is both larger and different.

The games and graphics compare favorably to those found on the Atari 400 and 800 computer systems. This should be no surprise since the machine internally resembles an Atari 400 with a redesigned Pokey I/O chip. Many of the most popular Atari home computer game cartridges are being converted for the 5200. These include *Super Breakout*, which is packed with the unit, *Star Raiders*, *Centipede*, *Missile Command*, *Asteroids*, and *Pac-Man*. Since these cartridges can be as large as 16K, the cartoons are now available in the *Pac-Man* cartridge. Most of these cartridges retail at \$39.95. There are also a number of other cartridges to be available around the first of the year. They include *Galaxian*, *Defender*, and three sports games, *Soccer*, *Football* and *Baseball*. These will retail at \$31.95 each. Many readers wonder if other software vendors will supply cartridges in the near future. While it is doubtful that Atari will supply information that will enable third party manufacturers to do so, the similarity of the unit with that of the home computer will likely enable others to supply cartridges to 5200 owners.

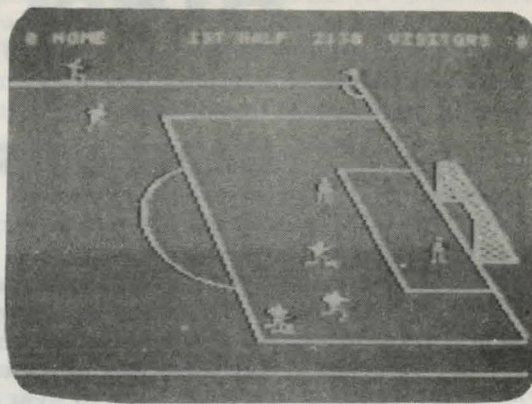
We were supplied with a unit in September that included five cartridges. Most of these were pre-released cartridges with EPROMs. The games supplied were very impressive, and two are discussed below.

Soccer is the most outstanding sports cartridge that I have ever seen. It features a very large scrolling play-field with eight detailed and animated players on each team. Like the Intellivision game, team members who don't control the ball are programmed to follow the play action. This cartridge surpasses all of its competition in that the team members position themselves properly for offensive and defensive plays, and head toward the ball when necessary. It's true that you only have fine control over one offensive or defensive player (indicated by a brighter team color), but this is sufficient. The graphics here are phenomenal. The ball moves slowly and in proper scale to the dimensions of the field and players, and, when kicked by the goalie after a save, it arcs high in the air and bounces several times. There is even a shadow below the ball. The goalie is very smart and can make most saves, but he is not under your control. He isn't perfect, so a high kick into the corner of the net usually scores. Yes, you can kick high or low using either of the two joystick buttons. The animation is so detailed that you can even tell which player is tossing the ball in on an out-of-bounds whistle. Either two people can play against each other, or a single player can challenge the computer and three different skill levels. It's an "awesome" sports game.

Defender is an excellent rendition of the William's arcade game of the same name. As many of you know, the object of the game is to defend 12 humanoids from kidnapping by alien fleet. You have a joystick-maneuverable ship armed with laser cannon and several smart bombs. The ship can fly in either direction over a scrolling landscape. A radar display at the top of the screen shows your location in relation to the enemy fleet that seemingly hyperwarp into your atmosphere. The ship is nicely controllable, both in speed and direction, with just the stick control. The ship moves faster the farther off center the joystick is moved. The lower button fires lasers, and the upper button, smart bombs. There is no hyperspace button as you find in the arcade version, but there is a space scene reached when you run out of humanoids. The game is certainly as challenging as the original arcade version.



GALAXIAN



SOCCER

ATARI HARDWARE

GAME I/O PORT PERIPHERALS

JOYSTICK — ATARI — \$9.95. Millions of these joysticks have been sold for use on both the Atari VCS and home computers. It is a joystick with a very simple mechanism. Tilting the stick pushes the nylon base against a piece of dimpled metal switch on the circuit board. When it is released and centered by spring action, the metal pops up, and the switch opens again. There are four of these contacts plus the one at the base of the fire button. The stick is certainly not arcade quality, and tends to wear out more often than any of the more expensive sticks. It's popular chiefly because of its very accurate response. Since it takes some force to activate, players are more sure of their movement and know when the stick has returned to neutral center. However, this excessive force tends to produce muscle fatigue, and many an *Asteroid* player's hand begins to cramp during a long game. The button is at the top left of the base and clearly favors right-handed players.

VIDEO COMMAND - ZIRCON - \$14.95. This joystick first appeared on the old Fairchild Channel F game unit. In many ways it is a good replacement for the Atari joysticks. They are slim and can be held in either hand. The joystick mechanism, which protrudes from the case at the top, moves easily in any direction while simultaneously acting as a firing button when pushed. Its low-spring tension is a relief when playing certain types of games that don't need accurate centering. It is great for games like *Star Raiders*, but performs very poorly in games that require precise positioning (e.g., *Missile Command*). It also isn't very good in games like *Frogger* or *Pac-Man*, where you must be sure you have returned to the neutral position before moving again.

STARPLEX CONTROLLER — STARPLEX ELECTRONICS — \$29.95. This unit has the same button configuration as the *Asteroids* arcade game. The left and right buttons are on the left side of the panel, the up (thrust) and fire button on the left, and the down (shields) below center. The buttons are extremely responsive, if not a little light on the touch. The unit doesn't take long to get used to, and is also suitable for playing *Galaxian* and *Space Invaders*-type games. The unit also has a "rapid fire" option. There is a small diode circuit requiring batteries; this allows the player to shoot continuously when depressing the fire button. This helps with fatigue problems associated with constantly pressing a fire button in shoot-'em-up games. The unit doesn't look very rugged, but has nicely withstood the neighborhood gang.

PADDLES — ATARI — \$14.95. These are the only paddles available for the Atari. They are potentiometer-type units that return a value over a linear range. They are quite suitable for any program that requires precise screen positioning. They can be used in a custom drawing program where each paddle represents the position on an axis. Or they can be used for games like *Super Breakout*, *Avalanche*, or *Clowns and Balloons*, which require smooth and accurate horizontal positioning.

LE STICK — DATASOFT — \$39.95. This is a rather novel joystick in that there are no moving parts. It has been designed to be held in one hand and simply tilted in the direction of desired movement. It has a set of mercury switches inside that close when the unit is tilted 20 degrees off axis. It has the usual joystick button at the very top and is fired with thumb action. This joystick takes getting used to. It works very well playing *Star Raiders*, but much less so playing *Pac-Man*. There is a second switch in the handle that will turn the unit off only while squeezing it. It does take the tension of holding the unit exactly upright while hyperwarping on the novice level in *Star Raiders*, but has little other apparent use. While LE STICK offers the freedom to play games with one hand, it isn't a joystick that everyone will like, nor one that works with all games.

PROSTICK — GAMES, INC — \$34.95. This joystick was built for durability. It uses four leaf-type switches rather than bubble contact switches. Each can be replaced separately, if necessary. The cable is strain-relieved. The joystick doesn't have much spring tension, yet has no trouble returning to neutral center. The fire button has a longer throw than most, and can't be rapid fired as fast. Game playability is good with this unit, much less fatiguing than with the Atari joystick. PROSTICK is rectangular and fits comfortably in one hand. The button placement clearly favors right-handed players.

COMMAND CONTROL TRACKBALL — WICO — \$69.95. This rugged unit is made by the same people who make trackball controllers for a large number of arcade machines. It is a solid piece of hardware that has a very smooth feel, and is capable of fast accurate positioning in games like *Centipede* and *Missile Command*. It is a large unit with felt non-skid pads on the base, and is meant to rest on a table. It also can be held resting on one knee. It has a very short throw fire button which is capable of "rapid fire" shooting. The unit does not behave as a real trackball in that it puts out pulsed joystick signals, and therefore does not position as rapidly as arcade trackballs. However, it works with any game that uses standard joystick input. It will not work in the (undocumented) *Missile Command* trackball mode. In my opinion, this unit makes games like *Centipede* finally controllable. Game scores are triple or more than those earned using a normal joystick. While the unit is good for certain types of games, it does not replace the joystick for others.

COMMAND CONTROL JOYSTICK — WICO — \$29.95. This oversized joystick is made from quality components. Leaf-type switches are used throughout for long lasting durability. The unit has two separate switch-selectable fire buttons. The first is one the base in the usual spot, while the second is on the top of th stick. The stick is long enough to allow one to grip it with the palm and fingers. The trigger can be fired with the thumb. The spring centering is rather soft. While this is less fatiguing, it does not reliably return the stick to neutral center and may cause problems in games like *Frogger*, where moves are only made after returning to center. Most other types of games play very well with this joystick.

POINTMASTER — DISCWASHER — \$16.95. This joystick was designed for the low end market, and the millions of people who are fed up playing with Atari joysticks. The unit is not very rugged, using bubble contact switches on a circuit board, as does the Atari. The fire button is placed on the top of the long pistol grip handle. The stick responds very well, and most people will double or triple their scores over their old Atari joysticks in many games. Although frankly I did not like the lack of a choice in the positioning of the fire button, many of the neighborhood children preferred this joystick over all the others. My only concern is its long term reliability, a factor which we were unable to test.



- A COMMAND CONTROL TRACKBALL — WICO
- B POINT MASTER — DISCWASHER
- C VIDEO COMMAND — ZIRCON
- D PROSTICK — GAMES, INC.
- E LE STICK — DATASOFT
- F JOYSTICK — ATARI
- G VIDEO GAME CONTROLLER — STARPLEX
- H COMMAND CONTROL JOYSTICK — WICO
- I PADDLES — ATARI

PRINTERS FOR YOUR ATARI

After you have purchased your Atari, filled it up to 48K of memory, added your first and probably your second disk drive, the next logical step is to add a printer.

Since the Atari can be "hooked up" to many printers, the potential purchaser is presented with a wide variety from which to choose. In view of that, *The Book* has chosen some of the more popular printers, presenting below a brief chart of their various characteristics to assist you in your deliberations.

We hasten to point out that this is a small sample of the number of printers available. However, in terms of price/performance, they are among the best.

The chart only refers to dot matrix printers: i.e., the characters are formed by a series of dots. Normally, the higher the matrix, the better the appearance.

CPS = Characters per second

CPI = Characters per inch

Type of Paper Feed = T(Tractor), F(Friction), P(Pin Feed)

DOT MATRIX PRINTERS

SPECIFICATIONS	IDS 460G PAPER TIGER	EPSON MX-80/ MX-80FT	EPSON MX-100	ANADEX DP 9620A	NEC 8023A-C	CENTRONICS 737 ATARI 825
SPEED (CPS)	160	80	100	80/132	100	80/50
BI-DIRECTIONAL	YES	YES	YES	YES	YES	NO
MATRIX TYPE	9x9	9x9	9x9	9x9	9x9	7x8
GRAPHICS	YES	YES	YES	YES	YES	NO
ADJUST LPI	6,8	6	6	6,8	6	6
5 CPI (Enhanced)	YES	YES	YES	YES	YES	NO
10 CPI (Standard)	YES	YES	YES	YES	YES	YES
16.5 CPI (Condensed)	YES	YES	YES	YES	YES	YES
PROPORTIONAL SPACING	NO	NO	NO	NO	YES	YES
LOWER CASE DESCENDERS?	YES	YES	YES	YES	YES	YES
FEED	T	T/F,T	F,T	T	F,T	F,P
[1-10] SERVICABILITY	5	8	8	8	7	6
[1-10] PRICE PER- FORMANCE RATIO	8	10	10	8	9	6
APPROX. RETAIL PRICE	\$1295	\$645/\$745	\$995	\$1100	\$795	\$995

WHOLE CHARACTER PRINTERS

	NEC Spin- writer 3500/7700	Diablo 630	QUME Sprint 7	Brother HR-1	Smith Corona TP-1	C.ITOH Starwriter F-10
SPEED (CPS)	35/55	32-40	45/55	16-20	12	40/55
PAPER WIDTH	16"	16"	13"	16.5"	13"	16"
GRAPHICS	NO	YES	YES	YES	NO	YES
COST	\$1995/ \$2535	\$2400	\$2490/ \$2625	\$1100	\$895	\$2000

A whole character printer is one whose characters are formed much like a typewriter. The characters are usually on a revolving daisy wheel, spun at high speed, and struck with a hammer in their appropriate places on the page. The paper for each of the line printers is tractor (pins) and friction feed, except for the *Brother* and *Smith Corona* units, which are friction feed only. The resulting text has a printed look, or typewriter quality finish.

MXPLUS

Dresselhaus Computer Products

\$49.95

MXPLUS is a small circuit board that plugs into your Epson Printer. It allows you to set the print mode directly on the printer using the three select buttons, rather than with complex Control codes in your program. In addition, it has automatic perforation skipover, a feature that the original Epson printer and Grafrax chip didn't have.

You install the chip "piggyback" over the ROM 1B socket. The *MXPLUS* board plugs into the chip's empty socket, and that chip plugs into the *MXPLUS* board. Two leads from the board are clipped to pins on the 1B and 1C chips. The exact locations are illustrated in the instructions, and the entire procedure takes less than ten minutes. The greatest portion of that time is spent taking off the printer's cover.

Eight print modes can be selected individually or in combination. They include condensed, double width, emphasized, double strike, italics (Grafrax only), 8 lines/inch, indent, and perforation skip-over. First activate the MPC by holding down the "on-line" button until it beeps. Each function is assigned a number of beeps. For example, emphasized print requires four beeps; that's three additional beeps added to the first. At that point, the function can be turned on or off with the FF button. The "on-line" lamp blinks a pattern that indicates whether a function is on or off. A long "on" with a short "off" indicates the function is turned on, while the reverse is true if the function is off. You exit the MPC mode by pressing the LF button. The "on-line" button is tapped again to put the printer back on-line.

This little accessory comes in handy when you are using various commercial packages. For instance, you may be using *Visicalc* and find that you forgot to put your printer into the 132 column (condensed) mode in order to print the entire spreadsheet. You can make the change without affecting the software. It is also very convenient when using various word processors and you want to select emphasized/double-strike for a high quality final draft. And you can use the indent feature for program listings, so that you will have room in the left margin for the three hole punch.

In sum, it is an excellent and useful product, compatible with all Epson MX-80/100 printers, with or without Grafrax/Grafrax + chips. While the Grafrax + chip now includes skip-over perforations, the *MXPLUS* offers the convenience of setting print modes without learning complicated Control codes.

The Votrax *Type 'n Talk* speech synthesizer is a second generation peripheral that adds speech capabilities to any micro computer equipped with an RS-232 serial interface. Unlike earlier units, and some software packages, this unit allows an unlimited vocabulary while using virtually no computer memory. As a refinement of earlier speech synthesizers it offers much more understandable speech and the ability to use standard English word input rather than the more difficult phoneme system.

A unit such as *Type 'n Talk* opens up a wealth of possibilities especially in the educational field. It has been proved that people are much more responsive to human speech than the printed word. An important point in a screen full of instructions may be ignored or missed, but a voice will immediately capture a person's attention. Young children are also more apt to pay attention to an educational package if prompting or praise is by voice.

The unit consists of a separate microprocessor and a Votrax speech chip incorporated into an attractive enclosure that matches the color of both the Apple and Atari computers. The Votrax contains a small amplifier that will power any small speaker. There are also controls for volume and frequency. This later control varies the tone of the machine. It can speak in a slow bass voice or a fast alto voice. In all cases it has a definite male tonal quality, close to a monotone. It sounds as one would expect a computer voice to sound.

Atari users will have no problem interfacing *Type 'n Talk* to the RS-232 port of the 850 Expansion Interface Module. Votrax sells cables for any of these interface combinations, and provides technical data if you choose to wire the cable yourself.

The *Type 'n Talk* unit is easy to interface to the user's programs. Any string consisting of ASCII characters can be read by the Votrax. The unit has a 700 character buffer, so that nearly a minute of speech could be sent to the synthesizer, and while it was speaking, the program could continue with its task. When the buffer full, it sends a signal to the computer to wait before sending more characters.

The most important factor when considering a speech synthesizer is a person's ability to understand it. Probably 80% of first time listeners can understand three-quarters of the sentences without missing a word. It usually takes several minutes of listening to gain proficiency. However, there are some people who simply cannot understand these units. These are the types of individuals who usually respond with "what?" when you speak to them. Frankly I found the Votrax unit much more understandable than the speech spoken by Street Electronic's Echo II speech synthesizer.

Approximately 90% of normally spelled words will be pronounced correctly by the Votrax. The difficulty lies in the complexity and spelling peculiarities of the English language. In many cases users must try a phonetic spelling to achieve understandable speech. For example, the word "today" is pronounced "tod-day" by the unit. Spelling the word "tудay" corrects the problem. Sometimes words must be broken up with spaces to achieve recognizable speech. "Computer" is a good example because it is pronounced "com-put-ter." Spacing the word on input like "com-pu-ter" works fine. The word "mouse" drove me crazy trying to find a correct phonetic spelling. It sounded like "mus" until I tried "ma ose." The unit's documentation includes a list of words and their phonetic spellings. "Ware" is spelled "wayr" and "country" as "kuntry."

Phoneme input is also available but this entails a more involved procedure. The major advantage is greater accuracy. But it requires separating words into their phonetic parts, matching these vowel and consonant sounds in a table, converting them to their ASCII equivalents, then sending them to the Votrax. At first glance it is very difficult, but with lots of practice it becomes tolerable.

There are a number of practical uses to which *Type 'n Talk* units have been put. One company is using it to prompt users who call for information. It responds through tones from push-button phones. I experimented with the Votrax to help rent bikes and skates at a friend's shop. It was entirely menu driven for simple operation by the girl at the counter. The computer would greet the customer, then ask if they wanted to rent bikes or skates. The operator would press the S or B keys, and a sub-menu would appear on the screen. Thus, the various questions or rules would be explained to the customer. For instance, the store required a \$25 deposit if the rentee had an out of state driver's license. It could figure the bill and announce what was due in the course of the transaction. What was surprising was the reaction of the customers. About a third ignored the computer voice entirely. Some were surprised that computers could talk in an understandable fashion, while a small minority could not understand the machine. Many who believed that the computer could only respond in a very limited fashion were surprised when we put it in a type and talk mode where anything they typed would be spoken. Teenagers are particularly impressed when it properly delivers their favorite four letter words.

MARK I EPSON REINKER

SAS Electronics

\$10.00

The *Mark I Epson Reinker* is a clip on unit for re-inking Epson cartridge ribbons. It clips on to the cartridge on the far right side. A felt pad rests against the ribbon and draws its ink supply by capillary action through a wick from an ink supply beneath it. The unit is simple to install. They recommend glueing the cap to the Epson plate beneath the cartridge. The unit works well, especially when using the ribbon continuously. The problem occurs when the printer is left idle over long periods. A very dark spot appears on the ribbon and thus on your printout. This can be cured by winding the spot past the print head and into the cartridge where it will dissipate with time. For people who do little printing this may be the better way to go, as it costs only a third of the price of the motorized unit.

MARK II EPSON REINKER

SAS Electronics

\$30.00

The *Mark II Epson Inker* is a motorized re-inking machine that is capable of re-inking Epson MX-80 and Epson MX-100 ribbons at extremely low cost. Considering that cartridge ribbon replacements cost \$15 each, this machine will pay for itself after two ribbons.

The unit consists of a cast iron chassis that positions the cartridge so that a small motor turns the feed knob. The ribbon feeds past a cylindrical, inked pad which is kept inked through capillary action from a small internal reservoir. The forty or so feet of ribbon are pulled slowly past the pad until re-inked. This normally takes at least 20 minutes, but on badly worn-out ribbons it may take over an hour. While saturating the pad may decrease re-inking times, I was reluctant to do so on the theory that over-inking the ribbon was impossible to correct without running the printer until the ink intensity was back to normal. The manufacturer doesn't recommend using the ribbon immediately after since the re-inking process tends to be slightly uneven. It normally takes several hours for the ink to become uniform. The ink itself is of rather low viscosity and can be purchased for \$2.00 from the manufacturer. Each bottle lasts a very long time, so that buying regular stamp pad ink may not amount to much savings if it doesn't work as well. As to whether the machine is worth it, yes! Especially if you do a lot of printing. Otherwise, consider the unit discussed next.

RECOMMENDED READING LIST

There is probably no other individual device in your possession that has more practical potential than your Atari Computer. However, in order to fully realize that potential, you must make the effort to learn as much as possible about it. To assist in this endeavor, we recommend the following books:

	TITLE	PUBLISHER	APPROXIMATE RETAIL
(1)	<p><i>Your Atari Computer</i></p> <p>A comprehensive guide to the Atari 400/800 computer. Excellent book for the beginner or advanced BASIC programmer. Infinitely better than the manuals that come with your computer. A book definitely worth owning.</p>	Osborne/McGraw-Hill	\$16.95
(2)	<p><i>De Re Atari</i></p> <p>A detailed look at the Atari's unique graphics and sound features by several top programmers. Chapters include: displays, player missile graphics, scrolling, display list interrupts, GTIA, sound, color, and character set graphics. But a very dry book for advanced programmers.</p>	APX	\$19.95
(3)	<p><i>Atari BASIC - Learning by Using</i></p> <p>Teaches some of the advanced graphics and sound features of BASIC through short programs that the reader is encouraged to experiment with. An important list of PEEKS and POKES is included.</p>	ELCOMP	\$9.95
(4)	<p><i>Games For The Atari</i></p> <p>Eight sample games (seven BASIC and one in machine language) show programmers how to design games using player missile graphics features. The explanations, which are brief, may not be adequate for beginning BASIC programmers. However, advanced programmers may gain insight by reading the commented assembly language listing of the <i>Gunfight</i> game.</p>	ELCOMP	\$7.95
(5)	<p><i>Inside Atari DOS</i></p> <p>Contains a complete source listing of Atari Dos 2.0S complete with</p>	Compute Books	\$19.95

TITLE

PUBLISHER

APPROXIMATE
RETAIL

- comments, and a detailed explanation of each module of code. Written by the author of the Atari *Disk Operating System*.
- (6) *Computel's First Book of Atari* Compute Books \$12.95
A compendium of *Computel* magazine articles from 1980-1981 book issues. Includes a memory map.
- (7) *Computel's Second Book of Atari* Compute Books \$12.95
Its 250 pages contain unpublished Atari articles on a variety of subjects. Many contain "ready to type" program listings. For beginners to experts.
- (8) *Atari Assembler* Reston \$12.95
An introduction to Assembly Language programming. Recommended for use with the Atari assembly language cartridge. Not the best of authors, but an adequate book.
- (9) *Atari Sound & Graphics* John Wiley \$9.95
A self teaching guide for beginners. It shows how to compose tunes, create sound effects, draw cartoons, and write simple games in BASIC.
- (10) *Stimulating Simulations* Hayden \$5.95
Contains twelve simulation games in BASIC. Each is flowcharted and documented.
- (11) *Picture This!* Addison-Wesley \$14.95
An introduction to computer graphics using Turtle graphics in the PILOT language. Recommended for use in conjunction with the PILOT cartridge.
- (12) *Master Memory Map* Santa Cruz Software \$6.95
The most complete list of Atari 400/800 memory locations available. A highly detailed memory map. Lists thousands of locations and routines. A must for the advanced programmer.

APPROXIMATE RETAIL PRICE TITLE

There is probably no other individual who is as well versed in the use of the Atari computer as the author of the following books:

- (1) **Atari Computer** by **John Wiley** \$12.95
The first and only book to give you a complete, step-by-step guide to the Atari computer. Includes a memory map.
- (2) **Atari's Second Book of Atari** by **John Wiley** \$12.95
Its 230 pages contain unpublished Atari articles on a variety of subjects. Many contain "ready to type" program listings. For beginners to experts.
- (3) **Atari Answer Book** by **John Wiley** \$12.95
An introduction to Assembly Language programming. Recommended for use with the Atari assembly language cartridge. Not the best of authors, but an adequate book.
- (4) **Atari Sound & Graphics** by **John Wiley** \$12.95
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SOFTWARE HOUSES

Acorn Software

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Atari Program Exchange (APX)

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Automated Simulations, Inc./EPYX.

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Discwasher

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St. Louis, MO 63132
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Santa Barbara, CA 93101
(805) 963-3487

Gebelli Software
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981 University Avenue
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(408) 399-2200

Infocom, Inc.
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(617) 492-1031

In-Home Software
2485 Dunwin Drive, Unit 1
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Canada
(416) 828-0775

Innovative Software Design
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Las Cruces, NM 88001
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St. Louis, MO 63129
(314) 846-6124

London Software
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L & S Computerware
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Sunnyvale, CA 94087
(408) 738-3416

Macrotronics, Inc.
1125 N. Golden State Blvd.
Turlock, CA 95380
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(see Avalon Hill)

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(408) 446-3099

Prism Computers
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Lathrup Village, MI 48076
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Greenwich, CT 06830
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Reston, VA 22090

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(312) 297-4747

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North Bend, OR 97459

Sentient Software
P.O. Box 4929
Aspen, CO 81612
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Sirius Software
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Sacramento, CA 95825
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Starplex Electronics, Inc.
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Liberty Lake, WA 99019
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Synapse Software
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(415) 527-7751

Syncro
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Westlake Village, CA 91361
(213) 889-9508

Synergistics Software
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San Jose, CA 95134
(408) 946-9000

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500 Stephenson Hwy.
Troy, MI 48084
(313) 588-2050

Wico - Consumer Division
6400 W. Gross Point Road
Niles, IL 60648
(312) 647-7500

Zircon International, Inc
475 Vanell Way,
Campbell, CA 95008
(408) 866-8600

Zork Users Group
P.O. Box 20923
Milwaukee, WI 53220

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Engineering	Engineering	Engineering
Finance	Finance	Finance
Information Systems	Information Systems	Information Systems
Marketing	Marketing	Marketing
Operations	Operations	Operations
Production	Production	Production
Quality Control	Quality Control	Quality Control
Research & Development	Research & Development	Research & Development
Sales	Sales	Sales
Supply Chain Management	Supply Chain Management	Supply Chain Management
Training	Training	Training
Human Resources	Human Resources	Human Resources
Legal	Legal	Legal
IT	IT	IT
Manufacturing	Manufacturing	Manufacturing
Project Management	Project Management	Project Management
Procurement	Procurement	Procurement
Public Relations	Public Relations	Public Relations
Security	Security	Security
Shipping & Logistics	Shipping & Logistics	Shipping & Logistics
Software Development	Software Development	Software Development
Systems Administration	Systems Administration	Systems Administration
Technical Support	Technical Support	Technical Support
Telecommunications	Telecommunications	Telecommunications
Transportation	Transportation	Transportation
Warehouse	Warehouse	Warehouse

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