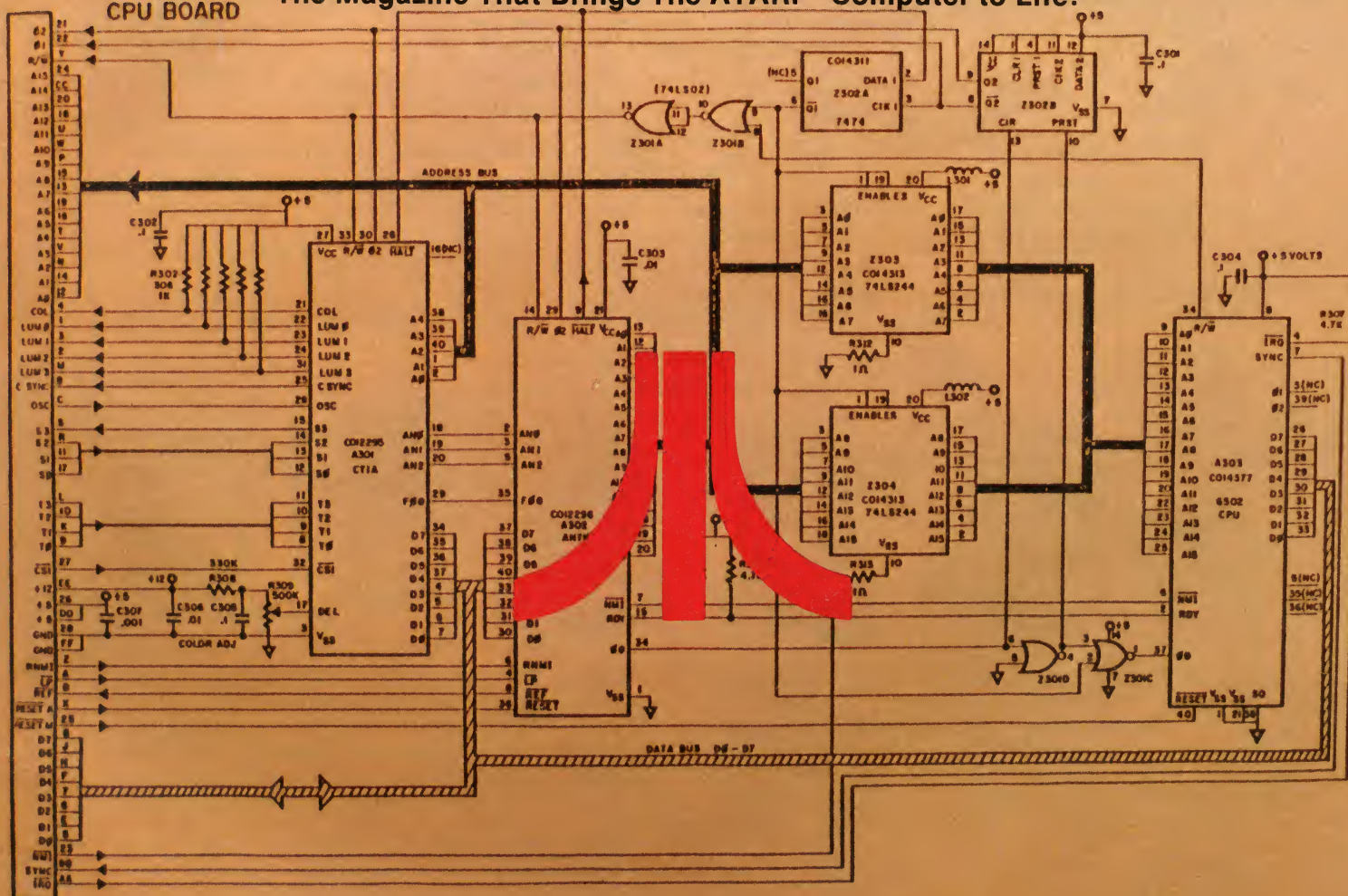


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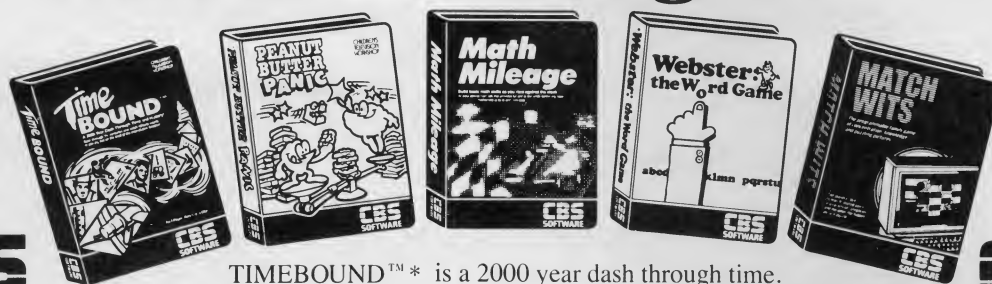


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Vol. 1, Issue 7

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EDITORIAL

ROM is now in its second year of publishing. We believe that we have improved our quality with each issue and that we have helped many Atari users improve their programming skills.

I have an editorial reply to make to the magazine "HI-RES". Until their May/June issue it was an Atari only magazine, but now also includes Commodore. In the Column, "From the Editor", a subscriber wrote saying, "I subscribed to your magazine on the understanding that it was for Atari only, now that you have added Commodore, don't bother renewing my subscription." I agree with the reader. If one magazine divides its attention between two computers, its coverage of each is diminished and the reader receives only half of what he believes he had purchased.

In its editorial, Hi Res made a statement that concluded as follows, — "while Atari's future is best described as debatable". In reply, I would say this; since Atari's structural basis is sound and whatever financial problems they might now be having are in the process of being resolved, it is my opinion that it is Hi Res's assessment of the situation that is debatable.

As far as Antic and Analog are concerned, I consider them to be excellent Atari magazines and subscribe to them regularly myself. I believe that all magazines with a common interest are mutually supportive and have something to offer the reader and each other.

Now that I've said what I wanted, I can speak a little of what we have in this issue. First, we have the machine language game "Depth Warrior" by Jack Chung, a sequel to his last game "Sky Warrior". "Depth Warrior" features four animated submarines battling it out underwater in order to be the Ruler of the Sea. Next, we have a game called, 'Midway' by Bob Cockroft. This game, based on the epic battle of World War II, pits the player against the computer who is trying to take Midway Island. The third game "Alpha miner" by Tom Tran, is an educational one in which you can learn the letters of the alphabet. Also, since ROM went to the "Summer Consumer Electronic Show", we are able in this issue to present a preview of what is coming up in the next year. Other things include: a tutorial on page flipping, a horse racing program, reviews, and an article on modems.

I know you'll enjoy what we have in store for you in the coming year and hope you'll become a regular reader.

Peter Ellison
Editor/Publisher

LETTERS

Dear ROM:

A world of thanks for the issues sent to me. I just couldn't believe what your firm had done. Most of the magazine companies that I have ever dealt with seem to be biased against Canadian submissions. I never did receive a response to the very same articles sent to a couple of other computer magazines.

It just goes to show you what "Real" people are all about. Also I have enclosed our 1st club newsletter for you. As it is a first attempt, we didn't do so hot but at least we tried. I have also sent some cartoons for you to read, I am not asking you to publish them, they are for your enjoyment.

Also, I would like at this time to make a slight suggestion as to a good article to use for an upcoming issue. As a Canadian Atari Support Group, we have a heck of a time finding out who the other Canadian groups are. Maybe sometime you could publish an up-to-date list of the user groups? Sure would appreciate it.

Thankyou again for your excellent service, you have convinced another group of people the Ataris are the better micro and will stay that way for quite a while to come. As manager of a computer shop in the city, I use your magazine as a selling point for the Atari Computers that I sell.

Kevin Greggain
Saskatoon, Saskatchewan

Dear Kevin:

First let me say on behalf of the ROM staff members, thankyou for you compliments. We really enjoyed the cartoons that you sent and have included a few of them in this issue. We also enjoyed your first newsletter, it was quite good. If you saw issue number one of ROM you'll see how much we've improved. Your suggestion on giving a list of user groups sounds quite interesting, we'll give that some thought. I wish you luck in your publication.

Dear ROM:

It has been quite a while since I've seen a magazine with so many fresh and new ideas. Just after reading your magazine, which I had picked up in a computer store just out of town, made me realize what a good magazine you have here. I especially enjoyed the assembler language listings, as I do some assembly work myself. I hope you can keep up the quality and please don't change your style.

Fran Lawson
Red Bank, NJ.

Dear Fran:

We at ROM try to keep our ideas new and would be glad to hear comments on what you would like to see done. We will continue to give entire assembly language listings to all of our games as to help people like yourself become more proficient in programming.

Dear ROM:

Well finally a magazine for the Atari the layman can understand! I read each issue cover to cover and especially enjoyed, "Jake The Software Dude" in issue No. 4. My only complaint is, it disappears from the newstand too quickly!

Maureen Knapp
Victoria, B.C.

Dear Maureen:

We don't mind hearing complaints like this as long as everyone can get an issue. This is why we keep our subscription prices down, so no one has to miss an issue as a result of it being sold out.



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ROM GOES TO SCES

By Peter Ellison

The 18th International Summer Consumer Electronic Show, which attracted a record-breaking 98,271 attendees, was held June 3-6 in Chicago and ROM was there to cover it. There was so much software to see from Atari and a lot of different third party software houses. Below is just a small look at what I saw. And to make it simple to read over, I'm going through the list of companies alphabetically.

ACTIVISION, which was originally software for the VCS only, has in the past year made conversions for the ATARI computer. It has just released three new games for the ATARI. They were "H.E.R.O.", "Zone Ranger", and "Zenji". H.E.R.O. marks the debut of R. Hero, a gritty rescue expert called upon to



save dozens of miners trapped deep inside a volcanic mountain. R. Hero, strapped inside a prop pack, must maneuver through a volcano, honeycombed with tunnels, in order to save dozens of trapped miners. Zone Ranger is a rebel Warrior commissioned by Earth in the year 2130 to enter an unexplored zone of the universe. It is known to be deadly; no ranger has ever returned from it alive. His goal: to survive. I found the graphics to be quite good and the play very unique. Zenji challenges the player to connect the glowing maze of elements (the Many) to a pulsating source (the One) while avoiding the constant threat of Flames of Desire and Illusions they emit.

ALPHACOM were demonstrating some very nice low-cost printers. Their printers will work with most popular personal computers as they make interface cables for each one. The Alphacom 81 (80 column thermal printer) retails for the low price of \$169.96. The Atari interface cable is \$44.95, which means you can have a printer and interface for a little more than the price of Atari's interface. This printer will also print all of Atari's control characters and dump graphic screens. They also have 20 and 40 column printers that are quiet and fast.

Now on to the booth that makes the best computer on the market, ATARI. Atari had many new games to demonstrate, including a new games system called the 7800. This all-new, state-of-the-art game console allows the best graphics seen on any videogame/home computer system on the market. It boasts 256 color shadings; finest resolution; more complex and sharply defined action on-screen; and over a 100 objects on-screen at one time. A custom 4K chip, which Atari has nicknamed 'Maria' is at the heart of the system. Atari won't tell how they got so much in the one chip, but it seems to be the central force in the machine's capabilities. Next issue will feature a complete review of the system.

While there were games to play on the new 7800 scattered throughout Atari's gigantic booth, computer games were also featured. New games for the Atari included arcade classics like "Track & Field" (Konami), "Jr. Pacman" (Scrolling screen), "Crystal Castles", and "Donkey Kong Jr.". These arcade games were so close to the arcade that I almost thought that I was in one with all of the games playing. Track & Field even comes with its own special controllers as in the arcade.

Two new games made by Lucas Films for Atari were "Ball Blazer" and "Rescue on Fractulas". Ball Blazer, a split scrolling screen, one or two player game, was quite an amazing work of graphics. The play is against the computer or head-to-head with a human opponent. The second, Rescue on Fractulas, is one in which you are a starship captain flying over the

surface of Fractulas, in order to save crashed pilots on the surface below. You must maneuver your craft to land and pick up survivors without yourself dying. Quite a fantastic flight simulator in itself.

New games from Atari that were not from the arcade or Lucas Films were two called, "The Last Starfighter" and "The Final Legacy". Both of these games have excellent graphics and play, living up to Atari's tradition of great games. (Star Raiders) The Last Starfighter has the player flying over the surface of a scrolling planet outside the atmosphere, fighting different types of Alien spacecraft. The Final Legacy, my personal favorite, is called a sequel to the renowned game, "Star Raiders". The graphics are much better with three different combat screens which are: Air to Sea, Sea to Sea, and Sea to Land. This means that there is a large variety in game play. This game, I feel, will make as big an impact on the game market as did Star Raiders four years ago.



Inside Atari's booth were demonstrations of a piece of hardware that I was dying to try. This was the new "Atari Mindlink". The piece of equipment that was strapped to my head looked like something from out of the movie, "Brainstorm". The Mind Link which would check the tension level of my head was plugged into a special box and then from there into one of the Atari's joystick ports. Breakout was on the screen at the time. I was amazed when I was able to move the paddle back and forth just by the amount of tension I asserted. "Look Ma, No hands!" More points were racked up as I became more relaxed. The Mind Link will work with a lot of the older programs, but to use the Mind Link to its full potential, newer revised versions will soon be available. The Mind Link will retail for the low price of \$80.

Synfile, Syncalc, and Syntrend, business programs developed by Synapse for Atari were displayed, showing the capabilities of the Atari with regard to business related functions. These three excellent programs will be reviewed in depth in the next issue of ROM, after we have conducted many hours of experi-



mentation on them.

After seeing all that Atari had to offer at the fair this year, I knew Atari was on the comeback. In the next year I think you'll see Atari begin to get a larger portion of the home computer market. They have the best computer, all they need is the right promotion. Good Luck Atari in the coming year!

AVALON HILL, a company that was at one time only a boardgame company, released four new games for the Atari Computer. One was "Quest of the Space Beagle", a sequel to Jupiter Mission 1999. The next program, "Market Forces", is a fast moving and educational game that portrays what real-world economics is all about. In the third game, "Clear for Action", you command up to five cannon-laden sailing vessels and attempt to out-sail and out-gun another human opponent or computer. The last game, "Combat Chess", is a graphic strategy wargame with ten different map screens available. In this one or two player game, you attempt to out-manuever and out-battle your opponent in classic wargame fashion.

BRODERBUND software who is famous for its original games of "Lode Runner" and "Chop Lifter", has done it again with the release of a sequel to Lode Runner, "Championship Lode Runner". This game will include 50 complex screens compared to



the original of 150. After each level a different tune is played, giving the player the incentive to keep going. A player completing the 50th screen will have a special password displayed, and after Broderbund has verified that number, the Player's name will be published in major computing magazines.

One game I found quite enjoyable to play at the fair was "Spelunker". It has a hi-resolution scrolling screen where players jump over bottomless holes, climb ladders, and swing from rope to rope in search of treasure. The graphics were good, playability fantastic and it took some great will power for me to pull myself away from the game. "Whistler's Brother", another arcade-style game, also with a scrolling screen and colorful graphics, was one with a little bit of a twist. Players have their hands full with two players to control: An absent minded archeologist, and his smarter brother (The Whistler Brothers). It becomes difficult because the absent minded brother begins to wander, making it quite a task to keep him from going astray.

The fourth new game from Broderbund is for those who enjoy playing the classic, Star Raiders. "Stealth" is a 3-D scrolling game that places the player in a realistic looking plane flying above a planet's surface. It is quite a task as you dodge firing bunkers, animated radar missiles, volcanoes, craters, and negative energy fields. You'll navigate over positive energy fields to power your craft and charge your weaponry during your epic flight toward Dark Tower.

CBS software has three new educational programs in the tradition of Sesame Street. They are "Astro-Grover", "Big Bird's Funhouse", and "Letter-Go-Round".

In the first game children help their Sesame Street pal Grover greet and count the friendly Zips from planet Zap by pressing one of the nine keys of the Easykey. Correct answers help Grover build a beautiful city or launch a zippy spaceship. Lively graphics and music hold attention while children work toward a goal of Grover performing his exciting dance. In Big Bird's Funhouse children invite their Sesame Street friends and make them hide from Big Bird. They practice concentration, memorization, and sequencing-important pre-reading and pre-math concepts. In Letter-Go-Round a letter appears on the basket and as it spins, children must find the right letter to match or complete a word. When a match is made or a word is completed, Big Bird, Bert, and Cookie Monster will dance and cheer children on to the next round of play.

Two educational "Adventures in Science Series" are "T-rex" and "The Honey Factory". Each one of these games has the adventure game flavour with some educational values inside. The last program is called "Adventure Master", a 2-disk program which is a creative instrument that becomes an adventure-

game-maker when the user brings his/her imagination to it. It provides everything needed to design text-adventure games. The user can create up to as many as 60 "rooms" within each adventure, describe places, plan events, create secret exits, name magic words, hide objects and create entire worlds to travel in. The program includes a built-in graphics system for illustrating the "rooms" in an adventure. The program comes with 3 professionally-authored adventures to play and learn from.

CODEWRITER corporation, formerly Dynatech Microsoftware has produced a whole line of utilities for writing programs. This is for those users who have little knowledge of programming. Whether you want a program to keep your files or one to play an adventure game, Codewriter, with a separate module can do it for you. The different modules that are available or will be available in the near future are File Writer, Report Writer, Dialog, Adventure Writer, the ELF system, Action Writer, and Menu Writer. Action Writer, which won't be available until September, will allow a person to create arcade games with no programming experience. Once you create a program with the Codewriter, you can have it marketed and sold through Codewriter Corporation, giving you something to look forward to.

DATAMOST had quite an impressive booth with contests set up for those wanting to try out their arcade skills. They announced the release of four new games for the Atari plus the conversion of the famous Apple game, 'Aztec'.

The first game, "Ankh", is an arcade action puzzle. The goal of Ankh is to guide your "other" through all 64 rooms of the Metareal World, solving many puzzles along the way. "Jet Boot Jack", the second game, is an arcade game in which you guide Jack through the Record Machine. With jets on his boots, Jack is able to fly over floors, ride elevators, collect musical notes, and avoid "sleepers". I thought the graphics and playability were good but the game difficult to play as I had a hard time staying alive. The



third game, "Polar Pierre", also an "arcade-style" game is one in which two players can play simultaneously. The object is to guide Pierre and Jacques over a 100 screen obstacle course, racing against each other through ice and snow.

The last new game released from Datamost is one every chess player should have, "Mychess II". This chess simulation can be played in 2-D, 3-D, color or B&W. Mychess II includes; nine challenging levels from beginner to master, hints, instant reply, the rotation of the board, take back moves, the examination of an opponent's possible moves, save to disk, and print out games. You can either play the computer or another person.

DATASOFT, a major producer of third party software has released a number of programs for the Atari computer. Following its word processor, "Text Wizard", Datasoft has produced a new improved word processor called "Letter Wizard". Besides having the usual move, delete, insert, search, and replace functions, "Letter Wizard" includes a formatting feature and disk manager not available on its earlier version. The disk manager helps create an organized filing system, making it easy to rename, lock, unlock, and delete files on disk. Letter Wizard will also be able to save a lot more text.

Datasoft which has helped bring home the arcade with home versions of Zaxxon, Pooyan, and Moon Shuttle has done it again with two more arcade classics. They are "Lost Tomb" and "Juno First". Lost Tomb adventure lowers the player into the depths of an ancient Egyptian tomb infested with deadly creatures and mysterious mummies throughout its 91-chamber maze. The latter, Juno First, places the player on board a spaceship to defend humankind and the Solar System from lethal alien enemies.

Two original computer games based on real life characters were "Bruce Lee" and "The Dallas Quest". In Bruce Lee you, as the player, must use your combative and strategic powers to penetrate each chamber within the menacing fortress of the Evil Wizard and capture a hidden treasure. The second game is based on the popular prime-time soap, Dallas. This game is an adventure game featuring hi-resolution graphic screens with some complicated puzzles to figure out.

DESIGNWARE, a leading publisher of educational software, has introduced some interesting software. The first, "States and Traits" is a game that teaches U.S. geography, history, and current facts on a colorful master map. In 'traits' the player's challenge is to answer questions about a multitude of U.S. landmarks, historical facts and trivia. In 'states' the player must move the labeled outline of a state with a joystick to the correct location on the map. This game will even help adults in their geographical skills. Two

other programs to be released in August are "The Notable Phantom" and "The Grammar Examiner". The Notable Phantom is the first program in the 'Music Teacher' series of musical educational games. Ghosts, Spiders, and a music loving phantom, create an entertaining, unpressured environment for learning the basics of piano-playing.

The Grammar Examiner is one in which kids can edit their way around a colorful gameboard in order to become an ACE reporter. The program includes 150 multiple choice questions and paragraphs, each with numerous grammatical mistakes to be edited. The player with the most money at the end of the game wins. The final program, "Mission: Algebra", due for release this fall, is a game in which kids rescue stranded sister ships in outer space by solving algebraic equations. This program, directed toward those between the ages of 13 to 18 has a random generator, creating thousands of problems which provide for endless practice in determining equations of lines, coordinating pairs on a graph and solving for 'x' and 'y' coordinate points.

ELECTRONIC ARTS, which brought us the award winning "M.U.L.E." and "Archon" have done it again with three new games. They are "Archon II", "Seven Cities of Gold" and "One on One". The first game, Archon II, is a sequel to Archon with better graphics and play. The second game, Seven Cities of Gold, is a graphic adventure game where you take on the role of Christopher Columbus exploring new lands. The last game, One on One, is a fast action basketball game with true to life animation.



EPYX, which brought us the award winning adventure game, Temple of Apshai, has been growing bigger and bigger with its large variety of software. Epyx which has stayed mainly with games, has come out with some pretty exciting stuff for the new year. The first game, "Pitstop II" is one to follow the best seller "Pitstop". Instead of just having one player racing against computer controlled cars, players will be able to race head-to-head in this new split screen car race

game.

The second game, "Summer Games", is one that offers the gamer life-like events from the Olympics, complete with real-life strategy elements. There are 8 official events in all, including gymnastics, skeet shooting, running, swimming, pole vaulting, and diving. There is an opening ceremony (torch lighting), an awards ceremony, and after each event players can choose to represent any one of 18 countries. The third game, "Breakdance", is one that is capitalizing on America's dance craze. "Breakdance" is three games in one, where, in the first game, the player must properly duplicate the moves of an opposing gang of breakdancers in order to pass through them. In the second game your breakdancer must duplicate the move of a computer controlled dancer and in the third you can enjoy free-style breakdancing in which the computer will record and play back your dance routine.

Another great game that Epyx has just released is "Moreta: Dragonlady of Pern" sequel to "Dragon Riders of Pern". These games are based on Anne McCaffrey's award winning science fiction novel of the same name. In "Moreta" the future of the faraway planet of Pern rests in your hands as you, assuming the role of Moreta, search for the secret remedy to a mysterious illness plaguing your people.

There are three new Computer Activity Toys, which according to Michael Katz, are "toys playable on a home computer". "The essence of the like is imaginative, creative non-structure play".

The first, "G.I. Joe", is a game which has plenty of real life combat action in this licensed version of Hasbro's popular male figure. The child selects the battlefield activity in which he wants to interact and then equips his G.I. Joe with the proper clothing, equipment, and transportation. All combat takes place against non-humanoid opponents. The second game, "BARBIE" (Mattel), is one that offers children the fun and challenge of dressing and redressing BARBIE, changing her hair style and color, altering her clothing and creating color-co-ordinated fashions.

In the final game, "HOT WHEELS" (Mattel), children experience the fun and excitement of constructing a Hot Wheels vehicle on the computer screen. Kids can then move their newly constructed car through various activities, including a Hot Wheels garage, city scene, and demolition derby. How come they didn't have these when I was a kid?

INFOCOM, the company who brought us great text adventure games like Zork I, II, and III has just released a new game called, "Sea Stalker". This is the first in a new series of software titles designed with the beginner in mind. With the disk you receive a submarine logbook, which serves as a users' manual, eight top secret infocards, Infocard decoder film, a

nautical chart of Frobton Bay, and a special Discovery Squad sticker. On the disk you'll experience an adventure in the tradition of Jules Verne's 20,000 Leagues Under the Sea, but instead of just reading it this time, you will be the main character.

MINDSCAPE, a relatively new company has released five new educational games. They are "Tonk in the Land of Buddy-Bots", "Tink's Adventure", "Tinka's Mazes", "Tuk Goes To Town", and "Crossword Magic". Children can now learn to recognize shapes and patterns with "Tonk in the Land of Buddy-Bots". In the next game, "Tink's Adventure", the child must guide the computer character to find and win a treasure. In the third game, "Tinka's Mazes", the child learns how to learn counting and develop basic math concepts. "Tuk Goes to Town" is a game where children can develop pre-reading and reading skills. The final program, "Crossword Magic" is a piece of software that allows the user to create his own crossword puzzles. Unlike the first-come, first-served puzzle in the newspaper, Crossword Magic can be used again and again by every member of the family.



PERSONAL PERIPHERALS Inc has released an affordably priced graphic tablet called, "Super Sketch" with software cartridge. "Super Sketch" allows consumers to easily create exciting computer graphics in color. By simply moving the stylus control as you would a pencil, Super Sketch will reproduce the movement on the screen. The thing that makes Super Sketch so exciting is its under \$50 price tag. Below are four pieces of software that can be used in conjunction with Super Sketch.

"Super Music Box" is a program that provides a simple approach to composing music and playing it back on the Atari. Neat features in this package include scrolling the screen measure by measure from left to right, and cutting and pasting measures to anywhere in the musical file. "Business Presentor" is one for creating quality business presentations. After completing attractive full color charts, graphs and

Continued on Page 12

AT LAST!!! A REAL FLIGHT SIMULATOR!!!

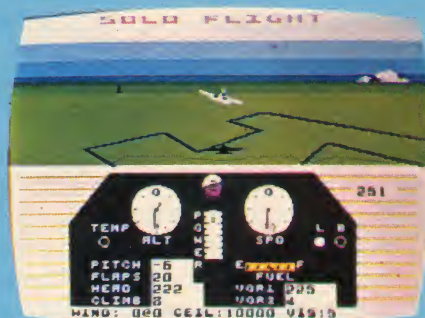
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other business related graphics, the user may store them on the screen in any predetermined order.

"Master Home Planner" is a software program for a new and easier method of quickly visualizing home planning concepts. Home and commercial design concepts can be designed, and interior design concepts can be explored. One interesting feature is Auto-Fill, textures-Brick; Wood Slats; Tiles. This can be a real help for the professional or amateur draftsman. The last Super Sketch enhancement is "Printer Utility", a program that allows a person to dump all of his or her created screens to a printer. This can be handy in a demonstration to a business client or friend.

SCREENPLAY which has brought us great graphic adventures like Dunzhin, and Kaiv have tried something new with a game called "Break Dancer". Watch the breakdancers as they twist, turn and spin to funky music. Besides having the game demonstrated at Screenplay's booth, they had a few live break dancers putting on quite a show. Another new innovative game that has just been released is "The Trivia Arcade". This game which includes five different categories: Sports, music, TV, science, and general, has the player race against the clock in order to choose his or her own favorite trivia subject. Once you have become an expert at this game, Screenplay has a module called, "The Trivia Arcade Question Pack I" which tests your skills on subjects ranging from history to comics.

A new game series that wasn't demonstrated but released was called, "Caesar's World"-Casino Software. The games that will be featured are: Black Jack, Roulette, Craps, Poker, Bacarat, and Slots.

SEGA who are famous for their arcade games and computer versions have three new ones to add to their list. They are "Up n' Down", "Tapper", and the newest "Spy Hunter". At the fair they had a demo of Spy Hunter which looked quite impressive and should be available some time in the fall.

SIERRA which was originally called Sierra On-line has a whole new line of Atari games. "B.C.'s Grog's Revenge" is the latest sequel to "B.C.'s Quest for Tires". Grog's Revenge follows Thor, once again on his trusty stone wheel, as he tries to climb a mountain and collect claims on his way. Fat Broad, Pterodactyls, and other fearsome creatures, as well as awesome terrain and obstacles block his path. Another new program is "Stunt Flyer", a flight simulator where you take charge of the open sky, fly upside down and do loop-de-loops in this barnstorming biplane. Other new programs include a line of "Wizard of ID" educational games with good graphics and gameplay. One that impressed me was "Wizard of ID's Wismath" which makes addition through algebra more enjoyable. Also "Wiz Type" is quite a neat program for learning to type.

Strategic Simulations released two new role-playing games for the Atari. They were "Questron" and "50 Mission Crush". The first game is a fantasy adventure game where the battle is between good and evil. Excellent Hi-Res color graphics add to the large disk based adventure game. The second game, which is reviewed in this issue, is one that puts you in the cockpit as pilot of the most glamorous bomber of World War II- the B-17 Flying Fortress. Since it is a role-playing game your characters can gain experience through each attack run. These two new games are a fine addition to SSI.

Although the fair was a big success for Atari supporting companies, I was disappointed in the fact that companies like Adventure International and Synapse, who were registered to have booths, didn't make an appearance.



INTERVIEW: Bill Wilkinson

Interviewed By Peter Ellison

Q. When did you first become interested in computer programming?

A. The first time I ever wrote a program was when I went to Carnegie Tech back in Pittsburgh, Pennsylvania. I never even took a programming course, but my roommate did. While I was goofing off, not doing my engineering work, I auditted his course and wrote a program on a computer then. I didn't really get interested in computers until '69 or '70.

Q. When did you get your first Atari?

A. We actually didn't own an Atari until after we started the business, "OSS". The entire time we did all the work for Atari, we never owned one. They delivered us one and the disk drive didn't work so we gave it back to them and they never gave us back another one.

Q. What was the first Program which you worked on that sold commercially and to what company?

A. When I worked for Aero Jet Electric System I did some work on the Satellite Systems.

Q. Who worked with you on Atari Dos?

A. There have been a lot of things attributed to me that should not be have been. I've tried to say that in my books, but people don't necessarily believe that. I didn't have much to do with Atari Dos. A fellow by the name of Paul Laughton wrote virtually all of Atari Dos, incidentally he also wrote Apple Dos. This was done through a company named Shepardson Microsystems.

As I look through the Atari Basic code, I guess I ended up writing more of it then. I thought I did at least influence it more than I thought I did because I see a lot of my comments in the floating point code that I had forgotten I had written. That was about all I was really involved in. The one thing I did do was I was involved in the negotiations for the contract, and I was then one who did the spec for it. So if you want to blame someone for the spec on it, you got to blame me. There were several things done in the final version which were not in the spec and there were some things left out that were in the original spec. Not the least, for example: I never suspected that we wouldn't be able to input into a string array. I didn't think you wouldn't be able to say INPUT "A ^ 3". That was a

fallout of the fact there were two people working on the BASIC, and input wasn't done by the same person who did lit. So things just didn't get done. There were quite a few little things that slipped through the cracks of Atari basic.

I don't like the way the length of the string is defined in Atari BASIC. In Cromemco BASIC the length of the string is defined by the number of characters, up to and including the last null characters. So if you attach nulls onto the end of a string it will automatically shorten. Obviously that is a better definition than the Atari version. Inputs should have been able to handle quotes, an oversight.

After we did the Atari stuff, we managed to keep ownership of it and Atari got the nonexclusive right to it. We decided to try marketing the stuff on the Apple also. Shepardson never wanted to put any money behind it, and that's where the name Optimized System Software came from. We felt we needed a name with a little more pizzaz then Shepardson Microsystems. That was a resounding failure, because within a year we sold about five hundred copies on the Apple. That's when we were taking on projects in which we got in a little bit over our heads. Basically, Shepardson was tired of having people work for him and we weren't able to agree with one another anymore and that was when we all said, "Bye." Everybody then broke up. I thought there was still some value in the stuff we were selling at OSS software and I negotiated with him for the rights to it. Basically that is where OSS came from. We kept the same name, it was easier than trying to invent a new name. This was in 1981.

Q. How big is the programming staff and do you have outside programmers?

A. That all depends on what day of the week it is. We're a pretty small company in general. We've got 15 people, and that includes shipping and everything. How big the programming staff is, depends on how many are answering technical questions on the phone that day. If you're answering technical questions, then you're not a programmer that day, are you? But actively working on programming, there are between 3 and 6, depending on the day of the week.

Q. Do you get a chance to oversee most of the programs?

A. The trouble is that I get myself involved in too much around here. So the answer is yes. Basically, for about a year and half there, we didn't produce any products ourselves, we bought them from outside sources and things like that. We're just now starting to get back into producing some new products. It took a while to build up to that point. When we were really small, the two or three of us who were involved with it could write programs and answer phone calls and everything else all at the same time. Then when we got a little bit bigger it took all of our time just to answer the phone. Now you get up to the point where you can hire someone to just answer the phone while you go off and program. Its kind of a pleasant feeling, I hope that it lasts.

To answer your question about having outside programmers, the answer is "Yes." Not people that normally work here, but do so from time to time when they come in to test final versions. Action! was done outside of us and so was MAC/65.

Q. When were you asked to write for COMPUTE?

A. What happened was I saw an answer in "You ask the readers" or "Feedback" or something like that and it was an absolute flat out wrong answer. I called them up and talked with them for a while and said that they should get someone who knows something about the Atari machine to answer the questions, rather than just guessing. They said "Great, you've got the job."

Q. How long did it take to create BASIC XL and how many programmers worked on it?

A. Steve Lawrow and myself were the only two who worked on it. We started from Atari BASIC, and I mean that literally. The reason we did it was because when Steve was in the process of doing MAC/65 he had learned some tricks on how the syntax stuff worked and was anxious to try them in basic. One of the things he did first of all was to produce an integer version of BASIC A+. BASIC A+ was a thing we sold on the Apple and then we converted it to the Atari. I shouldn't say simply because I added all the Player/missile stuff. Kathy O'Brien, who was originally one of the other persons who worked on Atari BASIC had added a lot of the stuff before I even got hold of it.

Steve did an integer version that was faster, but was not as fast as we had expected. It was at that time we started talking it over. What can we do to speed it up? It didn't turn out exactly like we had expected, because Steve doesn't take directions very well, but turned out pretty close to what I was hoping for. Basic XL took about six months, which is interesting because Atari BASIC only took two months in the first place. That was because there was a little more

forethought put into it. Basically, Atari Basic was written with the attitude of 'don't worry about it, we'll put it in later'. We never intended Atari Basic as specified and as delivered in the original machines to be the final version. We always intended it to be a 16K version. And Atari only through reasons of marketing, decided they didn't want a 16K version and instead they went off on a microsoft Basic. The result was a microsoft Basic that was kind of inadequate, a year and a half to two years later than we would have their 16K BASIC. There is a little bit of sour grapes on my part there. I suppose in one sense it's good, because OSS wouldn't be in existence if we'd done the 16K BASIC, because then we wouldn't have had anything to sell. On the other hand, I feel that Atari really blew it because at one point in time they were offered what was equivalent, BASIC A+ for \$35,000 flat. Instead they spent at least a million in promoting Microsoft BASIC.

Q. How did Clinton Parker come up with the idea of Action!

A. The reason he wrote it, he told me, was because he bought this Atari (Couldn't afford anything better than an Atari 400), and liked it, but couldn't find a decent screen editor. He wanted a full screen editor and he had written a full screen editor on some of the large mainframe computers. He said, 'The hardware is here, why isn't the software here?' So he wrote a screen editor. He found out that it only took up three to four bytes of code and said, "Well, I got this 8K cartridge, which he also built from scratch, what the heck am I going to do with the rest of the cartridge? I know, I'll build a compiler."

Q. Why did he choose OSS?

A. First he came to us, but at the time we were looking at the ABC compiler and Clinton wouldn't tell us enough about the Action! Compiler for us to understand how radically different it was. He was being secretive. We had already signed a nondisclosure agreement and had pretty much decided we would pick her up (market it). So we told Clinton, "We can't tell you what we're marketing but it sounds similar to what you're doing." And he then said, "No it isn't." So I said, "Tell me more about it."

Then the fellow who wrote the ABC compiler changed his mind and decided to market it himself and in the meantime Clinton had taken Action! over to Educational Software. At that time Educational Software was having some financial trouble. Clinton realized the one thing that would be needed in Action was a gigantic manual, and a promotion, and he didn't even understand the thing or what the language was even for. So Robin at Educational Software sent Clinton back to us. Then when Clinton showed it to us we went bananas because it was the first time we had gotten a chance to see it. We saw it as an 8K car-

tridge, and believe me, even as an 8K cartridge, it was impressive. At that time you had to have all the libraries on the disk and the editor didn't have any of the power it does now.

Q. How long after that did you get it into production?

A. We saw it in January or February of last year, '83, and we managed to get an informal agreement with Clinton by the time the '83 West Coast Computer Faire was on. The first day of the Faire we showed it as an 8K cartridge and by the second day we showed it as a 16K cartridge. At the same time that was happening we were also working on BASIC XL, and the whole reason for the Bank Select cartridge was because we wanted to be as compatible with Atari Basic as possible. The only way to do that was to have a Bank Select cartridge. It had to fit in 8K bytes of ROM. Otherwise our market would be zero. We had the first Action cartridge made about mid April but we didn't start shipping until August. We had expected to have it out at the end of June but we missed it, needless to say.

Q. What new programs at OSS do you have planned for in the near future?

A. We're coming out with some new products but there is nothing spectacularly new or different, they are just what we'd like to think of as high quality. We have dropped our plans for the \$50 word processor. The Atari market doesn't seem to care about another \$50 word processor because there are too many of them out there already. Instead we're going to come out with a \$129 word processor with a lot more features. The question is how can you sell a \$129 wordprocessor when you can't sell a \$50 one? We'll sell many, many fewer of them, but the people who buy them will know why they are buying them. This word processor has got most of the features of any other major machine word processor. It will also be in a Bank Select cartridge.

Q. What do you think of the Atari XL series?

A. There's so much hidden in the machine that has not been made public yet and I don't know what to think. The 800 XL has the finest operating system in ROM than any other machine on the market today. It is smart enough that when you turn it on it goes out to check to see if there are any parallel devices plugged in. If there are they are automatically hooked into the device driver chain. Everytime you call SIO for any requests, it checks to see if any of the parallel devices want to service the requested step.

Q. What type of Atari do you use when you're programming?

A. I'm not really fussy, but most of the time I've been using the 800 XL, not because I think it makes any difference in the type of stuff I do, but only because it's easier to carry around. One rule we have

around here is: "If it doesn't work on all the machines then you did it wrong."

Q. Did any of the programs from OSS need to be converted for the new XL's?

A. Yes, one. "Bug/65" of all things. Probably the most minor program. Incidentally it will become a standard part of OSS DOS XL from now on as of August 15. Basically we're raising the price of DOS XL to \$39.95, but we are throwing a lot more goodies into it. A 'Free' debugger into it and things like that.

Q. What do you do when you're not programming or working for OSS?

A. The problem with starting up a small business is that you simply have no time for anything else. That has certainly been my situation in the past couple of years. My hobby is music and I have a special wish to some day do a really nice coupling of a computer to a music system. I have yet to see a music system that I want to see on the Atari. It probably can't be done without a light pen. The Atari probably isn't capable of creating sounds the way I want it to. I want to be fair about it. This is not a criticism of the Atari, its just a limitation, but still I believe there is a lot that can be done on the Atari that hasn't been done yet.



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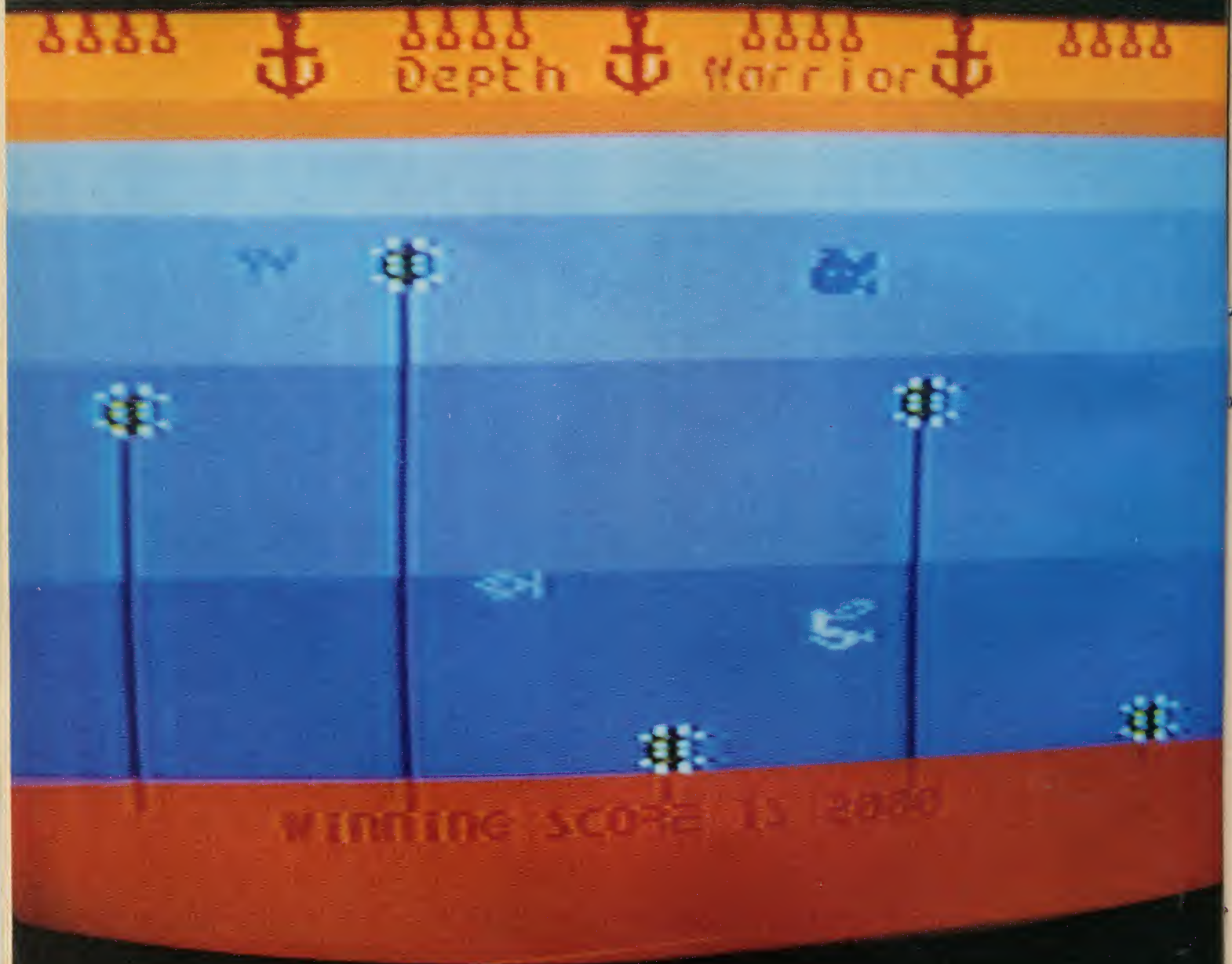
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DEPTH WARRIOR

By Jack Chung



In the last issue we heard of the trouble on Clarexa, the planet that was so over-populated that the people had to live in the clouds. On Nexa, thirty-three light years away, lives an entire population underwater. The reason for this was, the air on the surface became so polluted that it wasn't safe for any human life form. This was when the people moved to the sea.

The Sea World was working out fine until the people divided up into four separate groups. Each group had their own name: The Spartans, the Neptunes, the Troutens, and the Octopans. As time went on, fish and sea kelp became more and more scarce, making war inevitable. Instead of having an all out underwater war, the Sea People decided to have their best warriors fight it out. Each group would receive points for each submarine that was destroyed. If your ship was destroyed by an enemy craft, you would float to the surface and a new submarine would appear.

This game, "Depth Warrior", which is a sequel to last issue's "Sky Warrior", places two to four underwater submarines in a battle of skill and strategy. The Ocean depths contain four different levels, each with a different shade of blue. The same is for the four submarines. This makes it easy for enemy submarines to hide from one another at different levels.

Your submarine can maneuver in any of the eight joystick directions. The same goes for the torpedoes, they can be fired in any direction by pushing the firing button. By moving your submarine into water of the same color you are able to sneak up on enemy craft. This makes it difficult to fire at something which you can't see.

The object of the game, as I said in the opening paragraph, is to shoot enemy submarines. This is done by maneuvering your craft into the right position so as to get a good shot at another one's craft. Once a submarine has been shot, it will once again be restored to running condition, enabling another warrior to go back into combat.

Each of the four water levels give different points for shooting enemy submarines. The more points that are accumulated, the lower the level at which your vessel is in the water. So, if you were at the bottom level and shot a submarine, you would get about three times more points than if you were at the top. At the top of the screen is a red level. This, called the surface level, is to where ships float when destroyed. If you shoot an enemy submarine while on this level you will receive negative points. The amount of points required to win the game can be decided upon at the start. The score to win is then displayed at the bottom of the screen.

Within the ocean there are five power lines. These power lines can be passed over without doing any damage to your sub. If they are then shot at and hit, your submarine's torpedos will be disabled until you

move up a level in the water. These lines can be an advantage to a player who wants to hide behind one, because a torpedo will usually not pass through. These lines can be quite frustrating if you have an enemy craft all lined up ready to destroy.

Strategies-The way of playing this game is somewhat like that of "Hide & Seek". By keeping your ship in the level of your same color, it is possible to hide from enemy submarines. Then, when you think you know where it is (the enemy) let a torpedo go. This will also give you some bearing on where you ship is at the time. Another plan of attack is to try and destroy your opponent while on lower levels, for this will give you the greatest amount of points.

The game listing is in three different parts. The first program redefines the character set, the second one loads in the main program (machine code), and the third part loads in the basic set up of the game. When typing in the program, name the first program as CHAR.DAT, the second MAIN.DAT, and the third BASIC. This will then run all three programs when you run CHAR.DAT, because it calls each program from your disk. If you're a cassette user, save each program by typing SAVE 'C:'. Then, at line 20 in program one, change it to RUN 'C:' and line 20 in program two, do the same thing. Then make sure the programs are saved in the right order on your cassette.

This game runs on 48K and can be played by 2 to 4 players with joysticks. This game can be acquired by sending \$3.00 and a blank disk or cassette to:

**ROM MAGAZINE
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V2X 7G1**

Basic Listing

```
5 REM THIS IS PART 1 OF THE PROGR
AM
6 REM IT LOADS IN THE CHARACTER S
ET!
7 REM
10 FOR I=34816 TO 35840:READ X:PO
KE I,X:NEXT I
15 REM RUN THE NEXT PART
20 RUN "D:MAIN.DAT"
10000 DATA 0,0,0,0,0,0,0,0,48,48,
48,48,0,48,48,0,108,108,72,0,0,0,
0,0
10010 DATA 0,104,236,104,104,236,
104,0,16,124,144,120,20,248,16,0,
236,172,232,16,32,92,212,220
```

Basic Listing (cont'd)

10020 DATA 60,64,64,124,128,128,124,0,48,48,32,0,0,0,0,12,16,32,32,32,16,12,0
 10030 DATA 96,16,8,8,8,16,96,0,0,168,112,216,112,168,0,0,0,16,16,124,16,16,0,0
 10040 DATA 0,0,0,0,0,48,48,32,0,0,0,124,0,0,0,0,0,0,0,0,48,48,0
 10050 DATA 12,12,8,16,32,96,96,0,124,140,148,164,196,132,120,0,24,40,8,8,8,8,8,0
 10060 DATA 248,4,4,120,128,0,252,0,252,8,0,56,4,4,248,0,24,32,64,252,0,24,24,0
 10070 DATA 252,0,0,248,4,4,248,0,32,32,64,80,136,136,112,0,252,0,8,16,16,32,32,0
 10080 DATA 120,132,132,72,132,132,120,0,56,68,68,40,8,16,16,0,0,0,48,48,0,48,48,0
 10090 DATA 0,0,48,48,0,48,48,32,0,36,72,144,72,36,0,0,0,0,248,0,248,0,0,0
 10100 DATA 0,144,72,36,72,144,0,0,120,4,4,8,16,0,16,0,0,0,8,108,168,116,0
 10110 DATA 16,16,40,40,68,68,124,0,252,2,2,252,130,130,252,0,60,64,128,128,128,64,60,0
 10120 DATA 240,8,132,132,132,136,240,0,254,0,0,254,128,128,254,0,254,0,0,254,128,128,128,0
 10130 DATA 60,64,128,156,128,68,56,0,132,132,132,244,132,132,132,0,56,0,16,16,16,16,56,0
 10140 DATA 28,0,8,8,8,8,112,0,132,136,144,160,144,136,132,0,128,128,128,128,128,252,0
 10150 DATA 252,130,146,146,146,146,146,0,248,132,132,132,132,132,132,132,0,120,132,132,132,132,132,120,0
 10160 DATA 248,4,4,248,128,128,128,0,120,132,132,132,132,132,132,64,60,248,4,4,248,4,4,4,0
 10170 DATA 64,64,32,16,8,8,240,0,252,0,128,128,128,128,124,0,132,132,132,132,132,132,124,0
 10180 DATA 132,132,132,72,72,48,48,0,164,164,148,148,72,72,72,0,68,40,16,16,16,40,68,0
 10190 DATA 132,132,132,120,0,48,48,0,252,0,8,16,32,64,252,0,60,32,32,32,32,32,32,60
 10200 DATA 192,192,64,32,16,8,12,

12,120,8,8,8,8,8,8,120,0,16,40,124,0,0,0,0
 10210 DATA 0,0,0,0,0,0,0,0,255,0,54,127,127,62,28,8,0,7,6,7,3,3,3,127,127
 10220 DATA 192,192,192,128,128,128,252,252,3,195,195,195,243,63,15,1,128,134,134,134,158,248,224,0
 10230 DATA 0,0,0,0,0,12,14,202,0,0,0,0,0,48,176,163,42,46,42,46,42,202,14,12
 10240 DATA 168,184,168,184,168,163,176,48,2,2,2,2,2,2,2,2,0,0,0,0,0,0,0,0
 10250 DATA 15,15,15,15,0,0,0,0,240,240,240,0,0,0,0,255,255,0,0,0,0,0,0
 10260 DATA 0,0,0,0,0,0,0,255,255,0,0,0,0,240,240,240,240,0,28,28,119,119,8,28,0
 10270 DATA 0,0,0,31,31,24,24,24,0,0,0,255,255,0,0,0,24,24,24,255,255,24,24,24
 10280 DATA 0,0,60,126,126,126,60,0,0,0,0,0,255,255,255,255,192,192,192,192,192,192,192,192
 10290 DATA 0,0,0,255,255,24,24,24,24,24,24,24,255,255,0,0,0,240,240,240,240,240,240,240,240
 10300 DATA 24,24,24,31,31,0,0,0,120,96,120,96,126,24,30,0,0,24,60,126,24,24,24,0
 10310 DATA 0,24,24,24,126,60,24,0,0,24,48,126,48,24,0,0,0,24,12,126,12,24,0,0
 10320 DATA 0,24,60,126,126,60,24,0,0,0,124,132,132,132,100,0,128,128,184,132,132,132,248,0
 10330 DATA 0,0,124,128,128,128,124,0,4,4,116,132,132,132,124,0,0,0,124,136,144,128,124,0
 10340 DATA 56,64,64,120,64,64,64,0,0,0,120,132,132,100,4,248,128,128,184,132,132,132,132,0
 10350 DATA 32,0,32,32,32,32,32,0,8,0,8,8,8,8,48,128,128,132,136,176,136,132,0
 10360 DATA 32,32,32,32,32,32,32,0,0,0,216,164,164,164,164,0,0,0,248,132,132,132,132,0
 10370 DATA 0,0,120,132,132,132,120,0,0,0,0,248,132,132,184,128,128,0,0,124,132,132,132,116,4
 10380 DATA 0,0,112,128,128,128,128,8,0,0,0,124,128,120,4,248,0,128,1

Basic Listing (cont'd)

```
28,240,128,128,128,112,0
10390 DATA 0,0,132,132,132,132,12
0,0,0,0,136,136,136,80,32,0,0,0,1
48,148,148,148,108,0
10400 DATA 0,0,136,80,32,80,136,0
,0,0,184,132,132,72,48,224,0,0,25
2,8,48,64,252,0
10410 DATA 0,24,60,126,126,24,60,
0,24,24,24,24,24,24,24,0,126,1
20,124,110,102,6,0
10420 DATA 8,24,56,120,56,24,8,0,
16,24,28,30,28,24,16,0,0
```

```
5 REM THIS IS PART TWO OF THE PRO
GRAM
```

```
6 REM IT LOADS IN THE MAIN PROGRA
M
```

```
10 FOR I=16384 TO 18450:READ X:PO
KE I,X:NEXT I
```

```
20 RUN "D:BASIC"
```

```
20000 DATA 104,169,0,141,48,2,169
,70,141,49,2,165,88,141,4,70,165,
89,141,5,70,169,58,141
```

```
20010 DATA 47,2,169,3,141,29,208,
169,96,141,7,212,169,8,141,111,2,
169,192,141,14,212,169,33
```

```
20020 DATA 141,0,2,169,70,141,1,2
,160,0,152,153,0,100,153,0,101,15
3,0,102,153,0,103,153
```

```
20030 DATA 0,99,200,208,238,169,0
,141,210,68,141,178,68,141,198,2,
169,118,141,192,2,169,116,141
```

```
20040 DATA 193,2,169,114,141,194,
2,169,112,141,195,2,169,40,141,0,
210,169,175,141,169,68,160,0
```

```
20050 DATA 169,140,32,153,68,24,1
05,60,153,201,68,169,140,32,153,6
8,24,105,60,153,205,68,169,0
```

```
20060 DATA 153,197,68,153,173,68,
200,192,4,144,221,169,0,133,204,1
69,100,133,205,173,10,210,141,199
```

```
20070 DATA 2,172,210,68,185,173,6
8,240,6,32,5,68,76,241,64,32,30,6
5,32,140,67,172,210,68
```

```
20080 DATA 32,10,66,172,210,68,18
5,197,68,240,38,32,58,67,32,61,66
,185,0,208,240,3,32,117
```

```
20090 DATA 67,173,177,68,240,19,1
72,210,68,140,0,6,185,205,68,141,
1,6,169,0,141,177,68,96
```

```
20100 DATA 104,238,210,68,230,205
,32,83,68,173,210,68,201,4,144,16
9,169,0,141,210,68,32,72,68
```

```
20110 DATA 174,178,68,138,24,105,
```

```
16,141,178,68,201,64,208,5,169,0,
141,178,68,76,155,64,172,210
```

```
20120 DATA 68,185,120,2,170,138,4
1,1,208,13,185,205,68,201,50,144,
6,56,233,2,153,205,68,138
```

```
20130 DATA 41,2,208,13,185,205,68
,201,230,176,6,24,105,1,153,205,6
8,138,41,4,208,18,185,201
```

```
20140 DATA 68,56,233,1,153,201,68
,201,50,176,5,169,200,153,201,68,
138,41,8,208,18,185,201,68
```

```
20150 DATA 24,105,1,153,201,68,20
1,200,144,5,169,50,153,201,68,185
,197,68,208,47,185,132,2,208
```

```
20160 DATA 42,169,1,153,197,68,18
5,201,68,24,105,3,153,181,68,185,
205,68,24,105,4,153,185,68
```

```
20170 DATA 185,120,2,201,15,240,1
2,201,14,208,9,169,1,153,193,68,7
6,171,65,96,201,13,208,8
```

```
20180 DATA 169,2,153,193,68,76,0,
66,201,7,208,8,169,4,153,193,68,7
6,0,66,201,11,208,8
```

```
20190 DATA 169,3,153,193,68,76,0,
66,201,6,208,8,169,5,153,193,68,7
6,0,66,201,5,208,8
```

```
20200 DATA 169,6,153,193,68,76,0,
66,201,9,208,8,169,7,153,193,68,7
6,0,66,201,10,208,8
```

```
20210 DATA 169,8,153,193,68,76,0,
66,96,169,0,153,193,68,153,197,68
,96,172,210,68,185,201,68
```

```
20220 DATA 153,0,208,172,210,68,1
52,10,10,10,10,10,10,24,109,178,6
8,170,185,205,68,168,189,92
```

```
20230 DATA 70,145,204,200,232,238
,180,68,173,180,68,201,16,144,239
,169,0,141,180,68,96,172,210,68
```

```
20240 DATA 185,181,68,141,4,210,1
69,136,141,5,210,162,0,169,1,141,
31,208,232,208,248,185,193,68
```

```
20250 DATA 170,224,1,208,16,185,1
85,68,56,233,2,153,185,68,201,50,
176,3,76,117,67,224,2,208
```

```
20260 DATA 16,185,185,68,24,105,2
,153,185,68,201,230,144,3,76,117,
67,224,3,208,16,185,181,68
```

```
20270 DATA 56,233,4,153,181,68,20
1,40,176,3,76,117,67,224,4,208,16
,185,181,68,24,105,4,153
```

```
20280 DATA 181,68,201,200,144,3,7
6,117,67,224,5,208,32,185,185,68,
56,233,2,153,185,68,201,50
```

```
20290 DATA 176,3,76,117,67,185,18
1,68,24,105,4,153,181,68,201,200,
144,3,76,117,67,224,6,208
```

Basic Listing (cont'd)

20300 DATA 32,185,185,68,24,105,2,
153,185,68,201,230,144,3,76,117,
67,185,181,68,24,105,4,153
20310 DATA 181,68,201,200,144,3,7
6,117,67,224,7,208,30,185,181,68,
56,233,4,153,181,68,201,40
20320 DATA 176,3,76,117,67,185,18
5,68,24,105,2,153,185,68,201,230,
144,3,76,117,67,224,8,208
20330 DATA 32,185,181,68,56,233,4
,153,181,68,201,40,176,3,76,117,6
7,185,185,68,56,233,2,153
20340 DATA 185,68,201,30,176,3,76
,117,67,96,172,210,68,162,0,169,1
,141,31,208,232,208,248,185
20350 DATA 181,68,153,4,208,174,2
10,68,185,185,68,168,169,0,136,15
3,0,99,136,153,0,99,200,200
20360 DATA 189,227,68,153,0,99,20
0,153,0,99,200,169,0,153,0,99,200
,153,0,99,96,169,0,172
20370 DATA 210,68,153,197,68,141,
4,210,141,5,210,169,0,153,0,99,20
0,208,250,96,172,210,68,185
20380 DATA 8,208,208,5,185,12,208
,240,107,141,179,68,169,1,141,30,
208,173,179,68,41,1,201,1
20390 DATA 208,16,169,0,205,210,6
8,240,83,169,1,141,173,68,141,177
,68,96,173,179,68,41,2,201
20400 DATA 2,208,16,169,1,205,210
,68,240,58,169,1,141,174,68,141,1
77,68,96,173,179,68,41,4
20410 DATA 201,4,208,16,169,2,205
,210,68,240,33,169,1,141,175,68,1
41,177,68,96,173,179,68,41
20420 DATA 8,201,8,208,15,169,3,2
05,210,68,240,8,169,1,141,176,68,
141,177,68,96,172,210,68
20430 DATA 32,140,67,172,210,68,1
69,72,141,3,210,185,205,68,56,233
,1,153,205,68,141,2,210,168
20440 DATA 162,0,189,211,68,145,2
04,200,232,224,16,144,245,172,210
,68,185,205,68,201,50,176,16,169

20450 DATA 50,153,205,68,169,0,15
3,173,68,141,2,210,141,3,210,96,1
69,0,133,20,165,20,201,5
20460 DATA 144,250,96,238,171,68,
173,171,68,201,5,144,59,169,0,141
,171,68,173,170,68,240,26,238
20470 DATA 172,68,173,172,68,201,
5,144,39,169,0,141,172,68,141,170
,68,169,175,141,169,68,76,152
20480 DATA 68,206,169,68,169,40,1

41,0,210,173,169,68,141,1,210,201
,160,208,5,169,1,141,170,68
20490 DATA 96,141,168,68,238,168,
68,173,10,210,205,168,68,176,248,
96,0,175,0,0,0,0,0,0
20500 DATA 0,0,0,0,0,0,0,0,0,0,0,
0,0,1,2,3,4,1,2,3,4,0,0,0
20510 DATA 0,60,100,140,180,60,10
0,140,180,0,0,0,128,64,2,4,64,1,4
6,16,128,1,64,2
20520 DATA 8,0,0,3,12,48,192,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
20530 DATA 0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
20540 DATA 0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
20550 DATA 0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
20560 DATA 0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
20570 DATA 0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
20580 DATA 0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
20590 DATA 0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
20600 DATA 0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
20610 DATA 0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
20620 DATA 0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
20630 DATA 0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
20640 DATA 112,112,240,66,0,0,130
,132,132,132,132,132,132,132,132,
132,132,132,132,132,132,132,132,1
32
20650 DATA 132,132,130,130,130,65
,0,70,0,72,138,72,238,32,70,174,3
2,70,189,67,70,141,10,212
20660 DATA 141,24,208,141,26,208,
224,24,208,5,169,0,141,32,70,104,
170,104,64,56,54,52,118,118
20670 DATA 116,116,116,116,114,11
4,114,114,114,114,112,112,112,112
,112,112,50,50,50,50,0,7,8,208
20680 DATA 224,192,192,240,125,14
3,77,56,0,0,0,0,0,0,1,194,252,192
,192,240,124,143,76,56
20690 DATA 0,0,0,0,0,0,0,192,224,
208,200,247,125,143,77,56,0,0,0,0
,0,0,0,192
20700 DATA 252,194,193,240,124,14
3,76,56,0,0,0,0,0,0,17,57,85,167,
85,57,17,0,0,0

Basic Listing (cont'd)

```

20710 DATA 0,0,0,0,0,0,40,17,109,
167,109,17,40,0,0,0,0,0,0,0,0,1
6,56
20720 DATA 84,167,84,56,16,0,0,0,
0,0,0,0,0,0,40,17,109,167,109,17,
40,0,0,0
20730 DATA 0,0,0,0,0,57,109,63,22
,18,32,64,128,0,0,0,0,0,0,0,56,
109,63
20740 DATA 22,18,16,16,16,0,0,0,0
,0,0,0,0,56,108,63,22,18,8,4,2,0,
0,0
20750 DATA 0,0,0,0,0,56,108,63,23
,18,16,16,16,0,0,0,0,0,0,0,0,112,
49,123
20760 DATA 127,255,214,253,253,25
5,121,1,0,0,0,0,0,112,49,123,127,
255,214,252,253,255,121,0
20770 DATA 0,0,0,0,0,112,49,123,1
27,255,214,252,252,255,120,0,0,0,
0,0,0,112,49,123
20780 DATA 127,255,214,252,253,25
5,121,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0
20790 DATA 0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0
20800 DATA 0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0
20810 DATA 0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0
20820 DATA 0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0
20830 DATA 0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0
20840 DATA 0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0
20850 DATA 0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0
20860 DATA 0,0,0
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0
20850 DATA 0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0

```

```

5 DIM SCORE(4)
7 GOSUB 1000
8 FOR I=1 TO 4:SCORE(I)=0:NEXT I

10 GRAPHICS 0:POKE 752,1:POKE 559
,0:POKE 756,PEEK(106)-24:SETCOLOR
1,0,0
20 ? "AAAA | AAAA | AAAA |
AAAA"
22 ? "          Depth Warrior
"

```

```

23 FOR X=3 TO 35 STEP 8
25 Y=INT(15*RND(0)+5)
30 POSITION X,Y:?"??"?:FOR Y
1=Y+2 TO 21:POSITION X,Y1:?"?
":
NEXT Y1:NEXT X
40 POSITION 8,22:?"WINNING SCORE
IS ";MAXSCORE
100 U=USR(16384)
110 A=PEEK(1536):A=A+1:SCORE(A)=S
CORE(A)+(PEEK(1537)-50)
120 POSITION ((A-1)*10)+2,0:?"SCO
RE(A)
130 IF SCORE(A)>MAXSCORE THEN 300
0
200 U=USR(16624)
210 GOTO 110
1000 GRAPHICS 2:SETCOLOR 2,0,0:PO
KE 756,PEEK(106)-24
1010 ? #6;"      PREPARE"
1020 ? #6;"      FOR THE BATTLE"
1030 ? #6;"      OF YOUR"
1040 ? #6;"      LIFE!"
1050 FOR I=255 TO 0 STEP -0.5:POK
E 708,I:SOUND 0,I,8,10:NEXT I:SET
COLOR 0,7,4
1060 SOUND 0,250,10,8:SOUND 1,252
,10,8
1070 POSITION 4,6:?"#6;"DEPTH WAR
RIOR"
1080 FOR T=1 TO 500:NEXT T
1090 POSITION 4,8:?"#6;"BY JACK C
HUNG"
1100 FOR T=1 TO 500:NEXT T
1900 SOUND 0,0,0,0:SOUND 1,0,0,0

2000 TRAP 2000:?"What is the sc
ore to win ";:INPUT MAXSCORE
2001 TRAP 49999
2010 RETURN
3000 FOR I=0 TO 3:SOUND I,0,0,0:N
EXT I
3010 GRAPHICS 0:POKE 559,62:SETCO
LOR 2,0,0:FOR I=0 TO 7:POKE 53248
+I,0:NEXT I:POKE 756,PEEK(106)-24
:POKE 752,1
3020 ? :?"? :?" "PLAYER ";A;" YOU
ARE THE NEW DEPTH WARRIOR"
3030 POSITION 0,10:?"      PR
ESS *START* TO BEGIN      "
3031 POSITION 0,11:?"      PR
ESS *OPTION* TO SET WIN SCORE"
3032 SOUND 0,250,10,8:SOUND 1,252
,10,8
3035 SETCOLOR 4,INT(16*RND(0)+1),
6

```

Basic Listing (cont'd)

```

3040 IF PEEK(53279)=6 THEN SOUND
0,0,0,0:SOUND 1,0,0,0:GOTO 8
3045 IF PEEK(53279)=3 THEN SOUND
0,0,0,0:SOUND 1,0,0,0:GOTO 3060
3050 GOTO 3035
3060 POSITION 2,14:? "WHAT IS THE
SCORE TO WIN ";:INPUT MAXSCORE
3070 GOTO 8

```

DATA CHECK

```

1 REM * CHECK DATA: DEPTH.CHAR *

5 DATA 7267,430,487,502,972,745,3
12,533,786,42,19,306,134,9,107,17
0,761,952
10110 DATA 9746,413,603,521,577,8
2,423,607,451,251,856,649,61,873,
755,753,934,937
10280 DATA 7232,635,489,84,933,58
2,484,606,80,337,574,605,393,157,
279,994
,82,423,607,451,251,856,649,61,87
3,755,753,934,937
10280 DATA 7232,635,489,84,933,58
2,484,606,80,337,574,605,30

0 REM * CHECK DATA: DEPTH.MAN *
5 DATA 10604,631,394,970,110,559,
701,411,906,842,846,87,557,612,62
5,792,873,688
20130 DATA 10981,679,750,844,776,
641,423,380,424,759,784,6,898,712
,768,659,761,717
20300 DATA 11940,758,748,722,727,
813,822,570,799,701,775,676,769,6
69,792,47,622,930
20470 DATA 13504,942,801,463,932,
138,144,915,916,917,918,919,920,9
21,913,914,915,916
20640 DATA 10600,113,673,783,881,
533,884,131,567,798,689,536,678,6
57,181,658,923,915
20810 DATA 5579,916,917,918,919,9
20,989
0 REM * CHECK DATA: DEPTH.BAS *

5 DATA 6005,3,851,151,462,881,34,
518,353,317,208,71,404,319,270,69
,825,269
1010 DATA 9701,411,753,402,240,77
7,265,522,714,444,707,946,661,5,8
94,419,748,793
3030 DATA 5371,527,877,266,145,69
9,846,935,286,790

```

Assembler Listing

```

00010 .LI OFF
00020 *****
00030 * DEPTH WARRIOR *
00040 * BY JACK CHUNG *
00050 * FOR ATARI WITH *
00060 * 48 K *
00061 * *
00062 * This is the second *
00063 * game of the warrior *
00064 * series. *
00065 * *
00070 *****
00080 ;
00090 ;
00100 ;
00110 ;
00120 RANDOM .EQ $D20A
00130 VERTI .EQ $200
00140 DMACTL .EQ $22F
00150 DLST .EQ $230
00160 GRACTL .EQ $D01D
00170 PMBASE .EQ $D407
00180 COLPMO .EQ $02C0
00190 HPOSP0 .EQ $D000
00200 STICK .EQ $0278
00210 TRIGO .EQ $D010
00220 NMEN .EQ $D40E
00230 PRIOR .EQ $026F
00240 SOUND .EQ $D200
00250 SCREEN .EQ 560
00260 LDM .EQ $84
00270 JVB .EQ $41
00280 WSYNC .EQ $D40A
00290
00300 ADR .EQ $80
00310
00320 .OR $4000
00330 RIGHT .EQ $8
00340 LEFT .EQ $4
00350 DOWN .EQ $2
00360 UP .EQ $1
00370 HSPEED .EQ 4
00380 VSPEED .EQ 2
00390
00400 PLAYER .EQ $6000
00410 SPRITE .EQ $CC
00420
00430 START PLA
00440 LDA #DSP ;TELL
THE COMPUTER WHERE IS
00450 STA 560 ;THE D
ISPLAY LIST
00460 LDA /DSP
00470 STA 561
00480 LDA 88
00490 STA DSP+4

```

Assembler Listing (cont'd)

00500	LDA 89	00920	CLC
00510	STA DSP+5	00930	ADC #60
00520	LDA #\$3A ;SET U	00940	STA OX,Y
P		00950	LDA #140
00530	STA DMACTL ;PLAYE	00960	JSR RND
R		00970	CLC
00540	LDA #\$03 ;MISSL	00980	ADC #60
E		00990	STA OY,Y
00550	STA GRACTL ;SHAPE	00991	LDA #0
S		00992	STA MISSLEON,Y
00560	LDA /PLAYER	00993	STA PHIT,Y
00570	STA PMBASE	01000	INY
00580	LDA #8	01010	CPY #4
00590	STA PRIOR	01020	BCC .2
00600	LDA #\$C0	01030	LDA #\$00 ;START
00610	STA NMIE	!	
00620	LDA #DLI ;TELL	01040	STA SPRITE
THE COMPUTER WHERE		01050	LDA #\$64
00630	STA 512 ;IS TH	01060	STA SPRITE+1
E DISPLAY LIST INTERRUPT ROUTINE		01070	LDA RANDOM
00640	LDA /DLI	01080	STA 711
00650	STA 513	01090	LDY MAN
00660	LDY #0 ;CLEAN	01100	LDA PHIT,Y
UP		01110	BEQ OK1
00670	TYA ;PLAYE	01120	JSR KILL
R MISSLE MEMORY		01130	JMP TT
00680 .1	STA PLAYER+\$400,Y	01140	JSR RSTICK
00690	STA PLAYER+\$500,Y	01150	JSR HIT
00700	STA PLAYER+\$600,Y	01160	LDY MAN
00710	STA PLAYER+\$700,Y	01170	JSR MOVE
00720	STA PLAYER+\$300,Y	01180	LDY MAN
00730	INY	01190	LDA MISSLEON,Y
00740	BNE .1	01200	BEQ TT
00750	LDA #\$00	01210	JSR MDRAW
00751	STA MAN	01220	JSR MISSLE
00752	STA SH	01230	LDA 53248,Y
00760	STA \$2C6	01240	BEQ CONT1
00770	LDA #\$76 ;SET P	01250	JSR FINISH
LAYER		01260	LDA JUMPOUT
00780	STA COLPM0 ;COLOR	01270	BEQ TT
S		01280	LDY MAN
00790	LDA #\$74	01290	STY TEMP1
00800	STA COLPM0+1	01300	LDA OY,Y
00810	LDA #\$72	01310	STA TEMP2
00820	STA COLPM0+2	01320	LDA #0
00830	LDA #\$70	01330	STA JUMPOUT
00840	STA COLPM0+3	01340	RTS ;RTS
00850	LDA #40 ;SOUND	01350	PLA
0		01360	INC MAN
00860	STA SOUND ;40,10	01370	INC SPRITE+1
,14		01380	JSR PING
00870	LDA #\$AF	01390	LDA MAN
00880	STA VOLUME	01400	CMP #4
00890	LDY #0	01410	BCC OK
00900 .2	LDA #140	01420	LDA #0
00910	JSR RND	01430	STA MAN

Assembler Listing (cont'd)

```

01440      JSR  DELAY
01450      LDX  SH      ;THIS
IS
01460      TXA
01470      CLC
01480      ADC  #16     ;NEXT
SHAPE
01490      STA  SH      ;CONFU
SING
01500      CMP  #64
01510      BNE  MO1
01520      LDA  #0
01530      STA  SH
01540 MO1      JMP  MAIN
01550
01560 ;
01570 ;CHECK JOYSTICKS AND MOVE
01580 ;THE PLAYERS
01590 ;
01600 RSTICK  LDY  MAN
01610      LDA  STICK,Y
01620      TAX
01630      TXA
01640      AND  #UP
01650      BNE  .1
01660      LDA  OY,Y
01670      CMP  #50
01680      BCC  .1
01690      SEC
01700      SBC  #2
01710      STA  OY,Y
01720 .1      TXA
01730      AND  #DOWN
01740      BNE  .2
01750      LDA  OY,Y
01760      CMP  #230
01770      BCS  .2
01780      CLC
01790      ADC  #1
01800      STA  OY,Y
01810 .2      TXA
01820      AND  #LEFT
01830      BNE  .3
01840      LDA  OX,Y
01850      SEC
01860      SBC  #1
01870      STA  OX,Y
01880      CMP  #50
01890      BCS  .3
01900      LDA  #200
01910      STA  OX,Y
01920 .3      TXA
01930      AND  #RIGHT
01940      BNE  .4
01950      LDA  OX,Y
01960      CLC

```

```

01970      ADC  #1
01980      STA  OX,Y
01990      CMP  #200
02000      BCC  .4
02010      LDA  #50
02020      STA  OX,Y
02030 .4      LDA  MISSLEON,Y
02040      BNE  RETURN1
02050      LDA  644,Y
02060      BNE  RETURN1
02070      LDA  #1
02080      STA  MISSLEON,Y
02090      LDA  OX,Y
02100      CLC
02110      ADC  #3
02120      STA  MX,Y
02130      LDA  OY,Y
02140      CLC
02150      ADC  #4
02160      STA  MY,Y
02170      LDA  632,Y
02180      CMP  #15
02190      BEQ  RETURN1
02200      CMP  #14
02210      BNE  A1
02220      LDA  #1
02230      STA  DIR,Y
02240      JMP  RETURN1
02250 ;
02260 RETURN1  RTS
02270 ;
02280 A1      CMP  #13
02290      BNE  A2
02300      LDA  #2
02310      STA  DIR,Y
02320      JMP  FINI
02330 ;
02340 A2      CMP  #7
02350      BNE  A3
02360      LDA  #4
02370      STA  DIR,Y
02380      JMP  FINI
02390 ;
02400 A3      CMP  #11
02410      BNE  A4
02420      LDA  #3
02430      STA  DIR,Y
02440      JMP  FINI
02450 ;
02460 A4      CMP  #6
02470      BNE  A5
02480      LDA  #5
02490      STA  DIR,Y
02500      JMP  FINI
02510 ;
02520 A5      CMP  #5

```

Assembler Listing (cont'd)

02530	BNE A6	03090	RTS
02540	LDA #6	03100	;
02550	STA DIR,Y	03110	;
02560	JMP FINI	03120	;MOVE THE MISSLES IN THE
02570	;	03130	;PROPER DIRECTION AND ADD S
02580	A6 CMP #9	OUND	
02590	BNE A7	03140	;
02600	LDA #7	03150	MISSLE LDY MAN
02610	STA DIR,Y	03160	LDA MX,Y
02620	JMP FINI	03170	STA SOUND+4
02630	;	03180	LDA #\$88
02640	A7 CMP #10	03190	STA SOUND+5
02650	BNE FINI	03200	LDX #0
02660	LDA #8	03210	LOOP2 LDA #1
02670	STA DIR,Y	03220	STA 53279
02680	JMP FINI	03230	INX
02690	FINI RTS	03240	BNE LOOP2
02700	;	03250	LDA DIR,Y
02710	;	03260	TAX
02720	;	03270	CPX #1
02730	;	03280	BNE .1
02740	FINI1 LDA #0	03290	LDA MY,Y
02750	STA DIR,Y	03300	SEC
02760	STA MISSLEON,Y	03310	SBC #VSPEED
02770	RTS	03320	STA MY,Y
02780	;	03330	CMP #50
02790	;	03340	BCS .1
02800	;DRAW PROPER SHAPES FOR	03350	JMP FINISH
02810	;THE FOUR VEHICLES	03360	.1 CPX #2
02820	;	03370	BNE .2
02830	MOVE LDY MAN	03380	LDA MY,Y
02840	LDA OX,Y	03390	CLC
02850	STA HPOSPO,Y	03400	ADC #VSPEED
02860	LDY MAN	03410	STA MY,Y
02870	TYA	03420	CMP #230
02880	ASL ;*2	03430	BCC .2
02890	ASL ;*4	03440	JMP FINISH
02900	ASL ;*8	03450	.2 CPX #3
02910	ASL ;*16	03460	BNE .3
02920	ASL ;*32	03470	LDA MX,Y
02930	ASL ;*64	03480	SEC
02940	CLC	03490	SBC #HSPEED
02950	ADC SH	03500	STA MX,Y
02960	TAX	03510	CMP #40
02970	LDA OY,Y	03520	BCS .3
02980	TAY	03530	JMP FINISH
02990	MOO LDA SHAPE,X	03540	.3 CPX #4
03000	STA (SPRITE),Y	03550	BNE .4
03010	INX	03560	LDA MX,Y
03020	INX	03570	CLC
03030	INC COUNT	03580	ADC #HSPEED
03040	LDA COUNT	03590	STA MX,Y
03050	CMP #16	03600	CMP #200
03060	BCC MOO	03610	BCC .4
03070	LDA #0	03620	JMP FINISH
03080	STA COUNT	03630	.4 CPX #5

Assembler Listing (cont'd)

03640	BNE .5	04200 .88	LDA MY,Y
03650	LDA MY,Y	04210	SEC
03660	SEC	04220	SBC #VSPEED
03670	SBC #VSPEED	04230	STA MY,Y
03680	STA MY,Y	04240	CMP #30
03690	CMP #50	04250	BCS .8
03700	BCS .55	04260	JMP FINISH
03710	JMP FINISH	04270 .8	RTS
03720 .55	LDA MX,Y	04280 ;	
03730	CLC	04290 ;DRAW MISSLE SHAPES	
03740	ADC #HSPEED	04300 ;	
03750	STA MX,Y	04310 MDRAW	LDY MAN
03760	CMP #200	04320	LDX #0
03770	BCC .5	04330 LOOP	LDA #1
03780	JMP FINISH	04340	STA 53279
03790 .5	CPX #6	04350	INX
03800	BNE .6	04360	BNE LOOP
03810	LDA MY,Y	04370	LDA MX,Y
03820	CLC	04380	STA \$D004,Y
03830	ADC #VSPEED	04390	LDX MAN
03840	STA MY,Y	04400	LDA MY,Y
03850	CMP #230	04410	TAY
03860	BCC .66	04420	LDA #0
03870	JMP FINISH	04430	DEY
03880 .66	LDA MX,Y	04440	STA PLAYER+\$300,Y
03890	CLC	04450	DEY
03900	ADC #HSPEED	04460	STA PLAYER+\$300,Y
03910	STA MX,Y	04470	INY
03920	CMP #200	04480	INY
03930	BCC .6	04490	LDA MSHAPE,X
03940	JMP FINISH	04500	STA PLAYER+\$300,Y
03950 .6	CPX #7	04510	INY
03960	BNE .7	04520	STA PLAYER+\$300,Y
03970	LDA MX,Y	04530	INY
03980	SEC	04540	LDA #0
03990	SBC #HSPEED	04550	STA PLAYER+\$300,Y
04000	STA MX,Y	04560	INY
04010	CMP #40	04570	STA PLAYER+\$300,Y
04020	BCS .77	04580	RTS
04030	JMP FINISH	04590 ;	
04040 .77	LDA MY,Y	04600 ;CLEAN UP	
04050	CLC	04610 ;	
04060	ADC #VSPEED	04620 FINISH	LDA #0
04070	STA MY,Y	04630	LDY MAN
04080	CMP #230	04640	STA MISSLEON,Y ;ST
04090	BCC .7	OP MISSLE	
04100	JMP FINISH	04650	STA SOUND+4 ;SH
04110 .7	CPX #8	UT OFF SOUND	
04120	BNE .8	04660	STA SOUND+5
04130	LDA MX,Y	04670	LDA #0
04140	SEC	04680 CLEAN	STA PLAYER+\$300,Y
04150	SBC #HSPEED	04690	INY
04160	STA MX,Y	04700	BNE CLEAN
04170	CMP #40	04710	RTS
04180	BCS .88	04720 ;	
04190	JMP FINISH	04730 ;DETERMINE WHICH PLAYER IS	

Assembler Listing (cont'd)

```

04740 ;
04750 HIT      LDY MAN
04760          LDA 53256,Y
04770          BNE CONT
04780          LDA 53260,Y
04790          BEQ RETURN
04800 CONT     STA TEMP
04810          LDA #1
04820          STA 53278
04830          LDA TEMP
04840          AND #1
04850          CMP #1
04860          BNE B1
04870          LDA #0
04880          CMP MAN
04890          BEQ RETURN
04900          LDA #1
04910          STA PHIT
04920          STA JUMPOUT
04930          RTS
04940 ;
04950 B1        LDA TEMP
04960          AND #2
04970          CMP #2
04980          BNE B2
04990          LDA #1
05000          CMP MAN
05010          BEQ RETURN
05020          LDA #1
05030          STA PHIT+1
05040          STA JUMPOUT
05050          RTS
05060 ;
05070 B2        LDA TEMP
05080          AND #4
05090          CMP #4
05100          BNE B3
05110          LDA #2
05120          CMP MAN
05130          BEQ RETURN
05140          LDA #1
05150          STA PHIT+2
05160          STA JUMPOUT
05170          RTS
05180 ;
05190 B3        LDA TEMP
05200          AND #8
05210          CMP #8
05220          BNE RETURN
05230          LDA #3
05240          CMP MAN
05250          BEQ RETURN
05260          LDA #1
05270          STA PHIT+3
05280          STA JUMPOUT
05290 RETURN   RTS

05300 ;
05310 ;FLOATING DEBRIS ROUTINE
05320 ;
05330 KILL      LDY MAN
05340          JSR HIT
05350          LDY MAN
05360          LDA #$48
05370          STA SOUND+3
05380          LDA OY,Y
05390          SEC
05400          SBC #1
05410          STA OY,Y
05420          STA SOUND+2
05430          TAY
05440          LDX #0
05450 L1        LDA DSHAPE,X
05460          STA (SPRITE),Y
05470          INY
05480          INX
05490          CPX #16
05500          BCC L1
05510          LDY MAN
05520          LDA OY,Y
05530          CMP #50
05540          BCS SKIP
05550          LDA #50
05560          STA OY,Y
05570          LDA #0
05580          STA PHIT,Y
05590          STA SOUND+2
05600          STA SOUND+3
05610 SKIP     RTS
05620 ;
05630 ;
05640 ;
05650 DELAY     LDA #0
05660          STA 20
05670 .1        LDA 20
05680          CMP #5
05690          BCC .1
05700          RTS
05710 ;
05720 ;MAKE THE PING SOUND FOR
05730 ;SFX
05740 ;
05750 PING      INC TIMER
05760          LDA TIMER      ;TIMER
05770          CMP #5          ;LOOP
05780          BCC EXIT
05790          LDA #0
05800          STA TIMER
05810          LDA SILENT
05820          BEQ CONTINUE
05830          INC TIMER1

```

Assembler Listing (cont'd)

05840	LDA	TIMER1		06320	MISSLEON	.DA	#0,#0,#0,#0	
05850	CMP	#5		06330	OX	.DA	#60,#100,#140,	
05860	BCC	EXIT			#180			
05870	LDA	#0		06340	OY	.DA	#60,#100,#140,	
05880	STA	TIMER1			#180			
05890	STA	SILENT		06350	FRAME	.HS	00	
05900	LDA	#\$AF		06360	MAN	.DA	#0	
05910	STA	VOLUME		06370	;			
05920	JMP	EXIT		06380	DSHAPE			
05930	CONTINUE	DEC VOLUME	;FOR I	06390	.DA	#0,#128,#64,#2,#4,#64,		
	=15				#1,#46,#16,#128,#1,#64,#2,#8,#0,#			
05940	LDA	#40			0			
05950	STA	SOUND		06400	MSHAPE	.DA	#3,#12,#48,#192	
05960	LDA	VOLUME	;TO 0					
STEP				06410	;			
05970	STA	SOUND+1		06420		.OR	\$4600	
05980	CMP	#\$AO	;-.2	06430	DSP	.HS	7070FO	
05990	BNE	EXIT		06440		.DA	#\$42	
06000	LDA	#1	;FOR I	06450		.DA	#0	
	=1			06460		.DA	#0	
06010	STA	SILENT	;TO 40	06470		.DA	#\$82	1
0				06480		.DA	#LDM	2
06000	LDA	#1	;FOR I	06490		.DA	#LDM	3
	=1			06500		.DA	#LDM	4
06010	STA	SILENT	;TO 40	06510		.DA	#LDM	5
0				06520		.DA	#LDM	6
06020	EXIT	RTS		06530		.DA	#LDM	7
06030	;			06540		.DA	#LDM	8
06040	;	RANDOM NUMBER GENERATOR		06550		.DA	#LDM	9
06050	;			06560		.DA	#LDM	10
06060	RND	STA RTEMP						
06070		INC RTEMP		06570		.DA	#LDM	11
06080	RNDWAIT	LDA RANDOM						
06090		CMP RTEMP		06580		.DA	#LDM	12
06100		BCS RNDWAIT						
06110		RTS		06590		.DA	#LDM	13
06120	;							
06130	;			06600		.DA	#LDM	14
06140	;							
06150	;			06610		.DA	#LDM	15
06160	RTEMP	.DA	#0					
06170	VOLUME	.DA	#\$AF	06620		.DA	#LDM	16
06180	SILENT	.DA	#0					
06190	TIMER	.DA	#0	06630		.DA	#LDM	17
06200	TIMER1	.DA	#0					
06210	PHIT	.DA	#0,#0,#0,#0	06640		.DA	#LDM	18
06220	JUMPOUT	.DA	#0					
06230	SH	.DA	#0	06650		.DA	#LDM	19
06240	TEMP	.DA	#0					
06250	TEMP1	.EQ	\$600	06660		.DA	#LDM	20
06260	TEMP2	.EQ	\$601					
06270	COUNT	.DA	#0	06670		.DA	#\$82	21
06280	MX	.DA	#0,#0,#0,#0					
06290	MY	.DA	#0,#0,#0,#0	06680		.DA	#\$82	22
06300	MDIR	.DA	#1,#2,#3,#4					
06310	DIR	.DA	#1,#2,#3,#4	06690		.DA	#\$82	23

Assembler Listing (cont'd)

```

06700      .DA #JVB
06710      .DA DSP
06720 COUNTR      .DA #0
06730 ;
06740 ;DISPLAY LIST INTERRUPT ROUT
INE
06750 ;
06760 ;
06770 DLI
06780      PHA
06790      TXA
06800      PHA
06810      INC COUNTR
06820      LDX COUNTR
06830      LDA COLBAK,X
06840      STA WSYNC
06850      STA $D018
06860      STA $D01A
06870      CPX #24
06880      BNE ENDDLI
06890      LDA #$00
06900      STA COUNTR
06910 ENDDLI      PLA
06920      TAX
06930      PLA
06940      RTI
06950 ;
06960 ;
06970 ;
06980 COLBAK      .DA $$38,$$36,$$34
,$$76,$$76,$$74,$$74
06990      .DA $$74,$$74,$$72
,$$72,$$72,$$72,$$72,$$72,$$70
07000      .DA $$70,$$70,$$70
,$$70,$$70,$$32,$$32,$$32,$$32
07010 ;
07020 ;
07030 ;
07040 SHAPE
07050      .DA #0,#7,#8,#208,#224,#19
2,#192,#240,#125,#143,#77,#56,#0,
#0,#0,#0
07060      .DA #0,#0,#1,#194,#252,#19
2,#192,#240,#124,#143,#76,#56,#0,
#0,#0,#0
07070      .DA #0,#0,#0,#192,#224,#20
8,#200,#247,#125,#143,#77,#56,#0,
#0,#0,#0
07080      .DA #0,#0,#0,#192,#252,#19
4,#193,#240,#124,#143,#76,#56,#0,
#0,#0,#0
07090      .DA #0,#0,#17,#57,#85,#167
,#85,#57,#17,#0,#0,#0,#0,#0,#0
07100      .DA #0,#0,#40,#17,#109,#16
7,#109,#17,#40,#0,#0,#0,#0,#0,#0,

```

```

#0
07110      .DA #0,#0,#16,#56,#84,#167
,#84,#56,#16,#0,#0,#0,#0,#0,#0
07120      .DA #0,#0,#40,#17,#109,#16
7,#109,#17,#40,#0,#0,#0,#0,#0,#0,
#0
07130      .DA #0,#57,#109,#63,#22,#1
8,#32,#64,#128,#0,#0,#0,#0,#0,#0,
#0
07140      .DA #0,#56,#109,#63,#22,#1
8,#16,#16,#16,#0,#0,#0,#0,#0,#0,
0
07150      .DA #0,#56,#108,#63,#22,#1
8,#8,#4,#2,#0,#0,#0,#0,#0,#0
07160      .DA #0,#56,#108,#63,#23,#1
8,#16,#16,#16,#0,#0,#0,#0,#0,#0,
0
07170      .DA #0,#112,#49,#123,#127,
#255,#214,#253,#253,#255,#121,#1,
#0,#0,#0,#0
07180      .DA #0,#112,#49,#123,#127,
#255,#214,#252,#253,#255,#121,#0,
#0,#0,#0,#0
07190      .DA #0,#112,#49,#123,#127,
#255,#214,#252,#252,#255,#120,#0,
#0,#0,#0,#0
07200      .DA #0,#112,#49,#123,#127,
#255,#214,#252,#253,#255,#121,#0,
#0,#0,#0,#0
7,#255,#214,#252,#252,#255,#120,#
0,#0,#0,#0,#0

```

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PAGE FLIPPING

by Bob Cockroft

Have you ever made a game that required several displays, only to be disappointed with the slow speed in which every screen was drawn? The monotonous motion of the cursor or the gradual drawing of graphics is enough to detract from any program. Fortunately, there is a simple method of avoiding all this. By flipping through pages of memory, one is able to instantaneously replace one screen of information with another.

When one creates a graphic mode with the GRAPHICS 'X' command, the computer allocates a certain amount of memory space for screen data. The screen pointers indicate where the screen is, so that the computer is able to display it. The significant fact is that the GRAPHICS 'X' command uses empty memory, so that the screen appears originally blank. This means that data cannot be placed in memory locations that are to be used for display before the screen is created. Text or graphics must be drawn after the display is presented on the screen. As a result, much time is wasted while the screen is being drawn.

When using page flipping, the screen is best thought of as a block of memory with a specific location and size. The computer can have many of these blocks stored. The exact number depends on both the size of the block and the memory capacity of the computer. Page flipping is simply changing the screen pointers so that they indicate different blocks of screen data in the memory. Once the screen containing your information is stored as a block in the RAM, changing the pointers so that they point to this block will cause the screen to appear instantaneously. What is important is that all the screens need to be drawn only once and then stored in the RAM. Time does not need to be wasted recreating screens. The amount of memory reserved for screen data blocks depends on the resolution of the graphic mode. For example, GR.8 uses much more memory than GR.0. The following table gives the byte requirement for all the graphic modes.

Blocks of screen data must be placed in different places in the memory so that they do not erase each other. The position in the memory that is allotted for screen data is determined by the value contained in RAMTOP. RAMTOP (dec 106) gives the total

Table 1

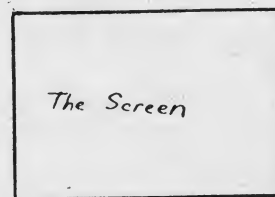
Mode type	Byte Requirements
0	993
1	513
2	261
3	273
4	537
5	1017
6	2025
7	3945
8	7900

amount of available RAM. This value will vary with the amount of memory already used and your computers RAM capacity (16K, 32K or 48k etc). RAMTOP (dec 106) indicates the amount of RAM available in terms of PAGES. A PAGE, when referring to memory capacity, means 256 bytes. In other words, by multiplying the value in RAMTOP by 256, one can find the amount of bytes available. In addition, this value is also the bottom of the screen. By subtracting the number of bytes used in the graphic mode under consideration (table 1) from the total availability bytes (PEEK(106), 256), the top of the screen can be found. (see below)

Screen Data

PEEK(106)-bytes use by Graphic mode.

PEEK(106)



Because RAMTOP determines the position of the screen data, changing the value in this location will cause the computer to create new screens at different locations in the memory. For instance, if no change was made to the value in RAMTOP(dec 106), the

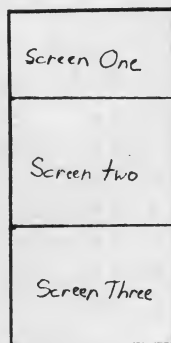
GRAPHICS 'X' command would create a screen that had a base of PEEK(106)*256. Then, if one were to reduce the value in RAMTOP by 4(POKE 106,PEEK(106)-4), the base of this new graphics mode would be positioned 1024 (4*256) bytes lower than the previous one. There would be now two screens in the memory. The only limit to the number of screens in the memory is your machines RAM capacity. Below is an example of creating extra GRAPHICS mode 0 screen blocks. The values for RAMTOP are those for a machine with 48K and do not necessarily correspond to computers that have different amounts of RAM.

Memory Configuration

PEEK(106)*256 = 40960

(PEEK(106)-4)*256 = 39936

(PEEK(106)-8)*256 = 38912



For every screen created there will be a corresponding Display List. This list is a set of instructions that tell the ANTIC chip where the screen data is, and how to display it. By directing the DL pointers(dec 560,561) to the location of the display list of the screen you wish to have presented, the computer will be able to know where to find the display. The pointers use the (LSB/MSB) byte pattern for storing the start location of the display list. In other words, the second byte must be multiplied by 256 and added to the first.

DL = PEEK(560)*256,PEEK(561)

The Display List can be anywhere between 24 and 256 bytes in length. Each byte or sometimes a group of bytes represents an individual instruction for the screen. In a discussion on Page Flipping, we are not concerned with most of these bytes. In fact, we only need to look at three. Display list bytes 3,4 and 5 are the first Load Memory Scan (LMS) instruction. Byte 3 tells the ANTIC what graphic mode to use, the next two bytes are the location of the first byte of the

screen that corresponds to this display list(LSB/MSB). What this means is that after creating a graphics mode, you POKE the display list pointers so that they indicate the display list of the screen you wish to have presented. This will cause the desired display to immediately appear on the screen. Table 2 is a partial display list. It was included in the article to help indicate how the display list finds screen data.

Partial Display List

DL	112	These 3 bytes draw a
DL + 1	112	total of 24 blank lines
DL + 2	112	at the top of the screen
DL + 3	66	
DL + 4	76	These 2 bytes indicate the
DL + 5	125	location of the screen data

The following is a step by step application of what has been explained. Although not a program, this section is designed to help you apply Page Flipping in your programs.

Create first screen

```
1 GRAPHICS 0
2 A = PEEK(106)
3 REM * NEXT:Store display list location *
4 DL11 = PEEK(560):DL12 = PEEK(561)
```

Repeat this process with the second screen

```
5 POKE 106,PEEK(106)-4:REM * lower memory location *
6 GRAPHICS 0
7 REM * NEXT:store display list location *
8 DL21 = PEEK(560):DL22 = PEEK(561)
If you POKEd the display list pointers with DL11 and DL12 (POKE 560,DL11:POKE 561,DL12) then the T.V. would display the first screen.
```

If ,instead, you POKEd the pointers with DL21 and DL22 (POKE 560,DL21:POKE 561,DL22) then the T.V. would display the second screen.

```
100 GRAPHICS 8
102 COLOR 1:SETCOLOR 2,16,1
110 T=0
120 L=PEEK(106)
140 DL11=PEEK(560):DL12=PEEK(561)

155 AC=236:ED=185:XP=210:RA=625:Y
P=25
```

```

158 GOTO 500
160 AC=60:ED=40:XP=50:RA=100:YP=1
20
162 GOTO 500
170 AC=310:ED=280:XP=295:RA=225:Y
P=140
172 GOTO 500
180 AC=35:ED=25:XP=30:RA=25:YP=30

500 FOR X=ED TO XP
510 Y=-SQR(-(X-XP)*(X-XP)+RA)+YP

520 AC=AC-1
530 PLOT X,Y:DRAWTO AC,Y
540 Y1=SQR(-(X-XP)*(X-XP)+RA)+YP

550 PLOT X,Y1:DRAWTO AC,Y1
560 NEXT X
580 T=T+1
600 IF T=1 THEN 160
610 IF T=2 THEN 170
620 IF T=3 THEN 180
700 PLOT 100,50:PLOT 100,100:PLOT
75,75:PLOT 200,50
710 PLOT 200,140:PLOT 300,50:PLOT
100,150:PLOT 80,140
720 PLOT 300,100:PLOT 5,5:PLOT 5,
100:PLOT 275,100
730 PLOT 100,120:PLOT 250,90:PLOT
225,140:PLOT 200,150
740 PLOT 100,10:PLOT 120,15:PLOT
300,25:PLOT 150,95
750 PLOT 2,150:PLOT 315,148
755 ?
760 ? " Use Joystick to change p
icture"
1000 POKE 106,L-32
1010 GRAPHICS 8
1020 COLOR 1:SETCOLOR 2,16,1
1030 T=0
1040 DL21=PEEK(560):DL22=PEEK(561
)
1050 AC=100:ED=50:XP=75:RA=625:YP
=25
1052 GOTO 1500
1060 AC=310:ED=290:XP=300:RA=100:
YP=100
1062 GOTO 1500
1070 AC=270:ED=230:XP=250:RA=400:
YP=37
1072 GOTO 1500
1080 AC=125:ED=95:XP=110:RA=225:Y
P=135
1500 FOR X=ED TO XP
1510 Y=-SQR(-(X-XP)*(X-XP)+RA)+YP
1520 AC=AC-1

```

```

1525 Y1=SQR(-(X-XP)*(X-XP)+RA)+YP
1530 PLOT X,Y:DRAWTO AC,Y1
1550 PLOT X,Y1:DRAWTO AC,Y
1560 NEXT X
1570 T=T+1
1580 IF T=1 THEN 1060
1590 IF T=2 THEN 1070
1600 IF T=3 THEN 1080
1700 PLOT 2,4:PLOT 100,95:PLOT 31
0,75:PLOT 270,50
1710 PLOT 50,140:PLOT 300,150:PLO
T 224,120:PLOT 75,75
1720 PLOT 100,10:PLOT 120,40:PLOT
300,5:PLOT 270,75
1730 PLOT 150,20:PLOT 160,100:PLO
T 180,50:PLOT 300,150
1740 PLOT 1,100:PLOT 150,150
1745 ?
1748 POKE 752,1
1750 ? " Use Joystick to change
picture"
5000 ST=STICK(0)
5010 IF ST=14 THEN POKE 560,DL11:
POKE 561,DL12
5020 IF ST=13 THEN POKE 560,DL21:
POKE 561,DL22
5100 GOTO 5000

1 REM * CHECK DATA *
100 DATA 8005,13,797,526,996,60,3
52,839,223,834,393,835,138,280,11
2,757,731,119
550 DATA 7200,831,781,665,224,227
,230,91,184,993,241,97,701,443,45
3,132,62,845
1030 DATA 9630,576,110,289,930,41
6,931,384,932,392,329,161,806,171
,829,831,830,713
1580 DATA 7026,328,331,325,8,204,
93,239,733,491,985,501,123,868,87
0,927

99 REM **** PAGE 1 ****
100 GRAPHICS 1
104 A=PEEK(106)
106 DL11=PEEK(560)
107 DL12=PEEK(561)
110 COLOR 1
120 SETCOLOR 2,16,1
122 SETCOLOR 1,8,10
124 SETCOLOR 0,18,5
130 POSITION 1,1:? #6;"THIS is"
140 POSITION 1,3:? #6;"PaGe 1"
150 ? "Press the page number you
want to see"
155 ? "?"

```

```

199 REM **** PAGE 2 ****
200 POKE 106,A-4
210 GRAPHICS 1
212 SETCOLOR 2,16,1
214 DL21=PEEK(560)
218 DL22=PEEK(561)
250 POSITION 12,1:? #6;"THIS is"

260 POSITION 12,3:? #6;"PaGe 2"

270 ? "Press the page number you
want to see"
275 ? "?"
299 REM **** PAGE 3 ****
300 POKE 106,A-8
310 GRAPHICS 1
312 SETCOLOR 2,16,1
314 DL31=PEEK(560)
318 DL32=PEEK(561)
350 POSITION 1,14:? #6;"THIS is"

360 POSITION 1,16:? #6;"PaGe 3"

370 ? "Press the page number you
want to see"
375 ? "?"
399 REM **** PAGE 4 ****
400 POKE 106,A-12
410 GRAPHICS 1
412 SETCOLOR 2,16,1
414 DL41=PEEK(560)
418 DL42=PEEK(561)
450 POSITION 12,14:? #6;"THIS is"

460 POSITION 12,16:? #6;"PaGe 4"

470 ? "Press the page number you
want to see"
475 ? "?"
499 REM **** MAIN LOOP ****
500 POKE 106,A-16
504 GRAPHICS 1
510 INPUT W
520 IF W=1 THEN POKE 560,DL11:POK
E 561,DL12
530 IF W=2 THEN POKE 560,DL21:POK
E 561,DL22
540 IF W=3 THEN POKE 560,DL31:POK
E 561,DL32
550 IF W=4 THEN POKE 560,DL41:POK
E 561,DL42
560 IF W<1 OR W>4 THEN 510
570 GOTO 510
1 REM * CHECK DATA *
99 DATA 6560,327,6,987,170,173,79
7,275,277,283,71,972,967,568,377,

```

```

25,8,277
214 DATA 5168,171,177,124,26,970,
571,379,30,9,278,173,179,127,30,9
71,572,381
400 DATA 6905,74,10,279,175,181,1
78,82,972,573,652,79,14,856,689,6
93,697,701
560 DATA 1494,656,838

```

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MIDWAY

by Bob Cockroft

It is the morning of June 4, 1942 as the American fleet waits silently north of Midway Island in anticipation of a major Japanese attack. Having broken the Japanese message code, the Americans had learned that the enemy is planning to invade this outermost Island of the Hawaiian chain. As a result, they committed the balance of their Pacific fleet to defend the Island. Being only six months after Pearl Harbour, the American naval forces are severely depleted and greatly outnumbered by the Japanese. You, as the American commander have only eleven ships at your disposal; three aircraft carriers, six heavy cruiser and two light cruisers. The carriers are the most important ships in the fleet. As a result, they should be protected at all costs. The whether battle will be won or lost will depend upon how effectively the aircraft are used. It has been rumoured that the Japanese would like to use Midway as a base from which to launch bomber attacks against Hawaii.

For a BASIC program, this game is quite complex. It uses 48K, and a couple of screens and has many options. Carefully read the following instructions, they will be helpful if not necessary in order to play. After the game has been initialized, the first phase begins. It will consist of a map of the Midway area. The map includes two islands: Kure, the upper, and Midway, the lower island. In addition, the American ships and reconnaissance aircraft are displayed. You may have noticed that there are no Japanese ships. The reason for this is that the exact location of the invading fleet is unknown. Intelligence has only determined that the enemy will move towards Midway from the western side of the map. The invader's ships exact location will need to be discovered by reconnaissance aircraft or surface patrols. Careful examination reveals two distinctive types of American ships. On the one hand, cruisers are displayed as ships with turrets and other armaments. On the other, carriers are displayed with their unmistakable flat top. At the top of the screen the name of the first ship you are to move is displayed. Using the joystick, move the ship in the direction you wish. A maximum of two spaces is allowed in any one direction. When you have moved the ship to the desired position, press the joystick trigger and repeat this procedure for the

eleven ships in the fleet, remembering that the name of the moving ship is displayed at the top of the screen. After all the ships have been shifted, the same procedure is used for moving the reconnaissance aircraft. These planes can move as many as ten spaces in any one direction. Because the Japanese fleet will move towards Midway Island from the western side of the map, it is usually best for the reconnaissance aircraft to move west in order to find the exact location of the fleet.

After all the reconnaissance aircraft have been moved, the search phase will begin. If there is a Japanese force on the same space as an American ship or within one space of a reconnaissance plane, an 'x' will be displayed on the map to pinpoint its location. In addition, the composition and position coordinates of the enemy force are displayed at the top of the map. The force that has been sighted can be composed of five different types of ships. In order to save space, each class of ship is represented by its naval symbol: Heavy carriers CV, light carriers CVL, battleships BB, heavy cruiser CA and light cruiser CL. The coordinates are given in X,Y form. They should be written down so that the forces can be tracked. Moreover, these coordinates could later be needed for your attacking aircraft. There could be a number of sightings on any given turn. Press the SPACE BAR after recording the numbers in order to continue the game.

When the search phase is completed, you will have the following options: 1. check fleet status, 2. call an air attack or 3. continue to the Japanese phase.

If you want to check the fleet or attack, press "S". Immediately the screen will display the American ships and two corresponding columns of numbers. The first column, under the subheading of DGE, represents the amount of damage the ship has sustained. The second column, under the subheading of HSR, represents the ships hull strength. If the damage number exceeds the hull strength the ship will sink. All ships that are already sunk will not be displayed. At the bottom of the screen, the computer will ask if you wish to call an air attack. A "N" response will cause the game to jump back to the map. A "Y" will cause the computer to respond with a series of questions. These would include the number of fighters and

bombers and the coordinates of the force to be attacked. The bombers will automatically attempt to concentrate their attack on enemy carriers, while the fighters try to engage any ZEROs in the area. Bombers unprotected by fighter escort will be easy prey for ZEROs.

The next phase is the one in which the Japanese move, search and possibly attack. The Japanese will move their reconnaissance plans in search of your ships. If they have made a sighting and you are in range, an air attack is possible. In addition, if a Japanese ship moves adjacent to one of your own, a surface battle will automatically occur.

After this last phase has been completed, the computer will return to the first phase and start the process over again for the second turn. There is no limit to the number of game turns. The game is only completed by sinking enough Japanese ships to force them to retreat (you win) or by losing Midway Island (the Japanese win).

The Battle of Midway was the turning point of the War in the Pacific. Although outnumbered, the Americans scored a major victory. By sinking four of Japan's largest aircraft carriers, the Americans stopped the Japanese offensive. A major victory determinant in both the Battle and this game, is the ability to locate the opponents carriers before he locates yours. In other words, the effective use of reconnaissance is vitally important to success.



```
1 DIM SHIP$(20),XPSP(11),YPSP(11)
  ,XPRC(4),YPRC(4),CL$(10),CA$(10),
  CV$(10),LIV(11),MAP(39,23)
2 XPSP(1)=29:XPSP(2)=28:XPSP(3)=2
9:XPSP(4)=30:XPSP(5)=31:XPSP(6)=3
2:XPSP(7)=32:XPSP(8)=29:XPSP(9)=3
5:XPSP(10)=35
3 XPSP(11)=35
4 YPSP(1)=5:YPSP(2)=7:YPSP(3)=9:Y
PSP(4)=10:YPSP(5)=11:YPSP(6)=13:Y
PSP(7)=14:YPSP(8)=6:YPSP(9)=12:Y
PSP(10)=13
```

```
5 YPSP(11)=14:XPRC(1)=28:XPRC(2)=
28:XPRC(3)=28:XPRC(4)=28:YPRC(1)=
10:YPRC(2)=13:YPRC(3)=16:YPRC(4)=
19
6 DIM HUST(11),DAMG(11):HUST(1)=3
:HUST(2)=3:FOR X=3 TO 5:HUST(X)=4
:NEXT X:FOR X=6 TO 11:HUST(X)=5:N
EXT X
7 CL$="LT CRUSIER":CA$="HY CR
USIER":CV$="CARRIER"
8 DIM BGAX(9),BGAY(9),GOAL(33)
10 FOR X=1 TO 11:LIV(X)=0:DAMG(X)
=0:NEXT X
12 FOR X=1 TO 3:POKE 1539+X-1,20:
POKE 1542+X-1,9:NEXT X
14 GOAL=4320:GOAL(31)=0:GOAL(32)=
0
17 FOR X=1 TO 32:GOAL(X)=0:NEXT X
110 RT=PEEK(106)-4
120 NT=RT*256
130 POKE 106,PEEK(106)-5
134 GOAL(33)=4320
135 GRAPHICS 0:POKE 752,1:POSITIO
N 17,8:? "MIDWAY":POSITION 15,10:
? "Please Wait"
140 FOR X=1 TO 1024:POKE NT-1+X,P
EEK(57344-1+X):NEXT X
145 FOR X=1 TO 39:FOR Y=1 TO 23:M
AP(X,Y)=0:NEXT Y:NEXT X
146 FOR X=1 TO 4
147 BGAY(X)=INT(RND(0)*10)+5
148 BGAX(X)=1
149 MAP(BGAX(X),BGAY(X))=MAP(BGAX
(X),BGAY(X))+10
150 NEXT X
170 POKE 756,NT/256:LOCX=0:LOCCX=
0
172 POKE 1600,0:POKE 1601,0
180 FOR X=1 TO 6
190 READ LOC
200 S=NT+LOC*8
210 FOR W=0 TO 7:READ D
220 POKE S+W,D
230 NEXT W
240 NEXT X
300 GRAPHICS 0:A=PEEK(106):DL11=P
EEK(560):DL12
=P88=PEEK(88):P89=PEEK(
89):POKE 752,1
310 POSITION 32,16:? "&":POSITION
29,14:? "("
400 POKE 106,A-16
405 GRAPHICS 0:DL21=PEEK(560):DL2
2=PEEK(561):P881=PEEK(88):P891=PE
EK(89)
```

```

2000 POKE 560,DL11:POKE 561,DL12:
POKE 756,NT/256:POKE 106,A:POKE 8
8,P88:POKE 89,P89:POKE 752,1
2001 IF PEEK(1601)=1 THEN POSITIO
N 0,0:? " JAPANESE RETREATING
'you win' ":POSITION 3,1:? "
SCORE: ";GOAL(31);
2002 IF PEEK(1601)=1 THEN ? "
":END
2003 GOAL(32)=GOAL(32)+1
2004 IF GOAL(32)=3 THEN BGAX(5)=1
:MAP(BGAX(5),BGAY(5))=12
0
2005 IF GOAL(32)=7 THEN BGAX(6)=1
:BGAY(6)=INT(RND(0)*10)+5:MAP(BGA
X(6),BGAY(6))=10
2006 IF GOAL(32)=8 THEN FOR X=7 T
O 9:BGAX(X)=1:MAP(BGAX(X),BGAY(X))=
1:NEXT X
2007 IF GOAL(32)=5 THEN BGBX=1:BG
BY=INT(RND(0)*15)+3:MAP(BGBX,BGBY
)=4320
2008 IF GOAL(32)=12 THEN POKE 153
7,1:POKE 1538,14:MAP(PEEK(1537),P
EEK(1538))=300
2009 IF GOAL(32)<12 THEN POKE 153
7,1
2010 FOR X=1 TO 11
2011 IF LIV(X)>0 THEN 2280
2012 IF X=1 THEN XPS=XPSP(1):YPS=
YPSP(1):SHIP$="Portland ":XPSP(
1)=0
2013 IF X=2 THEN XPS=XPSP(2):YPS=
YPSP(2):SHIP$="Atlanta ":XPSP(
2)=0
2014 IF X=3 THEN XPS=XPSP(3):YPS=
YPSP(3):SHIP$="Pensacola ":XPSP(
3)=0
2015 IF X=4 THEN XPS=XPSP(4):YPS=
YPSP(4):SHIP$="New Orleans":XPSP(
4)=0
2016 IF X=5 THEN XPS=XPSP(5):YPS=
YPSP(5):SHIP$="Astoria ":XPSP(
5)=0
2017 IF X=6 THEN XPS=XPSP(6):YPS=
YPSP(6):SHIP$="Minneapolis":XPSP(
6)=0
2018 IF X=7 THEN XPS=XPSP(7):YPS=
YPSP(7):SHIP$="Vincennes ":XPSP(
7)=0
2019 IF X=8 THEN XPS=XPSP(8):YPS=
YPSP(8):SHIP$="Northampton":XPSP(
8)=0
2020 IF X=9 THEN XPS=XPSP(9):YPS=
YPSP(9):SHIP$="Yorktown ":XPSP(

```

```

9)=0
2021 IF X=10 THEN XPS=XPSP(10):YP
S=YPSP(10):SHIP$="Enterprice ":XP
SP(10)=0
2022 IF X=11 THEN XPS=XPSP(11):YP
S=YPSP(11):SHIP$="Hornet ":XP
SP(11)=0
2023 POSITION 0,0:? "
":POSITION
0,1:? "
";SHIP$;"
2024 XP=XPS:YP=YPS
2025 ST=STICK(0)
2027 IF X>8 THEN POSITION XP,YP:?
"%":GOTO 2030
2030 IF ST=14 THEN POSITION XP,YP
:? " ":YP=YP-1:GOTO 2065
2032 IF ST=10 THEN POSITION XP,YP
:? " ":YP=YP-1:XP=XP-1:GOTO 2065
2034 IF ST=6 THEN POSITION XP,YP:
? " ":YP=YP-1:XP=XP+1:GOTO 2065
2036 IF ST=9 THEN POSITION XP,YP:
? " ":YP=YP+1:XP=XP-1:GOTO 2065
2038 IF ST=5 THEN POSITION XP,YP:
? " ":YP=YP+1:XP=XP+1:GOTO 2065
2040 IF ST=13 THEN POSITION XP,YP
:? " ":YP=YP+1:GOTO 2065
2050 IF ST=7 THEN POSITION XP,YP:
? " ":XP=XP+1:GOTO 2065
2060 IF ST=11 THEN POSITION XP,YP
:? " ":XP=XP-1:GOTO 2065
2065 IF XP<1 THEN XP=1
2070 IF XP>35 THEN XP=35
2075 IF YP<1 THEN YP=1
2080 IF YP>22 THEN YP=22
2085 POSITION 32,16:? "&":POSITIO
N 29,14:? "("
2090 IF (XP-XPS)>2 THEN XP=XPS+2
2100 IF (XP-XPS)<-2 THEN XP=XPS-2
2110 IF (YP-YPS)>2 THEN YP=YPS+2
2115 IF (YP-YPS)<-2 THEN YP=YPS-2
2120 IF X>8 THEN POSITION XP,YP:?
"%":GOTO 2122
2121 POSITION XP,YP:? "$"
2122 FOR S=1 TO 11
2124 IF LIV(S)>0 OR XPSP(S)=0 THE
N POSITION XPSP(S),YPSP(S):? " ":
GOTO 2130
2126 IF S>8 THEN POSITION XPSP(S)
,YPSP(S):? "%":GOTO 2130
2128 POSITION XPSP(S),YPSP(S):? "
$"
2130 NEXT S
2132 FOR WW=1 TO 4
2134 POSITION XPRC(WW),YPRC(WW):?

```

```

"#"
2136 NEXT WW
2150 IF STRIG(0)=0 THEN 2170
2160 GOTO 2025
2170 XPSP(X)=XP:YPSP(X)=YP
2280 NEXT X
2900 GOTO 4000
4000 POKE 560,DL11:POKE 561,DL12:
POKE 756,NT/256:POKE 106,A:POKE 8
8,P88:POKE 89,P89:POKE 752,1
4010 X=1
4020 XP=XPRC(X):YP=YPRC(X):XPRC(X)
)=0
4025 XPS=XP:YPS=YP
4030 POSITION 0,0:? "
      RECON ";X;"          ":POSITI
ON 0,1:? "
4040 ST=STICK(0)
4050 IF ST=14 THEN POSITION XP,YP
:? " ":YP=YP-1:GOTO 4130
4060 IF ST=10 THEN POSITION XP,YP
:? " ":YP=YP-1:XP=XP-1:GOTO 4130
4070 IF ST=6 THEN POSITION XP,YP:
? " ":YP=YP-1:XP=XP+1:GOTO 4130
4080 IF ST=9 THEN POSITION XP,YP:
? " ":YP=YP+1:XP=XP-1:GOTO 4130
4090 IF ST=5 THEN POSITION XP,YP:
? " ":YP=YP+1:XP=XP+1:GOTO 4130
4100 IF ST=13 THEN POSITION XP,YP
:? " ":YP=YP+1:GOTO 4130
4110 IF ST=7 THEN POSITION XP,YP:
? " ":XP=XP+1:GOTO 4130
4120 IF ST=11 THEN POSITION XP,YP
:? " ":XP=XP-1:GOTO 4130
4130 IF XP<1 THEN XP=1
4140 IF XP>38 THEN XP=38
4150 IF YP<1 THEN YP=1
4160 IF YP>22 THEN YP=22
4170 POSITION 32,16:? "&":POSITIO
N 29,14:? "("
4180 IF (XP-XPS)>10 THEN XP=XPS+1
0
4190 IF (XP-XPS)<-10 THEN XP=XPS-
10
4200 IF (YP-YPS)>10 THEN YP=YPS+1
0
4210 IF (YP-YPS)<-10 THEN YP=YPS-
10
4215 POSITION XP,YP:? "#"
4217 FOR W=1 TO 11
4218 IF LIV(W)>0 THEN POSITION XP
SP(W),YPSP(W):? " ":GOTO 4221
4219 IF W>8 THEN POSITION XPSP(
W),YPSP(W):? "%":GOTO 4221
4220 POSITION XPSP(W),YPSP(W):? "
$"
4221 NEXT W

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4223 FOR W=1 TO 4
4230 IF XPRC(W)=0 THEN 4250
4240 POSITION XPRC(W),YPRC(W):? "
#"
4250 NEXT W
4260 IF STRIG(0)=0 THEN 4280
4270 GOTO 4040
4280 XPRC(X)=XP:YPRC(X)=YP
4290 X=X+1:IF X<5 THEN 4020
4300 FOR R=1 TO 4
4310 FOR WW=(XPRC(R)-1) TO (XPRC(
R)+1)
4320 FOR WY=(YPRC(R)-1) TO (YPRC(
R)+1)
4330 IF MAP(WW,WY)>0 THEN 4350
4334 NEXT WY:NEXT WW
4340 NEXT R
4345 GOTO 4510
4350 POSITION 0,0:? "          Sig
hting:  LOC ";WW;" ";WY;" "
4360 DA=MAP(WW,WY)
4380 C1=(DA/10000)
4390 CVL=INT(C1)
4400 C2=(C1-CVL)*10
4410 CVS=INT(C2)
4420 C3=(C2-CVS)*10
4430 BBS=INT(C3)
4440 C4=(C3-BBS)*10
4450 CAS=INT(C4)
4460 CLS=INT((C4-CAS)*10)
4470 POSITION 0,1:? "      CV ";CVS;
"      CVL ";CVL;"      BB ";BBS;"      CA
";CAS;"      CL ";CLS
4472 POSITION WW,WY:? ")"
4473 POKE 764,255
4475 IF PEEK(764)=33 THEN 4477
4476 GOTO 4475
4477 POKE 764,255
4478 POSITION WW,WY:? " "
4479 FOR X=1 TO 4
4480 IF WW=XPRC(X) AND WY=YPRC(X)
THEN POSITION WW,WY:? "#":GOTO 4
495
4485 NEXT X
4495 IF BUS=1 THEN 4535
4500 GOTO 4334
4510 BUS=1
4520 WSS=1
4522 COUNT=WSS+1
4524 FOR LO=COUNT TO 11
4525 IF XPSP(WSS)=XPSP(LO) AND YP
SP(WSS)=YPSP(LO) THEN COUNT=COUNT
+1:GOTO 4535
4527 NEXT LO
4528 COUNT=COUNT+1
4530 IF MAP(XPSP(WSS),YPSP(WSS))>
0 THEN WW=XPSP(WSS):WY=YPSP(WSS):

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GOTO 4350
4535 WSS=WSS+1
4540 IF WSS<11 THEN 4524
4550 BUS=0
4560 FOR W=1 TO 11
4562 IF LIV(W)>0 THEN POSITION XP
SP(W),YPSP(W):? " ":XPSP(W)=0:GOT
O 4590
4570 IF W>8 THEN POSITION XPSP(W
),YPSP(W):? "%":GOTO 4600
4580 POSITION XPSP(W),YPSP(W):? "
$"
4590 NEXT W
4600 POSITION 0,0:? "Press 'S' fo
r FLEET STATUS or to ATTACK"
4605 POSITION 0,1:? "      Press
SPACE BAR to continue " :POKE 76
4,255
4610 IF PEEK(764)=62 THEN POKE 15
62,125:GOTO 8000
4620 IF PEEK(764)<>33 THEN 4610
4630 POKE 752,1:POSITION 0,0:? "

"
4635 POSITION 0,1:? "      Press
SPACE BAR to continue "
4640 IF PEEK(764)<>33 THEN 4640
4645 POSITION 0,1:? "      "

4650 GOTO 10000
8000 POKE 560,DL21:POKE 561,DL22:
POKE 88,P881:POKE 89,P891:POKE 10
6,AA:POKE 756,224:POKE 764,255
8002 POSITION 0,3
8003 FOR X=1 TO 12
8005 ? "      "

8006 NEXT X
8010 POSITION 14,0:? "Fleet Statu
s"
8020 ? :? "      NAME:      CLASS
      DGE -HSREN":?
8030 FOR W=11 TO 1 STEP -1
8035 IF LIV(W)>0 THEN 8200
8040 IF W=11 THEN ? "Hornet

";CV$;"      ";DAMG(W);"      ";HUST
(W)
8050 IF W=10 THEN ? "Enterprise
";CV$;"      ";DAMG(W);"      ";HUST
(W)
8060 IF W=9 THEN ? "Yorktown      "
;CV$;"      ";DAMG(W);"      ";HUST(
W)
8070 IF W=8 THEN ? "Northampton "
;CA$;"      ";DAMG(W);"      ";HUST(

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W)
8080 IF W=7 THEN ? "Vincenes      "
;CA$;"      ";DAMG(W);"      ";HUST(
W)
8090 IF W=6 THEN ? "Minneapolis "
;CA$;"      ";DAMG(W);"      ";HUST(
W)
8100 IF W=5 THEN ? "Astoria      "
;CA$;"      ";DAMG(W);"      ";HUST(
W)
8110 IF W=4 THEN ? "New Orleans "
;CA$;"      ";DAMG(W);"      ";HUST(
W)
8120 IF W=3 THEN ? "Pensacola      "
;CA$;"      ";DAMG(W);"      ";HUST(
W)
8130 IF W=2 THEN ? "Atlanta      "
;CL$;"      ";DAMG(W);"      ";HUST(
W)
8140 IF W=1 THEN ? "Portland      "
;CL$;"      ";DAMG(W);"      ";HUST(
W)
8150 IF DAMG(W)>=HUST(W) THEN DAM
G(W)=HUST(W):LIV(W)=1
8200 NEXT W
8210 IF LIV(11)=0 THEN POSITION 2
,16:? "Hornet      ";PEEK(1539);"
B.SQD      ";PEEK(1542);" F.SQD
":GOTO 8220
8215 POSITION 2,16:? "      "

8220 IF LIV(10)=0 THEN POSITION 2
,17:? "Enterprise ";PEEK(1540);"
B.SQD      ";PEEK(1543);" F.SQD
":GOTO 8230
8225 POSITION 2,17:? "      "

8230 IF LIV(9)=0 THEN POSITION 2,
18:? "Yorktown      ";PEEK(1541);" B
.SQR      ";PEEK(1544);" F.SQD      "
:GOTO 8500
8235 POSITION 2,18:? "      "

8500 GOTO 15000
10000 FOR X=1 TO 9
10156 GOAL(X)=MAP(BGAX(X),BGAY(X)
):MAP(BGAX(X),BGAY(X))=0
10160 IF GOAL(11+X)=1 THEN 10250
10180 BGAX(X)=BGAX(X)+2
10190 BGAY(X)=BGAY(X)+(INT(RND(0)
*4)-1)
10200 IF BGAX(X)>33 THEN GOAL(11+
X)=1
10205 IF BGAY(X)>20 THEN BGAY(X)
=BGAY(X)-2
10210 IF BGAY(X)<6 THEN BGAY(X)=

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BGAY(X)+2
10220 GOTO 10420
10250 BGAX(X)=BGAX(X)+(INT(RND(0)
*4)-1)
10260 BGAY(X)=BGAY(X)+(INT(RND(0)
*4)-1)
10270 IF BGAX(X)>37 THEN BGAX(X)=
37
10280 IF BGAX(X)<25 THEN BGAX(X)=
25
10290 IF BGAY(X)>6 THEN BGAY(X)=6
10300 IF BGAY(X)>17 THEN BGAY(X)=
17
10420 MAP(BGAX(X),BGAY(X))=MAP(BG
AX(X),BGAY(X))+GOAL(X)
10425 NEXT X
10430 GOTO 10500
10499 REM BATTLE GROUP B
10500 GOAL(10)=MAP(BGBX,BGBY):MAP
(BGBX,BGBY)=0
10510 IF LOCCX=0 THEN 10700
10520 IF BGBX<LOCCX-7 THEN BGBX=
BGBX+3:GOTO 10600
10540 IF BGBX>LOCCX+7 THEN BGBX=B
GBX-1:GOTO 10600
10550 IF BGBY<(PEEK(1536)-7) THEN
BGBY=BGBY+2:GOTO 10600
10560 IF BGBY>(PEEK(1536)+7) THEN
BGBY=BGBY-2:GOTO 10600
10580 BGBY=BGBY+INT(RND(0)*4)-2
10600 IF BGBX>37 THEN BGBX=37
10610 IF BGBX<27 THEN BGBX=BGBX+2
10620 IF BGBY>19 THEN BGBY=19
10630 IF BGBY<4 THEN BGBY=4
10640 GOTO 10800
10700 IF BGBX<25 THEN BGBX=BGBX+2
10710 IF BGBX>37 THEN BGBX=BGBX-2
10720 IF BGBY<9 THEN BGBY=BGBY+2
10730 IF BGBY>19 THEN BGBY=BGBY-2
10740 IF GOAL(10)>0 THEN GOAL(33)
=GOAL(10)
10800 MAP(BGBX,BGBY)=MAP(BGBX,BGB
Y)+GOAL(33)
10805 IF GOAL(33)<1000 AND GOAL(3
2)>10 THEN POKE 1601,1
10810 GOAL(11)=MAP(PEEK(1537),PEE
K(1538)):MAP(PEEK(1537),PEEK(1538
))=0
10820 IF PEEK(1537)=31 THEN POKE
1537,32
10830 IF PEEK(1537)<32 THEN POKE
1537,PEEK(1537)+2
10840 IF PEEK(1538)<16 THEN POKE
1538,PEEK(1538)+1
10850 IF PEEK(1538)>16 THEN POKE
1538,PEEK(1538)-1

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10860 MAP(PEEK(1537),PEEK(1538))=
MAP(PEEK(1537),PEEK(1538))+GOAL(1
1)
10870 GOTO 18000
15000 POKE 560,DL21:POKE 561,DL22
:POKE 88,P88:POKE 89,P891:POKE 10
6,AA:POKE 752,0
15005 POSITION 0,21:? "
"
15010 POSITION 0,20:? " Send plan
es (Y or N) " :INP
UT SHIP$
15100 IF SHIP$="Y" THEN 15120
15110 GOTO 16050
15120 POSITION 1,20:? "To where '
X,Y' " :INPUT X,W:POSI
TION 0,22:? " "
15125 POKE 1547,X:POKE 1548,W
15127 POSITION 1,21:? " "
15130 POSITION 1,20:? "From where
(1st letter of carrier/mid":INPU
T SHIP$
15140 IF SHIP$="H" THEN X=11:GOTO
15190
15150 IF SHIP$="E" THEN X=10:GOTO
15190
15160 IF SHIP$="Y" THEN X=9:GOTO
15190
15180 GOTO 15130
15190 IF ABS(XPSP(X)-PEEK(1547))<
7 AND ABS(YPSP(X)-PEEK(1548))<7 T
HEN 15210
15200 POSITION 1,20:? "Target is
too far away " :FOR
W=1 TO 75:NEXT W:GOTO 15010
15210 POSITION 1,21:? " " :
POSITION 1,20:? "How many bombers
? " :INPUT S
15215 IF X=11 AND S>PEEK(1539) TH
EN 15210
15217 IF X=10 AND S>PEEK(1540) TH
EN 15210
15218 IF X=9 AND S>PEEK(1541) THE
N 15210
15230 POSITION 1,21:? " " :
POSITION 1,20:? "how many fighter
s? " :INPUT W
15232 IF X=11 AND W>PEEK(1542) TH
EN 15230
15234 IF X=10 AND W>PEEK(1543) TH
EN 15230
15236 IF X=9 AND W>PEEK(1544) THE
N 15230
15250 IF SHIP$="H" THEN POKE 1551
,S:POKE 1552,W
15260 IF SHIP$="E" THEN POKE 1553

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,S:POKE 1554,W
15270 IF SHIP$="Y" THEN POKE 1555
,S:POKE 1556,W
15280 POSITION 1,21:? "      ":POSIT
TION 1,20:? "Send more planes?(Y/
N) or A to abort ":INPUT SHIP$
15285 TRAP 15280
15290 IF SHIP$="Y" THEN 15130
15295 IF SHIP$="A" THEN 16050
15300 DA=MAP(PEEK(1547)
,PEEK(1548))
15330 C2=DA/1000
15340 CVS=INT(C2)
15350 C3=(C2-CVS)*10
15360 BBS=INT(C3)
15370 C4=(C3-BBS)*10
15380 CAS=INT(C4)
15390 CLS=INT((C4-CAS)*10)
15400 X=(CVS+CAS)*3+BBS*6+CLS
15500 W=(PEEK(1551)+PEEK(1553)+PE
EK(1555))/X*3
15510 S=INT(RND(0)*4)+1
15520 IF W<4 THEN 15580
15530 IF S=1 THEN W=7:S=5
15540 IF S=2 THEN W=9:S=4
15550 IF S=3 THEN W=10:S=3
15560 IF S=4 THEN W=12:S=2
15570 GOTO 15730
15580 IF W<3 THEN 15640
15590 IF S=1 THEN W=3:S=6
15600 IF S=2 THEN W=5:S=5
15610 IF S=3 THEN W=7:S=4
15620 IF S=4 THEN W=10:S=3
15630 GOTO 15730
15640 IF W<2 THEN 15722
15650 IF S=1 THEN W=2:S=7
15660 IF S=2 THEN W=3:S=6
15670 IF S=3 THEN W=5:S=5
15680 IF S=4 THEN W=7:S=4
15722 DA=CVS*5-(PEEK(1552)+PEEK(1
554)+PEEK(1556))
15724 IF DA>0 THEN S=S+DA
15730 S=INT(S/3)+1
15740 IF PEEK(1551)>S THEN POKE 1
551,S:GOTO 15760
15750 POKE 1551,0
15760 IF PEEK(1553)>S THEN POKE 1
553,S:GOTO 15780
15770 POKE 1551,0
15780 IF PEEK(1555)>S THEN POKE 1
555,S:GOTO 15790
15785 POKE 1551,0
15790 DA=PEEK(1552)+PEEK(1554)+PE
EK(1556)
15800 DA=DA-(INT(RND(0)*3)+1)*CVS
15810 DA=INT(DA/3):IF DA<0 THEN D

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A=0
15820 POKE 1552,DA:POKE 1554,DA:P
OKE 1556,DA
15828 GOAL(23)=0:GOAL(24)=0:GOAL(
25)=0:GOAL(26)=0
15830 IF CVS>0 AND W>5 THEN CVS=C
VS-1:W=W-5:MAP(BGBX,BGBY)=MAP(BGB
X,BGBY)-1000:GOAL(33)=GOAL(33)-10
00:GOTO 15835
15832 GOTO 15850
15835 GOAL(23)=GOAL(23)+1
15840 IF W>4 THEN 15830
15850 IF CAS>0 AND W>2 THEN CAS=C
AS-1:W=W-3:GOAL(33)=GOAL(33)-10:G
OTO 15855
15852 GOTO 15870
15855 GOAL(24)=GOAL(24)+1
15860 IF W>2 THEN 15850
15870 IF CLS>0 AND W>1 THEN CLS=C
LS-1:W=W-2:GOAL(33)=GOAL(33)-1:GO
TO 15875
15872 GOTO 15890
15875 GOAL(25)=GOAL(25)+1
15880 IF W>1 THEN 15870
15890 IF BBS>0 AND W>6 THEN BBS=B
BS-1:W=W-7:GOAL(33)=GOAL(33)-100:
GOTO 15895
15892 GOTO 15910
15895 GOAL(26)=GOAL(26)+1
15900 IF W>6 THEN 15890
15910 POKE 1540,ABS(PEEK(1540)-PE
EK(1553))
15920 POKE 1539,PEEK(1540)
15930 POKE 1541,ABS(PEEK(1541)-PE
EK(1555))
15940 POKE 1542,ABS(PEEK(1542)-PE
EK(1552))
15950 POKE 1543,ABS(PEEK(1543)-PE
EK(1554))
15960 POKE 1544,ABS(PEEK(1544)-PE
EK(1556))
16000 IF LIV(11)=0 THEN POSITION
2,16:? "Hornet      ";PEEK(1539);"
B.SQD      ";PEEK(1542);" F.SQD
":GOTO 16010
16005 POSITION 2,16:? ""
16010 IF LIV(10)=0 THEN POSITION
2,17:? "Enterprise ";PEEK(1540);"
B.SQD      ";PEEK(1543);" F.SQD
":GOTO 16020
16015 POSITION 2,17:? "
"
16020 IF LIV(9)=0 THEN POSITION 2
,18:? "Yorktown    ";PEEK(1541);"
B.SQR      ";PEEK(1544);" F.SQD
":GOTO 16030

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16025 POSITION 2,18:? "
"
16030 ? :POSITION 0,20:? "Ships s
unk: ";GOAL(23);" CV ";GOAL(26)
;" BB ";GOAL(24);" CA ";GOAL(
25);" CL "
16035 ? " press SPACE BAR to cont
inue":POKE 764,255
16040 IF PEEK(764)<>33 THEN 16040
16050 POKE 560,DL11:POKE 561,DL12
:POKE 88,P88:POKE 89,P89:POKE 756
,NT/256
16052 POSITION 0,0:? "
":POSITI
ON 0,1:? "Press SPACE BAR to cont
inue
"
16060 GOTO 4600
18000 IF PEEK(1537)=32 AND PEEK(1
538)=16 THEN POSITION 0,0:? "
Japanese are invading midway
"
18002 IF PEEK(1537)=32 AND PEEK(1
538)=16 THEN POKE 1600,PEEK(1600)
+1
18003 IF PEEK(1600)>5 THEN POSITI
ON 0,0:? " MIDWAY TAKEN BY JAPANE
SE 'you lose'":POSITION 10,1:? "S
core: ";GOAL(31);
18004 IF PEEK(1600)>5 THEN ? "
":END
18005 X=INT(RND(0)*8)+1:IF LOCCX=
1 THEN X=X+3
18006 CLS=0
18010 IF X>4 THEN LOCCX=1:GOTO 18
030
18015 LOCCX=0
18020 GOTO 18240
18030 LOCCX=1
18031 FOR X=9 TO 11
18040 IF ABS(BGBX-XPSP(X))<7 AND
ABS(BGBY-YPSP(X))<7 THEN POKE 156
0,XPSP(X):POKE 1561,YPSP(X):GOTO
18070
18050 NEXT X
18060 GOTO 18020
18070 DA=MAP(BGBX,BGBY)
18080 CVS=INT(DA/1000)
18090 W=INT(RND(0)*4)*CVS:CLS=0
18100 FOR X=9 TO 11
18110 IF LIV(X)=0 THEN 18150
18120 NEXT X
18130 GOTO 18020
18150 DAMG(X)=DAMG(X)+W
18160 IF DAMG(X)>HUST(X) THEN DAM
G(X)=HUST(X):W=W-HUST(X):LIV(X)=1
:CLS=CLS+1:GOTO 18100

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18200 POKE 560,DL11:POKE 561,DL12
:POKE 88,P88:POKE 89,P89:POKE 756
,NT/256
18210 POSITION 4,0:? " JAP
Air Attack"
18220 POSITION PEEK(1560),PEEK(15
61):? ")
18230 POSITION 13,1:? CLS;" Carri
ers sunk":GOAL(31)=GOAL(31)+CLS*5
18232 POKE 764,255
18234 IF PEEK(764)<>33 THEN 18234
18240 FOR X=1 TO 11
18250 IF MAP(XPSP(X),YPSP(X))>0 T
HEN 18270
18260 NEXT X
18265 GOTO 19000
18270 DA=MAP(XPSP(X),YPSP(X))
18300 C2=(DA/1000)
18310 CVS=INT(C2)
18320 C3=(C2-CVS)*10
18330 BBS=INT(C3)
18340 C4=(C3-BBS)*10
18350 CAS=INT(C4)
18360 CLS=INT((C4-CAS)*10):BBS=0
18370 IF INT(RND(0)*3)+1=1 THEN L
IV(X)=1:DAMG(X)=HUST(X):GOTO 1838
0
18375 DAMG(X)=DAMG(X)+INT(RND(0)*
3)+1
18376 IF DAMG(X)>HUST(X) THEN DAM
G(X)=HUST(X)
18380 IF CAS>1 AND INT(RND(0)*10)
>8 THEN MAP(XPSP(X),YPSP(X))=MAP(
XPSP(X),YPSP(X))-10:BBS=1
18390 IF CLS>1 AND INT(RND(0)*10)
>5 THEN MAP(XPSP(X),YPSP(X))=MAP(
XPSP(X),YPSP(X))-1:BBS=1
18400 IF CVS>1 AND INT(RND(0)*10)
>9 THEN MAP(XPSP(X),YPSP(X))=MAP(
XPSP(X),YPSP(X))-1000:CVL=1
18410 POKE 560,DL11:POKE 561,DL12
:POKE 88,P88:POKE 89,P89
18420 POSITION 0,0:? " Surface
contact: SHIP/S/ LOST: ";LIV(X)
18430 ? " Japanese sunk: ";CVL+
BBS;" ":GOAL(31)=GOAL(31)+C
VL+BBS
18440 POSITION XPSP(X),YPSP(X):?
")
18500 POKE 764,255
18510 IF PEEK(764)<>33 THEN 18510
18520 GOTO 18260
19000 GOTO 2000
20010 DATA 3,0,0,121,35,255,120,0
,0
20020 DATA 4,0,16,16,54,255,126,0

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,0
 20030 DATA 5,0,0,4,12,255,126,0,0
 20040 DATA 6,84,130,16,157,48,66,
 36,0
 20050 DATA 8,0,96,24,60,12,10,16,
 0
 20060 DATA 9,0,66,36,24,24,36,66,
 0

0 REM * CHECK DATA *

1 DATA 8226,367,99,913,889,287,72
 0,396,912,755,415,120,204,182,922
 ,488,75,482
 140 DATA 9380,406,671,82,772,913,
 78,776,267,652,82,879,2,517,995,7
 74,776,738
 310 DATA 9535,735,78,491,739,483,
 493,483,508,919,828,490,725,200,1
 68,643,821,731
 2014 DATA 7588,881,958,760,79,920
 ,102,893,154,870,3,407,127,38,709
 ,256,213,218
 2038 DATA 7685,214,707,661,707,48
 9,597,492,592,794,162,199,159,209
 ,34,684,167,818
 2126 DATA 10381,688,345,819,213,4
 95,916,762,934,907,830,931,741,58
 2,528,410,154,126
 4050 DATA 7729,708,254,210,214,20
 9,701,655,701,484,603,488,593,791
 ,258,304,255,301
 4215 DATA 9041,689,178,10,708,348
 ,826,129,727,321,828,770,937,883,
 722,120,420,425
 4330 DATA 7304,942,503,823,942,69
 2,283,73,117,175,118,186,100,169,
 103,595,770,713
 4473 DATA 9571,93,853,957,97,710,
 143,585,839,496,939,733,753,191,5
 91,351,903,337
 4530 DATA 9092,189,55,552,736,179
 ,687,709,357,835,392,785,972,895,
 306,34,900,509
 4650 DATA 7582,980,806,193,177,70
 7,832,635,715,649,652,7,312,157,3
 41,86,328,5
 8110 DATA 8670,208,136,2,97,572,8
 27,471,562,771,564,633,566,983,17
 3,660,936,509
 10190 DATA 7457,404,306,673,621,2
 4,399,402,232,225,132,224,530,878
 ,26,681,990,710
 10520 DATA 7454,192,194,482,485,9
 91,893,169,897,788,32,167,175,126
 ,180,564,874,245
 10810 DATA 9096,159,411,986,991,9

96,40,37,941,471,554,787,32,23,85
 1,645,741,431
 15150 DATA 9382,428,409,37,587,35
 ,722,483,476,438,842,482,484,447,
 922,924,949,717
 15285 DATA 8094,47,798,781,144,99
 0,170,238,152,221,155,647,877,721
 ,442,440,634,637
 15550 DATA 9193,678,681,46,442,63
 7,631,634,677,43,439,634,636,639,
 642,924,634,176
 15740 DATA 4563,37,76,45,78,52,84
 ,472,30,266,716,959,14,50,548,445
 ,637,54
 15855 DATA 8258,552,447,624,58,55
 6,450,701,53,560,450,520,609,526,
 526,531,536,559
 16005 DATA 11877,518,859,704,722,
 706,402,749,990,500,310,987,768,9
 89,631,394,871,777
 18010 DATA 8170,323,928,38,926,23
 4,636,880,38,567,430,31,231,748,8
 78,36,533,713
 18200 DATA 6480,499,856,564,568,1
 39,4,228,701,883,44,987,71,170,23
 8,152,221,155
 18360 DATA 9049,29,195,313,3,802,
 763,927,537,535,570,412,137,998,4
 5,976,894,913
 20030 DATA 2591,803,38,866,884

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PRODUCT REVIEWS

CBS Software

Reviewed by Gabe Torok

When someone reviews as many programs in a month as I do, very few programs stand out as much better than the rest. Those that have that 'something special' you will invariably read about in ROM. This issue, I have the privilege to review two products from a software publisher, from whom I have never seen a program that could be classified as less than "the BEST". The programs are mainly educational in nature, but combine the learning process with just the right amount of fun and games to keep the interest for years. Yes, I said years. These programs will never be outdated, and their value in education is guaranteed by both the educators who wrote the programs and the educators placing these same programs in front of the students in schools across North America.

The CBS Software product line ranges in age from three to adult, and the subject matter spans five categories: Preschool Time, Fun and Learning Time, School Time, Career Time and Leisure Time.

Big Bird's Special Delivery. For ages 3 to 6

Every morning, Sesame Street greets my three year old. Now, he can help his television friends get their mail any time he pleases (and he pleases most of the time). The graphics are colorful, and after the initial running of the program, he hasn't delivered a parcel to the wrong 'address'. The program's reward of the smiling faces when he gets the delivery right is sufficient reward for him to continue for sometimes hours. And, during this time he is QUIET!, He's thinking. He is learning to classify objects, to match shapes and designs, and to control the movement of Little Bird with the use of the arrow keys. With the aid of this program, he has become very adept at comparing different objects according to attributes of form, class and function, in his every day dealings with the world.

The program is a lot of fun, judging by the amount of time he plays with it, and it's educational, verified by the barrage of questions and responses he presents me with. Highly recommended to parents of children within this age group, as a very effective entertainment while educational tool.

Coco Notes

For ages 6 and up.

This program, also intended for my son, has actually been confiscated by me for personal use. I admit to not liking jazz, and to the inability to compose or even read music. However, this program requires no such input. The ever-so-popular Jazz Scats do all the work, I just tell them which notes I want them to use from how each note sounds. Using the joy stick, players catch off-shore notes on Coco-Note Isle, (I do like fishing) and when a sufficient number of notes are caught, the Jazz Scats play them back for you. The compositions are terrific and different every time. I've even hooked up a tape recorder to save some of these 'compositions'.

Tired of just fishing and composing? Play the game against Cool Clam. Not only does he eat notes, he occasionally manages to eat your line. This game goes for both points and music, and the compositions are usually much longer. Playing for high scores requires considerable dexterity on the joystick, but the music at the end is a reward worth working for.

Another game built into this program allows you to compose by picking whatever notes you choose to be a part of your composition, AND, choose your background music, or rather, your accompaniment. Coco-Notes is a program that has to be heard. No description, no matter how well written, can provide a true idea of how entertaining this simple little program is. Anyone with the slightest liking for music will get hooked, if you pardon the pun.



Super Mailer Plus

Reviewed by Peter Ellison

Super Mailer Plus is a new inexpensive data base program that takes care of any small business or personal mailing lists. It's attractively packaged in a plastic case enclosing an orange disk and a well written 23

Continued on Page 60

ALPHAMINER

by Tom Tuong Tran

The Atari computer is the easiest computer with which to access graphics in Basic without having to use any machine language. In each game I write I try to have some educational content. It may be fun to play but, at the same time, should teach something at an elementary level. In issue number 5, I did a shoot'em up type game, also taught basic mathematics. The current game Alphaminer teaches simple spelling.

The game begins with a title screen showing a lady singing the Alphabet song. As each letter or word appears on the screen the lady moves her mouth, thus appearing to be singing.

To the right of the lady is a menu showing four choices: 1) Alphabetical (A-Z), 2) Reverse (Z-A), 3) Any order, and 4) Quit. Below is shown the high score in the form HI CASH=\$. Push '1' on the keyboard to begin play. A little man will appear at the top left hand corner of the screen. Letters will be randomly displayed on the screen below and then covered up with different coloured earth.

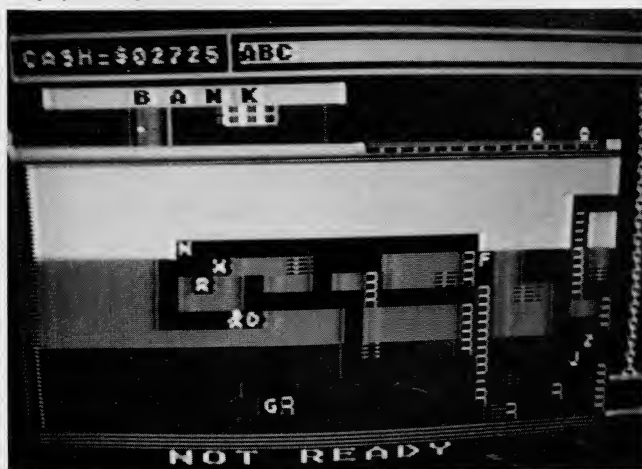
Because you pushed the key, the player must dig up the letters in the correct order form A-Z. So try to remember where the letters were scattered. Now move your man with the joystick to the right through the bank's door. The cash (points) will now go up to \$2500. Now move the man to the right onto the purple car. The car will then move automatically and place the man on the elevator. To lower the elevator move the joystick down. When you wish to stop at a certain level, pushed the fire button. After you have pushed the button the elevator will stop, allowing your man to get off. He can then move through the earth, mining for letters. He must find the letter 'A' first since we chose the 1 selection on the menu. If we had chosen 2 we would have to get '2' first. If we had picked 3 we could get anyone that we wanted first.

Rocks block the miner's path, making him go around them. If you can't remember where the letter 'A' is, push 'H' for help. The 'A' will now appear, making it easily recoverable. The miner can move in any of the eight joystick positions just by pushing the joystick in the direction desired. When moving up, your miner will build a ladder. He moves to the right or left and if there is no earth there he will die and the game will be over. So be careful when going up and down ladders. Another way of dying is to move out-

side the earth without having the elevator beside you.

The more moves that you make to find a letter, the lower your score will be after you recover it. When moving up you lose 35 points a step, moving left and right through earth you lose 20 dollars, and left and right through empty space, 10 dollars. After you touch the key that corresponds to the letter on the screen, move the miner back to the elevator and push your button. This will take you back up to the surface. Push your button again when you get to the top and move back onto the car. This will take you back to the bank where you can pick up your loot for recovering the letters. Try not to use the Help key to find the letters, so that the game becomes more challenging.

By redefining the character set, I was able to make the graphics look more interesting. Instead of having a block for a man, a realistic looking man was created. Also, by using control characters (Atari's built in character set), I was able to cut out a lot of work redefining the characters myself. I hope that you will enjoy this game.



```
1 REM ---ROM MAGAZINE-----
2 REM WRITTEN BY:Tom Tuong Tran
3 REM -ROM EDUCATION SOFTWARE--
10 DIM P1$(20),CAR$(15),ELE$(25),
A(100),T(100),K(4),C$(5):N1=1:N0=
0:N256=256:N23=23:N11=11:N7=7:N36
=36:N12=12
20 N76=76:N22=22:N2=2:N14=14:N59=
59:N33=33:N10=10:N5=5:N37=37:N13=
13:N5=5:N40=40:N9=9:N6=6:N76=76:N
4=4:N202=202
```

```

30 N128=128:N3=3:WAIT=7000:LINE=5
000:WAIT1=8000:N53761=53761
50 N15=15:N82=82:N19=19:K(1)=65:K
(2)=193:K(3)=97:K(4)=225:GOTO 100
0
60 G=CASH:C1=N0
70 IF G>0.99 THEN G=G/N10:C1=C1+N
1:GOTO 70
80 POSITION 12-C1,N1:? CASH:RETUR
N
100 SOUND NO,120,N10,N10
105 IF (AL=L OR Z=N0) AND NOT FL
AG THEN 160
110 IF H=26 THEN 841
140 POSITION NO,N23:? " NOT RE
ADY ";
150 MOVE=V:X=X2:Y=Y2:SOUND NO,NO,
NO,NO:GOTO 210
160 SOUND 0,200,NO,NO:AL=AL+Z:FLA
G=N1:H=H+N1:AL1=TABLE+H:AL2=L:POK
E AL1,AL2:IF KEY=255 THEN POKE MO
VE,NO:GOTO 150
165 POKE SC+40*(Y+DY)+(X+DX),NO:P
OKE 764,255:GOTO 150
200 IF Y1=N3 THEN Y=N5:X=N37:GOTO
510
205 Y=Y1+N2:X=N37:MOVE=SC+40*Y+X:
R=N1
210 ST=STICK(NO):IF ST<>N15 THEN
POKE N53761,N59:GOTO 330
215 IF Y=Y1+N2 AND X=N37 AND STRI
G(NO)=N0 THEN 850
216 IF R=N0 THEN POSITION NO,N23:
? "YOU ARE FALLING";:GOTO 800
217 IF CASH<=N0 THEN GOTO 840
218 GOSUB 60:KEY=PEEK(764):IF KEY
=57 THEN 220
219 GOTO 210
220 FOR W=N1 TO N:IF AL=T(W) THEN
POKE A(W),T(W)
230 NEXT W:GOTO 210
330 DY=(ST=N13 OR ST=N9 OR ST=N5)
-(ST=N14 OR ST=N10 OR ST=N6)
340 DX=(ST=N7 OR ST=N6 OR ST=N5)-
(ST=N11 OR ST=N10 OR ST=N9):CH=N1

350 X2=X:Y2=Y:X=X+DX:Y=Y+DY:V=MOV
E:MOVE=SC+40*Y+X:U=L:L=PEEK(MOVE)
:R=PEEK(MOVE+N40):O=N0:CASH=CASH-
10
351 IF X=N0 OR X=38 OR Y=N6 OR Y=
22 OR L=77 OR L=78 OR L=79 THEN M
OVE=V:X=X2:Y=Y2:R=N1
357 FOR W=N1 TO N:IF MOVE=A(W) TH
EN POKE A(W),T(W):MOVE=V:X=X2:Y=Y
2:A(W)=N0

```

```

358 NEXT W:POKE N53761,N0
359 IF ST=N14 THEN O=N6:CASH=CASH
-N5
360 IF U=6 THEN O=U
365 IF L=N202 THEN POSITION NO,N2
3:? " HARD ROCK ";:MOVE=V:X=X
2:Y=Y2
370 IF L<59 AND L>32 THEN 100
375 IF L<>N0 THEN CASH=CASH-20
380 POKE V,O:POKE MOVE,N76:GOTO 2
10
400 IF ST=N11 THEN DX=-N1
410 IF ST=N7 THEN DX=N1
420 POKE P,P1:IF ST=N15 THEN POKE
P,N0
430 X=X+DX:P=SC+40*Y+X:P1=PEEK(P)
:IF PEEK(P+40)=85 THEN X=X-DX:P=S
C+40*Y+X
440 POKE P,N76:RETURN
500 X=N2:Y=N5:P=SC+40*Y+X:POKE P,
N76:P1=N0:FLAG=1
510 ST=STICK(NO):IF ST<>N15 THEN
GOSUB 400
522 IF X=N0 THEN X=X+1
523 IF X=38 THEN X=X-1
524 IF X=6 AND FLAG THEN GOSUB 60
0
525 IF X=37 AND NOT FLAG THEN 85
0
526 IF X=19 AND NOT FLAG THEN E1
=N1:E2=N10:E3=N1:GOSUB 910
527 IF X=35 AND FLAG THEN E1=N10:
E2=N1:E3=-N1:GOSUB 910
590 GOTO 510
600 POKE P,P1:FOR K=N7 TO 8:POSIT
ION K,N4:? " ";:GOSUB WAIT:? "
":NEXT K
601 IF CASH=N0 THEN I=250:GOTO 60
3
602 I=200:POKE AL1,AL2+128
603 FOR K=1 TO N10:SOUND NO,K+N15
,8,N10:CASH=CASH+I:GOSUB 60:POKE
77,N0
610 SOUND NO,NO,NO,NO:NEXT K:POSIT
ION N7,N4:? " ";:FLAG=N0:X=
8:GOSUB 400:RETURN
700 FOR K=N6 TO N7:POSITION K,N5:
? " ";:GOSUB 7000:NEXT K:POSITI
ON N6,N5:? " ";:FLAG=N0:RETU
RN
710 FOR P0=0 TO 150:SOUND 0,P0,10
,P0/15+2:NEXT P0
720 FOR P0=0 TO 240 STEP 5:VOL=14
-P0/20:SOUND V0,P0,0,VOL:SOUND V1
,P0,8,VOL
730 SOUND V2,P0+15,2,VOL:NEXT P0:

```

```

GOSUB 54:RETURN
800 DOWN=MOVE:S=NO
810 POKE DOWN,N0:DOWN=DOWN+N40:IF
  PEEK(DOWN)<>N0 THEN POKE DOWN-N4
0,91:GOTO 840
820 POKE DOWN,127:S=S+N10:FOR Q=S
  TO S+10:SOUND 0,Q,10,17-Q/10:NEX
T Q:GOTO 810
840 FOR S=1 TO 15:SOUND 0,120,8,1
5-S:NEXT S:SOUND 0,0,0,0
841 POSITION N0,N23:? "      GAME
- OVER";:IF HCASH<CASH THEN HCASH
=CASH
842 FOR K=1 TO 500:NEXT K:CH=152:
GOTO 2000
850 ELE$(16,16)=CHR$(N12):DY=N1:I
F Y>N3 AND FLAG THEN DY=-N1
860 POSITION N36,Y1:? "
      " :Y1=Y1+DY:GOSUB 90
0:GOSUB WAIT1
861 IF STRIG(N0)=NO THEN GOSUB WA
IT:GOTO 200
865 IF Y1>=18 THEN DY=-N1
866 IF Y1=N3 THEN DY=N1
870 GOTO 860
900 POSITION N36,Y1:? ELE$:RETURN

910 POKE P,N0:CAR$(N1,N1)=CHR$(12
):DX=N1:IF X=35 THEN DX=-N1
915 FOR K=E1 TO E2 STEP E3:GOSUB
950:GOSUB WAIT1
920 POSITION X1,4:? "
      " :X1=X1+DX:NEXT K:CAR$(N1,N1)=
CHR$(32):GOSUB 950:X=35:IF E3=-N1
THEN X=19
930 ST=N15:GOSUB 400:RETURN
950 POSITION X1,N4:? CAR$:RETURN

1000 REM MACHINE LANGUAGE SUB. TO
  MOVE CHARACTER SET
1001 CH=PEEK(106)-8:CHSET=CH*256:
POKE 204,CH:POKE 206,224
1002 FOR K=1 TO 20:READ B:P1$(K,K
)=CHR$(B):NEXT K:K=USR(ADR(P1$))

1003 DATA 104,162,4,160,0,177,205
,145,203,200,208,249,230,206,230,
204,202,208,242,96
1004 READ A:IF A=-1 THEN 2000
1005 FOR J=0 TO 7:READ B:POKE CHS
ET+A*8+J,B:NEXT J
1006 GOTO 1004
1008 DATA 3,40,40,16,16,16,40,170
,170
1009 DATA 5,0,0,0,0,7,31,120,0
1010 DATA 6,126,66,66,66,126,66,6

```

```

6,66
1011 DATA 10,0,31,48,106,202,248,
15,0
1012 DATA 11,0,192,96,48,49,97,19
3,1
1013 DATA 12,0,3,6,12,140,134,131
,128
1014 DATA 13,0,0,0,0,126,0,0,0
1015 DATA 27,0,0,0,0,128,224,56,0

1016 DATA 28,5,5,5,13,9,49,73,133

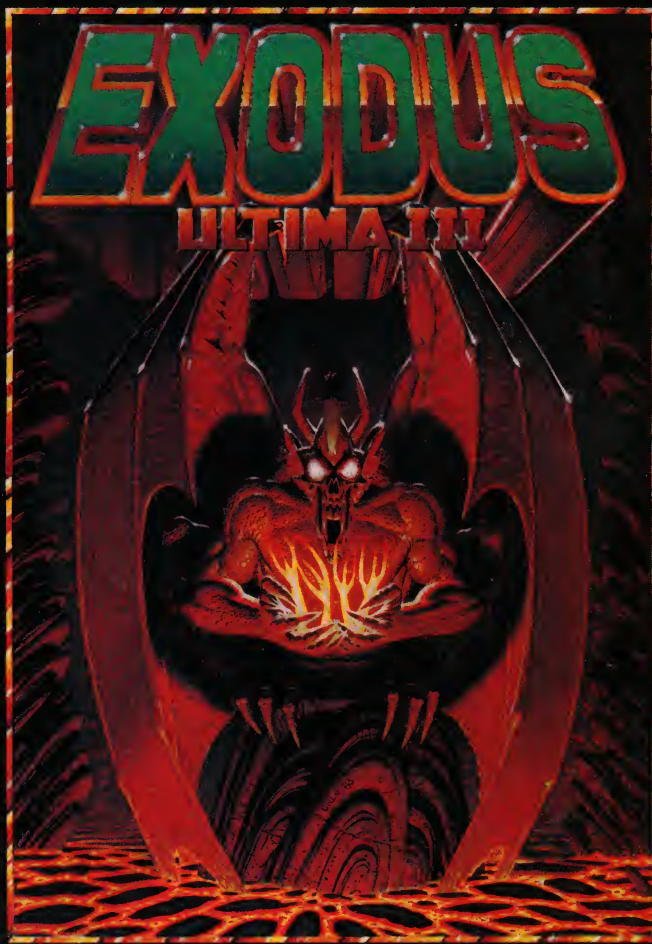
1017 DATA 29,0,0,0,126,0,0,126,0

1018 DATA 30,78,49,0,0,0,0,0,0
1019 DATA 59,20,21,81,66,82,20,5,
1
1020 DATA 60,20,84,69,129,133,20,
80,64
1021 DATA 61,0,1,5,16,85,5,0,0
1022 DATA 62,0,64,80,4,85,80,0,0

1023 DATA 63,34,220,0,0,0,0,0,0
1024 DATA 64,117,85,85,85,85,85,8
5,85
1025 DATA 72,170,170,170,170,170,
170,170,170
1026 DATA 73,213,213,213,255,213,
213,213,255
1027 DATA 74,170,85,170,85,170,85
,170,85
1028 DATA 75,0,248,12,166,163,14,
248,0
1029 DATA 76,60,60,27,126,216,60,
102,102
1030 DATA 79,24,24,60,102,195,195
,255,255
1031 DATA 80,255,255,255,255,85,1
70,85,170
1032 DATA 83,170,170,170,170,0,0,
0,0
1033 DATA 84,170,170,128,60,126,1
02,126,60
1034 DATA 85,85,85,161,161,85,170
,85,170
1035 DATA 89,160,160,160,176,144,
140,146,161
1036 DATA 91,60,126,102,231,129,2
31,231,231
1037 DATA 96,208,212,213,212,208,
192,192,192
1038 DATA 123,24,24,60,110,102,11
8,60,24
1039 DATA 127,102,102,60,24,126,2
19,60,60
1040 DATA -1

```


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Horse Racing

By Tim Ruscheinsky

Anxious faces of spectators line the track waiting for their horses to break through the gate. The horn sounds and they are off. This is not a day at the races, but an exciting simulation called 'Horse Racing'. Complete with weather conditions, odds, and winnings, the action at the track can be duplicated without any sobering losses.

In the race, you must bet on at least one of the five horses. Each horse has its own odds and characteristics that can vary with every running. Changing weather and track conditions offer a further obstacle in the choosing of a winner. Wet and Muddy tracks tend to slow the horses, while drier conditions produce faster times.



As soon as all bets have been made, a green track will appear with picket fences on either side. Racing begins instantly after this. The horses will progress from left to right towards the finish line. The lead may change a number of times before the first horse crosses the finish line. After every race the winning horse will immediately be announced. Bets are settled and then the entire process is repeated.

'Horse Racing' is not a complex game, but does recreate some of the of the more enjoyable aspects of the track. Characters are used to draw the horses and background features. A machine language subroutine is used to move the ROM character set. The odds are generated randomly with some die modifications. Despite its simplicity, the program will hopefully bring hours of enjoyment.

```

10 REM * HORSE RACING *
20 GRAPHICS 1+16:SETCOLOR 2,16,1

30 POSITION 4,6:? #6;"HORSE RACING"

100 FOR DAT=1 TO 25:READ PE
110 FOR TI=1 TO 3:FOR SP=1 TO 5:
  SOUND 0,PE,10,10:NEXT SP:NEXT TI
120 FOR YY=1 TO 10:NEXT YY:SOUND
  0,0,0,0:NEXT DAT
130 DATA 81,60,40,40,40,47,47,47,
  60,47,60,81,0,81,60,40,40,40,47,4
  7,47,81,81,81,60
140 M=10000
150 DIM WB$(20),WC$(20),WD$(20),WE$(20):WA=1
160 WB$="Dry & Fast":WC$="Dry & Rough":WD$="Wet & Slick":WE$="Muddy & Slow"
170 A=1:B=2:C=3:D=4:E=5
180 P=50:J=0:F=0:G=0:H=0:I=0
190 GRAPHICS 1+16:SETCOLOR 2,16,1:
  COLOR 1:POSITION 1,8:? #6;"count
  down to post "
200 L=INT(RND(0)*5)+1
210 IF A=L THEN J=J+1:P=P-1
220 IF B=L THEN F=F+1:P=P-1
230 IF C=L THEN G=G+1:P=P-1
240 IF D=L THEN H=H+1:P=P-1
250 IF E=L THEN I=I+1:P=P-1
260 POSITION 9,12:? #6;P;" "
270 IF P=0 THEN GOTO 290
280 GOTO 200
290 GRAPHICS 0:SETCOLOR 1,0,0:SET
  COLOR 4,0,0
300 Z=50
310 N=Z/J:A=INT(N+1):POSITION 2,3
  :? A;"1 Happy Jack"
320 POSITION 29,7:? "Welcome"
330 N=Z/F:B=INT(N+1):POSITION 2,5
  :? B;"1 Blazing Bob"
340 POSITION 27,9:? "to the track
  "
350 N=Z/G:C=INT(N+1):POSITION 2,7
  :? C;"1 Hop Along "
360 N=Z/H:D=INT(N+1):POSITION 2,9
  :? D;"1 Tippy Tim "

```

```

370 N=Z/I:E=INT(N+1):POSITION 2,1
1:? E;":1      Mustard Seed"
380 M=M
390 POSITION 2,1:? "ODDS      H
ORSES"
400 POSITION 10,20:? "PLACE YOU B
ET"
410 POSITION 30,1:? "TRACK":POSIT
ION 28,2:? "CONDITIONS"
420 POSITION 13,14:? "CASH: ";M
430 WA=INT(RND(0)*4)+1
440 POSITION 27,4:IF WA=1 THEN ?
WB$
450 IF WA=2 THEN ? WC$
460 IF WA=3 THEN ? WD$
470 IF WA=4 THEN ? WE$
480 POKE 752,1
490 POSITION 3,17:? "#1":POSITION
11,17:? "#2":POSITION 19,17:? "#
3":POSITION 27,17:? "#4":POSITION
35,17:? "#5"
500 IF M<0 THEN GOTO 1190
510 POSITION 1,18:? "      ":POS
ITION 0,18:TRAP 510:INPUT BET1:IF
M<BET1 THEN GOTO 510
520 M=M-BET1:POSITION 18,14:? "
      ":POSITION 18,14:? M
530 POSITION 9,18:? "      ":POS
ITION 8,18:TRAP 530:INPUT BET2:IF
M<BET2 THEN GOTO 530
540 M=M-BET2:POSITION 18,14:? "
      ":POSITION 18,14:? M
550 POSITION 17,18:? "      ":PO
SITION 16,18:TRAP 550:INPUT BET3:
IF M<BET3 THEN GOTO 550
560 M=M-BET3:POSITION 18,14:? "
      ":POSITION 18,14:? M
570 POSITION 25,18:? "      ":PO
SITION 24,18:TRAP 570:INPUT BET4:
IF M<BET4 THEN GOTO 570
580 M=M-BET4:POSITION 18,14:? "
      ":POSITION 18,14:? M
590 POSITION 33,18:? "      ":PO
SITION 32,18:TRAP 590:INPUT BET5:
IF M<BET5 THEN GOTO 590
600 M=M-BET5:POSITION 18,14:? "
      ":POSITION 18,14:? M
610 RAMTOP=106:CHBAS=756:CHORG=57
344
620 GRAPHICS 0:POKE 752,1:SETCOLO
R 1,0,8:SETCOLOR 2,14,5
640 RAMNEW=PEEK(RAMTOP)-8
650 START=RAMNEW*256
660 IF X4=10 THEN POKE CHBAS,RAMN
EW:GOTO 750
670 FOR X=1 TO 20:READ BB:POKE 15

```

```

35+X,BB:NEXT X
680 DATA 104,162,4,160,0,177,205,
145,203,200,208,249,230,206,230,2
04,202,208,242,96
690 Q=USR(1536):? "£"
700 POKE CHBAS,RAMNEW
710 X4=10
720 FOR I=0 TO 79:READ AA
730 POKE (START+(97*8)+I),AA
740 NEXT I
750 U=1:V=2:W=3:X=4:Y=5:P=0:Q=0:R
=0:S=0:T=0
760 FOR LINE=2 TO 21:POSITION 39,
LINE:? "j":NEXT LINE
770 POSITION 0,1:? "iiiiiiiiiiiiii
iiiiiiiiiiiiiiiiiiiiiiiiiiiiii"
780 POSITION 0,22:? "iiiiiiiiiiiiii
iiiiiiiiiiiiiiiiiiiiiiiiiiiiii"
790 POSITION P,3:? "abcd"
800 POSITION P,4:? "efgh"
810 POSITION Q,7:? "abcd"
820 POSITION Q,8:? "efgh"
830 POSITION R,11:? "abcd"
840 POSITION R,12:? "efgh"
850 POSITION S,15:? "abcd"
860 POSITION S,16:? "efgh"
870 POSITION T,19:? "abcd"
880 POSITION T,20:? "efgh"
890 Z=INT(RND(0)*(5+WA-1))+1
900 IF Z=U THEN P=P+1
910 IF Z=V THEN Q=Q+1
920 IF Z=W THEN R=R+1
930 IF Z=X THEN S=S+1
940 IF Z=Y THEN T=T+1
950 IF P=36 OR Q=36 OR R=36 OR S=
36 OR T=36 THEN 970
960 GOTO 790
970 ? "£":GRAPHICS 0
980 IF P=36 THEN WIN=BET1*A:NUM=1
990 IF Q=36 THEN WIN=BET2*B:NUM=2
1000 IF R=36 THEN WIN=BET3*C:NUM=
3
1010 IF S=36 THEN WIN=BET4*D:NUM=
4
1020 IF T=36 THEN WIN=BET5*E:NUM=
5
1030 M=M+WIN
1040 IF M<0 THEN END
1050 GRAPHICS 1+16:POSITION 6,10:
? #6;"horse #";NUM
1060 FOR J=1 TO 200:NEXT J
1070 GOTO 170
1080 DATA 0,0,0,0,0,0,0,0
1090 DATA 0,0,0,0,0,0,31,0

```

Continued on Page 62

Communication With The World

By Gabe Torok

Thanks to a little blue box, my Atari has grown immeasurably in stature. This blue box has opened a world I had not expected, for it has just erased the barrier between me, and any other computer.

Of course, you guessed it! I bought a modem. Not just ANY modem! This one is designed for use ONLY with the Atari Home Computers, plugs in directly to joystick port #2, and costs as little as the cable you would have had to buy had you bought any other non-Atari modem (About \$149.00). I bought the Microbits MPP-1000C Modem. It's a complete telecommunications package, complete with the "Smart Terminal" cartridge. The software supports disk drives, cassette recorders, printers, and has full up-loading and downloading capabilities, autodial, autoanswer and a whole mess of functions I haven't had time to try yet. (I've had my phone line tied up every night to every local BBS whose number I could find. (More on BBS's later.)

The Smart Terminal software is completely menu-driven and supports X-MODEM protocol which allows you to eliminate normal transmission errors while communicating. There are many other options as well that take full advantage of many of the built-in features of the Atari Computer.

It supports ASCII and ATASCII. (United Software recently announced a June release date for the Atari version of the ASCII Express, a superb communication package so far available only for the Apple and IBM PC.) ASCII stands for American Standard Code for Information Interchange.

But the most exciting part of this is that I can talk to ANY computer, anywhere they have a modem, ANY modem, and a telephone line. The baud rate for this communication can be varied to anything up to 300 baud, (with my MPP Modem,) which suits me just fine. It may be a little slower, but on most Bulletin Boards, like CompuServe, 300 baud is considerably cheaper than 1200 baud. (While we're on CompuServe, for those readers who are residing outside the United States, you will be able to use only your 5 free hours with your subscription unless you have a

credit card such as MasterCard or Visa. CompuServe, at this time, does not have direct billing to anywhere outside the United States.)

The MPP Modem is a smart terminal! For those of you who do not know the difference between a smart terminal and a dumb terminal: with a smart terminal you can up-load or download programs. Some BBS's require that you donate programs if you download a program from their files. These 'donations' are to be your own personally written programs, or, public domain programs not yet available on that particular BBS. Most BBS's request that you do not transfer or copy programs that are pirated.

The difference between a smart terminal and a dumb terminal is that the dumb terminal can read only, whereas the smart terminal can down or up-load information. If you are a serious user of your computer and the BBS, this smart terminal is a must.

Some BBS'S, such as Satyricon Electronics, will provide a special service to their members (for a fee of \$5.00 per year) such as a system's check on your own computer via their Industrial access mode. This will run a full analysis on the industrial computer and/or your micro. Should you have any problems, this portion of their program will surely point you in the direction required to correct that particular problem.

If you run into difficulties, the SYSOP (systems operator) will be able to answer any questions. Just leave a message before signing off. Next time you're on the system, there will be a message waiting for you with your answer.

I've talked to many SYSOP's. Most of them started the bulletin board because they had a computer, and got tired of space games and the like. There, all of a sudden, appeared an instant hobby and the opportunity to talk to other computer enthusiasts, without giving up the fun of computing. For this reason, there seems to be a new bulletin board popping up every day. Some survive for years, others disappear literally overnight.

Most BBS SYSOP's write their own programs to run the board. There are commercial programs avail-

able that can be revised to suit the operator, but most of these programs have been written for the non-Atari user, in CP/M, MS-DOS or PC-DOS. With your modem, you can access any of these boards, but when you download a program, be sure it can be run on your computer. If you cannot run CP/M, there is no need for you to save a program run on CP/M.

A BBS can be run on anything from a 48K Atari with one disk drive to a full mainframe (whatever) with several hundred megabytes of memory. The size of the system doesn't seem to matter. It's the people who intend to, and do use the service provided, that makes the big difference. A quick example could be Color Pacific. The SYSOP is Debbie Cooper, and she runs the board on a 64K Color computer with two disk drives. It works extremely well, and is a board that is easy to handle for the first-time user. The fact that she runs a board for the Color Computer from Radio Shack should not deter the Atari user, because there are several Atari users signed up on that board with many interests in common with you. Most boards will have a listing of the users and their computer types for you to access. But the most common ground I found so far on the BBS is the need for support working on the Infocom Adventures such as the Zork series, or Planetfall, or whatever. (See review of 'A Shortcut Through Adventureland' in this issue.) There is always someone that you can help, or get help from, going through these adventures, and it makes NO difference whether your computer is an Atari, Apple, CoCo, or TI.

Now that I have told you how great it is to have or to subscribe to a bulletin board, let me pass on a word from Doug Bailey of H & S Microsystems to would be Sysops. 'Firing up a Bulletin Board is like opening up a can of worms!' Before you go on line consider the fact that as soon as your first calls start coming in, you've lost your computer. It no longer belongs to you. Just try taking it out of service for a day and see the comments the unreasonable users leave for you. Some can and do get exceptionally crude, and there is very little you can do about these mental midgets.

If you think you can handle this so far, then think of the cost. Repairs to disk drives are not cheap, and the more popular your board is, the more downtime you'll suffer for repairs. If you're not running a hard disk drive, Oh!!!!, the cost of diskettes will eat you out of house and home! Better make it a membership system to cover the overhead, you say? Yes, but better do it from DAY 1. Otherwise you'll get the same message to the Sysop that appeared for Doug on his board when H & S became a (\$5.00 per year) membership board; 'How DARE you charge money for a PUBLIC service!' Of course, I left out the four letter words, and considerably shortened his fourteen paragraphs of complaints. But then, that's what happens when you

open a can of worms. Some crawl out!

My final note on the subject is for those readers who 'believe' in the power of communication. We've all heard the statement 'No man is an island' but probably ignored it. There are some extremely intelligent people who have a great deal to say, but cannot say it face to face to another person. The computer, with a modem, can be the proverbial lifebelt to those of us who would find difficulty in tete-a-tete communication. Thus the emergence of Dial-Your-Match in several States, and the computer-marriages we read about in the newspapers. The communications capabilities of our different computers gives us an access to a world of people that most of us may never have known existed. They are intelligent people, looking at the future in a manner perhaps different from our set patterns, but nevertheless, very much a part of our future, and the modem attached to their computer gives them the 'voice' and the access to people they may not otherwise have. The Modem is a window to the world and all who live in it. Use it wisely, but have fun while you're doing it. Who knows, you just may meet your match! The following is a list of Bulletin Boards I've recently compiled with the help of several publications and an extremely long list from Frank Swain III of United Software Industries (ASCII Express). Some of these boards may no longer exist, and there are at least this many new ones popping up while I write this. Most BBS's have a listing of other BBS's in that locality, so find the board nearest you from this list, give them a call, and list out the other local boards.

A number of systems require you to hit your return key when the connection has been made. Failure to do so will make the computer at the other end of the line hang up. Many systems will not let you in without a password, but will provide information on how to obtain one. In most cases, typing in your name and the word 'PUBLIC' for the password will give you some access. The Source does not give a free demo of the system, however, CompuServe does. Procedures for the free demo are included with most modems when you purchase them.

Finally, all bulletin boards have some sort of a time limit to allow all users a chance to use the system. If you intend to play a game, it may be wise to download it to your computer, then there will be little chance of losing the game while playing, as the auto-timer disconnects your line. Now, where is that telephone. . . .

Continued on Page 56

JAKE

THE SOFTWARE DUDE

by Jason Cockroft

The tune played "take me out to the ball game", it was the game of the month, J.S.D. and The Raving Reviewer would prove who's the real dunce. So much for the intro. This was it. The long awaited rematch between The Raving Reviewer and myself was about to happen over the classic game of baseball or shall I say Starbowl baseball.

As I think back I believe it was Jumpman where The Raving Reviewer and I had our last head to head competition. We all know by now that I rose victoriously. Yet, since that day, that cunning, so called associate of mine was dying for a rematch. Oh yes, I've played him in Pole Position, River Raid, Dimension X and Encounter since that fateful game, yet we never had the big rematch. This match, with no doubt, would be more than the game of the month but rather the game of the year.



News of the rematch spread quickly. Soon every software store had signs posted everywhere. Software dudes all around began to gather. There would be a simple message on the posters. It read, "J.S.D. vs T.R.R. Monday Night 8:00 PM 001 BUNKER ST." This of course was my home.

I tried to make the basement a little respectable for the event. Even though T.R.R. was my Arch Enemy, I knew I must conduct myself like the champ that I was. With this in mind I scrubbed the grease from my T.V. screen, emptied the garbage cans and cleaned the countless bags, bottles and bugs from the floor. Further, I rented a bunch of recliners, post-a-pods and fridges, for I knew it was going to be a long night.

This would mean more to me than the Marines did to Gomer Pile.

As for the game itself, it was like the lifesize game in almost every detail. If your team is up to bat you control the batter and the baserunners. You can lead off and steal. But WATCH OUT! you may get picked off. On defense you control the man closest to the ball. Once you retrieve it you can throw it anywhere in the infield. Your men are also capable of catching the big pop fly and making the double or even if you good, triple play.

The game is made complete with its great little extras. For example, before the game starts you hear the American national anthem. The game further includes crowd cheers, the seventh inning rally, out of town score board, and the attendance of the game. During the seventh inning you may bring in a reliever. You see, if you over use the fastball you pitcher's arm will soon be bagged. You'll have to make do with the wimpy guy till the seventh. Other great additions to the game include the display of the inning by inning scoreboard. Yet there was one feature I dreaded about this game, (due to the additional stress it adds on the ballplayer) — extra innings.

Two weeks before the match I was tuned. The pickoff, the pitchout and, of course, my pitching would make any major leaguer cringe. The game packed all the excitement of the American classic, all in the comfort of my cushioned recliner.

Monday morning finally rolled around for me at 11:00 AM as I reached over to shut off my alarm. "Today was going to be a special day," I thought while I gazed into the closet mirror. The clothes I slept in seemed clean enough although my hair seemed to be in a scattered mess. I grabbed my ol' Little League "Bunkerstreet Dispos" cap as I made my way down to the basement. I took one look at my Atari console and I knew I had to get away for awhile. The tension began to mount.

If there was one thing that could calm my nerves, it was a cruise in my Stratochief. I decided to kill a couple of hours and cruise 'The Ave' When I got down there I realized it was Monday afternoon. I spent half the day sitting at stoplights and watching pedestrains cross the street. It was kind of fun.

By mid afternoon I needed to talk to someone so I pulled in and had a word with Al at the local software store.

"You look as wound up as T.R.R.," laughed Al.

"so he's been here too. I wonder why he hasn't been out cruising the streets like I have? ", I asked.

"He went for a couple of practice laps at the Raceway," he explained.

"I guess that Maseratti isn't as streetwise as the Stratochief!", I added.

"J.S.D." said Al, "The Raving Reviewer pays me in cash for his software, not in I.O.U.'s and in refundable bottles. If your asking me to comment on the game tonight, well let's just put it this way . . . LET THE BEST MAN WIN! " So much for that guy. I went home.

Around six O'clock the people started to pile in. There was a lot of talk and stuff like that. Junior Dudes were shooting their mouthes off about how they could connect on the fastball and all that, but I just sat and waited, Waited for The Raving Reviewer.

At ten to eight he arrived as his usual pretentious, gleaming self. Some Junior Software Dudes asked him for his autograph as I sat in the corner.

One of the Junior Dudes shouted "J.S.D. is pro! Let's get his autograph!"

As I scribbled my name on software packages, I glanced over at T.R.R. and noticed the gleam was gone from his smile. By this time the game was about to begin.

And so it was to be . . . THE GAME. There were sweaty palms, beady eyes, shaky hands and smelly feet. But, of course, the game went into the extra Inning. The score was one all. As you might guess, it was a defensive battle. Both of our pitchers lost their fastball in the third. Yet, through imaginative pitching styles along with our great infield plays, the game kept close.

The Raving Reviewer had first bats. I can tell you right now, when you play this game, use all your pitches. (Sliders, Curve, Knuckler, Fastball) Your comments and style will give you away. To be the best, you must constantly change the rhythm of your pitching. But by the end of the 10th T.R.R. had me figured. He knocked one of my knucklers over the fence.

But, being the pro, you get to know the ropes of any game. I was down but not out. I had my final bats.

My first batter flyed out. My second struck out. Could this be? after calling a time out I ran into the kitchen to make the meanest pot of coffee my stomach has ever fought.

As I went back into the basement I looked around for the first time that night. The room was packed. Not only two Dozen software dudes, but so was the

editor, Al, Miss "Quick Game", and the Mayor there. I wasn't about to fall in front of all of them!

The first ball he threw I jumped on. I smashed it to left field. I managed a single out of the play. Now I was in business. My winning run was up to bat.

Within a couple of minutes the count was full. It was time for my baserunner to make his move. Before his pitch got underway my baserunner was on his way to second. I figured a basehit would bring him home. Then there was the pitch or was it?

T.R.R. threw a pitchout. His throw to second was strong and fast. As Porky Pig would say "Dats all Folks".

By the end of the week my salary at ROM was cut in half. By Pay-day I'd sold my Stratochief for some cold cash. By the end of the month the landlord kicked me out of my house. We agreed that I could rent out the basement. I was back where I started a year ago - at the bottom.

The rest of the week I played Baseball against the computer. But while I played the thought kept striking through my head — I was # 2.

I was lying on my couch last Friday evening when I heard a knock upon my door. It felt like a lot of effort but I got up to answer it.

"Miss Quick Game?", I said.

"Yes, well I mean no. My real name is Diana Giles," she replied.

"Well what brings you here?" I blared.

"J.S.D., you look like more of a mess than you've ever been before and we both know the reason why. Have you seen Rocky III?"

"Not yet."

"Well let's go see it. I think it will do you some good."

I agreed.

Starbowl Baseball Gamestar

Ratings

Playability:9

Challenge:9.5

Graphics:8.8

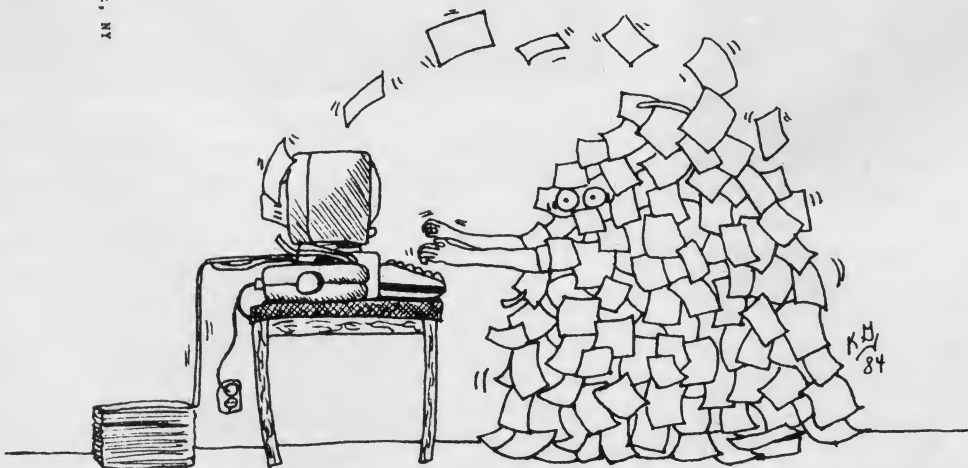
Sound:8

Documentation:8

Overall:9.1

BBS LIST

- 201-226-0341 Cyberon (Games) West Caldwell, NJ
 201-272-1874 RCP/H RBBS Cranford NJ
 201-272-3686 Dial-Your-Match #14
 201-276-8342 ARNUDC Washington, DC
 201-339-7407 AMIS, Bayonne, NJ
 201-391-5519 AMIS Jolly Roger BBS, Park Ridge, NJ
 201-462-0435 Dial-Your Match #21
 201-477-7263 TIBBS Brick, NJ
 201-486-2956 CPONJ/TBBS Linden, NJ
 201-494-3649 TBBS Metuchen, NJ
 201-528-6623 Forum-80 Monmouth Bittelle, NJ
 201-549-7591 Atari, Edison, NJ
 201-572-0617 Coco Board, New Brunswick, NJ
 201-584-9227 RCP/H MCBS Ken Stritzel, Plandora, NJ
 201-627-5151 Conference-Three Flagship, Danville, NJ
 201-635-0705 New Jersey Telecom
 201-678-6670 BBS IBM PC New York, NY
 201-747-6768 PMS - Shrewbury, NJ
 201-747-7301 RCP/H RBBS Paul Bogdanovich, NJ
 201-775-8705 RCP/H RBBS Ocean, NJ
 201-790-5910 Aphrodite-E, NJ
 201-790-6795 Photo-80, Haledon, NJ
 201-835-7228 ABBS CMNJ, Pompton Plains, NJ
 201-843-4563 ABBS Saddlebrook, NJ
 201-864-5345 ABBS Apple-Mate, New York, NY
 201-887-8874 RATS Systems
 201-891-7441 A-C-C-E-S Wyckoff, NJ
 201-932-3879 RCP/H RBBS Rutgers, New Brunswick, NJ
 201-932-3887 PMS-Rutgers University MicroLab, Piscataway, NJ
 201-968-1074 ABBS Apple Group N.J., Piscataway, NJ
 201-992-9893 BMBBS The Hospital, Livingston, NJ
 201-994-0988 BMBBS The Garage, Livingston, NJ
 201-994-9610 NET-WORKS Livingston, NJ
 202-272-1874 PCP/H RBBS Cranford, NJ
 202-276-8342 ARNU WASHINGTON
 202-337-4694 PSBBS Washington, DC
 203-237-2668 Cool Coco Meriden, CT
 203-289-6321 BBS IBM PC East Hartford, CT
 203-629-4375 Education-80 Greenwich, CT
 203-744-6644 BULLRT-80 Danbury, CT
 203-746-5763 Telecom 7, New Fairfield, CT
 203-776-9723 AMIS BBS New Haven CT
 203-869-7569 BMBBS The Firehouse, Greenwich, CT
 203-886-7932 BULLRT-80 Seymour, CT
 205-272-5069 FORUM-80 Montgomery, AL
 205-893-6749 RCP/H RBBS Huntsville, AL
 206-244-5438 ABBS Apple Create II Seattle, WA
 206-256-6624 Dial-Your-Match #16, WA
 206-334-7394 MSC-80 Everett, WA
 206-367-7949 BBS IBM PC Seattle, WA
 206-486-2368 PMS-Software Unlimited Kenmore, WA
 206-491-4143 Mage BBS, Lacey, WA
 206-522-1340 BBS IBM PC Seattle, WA
 206-525-3412 AMIS Space WA
 206-525-5947 The Constant Society Seattle, WA
 206-527-0897 Mail-Board 82 Seattle, WA
 206-546-6239 ARB Seattle, WA
 206-723-3282 Forum-80 Seattle, WA
 206-759-0615 CONFERENCE-TREE Tacoma, WA
 206-762-5141 MINI-BIN SEATTLE, WA
 206-763-8879 Sascam-80 Seattle, WA
 206-866-9043 A-C-C-E-S-S Olympia, WA
 206-883-0403 JCTS Redmond, WA
 206-883-4403 BBS IBM PC Seattle, WA
 206-933-9119 ABBS Apple Create I Seattle, WA
 209-298-1328 Dial-Your-Match #26 Clovis, CA
 209-739-1776 CBBS Sequoia Computer, Visalia, CA
 212-241-8965 AMIS New York, NY
 212-362-1040 TCBS B.A.M.S. New York NY
 212-410-0949 NET-WORKS Brooklyn, NY
 212-441-3755 CONNECTION-80 Woodhaven, NY
 212-442-3874 SISTER Staten Island, NY
 212-534-2858 BMBBS Avenger's Mansion, New York, NY
 212-541-5975 MHHM#2 NEW
 212-568-0682 AMIS New York, NY
 212-626-0375 Nybbles-80 NY
 212-740-5680 BULLRT-80 New York, NY
 212-767-6633 AMIS Info, New York, NY
 212-772-7167 The Database BBS
 212-799-4649 TCBS Astrocom, New York, NY
 212-877-7703 ABBS New York, NY
 212-879-5182 AMIS Manhattan Message Manager, New York, NY
 212-879-7698 TCBS Lefgh's Computer World, NY
 212-896-0519 ABBS Queens, NY
 212-897-3392 COM-80 Queens, NY
 212-933-9459 Bronx BBS, NY
 212-991-1664 CONNECTION-80 Manhattan, NY
 212-997-2488 PMS McGraw Hill Books, New York, NY
 213-242-1882 Dial-Your-Match #11
 213-287-1363 Greene Machine, Temple City, CA
 213-296-5927 RCP/H RBBS Software Store, Los Angeles, CA
 213-318-6626 Lusty Lady BBS Hermosa Beach, CA
 213-334-7614 PMS Los Angeles, CA
 213-345-1047 Dial-Your-Match #9
 213-346-1849 PMS O.A.C. Woodland Hills, CA
 213-360-5053 RCP/H RBBS Valley, CA



Halt!!! Break!!! Stop!!!.....Help!!!!

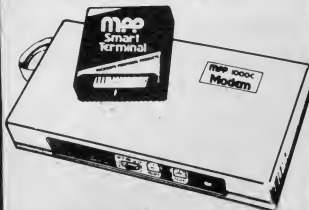
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THE RAVING REVIEWER

by Tim Reekie

Ultima III

We came, We saw, We kicked its Exodus. After much sweat and toil, we kicked, scratched, gouged and fought our way to Exodus, steadied ourselves for a rough, tough drag-em-out fight and were disappointed by the simplicity of the extermination of our dreaded foe. In any case, as instructed, we are 'reporting our feat'.

I'll keep this update short and sweet. If you haven't yet solved Sosaria, the following hints may be helpful. There are only two main objectives that must be obtained. I'm assuming that you are twenty-fifth level or better so that you have 2550 Hit Points. Any extra Levels are merely icing. Therefore, what must be increased is the Intelligence and Wisdom of your Wizards and Clerics, respectively, and the Strength and Dexterity of your fighters etc. This is easily done once you have found the best route down with a handful of keys. You must also find the castle of Exodus (obviously!). This is also easily found (easy for me to say, right!?). If you have not yet found it, you may get there two different ways, one of which is through the Moons. I highly recommend finding the Exotics before you go there, though, as you will find that inside the castle, fighting anyone without them is effectively useless. Wizard and Clerics should also have 80 or more magic Points (for the upper level 'Multi-Kill' spells). It is not Exodus that will sap your strength, but the trip to same.

As hinted at by many local yokels (of Sosaria) a rap with the Time Lord could be considered Time well spent! However, finding old T.L. could prove to be a bit of a chore. Ask around (casual like!). Usually stationary people in corners and far-away places have the most fascinating <word>s to tell. To avoid making an ash out of yourself, it's left to right, right? Too right!

If you aren't thoroughly confused by my ridiculous riddles, perhaps you too may become a hero to thousands of Sosarian children. Good Luck! (You'll need it!)

(P.S. "We" are Terry Slevin, Tim Ruscheinsky and myself with an absolute overkill score of 750,000 moves (give or take) Hey!, give us a break: It takes time to become super-sleuths!

DRAGON RIDERS OF PERN

Epyx

Shards and Shells; Pern has transversed the galaxies and is now orbiting my disk drive. Unfortunately, the Red Star has tagged along and is again menacing the people and dragons of Pern (not to mention playing havoc with my disk drive).

As any Anne McCaffrey fan knows, the Red Star erratically orbits Pern and every 200/400 turns, which is called an interval/Long Interval, it passes close to Pern and rains Thread on these hapless souls. This may not seem too terrible an ordeal to us Earthlings, who can cope with thread. However, this is no ordinary thread: this Thread eats away any organic substances (that is, everything except stone and metal). To make a long story short, Pern has beasts (called dragons) that are capable of flaming Thread and turning it into harmless ash.

If this is too complicated for you, then you would be well advised to read a couple of Anne McCaffrey's books before playing this game (Or at least read the prologue, which is generously supplied with the rules, before entering into the realm of Pern.

A (presumably Long) Interval has just passed and you (from 1 to 4 players) are a Weyrleader. Most Holds now openly doubt the existence of Thread and you, along with the other Weyrleaders are pledged to protect Pern in spite of herself. There are 16 major holds, 8 major craft halls and 6 Weyrs (at least two of which will be controlled by the computer). In a specified number of 'Turns' (240 days), you must emerge

the winner by 'out-allying' your opponents. This is the task you must face as you begin your orbit around your disk drive.

There are two main themes in this game. The first of these is the Intrigue part of the game. This is what you do during the year and the point of this intrigue is to make as many alliances as possible.



Usually, you will only try to make alliances with those people who are your three strongest supporters. How do we get strong supporters? you ask.

There are a number of ways, it seems. Giving the prospective ally fire lizard eggs(miniature dragons), inviting them to weddings or hatchings among other things. However, read the Description of the character, which is inside of the computer and can change with your actions, before doing anything. If the prospective ally hates fire-lizards, then giving him eggs will do more damage than harm! etc. After you have allied yourself with a Hold, you must protect it during Thread-fall or you will likely lose it.

This brings us to the Second Phase of the game: Thread Fighting. Here you go head-to-head with Thread, in an excellent graphics screen. With a dragon you control with a joystick, you must sear the Thread before it hits the ground (or maybe more importantly, you). Having dragons dying depletes your Weyr's dragons and also gives the Thread more of a chance to hit the ground which not only kills vegetation, but also your supporter's confidence too (word travels quickly on Pern).

Results of each player's attempts at Threadfall, including the computer's, are displayed after each player has fought Thread. The Intrigue phase of the game is then repeated, starting at Day 1 of the next Turn.

By the First Egg, this game is a must for anyone who has travelled through Pern via the Dragon-Tale books of Anne McCaffrey. Dragonriders of Pern takes you there and puts you in a position to control it. Another excellent game from Epyx.

I told you to rephrase
the last sentence !!!



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page instruction manual.

The thing that makes this mailing program better than most, is the amount of options inside the program. Lists can be made to suit the needs of the User. The User doesn't have to change to meet the needs of the program. Up to four disk drives can be used, making large mailing lists easy to create. The simplicity of using the program makes it easy for the first-time user. The "on-screen" prompts will make it very easy to use the powerful features of the program right from the first time you boot-up the disk.

One thing that bugs me about most data base programs is the amount of time it takes to search for something. This program has solved that problem. After using the program I was able to find a name out of a 1000 in one second. That's what I call, "Pretty Fast!" The "Zip Sort" is a truly 3-dimensional in that it can sort up to 3 things in one file. E.g., The program will sort 1st by ZIP/2nd by LAST NAME/3rd by FIRST NAME within each Zip code.

Other handy features within the program include; a State code abbreviation table built in by just pushing Ctrl-S, Search on any field, Special coding field (up to 12 custom codes), Print labels (1, 2, 3 or more), Fast Sorting, Merging your files to create a combination of files, and re-definable fields, allowing unlimited applications.

The manual that comes with Super Mail Plus is easy to understand. It takes you step by step through an imaginary mailing list, showing the different types of features that can be used. Or if you have used a Data Base program before, it has a Quick Reference table in the back so the advance user doesn't need to read the whole manual.

This program is a nice piece of software for anyone that wants to keep some type of files. Up to 1200 records can be stored on one disk. This program can be purchased from:

Royal Software
2160 W. 11th Avenue
Eugene, Oregon
97402

TOP-DOS
Reviewed by Peter Ellison

"TOP-DOS" is a new DOS for the Atari computer with many of the professional features found in much larger machines. Although it has all these advance features, TOP-DOS occupies the same amount of memory space as Atari's DOS. A DOS (Disk operating System) is the set of instructions that organizes the disk into files and allows the user to access them.

TOP-DOS does all that Atari's DOS does, and more. Features like: single line commands, create

powerful command files made up of a series of operations, examine and change bytes in memory without the hassle of PEEK, POKE and PRINT, Alphabetize and compress your File Directory, Restore unintentionally deleted files, and lastly, call for HELP with a single keystroke. It is hard to imagine being able to use all these new features without using up any more of the computer's memory.

Following its predecessor, DOS-MOD, TOP-DOS does all that DOS-MOD did and then some (see review in issue 3 of ROM). Things can be slow when working with Atari DOS, because of the number of times a person must push return just to do a simple command. With TOP-DOS a person can enter a whole command on a simple line, making it much faster with only a single carriage return.

Creating a Command file is something Atari DOS doesn't even have. In TOP-DOS you can create a command file in which you can put messages to tell the user what the file will do. 'Q' is the letter to press to get your own specially created command file. After the 'Q', the name of the command file which you wish activated must be typed in. This command file may do something as simple as formatting a disk or as complex as updating, alphabetizing, and copying drive one to drives two, three, and four. What makes the command file so neat is how simple it is to create your own commands.

The 'R' (Read/Store) command gives you a convenient way to examine and replace bytes in memory, without using BASIC's PEEK, POKE, and PRINT commands or resorting to an Assembler or utility program. This command makes it quite simple to change bytes of memory if you to run a certain program. It can save a lot of time and hassle, thus giving the programmer more time to program and to fool around with DOS.

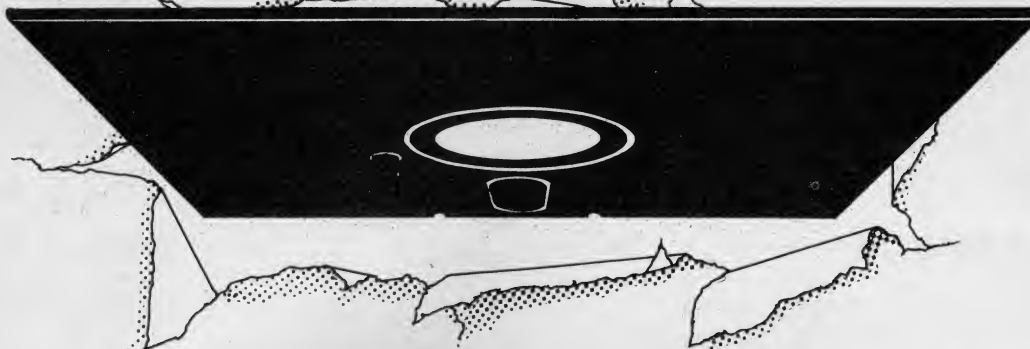
The 'S' (Set/Status) command enables you to customize many features of TOP-DOS to your own personal needs. This command isn't really necessary, but it does give the user a much more flexible and professional product to use. Things that a user can change, for example are: Prompt character, Left Margin, Right Margin, System Drive #, Num Buffers, Add Drive #, and a whole lot more, making it quite unique.

The 'T' (Trouble) command is the one used to save the operator from looking through manuals, trying to find what an error message means. For example, if a ERR 167 appeared on the screen, all that you would need to type in is 'T' and "File Locked" would be printed to the screen.

The 'U' (Undelete) command is one 'no' DOS should be without. What happens when you mistakenly delete a file? It is lost, right? No, you can retrieve it again by using this command, and your panicking

Continued on Page 62

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UNDELETE COMMAND rescues an accidentally-deleted file.

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Memory-residency: 0700-1A80 (hex)

(Same as ATARI DOS-2)

Commands: 58

(All ATARI DOS-2 + 43 more)

Command options: 42

SOPHISTICATED POWER

TOP-DOS offers professional features found only in systems on much larger machines. Whatever your experience level, you will appreciate the flexibility and power of this advanced system. Here are some examples of TOP-DOS's powerful features:

MACHINE LANGUAGE MONITOR & EDITOR allows you to access and change bytes in memory.

COMMAND FILE CAPABILITY permits you to simply and rapidly execute a complex sequence of commands.

"HELLO" FILE executes automatically on boot-up.

SET COMMAND enables you to customize your system: Configure disk drives and select TOP-DOS options.

FILE DIRECTORY COMMAND lets you choose: Alphabetization, the number of columns in the listing, and the inclusion of deleted & open files.

MEMORY MAP shows you the memory areas used by the Binary Load command.

ONE-LINE COMMANDS saves you time and conserves screen space, once you are familiar with the command syntax.

DOS-RESIDENT OPTION speeds your transfer between TOP-DOS & BASIC, or other programs.



ECLIPSE

See TOP-DOS at your dealer. If not available, you may order direct from ECLIPSE SOFTWARE, 1058-R Marigold Court, Sunnyvale, CA 94086, (408) 246-8325.

DEALER INQUIRIES WELCOME

TOP-DOS includes all the features of its predecessor, DOS-MOD. TOP-DOS and DOS-MOD are trademarks of ECLIPSE. ATARI is a registered trademark of Atari, Inc. Prices are subject to change without notice. Shipping charges are prepaid. California residents add 6.5% sales tax (\$49.95 + 3.25 = \$53.20).

Horse Racing (cont'd)

1100 DATA 3,3,12,31,48,207,239,247
 1110 DATA 96,112,95,255,240,224,128,128
 1120 DATA 0,0,0,0,0,0,0,0
 1130 DATA 1,1,3,3,6,12,12,24
 1140 DATA 239,222,227,97,96,33,35,224
 1150 DATA 224,96,48,144,176,160,0,0
 1160 DATA 0,0,85,85,68,68,68,68
 1170 DATA 192,192,0,0,192,192,0,0

DATA CHECK

0 REM * CHECK DATA: HORSE.RA *
 10 DATA 8576,545,104,319,775,159,229,242,715,517,461,466,777,689,330,752,746,750
 240 DATA 10429,754,758,772,571,832,902,586,786,140,883,571,728,774,76,557,390,349
 410 DATA 9070,685,977,410,347,430,433,436,929,620,611,366,479,390,482,492,485,498
 580 DATA 9526,488,504,482,404,607,802,458,932,39,285,372,528,637,628,779,766,815
 760 DATA 11905,539,463,515,798,807,796,814,842,860,849,867,856,865,729,431,435,439
 930 DATA 7605,443,447,187,851,397,218,223,258,263,268,879,358,399,689,884,394,447
 1100 DATA 6111,880,141,389,560,51,937,763,826,927,637

Product Reviews (cont'd)

will be over. I believe that just this command itself is worth the price of the disk.

There are many more features in TOP-DOS that I didn't mention because I could fill the whole magazine. One more thing that is a bonus to the package is the well documented manual that comes with the disk. It has some advance programming techniques that I found quite helpful. In closing, I just want to say to anyone who owns a disk drive, "TOP-DOS is a must! No disk drive user should be without."

TOP-DOS is available from:

Eclipse Software
 1058-R Marigold Court
 Sunnyvale, California
 94086

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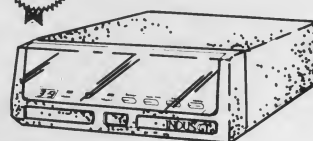
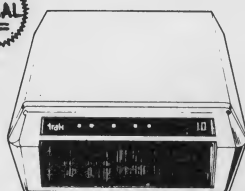
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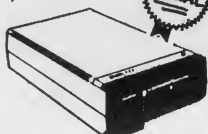
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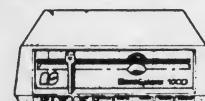


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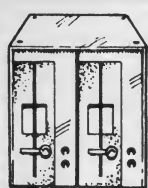
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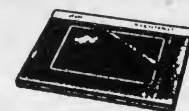
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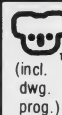
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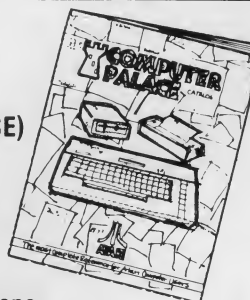
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