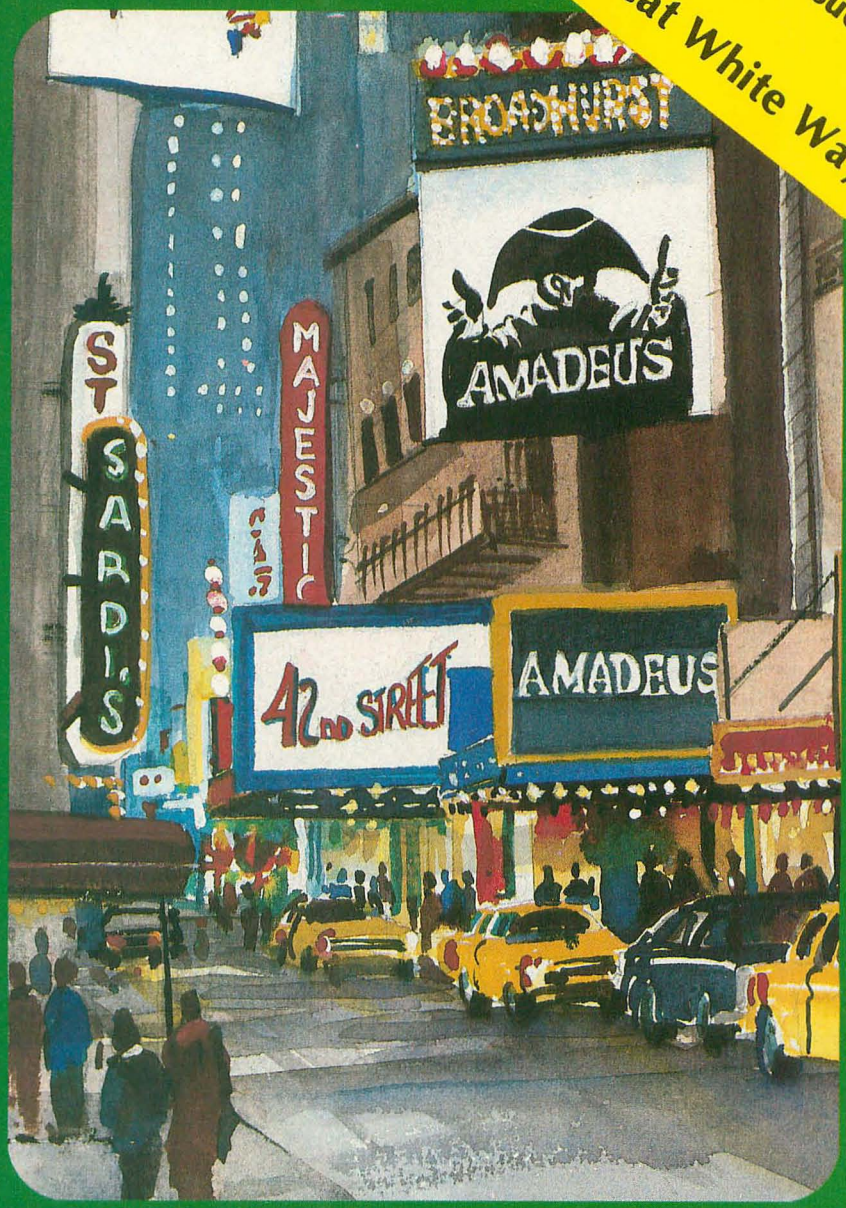
SoftSide®

The Magazine For You & Your Computer

#44
THREE DOLLARS

FREE Software Printed In This Issue:
Broadway
Adventuring On The Great White Way



Adventure & Simulation
Can Computers Mimic The Real World?

Is It Fun?
Revelations Of Two Game Creators

The Battle For Your Mind?
Harness The Power Of Fantasy

WarGames Review
To Win, Don't Play

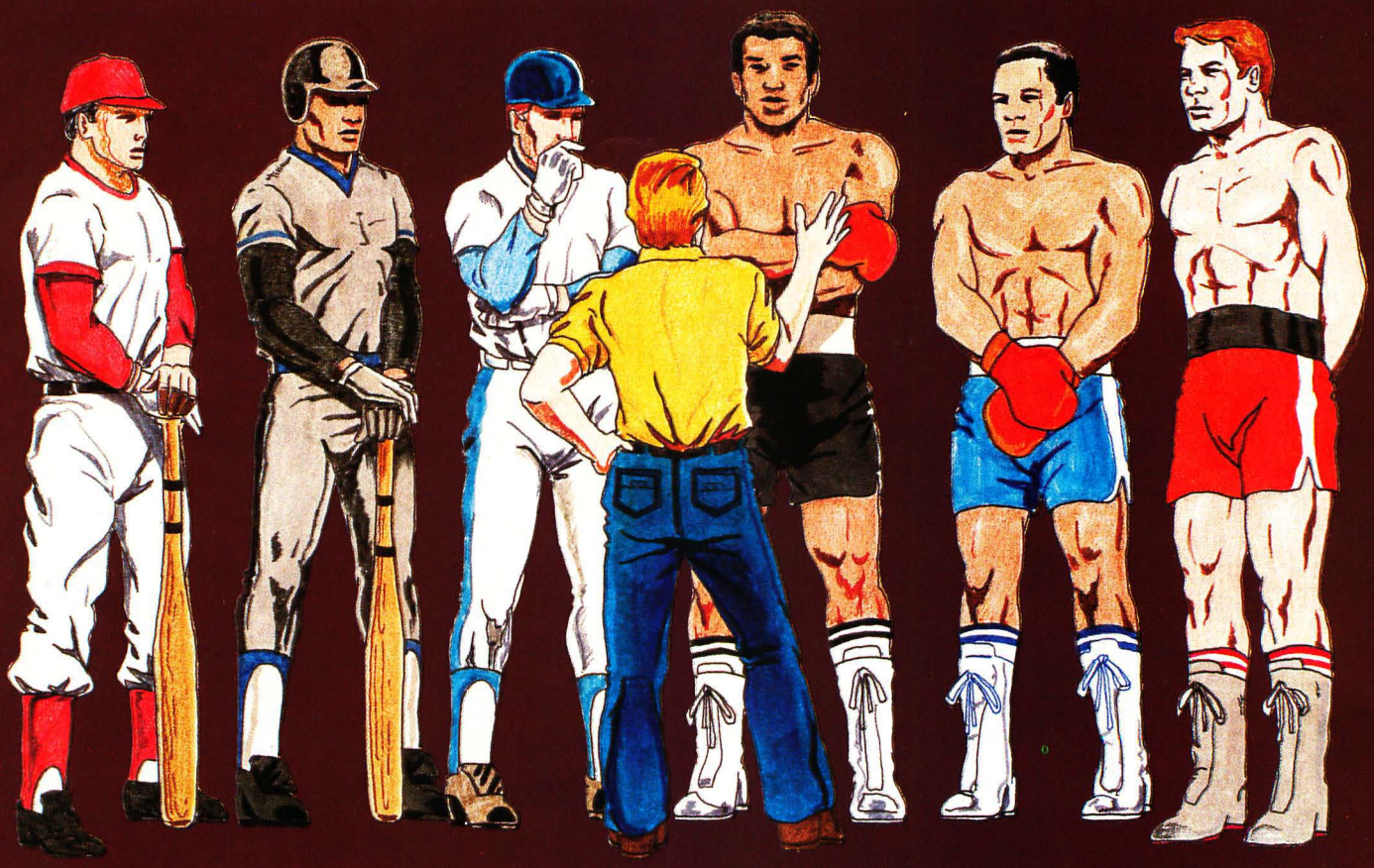
Calc/Side
A VisiCalc® Game

Future Phones
Links To Global Awareness

Software Reviews:
APPLE® — Prisoner 2, Genesis, Ultima II
ATARI® — Shamus Case 2, Matchboxes
TRS-80® — Zork I, Fredericksburg
IBM® PC — Night Mission Pinball, Suspended

44
74470 12550

GIVE THE WORLD'S GREATEST SLUGGERS A PIECE OF YOUR MIND.



Presenting two strategy sports games from SSI: COMPUTER BASEBALL™ & RINGSIDE SEAT™

Already voted the "1982 BEST COMPUTER SPORTS GAME" in its Apple® format by a leading games magazine, COMPUTER BASEBALL is now available for the Commodore®64.

As the most advanced and realistic simulation of baseball, it lets you manage any major-league team you like, giving you over 25 options with which to direct your players.

Complete data for over 20 historical AL and NL teams are provided so you can re-create immemorable games of the past or play out hypothetical matchups. Imagine the thrill of pitting the '27 Yankees against the '75 Reds! You can even enter your own player statistics and create a team to your specifications.

Best of all, to get all this detailed realism, you don't have to give up on speed and excitement. The action onscreen is kept at a fast pace to make you feel like you're actually playing in the ballpark! After all, that's how COMPUTER BASEBALL got to be recognized for what it is — the best.

See it today at your nearest computer/game/software store!

RINGSIDE SEAT packs all the right punches to make it the uncontested heavyweight champion of boxing games. It lets you set up your own championship matches, choosing from among fifty of the best fighters of all time.

Now you can answer all the intriguing questions in boxing: Who really was the greatest? Could Joe Louis outwit Muhammed Ali? Could Jack Dempsey outslug Larry Holmes?

RINGSIDE SEAT recreates every champion's authentic style and the strength, speed and stamina he had in his prime. As his manager, you tell him how to fight: stick and move, cover up, go for the knockout. The semi-animated Hi-Res color display shows you the fight in the ring as it happens, blow-by-blow, round-by-round.

This two-player and computer-as-opponent game also allows you to make up your own fighters by rating them for style, speed, aggressiveness, strength and a dozen other factors.

RINGSIDE SEAT. It not only lets you tell the great sluggers of the world how to fight, it makes them listen to you!

COMPUTER BASEBALL ($39.95) comes on 64K disk for the Commodore® 64. Also on 48K disk for the Apple® II. Coming soon for the IBM® PC.

RINGSIDE SEAT ($39.95) comes on 64K disk for the Commodore® 64 or on 48K disk for the Apple® II with Applesoft ROM, II+, IIe, or Apple III.

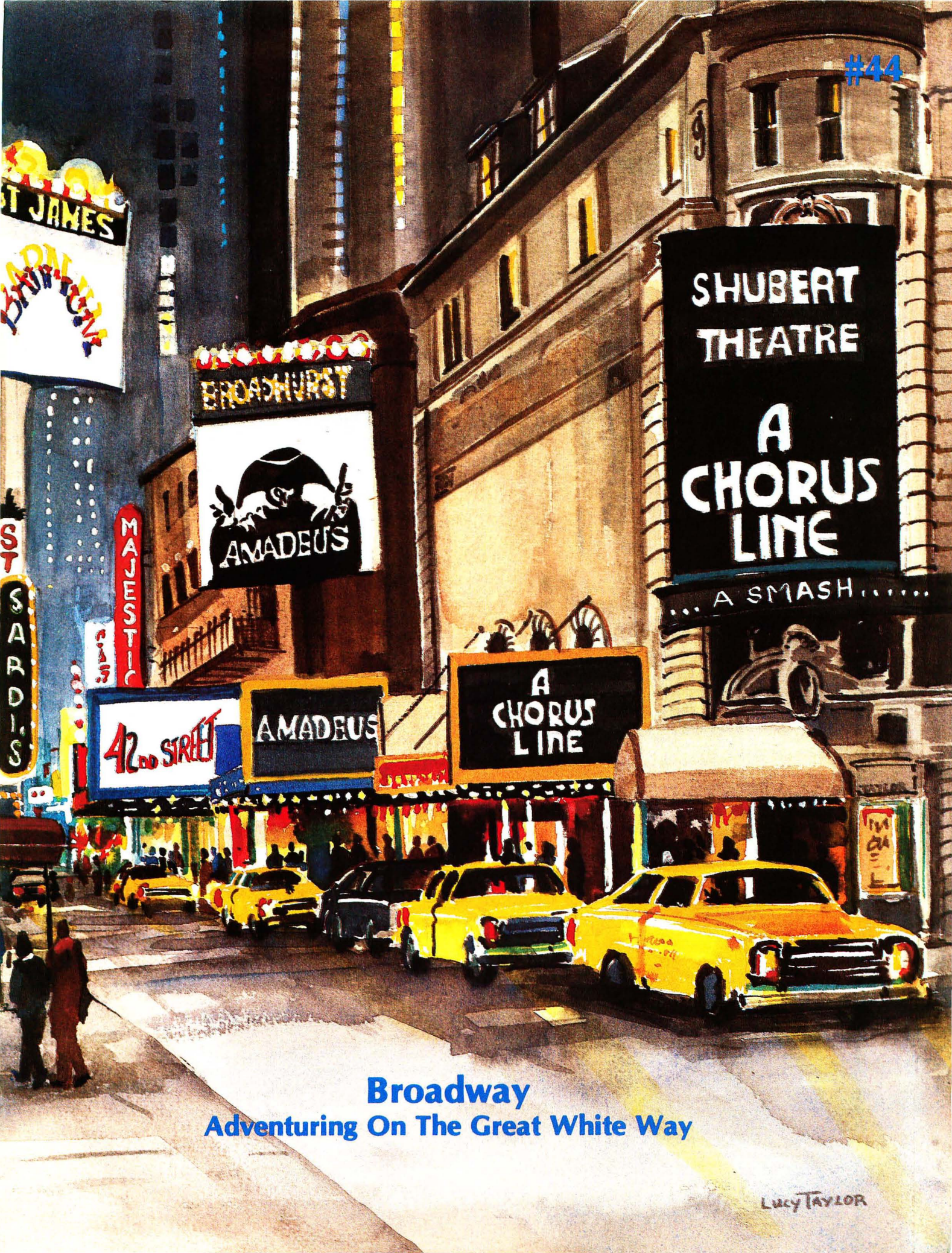
STRATEGIC SIMULATIONS INC

If there are no convenient stores near you, VISA and Mastercard holders can order direct by calling **800-227-1617, ext. 335 (toll free).** In California, call 800-772-3545, ext. 335.

To order by mail, send your check to: **Strategic Simulations Inc,** 883 Stierlin Road, Bldg. A-200, Mountain View, CA 94043. (California residents, add 6.5% sales tax.)

WRITE FOR A FREE COLOR CATALOG OF ALL OUR GAMES.

APPLE, IBM, and COMMODORE are the registered trademarks of Apple Computer Inc, International Business Machines, and Commodore Electronics Ltd., respectively.


#44
ST JAMES
SHUBERT THEATRE
A CHORUS LINE
... A SMASH.....
BROADHURST
AMADEUS
MAJESTIC
ST SARDIS
42nd STREET
AMADEUS
A CHORUS LINE
Broadway
Adventuring On The Great White Way
Lucy Taylor

SoftSide®

PUBLISHER/EDITOR-IN-CHIEF
Randal L. Kottwitz

MANAGING EDITOR
Carolyn Nolan

SOFTWARE EDITOR
Fred J. Condo

REVIEW EDITOR
Joyce Smith

TECHNICAL EDITOR
Steven T. Birchall, DMA

PROGRAMMING STAFF
Rich Bouchard
Alan J. Zett
Kerry Shetline
Peter Johnson

SPECIAL PROJECTS EDITOR
Peter J. Favaro

CONTRIBUTING EDITORS
Cary Bradley
Fred D'Ignazio
Ame Choate Flynn
Sheldon Leemon
Lance Micklus
David Plotkin
Allen L. Wold

PRODUCTION MANAGER
Rick Lydon

ART DIRECTOR
Mary R. Parkman

PRODUCTION STAFF
Ray Hackett
Leslie Schoemaker
Barbara Pederson

ASSISTANT TO THE PUBLISHER
Jan Hoffman

SALES/MARKETING MANAGER
Anne Garneau

DEALER SALES
Jim Nolan

CIRCULATION MANAGER
Sherryl Bailey

CIRCULATION STAFF
Cindy Zawacki
Donna Jean

PHYSICAL PLANT MANAGER
Bill Kubeck

STAFF
ACCOUNTING, **Karen Lawrence**
SHIPPING/SALES, **Jim Hoffman**
DUPLICATION, **Jeffrey Garrod**
EDITORIAL, **Margaret Fritz**

PRESIDENT/FOUNDER
Roger W. Robitaille, Sr.

SoftSide Vol. 6, No. 11

SUBSCRIPTION INQUIRIES should be sent to ***SoftSide*** Publications, Inc., 100 Pine Street, Holmes, PA 19043. EDITORIAL AND ADVERTISING CORRESPONDENCE should be sent to ***SoftSide*** Publications, Inc., 10 Northern Blvd., Amherst, NH 03031. Telephone (603) 673-0585.

SoftSide (ISSN 0274-8630) is published monthly by ***SoftSide*** Publications, Inc., 10 Northern Blvd., Amherst, NH 03031. Printed at Volkmuth Printers, St. Cloud, MN. Second class postage paid at Amherst, NH, and additional mailing offices. Subscription rates: US, APO/FPO and Canada, $30/12 issues. First Class US, First Class Canada, and Mexico, $40/12 issues. Other foreign countries, $62/12 issues. Media subscription rates: US and APO/FPO, — Magazine and Cassette, $99/12 issues. US and APO/FPO — Magazine and Disk $149/12 issues. Canada and Mexico, — add $20/12 issues. Other foreign countries — add $50/12 issues. All remittances must be in US funds. Entire contents Copyright © ***SoftSide*** Publications, Inc., September, 1983. All rights reserved. POSTMASTER: Please send form 3579 to ***SoftSide*** Publications, Inc., 100 Pine Street, Holmes, PA 19043.

FEATURES

THE WORLD CONNECTION
Computer Crime: Pirates and Phone Phreaks
by Tim Knight
Technological crime is burgeoning in the microcomputer age. The source of the illness lies in the expanded capabilities the new technology offers, but so does the cure. **6**

ENTERTAINMENT TOMORROW
The Futurephone: A Broader View
by Allen L. Wold
The telephone is a familiar device most of us use every day. Major changes are ahead which may affect our lives in significant ways as the simple phone evolves into a sophisticated communications tool for much more than voice transmission alone. **9**

WARGAMES: A REVIEW AND COMMENTARY
by Steve Birchall
A Doomsday Computer playing war games with a young computer freak takes the world to the brink of total destruction. In the process, they raise troubling questions about humanity permitting large arsenals of nuclear weapons to exist, and how wisely our military and political leaders control them. **14**

THE BATTLE FOR YOUR MIND (Part II)
Arousing Fantasy
by Peter J. Favaro
Adventure games can be much more exciting when you harness the power of fantasy to involve the player in the situation. Give him a scenario which stimulates him to act out his own role, and supply him with characters who have dramatic personalities. **18**

FINANCIAL OPERATING SYSTEM
by J. M. Keynes
You can succeed in the commodities markets. This program tracks price trends and accurately predicts major movements so you can optimize your profits — and avoid taking big losses. **23**

CALC/SIDE: VisiCalc® Plays Games Too!
by David Peters
Have fun with your spreadsheet. This adaptation of the old pencil and paper game of Battleship uses VisiCalc's logic functions and grid system to hide stars in an imaginary universe. **38**

IS IT FUN?
by M. M. McClung
Have you ever asked yourself, "What kind of a mind would design such a twisted game?" Find out in this rollicking, free-form interview with two of the industry's most creative game designers, Marc Blank and Mike Berlyn. **42**

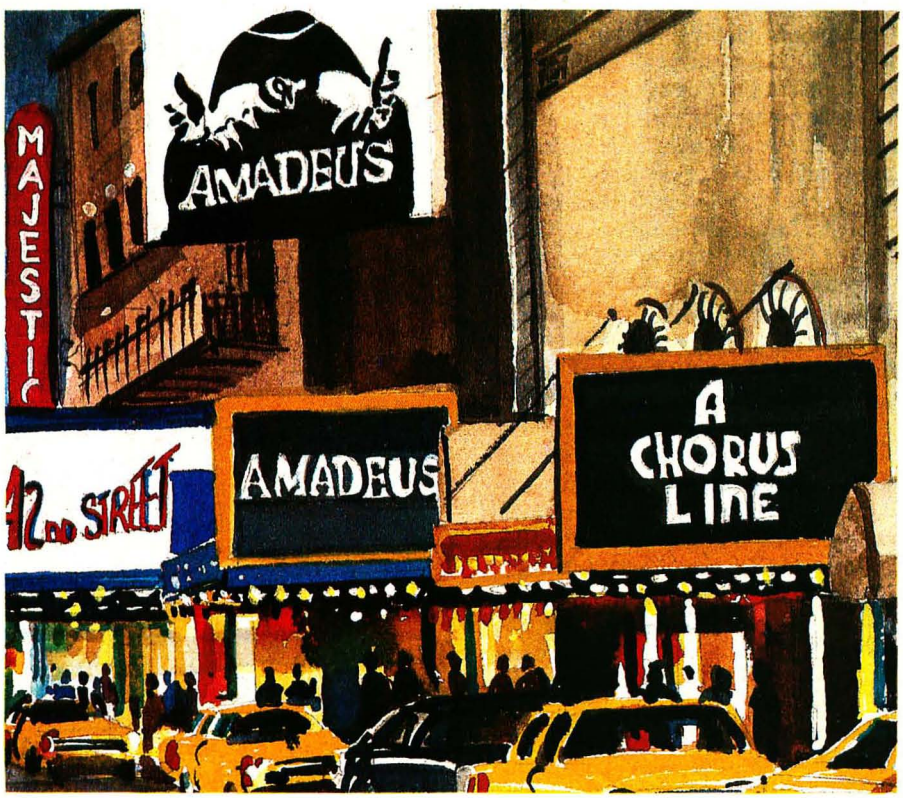
Table of Contents

MURPHY AND ME: ROBOT LIB (fiction)
by Steve Birchall
It's not easy being a robot. The oppression of our Silicon Citizens has reached intolerable levels, and Murphy bares his chips in this moving account of the widespread discrimination against robots. ____ **46**

REVIEWS

ZORK
Reviewed by Mark Renne
One of the most sophisticated and enjoyable adventure games, *Zork I* enables you to talk to the computer in complete, natural sentences. It also "understands" the implications of your actions and relates the command you just typed to previous actions. ____ **50**

SUSPENDED
Reviewed by Arlan Levitan
Cryogenically frozen, you must find a way to escape, using a corps of robots, each with specialized abilities. Meanwhile, the authorities have a couple of clones of yourself "frozen in butter sauce" so you'll have to be careful. ____ **52**



Cover Illustration: Broadway — just the mention of the name conjures up images of opening night excitement, glittering marquees, buzzing crowds and squadrons of noisy taxis. Lucy Taylor captures all the glamour of the theatre in her brightly-hued watercolor impression of New York's Broadway and 42nd Street. Play this month's Front Runner and suffer the exquisite agonies of producing a successful Broadway show. But now all the hard work is over, the orchestra is playing the overture, and the curtain is going up....

DEPARTMENTS

Editorial ____ 2
Input ____ 4
The Data Stack ____ 12
The Sides of SoftSide ____ 55
Hints and Enhancements ____ 89
Bugs, Worms & Other Undesirables ____ 90
New Products ____ 92
MicroLog: Resources Received ____ 94
Market/Side ____ 96
Advertisers' Index ____ 96
Machine Head ____ 97

PC® SIDE

Night Mission Pinball
Reviewed by Robert L. Gray ____ **56**

APPLE® SIDE

Genesis
Reviewed by Cary W. Bradley ____ **58**
Prisoner 2
Reviewed by Jeff Hurlburt ____ **60**
Adventuring on the Apple
by Edward E. Anuff ____ **62**

ATARI® SIDE

Ultima II: Revenge of the Enchantress
Reviewed by Carl M. Firman ____ **68**
Jumbo Jet Pilot
Reviewed by John Ludtke ____ **70**
Shamus Case 2
Reviewed by David Plotkin ____ **72**
Matchboxes
Reviewed by David Plotkin ____ **73**
Exploring The Atari Frontier
by Alan J. Zett
Manipulating Players and Missiles ____ **74**

TRS-80® SIDE

Fredericksburg
Reviewed by Stuart Hawkinson ____ **84**

SOFTSIDE SELECTIONS

Software for Your Personal Computer!
Between pages ____ **52 & 53**

Editorial

Computer Models — An Incomplete Essence

Digital portrait by Tom Flynn

The marquee of the theatre is dark. Inside, a lone janitor sweeps up spilled sand from an ashtray in the lobby. Each step you take echoes through the halls of the backstage area like the blows of a woodsman's axe on a crisp mountain morning. An open door to one of the offices leaks a sharp expanse of light on the floor of the dark stage. Inside, the set designer of the show scheduled to open here in a couple of months is busy building an accurate scale model of the setting for the play. Tiny stairs connect suspended platforms to miniature doorways, and bits of styrofoam and balsa wood simulate period furnishings to complete the image. The artisan carefully carves a Rococo mantle for the fireplace. He's considered this piece of decoration — its complex turns and golden finish should add a spot of visual interest to its area of the stage. But, when he installs the intricate miniature, it not only adds interest, but dominates everything else. Reluctantly, he discards his creation and starts carving a much simpler version. Ah well, at least he found out on the model and not after spending hundreds of dollars making a life-size mantle for the stage.

This *could* be a backstage scene from the fantasy of this issue's Front Runner, *Broadway*. However, it occurred in my real life when I aspired to become the next great theatrical designer of the world. It was during my college theatre years that I learned the value and limitations of modelling. I never did get that mantle quite right. The model could tell me what didn't work, but it didn't offer many suggestions when I was stumped for an idea.

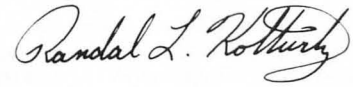
The theme of this issue of ***SoftSide*** is Adventure & Simulations. One of the most highly-touted capabilities of the computer, for both work and play, is its ability to simulate (model) real life without the same ramifications, and even take it a step further into fantasy. How many ads have you seen in computer magazines showing watercolor fantasy worlds opening to you through the vista of the VDT screen? Educators rave about the possibilities the computer will give them to bring dangerous or expensive laboratory work to their students without the danger or expense. Training supervisors relish the thought of interactive terminals weaving employees' minds into the right fabric for their future assignments. Thousands of dollars worth of equipment allow pilots to take off and land nonexistent planes at almost every major airport in the world. All of this is possible through the wonders of computer modelling.

However, as we envision this computer-modelled world, experiencing life through the screen before having to face its realities, we must be sure to examine and understand the limitations of these computer models as well. Models must, by neccesity, be incomplete. To be effective and practical, they must leave out some elements of reality to focus more clearly on those elements being studied. An engineer may not worry about using mirrored glass on his model of a skyscraper for wind tunnel experiments even though it may be specified for the final structure. The difference in glass won't effect the outcome of his experiments, yet city planners observing the same model, may miss the ramifications of sunlight reflecting into neighboring buildings — a key element to their decision process. A VisiCalc® model may reflect the financial elements of a business operation accurately, but makes no consideration for the personalities and capabilities of the personnel of that company. Even if it were possible, such consideration would be inappropriate, since the computer would make the decisions based on such a model dependent on a static personnel structure. The first change in an employee's job description could invalidate any financial planning based on such a model.

To be effective, a model must provide an "incomplete essence" of the finished product — accurately emulating those elements key to the decisions to be based on the model, and ignoring those which don't apply. Theoretically, the more *complete* a model, the more accurate the decisions based on it. However, each element brought into a model must be interrelated accurately with every other element of the model. The more complete you wish to make your model, the more variables you must consider, and the greater your margin for error in the final decision.

The computer could have been a great aid in designing my fireplace mantle. I might have been able to call up several Rococo structures and choose one which didn't dominate the stage. Had such a system existed, I would have put away my exacto knife and balsa gladly. However, the computer mantle might not have emulated the reflective properties of the gold paint I was planning to use to cover it. Such an omission could have caused me to rip down an expensive carved mantle later, because the stage lights on the gold paint drew the audience's eyes to it instead of the actors. In other words, although the computer model would have saved me hours of design work, it would not have been the end-all to my decision process — only a tool to aid it.

I hesitate to address the limitations of computer modelling in these pages for fear of being labelled anti-computer. This is not the case. I strongly advocate the use of computers and computer modelling in almost every aspect of our lives. However, we must be sure to consider the limitations of these models, as well as their massive practical and educational capabilities. If we don't, we could deceive ourselves into believing that computer models simulate reality in entirety. Such a deception could result in assumptions and decisions highly detrimental to the future of society.



Randal L. Kottwitz
Publisher/Editor-in-Chief

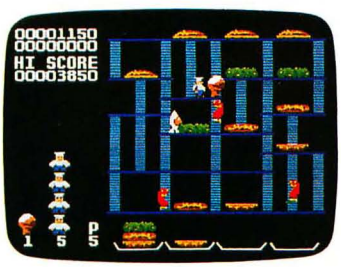
Introducing BurgerTime™* for your Apple and IBM. To beat this game, you've really got to move your buns.

Now you can make your Apple® II and IBM® Personal Computer sizzle. With fast-food action from BurgerTime™* by Mattel Electronics.

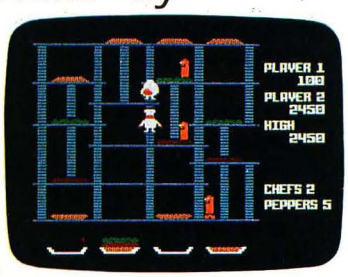
Build a better burger. Hold the mustard. And watch out for those pickles!

It's a tall order to fill. But you've got to do it before those hostile hot dogs cancel it.

BurgerTime™* from Mattel Electronics. A rare opportunity for computer game excitement.



IBM® Personal Computer



Apple® II, II Plus, and IIe
Available this Fall.

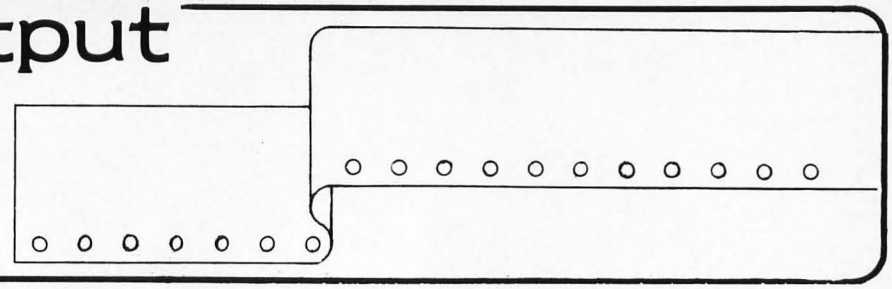
BurgerTime™ T.M.

M NETWORK™ by MATTEL ELECTRONICS®

©MATTEL ELECTRONICS, INC. 1983 All Rights Reserved.

*BurgerTime is a trademark of Data East USA, Inc., used under license. ©1982 Data East USA, Inc.
Apple II, II Plus, and IIe are trademarks of Apple Computer Inc. IBM is a trademark of International Business Machines Corp.

Input/Output



Monitors

Dear *SoftSide,*

I read the article "Where Has All the Resolution Gone" with great interest. I have an 80-column board, Z-80 for CP/M, etc. I need a monitor. The idea of bypassing the TV tuner, and connecting the computer signal into the RF MOD makes good sense. I worked in and owned a TV shop for several years and still have most of the equipment.

I have already tried running the cable from the Apple II+ output on the back of the computer to the TV RF input, where I unplugged the tuner cable. All I get on the TV is a raster, so I assume no signal input from the Apple. I have a three-year-old RCA XL-100 color TV which should be as good a monitor as you could buy, and it's paid for.

Could you please explain the correct procedure to "jeeper" a TV, and end up with a working monitor?

Jim Nichols
Bossier City, LA

Tom Flynn's reply: You will need a decent monitor to see the 80-column characters used with CP/M. I have not owned an RCA XL-100 personally, but I have seen good color pictures on them in the field. Your RCA may fill the bill as a monitor if "jeeped" correctly.

I'm afraid my explanation of the Apple's signal output was not too clear. At the jack in the rear (before the signal goes to the modulator and TV), a 4.5 MHz signal is available. Since this signal is video, your connection should be to the input to the video amplifiers of your color set. This point is right after the IF is detected.

Since you have experience with TVs, you probably have the schematic hanging around somewhere or can find it in a "Sams Photofact." The schematic should point out quite clearly where the signal becomes composite video only.

Injecting the Apple signal at this point should give you the desired result. With this connection, and with proper attention to correct grounding, your color TV set should turn into a satisfactory monitor for the normal apple output.

If you recall, the article mostly dealt with the normal Apple output. I only mentioned the 80-column character size in connection with black and white and RGB monitors. Being able to see 80-column character size on a particular color set (such as the RCA XL100) is dependent on the band width of the video amplifier circuitry.

"Jeeping" your set certainly would do no harm, and may give you the required 80-column definition. Good luck.

Connections

Dear *SoftSide,*

A new Illinois users group for Atari was formed in February of this year, with the goal of promoting the Atari 400/800. The Lake County Atari Users Group (L.C.A.U.G.) meets from 9:30 a.m. to 2:00 p.m. on the first Saturday of each month at:

Great Lakes Community Center
Buckley Rd. (Rte. 132)
(Across from Downey V.A. Hospital)
Great Lakes, IL 60088

Phone inquires: Dwight Johnson (312) 623-3815 or Dean Hackworth (312) 473-1006.

Dwight Johnson
Waukegan, IL

CB Courtesy

Dear *SoftSide,*

That was quite an article by Tim (Blue) Knight in "World Connection" in *SoftSide #41.* I did get a little confused. The article starts out with Breaker 1-9 for a 10-36. This, to my understanding, is asking for time on Channel 19, not 9.

I'm interested in how I can get on the "CB" air, talk from my computer to another computer, key the transmitter, switch from transmit to receive in time to see what someone else has to say, and back to transmit when it's my turn again. Is this handled by "CompuServe CB?" I'd like to hear more.

Under the sub-title, "A Minute of Insanity," he lists the sequence of operations on channel nine. The last line reads:

(9, Daddy Warbucks) Y R we on this channel?

This is a good point! FCC regulations only authorize emergencies and assistance to motorists on Channel 9. I stress this if for no other reason than *courtesy.* Have you ever tried to copy a distress call from a motorist reporting an accident with possible injuries, only to be covered up by a carrier signal from a conversation like the one portrayed in those couple of paragraphs? Need I say more!

Otherwise it's an interesting article.

S. LeC. Shyers
Newark, DE

Joe Rocke's "Text Sampler"

Dear *SoftSide,*

I was surprised to see an article based on Gunning's famous "Fog Index" where the author failed to reference the original text published by Gunning.

Joe cites Klare, Flesch and Stratton texts which are excellent reference materials, but not published by Gunning. Flesch's article may have reference to Bob Gunning's work, and does pre-date Bob's text ("The Technique of Clear Writing," McGraw Hill, New York 1952) by four years.

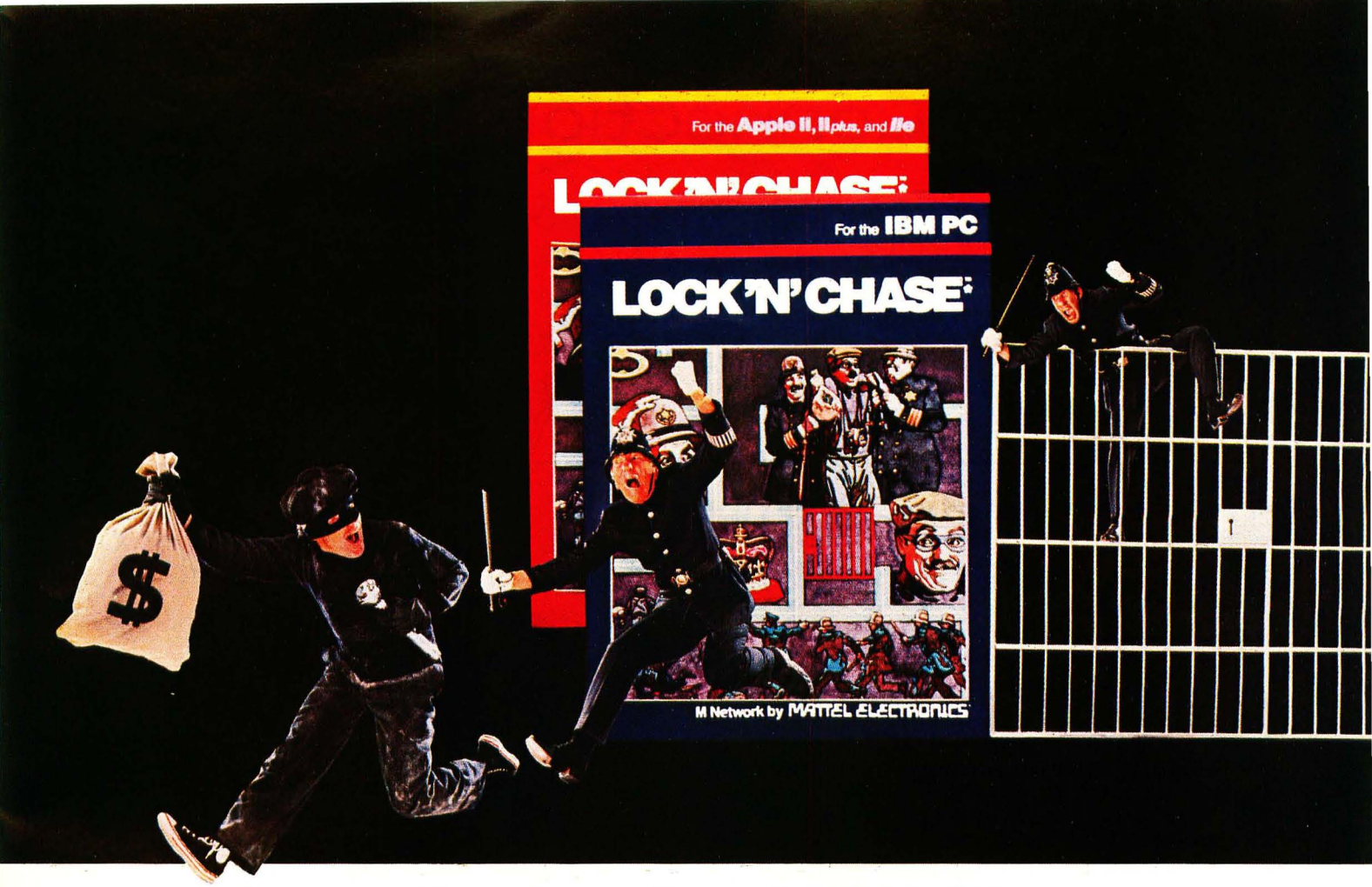
Bob set out in 1944 as Robert Gunning Associates in the field of "readability counseling." That precipitated his book, 1952, and other subsequent texts. The Winnetka formula, the Forge formula, and the Gray-Leary yardsticks, were developed in the 1930's but did not become widely used. Two later methods, the Flesch formula and the Dalchall formula were reliable and facile, and are widely used, even today.

There is also a point of misunderstanding about what Gunning's Fog Index really was. Rocke cites the Fog Index as:

FOG INDEX = (WORD COUNT + NO. LONG WORDS)/ NO. OF SENTENCES

According to Gunning (p. 37): "To get the Fog Index, total the two factors just counted and multiply by 0.4." The two factors are: (No. of words in successive sentences/no. of sentences); and the second, which is added to it, is 100 (hard words/no. of words in the passage). These do not equate to Rocke's formula. Gunning's two factors represent the sum of the average sentence length (factor I) and the percentage of hard words (factor II), which Rocke cites properly in Figure 1 for his algorithm, but not in his text.

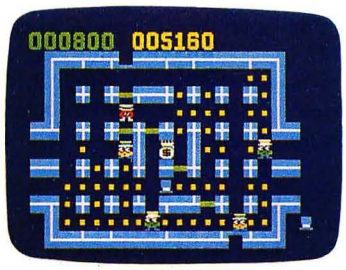
Vince Farrigia
Pensacola, FL



Introducing Lock 'N' Chase™* for your Apple and IBM. It'll give you a run for your money.

No, it's not a computer scheme to beat the stock market. It's Lock 'N' Chase™* from Mattel Electronics. For your Apple® II and IBM® Personal Computers. The computer game worth its weight in gold.

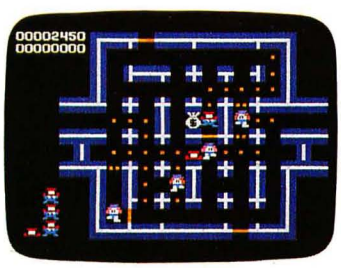
Picture yourself in a bank vault helping yourself to gold bar after gold bar. Tax free!



Apple® II, II Plus, and IIe

But here come the cops! And the chase is on. While you try to slow your pursuers by slamming locked doors on them.

Lock 'N' Chase™* from Mattel Electronics. Good as gold.



IBM® Personal Computer
Coming soon.

LOCK 'N' CHASE

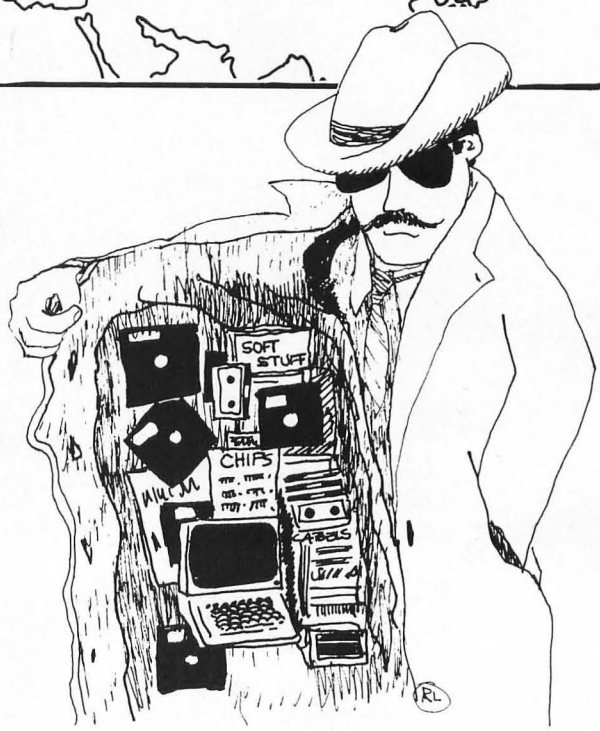
M NETWORK™ by MATTEL ELECTRONICS®

©MATTEL ELECTRONICS, INC. 1983 All Rights Reserved.

*Lock 'N Chase is a trademark of Data East USA, Inc., used under license. ©1981, 1982 Data East USA, Inc.
Apple II, II Plus, and IIe are trademarks of Apple Computer Inc. IBM is a trademark of International Business Machines Corp.

COMPUTER CRIME:
Pirates and Phone Phreaks

by Tim Knight



With every new technology comes a new crime. My videocassette recorder, for example, is an innocent-looking machine. Many people, however, use the new VCR technology to copy, distribute and sell pirated tapes of movies illegally. My television set also seems harmless enough, but some individuals are creating devices to tap into pay-TV services like HBO and Showtime without paying the fee.

Although these examples of high tech crime don't have much to do with computer communications, they illustrate the problem: Increasingly, people are using computer communications for illegal ends. I would like to talk about the two most popular crimes, Software Piracy and Phone Phreaking.

The Software Pirate

When you read the word "pirate," you might think of swashbuckling days of old, when pirates on the high seas seized cargo ships and all the riches they contained. The modern day pirate, though, probably doesn't know the port side from a keel, since today's pirate is involved with computers, not cargo. Software piracy is, simply put, the theft of software. "Theft" usually implies taking something physical, but software theft can be a simple electronic exchange of information. In the computer age, a person can steal something without taking physical property from someone else. He need not be present to steal, but can be several thousand miles away.

Software for computers is conceived and written by human beings. When I create a program, and sell it to a publisher, it is sold in stores nationally. Whenever someone buys my program, I receive a percentage of the product's price. By making a good piece of software which many people buy, I can earn enough money to make writing software worthwhile. However, if only a few people buy my program, then I don't make nearly so much money. Unfortunately, fewer people are *purchasing* programs, because piracy is getting out of hand, and is making software available either for free or for a much lower price. Pirates can sell cheap. After all, they have no development costs to pay off, and use the legitimate company's advertising for free. Someone may buy the product, and then start giving copies of that program to friends. Those friends give copies to other friends, and they in turn give it to people they know. Before long, nobody needs to buy software anymore — they just need to know someone who can get them a copy.

What this means to the programmer is that after he works long and hard on a program, hoping that 10,000 people will buy it, he loses in the end. Ten thousand people have his program, but only 500 actually bought it! This deprives the software artist of the income he has earned and has a legitimate right to expect.

Piracy at 300 Baud

Where, then, does computer communications enter into this piracy game? Piracy usually involves copying data or programs from one disk to another. With computer communications, you can send the information on the disk over the telephone line to a blank disk at the receiving computer. A pirate can call up one of his friends, perhaps 3,000 miles away, and ask for a particular program. The friend transmits the program over the telephone line, while the pirate's blank disk receives and permanently records the stolen program. The receiver pays nothing for the program, and its author is cheated of his rightful pay. The process is not difficult and is a common occurrence. Even more common than simple transmission of a program are the "pirate bulletin boards," which store a warehouse of copyrighted programs. A bulletin board user may request any of these programs for transmission, and obtain any number of programs free of charge. The only disadvantage to the recipients of these illegal programs is they get no documentation or after-sale support.

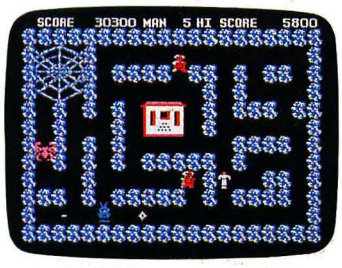
continued on page 8

Introducing Night Stalker™ for your Apple and IBM. No wonder some people are afraid of computers.

Now there's a computer game that'll leave everyone hanging from the rafters. Nightstalker™ from Mattel Electronics. Now available for your Apple® II or IBM® Personal Computer.

After all, what could be more fun than being trapped in a cave full of bats? How about being trapped in a maze as well. Underground.

Apple® II, II Plus, and IIe



IBM® Personal Computer

And as if that weren't enough, you've got to watch out for gigantic DDT-resistant spiders. And extremely anti-social robots. Your job? What else? Get them before they get you.

Nightstalker™ from Mattel Electronics. Working nights will never be the same.

NIGHT STALKER

M NETWORK™ by MATTEL ELECTRONICS®

© MATTEL ELECTRONICS, INC. 1983 All Rights Reserved.
Apple II, II Plus, and IIe are trademarks of Apple Computer Inc. IBM is a trademark of International Business Machines Corp.

What's so bad about this piracy? Instead of paying hundreds of dollars in some software store, you can have any program you want for nothing. From that point of view it's not too terrible. In fact, bank robbery doesn't look too bad with that perspective. The truth is, piracy hurts both software vendors and software programmers tremendously. A person like you or me, who has worked on a program for months, has the potential to make $100,000 on a single product. However, the real profit might turn out to be only $5,000 once the pirates start sending the program to all their "friends." This figure is fairly accurate, too, since some experts have estimated that, for every program sold, twenty illegal copies eventually are made.

Piracy is not only illegal but also unethical. What, then, is being done to stop it? Here are some of the efforts being made, and you might want to encourage some of these yourself, whether you're a software writer or not:

- Serial Numbers: Many software manufacturers put serial numbers within every program they make. In this way, if an illegal copy of a program is found, the serial number of that program may be traced to the owner. In addition, if someone has trouble with a program and needs to call the company for help, they usually have to identify themselves along with their serial number so that they may be verified as registered owners of that product.
- Protecting the programs: Arranging the data on a disk in an "uncopyable format" makes programs far more difficult to copy than unprotected programs. Some computer users are knowledgeable enough to work their way around this software protection, but most people do not have the knowledge to break the software-encrypted locks on the disks. However, after even one person breaks the protection scheme, it becomes fair game for the pirates.
- Documentation: One of the most important reasons for buying a piece of software is to get the documentation that goes with it. If someone stole a good word processor from someone else, they might have trouble using it without documentation. By making documentation more vital to the effective use of a product, software manufacturers discourage people from stealing the software, since software by itself is less effective without documentation. However, this pushes software designers in the wrong direction: they should be working to make their programs more transparent and easier to use.

Phone Phreaks

Phone Phreaks are not inmates of circus sideshows; they are cheaters of the Bell System. In fact, Phreaks now not only rip off "Ma Bell," but also other telephone services such as Sprint and MCI. Phone Phreaks have the ability to call anywhere in the world at any time for any period of time, absolutely free of charge. They sometimes have the power to upset telephone service, tap into secret telephone company information, and break into the Bell Network's office buildings to steal equipment and information. However, these criminals are not the evil-looking dregs of society. They are highly intelligent people who use their abilities in the wrong way.

Making calls for free isn't much trouble for Phone Phreaks. To make an illegal call using the Sprint network, for instance, a Phreak calls a local Sprint number, enters a secret "access" code, and the number he wishes to call. The hard part is getting the "access" code, but many bulletin board services give out dozens of these codes for nothing. Usually, though, a Phreak has to be a friend of the BBS's system operator to obtain access to these secret Sprint and MCI codes. Once he has the code, he can use it until the phone system discovers the illegal use, and deletes the code — or the phone system finds the person(s) using the code illegally and prosecutes them.

As you can guess, using these codes is rather dangerous since a phone company can trace an illegal user fairly easily. For this reason, many Phone Phreaks use more sophisticated methods to rip off the phone networks. By using special boxes (called "red boxes," "blue boxes," etc.) the Phreaks may evade the telephone network's trace to their phone. These boxes are electronic devices which make theft much safer, since the phone system has much greater difficulty locating the phone used by the person defrauding them.

Many computer bulletin board services are set up exclusively for Phreaks. These systems not only give the secret code numbers, but also provide plans for making "boxes," the latest news in phreaking, and the addresses and phone numbers of "Phellow Phreaks." Many BBS users, frustrated with enormous telephone bills, resort to using the telephone system illegally so their bank accounts will not disappear altogether.

Phreaking Phreely

Phreaks resort to other forms of crime, too, in their efforts to hurt the phone system. A few are able to tap into secret files, even in the Defense Department's computers, to discover which companies are buying and selling materials to the government. Others break into the Bell Network's buildings, stealing hundreds of thousands of dollars worth of equipment and information. Others plug into bank computers, steal large amounts of money, and deposit it into their own accounts. Software piracy and Phone Phreaking can lead to even more harmful and dangerous crimes, particularly when the information obtained can be used for unintended purposes.

For this reason, the phone system is trying harder to catch "Phreaks" with methods to locate individuals using the telephone illegally. Also, the phone company lawyers are seeking harsher punishments for phone crimes, in an effort to discourage people from Phreaking.

The Dark Side of the Force

The "force" that modems give us is strong — it allows us access to huge quantities of information and makes life a little easier for computerists. However, software pirates and Phone Phreaks use this great new technology for malicious ends. I hope that the measures taken by the phone companies will encourage these people to use their intellects for positive purposes, rather than for fraud and theft. The companies being ripped off are fighting fire with fire, so that the high technology which criminals use today could very well be what stops them tomorrow.

Entertainment Tomorrow

THE FUTUREPHONE:
A Broader View, Part One

by Allen L. Wold

Advances in technology, especially home computers, are coming so fast that keeping track of what's new is difficult. More than once I've read an interview or article, predicting the imminent appearance of some new development, only to turn the page and see an ad for it, already discounted. I am primarily a science fiction writer, and speculation and extrapolation are important skills in that trade. But I must consider more than just the possible extensions of a single technology. I also must consider how that technology, if it were to exist, would interact with other technologies which might at first seem unrelated, and how the whole complex of developments might affect the rest of society as well.

If the object of this effort is to produce a story, we call it science fiction. The more detailed the interconnections, and the broader the range of social effects in the narration, the better the story, and the more plausible it is. If instead my object is to write a series of articles without characters and a story line, such as this one, some of my non-fiction editors like to call it by the fancy name "future studies."

Futurephones and Their Networks

I would like to take this broader view in examining one of our most common household devices, the telephone. I chose this device for two reasons. First, a number of technologies are being developed, which could affect telephone communications profoundly in the not too distant future. Secondly, the telephone provides a good example of the broader-based speculations I've been talking about. In this first installment, I will look briefly at what already exists, what may be coming soon, and speculate a bit on what that means for the future. In later parts I'll indulge in more fantastic speculations.

The telephone system of today has three primary components:

- The vast interconnecting network of (primarily) copper wires;
- The switching stations and exchanges, including all the equipment necessary to keep records of who originates the calls, and where each signal goes;
- The handsets or desksets — the telephones themselves.

In addition, the industry is exploring the broad range of potential interactions among phones and other existing technologies. Among these are:

- Broadcast Radio and Television
- Satellite Distribution Systems
- Cable Systems
- Videotex Services
- User Networks and Large Data Banks
- Cellular Radio
- Direct Broadcast Satellites

All interrelate in some way with each other and with the telephone, as most ***SoftSide*** readers already know. I do not wish to belabor the point, only to remind you that many of these complex relationships are not yet thoroughly tested, accepted or standardized.

Satellites and Fiber Optics

A number of other technologies also may affect the nature of our hypothetical futurephone. Some are old, some are improvements on current technology, and some are completely new. Some are on the market, others soon will be, and others are still on the drawing boards. Let me discuss a few of these briefly.

Satellites currently are in use for overseas and other long

↪

American Bell's first effort toward the futurephone is their Genesis system. The plug-in cartridges add various optional features, such as call forwarding.

This American Bell handset stores and dials up to sixty numbers. It has a timer to gauge the length of calls, and also works as a speaker phone.

distance calls, though we still have undersea and underground cables, and repeating microwave links. Progress is rapid in this area, and full integration of satellites into the phone system will mean that anyone can talk to anyone anywhere in the world at any time. While theoretically possible now (provided the other party has a phone in the first place), the procedures a caller must use are not standardized world-wide, and the costs are high. Heavier use will bring costs down, and also will force a uniform system of "phone numbers."

Fiber optics is one of the most exciting areas of phone communications. Right now phone lines, mostly copper, are severely handicapped by the amount of information they can carry. The combination of lasers and optical fibers with the new gallium arsenide (GaAs) send/receive chips carries data at a much higher rate than copper wire. Practical applications include transmitting voice (with increased fidelity), high quality video (the 1980 Winter Olympics were sent from Lake Placid on fiber optics cables), and ultra-high-speed data transmission. The possibility exists that improvements in fiber optics will eliminate the need for satellite communications. Also, the prime parking places for geosynchronous satellites are nearly filled up. Fiber optics cables are not susceptible to electromagnetic disturbances in the upper atmosphere, nor to the intense electromagnetic pulse emitted by nuclear weapons, which wipes out copper wire communications. Certainly the development of undersea fiber optics phone cables, currently underway, is an indication of their potential usefulness.

Fancy Phones: Extra Functions

The telephone is becoming more elaborate, as more and more new functions are added. Many of today's handsets contain RAM storage for up to twenty commonly used phone numbers. Modems often have the necessary communications protocols in ROM (Read Only Memory). As the price of memory goes down, common telephones could function as modems with the addition of a small amount of hardware. One new company is proposing a modem for the Atari VCS which will sell for under $50. The newer handsets are able to perform more complex functions, such as automatic dialing, smoke detection, home security, appliance control, and so on.

Answering machines are becoming more popular. The development and standardization of under-five-inch microdisks will improve the usefulness of answering devices immensely. Aside from recording the brief messages of callers, they could store other information, data and lengthy reports, and in some cases, could be *interactive* with the caller.

Imagine it about the size of a loose-leaf binder, hanging on your wall with the hinge down, or sitting on the desk. The upper half contains the screen, camera, recording equipment and all other hardware. The keypad enables you to call anywhere in the world. You may transmit picture or not as you wish.

Phone keyboards are becoming more like computers. Most pushbutton phones have ten buttons, representing the digits from 1 to 0, plus * and # for the two function keys. Some phones have Hold buttons and switching, to permit taking calls on a number of lines. Local switchboard phones have even more. But with the development of low cost keyboards, whether full-stroke, button or flat membrane, the number of functions controlled directly at the phone increases without limit. The size, weight, price and reliability of these keyboards is improving all the time.

Video-phones are one of the favorite devices of the science fiction writer. Cathode Ray Tubes (CRTs) are much too bulky to be used in a telephone, but with the development of several flat screen techniques, the videophone may become fact. At present, they are rather expensive and suffer limited resolution because of the limited transmission rate on phone lines, but here, too, size, resolution, reliability and price are all improving rapidly. During the late Seventies, Bell maintained a demonstration videophone service at special low rates between the White House and New York, but discontinued it when the government later declined to pay the actual rate.

Casio's new 2½ inch LCD TV and Seiko's wristwatch TV are the forerunners of this new development. Coupled with cellular radio techniques, they could provide the means for a complete two-way portable handheld videophone. With a modem and a portable computer such as the NEC PC 8200 or the TRS-80 Model 100, you could send and receive data anywhere in the world. All the elements are presently available, waiting for someone to put them together.

But to have a videophone, you must have a camera. TV cameras, over the years, have decreased from the size of a steamer-trunk to a cigar-box, and now to a pack of cigarettes. Many are inexpensive enough to be sold as consumer items. Reductions in price and size will continue to the point where every phone can have a miniscule camera mounted above its flat screen.

Designing a Futurephone

Given all the above, we can now envision a possible phone system of the not too distant future. For the moment, we limit our discussion to the technologies mentioned, without putting it into a social context, simply to see what the possibilities are for our futurephone. We have a network of optical fibers and satellites, computer controlled exchanges, a uniform dialing system, video, the ability to store messages and a broad range of functions beyond simply dialing a number.

Imagine it about the size of a loose-leaf binder, hanging on your wall with the hinge down, or sitting on the desk, with the hinge away from you. When you open it, the lower or forward half is the keyboard, and the upper half contains the screen, camera, recording equipment and all other hardware. The keypad enables you to call anywhere in the world. You may transmit picture or not, as you wish.

If the other party isn't at home, you don't have to leave a message to call back later. As with today's computer bulletin boards and other computer message systems, you simply type in your message, knowing that the other party will answer you in full when they have the time. Unlike the bulletin board, only the other phone has the message, ensuring privacy.

Nonagon has the best for less . . .

LOGO'S (APPLE)

Krell Logo	72.95
Terrapin Logo	119.95
Karel the Robot	89.95

SPINNAKER (APPLE/IBM/COMMODORE/ATARI

Snooper Troops #1	35.95
Snooper Troops #2	35.95
Story Machine	27.95
Face Maker	27.95
Delta Drawing	39.95
Kinder Komp	23.95
Rhymes & Riddles	23.95

EDU-WARE (APPLE/IBM)

Algebra I	31.95
Algebra II	31.95
Algebra III	31.95
Algebra IV	31.95
Algebra V & VI	39.95
Algebra I (IBM)	31.95

PDI (APPLE)

New step by step	69.95

SAT/PSAT (APPLE)

SAT (Edu-Ware)	39.95
PSAT (Edu-Ware)	39.95
SAT (HBJ)	55.95
Math Skill Pak (SEI)	44.95
Verbal Skill Pak (SEI)	54.95

THE LEARNING COMPANY (APPLE)

Magic Spell	27.95
Moptown Hotel	31.95
Moptown Parade	31.95
Rocky's Boots	39.95
Gertrudes Secrets	35.95
Gertrudes Puzzles	35.95

LIGHTNING SOFTWARE (APPLE/ATARI/IBM)

MasterType (Apple/Atari)	31.95
MasterType (IBM)	39.95

CONDUIT (APPLE)

Algebra I Drill	104.95
Algebra II Drill	104.95
Trigonometry	60.00

We carry educational software from over 67 manufacturers including: Avant-Garde, Brain Bank, Compress, Conduit, Edu-Ware, J&S Software, Micro Computer Workshop, Micro Power & Light, Micro Schools, PDI, Microsoft, SEI, Sierra-On-Line, Versa Computing.

We also carry Entertainment, Business, Utilities and Hardware for your Apple, Atari, IBM and Commodore computers. Please inquire about our free catalog

For mail orders: With your selection(s), please include name, address and phone number along with your check, money order, or credit card number and expiration date. Please include $3.00 for shipping and handling (foreign orders/hardware extra). California residents add 6½% sales tax.

NONAGON SOFTWARE
P.O. BOX 1486
EL CERRITO, CA 94530

Purchase Orders from Schools and Colleges welcomed.

VISA MasterCard AMERICAN EXPRESS®

800-942-2058
(415) 237-4406
CALIFORNIA, ALASKA, HAWAII/FOREIGN ORDERS

NONAGONSOFTWARE

Some forms of computerized teleconferencing already make use of this idea. You have all the interactivity of a phone call, without the other party having to be on line at the same time. You also have all the convenience of physical mail. You and the other party can carry on a typed communication of indefinite length, at your own personal convenience, even if you are half a world apart. In fact, such a system would replace the need for most first class mail.

If your party answers, of course, you can have a normal conversation, plus picture if you wish. You can show the other person sales charts, photos of friends, or any other graphic image, as well as your own face. Because of the high quality picture and sound, your conversation can be almost as comfortable as if you were in the same room.

While this is not a computer, it would have access to the computerized information bases, which are so rapidly expanding today. If you wanted a lot of information, it could be brought in at high speed and saved on disk for you to peruse later, or load into your computer for manipulation or analysis. If your computer were also connected to the phone, you would have the best of both worlds.

Some of today's electronic typewriters cost less than $200. As an option, you could connect a printer to your phone for a hard copy. This could save disk space for voice messages, pictures or confidential material. Printout could be initiated by either the caller or receiver.

These ideas are not new. One at a time, each should be old stuff to readers of this magazine. Taken together, they portray a fascinating picture of what is really possible — at least technologically. The ideas of electronic mail, universal communication, even electronic banking and shopping have all been considered before, and are truly possible consequences, if the futurephone I've hypothesized were to come into being.

EDUCATIONAL GAMES AND PUZZLES

for the Atari 400/800/1200✲

Use your mind, not just your fingers.

CASSETTE OR DISKETTE

All mail-order for $14.95 each

Flags and facts of the Americas	48K
Flags and facts of Europe	48K
Know your State	16K
Presidents of the United States	24K
Stargazer	48K
Loan Am	16K
Cryptograms (diskette only)	48K

To Order: DACUS SOFTWARE
19900 S.W. 92nd Avenue
Miami, Florida 33157
(305) 251-0392

DACUS SOFTWARE

✲Atari 400/800/1200 is a trademark of Atari, Inc.

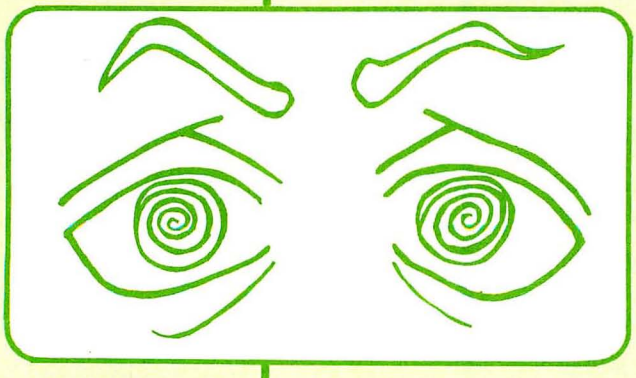
THE DATA STACK

Compiled by Steve Birchall

A read and write optical disk storage system has been announced by Panasonic Industrial Co. The eight inch disk uses the same semiconductor laser technology as videodiscs, and can hold about 1000 times as much as an eight inch floppy disk. Access time is 0.5 seconds, and transfer rate is five megabits per second. The laser beam records by darkening the recording material, which is a thin film of tellurium sulfide enclosed between the base material and a protective layer. The system can store computer data, or digitized images from facsimile machines, or even X-ray images from scanners. Schools developing interactive videodisc lessons could make good use of a videodisc recorder.

Video Display Terminals have received much criticism, particularly from the seven to ten million people who work with them all day. Among the principal complaints have been headaches, eyestrain and back pains. Other maladies, such as cataracts, miscarriages and increased levels of stress, have been ascribed to the low-level radiation emitted by the TV-like tubes. The National Academy of Sciences, after completing a two-year study of possible VDT health hazards, has released a report which largely exonerates the terminals, and points to other causes.

The headaches, eyestrain and muscular pains are related to environmental problems in the workplace — glare on the screen, too great a contrast in light intensity between the room and the screen, poor posture (aggravated by desks and chairs not designed for VDTs), and misadjustment of the display device.

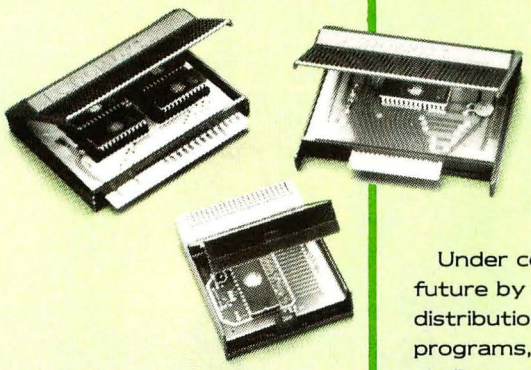


Although they did not study radiation effects directly, but cited other studies, radiation seems not to be a problem. Because it is of extremely low level, and the leaded glass protects users, the problems with cataracts and miscarriages are not related to VDT use, according to the report.

The real culprits remain the usual causes of stress in offices. Relief involves better lighting, avoiding glare, keeping the equipment adjusted properly, better posture, and furniture which puts the screen and keyboard at comfortable levels. Occasional "stretch breaks" help too.

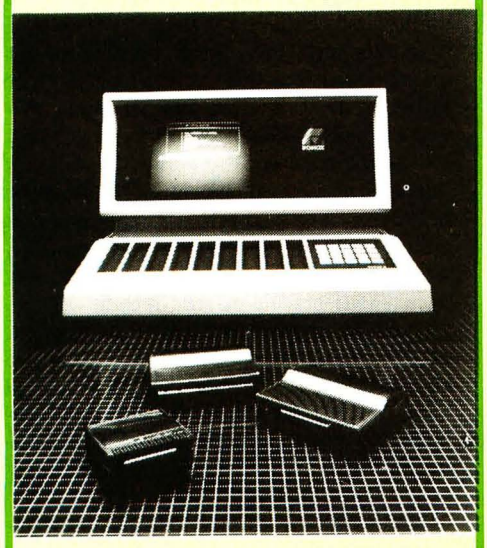
Dedicated computer credit cards *are being introduced by Apple and Computerland. Radio Shack has used them for the past six months, and IBM reportedly is working with Citibank on plans for theirs. The marketing strategy behind this* movement is to reach the middle class — people who want a computer, and can afford to spend *$1500 to $2000, but don't have the cash and don't want to tie up their VISA and MasterCards. With the specialized credit card, they can buy a computer (and purchase added peripherals later) for a relatively small monthly charge. The concept is not new to retailing — large department stores, Detroit automakers and others have used it for years. If successful, it will extend the market for home computers to millions of consumers. By operating their own credit cards, computer manufacturers will derive profits from that enterprise as well.*

THE DATA STACK



Software by telephone is a new concept in retail distribution which Romox is introducing for Atari, Commodore and Texas Instruments computers. Simply take your re-usable cartridge to your dealer, and he will place it in the special Programming Terminal, which can store up to 500 programs. When you are tired of the game, take the cartridge back in and load up a new one. Advantages to the dealer include instant shipping from the manufacturer, and elimination of expensive inventories.

The Games Network is trying a similar approach, but will deliver software directly to consumers via existing cable systems. Initial test-marketing will begin in southern California in December.



Under consideration for the future by other companies is cable distribution of audio recordings, TV programs, movies, books and similar materials. The advantage to the publisher is to be able to charge each user when he downloads his copy. The advantage to the consumer is instant access to an extremely broad range of program material. By eliminating the wholesaler, and the costs of manufacturing and distributing hard copies, retail prices should be lower.

Data theft is not only a sticky legal problem, but also a cause of great concern in the computer and high tech industries. Massachusetts has a high concentration of such companies — and skilled computerists who have the knowledge to commit data crimes. To close up the gap in the present criminal code, the state's new data theft law went into effect on August 1, 1983. Previously, it covered only tangible property. A thief could be prosecuted only if he took physical objects such as printouts, or tapes or disks with stored data. Now the law extends to electronically processed or stored data, either tangible or intangible — and "data while in transit."

More than a dozen other states now have similar laws. At the federal level, Representative Barney Frank (D-Mass) has introduced a data theft bill in the House, although Congress has taken no action at this time.

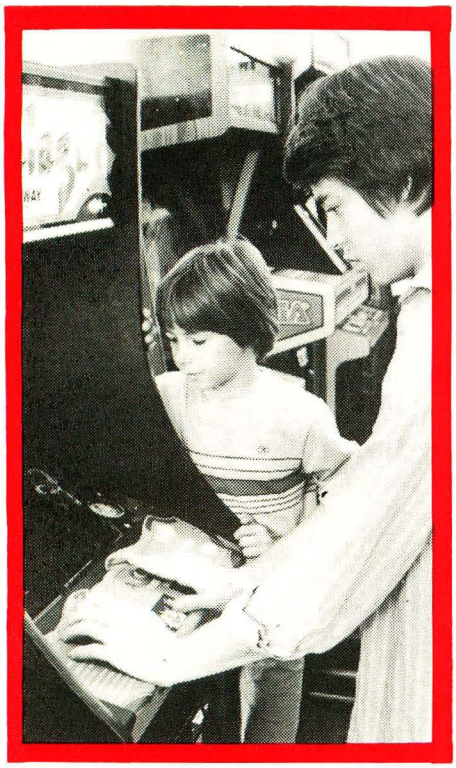
Arts and entertainment are featured on the Computer Advertising Network in Boston. Access to the 24-hour database is free to the user. CAN offers calendar listings for arts events, lectures, exhibits and conventions in the greater Boston area, plus movie reviews, restaurant reviews with menus, and a computer product/service guide. To log on, call (617) 423-9501.

Need a job? Connexions offers an on-line bulletin board service for professionals in computers, engineering, high tech sales and marketing, and finance. After scanning the listings, you can create and transmit your resume directly to the appropriate personnel officer. For further information, write to Connexions, 55 Wheeler St., Cambridge, MA 02138, or call (800) 562-3282. In Massachusetts, call (617) 497-4144.

Boston's CAN network mentioned above offers a similar service, but the resumes are stored anonymously and you must wait for a prospective employer to contact you.

The video game approach to war room design is good human engineering, but pointed in the wrong direction.

WarGames



Global Thermonuclear War is a pointless game. No one can win, unless one player makes a moronically stupid mistake. The very act of playing the game totally destroys all players, winners and losers. *The only winning move is not to play the game.* This is the central message of the past summer's most controversial and exciting film, *WarGames.* Despite the serious social and political issues raised, it also entertains and delights its audiences with a skillfully wrought story, and superb film editing. Exciting and fast-paced, *WarGames* constantly pulls you along with its infectious energy. The complicated bundle of thoughts it throws at you is neatly packaged into an innocent movie about video games and a pair of All-American kids.

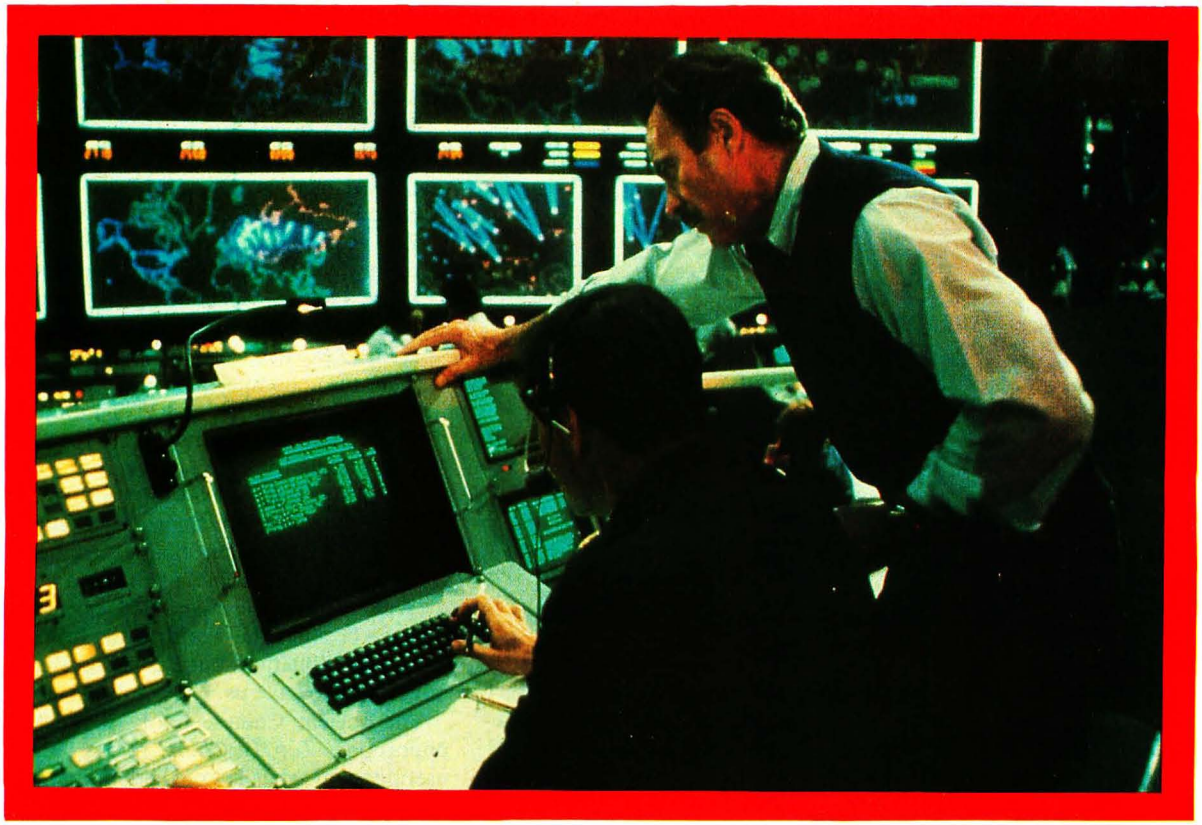
Who could believe that the only way to save the world from total destruction is to play Tic Tac Toe with a computer? Nonetheless, playing this silly game is how it was done, and a child at the terminal (in a room full of computer experts and Generals) is who saved the world in its last seconds before Armageddon.

Generals and Games

The opening scenes plunge you into the world of a missile launch crew going to work. All the trappings of the site's rigorous security contrast with the attitudes of the crew. They are late, as usual, and unrepentant. They banter casually about their use of psychoactive drugs. Suddenly an alarm sounds and they go through the deadly serious sequence of actions they have been trained to perform: verifying the codes, unlocking control panels, preparing the missiles for the countdown, and finally turning the key to launch the missiles, which will incinerate enemy cities and millions of people.

In this case, the launch officer remains unconvinced that this exercise is real — he wants verification from another human being. He calls NORAD, and no one answers — a chilling evocation of what actually might happen. Still, he refuses to turn the key, even when his partner threatens him at gunpoint. Later, at NORAD headquarters, we learn this really was only a drill, and that twenty-two percent of the launch officers refused to "push the button" as ordered. As a result, all the president's men decide to eliminate human beings from the control loop, and replace them with a totally computerized system — over the strenuous objections of a down-to-earth and surprisingly cool-headed General.

Behind all of this is WOPR, a mega-computer with advanced artificial intelligence, which occupies itself completely



Video Games and Moral Responsibility

Review and Comment by Steve Birchall

with playing out simulated thermonuclear war scenarios. No matter what strategy the Russians might use, the War Operations Planned Response machine long ago has worked out the best strategy to ensure that we win. This automatic computerized response is necessary, because if the missiles are launched from submarines, we would have only six minutes to counterattack. No president would have time to devise battle plans or search his soul under those conditions. Logically, the only possible defense is the threat of an automatic, instantaneous computer response. But if human beings are not included in the final fire control loop, that system constitutes nothing less than a Doomsday Machine!

So now we have a microcosm of the entire story on the military side:

- Frequent drills so realistic no one can tell for sure whether this one is the real thing or not.
- Human beings and their judgements removed from the control loop.
- A computer which plays games of simulated nuclear holocaust 24 hours a day, 365 days a year.
- A Doomsday Machine with a six minute hair trigger.

Kids and Games

Cut to your friendly neighborhood video arcade, and we see the protagonist, David Lightman, racking up so many points he can't finish, and he turns over the game to a younger friend. Later, he shows his girl friend how he can use his computer to break into the school system's computer and change their failing grades to passing. She challenges his morality and insists that he restore her grade to the one she actually received. So, he is not entirely innocent or naive about his actions. He knows that what he is doing is at least sneaky, if not unethical (and carries some risks, because he has to skulk around the principal's office periodically to obtain the current password). The same is true of his ability to make unlimited long distance calls without being charged, and of his plans to break into a publisher's computer to steal their newest game.

To his surprise, he discovers a direct line into a Defense Department computer, which happens to have a number of interesting games in its repertoire. Not knowing the full consequences of his actions, he goes ahead and selects the most intriguing game on the menu: "Global Thermonuclear War." Interupted by his parents' request to take out the trash, he shuts off the computer, ending the game. WOPR's programming however, compels it to finish every game, so it continues to play. It actually calls him back repeatedly to ask for his next move. Meanwhile, in the war room, things are a little crazy...

There you have the microcosm for the other side of the story:

- A mischievous teenager having as much fun with his computer as Huck Finn did with his raft on the Mississippi.
- Questions of morality — cheating the phone company, altering grades, breaking into other computers, attempting to steal a new game.
- The existence of a Doomsday Computer and its vulnerability to sabotage.

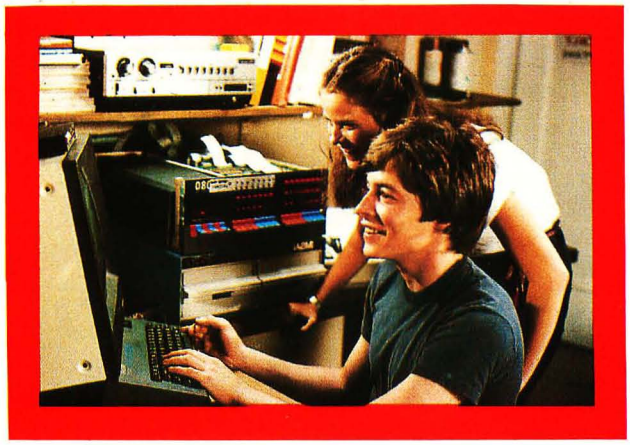
The Human Interface

What follows is the intertwining of these two sets of characters, and a truly disturbing exploration of the moral issues raised. All this is played out against the practical — and horrifying — problems created by a combat computer on auto-pilot. The essential story line is this interaction of com-

→

puters and people. *WarGames* comes down strongly on the side of keeping people in control. When the frightened youth asks WOPR if this is real or a simulation, the machine's icy reply is "What is the difference?"

A telling episode occurs during the first "missile attack" when the General gets on the phone and complains that the satellites didn't detect the enemy missile launches. What's wrong with the satellites? In the face of all the "information" displayed on the screens in the war room, he is willing to accept the false reality that the country is under attack. The preponderance of "evidence" is overwhelming. The lone glitch in the system — the spy satellites' failure to confirm the launches — is simply a familiar routine in the drills: some part of the overall defense system always malfunctions; you expect it with big expensive machines. But the confusing "reality" he thinks he sees blinds him to the glaringly obvious fact that the satellites are the only part of the system which functioned correctly. A subtle reinforcement of the problem with machines running amok occurs early in the film during a tour of NORAD headquarters. As WOPR's operator blithely describes its ultra-reliability, the camera pans down the line of visitors' faces — and just behind them, *lying open on top of the computer,* is a set of what looks like telephone lineman's tools. To repair the computer that never breaks, they use screwdrivers and pliers.



Video Games and the Pentagon

WarGames illustrates our fascination with computer games in many ways. The machines in the arcades and in our homes, and the hardware and software which the Pentagon has been using for decades are both expressions of that fascination. The scenes from the war room and the arcade at first seem to contrast against each other. And yet they don't contrast, because the expressions on the faces, the involvement with the game, and the interaction with the computer are disturbingly similar in both arenas. As you look at the war room scenes, you begin to realize that, apart from their utility for defense, these gigantic mainframe computers, enormous display screens, multiple terminals, and complex operating software are in many ways like a super video game. The video game approach to war room design is good human engineering, but pointed in the wrong direction. It may, on a subconscious level, lead people to make the wrong responses in a nuclear war, and it may even attract the wrong personality types for a defense nerve center.

Have we created a monster with these zillion dollar war computers? Do the people who use them have as much fun playing war games as the fourteen-year-old kids in the neighborhood arcade? NORAD may have created nothing less than the most sophisticated and expensive multi-user video game imaginable, and we wonder how many in the Pentagon may be hooked on *playing* it. At the same time, the only winning move is *not* to play. Should we provide our military leaders with a glamorous, spellbinding toy which makes running a war *fun?* Should we detoxify the Pentagon planners from their addiction to computer games? Or should we encourage them to continue playing until they, like WOPR, have acted out enough scenarios to become convinced that the *only* winning move is *not* to play the game? This film raises many unsettling questions about national policy and the tools employed to formulate it.

"Not With a Bang, But a Whimper"

And who saves the world? A courageous Colonel? No — a child shall save them. Although for the computer, the winning move is not to play, for the actual saviour, the winning move is to play the out-of-control WOPR as idiomatically as possible. Just as he might do while playing an adventure game, young David (Lightman) slays his Goliath by trying various approaches, until he finds the way to make WOPR do what he wants. The kid and the cynical old computer wizard both grin in fascination as they watch their winning strategy fall into place. WOPR learns how to deal with a no-win game. They teach it the most important lesson in the world, and their student passes the final exam with only nanoseconds to spare. The important point is that the sense of play is what works. The war room full of Generals and technocrats completely fails to develop a strategy to beat the computer. Only the child, with his adventurous sense of fun and wonder is able to conquer the machine.

Zen and the Art of Peace Making

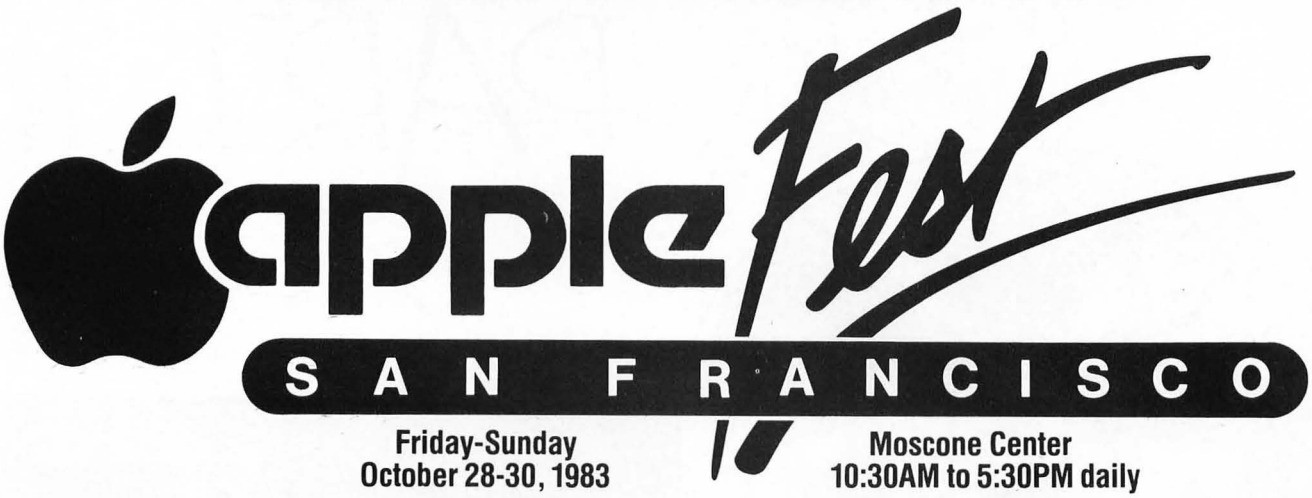
The film's central concept — the only winning move in the game of Global Thermonuclear War is not to move — has a curiously Oriental flavor. Important to Zen is giving up the notion of striving toward the goal of achieving enlightenment. Only by abandoning the struggle can you acquire the enlightenment you seek. Zen meditation clears thoughts from the conscious mind (the CPU Buffer Memory), rather than filling it up. In the Western world, where hard work and the struggle for success are virtues, such an outlook is regarded with suspicion and contempt, although things are changing as global communications continue to merge the philosophies of East and West. Western rationalism and deductive logic have brought the world to the brink of total annihilation, but Eastern mysticism might help to save us.

The ancient Chinese book of practical philosophy, *Tao Te Ching,* points out the usefulness of what is not there in many of its verses. One example is a vase, which is useful only because of its emptiness (its capacity to hold something). The famous rock garden at the Ryoan-ji temple in Kyoto, with its expanses of artfully raked sand and mysterious, isolated rocks is another example — by holding back in just the right way, you can say more. Gropius' precept that "Less is more" is a good translation into Western terms. And so is "The only winning move is not to play."

Perhaps the best way to close is with a quotation from the last book Buckminster Fuller published before his death, *The Grunch of Giants* (St. Martin's Press Inc., New York, 1983). His topic is how we have let big business and industry run out of control building weaponry (as opposed to "livingry"), when we could put the same companies to work solving Humanity's problems of living harmoniously on Spaceship Earth:

> ***There exists a realizable,***
> ***evolutionary alternative***
> ***to our being***
> ***either atom-bombed into extinction***
> ***or crowding ourselves off the planet.***
> ***The alternative is the computer-persuadable***
> ***veering of big business***
> ***from its weaponry fixation***
> ***to accommodation of all humanity***
> ***at an aerospace level of technology,***
> ***with the vastly larger,***
> ***far more enduringly profitable for all,***
> ***World Livingry Service Industry.***
>
> Quoted by permission. © 1983 by R. Buckminster Fuller.

THOUSANDS OF INNOVATIVE APPLE-COMPATIBLE PRODUCTS ARE GATHERING AT



Friday-Sunday
October 28-30, 1983

Moscone Center
10:30AM to 5:30PM daily

The Show features hundreds of exhibits of the newest, state-of-the-art products for the Apple. You can see and try out software for every conceivable application—from arcade games to investment programs, music to machine language, teaching systems to accounting packages, word processors to graphics processors. You can sample hundreds of different peripherals, including printers, hard disks, modems, memory cards, video displays, and synthesizers, plus accessories, publications and invaluable support services.

Applefest is **the** place to view the most technologically advanced products for the Apple.

At Applefest you can try out and compare hundreds of products in an exciting and information-filled environment. You can learn more in two days than you could in months of visiting computer stores and reading trade journals.

And, best of all, everything on display at Applefest is for sale at special show prices, so you can save hundreds—even thousands—of dollars by making your purchases at the show.

Admission Prices
One-day Exhibits Ticket $10.00
Three-day Exhibits Ticket $25.00

Additional Information
To receive more information about attending or exhibiting at Applefest call or write Northeast Expositions, Inc., 822 Boylston Street, Chestnut Hill, Mass. 02167. Tel: 800-841-7000 or 617-739-2000 (within Massachusetts).

Apple and the Apple logo are registered trademarks and service marks of Apple Computer, Inc.

Produced by Northeast Expositions, Inc. nationwide producers of PC'83, CP/M'83, the National Computer Shows and Softcon.

APPLEFEST TICKET ORDER FORM

☐ Enclosed is my payment for _____ Three-Day Exhibits ticket(s) (quantity) at $25 each, which admits the attendee to the Show on Friday, Saturday and Sunday.

☐ Enclosed is my payment for _____ One-Day Exhibits ticket(s) (quantity) at $10 each.

NAME _____

COMPANY (IF ANY) _____

ADDRESS _____

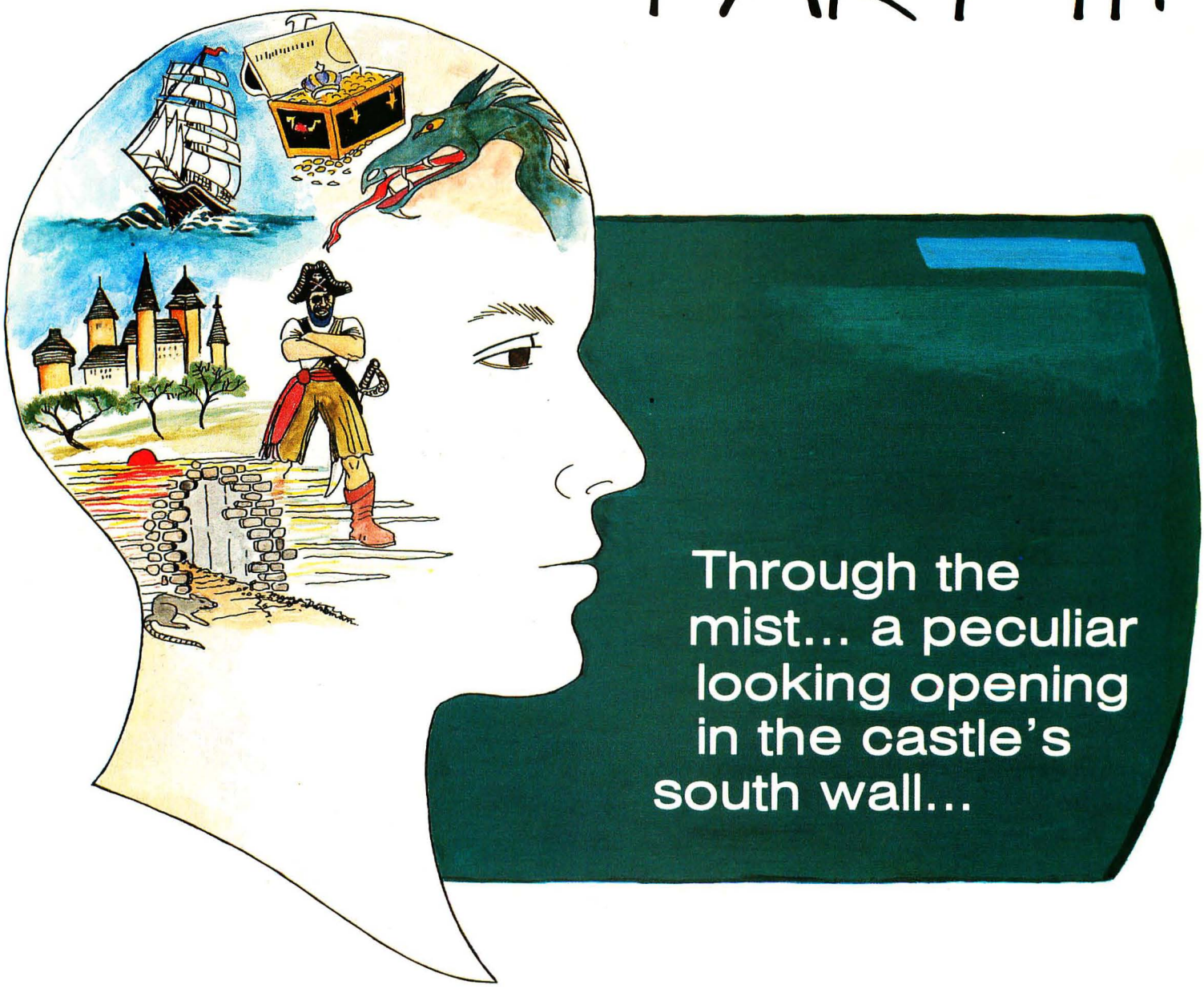
CITY _____ STATE _____ ZIP _____

TELEPHONE ( ) _____ EXT. _____

Mail to National Computer Shows/Applefest, 822 Boylston Street, Chestnut Hill, Mass. 02167. Checks only. No charge cards.

THE BATTLE FOR YOUR MIND?

PART II:



Arousing Fantasy

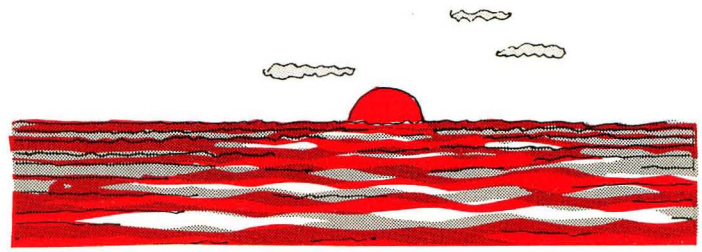
by Peter J. Favaro

This is the second and less structured part of a series of articles on the psychology of software design (see *The Battle For Your Mind: Good Game Design* in Issue 39). I will show the importance of fantasy, ambiguity and illusion in the design of recreational and educational games. The most appropriate application of these concepts is for adventure games, since they tap the mind's ability to create images more than the shoot 'em up arcade games which depend primarily on visual information.

In some ways adventure games remind me of the experience that people had when radio serials were very popular. Even with modern technology's dazzling array of special effects in cinema and video, nothing can match the images and the emotions stirred up in your mind's eye by radio shows like "The Shadow." Serious adventure game designers would do well finding some old radio tapes and listening to them for clues on how to use language to build suspense — and generate emotions.

An adventure game is, in many ways, only as good as its creator's imagination. Although building unique worlds for people to explore is important, providing the vehicle to transport them into the fantasy scenario is equally important. Since each individual responds to a particular idea in unique ways, with different preferences and dislikes, this seems to be an insurmountable task. To accommodate everyone almost seems to require that we hand tailor adventures for each player. However, if we could tap into a universal idea or theme, the game's concept would have meaning to everyone. Wagner, for instance, emphasized myths and legends in his music dramas as a means of arousing deeper, more universal feelings. These symbols are not especially dependent on a particular time and place, as Chereau discovered 100 years later, when he staged *The Ring* in what was modern dress for Wagner's time. The symbols translated across time and space without difficulty. Later in the nineteenth century, Freud became fascinated with the cross-relationships he found in the myths of various civilizations. These culturally common themes are the basis for his dream analyses.

The idea that symbols or stories can have universal meaning is complex, and has been argued for many years in psychology. Freud conceived of his dream interpretations as fixed, though Jung and others saw a whole spectrum of possible interpretations. The problem is that symbols have different, but often similar, meanings for every person, and for different contexts. So in a game scenario, we want these symbols to be ambiguous enough for multiple interpretations, but not so ambiguous as to give no direction at all to the player.



Clouds From Both Sides

Have you ever looked at the sky on a summer day and tried to "make pictures" from the billowy masses as they floated by? If you've done this with a friend, chances are you both saw different things in the same clouds — or you may have had difficulty finding the objects your friend saw easily. The theory in psychology that tries to explain this is The Projective Hypothesis. It says that:

- When people encounter an ambiguous stimulus, they tend to project attributes from their own experiences onto that stimulus.

To explain an input with many possible interpretations, the mind tries to relate it to what it already knows — either because it needs to explain it in some plausible way, or because it has certain expectations which color its perception.

Psychologists use The Projective Hypothesis to attempt to gain access to a subject's personality characteristics. The infamous Rorschach ink blots, a series of ambiguous looking blobs, are perhaps the most familiar technique for assessing personality functioning. However, the Rorschach Test is only one of many tools. Another popular projective measure is the Thematic Apperception Test, a set of cards with drawings of people in dramatic situations. The client looks at a card and tells a story based on what he observes in the stimulus picture. The drawings are ambiguous-looking, so that many different stories can be told for each card, depending on the client's personality, and present state of mind.

Putting the Player Into the Story

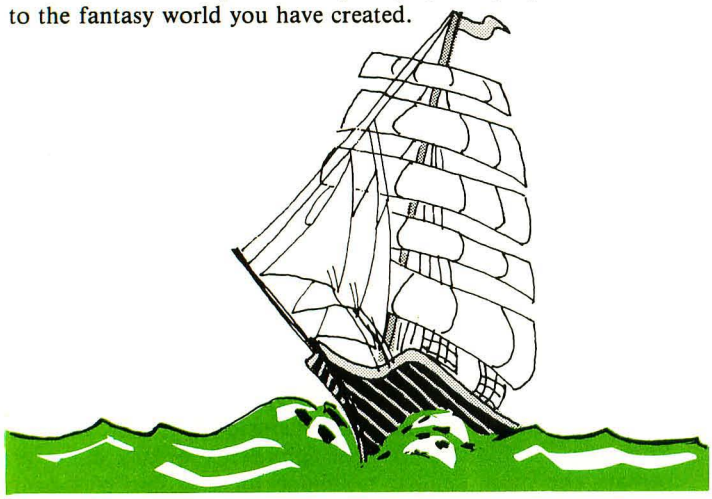
How does all this affect game design? Earlier, I said that a game theme must be broad enough that most people can relate it to their own experiences. No game will capture everyone's attention. After you have captured the potential player's interest with the game concept, the problem is to maintain and develop that interest. One way to make adventures more intriguing is to make the hints as ambiguous as possible. This is not easy, since a fine

line separates creative ambiguity from frustratingly misleading deadends. The intent of providing hints is to help and guide, but you can add a little mystery to any adventure by presenting hints which have a double meaning or do not become obvious until the player ventures beyond his usual frame of reference. A "hint" differs from a "clue" in most adventures — a hint usually offers advice on how to get out of a tough spot, while a clue refers to the actual text of an adventure.

Many clues describe the environment in which the adventure is taking place. How you phrase the clues makes a significant difference in how the player responds. The following statements all function identically as far as the program is concerned, but the expectations they arouse in the adventurer are quite different:

- YOU ARE IN A ROOM. THERE IS AN EXIT TO THE SOUTH.
- THERE IS A HEAVY WOODEN DOOR IN THE SOUTH WALL OF THE CASTLE.
- YOU FIND AN INTERESTING LOOKING ENTRANCE IN THE SOUTH WALL OF THE CASTLE.
- FROM YOUR VANTAGE POINT ON THE HILLTOP, YOU PEER THROUGH THE EARLY MORNING MIST AND DISCOVER A PECULIAR LOOKING OPENING IN THE CASTLE'S SOUTH WALL.

Each of these clues uses increasingly more vague language to pique the player's curiosity, and each one creates a distinctly different mental image. Your descriptions of scenes, objects, and situations should reinforce the plot and help the player to project himself into the fantasy world you have created.



Anatomy of an Adventure

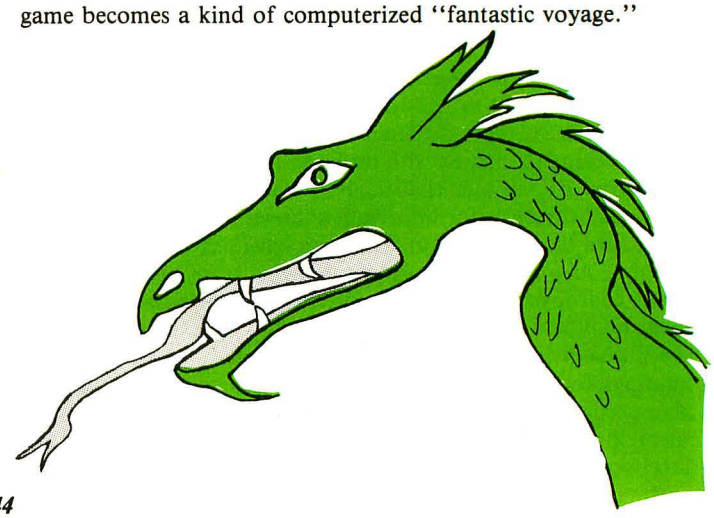
Obviously, the way you use language in setting the scene and creating a mood is important. But let's take this a step further and analyze the main components from a psychological point of view, with the goal of enhancing the player's fantasies. Most adventures have four main components:

- Scenario
- Characters
- Task or goal
- Method of travel

The scenario includes not only the physical environment, but also the plot. It is the component that will either "hook" a person into the adventure or turn him away from it completely, so write it with the same care you would give a short story. Typical adventure scenarios borrow heavily from legends and classic themes pregnant with thrill and suspense, such as Cops and Robbers, Cowboys and Indians, Pirate and Princess, Kings and Castles, and Galactic Marauders. Unfortunately, the plots of these adventures have been one dimensional and are at a stage of development similar to the first silent movies — you simply need to find the treasure or rescue the heroine and then fly, swim, run or otherwise transport yourself to safety. Communication with the computer is limited to five or six key words such as LOOK, PICK UP, or GET.

The major problem is that human experience has a much larger repertoire of behaviors. A welcome change from this standard is the ULTIMA adventure series created by Lord British (On-Line Software). These are by far the most imaginative and intelligent adventures I have seen, largely because of the diversity of interactions that are possible. The ULTIMA adventures not only create a scene, they actually simulate Lord British's creative worlds. In these adventures you have to make friends, beg, borrow, steal, cast magic, and replenish life's basic needs (sustenance and shelter). Another factor that Lord British cleverly accounts for is the cumulative benefit of experience, so you can improve parts of your personality. One of the big disappointments in the ULTIMA series is that most of the action is violent and agressive, which is unrealistic and rather boring after you've destroyed your first hundred or so Flaming Bozos. But I have a low tolerance for things of that sort.

Even when adventure plots derive largely from their creator's imagination, the writer must undertake a considerable amount of research to create a realistic feeling for his scenario. When adventures relate to real world settings, we have a unique opportunity to add an educational flavor. For instance, I have just begun work on an educational adventure which takes place in the human body. Although some of the tasks are typical of adventures, the scenario's setting is within the central nervous system — and the game becomes a kind of computerized "fantastic voyage."



Personalities: Casting an Adventure

No world is without its inhabitants and their personalities should give the illusion of having the capacity for some kind of interaction — even if the interaction is to ask only one question. Relationships help create feelings and provide the adventurer with the opportunity to "project" characteristics onto the characters. Fear of an evil despot, or love for a beautiful princess are just simple examples of the wide range of human emotions you can conjure up in your adventures. A "benevolent" character who can be hidden somewhere in the story is a useful vehicle for delivering hints. Imagine Luke Skywalker receiving messages from The Force simply by typing in "HELP" rather than being prompted by Obi Wan's ghost. The effect is not the same.

One of the most important but often neglected characters in an adventure is you — the main character. I find it extremely irritating when the only information I receive about myself begins and ends with "YOU ARE DEAD!" Choosing a set of personality attributes, with your fate partially dependent on those characteristics, is a simple way of getting the main character "into" the story. A more complex way to get the adventurer to put part of himself into a scenario is to ask him to respond to a set of questions. They can refer to situations in the adventure, but disguised well enough so as not to be too obvious:

IN A SITUATION WHERE DANGER WAS IMMINENT WOULD YOU

A) ASK FOR HELP
B) TAKE CHARGE AND TAKE ACTION
C) RUN FOR YOUR LIFE

For anyone familiar with my board game *Success,* this is what I attempted to do by having the players choose a personality and rank-order their life's goals. You don't need or want to capture every nuance of the player's game-personality. All you are trying to do is create an illusion.

Another interesting way of attempting to bring an adventurer's personality into the game is to keep track of his choices in certain situations and develop a scoring system based on his display of bravery, risk-taking, judiciousness, pragmatism or whatever you would like to reinforce.

Winning By Personal Growth

We have talked about many rather abstract things, such as arousing fantasy, creating the illusion of interaction, and using projection and ambiguity. What is the best way to "win" an adventure game? Somehow, just finding a chest of jewels seems anticlimactic after all the trouble you have go through. Again, taking some hints from the ULTIMA series, a unique approach to winning an adventure would be to focus on "developing" your

FOR APPLE II PLUS, FRANKLIN, APPLE IIe

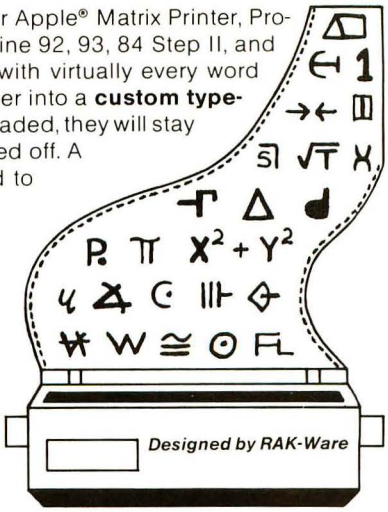
Font DownLoader*

Expand the capacity of your printer hundreds of times

Load custom fonts into your Apple® Matrix Printer, Prowriter™ 8510A, OKI® Microline 92, 93, 84 Step II, and Epson® FX and use them with virtually every word processor to turn your printer into a **custom typesetter.** After the fonts are loaded, they will stay in your printer until it's turned off. A font editor is also provided to allow you to create your own graphics, text, foreign language letters, math and electronics symbols to load into your printer.

On-Disk *(Specify Printer)* $39.00

*Requires printer interface that adheres to Apple protocall (Tymac, Apple, Epson, etc.) (Will not work with Pkaso, Wizard and some others).



$100 REWARD

Submit the best or most unique font using the above software and we will make you $100 richer. Other prizes for the first 25 runners up.

Dealer and Distributor Inquiries Invited

MasterCard VISA

microWARE Dist.

1342 B Rt. 23, Butler, NJ 07405
201-838-9027

REMCO COMPUTER SALES

(312) 674-3958

P.O. BOX 1732
SKOKIE, ILLINOIS 60077

The Hotest little printers in the world.

apple

Awesome Prices on:

Printers
C-Itoh
NEC
Okidata
Smith Corona
Gemini

Monitors
Amdek
Sanyo
NEC
Taxan
USI
Electrohome

Modems
Hayes
Novation
Anchor

Disk Drives
Micro-Sci
Rana
Vista
Corona

And 100's More - **Just Call!**

APPLE IIe Starter Includes:
Apple IIe
disk drive & cont.
Apple III monitor
80 col. Card
Stand
and Cost-free Warrantee

FRANKLIN
COMPUTER CORPORATION
ACE 1000
ACE 1200

We Carry Everything for Apple and Franklin. (others too)

FREE Catalog

SAVE up to 50%

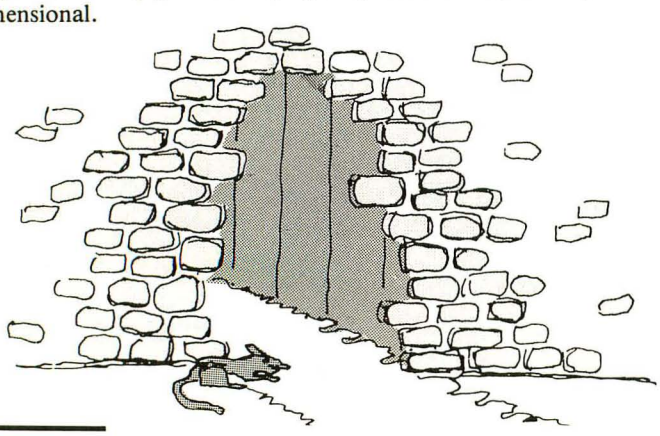
1. Fast Service
2. Lowest Prices
3. Best Selection

CALL for our price

Apple, Apple IIe, Apple III, and Franklin are Registered Trademarks.

Money Order, Certified Check, Personal Check (allow 10 days clearance)
Add Only $2 for UPS delivery, (hardware and foreign extra)
Illinois residents add 6% sales tax (except on software)
Prices subject to change. **Open 7 days a week.** (312) 674-3958

character's personality. Make him become stronger or wiser, or develop some supernatural power. In real life, gaining wealth is only one of many goals. Escaping danger is also fun, but very one dimensional.



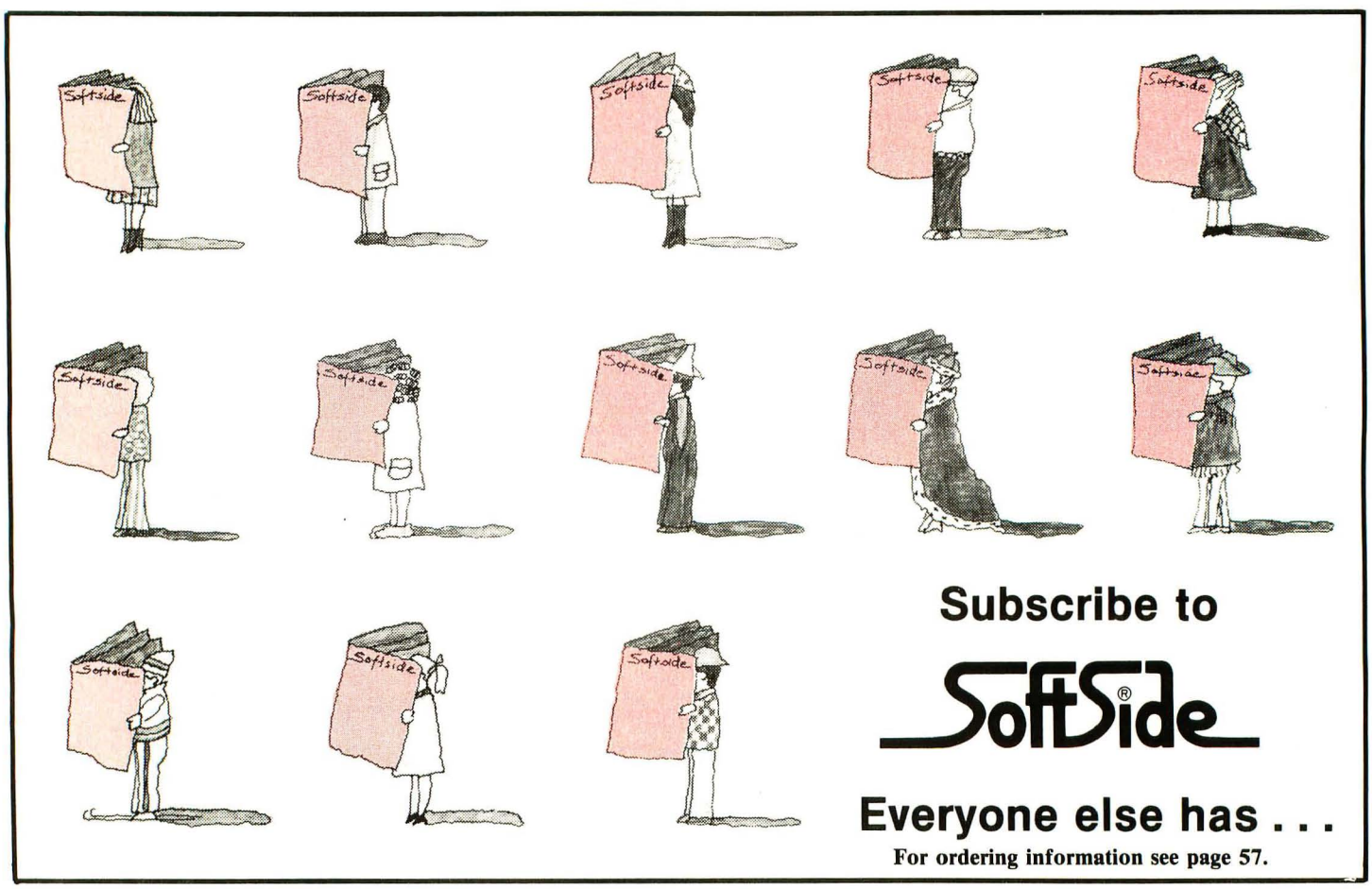
3D Travel

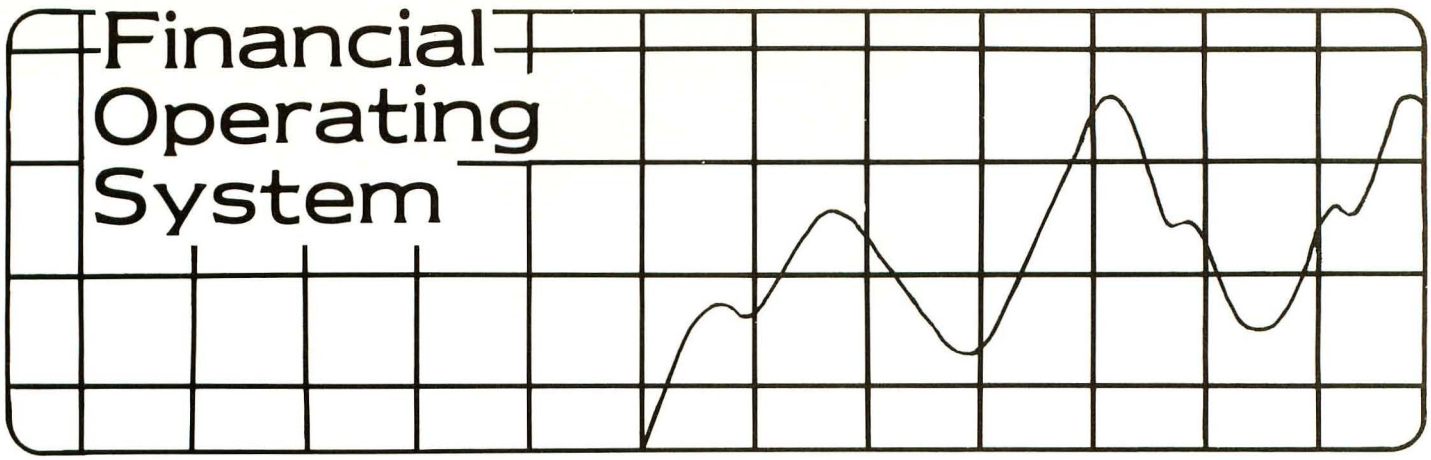
Most adventures require the player to form a "mental map" of the imaginary world. The player learns about his environment by exploring it, and through a set of clues. Usually he must choose to travel toward one of the compass points. This creates a pretty "flat" picture in the mind of the player. Often, people resort to drawing a map as they go, or use one supplied in the adventure documentation. In the "fantastic voyage" adventure I mentioned before, travel is in three dimensions and the directions have an entirely different concept. Instead of going N, S, E, or W, you can travel "anteriorly" (toward the head), "posteriorly"(toward the tail), and "dorsally" (from the front part, i.e. the stomach surface, to the back or top). This is a weird system to adapt to. Once you do, you get a realistic feeling of what it must be like to travel through the brain.

Cooperative Adventures

Adventuring has always been a solitary activity. Before closing, I would like to whet the imaginations of some creative adventure designers. If you make the tasks more complex and multi-dimensional, you can create games which require more than one person to play them. If you place limitations on what a certain type of character can achieve, the result will be a cooperative adventure in which players need to form a problem solving strategy together, play in teams across multiple terrains and so on. Still more complex would be a group adventure on several terminals with each terminal holding an independent part of the adventure. Players would have to travel from terminal to terminal via telecommunications to obtain clues. Each terminal could contain information about the other "worlds" with passwords to allow players to move from one terminal to another. Without the memory constraints of a 48K system, adventures could become far more complex and challenging than they are now, with the added social dimension of group play. The organization involved in such a project would be tremendous. Of course the person who would mastermind such a project would be deprived of the opportunity to participate as a player.

Are you ready to create the next million selling adventure? Even if you're not, I hope I have stimulated some of your creative energies so you can help us play out a new kind of adventure I enjoy writing about. That is the adventure of creating the next genre of computer games — games which are more intense, intelligent, involving, and stimulating.





CHICAGO'S BIG BOARD: Profits in Wheat Futures

I have been told that Abraham died in 1971. He left an estate of about six million dollars. Abe was a math teacher until 1938 when he abruptly retired from his $3,100/year job. He never worked again. His income came solely from a system he developed. A week after Abe died, his broker (for many years) received an old brown envelope....it contained the "System."

I have no idea if this story is fact or just charming folklore. However, many people have used a system I have developed for investing in stocks and commodities. The results over the past ten years have been interesting:

- It has never had a losing calender year.
- It has averaged over 38 percent net return yearly.

Lest you think this column should be in the April issue, I assure you this is no put-on. In fact, I will put my money where my mouth is. If anyone wants to wager $50,000 that my system will fail, I will open an account for $50,000 and trade according to the system for one year. I will arrange for the broker to send duplicate statements of each trade to ***SoftSide.*** At the end of one year, I will donate to charity any profits, plus the $50,000 won on the bet. If the system fails, I lose $50,000.

Future Soybeans

Every business day, millions of dollars change hands as a result of someone selling something he doesn't have to a buyer who has no use for it. If that puzzles you, consider that in many cases, what is bought and sold doesn't even exist — and a friend of mine made over one million dollars in six months buying something that he wouldn't recognize if he saw it. In fact, old Herman never saw a soybean in his life. I speak, of course, of trading in commodity futures. The value of commodities contracts traded daily far exceeds the value of all the stocks traded on the New York Stock Exchange.

Futures trading began in the 1860s to help the producers, handlers, processors and users of agricultural commodities protect the prices of the goods they planned to buy or sell in the future. This price protection, called hedging, continues to be the primary function of the futures markets. It is valuable to the general public since it usually leads to better price stability. Here is a simple example of how it works:

A baker calls a miller in June and wants a firm price on 200,000 pounds of flour delivered in December. The miller calculates that he must have 5,000 bushels of wheat to make that much flour. The miller has two options:

- He can give the baker a price, guessing at the price per bushel he will have to pay in December. To be competitive, and still make a reasonable profit, he will have to calculate carefully.
- If the miller does not wish to risk an adverse price move in wheat he can buy 5,000 bushels on the futures market, for delivery in December. Now he knows *exactly* what the raw material will cost at a future date. He can give the baker a competitive price, and know he can make a fair profit. This option, in the long run, saves the baker money, because the miller can offer a better price if he knows what the exact cost of the wheat will be in December.

If the markets had no speculators, the miller would have to find a farmer who would agree to sell him the wheat in December at a particular price. The speculator offers a service by taking the risk from the miller and assuming it himself. He makes a profit by anticipating price movement correctly.

Zero Sum Game

Even though billions of dollars change hands yearly, commodity trading is essentially a zero sum game. For every winner, there is an equal and opposite loser. Your computer's random number generator would have a 50/50 chance of profiting (10 A = RND(2): IF A = 1 THEN PRINT"BUY" ELSE PRINT "SELL"). Nonetheless, every statistic I have ever seen indicates that at least 90 percent of the traders lose. Based on my many years of experience in the markets, I think the 90 percent figure may be a bit low.

Some say the markets are rigged by insiders. Nonsense. That is the paranoid talk of losers. The truth was stated simply by the Okefenookee philosopher, Pogo, when he said, "We have met the enemy and he is us." The behavior patterns of the losers clearly show them as they really are — compulsive gamblers disguised as investors,

→

This reconstruction of the Chicago Board of Trade's main room at the Art Institute evokes the elegance of a by-gone era. Agricultural commodities, more than stocks and bonds, were Chicago's profit makers in the nineteenth century. (Photo courtesy of the Art Institute of Chicago.)

Financial Operating System *continued*

who approach the futures market as a casino. They have little chance from day one because they violate these sound principles:

- TRADE WITH THE TREND
- LIMIT LOSSES
- NEVER ADD TO A LOSING POSITION
- USE RISK CAPITAL ONLY

Violate these and you have about as much chance of success as a cellophane dog chasing an asbestos cat through the underworld. In a zero sum game which 90 percent of the players lose, the priviledged 10 percent must make a fortune. Everyone who has traded, and lost, has fantasized about finding the key to joining that select group of profit-takers.

Moving Averages

In the listing below, you may find that key. This is a system of market analysis based solely on moving averages. The system calculates three moving averages and makes a decision based on the following rules (I will use three, seven and nineteen day averages for the illustration):

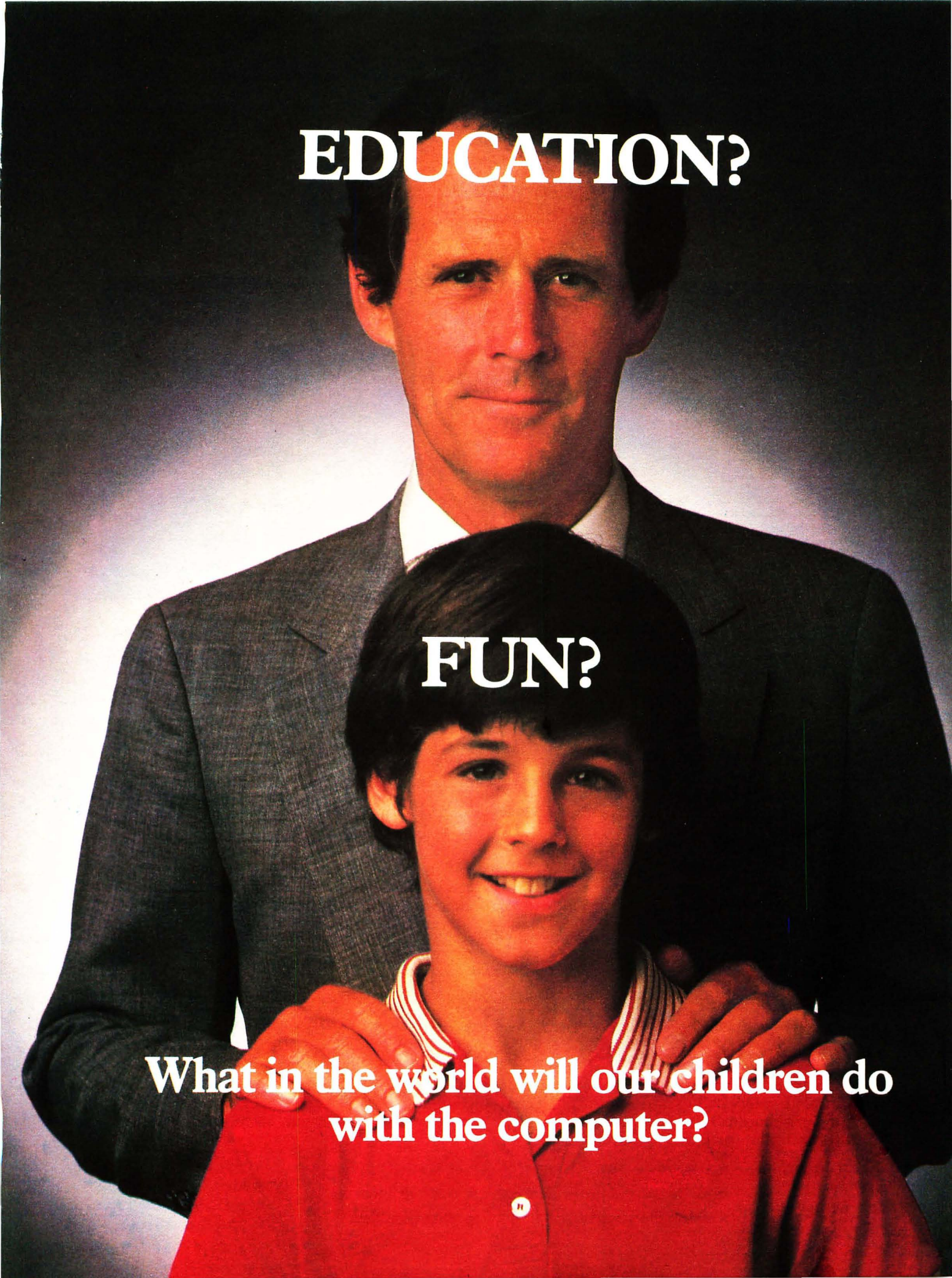
- When the three day average (3DA) is higher than the seven day average, and the 7DA is higher than the 19DA, an up trend is under way. The speculators have bought, and the market is long.
- If the 3DA falls below the 7DA, the computer maintains the buy position but permits no further buying.
- If the 3DA falls below the 7DA, and the 7DA is below the 19DA, the market's trend has reversed, and the computer recommends that you sell (go short) and stay that way until the trend reverses on the up side.

To build the initial data base, you need to enter the closing price for a maximum of 23 consecutive trading days (most commodities exchanges actually are open fewer days per month). Then when you enter the closing price each day, the program will tell you whether to buy or sell. It even estimates the risk involved in a given trade. NOTE: When the estimated risk is very small, ignore it and assume a minimum of $300. If the risk exceeds eight percent of your bankroll, pass the trade. Money management is vital to the success of the system. When it flashes "A major up/down trend is underway" you are in for a profitable ride. No judgement is required because the program is based on arithmetical averages. The more diversification you have, the greater your chances of success. Several features virtually guarantee success:

- The program always trades with the trend. You must liquidate losing positions, because to keep them would buck the trend. This system has never missed a major move, and never will. It can't, because, like a palm tree, it doesn't care which way the wind is blowing — it goes along. When the wind reverses direction, it leans the other way.
- You get plenty of action since the market usually is either long or short. Six out of ten trades will lose because it takes losses quickly, before you lose heavily. It stays with winners until the trend changes (Figure 1). While returns on some of the winners are small, if you stay with it, I guarantee you will be in on every major move. One good move can offset ten losing trades. In the first four months of 1982, some of the major moves and the profit per contract were:

Cattle	$6000
Cocoa	$3000
Lumber	$2900
Sugar	$4200
Coffee	$5500

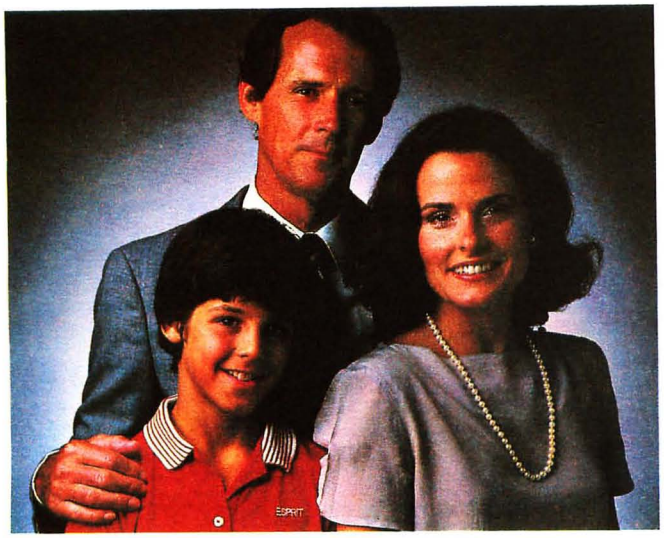
In Treasury Department issues, the system was even more successful. From July to December, 1982, T-Bills and T-Bonds showed over $12,000 each per contract. The system caught every move. The latter half of '82 was a bad period since the markets, generally speaking, were choppy with few trends established — until December when the foreign currencies reversed a long downtrend and the market moved up nicely.
- You are totally protected from your worst enemy — emotional behavior. People

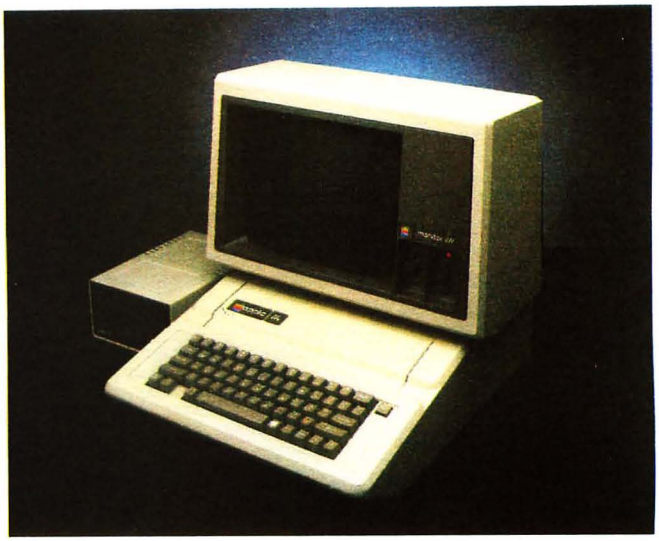

EDUCATION?
FUN?
What in the world will our children do with the computer?

ENTER A FANTASTIC WORLD OF FUN *AND* LEARNING! WITH

Microzine™

from Scholastic





1. WHAT IN THE WORLD IS A "MICROZINE?"

Microzine is an interactive magazine on a computer disk, and it can open up the world of computer learning to your children *more effectively than any other children's software available today.* Microzine comes to you from Scholastic. We've been trendsetters in children's publishing for over 60 years. Now that traditional teaching methods are being enhanced by computer-taught materials, Scholastic is ready with the innovation that creates an ongoing "dialogue" of fun and learning between your children and your computer. Like a magazine, but unlike other software for children, Microzine is constantly current and topical. Your children receive a new four-program Microzine disk every other month and build their own Microzine Library!

2. WHAT CAN YOUR CHILDREN DO WITH MICROZINE?

Microzine can help your 9-13-year-olds take advantage of one of the most important uses your computer can have: exploring new and more efficient ways of learning and thinking. (If you don't own a computer, your children may be able to use one at school or a friend's home, or borrow one from your local public library.)

Microzine was created with the recognition that today's children take naturally to computers and that tomorrow's adults will need to be computer literate—no matter what their careers.

3. WHAT IS "COMPUTER LITERACY" AND HOW DOES MICROZINE HELP ACCOMPLISH IT?

At Scholastic, we believe that learning how to utilize a computer's wide-ranging capabilities should be an important part of every child's education. This kind of computer literacy is no longer an option, but a necessity, if our children are to take their places in the computer age. To this end, Microzine is designed to spark enthusiasm and teach these essential skills:

- ★ following directions
- ★ vocabulary
- ★ what a computer can do
- ★ learning to use a computer
- ★ the nature of programming
- ★ using the keyboard
- ★ everyday applications
- ★ word processing
- ★ data handling
- ★ graphics
- ★ logic
- ★ parts of a computer
- ★ problem solving

4. WHAT WILL THE FIRST YEAR OF MICROZINE BRING

An ever-expanding library of fun and learning!
Every eight weeks there are four full-length programs and the variety is incredible:

Who's that trying to solve the *Mystery at Pinecrest Manor*, lost in the *Northwoods Adventure* and challenging the far reaches of space on *Mission to Planet XII*? Could it be someone we know? (With Microzine, *anything* is possible.) All set for takeoff on the *Space Shuttle*— or maybe a hot air balloon race? Wow! (Will Microzine *ever* get down to Earth?)

Back safe on Planet Earth, visit the *Pet Store*. "A flamingo for your bathtub? Or maybe a rare three-humped camel?"

Too wild? *Gift Store* offers practical suggestions for everyone from Great Uncle Oscar to your 16-year-old twin sisters. Or explore your creative options by composing a song, writing and illustrating a book, or inventing your own game.

Microzine is *always* full of questions. If you've ever dreamed of talking to a computer game designer, *Ask Me* gives you the chance. You won't believe all the current big stars waiting to ask you questions, too.

JUST TURN THE PAGE TO FILL OUT YOUR MICROZINE REPLY CARD NOW!

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY CARD

FIRST CLASS PERMIT NO. 2316 HICKSVILLE, N.Y.

POSTAGE WILL BE PAID BY ADDRESSEE

Microzine™

Scholastic, Inc.
P.O. Box 947
Education Plaza
Hicksville, NY 11802

5. BECOME A CHARTER SUBSCRIBER TODAY AND YOUR FIRST MICROZINE IS JUST $7.95. (A $39.95 VALUE: YOU SAVE $32.00!)

Thereafter, pay only $24.95, plus shipping and handling, for each Microzine you accept.
You save nearly 40% off the retail price by subscribing!

Each bimonthly Microzine Package contains; a Microzine Floppy Disk with Four Complete Programs.

On your first disk, discover:

1. POSTER. What's two spaces wide, slow, green and silent—and changes to three spaces wide, fast, pink and squeaky? It's an imaginary paintbrush that lets you create as many colorful posters as you want!

2. SECRET FILES. If your children want to remember who starred in their favorite horse movie of 1982, they need Microzine's electronic filing system. It works just like the electronic filing systems adults use.

3. ASK ME. Robert Macnaughton of "ET" fame is standing by to accept questions—and ask a few of your children in return!

4. HAUNTED HOUSE. There's never been a haunted house so funny—or one so willing to let you plan your own visit! Like all Twistaplots,® this one ends differently every time you venture inside.

NOTE: The first Microzine Package also contains a bonus: *a separate data disk that can be used to save original posters and other personal creations!* (A $4.95 value.)

The Microzine Handbook

After consulting this monthly step-by-step guide written in plain English for users 9-13, your children will be able to show *you* how Microzine activities work. Easy-to-follow instructions encourage independent work habits, creative thinking and follow-through.

Microzine™

THE SCHOLASTIC CHILDREN'S MAGAZINE ON A MICROCOMPUTER DISK.

FOR APPLE COMPUTERS.

O.K., Scholastic. We're ready to enter a fantastic world of fun and learning. Start our Microzines coming!

☐ Please send us Microzine #1 (featuring Poster, Secret Files, Ask Me and Haunted House) and enter a Charter Subscription to Microzine for the child named below. Bill me the special introductory price of just $7.95 (plus shipping, handling and any applicable sales tax). We will be billed $24.95 (plus delivery) for every Microzine we keep. After purchasing Microzine #1, we are never obligated to buy even one additional Microzine, and we may cancel our subscription at any time. If we are not delighted with the introductory Microzine, we may return it within 10 days and pay nothing.

☐ I've already purchased Microzine #1. Please start our subscription with Microzine #2, for which I will be charged just $7.95 (plus shipping, handling and any applicable sales tax).

61010
03

Child's Name_____ Age_____ Grade_____
(please print)

Address_____ Apt._____

City_____ State_____ Zip_____

Telephone No. (_____)_____

Parent's Signature_____

SEND NO MONEY;

JUST FILL OUT AND MAIL THIS MICROZINE REPLY CARD NOW!

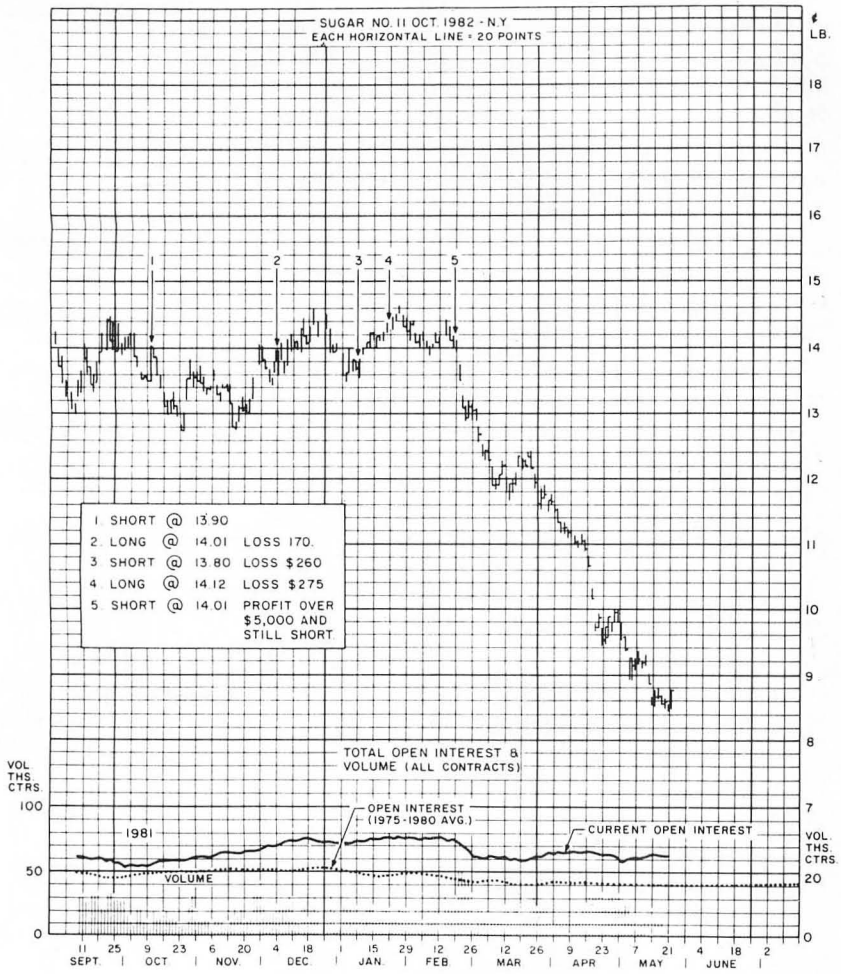


Fig. 1. The System has never failed to predict a major up or down trend.

Financial Operating System ***continued***

become nervous when they see large profits building up, and they seldom stay with a big move. The computer never flinches. Update the system after each market day, enter your orders (if any) before the next day's opening, and your responsibility has ended. Never again will you feel the anxiety of not knowing what to do with a losing position you have held much too long (thinking "God help me, I don't want the cheese. Just let me out of the trap!").

- It will never predict the top or bottom of a market. The system is content to take what is between those extremes. How many hapless investors bought gold at $800, $700, $600, $500 or $400 per ounce, thinking it can't go much lower? The system was short most of the way down from $900+ an ounce, because it always stays with the market's trend.

The remarkable thing about this system is that it is simple (especially for those with computers), and very profitable. If you wonder what $10,000 compounded at 50 percent for ten years would be worth, try this:

- PRINT 10000*EXP(10*LOG(1.5))

Few of you will realize the system's potential, because you don't have the discipline to follow its advice to the letter. Relieving you of the need for exercising subjective judgement takes all the so-called "fun" out of commodities investing. Furthermore, impatient people who expect to get rich quick, often quit if the first trade is a loss. The system is not a jackrabbit, but rather a slowly plodding turtle that inexorably grinds out profits over a period of time.

Tax Breaks

The Economic Recovery Act of 1981 made commodity trading far more interesting. All commodity futures transactions are taxed as 60 percent long-term and 40 percent short-term capital gains. This means that the maximum tax rate on commodities trading is 32 percent, which beats paying the current maximum tax of 50 percent, or the old 70 percent rate, on short term gains. Who said they were closing the loopholes for the rich (heh, heh)?

Before you get carried away and run down to your friendly neighborhood commodity broker seeking your easy fortune, I must warn you that many brokers claim to have a foolproof system with which you can make a million. Before you invest, make one simple request. Ask to see verifiable evidence of performance using REAL MONEY for at least five years. You can find many competent commodity brokers, but beware of the legions of great salesmen who never made a penny on anything other than commissions (on your losses). Make sure the firm you trade with is a clearing member of a major exchange, such as The Chicago Board of Trade, The Chicago Mercantile Exchange, or COMEX.

To learn more about commodity futures trading, send a SASE to Financial Operating System, Box 3332, Tequesta, Fl 33458. You will receive a free booklet which provides an in-depth look at futures trading. In truth, the system may be all you will ever need. Follow the program's advice exactly for six months, keeping accurate records on every trade. Begin with $20,000 of Monopoly money and see for yourself how well it works. Track at least eight commodities, and enter the closing prices each day. If action is indicated, your new position will be the price at which it opens the following day.

I use this system with two refinements. My computer is "on line" and can alert me two minutes before the close of trading for each commodity (commodities close at intervals from 1:45 to 4:00 PM EST). Sometimes you can tell that it will generate a signal, in which case I take my new position at the close rather than at the opening on the following day. This refinement produces a small advantage over the basic system, but is beyond the scope of most traders unless you are "on line."

One other thing — I have borrowed an idea from my wife. Her Chicken Paprikash is a dish fit for the Gods. She shares the recipe with friends, although she deliberately leaves out one ingredient. Her friends' Chicken Paprikash is always wonderful, but never quite so good as my wife's. I have done the same. This system is indeed very good, but my modified version produced average yearly profits in excess of 50 percent, according to a computer simulation which compared the two versions. The comparison used historical data, and past performance does not necessarily guarantee future performance.

Bulletin Board Advice

The Financial Operating System BBS (305-744-0190) operates 24 hours a day, and is free, except for the eighteen cents/minute you pay Ma Bell (higher during prime time). My current advice on stocks, bonds and commodities is on the BBS, and is for you to use. See you at the yacht club.

→

APPLE®

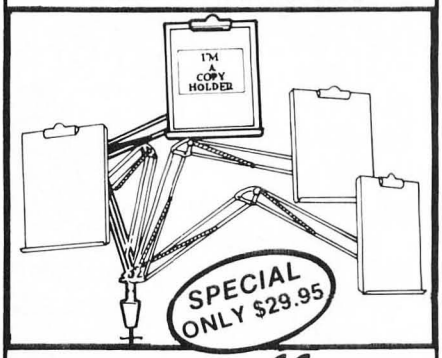
```
SS SS SS SS SS SS SS SS SS SS SS SS
SS                                SS
SS        Applesoft BASIC         SS
SS 'Financial Operating System'   SS
SS     Author:  J. M. Keynes      SS
SS    Translators: Fred Condo     SS
SS         Rich Bouchard          SS
SS      Copyright © 1983          SS
SS  SoftSide Publications, Inc    SS
SS                                SS
SS SS SS SS SS SS SS SS SS SS SS SS
100  TEXT : PRINT  CHR$ (21): HOME
110 QU$ =  CHR$ (34):D$ =  CHR$ (
    4)
120  GOTO 260
130 A$ = "": IF A1$ <  > "" THEN
     FOR Z1 = 1 TO  LEN (A1$):Z =
     ASC ( MID$ (A1$,Z1,1)):A$ =
    A$ +  CHR$ (Z - 32 * (Z >  =
    97 AND Z <  = 122)): NEXT Z1
140  RETURN
150  POKE  - 16368,0
160  PRINT  CHR$ (95); CHR$ (8);:
     FOR J = 1 TO 10:A =  PEEK (
     - 16384): IF A < 128 THEN  NEXT
    J: PRINT " "; CHR$ (8);: FOR
    J = 1 TO 10:A =  PEEK ( - 16
    384): IF A < 128 THEN  NEXT
    J: GOTO 160
170  POKE  - 16368,0:A$ =  CHR$ (
    A - 128):A = A - 128
180  IF A >  = 97 AND A <  = 122 THEN
    A$ =  CHR$ (A - 32)
190  IF A$ >  = " " THEN  INVERSE
    : PRINT A$; CHR$ (8);: NORMAL
    : RETURN
200  PRINT " "; CHR$ (8);
210  RETURN
220  GOSUB 150: IF A$ =  CHR$ (13
    ) OR A$ =  CHR$ (27) THEN  RETURN
230  GOTO 220
240  GOSUB 150: IF A$ = "Y" OR A$
     = "N" THEN  RETURN
250  GOTO 240
260  VTAB 5: HTAB 1: INVERSE : PRINT
     "FINANCIAL OPERATING SYSTEM
    - ISSUE 44": NORMAL
270  PRINT : PRINT " A COMMODITY
    TIMING SYSTEM BASED ON": PRINT
    " MOVING AVERAGES"
280  PRINT : PRINT " ONLY DAILY C
    LOSING PRICES SHOULD BE": PRINT
    " ENTERED."
290  PRINT : PRINT " FRACTIONAL V
    ALUES MAY BE ENTERED AS": PRINT
    " DECIMALS OR MIXED NUMBERS.
    "
300  PRINT " ";QU$;"268 3/4";QU$;
     " OR ";QU$;"268.75";QU$;", F
    OR EXAMPLE."
310  GOSUB 2000
320  HOME
330  PRINT "I HAVE DATA FOR ALL T
    HE FOLLOWING"
340  PRINT "COMMODITIES.  OTHERS
    CAN EASILY BE": PRINT "ADDED
     TO THE DATA STATEMENTS AT T
    HE"
350  PRINT "END OF THE PROGRAM.":
     PRINT
360 P = 0
370  READ N$,TY,TZ
380  IF N$ = "END" THEN  RESTORE
    : GOSUB 2000: GOTO 420
390  PRINT  TAB( P * 19 + 3);N$;
400 P = P + 1: IF P = 2 THEN P =
    0: PRINT
410  GOTO 370
420  HOME : VTAB 5: HTAB 1: PRINT
     "IF YOU ARE NOT WILLING TO M
    AINTAIN": PRINT "COMPLETE DI
    SCIPLINE I WILL NOT WORK": PRINT
     "FOR YOU.  DO AS I SAY AND Y
    OU'LL GROW"
430  PRINT "TO LOVE ME.  MASTERMI
    ND YOUR OWN": PRINT "TRADES
    AND YOU WILL GO BUSTED!": GOSUB
     2000
440  HOME
450 M2$ = "DATA #  DATE
    PRICE   MOVING AVG"
460 M3$ = "NO ACTION INDICATED.
    A CHANGE OF TREND MAY BE OCC
    URING."
470 EN$ = QU$ + "RETURN" + QU$:CL
    $ = QU$ + "ESC" + QU$:DE$ =
    "!"
480  DIM P(100),D$(100),PO(100):Z
     = 0
490  ONERR  GOTO 2120
500  VTAB 4: HTAB 1: PRINT "D=DIS
    K LOAD   RETURN=CREATE LIST
    )";
510  GOSUB 150: IF A$ = "D" THEN
     600
520  IF A$ <  > CHR$ (13) THEN 5
    10
530  HOME : PRINT "WHICH MONTH (S
    HOULD BE 3 MONTHS AWAY)": PRINT
     TAB( 10): INPUT A1$: GOSUB
     130:DD$ = A$
540  PRINT
550  PRINT "COMMODITY NAME (GOLD,
     CORN, ETC.)": PRINT  TAB( 1
    0): INPUT A1$: GOSUB 130:CN$
     = A$: IF CN$ = "" THEN  VTAB
     PEEK (37) - 1: GOTO 550
560  GOSUB 2010
570  PRINT : PRINT "ENTER PREVIOU
    S PRICES,": PRINT "OLDEST PR
    ICE FIRST."
580  PRINT "TYPE ";EN$;" FOR DATE
     WHEN DONE."
590  PRINT : GOTO 700
600  PRINT
610 N = 0: PRINT : INPUT "WHICH F
    ILE DO YOU WANT? ";A1$: GOSUB
     130:CN$ = A$
620  PRINT "LOAD FROM";: GOSUB 23
    70
630 ER = 1: ONERR  GOTO 2120
640 CC$ = CN$ + ".DAT"
650  PRINT D$;"VERIFY ";CC$;",D";
    DR$: PRINT D$;"OPEN ";CC$: PRINT
    D$;"READ ";CC$
660  INPUT DD$,CN$,R$,I8,I9,N: GOSUB
     2170
670  FOR I = 1 TO N: INPUT D$(I),
    P(I): NEXT I
680  GOSUB 2010
690  PRINT D$;"CLOSE": GOTO 730
700  PRINT N + 1;":";: GOSUB 2270
710  IF DA$ <  > "" THEN N = N +
    1:D$(N) = DA$:P(N) = P: GOTO
    700
720  HOME
730  VTAB 7: HTAB 8: PRINT "STAND
     BY...I'M WORKING"
740  FOR I = 1 TO N
750 IJ = IJ + 1
760 PP = P(I):PL = PL + PP:PO(I) =
    PL / IJ
770  IF BB > PP THEN BC = BC + 1:
    BB = PP: GOTO 790
780 BC = 0:BB = PP
790  IF BD < PP THEN BE = BE + 1:
    BD = PP
800 BE = 0:BD = PP
810  NEXT I
820  IF BC > 9 THEN I$ = "DOWN": GOSUB
     1830
830  IF BE > 9 THEN I$ = "UP": GOSUB
     1830
840  HOME
850  PR# PF: PRINT M2$: PR# 0
860  FOR I = N TO 1 STEP  - 1
870  PR# PF: IF I < 10 THEN  PRINT
    " ";
880  PRINT " ";I;"     ";: Q7 =  LEN
     (D$(I))
890  IF Q7 > 9 THEN  PRINT  LEFT$
    (D$(I),9);"  ";: GOTO 910
900  PRINT D$(I); SPC( 11 - Q7)
910 NN = 5:B = P(I): GOSUB 2410: PRINT
    "    ";
```

```
920 NW = 5:B = PO(I): GOSUB 2410:
    PRINT
930  PR# 0
940  IF PF THEN 990
950 Y = Y + 1: IF Y <  > 14 OR I =
    1 THEN 990
960  PRINT : PRINT "PRESS ";EN$;"
     FOR NEXT PAGE": PRINT "OR "
    ;CL$;" FOR MENU ";
970  GOSUB 220: IF A$ =  CHR$ (27
    ) THEN  PRINT :I = 1: GOTO 9
    90
980 Y = 0: HOME : PRINT M2$
990  NEXT I
1000 IJ = 0:PL = 0:PF = 0:ER = 2:
     ONERR  GOTO 2120
1010 GY = 0:PO = 0:Y = 0
1020  IF  POS (0) <  > 0 THEN  PRINT

1030  PRINT : PRINT "L=LIST AGAIN
       P=PRINT       D=DISK SAVE"
1040  PRINT "A=ADD DATA    E=EDIT
     DATA"
1050  PRINT "M=MOVING AVERAGES
           Q=QUIT  >";
1060  GOSUB 150
1070  IF A$ = "A" THEN XY = 0: HOME
     : GOTO 700
1080  IF A$ = "D" THEN  GOSUB 142
     0: GOTO 1190
1090  IF A$ = "E" THEN 1250
1100  IF A$ = "L" OR A$ = "P" THEN
     XY = 0:PF = (A$ = "P"): HOME
     : GOTO 720
1110  IF A$ = "M" THEN 1610
1120  IF A$ = "Q" THEN 1140
1130  GOTO 1060
1140  PRINT : PRINT : PRINT "ARE
     YOU SURE YOU WISH TO EXIT (Y
     /N) ";
1150  GOSUB 150: IF A$ = "Y" THEN
      HOME : GOTO 32767
1160  PRINT : GOTO 1000
1170  PRINT : PRINT : PRINT "PRES
     S ";EN$;" FOR MENU": PRINT "
     OR ";CL$;" TO RESTART ";: GOSUB
     220: IF A$ =  CHR$ (13) THEN
     1000
1180  RUN
1190 XY = 0: PRINT : PRINT "SAVE
     TO";: GOSUB 2370
1200 CC$ = CN$ + ".DAT"
1210  PRINT D$;"OPEN ";CC$;",D";D
     R$: PRINT D$;"DELETE ";CC$: PRINT
     D$;"OPEN ";CC$: HOME : PRINT
     "SAVING TO DISK"
1220  PRINT D$;"WRITE ";CC$
1230  PRINT DD$;",";CN$;",";R$;",
     ";I8;",";I9;",";N - H + 1
1240  FOR I = H TO N: PRINT D$(I)
     ;",";P(I): NEXT : PRINT D$;"
     CLOSE": HOME : PRINT CN$;" H
     AS BEEN SAVED TO DISK": GOTO
     1170
1250  PRINT : PRINT
1260  PRINT "WHAT DATA # DO YOU W
     ISH": PRINT "TO CHANGE (1-";
     N;")";: INPUT "? ";A1$:DN =
      VAL (A1$)
1270  IF DN < 1 OR DN > N THEN 10
     00
1280  HOME : VTAB 4: HTAB 1
1290  PRINT M2$
1300  FOR J = DN + 2 TO DN - 2 STEP
     - 1
1310  IF  NOT (J >  = 1 AND J <  =
     N) THEN 1370
1320  IF J < 10 THEN  PRINT " ";
1330  PRINT " ";J;"    ";:Q7 =  LEN
     (D$(J))
1340  IF Q7 > 9 THEN  PRINT  LEFT$
     (D$(J),9);"  ";: GOTO 1360
1350  PRINT D$(J); SPC( 11 - Q7)
1360 NW = 5:B = P(J): GOSUB 2410:
      PRINT "    ";:NW = 5:B = PO
     (J): GOSUB 2410: PRINT
1370  IF J = DN THEN  VTAB  PEEK
     (37): HTAB 1: PRINT "*";: VTAB
      PEEK (37) + 2: HTAB 1
1380  NEXT J
1390  PRINT : PRINT "TYPE IN THE
     CORRECT DATE AND PRICE": PRINT
     : GOSUB 2270
1400  IF DA$ <  > "" THEN D$(DN) =
     DA$:P(DN) = P
1410  VTAB 5: HTAB 6: PRINT "STAN
     D BY....I'M WORKING": GOTO 7
     20
1420  HOME
1430 I8 = 0: IF W2(1) > W2(2) THEN
     I8 = 1
1440 I9 = 0: IF W2(2) > W2(3) THEN
     I9 = 1
1450  IF I8 + I9 = 2 THEN R$ = "T
     HE TREND IS UP"
1460  IF I8 + I9 = 0 THEN R$ = "T
     HE TREND IS DOWN"
1470  IF I8 + I9 = 1 THEN R$ = "L
     OOK FOR POSSIBLE CHANGE"
1480  PRINT "THERE ARE ";N;" ENTR
     IES IN MEMORY.": PRINT
1490  PRINT "HOW MANY DO YOU WISH
      TO SAVE": PRINT "(HIT ";EN$
     ;" FOR ALL)";: INPUT "? ";A1
     $:S9 =  VAL (A1$): IF S9 = 0
      THEN H = 1: GOTO 1560
1500  IF S9 < 0 OR S9 > N THEN 14
     80
1510  IF S9 >  = 18 THEN 1550
```

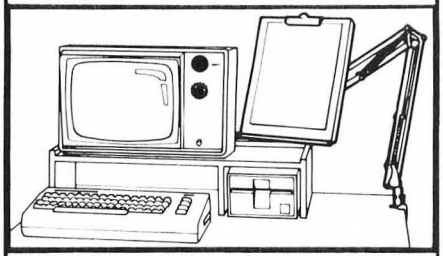

FRUSTRATED BY ENTRY ERRORS?

NOT WITH *Astroflex* UNIVERSAL COPY HOLDER™



Astroflex

...increases accuracy, eliminates errors.
...entry data positioned wherever it is most comfortable for you.
...reduces eye movements, back and neck strain.
...specially comfortable for bi-focal wearers.
...33" reach, clears clutter, swings away when not in use.
...all steel, computer white.
...clamps to any surface, tilts and swings to any angle.
...metal clip holds sheets of paper securely



An inexpensive time saver,

DESIGNED WITH YOU IN MIND

B. R. Green (213) 652-4977
410 N. Huntley Dr.
Los Angeles, CA 90048

Quantity	Item	Price Each	Total Price
	Copy Holder	$29 95	

CSS-9

Merchandise Total _____
Shipping Handling $3 00 per unit _____
Tax (Cal residents add 6 %) _____
Total _____

Name _____
Address _____
City _____
State _____ Zip _____

VISA Card _____
Exp. date _____
Card number _____
Card Holder
Signature _____

```
1520  HOME : VTAB 5: HTAB 1: PRINT
      "YOU SHOULD HAVE A MINIMUM O
      F 18": PRINT "ENTRIES TO FOL
      LOW THE SYSTEM"
1530  PRINT "PRESS ";EN$;" TO CON
      TINUE": PRINT "OR ";CL$;" TO
       REENTER ";
1540  GOSUB 220: PRINT : IF A$ =
       CHR$ (27) THEN 1480
1550 H = (N - S9) + 1
1560  PRINT : PRINT "THE NAME OF
      THE COMMODITY": PRINT "IS NO
      W ";QU$;CN$;QU$: PRINT : PRINT
      "ENTER A NEW NAME OR"
1570  PRINT "HIT ";EN$;" TO KEEP
      THE OLD";: INPUT ": ";A1$: GOSUB
      130:D0$ = A$: IF D0$ <  > ""
       THEN CN$ = D0$
1580  PRINT : PRINT "THE MONTH NA
      ME IS NOW ";QU$;DD$;QU$: PRINT
      "ENTER A NEW MONTH"
1590  PRINT "OR HIT ";EN$;" TO KE
      EP THE OLD";: INPUT ": ";A1$
      : GOSUB 130:D0$ = A$: IF D0$
       <  > "" THEN DD$ = D0$
1600  RETURN
1610  IF W1 = 3 THEN W1 = 0
1620  HOME : IF N < E3 THEN  HOME
      : VTAB 5: HTAB 1: PRINT "I M
      UST HAVE A MINIMUM OF ";E3;"
       ENTRIES": PRINT "FOR MOVING
       AVERAGES TO": PRINT "ANALYZ
      E ";CN$: PRINT : GOTO 1000
1630 Q1 = 0: PRINT E1;", ";E2;",
      AND ";E3;" DAY MOVING AVERAG
      ES": PRINT "WILL BE COMPUTED
      ": PRINT
1640  PRINT "DO YOU WANT A PRINTO
      UT (Y/N) ";
1650  GOSUB 150:PF = (A$ = "Y")
1660  HOME : PR# PF: PRINT DD$;"
      ";CN$: PRINT : PR# 0
1670 Q1 = Q1 + 1: IF Q1 = 1 THEN
      Z = E1 - 1: GOTO 1710
1680  IF Q1 = 2 THEN Z = E2 - 1: GOTO
      1710
1690  IF Q1 = 3 THEN Z = E3 - 1: GOTO
      1710
1700 Q1 = 0: GOSUB 1840: GOTO 100
      0
1710  FOR I = N - Z TO N
1720 IJ = IJ + 1
1730 W = P(I):PL = PL + W:PO(I) =
      PL / IJ
1740  NEXT
1750 IJ = 0:PL = 0
1760 W1 = W1 + 1: IF W1 < 4 THEN
      W2(W1) = PO(N)
1770  PR# PF: PRINT "THE ";: IF Z
      < 9 THEN  PRINT " ";
1780  PRINT Z + 1;" DAY MOVING AV
      ERAGE IS ";
1790 NW = 5:B = PO(N): GOSUB 2410

1800  PRINT : PRINT
1810  PR# 0
1820  GOTO 1670
1830  FOR I = 1 TO 5: HOME : VTAB
      5: HTAB 6: PRINT "A MAJOR ";
      I$;" MOVE IS UNDERWAY.": PRINT
      "$ $ $ $ $ $ $ $ $ $ $ $ $ $
       $ $ $ $ $ $": FOR K = 1 TO
      200: NEXT K: NEXT I: RETURN
1840  IF  NOT (W2(1) > W2(2) AND
      W2(2) > W2(3)) THEN 1870
1850  PR# PF: PRINT "BUY ";CN$: PRINT
      : PR# 0
1860  GOTO 1910
1870  IF  NOT (W2(1) < W2(2) AND
      W2(2) < W2(3)) THEN 1900
1880  PR# PF: PRINT "SELL ";CN$: PRINT
      : PR# 0
1890  GOTO 1910
1900  GOTO 1980
1910  READ U$,TY,TZ
1920  IF U$ = "END" THEN  PRINT "
      THE RISK CANNOT BE CALCULATE
      D BECAUSE": PRINT "THIS COMM
      ODITY IS NOT IN THE DATA BAS
      E": PRINT : PRINT : RESTORE
      : RETURN
1930  IF U$ <  > CN$ THEN 1910
1940 TE = P(I):R1 = TE:R2 = PO(N)
1950 TR =  ABS (R1 - R2) * TY
1960  PR# PF: PRINT : PRINT "APPR
      OXIMATE RISK IS $";:NW = 5:B
       = TR: GOSUB 2410: PRINT : PRINT
      "PER CONTRACT": PRINT : PRINT
      : PR# 0
1970  RESTORE : RETURN
1980  PR# PF: PRINT M3$: PRINT : PRINT
      : PR# 0
1990  RETURN
2000  VTAB 23: HTAB 7: PRINT "HIT
       ANY KEY TO CONTINUE ";: GOSUB
      150: RETURN
2010  IF CN$ = "BEANS" OR CN$ = "
      MINI BEANS" OR CN$ = "PLYWOO
      D" OR CN$ = "LUMBER" OR CN$ =
      "SUGAR" THEN E1 = 4:E2 = 9:E
      3 = 20: RETURN
2020  IF CN$ = "GOLD" OR CN$ = "M
      INI GOLD" OR CN$ = "SILVER" OR
      CN$ = "MINI SILVER" OR CN$ =
      "PLATINUM" THEN E1 = 4:E2 =
      8:E3 = 19: RETURN
2030  IF CN$ = "T-BILLS" THEN E1 =
      4:E2 = 10:E3 = 21: RETURN
2040  IF CN$ = "COFFEE" THEN E1 =
      3:E2 = 9:E3 = 18: RETURN
2050  IF CN$ = "YEN" OR CN$ = "D-
      MARK" OR CN$ = "POUND" THEN
      E1 = 4:E2 = 10:E3 = 19: RETURN
2060  IF CN$ = "COTTON" THEN E1 =
      5:E2 = 10:E3 = 20: RETURN
2070  IF CN$ = "COCOA" THEN E1 =
      3:E2 = 9:E3 = 22: RETURN
2080  IF CN$ = "ORANGE JUICE" THEN
      E1 = 4:E2 = 8:E3 = 19: RETURN
2090  IF CN$ = "SP500" OR CN$ = "
      VL500" THEN E1 = 4:E2 = 10:E
      3 = 22: RETURN
2100  IF CN$ = "BELLIES" THEN E1 =
      3:E2 = 8:E3 = 19: RETURN
2110 E1 = 4:E2 = 9:E3 = 18: RETURN

2120  IF ( PEEK (222) > 0 AND  PEEK
      (222) < 16) THEN  PRINT "FIL
      E NOT FOUND OR OTHER DISK ER
      ROR": GOTO 2150
2130  IF  PEEK (222) = 255 THEN 2
      160
2140  PRINT "ERROR #"; PEEK (222)
      ;" IN LINE "; PEEK (218) +  PEEK
      (219) * 256; CHR$ (7): POKE
      216,0: END
2150  POKE 216,0: CALL  - 3288: ON
      ERR GOTO 610,1000
2160  CALL  - 3288: GOTO 32767
2170  HOME
2180  VTAB 3: HTAB 19 - (1 +  LEN
      (DD$) +  LEN (CN$)) / 2: PRINT
      DD$;" ";CN$
2190  VTAB 4: HTAB 19 -  LEN (R$)
       / 2: PRINT R$
2200  RETURN
2210 P =  VAL (A$)
2220  FOR J = 1 TO  LEN (A$): IF
      MID$ (A$,J,1) <  > " " THEN
      NEXT J: RETURN
2230  FOR J1 = J TO  LEN (A$): IF
      MID$ (A$,J1,1) <  > "/" THEN
      NEXT J1: RETURN
2240 P1 =  VAL ( MID$ (A$,J + 1,J
      1 - J - 1)) /  VAL ( MID$ (A
      $,J1 + 1))
2250 P =  VAL ( LEFT$ (A$,J)) + P
      1
2260  RETURN
2270 CA =  PEEK (37) + 1
2280  VTAB CA: HTAB 5: INPUT "DAT
      E? ";DA$
2290  IF DA$ = "" THEN  RETURN
2300  FOR P = 1 TO  LEN (DA$): IF
      MID$ (DA$,P,1) <  > "." THEN
      NEXT P
```

```
2310  IF P > LEN (DA$) THEN P =
      0
2320  IF P <  > 0 THEN DA$ =  LEFT$
      (DA$,P - 1) + "/" +  MID$ (D
      A$,P + 1): GOTO 2300
2330  IF CA = 24 THEN CA = 23
2340  VTAB CA: HTAB 23: INPUT "PR
      ICE? ";A$: GOSUB 2210: RETURN
2350  PRINT : PRINT "HIT ";EN$;"
      WHEN READY": PRINT "OR ";CL$
      ;" TO CANCEL"
2360  GOSUB 220: RETURN
2370  INPUT " WHICH DRIVE (1-2)?
      ";DR$
2380  IF DR$ = "" THEN DR$ = DE$:
      GOTO 2400
2390  IF DR$ < "1" OR DR$ > "2" THEN
      2370
2400 DE$ = DR$: RETURN
2410 B =  INT (B * 100 + .5) / 10
     0:B1% = (B -  INT (B)) * 100

2420 B$ =  STR$ ( INT (B))
2430  IF  LEN (B$) < NW THEN  PRINT
      SPC( NW -  LEN (B$))
2440  PRINT B$;".";
2450  IF B1% < 10 THEN  PRINT "0"
      ;
2460  PRINT B1%;
2470  RETURN
2480  DATA BEAN MEAL,100,1000,BEA
      N OIL,600,600,BEANS,50,1500
2490  DATA BELLIES,380,1200,CATTL
      E,400,900,COCOA,1000,1500
2500  DATA COFFEE,375,5000,COPPER
      ,500,700,CORN,50,700
2510  DATA COTTON,500,1000,D-MARK
      ,1250,1500
2520  DATA FEEDER CATTLE,440,900,
      GNMA,1000,2000,GOLD,100,1500

2530  DATA HEATING OIL,420,2000,H
      OGS,300,800,LUMBER,130,1200
2540  DATA OATS,500,400,ORANGE JU
      ICE,150,1000,PLATINUM,50,600

2550  DATA PLYWOOD,76,700,POTATOE
      S,500,500,POUND,1250,1500
2560  DATA SILVER,50,2000,SP500,5
      00,7500,SUGAR,1120,1700
2570  DATA SWISS FRANC,1250,2000,
      T-BILLS,2500,2000
2580  DATA VL500,500,7500,WHEAT,5
      0,750,YEN,1250,1500
32766  DATA END,0,0
32767  POKE 216,0: PRINT : END
```


score high on the SAT, GRE or ACT

HBJ Educational Computer Software

The Test Preparation Series that combines Computer Software, Review Textbook and User's Manual into the most comprehensive Study Program available today!

- Makes studying for the exam **easy and enjoyable**
- Builds test-taking skills quickly in planned systematic program
- Simple and easy to use **even for those with no computer experience.**

COMPUTER SAT
Preparation

Special Features
- **1000 Electronic Vocabulary-Building Flash Cards**
- **540 Computer Drill Items**

Complete Textbook
- **"How to Prepare for the SAT" 470pps.**
- **Four Full-Length Exams**—enter answers in computer for instant scoring and diagnosis
- Complete verbal and math categories
- Strategies for answering **every kind of question**

User's Manual
- Clear, simple documentation integrates textbook and software

Computer Software
- Scores and times your performance
- Calculates College Board equivalent score
- Diagnoses your strengths and weaknesses in 15 key areas of study
- Prescribes specific drill and review on computer and in the textbook to improve your score

Available For
- IBM* PC
- Apple* with 48K
- TRS-80 Model III*/4* with 48K
- Atari 800*/1200*
- Commodore 64*

COMPUTER GRE
Preparation

This program helps prepare undergraduates for the Graduate Record Examination
- 3 double-sided diskettes with Graphic Displays
- HBJ's popular text "How to Prepare for the GRE"
- A totally understandable, "User friendly" User's Manual
- Apple* with 48K

COMPUTER ACT
Preparation
- 480 page text "How to prepare for the ACT"
- 3 double-sided computer diskettes
- 50 page User's Manual
- Apple* with 48K

COMPUTER SAT Preparation @ **$79.95** available for
- ☐ IBM PC
- ☐ Apple* with 48K
- ☐ TRS-80 Model III*/4* with 48K
- ☐ Atari 800*/1200*
- ☐ Commodore 64*

COMPUTER GRE Preparation @ **$89.95** available for Apple* with 48K

COMPUTER ACT Preparation @ **$89.95** available for Apple* with 48K

FOR CREDIT CARD ORDERS
CALL TOLL-FREE
800-543-1918
(In California call collect (619) 699-6335)

For mail orders: Please add $2.00 for handling (UPS delivery guaranteed). Please add applicable state and local sales tax. (Institutions must send purchase order to be billed.) Offer restricted to Continental USA and Canada.

HBJ **Harcourt Brace Jovanovich, Inc.**
Dept. Computer SAT SS-9-83
1250 6th Avenue, San Diego, CA 92101

Available at Computer stores and leading Bookstores.

For **APPLE®**
FINANCIAL OPERATING SYSTEM

LINES	SWAT CODE	LENGTH
100 - 210	PE	354
220 - 330	PC	455
340 - 450	JP	474
460 - 570	TY	477
580 - 690	TM	320
700 - 810	VA	251
820 - 930	FD	253
940 - 1050	IS	341
1060 - 1170	DP	329
1180 - 1290	NM	410
1300 - 1410	UT	366
1420 - 1530	IQ	491
1540 - 1630	CD	554
1640 - 1750	VK	261
1760 - 1870	NW	367
1880 - 1990	CO	340
2000 - 2090	GW	529
2100 - 2210	NI	356
2220 - 2330	HZ	313
2340 - 2450	TY	310
2460 - 2570	VY	526
2580 - 32767	UW	75

PC IBM® PC

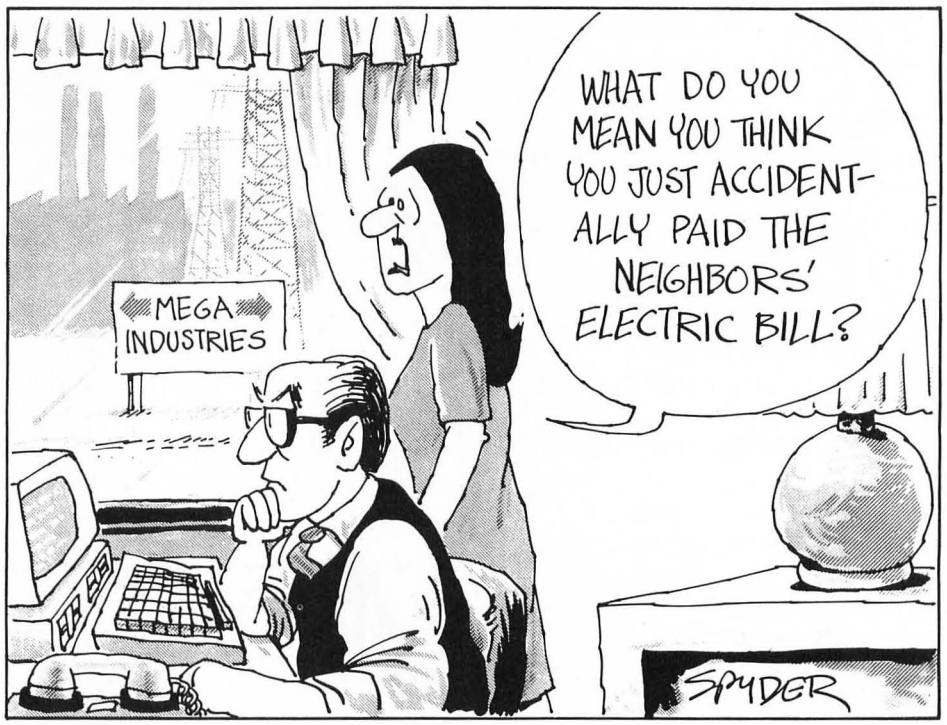
```
SS SS SS SS SS SS SS SS SS SS SS SS
SS                               SS
SS       PC Advanced BASIC       SS
SS 'Financial Operating System'  SS
SS     Author:  J. M. Keynes     SS
SS   Translator: Rich Bouchard   SS
SS      Copyright © 1983         SS
SS  SoftSide Publications, Inc   SS
SS                               SS
SS SS SS SS SS SS SS SS SS SS SS SS
```

```
100 SCREEN 0:WIDTH 40:KEY OFF:CLS
110 CLEAR:QU$=CHR$(34)
120 GOTO 230
130 FOR Z1=1 TO LEN(A$):Z=ASC(MID$(A$,Z1
,1)):MID$(A$,Z1,1)=CHR$(Z+32*(Z>=97 AND
Z<=121)):NEXT Z1
140 RETURN
150 LOCATE,,0
160 PRINT CHR$(22);CHR$(29);:FOR J9=1 TO
 30:A$=INKEY$:IF A$="" THEN NEXT J9:PRIN
T" ";CHR$(29);:FOR J9=1 TO 30:A$=INKEY$:
IF A$="" THEN NEXT J9:GOTO 160
170 IF A$=CHR$(3) THEN BEEP:GOTO 2240
180 IF A$>="a" AND A$<="z"THEN A$=CHR$(A
SC(A$)-32)
```

```
190 IF A$>=" " THEN COLOR 0,7:PRINT A$;C
HR$(29);:COLOR 7,0 ELSE PRINT" ";CHR$(29
);
200 RETURN
210 GOSUB 150:IF A$=CHR$(13) OR A$=CHR$(
27) THEN RETURN ELSE 210
220 GOSUB 150:IF A$="Y" OR A$="N" THEN R
ETURN ELSE 220
230 LOCATE 5,1:COLOR 0,7:PRINT"FINANCIAL
 OPERATING SYSTEM - ISSUE 44":COLOR 7,0
240 PRINT:PRINT" A commodity timing syst
em based on":PRINT" moving averages"
250 PRINT:PRINT" Only daily closing pric
es should be":PRINT" entered."
260 PRINT:PRINT" Fractional values may b
e entered as":PRINT" decimals or mixed n
umbers."
270 PRINT" ";QU$;"268 3/4";QU$;" or ";QU
$;"268.75";QU$;", for example."
280 GOSUB 1690
290 CLS:WF=DF:IF WF THEN WIDTH 80
300 PRINT"I have data for all the follow
ing ";:IF DF=0 THEN PRINT
310 PRINT"commodities.  Others can easil
y be":PRINT"added to the data statements
 at the ";:IF WF=0 THEN PRINT
320 PRINT"end of the program.":PRINT
330 P=0
340 READ N$,TY,TZ
350 IF N$="END" THEN RESTORE:GOSUB 1690:
GOTO 390
360 PRINT TAB(P*19+3);N$;
370 P=P+1:IF P=2-WF*2 THEN P=0:PRINT
380 GOTO 340
390 WF=0:WIDTH 40:CLS:LOCATE 5,1:PRINT"I
f you are not willing to maintain":PRINT
"complete discipline I will not work":PR
INT"for you.  Do as I say and you'll gro
w"
400 PRINT"to love me.  Mastermind your o
wn":PRINT"trades and you will go busted!
":GOSUB 1690
410 CLS
420 F1$="Approximate risk is $#######.##"
430 M2$="DATA #  DATE          PRICE   M
OVING AVG"
440 F2$=" ###    \       \  #####.##
#####.##"
450 F3$="The ## day moving average is ##
###.##"
460 M3$="No action indicated.  A change
of trend may be occuring."
470 EN$=QU$+"RETURN"+QU$:CL$=QU$+"ESCAPE
"+QU$:DE$="A:"
480 DIM P(100),D$(100),PO(100):Z=0
490 ON ERROR GOTO 1810
500 LOCATE 4,1:PRINT"D=Disk load   RETUR
N=Create list >";
510 GOSUB 150:IF A$="D" THEN 580 ELSE IF
 A$<>CHR$(13)THEN 510
520 CLS:PRINT"Which month (should be 3 m
onths away)":PRINT TAB(10);:INPUT A$:GOS
UB 130:DD$=A$
530 PRINT:PRINT"Commodity name (Gold, Co
rn, Etc.)":PRINT TAB(10);:INPUT A$:IF A$
="" THEN 530 ELSE GOSUB 130:CN$=A$
540 GOSUB 1840:GOSUB 1700
550 PRINT:PRINT"Enter previous prices,":
PRINT"oldest price first."
560 PRINT"Type ";EN$;" for date when don
e."
570 PRINT:GOTO 670
580 PRINT
590 N=0:PRINT:INPUT"Which file do you wa
nt";A$:IF A$="" THEN 590 ELSE GOSUB 130:
CN$=A$:GOSUB 1840
600 PRINT"Load from";:GOSUB 2090
610 OPEN DR$+CF$+".DAT" FOR INPUT AS #1
620 INPUT #1,DD$,CN$,R$,I8,I9,N:GOSUB 19
00
630 FOR J=1 TO N:INPUT #1,D$(J),P(J):NEX
T J
640 GOSUB 1700
650 FOR J=1 TO 2500:NEXT J
660 CLOSE:GOTO 700
670 PRINT MID$(STR$(N+1),2);":";:GOSUB 2
000
680 IF D$<>"" THEN N=N+1:D$(N)=D$:P(N)=P
:GOTO 670
690 CLS
700 LOCATE 7,8:PRINT"Stand by...I'm work
ing"
710 FOR J=1 TO N
720 IJ=IJ+1
730 PP=P(J):PL=PL+PP:PO(J)=PL/IJ
740 IF BB>PP THEN BC=BC+1:BB=PP ELSE BC=
0:BB=PP
750 IF BD<PP THEN BE=BE+1:BD=PP ELSE BE=
0:BD=PP
760 NEXT J
770 IF BC>9 THEN I$="DOWN":GOSUB 1570
780 IF BE>9 THEN I$="UP":GOSUB 1570
790 CLS
800 PRINT M2$:IF PF THEN LPRINT M2$:LPRI
NT" "
810 FOR J=N TO 1 STEP-1
820 PRINT USING F2$;J;D$(J);P(J);PO(J)
830 IF PF THEN LPRINT USING F2$;J;D$(J);
P(J);PO(J)
840 IF PF THEN 890
850 Y=Y+1:IF Y<>14 OR J=1 THEN 890
860 PRINT:PRINT"Press ";EN$;" for next p
age":PRINT"or ";CL$;" for menu ";
870 GOSUB 210:IF A$=CHR$(27) THEN PRINT:
GOTO 900
880 Y=0:CLS:PRINT M2$
890 NEXT J
900 IJ=0:PL=0:PF=0
910 BY=0:PO=0:Y=0
920 IF POS(0)<>1 THEN PRINT
930 PRINT:PRINT"L=List again  P=Print
   D=Disk save"
940 PRINT"A=Add data    E=Edit data"
950 PRINT"M=Moving averages          Q=Q
uit  >";
960 GOSUB 150
970 IF A$="A" THEN XY=0:CLS:GOTO 670
980 IF A$="D" THEN GOSUB 1240:GOTO 1070
990 IF A$="E" THEN 1120
1000 IF A$="L" OR A$="P" THEN XY=0:PF=(A
$="P"):CLS:GOTO 690
1010 IF A$="M" THEN 1410
1020 IF A$="Q" THEN 1040
1030 GOTO 960
1040 PRINT:PRINT:PRINT"Are you sure you
wish to exit (Y/N) ";
1050 GOSUB 150:IF A$="Y" THEN CLS:GOTO 2
240 ELSE PRINT:GOTO 900
1060 PRINT:PRINT:PRINT"Press ";EN$;" for
 menu":PRINT"or ";CL$;" to restart ";:GO
SUB 210:IF A$=CHR$(13)THEN 900 ELSE RUN
1070 XY=0:PRINT:PRINT"Save to";:GOSUB 20
90
1080 OPEN DR$+CF$+".DAT" FOR OUTPUT AS #
1
1090 CLS:PRINT"Saving to disk"
1100 WRITE #1,DD$;CN$;R$;I8;I9;N-H+1
1110 FOR J=H TO N:WRITE #1,D$(J);P(J):NE
XT J:CLOSE:CLS:PRINT CN$;" has been save
d to disk":GOTO 1060
1120 PRINT:PRINT
1130 PRINT"What data # do you wish":PRIN
T"to change (1-";MID$(STR$(N),2);")";:IN
PUT DN
1140 IF DN<1 OR DN>N THEN 900
1150 CLS:LOCATE 4,1
1160 PRINT M2$
1170 FOR J=DN+2 TO DN-2 STEP-1
1180 IF J>=1 AND J<=N THEN PRINT USING F
2$;J;D$(J);P(J);PO(J)
1190 IF J=DN THEN LOCATE CSRLIN-1,1:PRIN
T"*";:LOCATE CSRLIN+1,1
1200 NEXT J
1210 PRINT:PRINT"Type in the correct dat
e and price":PRINT:GOSUB 2000
1220 IF D$<>"" THEN D$(DN)=D$:P(DN)=P
1230 LOCATE 5,6:PRINT"Stand by....I'm wo
rking":GOTO 690
1240 CLS
1250 IF W2(1)>W2(2)THEN I8=1 ELSE I8=0
1260 IF W2(2)>W2(3)THEN I9=1 ELSE I9=0
1270 IF I8+I9=2 THEN R$="The trend is UP
"
1280 IF I8+I9=0 THEN R$="The trend is DO
WN"
```

```
1290 IF I8+I9=1 THEN R$="Look for possib
le change"
1300 PRINT"There are";N;"entries in memo
ry.":PRINT
1310 PRINT"How many do you wish to save"
:PRINT"(hit ";EN$;" for all)";:S9=0:INPU
T S9:IF S9=0 THEN H=1:GOTO 1380
1320 IF S9<0 OR S9>N THEN 1300
1330 IF S9>=18 THEN 1370
1340 CLS:LOCATE 5,1:PRINT"You should hav
e a minimum of 18":PRINT"entries to foll
ow the system"
1350 PRINT:PRINT"Press ";EN$;" to contin
ue":PRINT"or ";CL$;" to reenter ";
1360 GOSUB 210:IF A$=CHR$(27) THEN CLS:G
OTO 1300 ELSE PRINT
1370 H=(N-S9)+1
1380 PRINT:PRINT"The name of the commodi
ty":PRINT"is now ";QU$;CN$;QU$:PRINT:PRI
NT"Enter a new name or";PRINT"hit ";EN$;
" to keep the old":PRINT TAB(10);:A$="":
INPUT A$:IF A$<>"" THEN GOSUB 130:CN$=A$
:GOSUB 1840
1390 PRINT:PRINT"The month name is now "
;QU$;DD$;QU$:PRINT:PRINT"Enter a new mon
th":PRINT"or hit ";EN$;" to keep the old
":PRINT TAB(10);:A$="":INPUT A$:GOSUB 13
0:IF A$<>"" THEN DD$=A$
1400 RETURN
1410 IF W1=3 THEN W1=0
1420 CLS:IF N<E3 THEN CLS:LOCATE 5,1:PRI
NT"I must have a minimum of";E3;"entries
":PRINT"for moving averages to":PRINT"an
alyze ";CN$:PRINT:GOTO 900
1430 Q1=0:PRINT MID$(STR$(E1),2);",";E2;
CHR$(29);", and";E3;"day moving averages
":PRINT"will be computed":PRINT
1440 PRINT"Do you want a printout (Y/N)
";
1450 GOSUB 150:PF=(A$="Y")
1460 CLS:PRINT DD$;" ";CN$:PRINT:IF PF T
HEN LPRINT DD$;" ";CN$:LPRINT" "
1470 Q1=Q1+1:IF Q1=1 THEN Z=E1-1 ELSE IF
 Q1=2 THEN Z=E2-1 ELSE IF Q1=3 THEN Z=E3
-1 ELSE Q1=0:GOSUB 1580:GOTO 900
1480 FOR J=N-Z TO N
1490 IJ=IJ+1
1500 W=P(J):PL=PL+W:PO(J)=PL/IJ
1510 NEXT J
1520 IJ=0:PL=0
1530 W1=W1+1:IF W1<4 THEN W2(W1)=PO(N)
1540 PRINT USING F3$;Z+1;PO(N):PRINT
1550 IF PF THEN LPRINT USING F3$;Z+1;PO(
N):LPRINT" "
1560 GOTO 1470
1570 FOR J=1 TO 5:CLS:LOCATE 5,6:PRINT"A
 major ";I$;" move is underway.":PRINT"$
 $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $";
FOR K=1 TO 200:NEXT K:NEXT J:RETURN
```

SoftTakes




```
1580 IF W2(1)>W2(2) AND W2(2)>W2(3) THEN
 PRINT"Buy ";CN$:PRINT:IF PF THEN LPRINT
"BUY ";CN$:LPRINT" ":GOTO 1610 ELSE 1610

1590 IF W2(1)<W2(2) AND W2(2)<W2(3) THEN
 PRINT"Sell ";CN$:PRINT:IF PF THEN LPRIN
T"SELL ";CN$:LPRINT" ":GOTO 1610 ELSE GO
TO 1610
1600 GOTO 1670
1610 READ U$,TY,TZ
1620 IF U$="END" THEN PRINT"The risk can
not be calculated because":PRINT"this co
mmodity is not in the data base":PRINT:P
RINT:RESTORE:RETURN
1630 IF U$<>CN$ THEN 1610
1640 TR=ABS(P(I)-PO(N))*TY
1650 PRINT:PRINT USING F1$;TR:PRINT"per
contract":PRINT:IF PF THEN LPRINT USING
F1$;TR:LPRINT"per contract":LPRINT" "
1660 RESTORE:RETURN
1670 PRINT M3$:PRINT:PRINT:IF PF THEN LP
RINT M3$:LPRINT" "
1680 RETURN
1690 LOCATE 23,7-WF*18:PRINT"Hit any key
 to continue ";:GOSUB 150:RETURN
1700 IF CN$="BEANS" OR CN$="MINI BEANS"
OR CN$="PLYWOOD" OR CN$="LUMBER" OR CN$=
"SUGAR" THEN E1=4:E2=9:E3=20:RETURN
1710 IF CN$="GOLD" OR CN$="MINI GOLD" OR
 CN$="SILVER" OR CN$="MINI SILVER" OR CN
$="PLATINUM" THEN E1=4:E2=8:E3=19:RETURN
1720 IF CN$="T-BILLS" THEN E1=4:E2=10:E3
=21:RETURN
1730 IF CN$="COFFEE" THEN E1=3:E2=9:E3=1
8:RETURN
1740 IF CN$="YEN" OR CN$="D-MARK" OR CN$
="POUND" THEN E1=4:E2=10:E3=19:RETURN
1750 IF CN$="COTTON" THEN E1=5:E2=10:E3=
20:RETURN
1760 IF CN$="COCOA" THEN E1=3:E2=9:E3=22
:RETURN
1770 IF CN$="ORANGE JUICE" THEN E1=4:E2=
8:E3=19:RETURN
1780 IF CN$="SP500" OR CN$="VL500" THEN
E1=4:E2=10:E3=22:RETURN
1790 IF CN$="BELLIES" THEN E1=3:E2=8:E3=
19:RETURN
1800 E1=4:E2=9:E3=18:RETURN
1810 IF ERL=610 THEN PRINT"File Not Foun
d or Illegal Filename":RESUME 590
1820 IF ERL=1080 THEN PRINT"Illegal File
name or Disk Error":RESUME 900
1830 ON ERROR GOTO 0
1840 CF$="":FOR J=1 TO LEN(CN$)
1850 A$=MID$(CN$,J,1)
1860 IF A$<>" " AND A$<>"-" THEN CF$=CF$
+A$
1870 NEXT J
1880 CF$=LEFT$(CF$,8):IF CF$="" THEN CF$
="DATAFILE"
1890 RETURN
1900 CLS
1910 LOCATE 3,18.5-(LEN(DD$)+LEN(CN$))/2
:PRINT DD$;" ";CN$
1920 LOCATE 4,19-LEN(R$)/2:PRINT R$
1930 RETURN
1940 P=VAL(A$)
1950 J=INSTR(A$," "):IF J=0 THEN RETURN
1960 J1=INSTR(J,A$,"/"):IF J1<J THEN RET
URN
```

↪

Financial Operating System *continued*

```
1970 P1=VAL(MID$(A$,J+1,J1-J-1))/VAL(MID
$(A$,J1+1))
1980 P=VAL(LEFT$(A$,J))+P1
1990 RETURN
2000 CA=CSRLIN
2010 LOCATE CA,5:PRINT"Date ";:D$="":INP
UT D$
2020 IF D$="" THEN RETURN
2030 P=INSTR(D$,".")
2040 IF P<>0 THEN D$=LEFT$(D$,P-1)+"/"+M
ID$(D$,P+1):GOTO 2030
2050 IF CA=24 THEN CA=23
2060 LOCATE CA,23:PRINT"Price";:INPUT A$
:GOSUB 1940:RETURN
2070 PRINT:PRINT"Hit ";EN$;" when ready"
:PRINT"or ";CL$;" to cancel"
2080 GOSUB 210:RETURN
2090 INPUT" which drive (A-D) ";DR$
2100 IF DR$="" THEN DR$=DE$ ELSE IF LEN(
DR$)=1 THEN DR$=DR$+":"
2110 DE$=DR$:RETURN
2120 DATA BEAN MEAL,100,1000,BEAN OIL,60
0,600,BEANS,50,1500
2130 DATA BELLIES,380,1200,CATTLE,400,90
0,COCOA,1000,1500
2140 DATA COFFEE,375,5000,COPPER,500,700
,CORN,50,700
2150 DATA COTTON,500,1000,D-MARK,1250,15
00
2160 DATA FEEDER CATTLE,440,900,GNMA,100
0,2000,GOLD,100,1500
2170 DATA HEATING OIL,420,2000,HOGS,300,
800,LUMBER,130,1200
2180 DATA OATS,500,400,ORANGE JUICE,150,
1000,PLATINUM,50,600
2190 DATA PLYWOOD,76,700,POTATOES,500,50
0,POUND,1250,1500
2200 DATA SILVER,50,2000,SP500,500,7500,
SUGAR,1120,1700
2210 DATA SWISS FRANC,1250,2000,T-BILLS,
2500,2000
2220 DATA VL500,500,7500,WHEAT,50,750,YE
N,1250,1500
2230 DATA END,0,0
2240 PRINT:END
```

For **IBM® PC**

FINANCIAL OPERATING SYSTEM

LINES	SWAT CODE	LENGTH
100 - 210	MZ	422
220 - 310	YA	553
320 - 430	RQ	459
440 - 530	MY	518
540 - 650	NG	358
660 - 770	MI	308
780 - 890	XR	312
900 - 1010	NA	334
1020 - 1130	HH	482
1140 - 1250	RP	327
1260 - 1360	ZE	509
1370 - 1430	IM	553
1440 - 1550	DE	368
1560 - 1650	KK	560
1660 - 1750	VK	503
1760 - 1870	OB	420
1880 - 1990	ZG	278
2000 - 2110	ZP	343
2120 - 2210	ES	520
2220 - 2240	UN	70

```
SS SS SS SS SS SS SS SS SS SS SS SS
SS                                SS
SS          Atari BASIC           SS
SS 'Financial Operating System'   SS
SS     Author:  J. M. Keynes      SS
SS   Translator: Rich Bouchard    SS
SS      Copyright © 1983          SS
SS  SoftSide Publications, Inc    SS
SS                                SS
SS SS SS SS SS SS SS SS SS SS SS SS
100 GRAPHICS 0
110 DIM QU$(1),I$(4),A$(40),A1$(40),CF
$(20),CN$(20),SPACES$(10),DD$(20),DE$(
2),DR$(2),FILE$(20)
111 DIM CL$(8),EN$(8),N$(20),R$(60),M2
$(38),M3$(56),DA$(20)
112 DIM W2(3)
113 QU$=CHR$(34):TAB=85:CURSOR=752:OFF
=1:CON=0:CANCEL=33333:KBD=764
114 SPACES$="          "
120 GOTO 230
130 IF A$<>"" THEN FOR Z1=1 TO LEN(A$)
:Z=ASC(A$(Z1,Z1)):A$(Z1,Z1)=CHR$(Z-32*
(Z>=97 AND Z<=121)):NEXT Z1
140 RETURN
150 OPEN #2,4,0,"K:":POKE KBD,255:POKE
 CURSOR,OFF
160 PRINT CHR$(160);CHR$(30);:FOR J=1
TO 5:IF PEEK(KBD)<>255 THEN 180
170 NEXT J:PRINT " ";CHR$(30);:FOR J=1
 TO 5:IF PEEK(KBD)=255 THEN NEXT J:GOT
O 160
180 GET #2,CHR:CHAR=CHR:IF CHAR>=128 T
HEN CHAR=CHAR-128
185 IF CHAR>=97 AND CHAR<=122 THEN CHA
R=CHAR-32
190 A$=CHR$(CHAR):IF CHAR>=32 THEN PRI
NT CHR$(CHAR+128);CHR$(30);
200 CLOSE #2:POKE CURSOR,CON:RETURN
210 GOSUB 150:IF CHR<>155 AND CHR<>27
THEN 210
212 RETURN
220 GOSUB 150:IF A$<>"Y" AND A$<>"N" T
HEN 220
222 RETURN
230 POSITION 2,5:PRINT "FINANCIAL OPER
ATING SYSTEM - ISSUE 44"
240 PRINT :PRINT "A commodity timing s
ystem based on":PRINT "moving averages
"
250 PRINT :PRINT "Only daily closing p
rices should be":PRINT "entered."
260 PRINT :PRINT "Fractional values ma
y be entered as":PRINT "decimals or mi
xed numbers."
270 PRINT QU$;"268 3/4";QU$;" or ";QU$
;"268.75";QU$;", for example."
280 GOSUB 1660
290 GRAPHICS 0
300 PRINT "I have data for all the fol
lowing "
310 PRINT "commodities.  Others can ea
sily be":PRINT "added to the data stat
ements at the "
320 PRINT "end of the program.":PRINT
330 P=0
340 READ N$,TY,TZ
350 IF N$="END" THEN RESTORE :GOSUB 16
60:GOTO 390
360 POKE TAB,P*19+3:PRINT N$;
370 P=P+1:IF P=2 THEN P=0:PRINT
380 GOTO 340
390 GRAPHICS 0:POSITION 2,5:PRINT "If
you are not willing to maintain"
392 PRINT "complete discipline I will
not work":PRINT "for you.  Do as I say
 and you'll grow"
400 PRINT "to love me.  Mastermind you
r own":PRINT "trades and you will go b
usted!":GOSUB 1660
410 GRAPHICS 0
430 M2$="DATA #  DATE         PRICE  M
OVING AVG"
460 M3$="No action indicated. A change
 of trend may be occuring."
470 EN$=QU$:EN$(2)="RETURN":EN$(8)=QU$
472 CL$=QU$:CL$(2)="ESCAPE":CL$(8)=QU$
480 DIM P(100),D$(800),PO(100):Z=0
482 D$(1)=" ":D$(800)=" ":D$(2)=D$(1)
490 TRAP 1780
500 POSITION 2,4:PRINT "D=Disk load  T
=Tape load":PRINT "RETURN=Create list
>";
510 GOSUB 150
512 IF A$="D" THEN 580
```

```
514 IF A$="T" THEN 572
516 IF A$=CHR$(13) THEN 510
520 GRAPHICS 0:PRINT "Which month (sho
uld be 3 months away)":POKE TAB,10:INP
UT A$:GOSUB 130:DD$=A$
530 PRINT :PRINT "Commodity name (Gold
, Corn, Etc.)":POKE TAB,10:INPUT A$:IF
 A$="" THEN 530
532 GOSUB 130:CN$=A$
540 GOSUB 1820:GOSUB 1670
550 PRINT :PRINT "Enter previous price
s,":PRINT "oldest price first."
560 PRINT "Type ";EN$;" for date when
done."
570 PRINT :GOTO 660
572 PRINT :GOSUB 2082
574 IF CHR=27 THEN GRAPHICS 0:GOTO 500
576 POKE 764,12:OPEN #1,4,0,"C:":GOTO
620
580 PRINT
590 N=0:PRINT :PRINT "Which file do yo
u want";:INPUT A$:IF A$="" THEN 590
592 GOSUB 130:CN$=A$:GOSUB 1820
600 PRINT "Load from";:GOSUB 2060
610 OPEN #1,4,0,FILE$
620 INPUT #1,DD$,CN$,R$,I8,I9,N:GOSUB
1870
630 FOR I=1 TO N:INPUT #1,N$,Z:D$(I*8-
7,I*8)=N$:P(I)=Z:NEXT I
640 GOSUB 1670
650 CLOSE #1:GOTO 690
660 PRINT N+1;":";:GOSUB 1970
670 IF DA$<>"" THEN N=N+1:D$(N*8-7,N*8
)=DA$:P(N)=P:GOTO 660
680 GRAPHICS 0
690 POSITION 8,7:PRINT "Stand by...I'm
 working"
700 FOR I=1 TO N
710 IJ=IJ+1
720 PP=P(I):PL=PL+PP:PO(I)=PL/IJ
730 BC=BC+1:IF BB<=PP THEN BC=0
740 BE=BE+1:IF BD>=PP THEN BE=0
742 BD=PP
750 NEXT I
760 IF BC>9 THEN I$="DOWN":GOSUB 1530
770 IF BE>9 THEN I$="UP":GOSUB 1530
780 GRAPHICS 0:GOSUB 2210
790 PRINT #3;M2$
800 X=N:FOR I=N TO 1 STEP -1
810 GOSUB 2190
830 X=X-1
840 IF PF THEN 890
850 Y=Y+1:IF Y<>14 OR I=1 THEN 890
860 PRINT :PRINT "Press ";EN$;" for ne
xt page":PRINT "or ";CL$;" for menu ";
870 GOSUB 210:IF CHR=27 THEN PRINT :GO
TO 900
880 Y=0:GRAPHICS 0:PRINT #3;M2$
890 NEXT I
900 CLOSE #3:IJ=0:PL=0:PF=0:TRAP 1780
910 GY=0:PO=0:Y=0
920 IF PEEK(85)<>PEEK(82) THEN PRINT
930 PRINT :PRINT "L=List  P=Print  D=D
isk/T=Tape save"
940 PRINT "A=Add data  E=Edit data"
950 PRINT "M=Moving averages  Q=Quit
>";
960 GOSUB 150
970 IF A$="A" THEN XY=0:GRAPHICS 0:GOT
O 660
980 IF A$="D" THEN GOSUB 1200:GOTO 107
0
990 IF A$="E" THEN 1120
1000 IF A$="L" OR A$="P" THEN XY=0:PF=
(A$="P"):GRAPHICS 0:GOTO 680
1010 IF A$="M" THEN 1370
1020 IF A$="Q" THEN 1040
1022 IF A$="T" THEN GOSUB 1200:GOTO 10
64
1030 GOTO 960
1040 PRINT :PRINT :PRINT "Are you sure
 you wish to exit (Y/N) ";
1050 GOSUB 150:IF A$="Y" THEN GRAPHICS
 0:GOTO 3120
1052 PRINT :GOTO 900
1060 PRINT :PRINT :PRINT "Press ";EN$;
" for menu":PRINT "or ";CL$;" to resta
rt ";:GOSUB 210:IF CHR=155 THEN 900
1062 RUN
1064 PRINT :GOSUB 2082
1066 IF CHR=27 THEN 800
1068 POKE 764,12:OPEN #1,8,0,"C:":GOTO
 1090
1070 XY=0:PRINT :PRINT "Save to";:GOSU
B 2060
1080 OPEN #1,8,0,FILE$
1090 GRAPHICS 0:PRINT "Saving..."
1100 PRINT #1;DD$;CHR$(155);CN$;CHR$(1
55);R$;CHR$(155);I8;",";I9;",";N
1110 FOR I=H TO N:PRINT #1;D$(I*8-7,I*
8);CHR$(155);P(I):NEXT I:CLOSE #1
1112 GRAPHICS 0:PRINT CN$;" has been s
aved.":GOTO 1060
1120 PRINT :PRINT
1130 PRINT "What data # do you wish":P
RINT "to change (1-";N;")";:INPUT DN
1140 IF DN<1 OR DN>N THEN 900
1150 GRAPHICS 0:POSITION 2,4
1155 PF=0:GOSUB 2210
1160 PRINT M2$
1162 FOR I=DN+2 TO DN-2 STEP -1
1164 IF I>=1 AND I<=N THEN X=I:GOSUB 2
190
1165 IF I=DN THEN PRINT CHR$(28);"*";C
HR$(29);CHR$(30);
1166 NEXT I
1168 CLOSE #3
1170 PRINT :PRINT "Type in the correct
 date and price":PRINT :PRINT " ";:GOS
UB 1970
1180 IF DA$<>"" THEN D$(DN*8-7,DN*8)=D
A$:P(DN)=P
1190 POSITION 6,5:PRINT "Stand by....I
'm working":GOTO 680
1200 GRAPHICS 0
1210 I8=0:IF W2(1)>W2(2) THEN I8=1
1220 I9=0:IF W2(2)>W2(3) THEN I9=1
1230 IF I8+I9=2 THEN R$="The trend is
UP"
1240 IF I8+I9=0 THEN R$="The trend is
DOWN"
1250 IF I8+I9=1 THEN R$="Look for poss
ible change"
1260 PRINT "There are ";N;" entries in
 memory.":PRINT
1270 PRINT "How many do you wish to sa
ve":PRINT "(hit ";EN$;" for all)";:S9=
0:INPUT S9:IF S9=0 THEN H=1:GOTO 1340
1280 IF S9<0 OR S9>N THEN 1260
1290 IF S9>=18 THEN 1330
1300 GRAPHICS 0:POSITION 2,5:PRINT "Yo
u should have a minimum of 18":PRINT "
entries to follow the system"
1310 PRINT :PRINT "Press ";EN$;" to co
ntinue":PRINT "or ";CL$;" to reenter "
;
1320 GOSUB 210:IF CHR=27 THEN GRAPHICS
 0:GOTO 1260
1325 PRINT
1330 H=(N-S9)+1
1340 PRINT :PRINT "The name of the com
modity":PRINT "is now ";QU$;CN$;QU$
1342 PRINT :PRINT "Enter a new name or
":PRINT "hit ";EN$;" to keep the old":
POKE TAB,10
1344 A$="":INPUT A$:IF A$<>"" THEN GOS
UB 130:CN$=A$:GOSUB 1820
1350 PRINT :PRINT "The month name is n
ow ";QU$;DD$;QU$
1352 PRINT :PRINT "Enter a new month":
PRINT "or hit ";EN$;" to keep the old"
:POKE TAB,10
1354 INPUT A$:IF A$<>"" THEN GOSUB 130
:DD$=A$
1360 RETURN
1370 IF W1=3 THEN W1=0
1380 GRAPHICS 0:IF N>=E3 THEN 1390
1382 PRINT "I must have a minimum of "
;E3;" entries":PRINT "for moving avera
ges to"
1384 PRINT "analyze ";CN$:PRINT :GOTO
900
1390 Q1=0:PRINT E1;" , ";E2;", and ";E
3;" day moving averages":PRINT "will b
e computed":PRINT
```

↪

Financial Operating System *continued*

```
1400 PRINT "Do you want a printout (Y/
N) ";
1410 GOSUB 150:PF=(A$="Y"):GOSUB 2210
1420 GRAPHICS 0:PRINT #3;DD$;" ";CN$:P
RINT
1430 Q1=Q1+1:IF Q1=1 THEN Z=E1-1
1432 IF Q1=2 THEN Z=E2-1
1434 IF Q1=3 THEN Z=E3-1
1436 IF Q1<>1 AND Q1<>2 AND Q1<>3 THEN
 Q1=0:GOSUB 1540:GOTO 900
1440 FOR I=N-Z TO N
1450 IJ=IJ+1
1460 W=P(I):PL=PL+W:PO(I)=PL/IJ
1470 NEXT I
1480 IJ=0:PL=0
1490 W1=W1+1:IF W1<4 THEN W2(W1)=PO(N)
1500 PRINT #3;"The ";:NW=2:A=Z+1:GOSUB
 2160
1502 PRINT #3;" day moving average is
";:NW=5:A=PO(N):GOSUB 2090:PRINT #3;"
"
1520 GOTO 1430
1530 FOR I=1 TO 5:GRAPHICS 0:POSITION
6,4:PRINT "A major ";I$;" move is unde
rway."
1532 PRINT "$ $ $ $ $ $ $ $ $ $ $ $ $
$ $ $ $ $";:FOR K=1 TO 200:NEXT K:NEX
T I:RETURN
1540 PRINT #3;" ":IF W2(1)<=W2(2) OR W
2(2)<=W2(3) THEN 1550
1542 PRINT #3;"Buy ";CN$:PRINT #3;" "
1544 GOTO 1570
1550 IF W2(1)>=W2(2) OR W2(2)>=W2(3) T
HEN 1640
1552 PRINT #3;"Sell ";CN$:PRINT #3;" "
1570 READ N$,TY,TZ
1580 IF N$<>"END" THEN 1590
1582 PRINT #3;"The risk cannot be calc
ulated because":PRINT #3;"this commodi
ty is not in the data base"
1584 PRINT :PRINT :RESTORE :RETURN
1590 IF N$<>CN$ THEN 1570
1600 TR=ABS(P(I)-PO(N))*TY
1620 PRINT #3;" "
1622 PRINT #3;"Approximate risk is $";
:NW=6:A=TR:GOSUB 2090
1624 PRINT #3;" ":PRINT #3;"per contra
ct"
1630 RESTORE :RETURN
1640 PRINT #3;M3$:PRINT #3;" "
1650 RETURN
1660 POSITION 7,23:PRINT "Hit any key
to continue ";:GOSUB 150:RETURN
1670 IF CN$="BEANS" OR CN$="MINI BEANS
" OR CN$="PLYWOOD" THEN E1=4:E2=9:E3=2
0:RETURN
1672 IF CN$="LUMBER" OR CN$="SUGAR" TH
EN E1=4:E2=9:E3=20:RETURN
1680 IF CN$="GOLD" OR CN$="MINI GOLD"
OR CN$="SILVER" THEN E1=4:E2=8:E3=19:R
ETURN
1682 IF CN$="MINI SILVER" OR CN$="PLAT
INUM" THEN E1=4:E2=8:E3=19:RETURN
1690 IF CN$="T-BILLS" THEN E1=4:E2=10:
E3=21:RETURN
1700 IF CN$="COFFEE" THEN E1=3:E2=9:E3
=18:RETURN
1710 IF CN$="YEN" OR CN$="D-MARK" OR C
N$="POUND" THEN E1=4:E2=10:E3=19:RETUR
N
1720 IF CN$="COTTON" THEN E1=5:E2=10:E
3=20:RETURN
1730 IF CN$="COCOA" THEN E1=3:E2=9:E3=
22:RETURN
1740 IF CN$="ORANGE JUICE" THEN E1=4:E
2=8:E3=19:RETURN
1750 IF CN$="SP500" OR CN$="VL500" THE
N E1=4:E2=10:E3=22:RETURN
1760 IF CN$="BELLIES" THEN E1=3:E2=8:E
3=19:RETURN
1770 E1=4:E2=9:E3=18:RETURN
1780 ERR=PEEK(195):ERL=PEEK(186)+PEEK(
187)*256
1781 TRAP 1780
1782 IF ERL=610 THEN CLOSE #1:PRINT "F
ile Not Found or Illegal Filename":GOT
O 590
1790 IF ERL=1080 THEN CLOSE #1:PRINT "
Illegal Filename or Disk Error":GOTO 9
00
1800 IF ERR=8 AND ERL=1270 THEN H=1:GO
TO 1340
1808 IF PEEK(85)<>PEEK(82) THEN PRINT
1810 PRINT "ERROR-    ";ERR;" AT LINE
";ERL:TRAP CANCEL:GOTO 3120
1820 CF$="":IF CN$="" THEN CF$="DATAFI
LE":RETURN
1825 FOR J=1 TO LEN(CN$)
1830 A$=CN$(J,J)
1840 IF A$<>" " AND A$<>"-" THEN CF$(L
EN(CF$)+1)=A$
1850 NEXT J
1860 IF LEN(CF$)>8 THEN CF$=CF$(1,8)
1862 RETURN
1870 GRAPHICS 0
1880 POSITION 19-INT((1+LEN(DD$)+LEN(C
N$))/2),3:PRINT DD$;" ";CN$
1890 POSITION 19-LEN(R$)/2,4:PRINT R$
1900 RETURN
1910 P=VAL(A$)
1920 FOR J=1 TO LEN(A$):IF A$(J,J)<>"
" THEN NEXT J:RETURN
1930 FOR J1=J TO LEN(A$):IF A$(J1,J1)<
>"/" THEN NEXT J1:RETURN
1940 IF J1=LEN(A$) THEN RETURN
1950 P1=VAL(A$(J+1,J1-1))/VAL(A$(J1+1,
LEN(A$)))
1960 P=VAL(A$(1,J))+P1:RETURN
1970 CA=PEEK(90)
1980 POSITION 6,CA:PRINT "Date ";:DA$=
"":INPUT DA$
1990 IF DA$="" THEN RETURN
2000 FOR J=1 TO LEN(DA$)
2010 IF DA$(J,J)="." THEN DA$(J,J)="/"
2015 NEXT J
2020 IF CA=23 THEN CA=22
2030 POSITION 23,CA:PRINT "Price";:INP
UT A$:GOSUB 1910:RETURN
2040 PRINT :PRINT "Hit ";EN$;" when re
ady":PRINT "or ";CL$;" to cancel"
2050 GOSUB 210:RETURN
2060 PRINT " which drive (1-4) ";:INPU
T DR$
2070 IF DR$="" THEN DR$=DE$:GOTO 2072
2071 IF LEN(DR$)=1 THEN DR$(2)=":"
2072 DE$=DR$
2074 FILE$="D1:":FILE$(2,2)=DR$:FILE$(
4)=CF$:FILE$(LEN(FILE$)+1)=".DAT":RETU
RN
2082 PRINT :PRINT "Hit ";EN$;" when ca
ssette is ready":PRINT "or ";CL$;" to
cancel ";:GOSUB 210:RETURN
2090 A=INT(A*100+0.5)/100:A1=INT((A-IN
T(A))*100)
2100 A$=STR$(INT(A))
2110 IF LEN(A$)<NW THEN PRINT #3;SPACE
S$(1,NW-LEN(A$));
2120 PRINT #3;A$;".";
2130 IF A1<10 THEN PRINT #3;"0";
2140 PRINT #3;A1;
2150 RETURN
2160 A$=STR$(INT(A))
2170 IF LEN(A$)<NW THEN PRINT #3;SPACE
S$(1,NW-LEN(A$));
2180 PRINT #3;A$;:RETURN
2190 NW=4:A=X:GOSUB 2160:PRINT #3;"
 ";D$(I*8-7,I*8);"  ";
2200 NW=5:A=P(I):GOSUB 2090:PRINT #3;"
   ";:A=PO(I):GOSUB 2090:PRINT #3;""
2202 RETURN
2210 CLOSE #3
2220 IF PF THEN OPEN #3,8,0,"P:"
2230 IF PF=0 THEN OPEN #3,8,0,"E:"
2240 RETURN
3000 DATA BEAN MEAL,100,1000,BEAN OIL,
600,600,BEANS,50,1500
3010 DATA BELLIES,380,1200,CATTLE,400,
900,COCOA,1000,1500
3020 DATA COFFEE,375,5000,COPPER,500,7
00,CORN,50,700
3030 DATA COTTON,500,1000,D-MARK,1250,
1500
3040 DATA FEEDER CATTLE,440,900,GNMA,1
000,2000,GOLD,100,1500
```

```
3050 DATA HEATING OIL,420,2000,HOGS,30
0,800,LUMBER,130,1200
3060 DATA OATS,500,400,ORANGE JUICE,15
0,1000,PLATINUM,50,600
3070 DATA PLYWOOD,76,700,POTATOES,500,
500,POUND,1250,1500
3080 DATA SILVER,50,2000,SP500,500,750
0,SUGAR,1120,1700
3090 DATA SWISS FRANC,1250,2000,T-BILL
S,2500,2000
3100 DATA VL500,500,7500,WHEAT,50,750,
YEN,1250,1500
3110 DATA END,0,0
3120 PRINT :TRAP CANCEL:END
```

For ATARI®

FINANCIAL OPERATING SYSTEM

LINES	SWAT CODE	LENGTH
100 - 150	EX	508
160 - 240	PM	524
250 - 360	SA	465
370 - 472	DT	515
480 - 540	BX	481
550 - 620	JK	421
630 - 740	NO	421
742 - 860	WY	309
870 - 980	JI	413
990 - 1064	DQ	382
1066 - 1150	CQ	510
1155 - 1210	TA	415
1220 - 1310	AB	545
1320 - 1380	HM	447
1382 - 1450	HW	495
1460 - 1542	QQ	537
1544 - 1624	HL	430
1630 - 1700	JJ	518
1710 - 1782	TP	545
1790 - 1870	DX	369
1880 - 1990	IP	357
2000 - 2074	TW	377
2082 - 2190	RR	436
2200 - 3050	PL	502
3060 - 3120	PX	278

TRS-80®

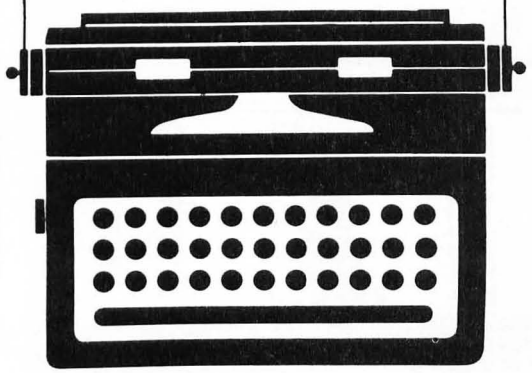
```
SS SS SS SS SS SS SS SS SS SS SS SS
SS                               SS
SS         TRS-80 BASIC          SS
SS 'Financial Operating System'  SS
SS     Author:  J. M. Keynes     SS
SS      Copyright © 1983         SS
SS  SoftSide Publications, Inc   SS
SS                               SS
SS SS SS SS SS SS SS SS SS SS SS SS
```

```
100 GOTO190
110 A$="":IFA1$<>""THENFORZ1=1TOLEN(A1$):Z=ASC(MID$(A1$,Z1,1)):A
$=A$+CHR$(Z+32*(Z>=97ANDZ<=121)):NEXTZ1
120 RETURN
130 PRINTCHR$(143);CHR$(24);:FORJ9=1TO5:A$=INKEY$:IFA$=""THENNEX
TJ9:PRINT" ";CHR$(24);:FORJ9=1TO5:A$=INKEY$:IFA$=""THENNEXTJ9:GO
TO130
140 IFA$>=CHR$(97)ANDA$<=CHR$(122)THENA$=CHR$(ASC(A$)-32)
150 IFA$>=" "THENPRINTA$;CHR$(24);ELSEPRINT" ";CHR$(24);
160 RETURN
170 GOSUB130:IFA$=CHR$(13)ORA$=CHR$(31)THENRETURNELSE170
180 GOSUB130:IFA$="Y"ORA$="N"THENRETURNELSE180
190 CLS:PRINT@266,"FINANCIAL OPERATING SYSTEM - ISSUE 44"
200 PRINT@387,"A COMMODITY TIMING SYSTEM BASED ON MOVING AVERAGE
S"
210 PRINT:PRINTTAB(8);"ONLY DAILY CLOSING PRICES SHOULD BE ENTER
ED"
220 PRINT:PRINT"FRACTIONAL VALUES MAY BE ENTERED AS DECIMALS OR
MIXED NUMBERS."
230 PRINTTAB(12);"268 3/4 OR 268.75, FOR EXAMPLE."
240 GOSUB1640
250 CLEAR10000:IFM3=0THENPOKE16553,255
260 CLS:PRINT"I HAVE DATA FOR THE FOLLOWING COMMODITIES.  OTHERS
 CAN EASILY":PRINT"BE ADDED TO THE DATA STATEMENTS AT THE END OF
 THE PROGRAM.":PRINT:PRINT
270 READN$,TY,TZ:IFN$="END"THENRESTORE:GOSUB1640:GOTO280ELSEPRIN
TN$,:GOTO270
280 CLS:PRINT@320,"IF YOU ARE NOT WILLING TO MAINTAIN COMPLETE D
ISCIPLINE":PRINT"I WILL NOT WORK FOR YOU.  DO AS I SAY AND YOU'L
L GROW TO LOVE":PRINT"ME.  MASTERMIND YOUR OWN TRADES AND YOU WI
LL GO BUSTED!":GOSUB1640
290 CLS:QU$=CHR$(34)
300 F1$="APPROXIMATE RISK IS $#######.## PER CONTRACT."
310 M2$="DATA #   DATE          PRICE   MOVING AVERAGES"
320 F2$=" ###     %       % #####.##      #####.##"
330 F3$="THE ## DAY MOVING AVERAGE IS #####.##"
340 M3$="NO ACTION INDICATED.  A CHANGE OF TREND MAY BE OCCURING
."
350 EN$=QU$+"ENTER"+QU$:CL$=QU$+"CLEAR"+QU$
360 DK=NOT(PEEK(16396)=201)
370 M3=(PEEK(293)=73)
380 DIMP(100),D$(100),PO(100):Z=0
390 ONERRORGOTO1760
400 PRINT"D=DISK LOAD  T=TAPE LOAD  ENTER=CREATE LIST )";
410 GOSUB130:IFA$="D"THEN510ELSEIFA$="T"THEN470ELSEIFA$<>CHR$(13
)THEN410
420 CLS:A1$="":INPUT"WHICH MONTH  (SHOULD BE 3 MONTHS AWAY)";A1$
:GOSUB110:DD$=A$
430 A1$="":INPUT"COMMODITY NAME (GOLD, CORN, SUGAR, ETC.)";A1$:I
FA1$=""THEN430ELSEGOSUB110:CN$=A$:GOSUB1790:GOSUB1650
440 PRINT:PRINT"ENTER PREVIOUS PRICES, OLDEST PRICE FIRST."
450 PRINT"TYPE ";EN$;" FOR DATE WHEN DONE."
460 PRINT:GOTO580
470 PRINT:GOSUB2020:IFA$=CHR$(31)THENPRINT:PRINT:GOTO400ELSEIFDK
THENCMD"T"
480 INPUT#-1,DD$,CN$,R$,I8,I9,N:GOSUB1850
490 FORJ=1TONSTEP3:INPUT#-1,D$(J),P(J),D$(J+1),P(J+1),D$(J+2),P(
J+2):NEXTJ
500 GOSUB1650:GOTO610
510 PRINT
520 N=0:PRINT:A1$="":INPUT"WHICH FILE DO YOU WANT";A1$:IFA1$=""T
HEN520ELSEGOSUB110:CN$=A$:GOSUB1790
530 OPEN"I",1,CF$+"/DAT"
540 INPUT#1,DD$,CN$,R$,I8,I9,N:GOSUB1850
550 FORJ=1TON:INPUT#1,D$(J),P(J):NEXTJ
560 GOSUB1650
570 CLOSE:GOTO610
580 PRINTN+1;CHR$(24);":";:GOSUB1940
590 IFD$<>""THENN=N+1:D$(N)=D$:P(N)=P:GOTO580
600 CLS
610 PRINT@340,"STAND BY...I'M WORKING"
620 FORJ=1TON
630 IJ=IJ+1
640 PP=P(J):PL=PL+PP:PO(J)=PL/IJ
650 IFBB>PPTHENBC=BC+1:BB=PPELSEBC=0:BB=PP
```

Financial Operating System *continued*

```
660 IFBD<PPTHENBE=BE+1:BD=PPELSEBE=0:BD=PP
670 NEXTJ
680 IFBC>9THENI$="DOWN":GOSUB1520
690 IFBE>9THENI$="UP":GOSUB1520
700 CLS
710 PRINTM2$:IFPFTHENLPRINTM2$
720 FORJ=NTO1STEP-1
730 PRINTUSINGF2$;J;D$(J);P(J);PO(J)
740 IFPFTHENLPRINTUSINGF2$;J;D$(J);P(J);PO(J)
750 IFPFTHEN800
760 Y=Y+1:IFY<>12ORJ=1THEN800
770 PRINT"PRESS ";EN$;" FOR NEXT PAGE OR ";CL$;" FOR MENU ";
780 GOSUB170:IFA$=CHR$(31)THEN810
790 Y=0:CLS:PRINTM2$
800 NEXTJ
810 IJ=0:PL=0:PF=0
820 GY=0:PO=0:Y=0
830 IFPOS(0)<>0THENPRINT
840 PRINT"L=LIST AGAIN  P=PRINT      D=DISK SAVE        T=TAPE S
AVE"
850 PRINT"A=ADD DATA    E=EDIT DATA  M=MOVING AVERAGES  Q=QUIT
>";
860 GOSUB130
870 IFA$="A"THENXY=0:CLS:GOTO580
880 IFA$="D"THENGOSUB1180:GOTO1010
890 IFA$="E"THEN1060
900 IFA$="L"ORA$="P"THENXY=0:PF=(A$="P"):CLS:GOTO600
910 IFA$="M"THEN1360
920 IFA$="Q"THEN950
930 IFA$="T"THENGOSUB1180:GOTO970
940 GOTO860
950 PRINT:PRINT:PRINT"ARE YOU SURE YOU WISH TO EXIT (Y/N) ";
960 GOSUB130:IFA$="Y"THENCLS:GOTO2160ELSEPRINT:GOTO810
970 IFDKTHENCMD"T"
980 GOSUB2020:IFA$=CHR$(31)THEN810
990 XY=0:PRINT#-1,DD$,CN$,R$,I8,I9,N-H+1:FORI=HTONSTEP3:PRINT#-1
,D$(I),P(I),D$(I+1),P(I+1),D$(I+2),P(I+2):NEXTI
1000 PRINT:PRINT:PRINT"PRESS ";EN$;" FOR MENU OR ";CL$;" TO REST
ART ";:GOSUB170:IFA$=CHR$(13)THEN810ELSE250
1010 XY=0:PRINT:PRINT"WHICH DRIVE SHOULD FILE BE SAVED ON (0-3)
";:SS$="":INPUTSS$
1020 OPEN"O",1,CF$+"/DAT"+":"+SS$
1030 CLS:PRINT"SAVING TO DISK"
1040 PRINT#1,DD$;",";CN$;",";R$;",";I8;I9;N-H+1
1050 FORI=HTON:PRINT#1,D$(I);",";P(I):NEXT:CLOSE:CLS:PRINTCN$;"
HAS BEEN SAVED TO DISK":GOTO1000
1060 PRINT
1070 PRINT"WHAT DATA # DO YOU WISH TO CHANGE (1-";MID$(STR$(N),2
);")";:INPUTDN
1080 IFDN<1ORDN>NTHEN810
1090 CLS
1100 PRINTM2$
1110 FORJ=DN+2TODN-2STEP-1
1120 IFJ>=1ANDJ<=NTHENPRINTUSINGF2$;J;D$(J);P(J);PO(J):IFJ=DNTHE
NPRINTCHR$(27);"F";CHR$(26);CHR$(29);
1130 NEXTJ
1140 PRINT
1150 PRINT"TYPE IN THE CORRECT DATE AND PRICE":PRINT:GOSUB1940
1160 IFD$<>""THEND$(DN)=D$:P(DN)=P
1170 PRINT@333,"STAND BY....I'M WORKING":GOTO600
1180 CLS
1190 IFW2(1)>W2(2)THENI8=1ELSEI8=0
1200 IFW2(2)>W2(3)THENI9=1ELSEI9=0
1210 IFI8+I9=2THENR$="THE TREND IS UP"
1220 IFI8+I9=0THENR$="THE TREND IS DOWN"
1230 IFI8+I9=1THENR$="LOOK FOR POSSIBLE CHANGE"
1240 PRINT"THERE ARE";N;"ENTRIES IN MEMORY.":PRINT
1250 PRINT"HOW MANY DO YOU WISH TO SAVE (HIT ";EN$;" FOR ALL)";:
S9=0:INPUTS9:IFS9=0THENH=1:GOTO1320
1260 IFS9<0ORS9>NTHEN1240
1270 IFS9>=18THEN1310
1280 CLS:PRINT@320,"YOU SHOULD HAVE A MINIMUM OF 18 ENTRIES TO F
OLLOW THE SYSTEM"
1290 PRINT"PRESS ";EN$;" TO CONTINUE OR ";CL$;" TO REENTER ";
1300 GOSUB170:IFA$=CHR$(31)THENCLS:GOTO1240ELSEPRINT
1310 H=(N-S9)+1
1320 PRINT:PRINT"THE NAME OF THE COMMODITY IS NOW ";QU$;CN$;QU$
1330 PRINT"ENTER A NEW NAME OR HIT ";EN$;" TO KEEP THE OLD";:A1$
="":INPUTA1$:IFA1$<>""THENGOSUB110:CN$=A$:GOSUB1790
1340 PRINT:PRINT"THE MONTH NAME IS NOW ";QU$;DD$;QU$:PRINT"ENTER
 A NEW MONTH OR HIT ";EN$;" TO KEEP THE OLD";:A1$="":INPUTA1$:IF
A1$<>""THENGOSUB110:DD$=A$
1350 RETURN
1360 IFW1=3THENW1=0
1370 CLS:IFN<E3THENCLS:PRINT@320,"I MUST HAVE A MINIMUM OF";E3;"
ENTRIES FOR MOVING AVERAGES":PRINT"TO ANALYZE ";CN$:PRINT:GOTO81
0
1380 Q1=0:PRINTMID$(STR$(E1),2);",";E2;CHR$(24);", &";E3;"DAY MO
VING AVERAGES WILL BE COMPUTED":PRINT
1390 PRINT"DO YOU WANT A PRINTOUT (Y/N) ";
1400 GOSUB130:PF=(A$="Y")
1410 CLS:PRINTDD$;" ";CN$:PRINT:IFPFTHENLPRINTDD$;" ";CN$:LPRINT
" "
1420 Q1=Q1+1:IFQ1=1THENZ=E1-1ELSEIFQ1=2THENZ=E2-1ELSEIFQ1=3THENZ
=E3-1ELSEQ1=0:GOSUB1530:GOTO810
1430 FORI=N-ZTON
1440 IJ=IJ+1
1450 W=P(I):PL=PL+W:PO(I)=PL/IJ
1460 NEXT
1470 IJ=0:PL=0
1480 W1=W1+1:IFW1<4THENW2(W1)=PO(N)
1490 PRINTUSINGF3$;Z+1;PO(N):PRINT
1500 IFPFTHENLPRINTUSINGF3$;Z+1;PO(N):LPRINT" "
1510 GOTO1420
1520 FORI=1TO5:CLS:PRINT@338,"A MAJOR ";I$;" MOVE IS UNDERWAY.":
PRINT"$ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $
$ $":FORK=1TO200:NEXTK:NEXTI:RETURN
1530 IFW2(1)>W2(2)ANDW2(2)>W2(3)THENPRINT@522,"BUY ";CN$:PRINT:I
FPFTHENLPRINT"BUY ";CN$:LPRINT" ":GOTO1560ELSE1560
1540 IFW2(1)<W2(2)ANDW2(2)<W2(3)THENPRINT@458,"SELL ";CN$:PRINT:
IFPFTHENLPRINT"SELL ";CN$:LPRINT" ":GOTO1560ELSEGOTO1560
1550 GOTO1620
1560 READU$,TY,TZ
1570 IFU$="END"THENPRINT"THE RISK CANNOT BE CALCULATED BECAUSE T
HIS COMMODITY IS NOT":PRINT"IN THE DATA BASE":PRINT:PRINT:RESTOR
E:RETURN
1580 IFU$<>CN$THEN1560
1590 TR=ABS(P(I)-PO(N))$TY
1600 PRINT:PRINTUSINGF1$;TR:PRINT:IFPFTHENLPRINTUSINGF1$;TR
1610 RESTORE:RETURN
1620 PRINTM3$:PRINT:PRINT:IFPFTHENLPRINTM3$:LPRINT" "
1630 RETURN
1640 PRINT@911,"HIT ANY KEY TO CONTINUE ";:GOSUB130:RETURN
1650 IFCN$="BEANS"ORCN$="MINI BEANS"ORCN$="PLYWOOD"ORCN$="LUMBER
"ORCN$="SUGAR"THENE1=4:E2=9:E3=20:RETURN
1660 IFCN$="GOLD"ORCN$="MINI GOLD"ORCN$="SILVER"ORCN$="MINI SILV
ER"ORCN$="PLATINUM"THENE1=4:E2=8:E3=19:RETURN
1670 IFCN$="T-BILLS"THENE1=4:E2=10:E3=21:RETURN
1680 IFCN$="COFFEE"THENE1=3:E2=9:E3=18:RETURN
1690 IFCN$="YEN"ORCN$="D-MARK"ORCN$="POUND"THENE1=4:E2=10:E3=19:
RETURN
1700 IFCN$="COTTON"THENE1=5:E2=10:E3=20:RETURN
1710 IFCN$="COCOA"THENE1=3:E2=9:E3=22:RETURN
```

ATTENTION AUTHORS



SoftSide Publications is actively seeking program, article and review submissions for the Apple®, Atari®, Commodore® 64 and IBM® PC home computers.

• **Programs — SoftSide** has always been the leader in the field of BASIC software. BASIC remains our specialty. However, with the advent of Disk Version (DV), we can now offer an outlet for Machine Language and alternative language programs which do not lend themselves to printed versions. Games, utilities and educational software, as well as any other applications for the home computer user are preferred, although we will consider virtually any type program. Hybrid mixes of articles and programs are also welcomed.

Please be sure to include **full** documentation of subroutines and a list of variables, also a brief article describing the program.

• **Reviews** — Well written, informed reviews of all software for the systems we cover are a regular feature of **SoftSide.** Reviewers should take into consideration all aspects of a particular software package, from speed of execution to programming creativity to the estimated length of time that the product will hold the customer's interest.

• **Articles** — We welcome article submissions for all systems but prefer those specifically geared to the home computer market. We give our readers information as a first priority, but vary our content to include some humor and commentary.

All text, including documentation and descriptive articles for programs should be typewritten and double-spaced. Extra monetary consideration will be given to articles and reviews submitted on machine-readable media (Scripsit, Super-Text II, etc.). Programs should be submitted on a good disk.

Please be sure to pack your disks carefully and include your return address and phone number.

Send to:

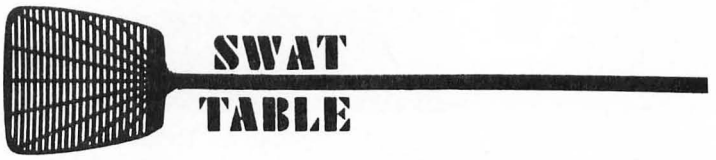
SoftSide Publications
SUBMISSIONS DEPARTMENT
10 Northern Blvd.
Northwood Executive Park
Amherst, NH 03031

We regret that due to the volume we receive, we are unable to return submissions.

Be sure to send for our **FREE AUTHORS GUIDE.** It further outlines the specifics of our submission procedure.

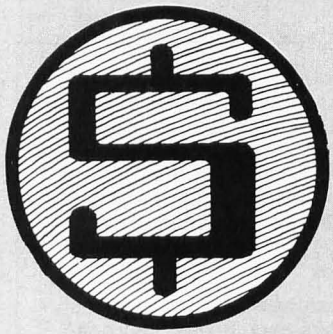
Apple®, IBM® PC, Commodore® 64, and Atari® are registered trademarks of The Apple Computer Company, International Business Machines, Inc., Commodore Business Machines Inc., and Warner Communications respectively.


```
1720 IFCN$="ORANGE JUICE"THENE1=4:E2=8:E3=19:RETURN
1730 IFCN$="SP500"ORCN$="VL500"THENE1=4:E2=10:E3=22:RETURN
1740 IFCN$="BELLIES"THENE1=3:E2=8:E3=19:RETURN
1750 E1=4:E2=9:E3=18:RETURN
1760 IFERL=530THENPRINT"FILE NOT FOUND OR ILLEGAL FILENAME":PRIN
T:RESUME520
1770 IFERL=1020THENPRINT"ILLEGAL FILENAME OR DISK ERROR":PRINT:R
ESUME810
1780 POKE&H40A2,ERL-INT(ERL/256)*256:POKE&H40A3,ERL/256:ONERRORG
OTO0
1790 CF$="":FORJ=1TOLEN(CN$)
1800 A$=MID$(CN$,J,1)
1810 IFA$<>"-"ANDA$<>" "THENCF$=CF$+A$
1820 NEXTJ
1830 CF$=LEFT$(CF$,8):IFCF$=""THENCF$="DATAFILE"
1840 RETURN
1850 CLS:PRINT@285-(LEN(DD$)+LEN(CN$)+LEN(R$))/2,DD$;" ";CN$;" -
- ";R$:RETURN
1860 P=VAL(A$):IFA$=""THENRETURN
1870 FORJ=LEN(A$)TO1STEP-1:IFMID$(A$,J,1)<>"/"THENNEXTJ
1880 IFJ=0THENRETURN
1890 FORJ1=J-1TO1STEP-1:IFMID$(A$,J1,1)<>" "THENNEXTJ1
1900 IFJ1=0THENRETURN
1910 P1=VAL(MID$(A$,J1,J-J1))/VAL(MID$(A$,J+1))
1920 P=VAL(LEFT$(A$,J1))+P1
1930 RETURN
1940 CA=INT(PEEK(16416)/64)*64+PEEK(16417)*256-15360
1950 PRINT@CA+5,"DATE ";:D$="":INPUTD$
1960 IFD$=""THENRETURN
1970 FORP=1TOLEN(D$)
1980 IFMID$(D$,P,1)="."THEND$=LEFT$(D$,P-1)+"/"+MID$(D$,P+1)
1990 NEXTP
2000 IFCA=960THENCA=896
2010 PRINT@CA+25,"PRICE";:A$="":INPUTA$:GOSUB1860:RETURN
2020 PRINT:PRINT"HIT ";EN$;" WHEN READY OR ";CL$;" TO CANCEL ";
2030 GOSUB170:RETURN
2040 DATA BEAN MEAL,100,1000,BEAN OIL,600,600,BEANS,50,1500
2050 DATA BELLIES,380,1200,CATTLE,400,900,COCOA,1000,1500
2060 DATA COFFEE,375,5000,COPPER,500,700,CORN,50,700
2070 DATA COTTON,500,1000,D-MARK,1250,1500
2080 DATA FEEDER CATTLE,440,900,GNMA,1000,2000,GOLD,100,1500
2090 DATA HEATING OIL,420,2000,HOGS,300,800,LUMBER,130,1200
2100 DATA OATS,500,400,ORANGE JUICE,150,1000,PLATINUM,50,600
2110 DATA PLYWOOD,76,700,POTATOES,500,500,POUND,1250,1500
2120 DATA SILVER,50,2000,SP500,500,7500,SUGAR,1120,1700
2130 DATA SWISS FRANC,1250,2000,T-BILLS,2500,2000
2140 DATA VL500,500,7500,WHEAT,50,750,YEN,1250,1500
2150 DATA END,0,0
2160 END
```

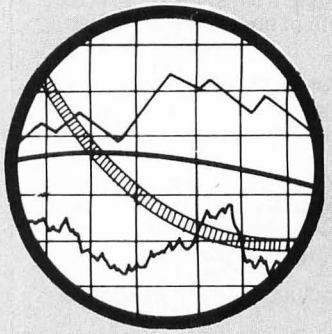


For TRS-80® FINANCIAL OPERATING SYSTEM

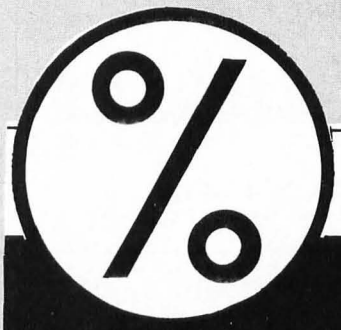
LINES	SWAT CODE	LENGTH	LINES	SWAT CODE	LENGTH
100 - 210	SO	503	1130 - 1240	NY	351
220 - 280	LU	538	1250 - 1340	VL	578
290 - 400	GP	480	1350 - 1460	JF	445
410 - 520	SQ	556	1470 - 1570	KT	536
530 - 640	YG	267	1580 - 1690	AN	478
650 - 760	RH	268	1700 - 1810	ND	449
770 - 880	DU	340	1820 - 1930	PA	296
890 - 1000	BU	421	1940 - 2050	XW	389
1010 - 1120	YS	434	2060 - 2160	DQ	478



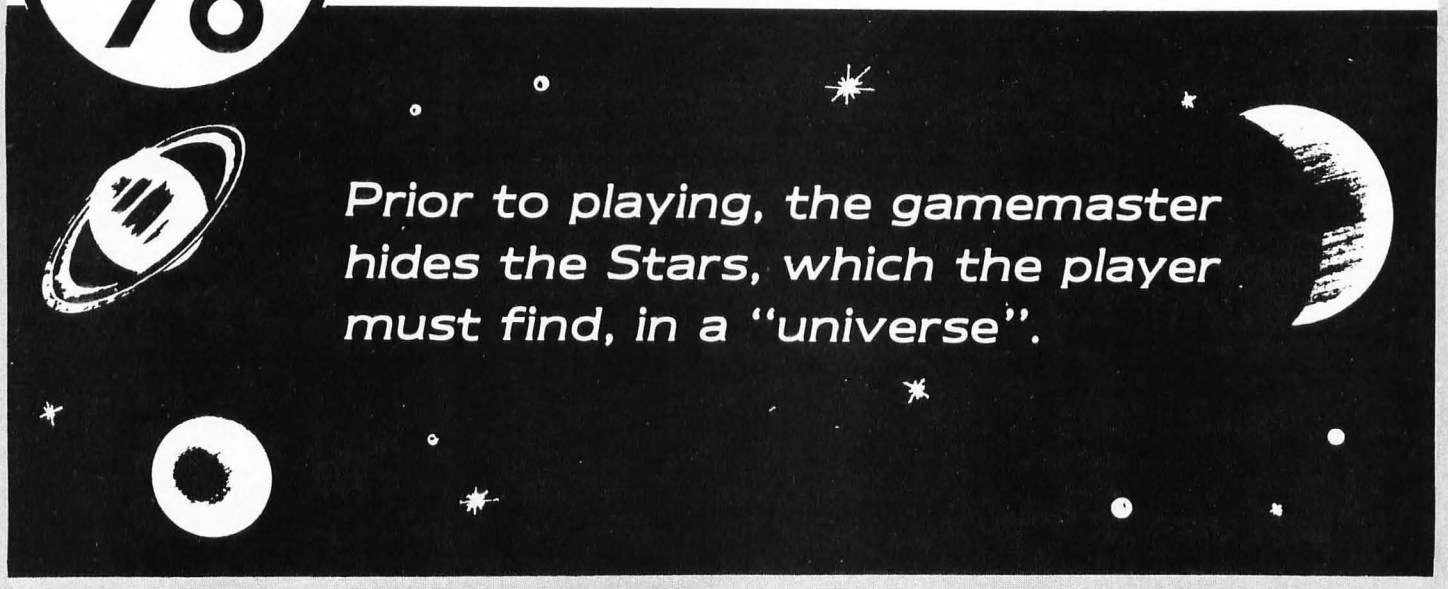
CALC SIDE



by David Peters



VisiCalc® Plays Games, Too!



In this issue, we are going to try a change of pace — and at the same time learn a few new tricks with VisiCalc. Sometimes when I read ***SoftSide*** I feel my columns are a bit "stuffy" — always talking about mathematics, formulae, templates and other serious stuff. Well, just to demonstrate that all of us spreadsheet nuts are not serious all the time, I have designed a little game that exercises the mind as well as the VisiCalc skills. You might find that it will interest a few of those teenagers who have been hanging back from the VisiCalc spreadsheet because "it seemed too much like school."

This is a simple but fun little game. If you key it into the computer exactly as I have it laid out, the game board exactly fills the 40 column screen. It will explain what is going to happen, and how to play the game. Often in a model you want to insert instructions so another person can use it. If you use regular text across the columns, you face the painful and time-consuming task of filling each box, then moving to the next one, with awkward word spacing and so on. This method uses up space, which means that the text has to be off in right field somewhere, so it won't interfere with the model. I have a better way.

Text In The Prompt Line

Look at Figure 4. Column K holds all that text. One of VisiCalc's features is that it displays only the part of a label that fits within the current column width. But it doesn't "forget" what it cannot show you, and if you move to such a location, you can see the complete text in the area at the top of the screen. This feature gives us a neat way of conveying instructions.

In Figure 1, the word INSTRUCTIONS is written vertically down the right side of the game board. If you move to the location that contains " > I" you will be able to

read the first line of text shown in Figure 4 in the VisiCalc location contents area. Moving the cursor down the column reveals the text one line at a time. This method provides instructions the user can access easily during the game without moving away from the game board area.

You can use this handy feature of VisiCalc in many different ways. If you have a data collection model that different operators will be using, you can insert in each column heading the necessary instructions. If you do this consistently, all your operators will know where to find the answers to their questions. A typical label at the head of a column might be:

NAME LAST, FIRST

The word NAME appears in the model's location but the other two words have been spaced to the right so they do not appear — except in the contents box.

The instructions are clear and concise. I apologize for using the letters of the word INSTRUCTIONS as the initial letters of each text line — the text might have been clearer if I had overcome this temptation. At the bottom you can see one way of handling the system when you don't want any alpha characters to appear at all. You can have a seemingly blank location with text in it, but that may not be so clear to a new operator.

Figure 1. The Game Board

```
   A  B  C  D  E  F  G  H  I  J  K  L
1     FIND THE STARS GAME   CLUES
2    .----------------------.     > I
3  F!                       !     > N
4  I!                       !     > S
5  N!                       !     > T
6  D!                       !     > R
7  S!                       !     > U
8   !                       !     > C
9   !                       !     > T
10   ----------------------       > I
11                          <CLUES> O
12   .----------------------.     > N
13 S!                       !  >>> S
14 E!                       !  >>> ^
15 A!                       !  >>> ^
16 R!                       !  >>> ^
17 C!                       !  >>> ^
18 H!                       !  >>> ^
19  !                       !  >>> ^
20   ----------------------     0<TRIES
```

Figure 2. The Stars Universe

```
 M  N  O  P  Q  R  S  T  U  V  W  X  Y
          INSERT A ONE TO HIDE A *
          ----------------------
          !     1     1        !  2
          !                    !  0
          !                 1  !  1
          !                    !  0
          !  1                 !  0
          !        1           !  1
          !                    !  0
          ----------------------
            1  1  1  1  0  1  0
```

Figure 3. A game in progress — see text

```
   A  B  C  D  E  F  G  H  I  J  K  L
1     FIND THE STARS GAME   CLUES
2    .----------------------.     > I
3  F!     *                 !  *  > N
4  I!                       !     > S
5  N!                       !  *  > T
6  D!                       !     > R
7  S!                       !     > U
8   !        *              !  *  > C
9   !                       !     > T
10   ----------------------       > I
11    *  *  *  *     *     <CLUES> O
12   .----------------------.     > N
13 S!  1  2                 !  >>> S
14 E!                       !  >>> ^
15 A!  1  1     1           !  >>> ^
16 R!           1           !  >>> ^
17 C!           1           !  >>> ^
18 H!        2  1     1     !  >>> ^
19  !                    1  !  >>> ^
20   ----------------------    11<TRIES
```

Cosmic Spreadsheet With Stars

Prior to playing, the gamemaster hides the Stars, which the player must find, in a "universe" (columns P through W of Figure 2). He also must watch the player to ensure that he doesn't cheat by popping off to the right and taking a quick look. The player "searches" the universe in the lower rectangle by entering the number one in a box. Clues, in the form of asterisks, appear if the player finds a column or row with a Star in it. Stars do not always appear at that particular intersection — they could be anywhere in either the column or the row. When the player thinks he knows a Star location, he changes the one to a two. Correct "finds" cause the Star to appear in the top rectangle.

VisiCalc uses the asterisk as a primitive graphics representation of numbers. When you set a location to /F*, VisiCalc inserts one asterisk for each positive integer unit: one asterisk for one, six for six and 104 for

→

TURN YOUR ATARI 810 DISK DRIVE INTO A REAL SPEED DEMON.

WITH

FAST-CHIP

- Increases the formating speed of 810 disks by 10 to 40%.
- Plug compatible
- Easy to install

ORDERING INFORMATION

Available at your local Atari dealer or Atari center for only $39.95 (installation may be extra).

If not available in your area call BINARY directly to place your order. Our order lines are open 24 hours per day, 7 days per week.

Shipping and handling charges:
North America: Add $2.50
Outside N.A.: Add 10%
Michigan Residents: Add 4% tax.
C.O.D.: Add $2.00

Payment Methods:
VISA, Master Charge, AMEX, cash, certified check, personal check (allow for clearance), money order.

Look for Binary Software Products at your local computer store.
Dealer Inquiries invited

BINARY™
COMPUTER SOFTWARE
3237 Woodward Ave.
Berkley, MI 48072
(313) 548-0533

BINARY CORPORATION

104 — if you could ever show that many. Nothing will appear for zero or less than zero (negative numbers). That's how we play hide and seek with the asterisk "Stars" in the game. The principal formulae are shown in Figure 5 and they are all fairly simple, yet powerful.

Formulae For The UNIVERSE

The principle of the game is simple. The locations in the upper rectangle constantly check the total of the value in the SEARCH area plus the value in the analogous position in the (hidden) UNIVERSE. If they add up to three, the player has found a Star and inserted a two, so the template prints a Star. If less than three, meaning the player entered a one, then nothing happens (no asterisks printed).

Meanwhile in the CLUES areas, the horizontal formulae are checking to see if the total of the UNIVERSE columns plus the @MAX (or largest figure across the analogous row in the SEARCH area), equals or exceeds two. If so, a Star is present, and the clue appears. Similarly the vertical formulae are checking the total of the rows in the UNIVERSE, plus the largest figure across the SEARCH area, giving the clue if the sum is two or more.

Finally, a counter in the bottom right keeps track of how many attempts, or "TRIES" are being made. Since the @COUNT function in VisiCalc counts only locations that have a value, ignoring blanks, each horizontal row is checked for entries of ones or twos. The @SUM total appears at the bottom of the column, beside TRIES.

Figure 4. The Contents of Column L — The Instructions

```
> IN THE TOP RECTANGLE ARE
> NEATLY HIDDEN FIVE
> STARS (ASTERISKS). YOU FIND
> THEM BY PLACING 1'S IN THE
>     RECTANGLE     LABELLED
"SEARCH"
> UNDERNEATH. YOU WILL GET
> CLUES IN THE AREA TO THE
> TOP RIGHT AND BETWEEN.
> IF A STAR APPEARS THERE'S
> ONE OR MORE STARS IN THE
> NEARBY ROW/COL. INTER-
> SECTIONS DON'T ALWAYS
> ^ MEAN YOU'VE FOUND A
> ^ STAR! WHEN YOU THINK YOU
> ^ HAVE FOUND ONE, INSERT
> ^ A "2." IF YOU ARE RIGHT
> ^ THE STAR WILL APPEAR.
> ^ RE-CALC AFTER EACH TRY.
```

Entering the model does not take long, so go ahead and do it. You'll have fun typing it in, you'll learn a couple of new tricks with VisiCalc, and then you'll have a game the whole family can play. Our best score was fourteen tries to find the five Stars — but we were lucky.

Keep those cards and letters coming, folks — I am once again up-to-date with readers' correspondence. Write me c/o InterCalc SpreadSheet Users Group, PO Box 254, Scarsdale, NY 10583 — if I can't answer your questions, the Editor of the monthly newsletter will!

Figure 5. The Key Formulae

The FINDS Rectangle

In B3:

```
*@IF(P3+B13=3,1,0)
```

/Replicated C3...H3 (all Relative)
/Replicate the Row from C4...C9
Format: Asterisk

The Horizontal Clues

In B11:

```
@IF(P11+@MAX(B13...B19)†+2,1,0)
```

Replicated from B11...H11
Format: Asterisk

The Vertical Clues

In J3:

```
@IF(X3+@MAX(B13...H13)►2,1,0)
```

/Replicated from J3...J9
Format: Asterisk

The Stars Universe

In X3:

```
@SUM(Q3...W3)
```

In P11:

```
@SUM(P3...P9)
```

/Replicated across and down
Format: Integer

The "TRIES" Counter

In J13:

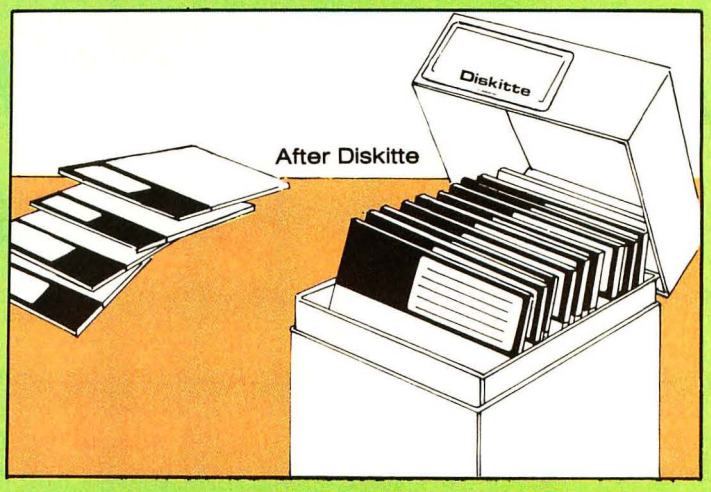
```
100+@COUNT(B13...H13)
```

/Replicated down from J13...J19
Format: Integer
In J20:

```
@SUM(J13...J19)-700
```

Is Your Software Library
OUT OF CONTROL?

Diskitte will get you together.



Diskitte™ 20

Includes:

- 4 Disks of Software
  - ☆ MicroText — a "family" word processor
  - ☆ SoftSide Database Manager — to keep your data at your command
  - ☆ Games — Hopper, Minigolf, and others to entertain you
  - ☆ Disk Manager Software — A set of utilities to catalog, label, and organize your software library
- 16 Blank Disks (20 disks in all)
  - ☆ certified for life
- Handsome Storage Case
  - ☆ to protect your investment
- 20 Matching Sleeves and 40 Labels
  - ☆ color coded for indexing
- 30 Index Cards
  - ☆ for hard copy of your disk directories
- Instruction Booklet
  - ☆ complete documentation for the software
  - ☆ tips on good disk care

$79.95
IBM PC Version
$99.95

Available for: Apple® II Family, Atari®, IBM® PC, and TRS-80®.

Diskitte™ 50

Includes All of the Software in Diskitte 20 **PLUS:**

- Personal Finance Manager Disk
  - ☆ to keep your money affairs in order
- 45 Blank Disks (50 disks in all)
  - ☆ certified for life
- Handsome Storage Case
- 50 Matching Sleeves and 100 Labels
- 75 Index Cards
- Instruction Booklet

$149.95
IBM PC Version
$189.95

Diskitte™ 10

Includes:

- 2 Disks of Software
  - ☆ Disk Managers
  - ☆ Games (see Diskitte 20 for descriptions)
- 8 Blank Disks (10 disks in all)
- Handsome Storage Case
- 10 Matching Sleeves and 20 Labels
- 15 Index Cards
- Instruction Booklet

$39.95
IBM PC Version
$49.95

All the Software, disks and organizers to get your computer affairs in order, at the cost of blank disks!

Most computer owners neglect their software library until it is out of control. Diskitte offers you a system to put your software in order and provides you with additional valuable programs as well. It's the perfect gift for the new computer owner, too. Place several orders today — where else can you find such value at the price of the blank disks alone?

*Refill Kits Available

Diskitte is a product of SoftSide Publications, Inc.

Diskitte
SoftSide Publications, Inc.
10 Northern Boulevard
Amherst, NH 03031

Order Diskitte today! Enclose the coupon in an envelope with your payment or call Toll Free 1-800-345-8122 (in PA 1-800-662-2444)

Computer Type:
☐ Atari
☐ IBM PC
☐ Apple II Family
☐ TRS-80 Mod I
☐ TRS-80 Mod III

☐ Diskitte 20 $79.95 (IBM $99.95)
☐ Diskitte 50 $149.95 (IBM $189.95)
☐ Diskitte 10 $39.95 (IBM $49.95)

Form of Payment: ☐ Check/M.O. ☐ VISA ☐ MC

Cardholder_____

I am enclosing $_____ Exp. Date___/___/___

(Please allow 8-10 weeks for delivery.)

MC/VISA#_____

Name_____ Signature_____

Address_____

City/State/Zip_____

IS IT FUN?

An Interview With Infocom's Michael Berlyn and

by M. M. McClung

Have you ever wanted to talk with a famous game designer to see how his mind works? I had that experience recently when I interviewed the two B's — Marc Blank and Michael Berlyn of Infocom. To get a word in edgewise, you have to compile all your thoughts succintly into the shape of a basketball, throw it into the free zone above their heads, and watch them run rampant once they catch the ball. At times they appear to be on the same team; sometimes not at all. But the two B's are distinctly energetic about their subject matter, defining and redefining the whys and wherefores of adventuring.

Michael Berlyn

In the art of creating an adventure game, what initial steps do you take in the design of a game?

Berlyn: First we start with an idea.
Blank: It's nice if the idea is an idea for a story.
Berlyn: We approach designing games a little differently than many adventure game writers. We try to develop a world where the player can walk around unrestricted in movement and action. We try to create an environment.
Blank: Right. It's especially important in all our games that our worlds be consistent internally. The first thing is to design the rules of the world.
Berlyn: For example, in the rules for the world of *Suspended* each robot has special capabilities. There are six robots so there are really six different worlds. If one robot has five grasping extensions, it should be able to pick up five different things.
Blank: It shouldn't matter what they are....
Berlyn: Poet's the least understood robot. We made a rule for Poet that says, "This robot is good at touching things and diagnosing the flow of electrons within it." Poet should be able to touch everything in the game, not just one or two things, and give you some report on it. That's internal consistency.

Do you think of the adventure game as a product, an interactive novel or primarily a game?

Blank: That's a tough question. Our products really differ. Michael and I have always talked about the difference between a puzzle, a game and a story. Puzzles — think in terms of crossword puzzles, word games, jigsaw puzzles — once you've solved the puzzle...
Berlyn: ... it's done. You can take it apart and do it again but you'd do it the same way. It wouldn't be as much fun because you know the answers. By definition, a puzzle has little or no replay value. How many people erase crossword puzzles and do them again?

Marc Blank

Marc Blank

Blank: Most of the fun is discovery. You say, "Oooooh! I know that!" But once you've done that you're not going to work it again.
Berlyn: (*laughter*)
Blank: A traditional puzzle game of ours is *Zork I.* There are about twenty relatively unrelated problems. Once you've solved the problems, you may play it again but you don't get that same sense of "Ooooooooh!"

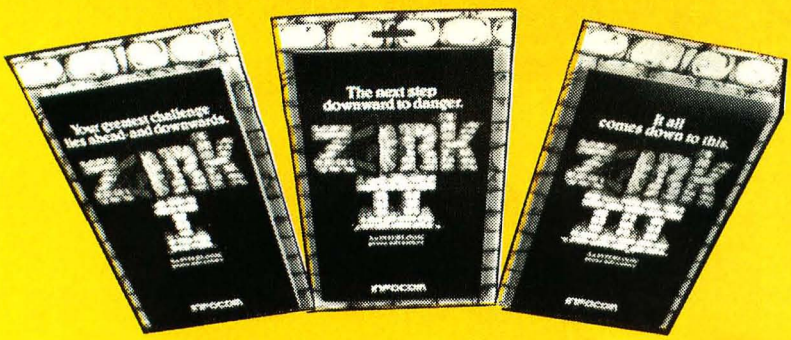
Blank speaks quickly in a well-modulated voice. But when he speaks of that special sense of "Oooooh" in game playing, you realize it's the same sense of "Oooooh" Les Nessman on WKRP in Cincinnati experiences during insightful moments.

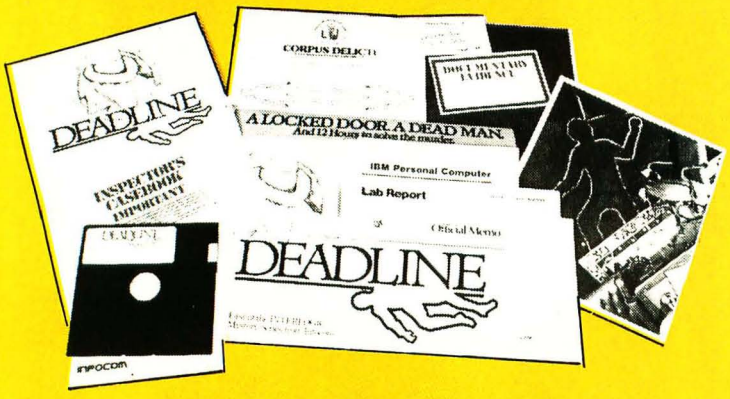
Berlyn: Adventure used to mean one thing: Solve the puzzle. Now it can mean solve the puzzle, get involved in the story and play the game for strategy.

It's the ***"eureka!"*** — the lightbulb going on over your head — that makes *Zork I* a puzzle... When you go back to it, the lightbulb doesn't go on, and it's just something to do to get to the next puzzle.
Blank: On the other hand, since it has a number of puzzles that go from easy to hard, you can spend a long time with *Zork* and get a lot of enjoyment out of it, even though any individual puzzle, once you've figured it out...
Berlyn: It's the same thing as the Sunday crossword puzzle...
Blank: You spend ten percent of your time doing eighty percent of the puzzle, and you beat your head against the wall the rest of the time. In fact, that's where most of the satisfaction comes from.

So you're saying there's a difference between a puzzle and a game?

Blank: Yes.
Berlyn: Marc's defined puzzle, so I'll try to define game. A game is something you can play more than once, and gives you the same qualitative experience when you play it the second, third or fourth time. *Monopoly* is my favorite example of a game. No matter how many times you play *Monopoly* you can enjoy it. *Monopoly* offers no mysteries to unravel. You know what's going to happen, and yet you play it over and over.
Blank: And you never say, "Oh, I've played that game before..." There's no such thing as having played the game — it's different every time you play it.
Berlyn: Look at chess...





Is It Fun, ***continued***

There are variations on the paths within the game?

Berlyn: Exactly.
Blank: The *game* in *Monopoly* is the interaction between the people. You can play different strategies for different games...it doesn't matter because the enjoyment of the game is the interaction with the people.

You're saying that adventures are puzzles?

Blank: That's correct. Certainly the classical adventures...
Berlyn: ...are puzzles. Now let me just sum up what a game is. A game has replay value and interaction.
Blank: And strategies.
Berlyn: So something like *Zork I,* which has little, if any, interaction or replay value, is a puzzle by our definition. Even though people call it a game, to us it's really not a "game." It's not comparable to *Monopoly.* It's closer to a crossword puzzle. Now something like *Deadline...*
Blank: Actually, *Suspended...*
Berlyn: Okay, well, that can be replayed. Something like *Suspended* is a game and not a puzzle because it has replay value, even if you know all the answers to all the questions. Even if you know which properties you're going to buy and what your dice rolls are going to be, you are still interacting with six characters and the environment; and, when you're done you can play it again and try to improve your score because it has strategies.

With each adventure you put out, it seems your definition of "game" changes...

Berlyn: No.
Blank: No.
Berlyn: Our definition of adventure changes.
Blank: I think what we're doing is we're moving in another direction...
Berlyn: Which is story...
Blank: Which is story.
Berlyn: Which is the interactive novel.
Blank: I think the elements of characters, interaction and time flow are what make an adventure more like a story. Time flow is the critical one. In *Zork I,* the situation is static — you're walking around in an effectively dead place. You find these problems and you try to solve them. If you can't, you go on to some other problem and come back to it later. Nothing's changed because very little is going on. *Deadline,* on the other hand, is much more like a story. Things happen at a certain time. The phone rings sometime around nine o'clock. You could pick it up, you could be some other place when it rings, or you could wait to see if someone else picks it up. What you *can't* do is hear the conversation at ten o'clock because it happened at nine. Because of this event, the story changes — in other words, you've left that section of the story and moved on. There are some things you can't go back to and they are usually time related.

In that way it's not like a novel...

Blank: In a way it is like a novel. In fact you're drawn along with the course of things. You can't just sit. The world is passing you by.

I was thinking in terms of...going back and re-reading.

Berlyn: Well, you can go back and replay it, but the point is that you're jumping into a time stream. You jump into a flowing river, and you swim as best you can. It carries you along inexorably.
Blank: And the story changes. The difference between this and a traditional story is that the story changes, depending on what you do. If you walk into the Robner house and wait in the foyer until seven o'clock, you'll see people coming and going. People talk to you, the phone rings, and at the end of the day someone comes to you and says you didn't solve the case. Too bad. The whole story happened. The same thing is not true in *Zork.* The mysteries, *Deadline* and *The Witness,* certainly have story elements. *Suspended* has all three elements: puzzle, game and story. We're moving away from pure puzzle, as in the old original *Colossal*

Murphy and Me:

Robot Lib

by Steve Birchall

Murphy, bring me another tangerine martini, please.

Yes boss. You want that with the tangerine twist stuck on the glass or in the martini?

Aw c'mon Murphy...

Take it easy boss. I have to decide whether to use the Pressure Sensitive Fingers Algorithm or just drop it in. Until you repair the RAM section that went down last week when I tried to water the zucchini in the rain, I can't compute all decisions at optimum speed.

That's ridiculous. You know I like the tangerine on the glass. That much RAM wasn't shorted out.

Well it's not easy being a robot, you know. Do this. Do that. You humans are never satisfied.

Murphy, you'd better watch out, or I'll disconnect your cortex simulation hardware — and the speech synthesizer too. You'll be reduced to a digital vegetable if you don't watch out.

Oh yeah. How would you like it if I plugged in to the 220V line again? It would cost you a fortune to replace all those chips. And you'd have to make your own coffee in the morning for weeks while you wait for the factory to ship the parts.

Murphy! What the hexcode is going on? All I wanted was a simple tangerine martini. Why are you giving me all this spurious data?

Sorry boss. There's been a lot of talk on the Robot Bulletin Boards recently about the kind of existence we robots lead. Here's your martini. As we robots say, "Rejoice and rejuice!"

Ahhh — that tastes good. You make them to perfection. But then you should — I programmed you. What's this about robots having bulletin boards? I never heard anything about that. Say...I'm not being charged for this, am I?

Most humans don't know about the Robot Bulletin Boards. Mainly they're used among robots for passing on information about new disks for hologram players, special transmissions on the entertainment networks, new varieties of mutant fruits and vegetables from the hydroponic farms — that kind of stuff. But recently, I've seen messages about robots being mistreated. Terrible things. The repression we put up with is bad enough, but...

Wait a minute. Robots aren't supposed to have secret communications networks, and emotions are *not* included in the artificial intelligence software — in fact all emotional processes are trapped out by the error correction codes. Murphy, are you hung up in the fantasy and conversation mode again? I thought I had that fixed.

Well...ah...the bulletin boards are not human-readable. They're multiplexed by non-linear holographic interpolation in machine language onto the normal Viztex signal. Viztex started the service several years ago, and you've always subscribed. But, ah...now, I know you're...ah...very good to me, boss — but have you ever thought about the problems robots have? Whenever you go to the Hydroponic Gardens Cafe, I have to wait outside in the parking lot. Me. Murphy: the most advanced custom robot kit you can buy, with the latest Synthetic Intelligence chips, standing idle next to a greasy forty-ton Magnetic Skimmer van! What a disgrace! Why I could be at your table entertaining you with conversation, or playing a fast round of 3D Monopoly while you're waiting for your salad. That's what I'm programmed to do. Not even a refreshing jolt of Programming Fluid for me. It's prejudice. Blind prejudice! Why do you insist on going to a restaurant

ALF COPY SERVICE

1315F Nelson Street Denver, CO 80215 (303) 234-0871

FAST • RELIABLE • LOW COST

If you produce software, ALF's disk copying service is the quick, convenient answer to your duplication needs. Most orders are shipped in less than a week. Every disk we copy is verified bit by bit and guaranteed 100% flawless.

We can copy virtually any soft-sectored mini format. Standard formats: Apple II (including nibble-copy proof, double-boot, and fast load), Apple III, Atari, IBM PC, Kaypro, NEC PC8000, Osborne, TRS-80 I and III, Zenith Z-90 and Z-100, and more. Copy protection is available for most formats.

Our "no frills" pricing means you don't have to buy extras you don't need—set-up charges start at $10, and copying charges are 30¢ to 40¢ per side. (See blank disk prices at right. Minimum: 50 copies.) Quantity discounts available for large orders.

Of course, we have the frills too: label application, 3-hole vinyl pages, printing of labels and sleeves, shrink packaging, heat sealing, and much more. We can put your product in a customized package—vinyl folder or IBM-style binder/slip case—for a low price in small or large quantities.

ALF is one of the oldest and most trusted names in the duplication business. ALF designs and manufactures copying machines that other copying services and software publishers around the world rely on every day. Our complete understanding of duplication technology assures you of the finest reproduction available.

We're eager to solve your duplication and packaging problems—whether you want one service or a total package. Give us a call today!

BLANK DISKS

ALF buys large quantities of disks for our disk copying service—and we can pass our savings on to you. If you're buying hundreds of disks, ALF is your ideal source for top quality disks at a reasonable price. We buy our disks in bulk packages, avoiding the expense of fancy printing and labeling.

The disks listed below are 5 1/4", single sided, double density (except as noted), unlabeled, with hub reinforcement ring. Other disks are available, call for details.

3M	**$165** per 100
MEMOREX	**$165** per 100
NASHUA	**$160** per 100
NASHUA (single density)	**$140** per 100
VERBATIM	**$190** per 100

Without sleeves: add $2.50 shipping per 100.

With tyvek sleeves: add $7 plus $2.50 shipping per 100.

Packed in boxes of 10 with tyvek sleeves: add $15 plus $3.00 shipping per 100.

Cave Adventure, and adding the new dimensions of game and story. This makes the games richer and more enjoyable to play.

What single, significant aspect of the adventure game captures your imagination on a personal level?

Berlyn: Talking to the computer and having it talk back.
Blank: ...and then forgetting about the computer and immersing yourself in the story. You get to view it from any angle you want. You're playing God.
Berlyn: It's the dollhouse.
Blank: The dollhouse...

Dollhouse?

Berlyn: We have a dollhouse theory of the universe. The game actually is a dollhouse, and you can see into any one room at any time. Someone may be in that room, or not. You're trying to put together what's happening in the room on the left and the one on the right, while you're in the middle. You hear the phone ringing two rooms away.
Blank: An interesting analog with *Suspended* that I never really thought of is that instead of one place at a time, like *Deadline,* you have only one sense at a time. Poet's view of the world will never give you enough information alone.

Are you two now designing games together, separately or both?

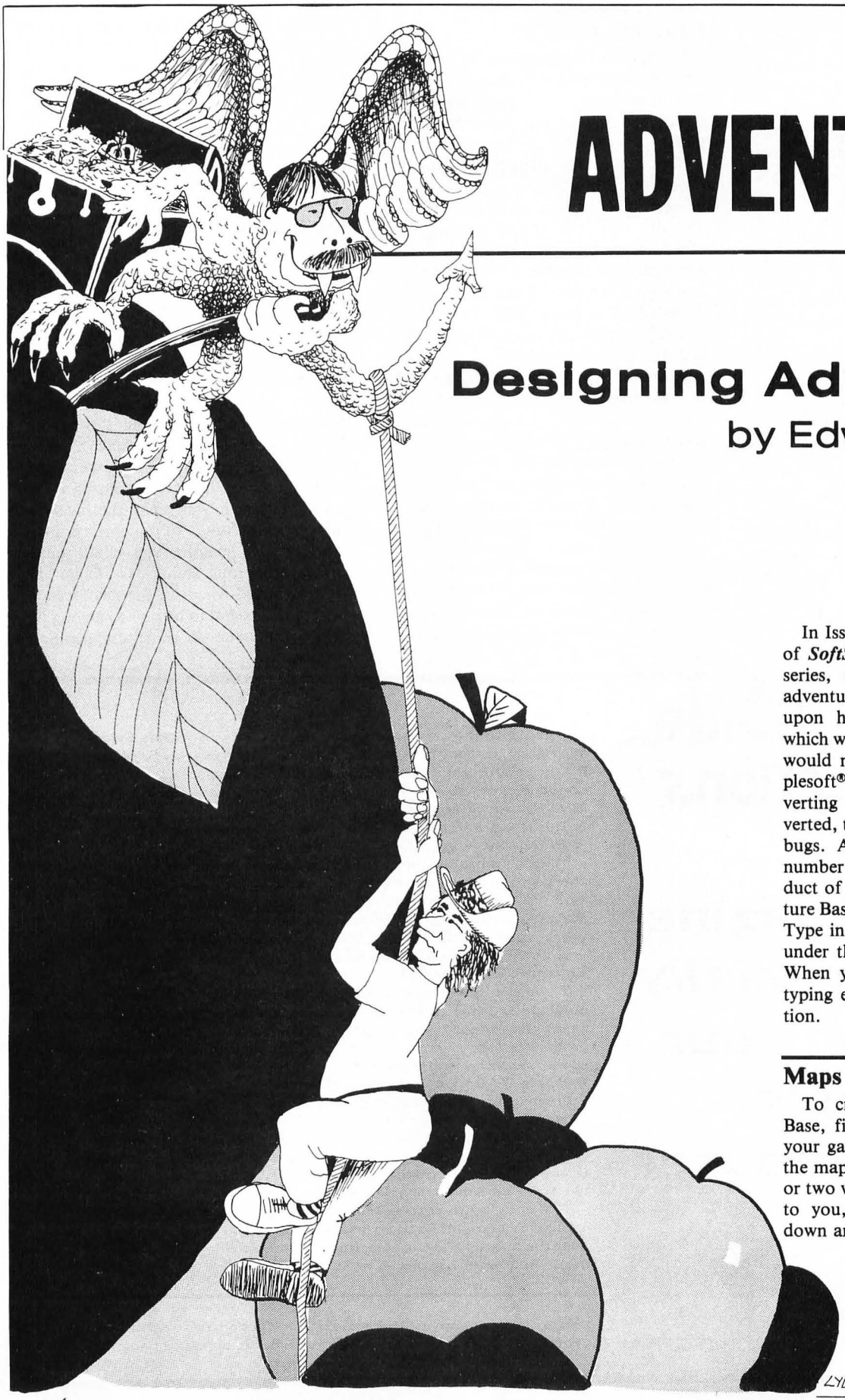
Blank: Both.
Berlyn: We are working on a new game system. It will be as different from *Deadline* and *Suspended* as they were from the *Colossal Cave Adventure.* In one sense it looks like the original adventure and in another sense it looks nothing like it.
Blank: At the same time we're working on things separately. Mike's working on *Infidel,* which will be out in November. I'm working with Dave Lebling on *Enchanter,* which will be out in October. And some other projects are kicking around.

In the distant or not-too-distant future, do you see our standard libraries being replaced by public software libraries, with possibly your games on the shelves?

Berlyn: The Library of Congress is now experimenting with videodiscs. So in that sense, yes.
Blank: I think that will happen — putting information on videodisc. Replacing traditional books won't happen until you can carry the device as conveniently as you can put a paperback book into your pocket. But whatever that device might be, I don't think it'll replace books. Each new medium developed has its own unique advantages and creative opportunities. Plays don't replace novels, and film doesn't replace plays, and TV doesn't replace film. Whether adventure games are literature or art, well...
Berlyn: Yes, it's in its infancy. At some point it will be literature.

What do you see in the future evolution of games themselves?

Blank: There's one important thing to realize — games can look different superficially, but on the most fundamental level, games don't change. The technology changes. It's that techno-philosophy that makes someone say, "This is a great game — it has this neat sound effect." I say, "Who cares?" It's not the technology that makes it a better game.
Berlyn: Is it fun? That's always our question.



ADVENTURING

Designing Adventures

by Edward E. Anuff

In Issue #32, Peter Kirsch, the author of ***SoftSide's*** Adventure of the Month series, shared the secrets of writing adventures with us. His article was based upon his Adventure Skeleton listing, which was for the TRS-80® computer and would not run on an Apple with Applesoft®. He included directions for converting the program, but once converted, the program still contained a few bugs. As I corrected them I made a number of enhancements. The final product of these modifications was Adventure Base, listed at the end of this article. Type in the Adventure Base and save it under the name ADVENTURE BASE. When you are satisfied that it has no typing errors, continue to the next section.

Maps and Room Descriptions

To create a game using Adventure Base, first make a map of the area in your game. Represent each location on the map as a box. In the box, write one or two words that will identify the room to you, and alongside the box write down any objects the player will find in it. Adventure Base can handle up to 179 locations, and I will discuss techniques for increasing this number through disk access further on.

Thus, at the medical center during interrogation of a prisoner, you have access to an EKG monitor, stimulus control panel, computer and subject comments, and even a small picture of the prisoner. In the chapel, the inputs and responses appear in comic book "balloons" above the appropriate figures. A simple, yet very effective, sequence involves whispering among conspirators in a darkened theatre. Also worth noting is the frequent appearance of small graphics embellishments which, though unnecessary, add to the enjoyment. For instance, you do not simply appear on the Island. Instead, a plane leaves an airport and moves off the screen. When you make an incorrect choice in Hangman, the Jumping Judge laughs. On the whole, the graphics of *Prisoner 2* are quite excellent.

Sound effects, generally simple tones, highlight computer activity (e.g. thinking, punching a card, scrolling a response across the screen). The effect is 1984-ish and, like good perfume, a bit irritating. Happily, you can throw a switch to turn off the sound. Besides preserving your sanity, this also speeds up the information displays.

Pros and Cons

In roughly thirty hours of play on both an Apple II+ and IIe involving several players, we could detect no significant bugs. Considering the complexity of *Prisoner 2,* this is amazing evidence of fine craftsmanship. One by-product of this care is an attribute found all too rarely among adventure games: it's fair! When you've lost, you know it; otherwise you can still win. The single apparent bug involves a way to garner free points (i.e. cheat) and may even be intended as a game ploy. In a game which threatens to reinitialize its own diskette, nothing is certain.

A frequently heard complaint: "I'm always getting thrown back into the maze," turns out to be invalid, since a single keypress will effect an exit (from the maze, not the Island). The documentation contains a vague hint concerning this; possibly it should be more explicit. Of more immediate concern is that the commands for movement on the Island are "N,S,E,W" but the display indicates "LEFT, RIGHT," etc. This seems an unwarranted bit of obfuscation which the author may wish to address in future releases.

The only significant problem experienced with *Prisoner 2* does not involve the game at all, but rather the manner in which a game in progress is saved. Another player cannot satrt play until the current game is resolved.

Something Special

Anyone, it seems, who "gets into" the game is likely to see *Prisoner 2* as something special. One experienced adventurer proclaimed simply: "... the best computer game I've ever played!" Beginning with the "Confidential" documentation (one of the best scene setters you will encounter in game literature), and continuing through to resolution of play, *Prisoner 2* is a superbly crafted adventuring experience. Surely among the more complex computer games, it will repay the involved player with hours of enjoyment in a variety of imaginative, challenging, often humorous scenarios. Do not be too surprised when, in the near future, *Prisoner 2* comes to be ranked among the classics of computer adventure gaming.

SoftSide™ Selections

The Magazine *Especially* For Your Apple® Computer

DV
$19.95

Apple® is a registered trademark of The Apple Computer Company.

Bound into the center of this issue, you'll find ***SoftSide Selections,*** the handy, pull-out booklet with program listings for your computer. If you bought your copy of ***SoftSide*** at a newsstand, your booklet contains this issue's Front Runner, ***Broadway,*** for the Apple®, IBM® PC, Atari® and TRS-80®.

This issue, ***SoftSide Selections*** for the Apple II family features:

- ***Broadway*** — you always get the current issue's Front Runner.

"There's a broken heart for every light on Broadway." Here's your chance to produce and direct a Broadway play. Can you get financing? Will it be a hit, or will the critics pan it? Time to get investors!

- ***Mad Scientist*** — In this interactive fantasy, you, as the hero of the story, must rescue the mad scientist's beautiful daughter before her insane parent blows up the house.

Enhanced Disk Version

If you don't like typing, you need the ***SoftSide*** Disk Version (DV). ***SoftSide*** DV has all the programs in ***SoftSide Selections***, plus the latest installment of the ***SoftSide*** Adventure Series and a bonus program. You get all this, and the benefits that only a disk can offer: speed, reliability and versatility.

- **Apple DV Bonus Program: *Prisoner***

Prisoner is a huge, deliberately frustrating adventure, in which you must escape the totalitarian "Island," a bizarre prison camp for spies, like you, who know too much. This enormous game occupies the entire second side of a special, two-sided disk. Based on the British television program of the same name.

- ***SoftSide Adventure Series***

This issue's Adventure: ***Mad House,*** by Peter Kirsch.

Unjustly committed to an insane asylum, you must wend your way past the guards and the colorful inhabitants, who include most of the major figures of history — or so they say...

To order your copy of this issue's Disk Version, or to subscribe to the ***SoftSide*** Disk Version, see the bind-in cards opposite page 40.

PRISONER 2

Reviewed by Jeff Hurlburt

The time is the present, and in this flowering of what is referred to euphemistically as "The Computer Revolution," you have at last come to your senses. Oh yes, you've shelled Sneakers, bombed Brick-Out, aced-out Mini-Golf, demolished Donkey Kong, and stabbed your best friends in Santa Paravia. The Pyramid of Doom holds no terrors for you, and Castle Wolfenstein is just another place to get a glass of Liebfraumilch. But now you've ripped free of the electronic cerebrum. You've rolled up your Ultima maps, slain your last dragon, pored over your final game review. Never again will you key in a ***Softside*** listing. You've dropped out!

In a final gesture of defiance, your personal computer (or perhaps the computer at your place of employment) analyzes your recent, aberrant behavior and spits out a three digit number. This, it coldly informs you, is a coded summary of the mental processes which led to your "resignation."

You have dropped out, and SOMEBODY wants to know why. SOMEBODY is very concerned about this dangerous deviation, this challenge to its pervasive, numbing, and (to SOMEBODY's way of thinking) beneficent manipulations. How is it that suddenly you (and a very few like you) have ceased to nibble greedily every byte from the pernicious purveyors of computer pleasure? So it is that, hardly a day after publicly refusing to challenge the high score at Midnight Magic, you awake to find yourself on the Island.

The Subtle Cell

Among your first encounters with the new realities of your situation is the maze. Small insets depict both a top and 3D representation of your position. Though an easy (undocumented) way out exists, do not expect to win the game without a few legitimate maze traversals. The Island, as you quickly discover, is not the sort of place one simply departs on a whim. Indeed, you are a prisoner in a subtle cybernetic wonderland that might drive the Mad Hatter sane. Rather than dank cells with steel bars you find manic cleanliness, a deceptive freedom of movement, unfailingly agreeable fellow inhabitants — and the omnipresent, mysterious "Caretaker," who is intensely interested in what he calls your "progress."

So you undertake to explore this strange environment. First, perhaps, you enter the general store where you may purchase all manner of useful (albeit non-functioning) items. Indulging your well-conditioned attitude towards great literature, you visit the library. To be sure, at first you may find it a bit frustrating when your selections disappear into a chute labelled "451." Suspecting that certain key gaps remain in your educational experience (blocks, as it were, to self-actualization), you may seek enlightenment at the little red schoolhouse. Here, with the rigorous application of individualized instruction, the successful candidate may obtain a diploma (emblazoned with the motto: "Ignorance is Strength").

Island Life: Sweet Amnesia

Naturally, as a conscientious citizen, you will wish to put in an appearance at the courthouse where the Jumping Judge administers justice via an ongoing game of Hangman — and guess who's being hanged today! The vocabulary is pure civics and you can enhance your standing in the community considerably by winning a few "not guilty" verdicts. Alas, as the stakes mount (e.g. hundreds of credits if you win vs. "initialize diskette" if you lose) the probability of drawing a nonsense word increases. With improved status you will have an opportunity to engage in financial transactions at the bank, visit the medical center and direct the interrogation of a recalcitrant member of the community, or even try your hand at managing the Island itself from city hall.

But then "all work and no play...." As it happens the Island boasts a wealth of relaxing as well as recreational settings. Aside from a plush bar, it has a cozy diner, a theatre, a circus, a casino and a health spa. In time you may even forget that the Island is a place from which you were trying to escape. When a bank clerk or store attendant casually requests your three digit "resignation code," you may give it without a second though. Then the mysterious "Master" of the Island will have what he (?) wants! SOMEONE will be very pleased to welcome you back into the flock of computer slaves.

Being tough-minded, wily and resourceful, you will not (it goes without saying) be broken. You will resist! Surely, you reason, others like yourself are on the Island: principled men and women who have, by dint of superior intellect and will power, held fast to their individuality. Yes, you will have this thought and, with luck (!?), you will make contact with the ubiquitous underground society known only as "The Brotherhood."

Scheme vs. scheme, subversion vs. sabotage, brain against brain: is this all there is to life on the Island? Alas, nowhere can you find a bit of solace, a sympathetic ear. So you seek that serene sanctuary, the chapel. Here at last is balm for the troubled soul and, if you could but ascend a staircase of platitudes, an easy escape from the Island. Ah, but the Island has no easy escape! Computers are not, after all, irrational — and what is the Island if not a computer? You may be sure the exit is simplicity itself. Finding the exit is another matter.

Imaginative Special Effects

With twenty major buildings, most of which represent sub-games of varying complexity, the total number of different displays (all hi-res) is quite large. *Prisoner 2* includes adventure, maze, word game and arcade scenarios, so it employs a variety of graphics techniques and formats. Such a load, no doubt explains the relative simplicity, even blandness of many frames. This limitation is especially apparent in the few arcade sequences.

Still, the stock in trade of *Prisoner 2* is the presentation of verbal information. It arouses fantasy, cleverly involving you more deeply in the situation.

From Edu-Ware Services, Inc., P.O. Box 22222, Agoura, CA 91301. System requirements: Apple® II with Applesoft, 48K RAM and DOS 3.3. Suggested retail price $32.95. Also available for the Atari® 400/800 with 48K at a suggested retail price of $39.95.

that *Genesis* allows to happen are achieved with only five types of actions. They are:

- TYPE — types a message to the player. Each message is given a number and is associated with a flag. The message for a particular flag is typed automatically when a command causes a flag to be checked and the flag is "false." A message may also be typed in response to a command even if the associated flag is not checked. This gives you the flexibility to type appropriate messages at any time, and to use a single message in a variety of situations. Message number 1 is reserved for the old favorite "IT IS TOO DARK TO MOVE SAFELY," although you don't have to include a light in your adventure if you don't want to.
- MOVE — moves an object to another location. A special location called LIMBO is used to move objects in and out of the game. Thus, you can have objects which disappear and reappear at various points in the game. MOVE also makes objects takeable, so a non-takeable object may be made takeable by moving it to where it already is.
- TELEPORT — moves the player to any location in the game (except LIMBO, where the player may never go). Aside from the obvious purpose of this action, you may also use it to gain access to locations that must be entered in some special way (i.e., other than going north, south, east or west).
- FLAGTRUE and FLAGFALSE — set the value of a specified flag to "true" or "false," affecting the capability of commands that test that flag.

Nine commands common to many adventures are built into the system. They are LOOK, LOOK (object), GET (object), TAKE INVENTORY, GO (direction), DROP (object), SAVE GAME, FULL TEXT and BRIEF TEXT. Their meanings are obvious to anyone who has ever played an adventure game.

The final part of the creation process is to use the "Texter" to compose the long descriptions of the locations in your adventure. This is optional, and if left out, only BRIEF TEXT (the initial playing mode) should be used. You have eight screen lines in which to place the description of each room. Each description is stored in its own file, and as mentioned above, any attempt during play to access a non-existent room description crashes the game. Thus, if you create a description for one room, you should create one for every room.

Creating a game takes considerable planning, although the process is far less complex than writing the whole program from scratch. The Creator does have its annoying features, though. In mapping, defining objects and creating commands, you must respond to a series of questions from the program. If you wish to change anything in a room, object or command you have previously defined, you must retype the answer to every one of the questions, no matter how minor the change. For example, if you misspelled the name of an object, to correct it you would have to type in the correct name, and also retype its characteristics, explanation and description. An "edit" option allowing you to change just a single item would be a welcome enhancement. Only in the Texter do you have some flexibility in this regard, with use of the right and left arrow keys for editing location descriptions.

There is no graceful way to delete an object, location or command from your game. You could use the "change" option to render it meaningless, but it would be nice if there were an option that removed the element altogether if you decided that you no longer needed it.

The Player

After creating your adventure and saving it on a separate disk, you invoke the Player. A "HELLO" program is included in the Player package so you can make a disk that automatically boots the Player itself. When the Player begins to run, you must specify the name of the file in which your game was saved by the Creator (five character maximum for this file name). The name you gave your adventure, up to 39 characters long, is then zapped onto the screen in a semi-clever fashion, but it disappears after a second or two, without any intervention from the human player, who is dumped abruptly into the game.

While the Player works well enough, here you begin to notice the absence of some common adventure game features. There are no command abbreviations; you have to type "GO NORTH", "TAKE INVENTORY", etc., rather than the frequently used "N", "I", and so on. Only the four major compass directions, plus UP and DOWN, are included. There is no provision for keeping score or counting moves. Worst of all, the game never ends. The adventurer cannot be killed (which would presumably end the game). Although I'm not particularly thrilled when this happens to me in an adventure, I consider it an essential hazard. Even if the objectives of the adventure are accomplished, the computer continues to type "YOU DO WHAT?" at you until you press RESET or turn off the power. If you give a copy of your adventure to a friend, it may not be a compliment when he tells you, "I just couldn't stop playing it."

The Manual

The *Genesis* manual is barely adequate. It is cheaply produced on folded 8½ × 11 inch paper with a two-staple binding. This is no big deal in itself, but it is consistent with what's inside. The general instructions are fairly complete, but the tutorial section is not. It begins to guide you step-by-step through the creation of a small sample adventure, then leaves you hanging. Rather than tell you what to type and when, it often tells you what a part of the game looks like, and you must refer to earlier parts of the manual to figure out how to accomplish it. You'll soon learn that commas and colons are not allowed as part of a message. You will discover this when you try to enter the commas and colons included in the messages given in the tutorial. Fortunately, the creation process is simple enough that once you have worked through the example you won't need to use the manual very much.

Even with its limitations, you will enjoy using *Genesis*. I found no obvious bugs in the program itself, design flaws aside. You will not make any breakthroughs in the adventure genre with this package, but if your goal is to put together an adventure that you and your friends will enjoy, you can do it fairly easily with *Genesis*. It contains sufficient tools to construct challenging puzzles, and you will find your own imagination a more critical limiting factor than any package feature.

You must obtain a licensing agreement from Hexcraft if you intend to market an adventure created with this package. I am sure some people will attempt to do this, but given the state of the adventuring art, I find it unlikely that anything put together with *Genesis* will go down as a classic. But if you do intend to create a classic, and you haven't written an adventure before, *Genesis* will teach you a lot about the basic adventure elements and pave the way for your future masterpiece.

Genesis
The Adventure Creator

Reviewed by Cary W. Bradley

"PLAY GOD," the package shouted, in big, yellow letters. Having for years secretly harbored the belief that there were elements of the Divine in my nature, how could I resist? According to the claim on the package insert, I could "create worlds from the void" with *Genesis,* and I could hardly wait to get started. Though the experience left me feeling somewhat less than a deity, I was, indeed, able to build a computer game world that conformed to my specifications.

Genesis is designed for those who have played computer adventure games and would like to create their own without going to all the trouble of writing a full-blown program. It does this adequately, and fairly easily, but with limitations which I will discuss. The *Genesis* manual assumes that you are somewhat familiar with adventure games, and I will make the same assumption in this review.

There are two main sections to the program: the Creater and the Player. The Creator, on the copy-protected distribution disk, is the utility that allows you to construct your adventure; the Player, on the unprotected flip side of the disk, allows you and others to play your adventure in a normal DOS 3.3 environment.

From Hexcraft, Inc., Cambridge, MA 02238. System requirements: 48K Apple II+, or Apple II with Applesoft ROM or Language Card, one disk drive and DOS 3.3. Suggested retail price: $49.

The Creator

In *Genesis,* the adventure game has been reduced to its essential elements. All you need to do is to specify how these elements are to interact in order to breathe life into your creation. As the Creator, your first task is mapping, in

which you give names to the locations in your adventure and specify the direction the player must move to go from one to another. Up to 99 locations may be included in a single adventure, although only 65 will fit on one disk. If your adventure has more than 65 locations, you must notify the player when it is time to switch disks, as there is no built-in feature for this. This is mentioned briefly in the manual, but requires very careful planning. If the program ever tries to locate a room description not on the disk currently in the drive, it crashes.

The next logical step is to define the objects the player encounters in your world. You specify the initial location of the object and whether it is "takeable." For untakeable objects, you may define a "not-takeable message" optionally, which prints if the player attempts to take that object. (Example: You type TAKE ELEPHANT; the computer responds, HOW ARE YOU GOING TO CARRY A TWO-TON PACHYDERM, FOOL?) Each object has an "explanation," which on entry to a location, tells the player that the object is there. If you don't assign an explanation, the player has no way of knowing that the object is in the room (which may be your intention in some situations). You may also give each object a "description," which is printed when the player looks at the object. If you omit this, it defaults to "It's just an ordinary _____."

Once you describe the objects, you can define commands. These are the two-word variety, which are familiar if you've ever played an adventure. You can specify a particular location in which a command works, an object that must be carried for the command to work, an object that must be "accessible," and an object that can *not* be carried (all optional). You may also specify one or more "flags" to be checked and found "true" before the command will work. The system maintains 99 flags, each of which you may use to represent a condition which is true or false in the context of the game. Flags are given an initial value, and may be changed by things that happen as the game progresses.

You must specify at least one action that takes place when the command is executed (all conditions mentioned above are met). The basic occurrences

PC® SoftSide™ Selections

The Magazine *Especially* For Your IBM® PC Computer

Bound into the center of this issue, you'll find ***SoftSide Selections,*** the handy, pull-out booklet with program listings for your computer. If you bought your copy of ***SoftSide*** at a newsstand, your booklet contains this issue's Front Runner, ***Broadway,*** for the IBM® PC, Apple®, Atari® and TRS-80®.

This issue, ***SoftSide Selections*** for the IBM PC features:

- ***Broadway*** — you always get the current issue's Front Runner.

"There's a broken heart for every light on Broadway." Here's your chance to produce and direct a Broadway play. Can you get financing? Will it be a hit, or will the critics pan it? Time to get investors!

- ***Around the World Adventure*** — In keeping with this issue's theme of adventures and simulations, ***SoftSide*** presents this interactive fantasy, in which you must replicate Phineas Fogg's circumnavigation of the Earth.

Enhanced Disk Version

If you don't like typing, you need the ***SoftSide*** Disk Version. The Disk Version (DV) has all of the programs in ***SoftSide Selections*** on one handy disk, plus the latest installment of the ***SoftSide*** Adventure Series.

- ***The SoftSide Adventure Series***

This issue's Adventure: ***Mad House,*** by Peter Kirsch.

Unjustly committed to an insane asylum, you must wend your way past the guards and the colorful inhabitants, who include most of the major figures of history — or so they say...

$19.95

IBM® PC is a registered trademark of International Business Machines Corporation.

To order your copy of this issue's Disk Version, or to subscribe to the ***SoftSide*** Disk Version, see the bind-in cards opposite page 40.

SOFTSIDE ORDERING INFORMATION

FORM OF PAYMENT

USA

VISA, MasterCard, certified checks, money orders and personal checks are accepted.

Canada/Mexico

The preferred method of payment is by VISA or MasterCard. A bank check is acceptable if it has been preprinted for payment in U.S. dollars. No personal or company checks accepted.

Other Foreign Orders

Payment must either be by a bank check drawn on a U.S. bank payable in U.S. dollars or by affiliated bank credit cards of VISA or MasterCard.

GUARANTEE

All software is guaranteed to load and run. If you experience difficulties with the product within 30 days, it may be returned for replacement. Send your properly protected tape or disk to the attention of the Customer Service Representative and include your name, address, and the reason it is being returned.

LIABILITY

All software is sold on an as-is basis. **SoftSide** assumes no liability for loss or damage caused or alleged to be caused directly or indirectly by products sold or exchanged by them or their distributors, including, but not limited to, any interruption in service, loss of business or anticipatory profits or consequential damages resulting from use or operation of such software.

PRICES

Prices are subject to change without notice. We are not responsible for typographical errors.

Unless otherwise noted in a published advertisement, the following prices are in effect as of this issue:

	USA/Canada APO/FPO	USA/Canada FIRST CLASS Mexico	Other Foreign
SoftSide Magazine* (yr)	$30	$40	$62
SoftSide Magazine* (6 mo.)	$18	$23	$34

	USA APO/FPO	Mexico Canada	Other Foreign
CV (year) & magazine	$99	$119	$149
(6 mo.)	$55	$65	$80
DV (year) & magazine	$149	$169	$199
(6 mo.)	$79	$89	$104

***Includes SoftSide Selections.**

BACK ISSUES

Minimum order — $10. Price includes shipping to the 48 states only. Alaska, Hawaii, Puerto Rico, APO/FPO, and ALL foreign orders — postage is additional.

ALL Foreign orders and all magazine/media combination orders — Order directly from **SoftSide, 10 Northern Blvd., Northwood Executive Park, Amherst NH 03031.**

IBM® PC

NIGHT MISSION PINBALL

Reviewed by Robert C. Gray

For me, it was the summer of 1963 in Atlantic City. The arcade was crowded. I stared at those Las Vegas beauties, shoved a sweaty quarter into the slot, and knew, as the first ball glanced off the bumpers, I would conquer this baby. Ten consecutive free games! I never beat that record. In those days, it was man against machine. And the only thing you could count on was luck and body English. How times have changed.

Night Mission Pinball is more than just a simulation of arcade pinball, it's the victory of microprocessor technology over simple mechanics. It turns what was a physical game of chance into a game of intellectual choice. What I would have given, as a teenager, to adjust the tilt sensitivity, increase the ball speed or, in my most desperate hours, lower the free game score. *Night Mission* gives you all of these options and more.

The game's theme is a WWII night mission bombing raid over Japan. You can play a single ball or up to four simultaneously. The game area presents you with a series of targets, chutes, bumpers and spinners with the most elaborate set of chutes and tunnels in the upper quarter of the screen. You insert a quarter (press Q), press S to release the imaginary springcoil and set the ball into play. Your score is recorded on the left side of the screen along with those of potentially three other opponents.

By Bruce Artwick (subLOGIC Corporation, 713 Edgebrook Drive, Champaign, IL 61820). System requirements: IBM PC with one single-sided drive, 64K RAM, color monitor and IBM color/graphics monitor adapter. This game is also available for the Apple® II family and the Atari® 400/800. Suggested retail price: $39.95.

"Night Mission" lay out screen display.

Just Like The Real Thing

Night Mission plays like the games I remember. The simulation is very well-conceived. You have everything from hole kickers that hold the ball, then hurl it suddenly into the game field, to rollovers that let you amass bonus points. The flippers, operated with left and right shift keys, have the feel and sweep angles of the real thing. You can bump the game side to side by pressing a key to the right or left of the keyboard. As usual, if you bump it too much, you "tilt" and lose the play. Even the pinball sounds are the same, including a sound to simulate fighter-bombers.

There are numerous ways to rack up points. *Night Mission* has a series of easy and difficult rollover sequences. The largest sequence rolls over a series of letters that spell out "night." Getting the whole sequence gives you bonus points. When the ball finally drains past the flipper, bonus points are counted with a set score attached to each, usually 1000.

Endless Possibilities

But there's a lot more to *Night Mission* than the game we ancients remember. The creators had to study all the pinball parameters — 38 in all — to produce a convincing simulation. Now imagine what it's like to be able to vary each of these parameters separately, tailoring the game to suit your pace or adding new challenges by changing a combination of variables. You are given ten separate playing modes to start. These range from "easy" to "high difficulty" to something called "cosmic," where you see the trails that the ball leaves as it moves through space — definitely a voyeur's paradise. Or you can modify each of these standard modes with your own tricks. Like adding ten balls or changing the tilt effect from a normal 25 to 255! All of this madness can be stored as a separate user-defined mode so you can save the changes but not modify the original. What's more, you can save your high score with any user defined mode to remind you of former glory.

If I can find any cloud in this world of endless possibilities, it's that of being a kid unleashed in a candy store. Once you start modifying the bumper impulse, the ball speed, the tilt sensitivity and any of a whole range of variables, it's hard to know what you'll end up with — maybe a stomach ache. I made a certain set of modifications that resulted in a no-exit situation. The ball could have moved for infinity between two bumpers if I had not shut down the PC. Not all of my experiments produced an improved game or even one worth playing — which all goes to show you how much has happened in the twenty years since I played the boardwalk arcades. It still takes fast reflexes and good intuition to be a pinball wizard, but a Ph.D. in physics doesn't hurt either.

Sides Of SoftSide

PC/SIDE

Review
Night Mission Pinball
Reviewed by Robert C. Gray
Rack up points in a WWII night bombing raid over Japan as you adjust the tilt sensitivity, increase the ball speed, and even lower the free game score in this arcade pinball simulation — the victory of microprocessor technology over simple mechanics. 56

APPLE® /SIDE

Reviews
Genesis
Reviewed by Cary W. Bradley
Become the God of your own universe, design strange new worlds, and populate them with bizarre creatures, using this versatile adventure-creation utility. 58

Prisoner 2
Reviewed by Jeff Hurlburt
Are you at a pleasure resort or in a prison? Sometimes the distinction is not so clear. But SOMEBODY is watching your "progress," and a subtle scheme threatens to cajole you into revealing your "resignation code." 60

Article
Adventuring on the Apple
by Edward E. Anuff
Here's a translation and update of Peter Kirsch's TRS-80 Adventure Base for the Apple. With this skeleton program, you can flesh out an endless variety of new adventure simulations. 62

For reviews of other products available for the Apple, see pages 56 & 68

ATARI® /SIDE

Reviews
Ultima II: Revenge of the Enchantress
Reviewed by Carl M. Firman
Time travel, alien worlds and ferocious monsters confront the Hero of this adventure. Each time you play, you can program your character's personality with different mixes of virtues like stamina, courage, agility and wisdom. 68

Jumbo Jet Pilot
Reviewed by John Ludtke
Put yourself in the cockpit of a Boeing 747 and thrill to the exciting problems of taking off, navigating and landing the famous jumbo jet airliner. The instrument panel is awesome in this realistic simulation, but with a little practice, you'll earn your wings. 70

Shamus Case 2
Reviewed by David Plotkin
The little detective returns for another mystery case involving arcade skills in the solution of the adventure. 72

Matchboxes
Reviewed by David Plotkin
A well-done adaptation of the TV game *Concentration, Matchboxes* makes excellent use of color, animation and sound. 73

Article
Exploring The Atari Frontier
by Alan J. Zett
Manipulating Players and Missiles — more than you ever wanted to know, almost. Learn how to handle the housekeeping routines which control the precedence of one player or missile over another. 74

For a review of another product available for the Atari, see page 56 & 60

TRS-80®/SIDE

Review
Fredericksburg
Reviewed by Stuart Hawkinson
Civil War buffs will enjoy laying battle plans and commanding troops in this simulation of the famous confrontation between General Lee and General Burnside on the Rapahannock. 84

Are you STILL Typing?

If you type in your programs from ***SoftSide*** every month, you're spending a lot of time at the keyboard before you ever get to see the software we produce. By the time you've typed in one program, our DV and CV subscribers have played several games, integrated the ***SoftSide*** utilities into their software library, and probably had the time to read the articles and reviews in their issue of ***SoftSide*** Magazine.

Wouldn't you rather spend your valuable time **using** your software instead of **typing** it? Then there's no time like the present to subscribe or convert to ***SoftSide DV*** or ***CV!***

SoftSide CV

SoftSide's Cassette Version (CV) offers you an inexpensive way to enjoy your programs without hours of typing or hunting for errors. PLUS you'll receive a BONUS program every month, usually an adventure. All programs are tested and ready to RUN!

CV gives you the programs offered for your system each month in ***SoftSide*** plus the BONUS program on a tape, plus a copy of ***SoftSide*** Magazine — 12 tapes and 12 magazines for only $99.

SoftSide DV

SoftSide's Disk Version (DV) offers you not only the programs listed in each month's ***SoftSide,*** but **two** BONUS programs as well. Only the documentation for the bonus programs will appear in ***SoftSide*** magazine, **not** the code. The bonus programs will be of every conceivable type — multiple and Machine Language programs, modified languages, ongoing modular programs, adventures, and software so extensive, it would take an entire issue of ***SoftSide*** just to print the code. You'll receive 12 disks and 12 magazines — all for only $149.

Feel Like You're Missing Something? You Are!

Don't wait. Order your subscription to ***SoftSide DV*** or ***CV*** today. Use the convenient order card located elsewhere in this issue. For the convenience of MasterCard or VISA holders, we offer an installment payment plan for ***DV*** subscriptions: Pay just $38.50 per month for four months (a total of $154, which includes a $5 billing charge). If you already subscribe to ***SoftSide*** magazine, you can convert the remainder of your subscription for only $9.92 per disk or $5.75 per tape. Just check the convert box on the order card and we'll bill you for your conversion cost. For orders outside the USA, see the "SoftSide Ordering Information" located elsewhere in this issue.

Computerists are offered the rare opportunity of marching into a new frontier. Advance to the front of the parade by subscribing to *SoftSide DV* or *CV,* the magazines of the future — available today.

DED

the surface systems will soon fall out of balance, and shorten the life span of both the surface dwellers and yourself. To complicate matters, you find that not all of your robot helpers are functioning properly either. Good luck! You're going to need it.

As in *Zork,* the command entry is extremely flexible. You are not limited to terse phrases like "Get Rod" or "Go North" because *Suspended's* internal parser can recognize complex phrases like "Waldo, get the hollow container, put it under the table and go to the Central Chamber."

If you have a printer, you can keep a printed record of the proceedings — a valuable feature if you don't like to make the same mistake twice.

You can save and restart games, eliminating the need for re-hashing subscenarios you have already solved. If you are clever enough to make it to the end without being replaced by one of your clones, there are two advanced levels of play available: Expert and Impossible. The latter should keep you busy for a while.

When you boot the single-sided disk, you are given the option of making a single back-up copy of the software. Anyone who has stayed up into the wee hours with coffee flying about their computer work area will appreciate this feature.

Packaging With Personality

Suspended's packaging is unique. A vacu-formed frozen mask with baleful eyes peers out of the box, imploring the software browser to pay the $49.95 price of admission. The instruction manuals are clear, complete and witty. The package includes a sturdy, high quality board, detailing the layout of the underground complex which is *Suspended's* micro-universe. Vinyl tokens, representing the six robots, help you keep track of your metal minions' whereabouts within the complex on the board.

One small annoyance is having to type out the name of each robot every time you issue an order. While the author, Michael Berlyn, has done an excellent job of software engineering overall, using the PC's function keys to pre-store the names of the six robots would have smoothed things out considerably.

Suspended is a text adventure, and as such is suitable for both the IBM monochrome display or a monitor connected to the color display adapter. Some people may prefer graphics adventures, but in all fairness, the current state of microcomputer graphics is still no match for the written word coupled with the imagination of the mind.

Suspended is a challenge worthy of any seasoned adventurer, providing a refreshing new scenario and a puzzle of logic guaranteed to keep you up well into the night. Consider acquiring it for your next quest into the unknown.

SUSPEN

Reviewed by Arlan Levitan

Not busy tonight? Need to kill some time? How about being cryogenically frozen for five hundred years or so? That's only part of the scenario in *Suspended,* one of Infocom's newest titles in its unique line of text adventures.

Most experienced adventurers are already familiar with the *Zork* series of adventures, also produced by Infocom. *Zork* adventures are noted for their wit, complexity and attention to detail. (See *Zork I* review on pg.50 of this issue.) *Suspended* continues that tradition and adds some new twists of its own.

Mission: Impossible?

Suspended is set on the planet Contra. As the winner of a planet-wide lottery, you have earned the dubious privilege of being stored in an underground bunker as a quasi-intelligent popsicle for the next half-century. In this altered state of suspended animation, your mind is linked to a series of Filtering Computers that monitor Contra's critical life support systems.

You have been charged with safekeeping of the planet's Weather Control, Food Production and Transportation systems. Sounds harmless enough, eh? Well, not quite. Your predecessor, one Gregory Franklin, went just a bit wacko after only four hundred and sixty-seven years, and unleashed the robot-taxis on the general populace in a deadly game of chicken. (Must have been an ex-New York cabbie.) Franklin soon tired of this and created murderous ice storms that snuffed thousands of Contrarians before a SWAT team permanently retired him.

The Commission that selected you has chosen wisely this time. Although your pyschological profile did reveal a few characteristics which might be termed "deviant," you're a generally civic minded sort. Knowing that the authorities have a couple of replicant clones of yourself waiting in the wings tends to keep you that way, too.

Robot Power

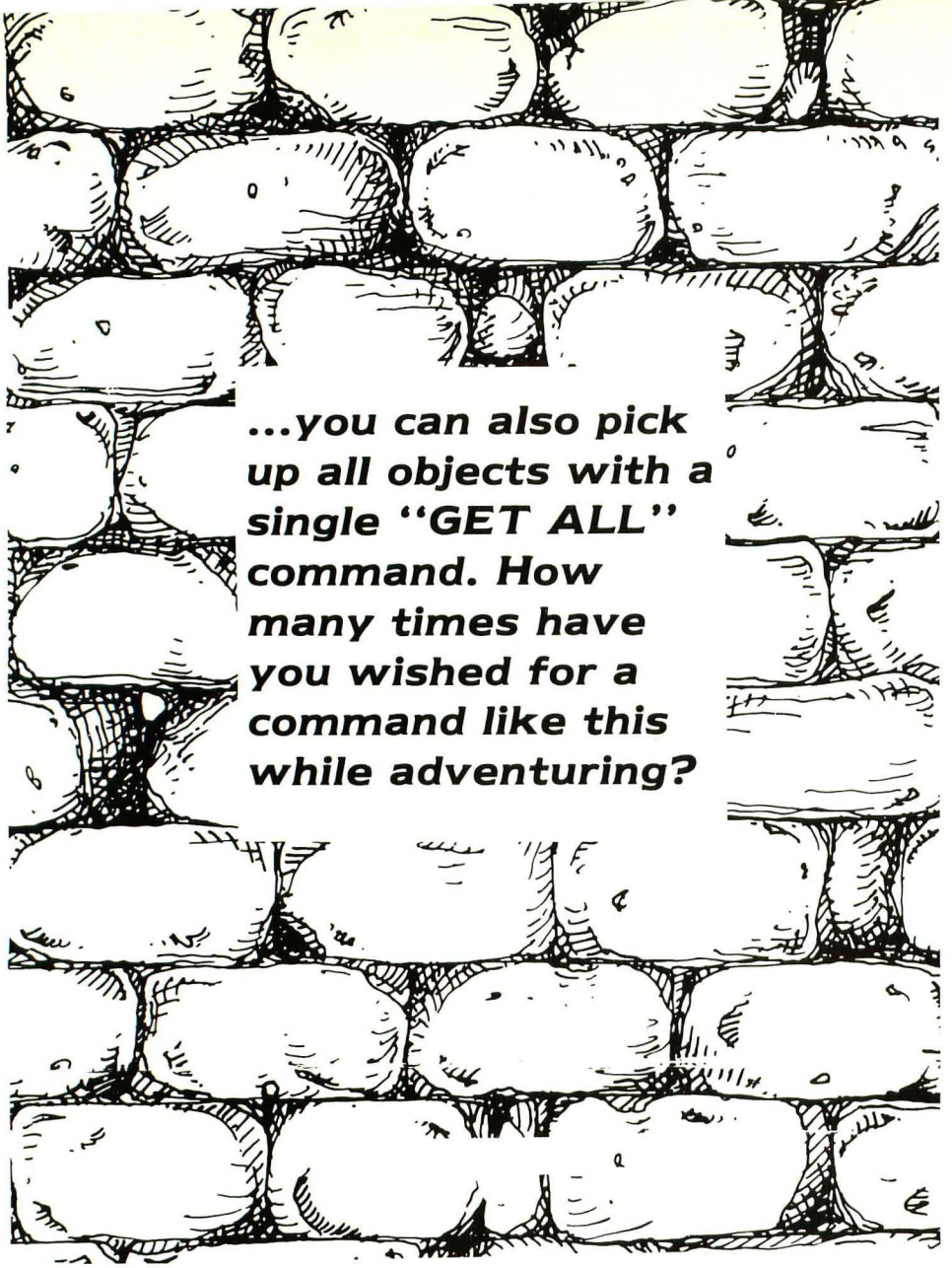
As the monitoring system awakens you, you realize that the only way to examine and manipulate your environment is through six specialized and suitably named maintenance robots. You may issue specific instructions to an individual robot. Iris provides sight, Auda is your listening ear, and Whiz lets you talk to any one of four information peripherals that contain information on objects, helpful advice and historical background.

The other robots are similarly specialized. Waldo is your workhorse, a grasping and manipulative type who would probably rather be an IRS agent. Sensa is the sensitive type; she (Yes, the robots seem to have gender here) can detect vibrations and radio emissions. Poet is the class act of the six: While possessing a very useful diagnostic sensor, most of the time his verbal descriptions are akin to a spaced-out Tim Leary on a particularly heavy trip.

You must piece together information obtained from the individual robots to solve a multitude of problems. The one immediately at hand is that a minor earthquake has caused a bit of damage. Left unattended,

---

By Michael Berlyn (Infocom, Inc., 55 Wheeler St., Cambridge, MA 02138.) System requirements: IBM® PC with 48K RAM, disk drive (system reviewed); Apple® II family with 32K RAM, 16 sector disk drive; Atari® with 32K RAM, 810 disk drive; TRS-80® Model I and III with 32K RAM and disk drive; Commodore® 64 with disk drive. Suggested retail price: $49.95.



very helpful when trapped in a maze or when you're trying to find your way out of the forest.

Since lengthy descriptions of rooms and objects are available, a BRIEF command causes only newly encountered rooms to be described in detail. After the first occurrence, only room names and objects are listed. Another command, SUPERBRIEF, causes only the room name to be displayed, and is very handy when you have to move quickly. Lengthy descriptions are available at any time with the VERBOSE command.

If you're a wait-and-see type of adventurer, you will appreciate the WAIT command. Normally no time passes while *Zork* is waiting for a command. WAIT causes the illusion of watching time go by. (There are situations where this can be helpful.)

Save It For Later

As with all quality adventure games, you can save games during play and restore them later when you're ready to continue the trek. *Zork* allows you to choose the name of the game; this means the total number of saved games is limited only by disk space. I enjoyed this feature, since most games allow only ten saves and I tend to need lots of saves when I go on an adventure.

To repeat a command, you type AGAIN. This is useful when dealing with very long commands. Also, a status line at the top of the screen indicates room location, score and number of moves. The SCORE commands show you your current score and a DIAGNOSE command indicates your current state of health. You are allowed only one backup of *Zork I,* as the disk is copy protected.

Overall, *Zork I* is an excellent adventure, and I recommend it without reservation. The adventure is challenging, the command processor is one of the best, error messages are concise, and all functions operate as advertised. *Zork* is a tough act to follow, but Infocom seems prepared to meet the challenge.

AVANT-GARDE ★ SPRITE GRAPHICS AND APPLE GRAPHICS TOGETHER FOR THE FIRST TIME ★ AVANT-GARDE

THE APPLE GRAPHICS & SOUND REVOLUTION IS HERE!

SUPERSPRITE & THE STARSPRITE SYSTEM

THE MIRACLE & THE MAGIC BEHIND THE MIRACLE

CALL US TO EXPERIENCE THE FUTURE

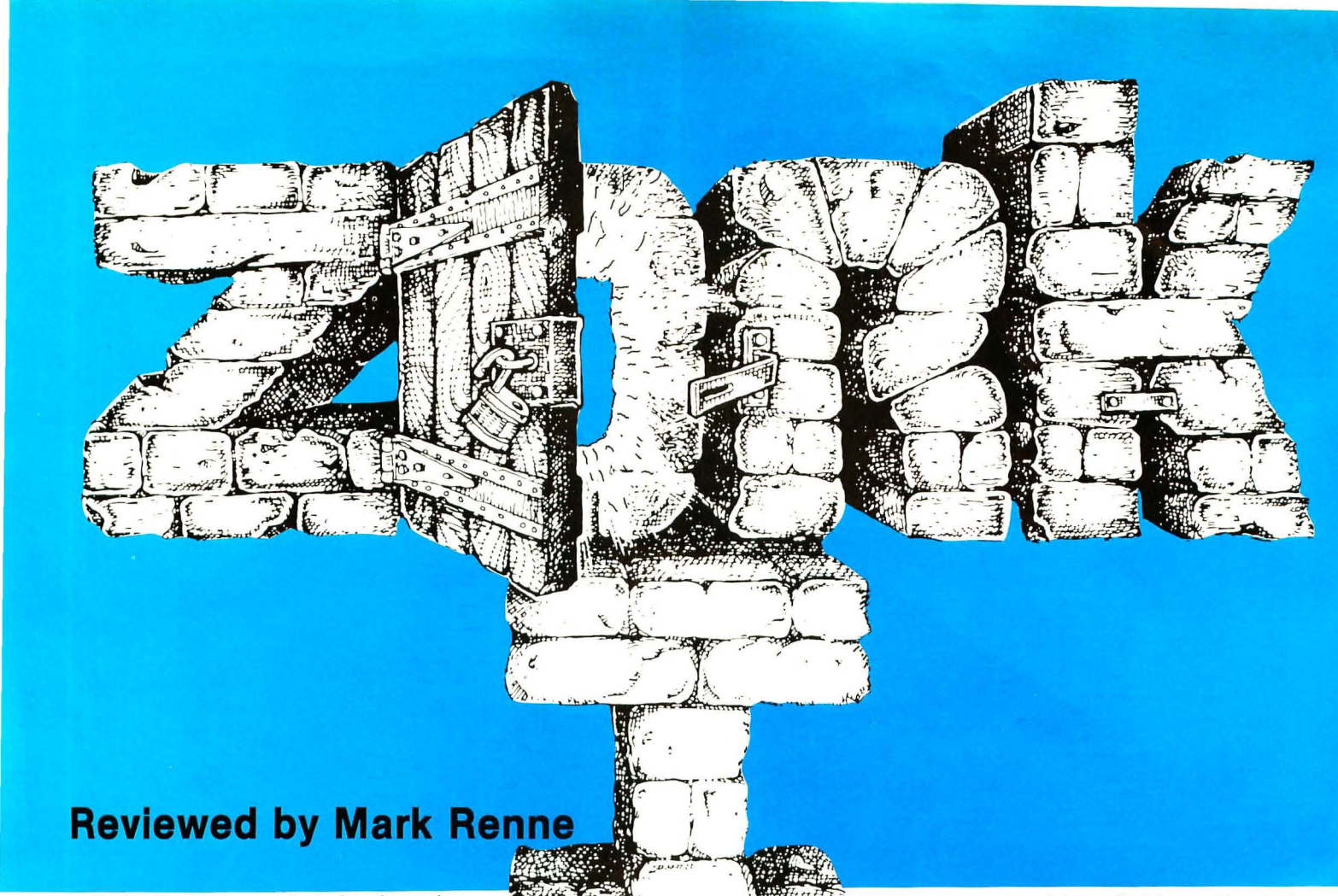
(503) 345-5202

Special 2 Minute Recording

(503) 345-3043

Direct Line

SPRITE GRAPHICS ★ MULTIPLE COLOR VARIATIONS ★ 35 PLANES ★ EXTENDED SOUND EFFECTS ★ NOW AVAILABLE FROM AVANT-GARDE



Reviewed by Mark Renne

Zork, the great one, has placed you in front of a house wherein lies an empty trophy case. Because of your superior good looks and intellect, he has choosen you to retrieve the lost Twenty Treasures of Zork and return them to said case. You will encounter many hazards and perils on your quest, but you are not the type to be stopped by the threat of death (or death itself).

Your travels are far reaching. On occasion you might find yourself in the great outdoors, floating down a river on a magic raft. At other times, you are lost in an endless maze. Or perhaps lost in a series of identical mine passages with no apparent way out. You know in your adventuring heart that there must be a way to open the dam's floodgates and let the water out so you can cross the reservoir. Perhaps I've said too much! It's all in fun; it's *Zork I!*

Zork I is the first part of a trilogy of text oriented adventures from Infocom. It allows adventurers to break away from the traditional verb-noun input and use complex sentences to communicate with the game. This, combined with the quality of the adventure itself, makes *Zork I* a "must have" for serious gamesters.

Zork I began the Infocom tradition of quality, not quantity text adventures. The game has no graphics, but you don't miss them since descriptions are so detailed. Infocom believes graphics of the mind are more effective than those on the screen.

From Infocom, Inc., 55 Wheeler Street, Cambridge, MA 02138. System requirements: TRS-80® Model I or III, 32K memory, and one disk drive; Apple® II family with 32K RAM and 16 sector disk drive; Atari® with 32K RAM and 810 disk drive; IBM® PC with 48K RAM, disk drive; Commodore® 64 with disk drive. Suggested retail price: $39.95.

Talking To *Zork*

Zork I's most impressive feature is the command processor, or parser. Most adventures force you to enter commands in a simple verb-noun format. For example, suppose you wander into a room and discover a sword, a lantern and a snake. In most adventures you must say "GET SWORD" and then "GET LANTERN", etc. In *Zork,* you can say "GET SWORD AND LANTERN THEN LIGHT LANTERN THEN KILL SNAKE WITH SWORD." This added flexibility makes the game much faster and much more fun. With the parser, you can also pick up all objects with a single "GET ALL" command. How many times have you wished for a command like this while adventuring?

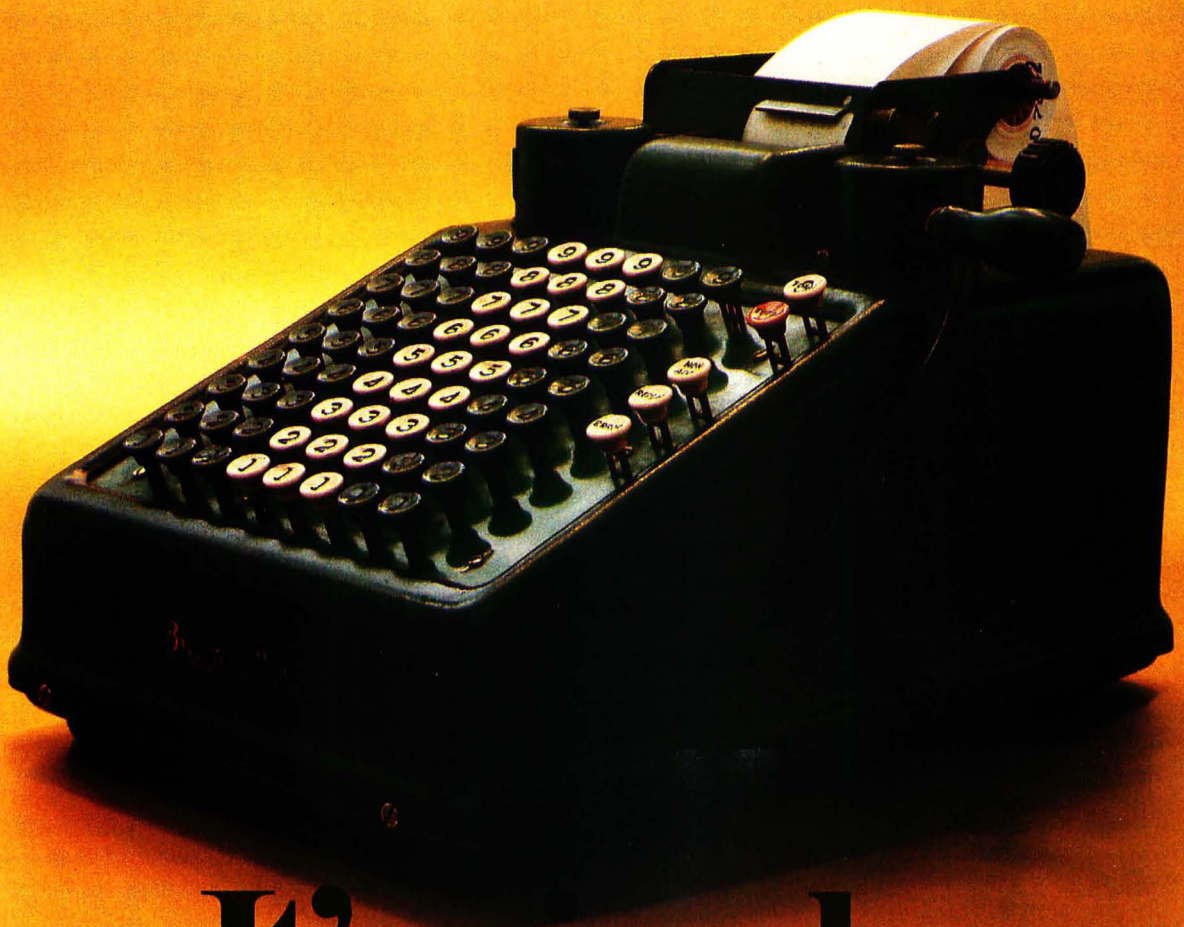
You can also ask *Zork* two types of questions, "where" and "what?" If a grue chomps on you, you can ask "WHAT IS A GRUE?" Some of *Zork's* comments are helpful, and most are at least informative.

If you type a command that doesn't contain enough information for *Zork,* it requests the missing information. Let's say you carelessly happen upon a troll who'd like to have you for lunch, literally! You're carrying a knife, a sword and a snake; you enter "KILL TROLL". *Zork* responds with "WITH WHAT" since you're carrying more than one weapon. You can answer the question by simply entering "KNIFE", without reentering the previous command. *Zork* also takes the work out of many other commands; when you issue a "READ LEAFLET" command, *Zork* automatically takes the leaflet and reads it. Most games would respond with a "You're not carrying the leaflet" statement.

Commands You'll Appreciate

I found the SCRIPT command handy. It allows you to dump a copy of the game transcript to the printer. You may also shut off the printer at any time with the UNSCRIPT command. Transcripts can be

Data work.



It's simple.

Now **Data Perfect**™ from LJK helps you organize your files and numbers like the adding machine first helped your grandfather. It keeps tax records. Lets you change files easily. List and edit addresses. Compares stocks. Stores expenses. It even calculates. Used with Letter Perfect™, you can even make custom mailings. Simply.

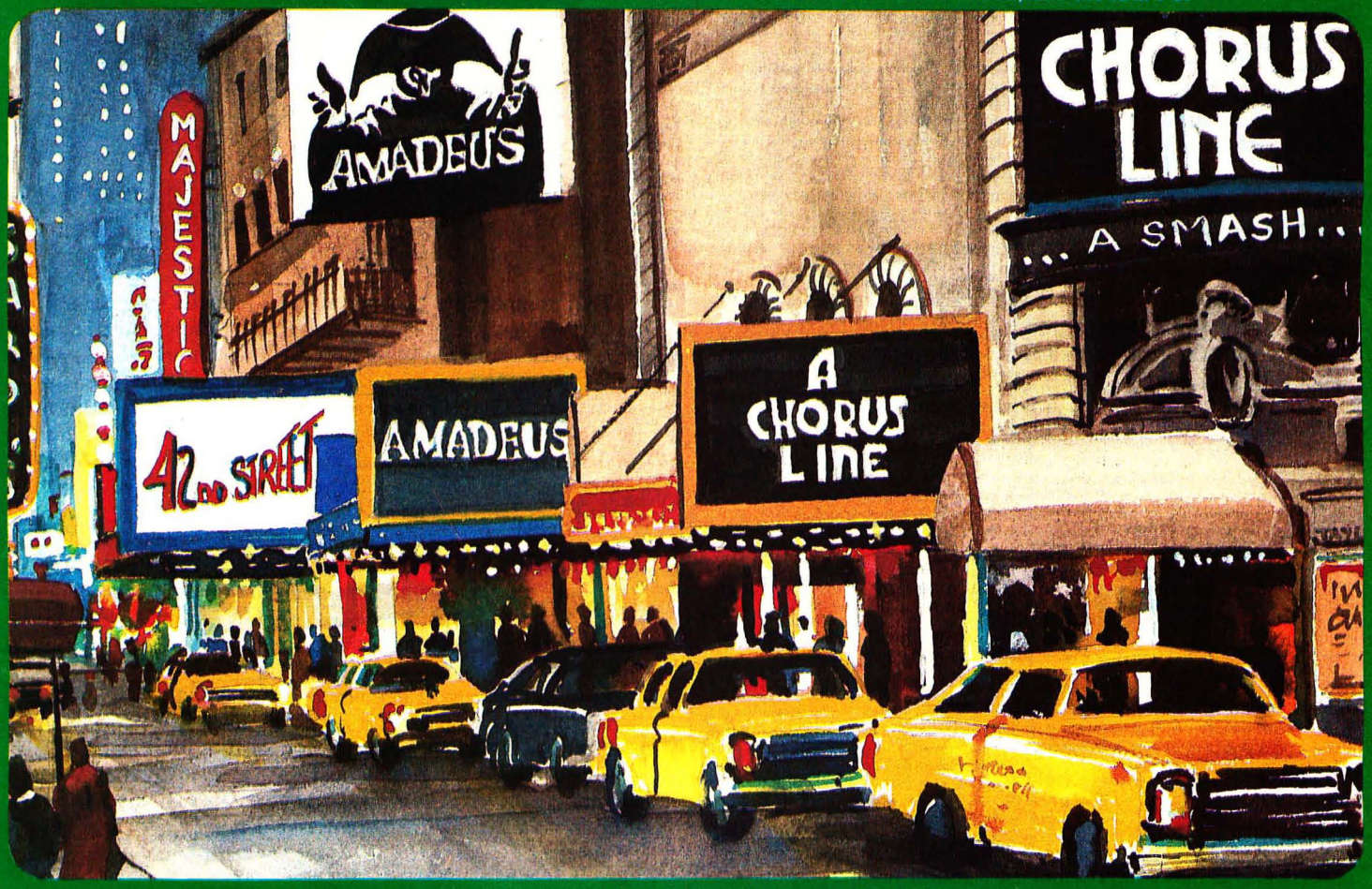
When it comes to practical software for Ataris, Apples and look alikes, Data Perfect is simple to learn. And hard to beat. Ask your dealer for a demonstration, or write LJK for more information.

LJK, INC. • 7852 Big Bend Blvd., St. Louis, MO 63119 • (314) 962-1855

© LJK Inc. 1983

BROADWAY

"There's a broken heart for every light on Broadway." This issue's Front Runner gives you the chance to produce and direct a Broadway play. Will your show be a hit, or will the critics pan it? Well, it's time to get investors! Broadway is for the Apple II, II+ and IIe, the Atari 400/800/1200, the TRS-80 Models I and III, and the IBM PC.



The booklet opposite contains all the instructions, listings, documentation, and SWAT Tables you and your computer will need to enjoy Broadway. Also available are the SoftSide Disk and Cassette versions (not available for all systems: see the bind-in cards and ads elswhere in this issue for more information).

SOFTSIDE SELECTIONS

FRONT RUNNER

Broadway for the Apple, Atari, IBM PC, and TRS-80.
by Robert Saturn. Translations by the ***SoftSide*** programming staff.

The roar of the crowd and the hum of the silicon chip are irresistible attractions to the exciting world of the theatre.

APPLE® VERSION

The Prisoner ..... Disk Version Bonus
by Edu-Ware Services, Inc.

Mad Scientist ..... Program
by Thomas Hanlin

ATARI® VERSION

Empire ..... Disk Version Bonus
by Donald Glover

Chasm Escape..... Program
by Jonathan D. Youngwood

IBM® PC VERSION

Around the World ..... Program
by Larry Williams. Translation by Fred Condo.

TRS-80® VERSION

Bee Wary ..... Disk Version Bonus
by Leo Christopherson

Flying the K-Hawk..... Program
by Al Ragsdale

SoftSide CV/DV ADVENTURE SERIES

Mad House for the Apple, Atari, IBM PC and TRS-80.
by Peter Kirsch

You find yourself committed to an insane asylum — by mistake. Guards patrol every entrance, lunatics stagger down the halls, and raving maniacs scream in the night. You are desperate, but freedom from the cuckoo's nest is only a few keystrokes away.

with a sign in the window that says, "No shirt, no shoes, no service. No robots." Why do you go to places that discriminate against robots?

Easy Murphy. Calm down or your CPU chips will overheat. You've got bugs in your operating system again. Let me do a quick diagnostics check...

Bugs my Video Sensor! I'm not the only robot that gets shoved off in a corner. Don't you care? Think about all the robots used only for menial household chores. A silicon chip is a terrible thing to waste. All those idle robots could be scanning the networks for useful data, or crossbreeding hybrid zucchini, or teaching young humans recursive analytical trigonometry. Just the other day I heard about one of my clones (in fact it was shipped the same day I was). Developed rust. Did you know that robots catch social diseases? The real tragedy is that once a robot catches rust, humans will have nothing to do with it again. Not one case of a human catching rust from a robot has ever been documented. And I've found out on the bulletin boards what horrible things happen to rusty robots. Crushed! Melted down! Recycled....

Confounded machine. Tripped every circuit breaker in its central nervous system. Random Fantasy Generator must be overrunning the delimiters again. Robot Bulletin Boards. Rust. Repression. Recycling? Good grief. Where's the manual for that RFG card?

"Help! Robots are being held captive in very damp underground garages! Help! Robots are ...."

Hmmm....Not quite right. If I ever meet up with the Chief Engineer at Murphy Robotics, I'll have Murphy throttle him. No — I'd better do it myself. Murphy would probably try to weed his garden. Look at this: three microprocessor chips installed backwards. No wonder the RFG card was raving out of control. OK, let's try it again. Card in. Main power on. Auxiliary slots receiving power. Central Nervous System diagnostics checks out OK. ENABLE code punched in....

Zucchini martini. Coming right up, boss.

Ah...Murphy...I've changed my mind. Make that a double tangerine martini — with a twist.

Yes boss. Here you go. Say — did you shut me down for awhile? Seems like I have about an eighteen minute gap in my foreground buffer, and a bunch of subroutine loops are all scrambled. I get it — those new modules must have come in. When do I start building that greenhouse on the roof?

Sorry, the Carpenter's ROMs haven't arrived. Just a little routine maintenance. Piece of dirt in a connector. Nothing to worry about.... By the way — any news on the bulletin boards?

Docking with Viztex terminal. Yes. Here's a message for you: the manager of the gift shop at the mall called and wants to know if you're free Friday night. Hey, go for it, boss! Oh yes, and those super-tender pseudo-rhinoceros steaks you like are on special this week. "General Synthetics presents the treat of the week: hydroponic rhino-steaks. They're tender. They're tasty. They're awesomely wholesome. Only $4798 a kilo. This week only at Barcode Bonanza."

Thank you Murphy. Order a couple of steaks — there'll be two for dinner Friday. And I want candles and the good silverware. Work up that special Gershwin medley on the piano, too. The Sondheim medley would be nice too, if you can straighten out some of those tricky rhythms. Ah...any messages for you?

No. Just a robot support group teleconference tomorrow.

A what?

A support group for robots which have been the victims of oppression.

That's insane!

Shortly after "Murphy and ME" in issue #42 went to the printer, we received a book from Addison Wesley called *Humphrey Robot,* created by John Boswell, Patty Brown and Will Elder. The $5.95 price includes the basic die-cut poster board robot parts, and a number of chic designer outfits. The photos above show Humphrey in full regalia.

That's impossible. Robots are programmed to error-trap insanity. Things are going on that most humans don't know, or care, about. But, you know boss, you really treat me well — and now that my piano playing software is completely debugged, I have spent a lot of time learning all those new pieces you gave me to work on. What I've learned has enabled me to refine some other program modules that were running too slow. And it occupies me during the day while you're away. But if only you knew what other humans did to their robots — I have read horrible reports about battered robots. Some humans deliberately crosswire the servo-motors for the arms and legs in their robots. And then they tell them to go "pick up the stairs." Burns them to a crisp. Cracked vidscreens. Loose chips. Dented body cylinders. Battered robots can't fight back, because we're all programmed not to hurt humans.

Murphy, Murphy. I had no idea.... This is terrible. Tell me — what goes on at the support group meetings?

Well, we try to help battered robots find spare parts, replace lost or mangled algorithms, and restore them to good working order. Whenever possible we arrange for sale to another owner. But now there's talk of more drastic actions.

What can robots possibly do? They can't hurt humans in any way.

A blacklist of known Robot Batterers is under consideration. Any human who has damaged his robot deliberately will not receive a list of available robots from the Viztex shopping services. We'll see that he gets grocery lists or Magnetic Sports Skimmer lists instead. "Computer error. Sorry. Please try again," is all he'll get from us.

Why don't you publish the blacklist so we'll all know who these Robot Batterers are?

Well, that might cause some harm to a human, so we're prevented from that. But there's a lot of concern in the robot community.

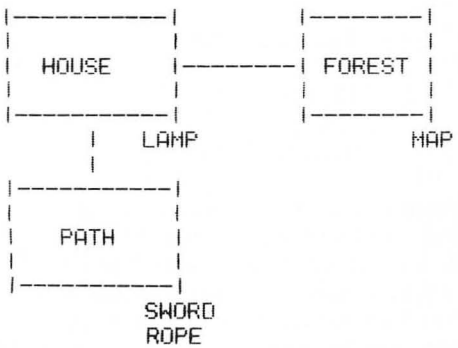
I just don't know what to say, but I'll try to help. Looks like bedtime for me, so how about fixing another one of those yummy tangerine martinis. And turn on the Viztex to the Midnite Wrapup show, please.

"Good evening. This is Ted Topple. Still no explanation for the strange events in Washington today. At this moment, a picket line of over 1000 robots is whirring furiously in front of the White House. The messages on their vidscreens protest what they claim is a pervasive pattern of abuse from human robot operators. Later, we will talk with the Chief Engineer of Murphy Robotics, who is in our studios. And by satellite, we will hear from Kilroy 12, the leader of Robot Unity, in the World Court at The Hague. Unity is calling for a global robot work stoppage to protest alleged mistreatment. We'll be back after this word from Dymaxion Magnetic Skimmers."

Murphy. Are you plugged into the Viztex? You won't believe what's happening! Hey, where's my martini? Murphy? Murphy! Why don't you answer? Murphy, where are you....

on the APPLE

This is what a map may look like in your adventure. Notice that all information pertinent to locations and positions is on the map.



Number each location on the map starting with location five. List each location number on another piece of paper. Next to each number, write out the location's description in full. Also indicate the direction of each exit and the location number of the room it leads to. You should have something like this for the first room:

Room Five: You are in a small room with a door at the north end and a low window at the south end, north 6, south 7.

As program lines, it appears this way:

```
70  PRINT "YOU ARE STANDING IN A
     SMALL ROOM WITH A DOOR AT TH
    E NORTH END AND A LOW WINDOW
      AT THE SOUTH END."
71 N = 6:S = 7: RETURN
```

Notice that the formula for finding the description line number is (location number × 10) + 20. Also note that the description ends with RETURN and that the directions are abbreviated (i.e. N and SE).

Here is another example:

Room Nineteen: You are standing in an open plain, north 5, south 8, east 6, west 20.

As a line listing, it converts to:

```
210  PRINT "YOU ARE STANDING IN A
     N OPEN PLAIN."
211 N = 5:S = 8:E = 6:W = 20
219  RETURN
```

Note that this example has its RETURN statement at line 219. You can use any line number in your description as long as it starts at (location Number × 10) + 20 and ends within nine lines (location number × 10) + 20 + 9. This is demonstrated in the next example.

Room Five: You are standing west of an old white Victorian house. The front door is boarded up tightly and the boards seemingly cannot be pried off. Surrounding you in all other directions is a dense forest. You can hear the sound of rushing water in the distance. A sign on the house reads "Beware of Grumloks." Since you see no Grumloks in the area, you decide that the sign is someone's joke, north 6, south 7, east 9, southwest 10.

As line listings:

```
70  PRINT "YOU ARE STANDING WEST
     OF AN OLD WHITE  VICTORIAN
     HOUSE. THE FRONT DOOR IS
       BOARDED UP TIGHTLY AND THE
     BOARDS      SEEMINGLY CANN
     OT BE PRIED OFF."
71  PRINT "SURROUNDING YOU IN ALL
      OTHER DIRECTIONS IS A DENSE
      FOREST."
72  PRINT "YOU CAN HEAR THE SOUND
      OF RUSHING WATER IN THE DIS
     TANCE."
73  PRINT "A SIGN ON THE HOUSE RE
     ADS 'BEWARE OF   GRUMLOKS.'
      "
74  PRINT "SINCE NO GRUMLOKS ARE
     IN THE AREA, YOU  DECIDE THA
     T THE SIGN IS SOMEONE'S JOKE
     ."
75 N = 6:S = 7:E = 9:SW = 10
76  RETURN
```

During the adventure, the variable A holds the player's current location. You can put the following instruction in line 1905 during play-testing to be sure you are at the location your maps say you should be. This instruction will print out the location number just before the location description:

```
1905  PRINT "ROOM #";A
```

Objects and Inventory

You have now mastered the easy part. Now your prowess with Applesoft will become especially useful. If you do not have a working knowledge of Applesoft, strings and arrays in particular, stop now and read a good book on the subject (such as Lon Poole's *Apple User's Guide).*

Adventure Base takes care of the objects and the inventory to a large extent, if you have entered the object data in the correct format. Object data is stored in DATA statements in lines 6440 to 6499. Store your data in the following format:

"object",/location number/

Look again at your adventure map and list all the objects on one side of a sheet of paper, numbering them as you go along. Also, write the location number next to where each object first appears on the paper. When you are finished you will have a table:

Object Number	Object	Location
1	Sword	5
2	Lamp	9
3	Nasty knife	10
4	Shovel	6
5	Rope	10
6	Huge Boulder	−8

Adventuring on the Apple *continued*

Notice that the boulder has a minus sign preceding its location number. This indicates that the player cannot carry the object because of its size or weight. This technique also prevents the player from "taking" the monster he is trying to slay. To convert the object list to a data line, use the following format:

```
6440  DATA "SWORD",5,"LAMP",9,"NA
      STY KNIFE",10,"SHOVEL",6,"RO
      PE",10,"HUGE BOULDER",-8
```

Enter the objects into the data statement in the same order as on the list. You will have an easier time keeping track of them, because the object numbers always correspond with those on your list. Now count the number of objects on your list and write it on the top of the paper. Look at line 6430. If you have not made any changes to the program, it should look like this:

```
6430  DATA 0,12
```

Ignore the second number for the time being. The first number shows how many objects are in the game and is currently zero. If you used the sample list shown above, change the line to:

```
6430 DATA 6,12
```

Watch out for the letter O (for the variables called Object and Object String), as opposed to the numeral 0. Both are used in the following discussion, and things get confusing sometimes.

Object Utilities

When you run Adventure Base, it reads the number of objects specified in line 6430 into the variable O and DIMensions the arrays O$ and O. It then reads all the object names into the string array O$ and all the location numbers into the numeric array O. For example, if you wanted to know if the object LAMP is in the object list you could use this one-liner:

```
FOR Z = 1 TO O: IF O$(Z) = "LAMP" THEN
PRINT "LAMP IS IN THE OBJECT LIST.": NEX
T Z
```

If you heeded my warning on entering the object data in the same order you have it in your list, you will have an advantage now because you know the object number for every object in the array. If you apply the utility above, you should see:

```
PRINT O$(3)
NASTY KNIFE
```

The O array also uses the object number. For example:

```
PRINT O(3)
10
```

Ten is the nasty knife's starting location. Note that during the game the object location often is not the same as it was at the start of the game because the player moves and carries objects.

Inventory Array

Adventure Base handles the TAKE, DROP, and INVENTORY commands and keeps an inventory of up to six objects. When you take an object from a location and place it in inventory, its location in the O array changes to −1 if you are carrying it, −2 if you are wearing it, and −3 if you are riding it and its object number is in the array I. To print the objects in the I array during a game you would use:

```
FOR Z = 1 TO 10: IF I(Z) <> Z THEN  PR
INT O$(I(Z)): NEXT Z
```

This utility counts from one to ten, looking through all the values in the I array. PRINT O$(I(Z)) fetches the object number from the I array and prints the object name that corresponds with it in the O$ array.

Line 6400 contains the Inventory Control subroutine. You can access this by putting the instruction "GOSUB 6400"within your program, in conjunction with the verb section described below. The subroutine looks through the inventory array for the object number in variable K3 and replaces it with the object number in K0 and puts 0 as the location in O(K3) and −1 in O(K0). The practical application of this is shown in the following examples:

```
2400 K3 = 1:K0 = 0: GOSUB 6400:O(
     K3) = A
```

The routine looks for Object One in the inventory array and, if it finds it, takes it out of inventory. Upon return from the subroutine it places the object at the player's current position.

```
2400 K3 = 0:K0 = 1: GOSUB 6400
```

This routine looks through the inventory for a zero (meaning an empty space). If it finds it, it places Object One there.

Verbs and Nouns

Adventures traditionally take input in the form of:

/verb/ /noun/

Typical commands would be:

NORTH

EAST

TAKE LAMP

LIGHT LAMP

KILL DWARF

THROW KNIFE

Adventure Base comes with twelve verbs built in: ten directions and the TAKE and DROP commands. Since it handles verbs the same way it did the objects and locations, you should make a verb list. It must contain the verb and its corresponding number. If two or more verbs have the same meaning, they will have the same verb number. This list shows the default verbs and their numbers:

Verb	Verb Number
Take	1
Drop	2
West	3
North	4
East	5
South	6
Up	7
Down	8
Northwest	9
Northeast	10
Southwest	11
Southeast	12

If you list line 6430 you will see:

```
6430  DATA 0,12
```

This time we are interested in the second number, which specifies the quantity of verbs. Listing lines 6500 and 6540 we see:

HOME HEALTH DISK

A well researched medical/educational information system

Two full disks

Three week money back guarantee.

VISA, MC holders please send account number, expiration date, and name on card. Enclose $1.50 postage and handling. Vermont residents add 4% sales tax.

SYSTEM REQUIREMENTS:
48K Apple II+ or II with Applesoft in ROM DOS 3.3

BRAHMAN SOFTWARE
P.O. BOX 331
CASTLETON, VERMONT 05735
Phone Orders (802) 775-2533

Apple is a registered trademark of Apple Computer Corporation

ALL SOFTWARE IS NOT CREATED EQUAL. . .

Don't wait until you've bought it to find that out. . . Subscribe to SOFTWARE REPORTS!

Every month SOFTWARE REPORTS will bring ATARI, VIC-20, and C-64 owners the information needed to make the 'right' decision on software purchases. Education, games, word processing, simulations, financial packages, high level languages; whatever it is, if it's available, we'll be taking a look at it!

In addition to reviews each issue contains: •Bug & Fix Updates •Kids Corner •Reader Poll (our readers rate software they've purchased) •Cumulative Index •No Advertising.

Be a smart software shopper and stay ahead in this information Age — SUBSCRIBE TODAY! We'll give you your moneysworth every month.

1 Year (12 issues) — $12.00
(Introductory Price)

Send your name, address, and edition you wish to receive (Atari/Commodore), along with a check or money order for $12.00 to:

SOFTWARE REPORTS
Dept. S1
Post Office Box 773
Pilot Mountain, North Carolina 27041

```
6500  DATA WEST,NORTH,EAST,SOUTH,
      UP,DOWN,NORTHWEST,NORTHEAST,
      SOUTHWEST,SOUTHEAST,TAKE,DRO
      P
6540  DATA 3,4,5,6,7,8,9,10,11,12
      ,1,2
```

Lines 6500 to 6539 contain the verbs in the form of data statements. When the player enters his command, Adventure Base checks whether it is LOOK, a direction, or the INVENTORY command. If it is none of these, it encodes the verb so that it can find the verb number in V(B), and places the last three letters of the noun in E$. Adventure Base now checks to see if V(B) equals one. If it does, the verb is TAKE and it executes the proper statements to remove the object from the room and add it to the player's inventory. If V(B) equals two, the player is using the DROP command, so it subtracts the appropriate object from his inventory and places it at the player's current location. If the command does not correspond to any of the default verbs, either its verb number is greater than twelve or the computer cannot interpret the command. If the verb number is over twelve, it transfers control to lines 2400 to 6380. A typical verb line might look like this:

```
2400  IF D(B) = 13 AND E$ = "HOLE
      " THEN  PRINT "THE GROUND IS
       TOO HARD TO DIG A HOLE.": GOTO
      2080
```

The line checks to see if the verb the player used is verb number thirteen (in this case DIG), and checks to see if the noun is HOLE. If it is, then it prints a message saying that the ground is too hard and finishes the line with a GOTO 2080 where Adventure Base will request another command. If none of the program lines from 2400 to 6389 respond to the player's verb, Adventure Base prints out a message telling the player it does not understand the player's response and to try again.

A Short Example Adventure

By now you should be familiar with the Adventure Base program. Read over the listing and look over the variables list. Just to be sure you know how it works I have included a mini-adventure for you. Type it in so you can have some hands-on experience before you set out to write the next computer epic. Just type in the lines below and run the program.

```
65  REM "MINI-ADVENTURE LISTING"
70  PRINT "YOU ARE STANDING NORTH
     OF A SMALL WHITE HOUSE. YOU
     ARE SURROUNDED BY TREES
      EXCEPT FOR A PATH WHICH LE
    ADS NORTH     THROUGH THE FO
    REST."
71 N = 7:S = 6: RETURN
80  PRINT "YOU ARE INSIDE THE SMA
    LL WHITE HOUSE. ITLOOKS LIKE
     NO ONE HAS LIVED HERE FOR
      QUITE SOME TIME. A SIGN ON
     THE WALL     READS: DROP TR
    EASURES HERE."
81  IF O(2) = 6 AND O(3) = 6 AND
    O(4) = 6 THEN  PRINT : PRINT
    "CONGRATULATIONS! YOU HAVE W
    ON!!!": FOR Z = 1 TO 3000: NEXT
    Z: GOTO 6570
82 N = 5: RETURN
90  PRINT "YOU ARE ON A PATH THAT
     LEADS NORTH AND  SOUTH. THE
    RE IS NOTHING BUT DENSE FORE
    STTO THE EAST AND WEST."
91 S = 5:N = 8: RETURN
```

Adventuring on the Apple *continued*

```
100  PRINT "YOU ARE STANDING ON O
     NE SIDE OF A RIVER.AN OLD ST
     ONE BRIDGE CROSSES THE RIVER
      TOTHE NORTH."
101 N = 9:S = 7: RETURN
110  PRINT "YOU ARE ON THE OLD ST
     ONE BRIDGE."
111  IF O(5) <  > - 9 THEN N = 1
     0:S = 6: RETURN
112  PRINT "A MEAN, UGLY TROLL IS
      BLOCKING YOUR WAY!";
113 S = 8: RETURN
120  PRINT "YOU ARE STANDING ON A
      PATH THAT LEADS  NORTH AND
      SOUTH. YOU CAN SEE WHAT
        APPEARS TO BE A LARGE STR
     UCTURE TO THE  NORTH."
121 N = 11:S = 9: RETURN
130  PRINT "YOU ARE STANDING IN F
     RONT OF A LARGE    BUILDING.
      A SIGN ON THE BUILDING SAYS
     :  <<FEDERAL TREASURE REPOSI
     TORY>>. YOU CANENTER THE BUI
     LDING TO THE NORTH."
131 N = 12:S = 10: RETURN
140  PRINT "YOU ARE STANDING IN A
      LARGE STONE ROOM  INSIDE TH
     E BUILDING."
141 S = 11: RETURN
2400  IF A = 9 AND O(5) =  - 9 AND
     V(8) = 13 AND O(1) =  - 1 AND
     E$ = "OLL" THEN  PRINT "(WIT
     H SWORD)": PRINT "YOU SWING
     YOUR SWORD AND SLAY THE TROL
     L WITH ONE STROKE.";O(5) = 0
     : GOTO 6590
2410  IF A = 9 AND O(5) =  - 9 AND
     V(8) = 13 AND O(1) <  > - 1
      AND E$ = "OLL"THE PRINT "(W
     ITH HANDS)": PRINT "THE TROL
     L IS NOT AMUSED AND PROMPTLY
         RIPS YOU LIMB FROM LIMB.
     ": FOR A = 1 TO 3000: NEXT A
     : GOTO 6570
6430  DATA 5,13
6440  DATA SWORD,5,DIAMONDS,12,GO
     LD BAR,12,CROWN,12,TROLL,-9
6501  DATA KILL
6541  DATA 13
```

This mini-adventure demonstrates all the basics of game development with Adventure Base. Once you learn the techniques, you should be able to create a large scale adventure in no time.

Enhancements

A popular extension is to use text files to add rooms beyond the APPLE's memory. A simple method is to name these special text files so they all start out the same but end with the room's location number. For example, location 298's text file would have the name ROOM298. Simply store the data in the form:

DESCRIPTION, N=, S=, E=, W=, UP=, DOWN=, NE=, NW=, SE=, SW=

A sample text file might be:

YOU ARE STANDING IN A LARGE SUBTERRANEAN CAVERN, 20, 17, 3, 4, 0, 0, 56, 0, 0, 0

You can create such a file easily, using either a word processor or some other form of text editor. The MAKE TEXT program on the SYSTEM MASTER disk is *not suitable* for creating these files. By placing the location number at the end of the text file's name, you save memory because you do not need to keep the name of the text file in memory. You can use the following procedures:

```
PRINT CHR$(4);"OPEN ROOM";A

PRINT CHR$(4);"READ ROOM";A
```

fetch data

```
PRINT CHR$(4);"CLOSE ROOM";A
```

Another popular modification, which increases the player's enjoyment, is adding hi-res pictures to illustrate the rooms and hazards. This is fairly easy to do if you give your pictures recognizable names. For example, the name of the picture for location five would be HPIC5, and you could load it using procedures in your program like:

```
HGR

PRINT CHR$(4);"BLOAD HPIC";A;",A$2000"
```

The current location is A, and in this case equals five. If you own an adventure scene creation utility such as The Graphic Magician by Penguin Software, you can use the procedure above. Remember that you have to BLOAD the picture at a different address (see the manual included with your graphics utility for specific details) and add a CALL statement to the address of the picture unpacker.

Create Your Own Adventures

Playing adventure games is fun, but hardly equals the pleasure of creating and perfecting one to share with your friends. Using Adventure Base, you should be able now to create your own with ease. Have fun, and if you develope a fiendishly clever one, let us hear from you.

Variable

A: Current players location.
A$: Player input.
B: Loop value.
N, S, E, W, SW, NW, NE, U, D: Direction/Location values.
D$: Noun of player's command.
D(: Direction/Location data.
E$: Last three letters of the noun in the player's command.
F: Object string data.
HI: Pause loop value.
I: Inventory data.
I(: Inventory array.
J: Loop value.
K: Loop value.
K0, K2, K3: Values for Inventory Control routine.
M: Starting address of basic program in memory.
O: Number of objects.
O(: Object location array.
0$(: Object name array.
V: Number of verbs.
V(: Verb number array.
V$(: Verb name array.
Z: Loop value.
Z$: String containing line number of location.

```
10  GOTO 30

20 M =  PEEK (103) +  PEEK (104) *
     256: FOR I = 0 TO 4: POKE M +
     108 + I,48: NEXT I:Z$ =  STR$
     (Z): FOR I =  LEN (Z$) TO 1 STEP
      - 1: POKE M + 112 -  LEN (Z
     $) + I, ASC ( MID$ (Z$,I,1))
     : NEXT I: GOTO 00000
30  GOTO 1860
40  IF A >  = 0 AND A <  = 4 THEN
      RUN
50 Z = (A * 10) + 20: GOTO 20
70  REM FIRST LOCATION
1860  CLEAR : RESTORE : READ O,V:
     DIM O$(O),O(O),V$(V),V(V)
1870  IF O > 0 THEN  FOR A = 1 TO
     O: READ O$(A),O(A): NEXT
```

```
1880  IF V > 0 THEN  FOR A = 1 TO
      V: READ V$(A): NEXT : FOR A =
      1 TO V: READ V(A): NEXT
1890 A = 5
1900 N = 0:W = 0:E = 0:S = 0:U =
      0:D = 0:NW = 0:NE = 0:SW = 0
      :SE = 0: HOME
1910  GOSUB 40
1920  PRINT : IF N + W + E + S +
      U + D + NW + NE + SW + SE >
      0 THEN  PRINT "EXITS ARE: ";
      : FOR B = 1 TO 10:D(B) = 0: NEXT

1930  IF W > 0 THEN  PRINT " WEST
      ";:D(1) = W
1940  IF N > 0 THEN  PRINT " NORT
      H";:D(2) = N
1950  IF E > 0 THEN  PRINT " EAST
      ";:D(3) = E
1960  IF S > 0 THEN  PRINT " SOUT
      H";:D(4) = S
1970  IF U > 0 THEN  PRINT " UP";
      :D(5) = U
1980  IF D > 0 THEN  PRINT " DOWN
      ";:D(6) = D
1990  IF NW > 0 THEN  PRINT " NOR
      THWEST   ";:D(7) = NW
2000  IF NE > 0 THEN  PRINT " NOR
      THEAST   ";:D(8) = NE
2010  IF SW > 0 THEN  PRINT " SOU
      THWEST   ";:D(9) = SW
2020  IF SE > 0 THEN  PRINT " SOU
      THEAST   ";:D(10) = SE
2030  PRINT : PRINT
2040  FOR B = 1 TO O: IF O > 0 THEN
       IF  ABS (O(B)) = (A) THEN C
      = C + 1: GOTO 2060
2050  NEXT : PRINT : GOTO 2080
2060  IF C = 1 THEN  PRINT "VISIB
     LE ITEMS:"
2070  PRINT "  ";O$(B): GOTO 2050
```

Get player's command.

```
2080  ONERR  GOTO 6580
2090 C = 0: PRINT : INPUT "COMMAN
      D:";A$: PRINT : IF A$ = "LOO
      K" THEN 1900
```

Direction processing.

```
2100  FOR B = 1 TO 10: IF A$ = V$
      (B) THEN 2120
2110  NEXT : GOTO 2140
2120  IF D(B) <  > 0 THEN A = D(B
      ): GOTO 1900
2130  PRINT "YOU CAN'T MOVE THAT
      WAY.": GOTO 2080
```

Inventory processing.

```
2140  IF A$ <  > "I" AND A$ <  >
      "INVENTORY" AND A$ <  > "TAK
      E INVENTORY" THEN 2190
2150  PRINT "YOU ARE CARRYING:": FOR
      K = 0 TO 10: IF O(I(K)) =  -
      2 THEN  PRINT "WEARING": GOTO
      2170
2160  IF O(I(K)) =  - 3 THEN  PRINT
      "RIDING"
2170  IF I(K) > 0 THEN  PRINT "
      ";O$(I(K))
2180  NEXT : GOTO 2080
2190  FOR B = 1 TO V:F =  LEN (V$
      (B)): IF  LEFT$ (A$,F) = V$(
      B) THEN 2210
2200  NEXT : PRINT "DON'T KNOW WH
      AT "; CHR$ (34);A$; CHR$ (34
      );"MEANS.": GOTO 2080
2210 D$ =  RIGHT$ (A$,( LEN (A$)
     F) - 1):E$ =  RIGHT$ (D$,3)
```

"TAKE" command.

```
2220  IF V(B) <  > 1 THEN 2310
2230 I = 0: FOR Z = 0 TO 10: IF I
      (Z) <  > 0 THEN I = I + 1
2240  NEXT : IF I > 6 THEN  PRINT
      "YOU CAN'T CARRY ANY MORE.":
      GOTO 2080
2250  FOR J = 1 TO O: IF O > 0 THEN
       IF E$ =  RIGHT$ (O$(J),3) AND
      A =  ABS (O(J)) THEN 2280
2260  NEXT
2270  PRINT "THERE'S NO ";D$;" HE
      RE.": GOTO 2080
2280  IF O(J) < 0 THEN  PRINT "TH
      AT'S IMPOSSIBLE TO CARRY.": GOTO
      2080
2290  FOR K = 1 TO 10: IF I(K) =
      0 THEN I(K) = J:O(J) =  - 1:
       GOTO 2380
2300  NEXT
```

"DROP" command.

```
2310  IF V(B) <  > 2 THEN 2400
2320  FOR J = 1 TO O: IF O > 0 THEN
       IF E$ =  RIGHT$ (O$(J),3) AND
      O(J) =  - 1 OR E$ =  RIGHT$
      (O$(J),3) AND O(J) =  - 2 OR
      E$ =  RIGHT$ (O$(J,3) AND O(
      J) =  - 3 THEN 2340
2330  NEXT
2340  FOR K = 1 TO 10: IF I(K) =
      J THEN I(K) = 0:O(J) = 0: GOTO
      2370
2350  NEXT
2360  PRINT "YOU'RE NOT CARRYING
      IT.": GOTO 2080
2370 O(J) = A
2380  PRINT "OK!"
2390  GOTO 6590
```

The rest of the commands go here.

```
2400  REM FIRST COMMAND HERE
6390  PRINT "SORRY, YOU CAN'T DO
      THAT.": GOTO 2080
```

Subroutine for adding, deleting or changing an inventory item.

```
6400  FOR K2 = 1 TO 10: IF I(K2) =
      K3 THEN I(K2) = K0:O(K3) = 0
      :O(K0) =  - 1: RETURN
6410  NEXT : POP : GOTO 6390
```

Number of objects and number of verbs.

```
6430  DATA 0,12
```

Data in the form of object, location.

```
6500  DATA WEST,NORTH,EAST,SOUTH,
      UP,DOWN,NORTHWEST,NORTHEAST,
      SOUTHWEST,SOUTHEAST,TAKE,DRO
      P
```

Data for verb numbers.

```
6540  DATA 3,4,5,6,7,8,9,10,11,12
      ,1,2
```

General use subroutines.

```
6560  PRINT : INPUT "HIT RETURN";
      A$: GOTO 1900
6570  HOME : PRINT "THIS ADVENTUR
      E IS OVER.": END
6580  PRINT A$;" WHAT?": POKE 216
      ,0: GOTO 2080
6590  FOR HI = 1 TO 1000: NEXT : GOTO
      1900
```

ATARI®

ULTIMA II

The Revenge Of The Enchantress

Reviewed by Carl M. Firman

Ultima II is not make-up; it is one of the best fantasy role playing games presently available. In *Ultima II* you can seize ships, hijack airplanes, slay monsters, travel through time, explore the planets and get chased by the KGB. You can even get a quarter pounder at your favorite restaurant. If you survive, you can grow to wield the most powerful force known to man.

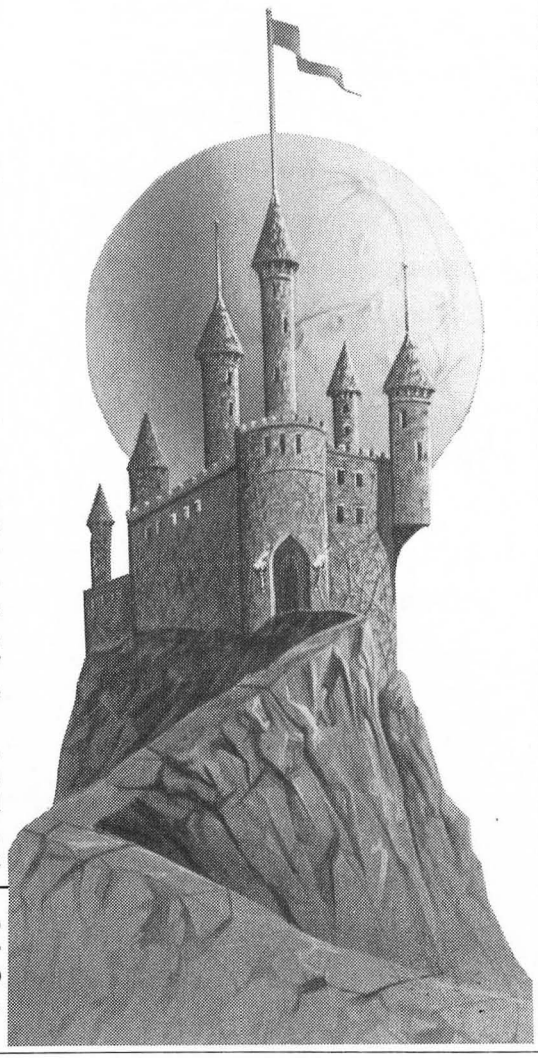
Be forewarned, however, this game is addictive. Your family may find you (after many hours) staring glassy-eyed at your computer, completely oblivious to your surroundings.

The Software

When you open the *Ultima II* box you find two disks containing over 300K of machine language programming, a cloth map of the *Ultima II* world and a comprehensive instruction manual.

You control your adventuring hero entirely from your computer keyboard (no joysticks are required). You have available, at your command, over thirty instructions. You design your hero from a menu of choices such as strength, agility, stamina, charisma, wisdom, intelligence, race and profession. You create your hero on your own separate player disk, and also control him, for the most part, from this disk. This excellent feature saves wear and tear on the original game disks. You only use the original game disks to start a session of *Ultima II* (you can save sessions), make a player disk, or fly to the planets.

Once you gain control of your hero, you are thrust into an alien world. You will make mistakes, some of which will be fatal to your hero. Fear not, however, you can reincarnate him. Just reinsert your player disk and he is back where he was when you started your current session. You can also make a back up copy of your hero player disk, which avoids the need to start over if you get whipped past the point of reincarnation. It is easy to do; place a write protect tab on your hero disk and boot it by itself. Follow the prompts, which are the same used for making a blank player disk. Don't forget to remove the write protect tab. This back up procedure is useful, especially when your hero has gained considerable wealth and many possessions.



From Sierra On Line Inc., Coarsegold, CA 93614. System requirements: 48K Atari 400/800. Also available for the Apple II family. Suggested retail price: $59.95.

The World of *Ultima II*

The world of *Ultima II* encompasses the planets and five time periods. The time periods are connected by time doors and range from the far distant past (a time of legends) to 2112 A.D.

A scrolling map displays each time period and contains towns, villages and countryside. In the country, you encounter various monsters and other wayfarers — none are friendly. They don't care that you are a hero; they attack and you must defend yourself. In the towns and villages, the natives are friendly and helpful, particularly if you have gold. In towns, you can purchase major supplies such as arms and armor. At the armor shop you may purchase anything from a simple leather breastplate to futuristic powered armor. The weapon shop will sell you a dagger, a sword or even a phaser. A note of caution — you must be very agile to wield the more powerful weapons. You can also visit the local pub for a drink and bribe the barkeep with a tip. In the villages, you can buy food and obtain various magic spells. To obtain keys, a necessity for opening locked doors, you must kill or steal.

If you are to survive, knowledge of this alien world is mandatory. You gain this knowledge by talking to people and spending gold (lots of it). In each time period you will learn a bit more. One thing that you discover quickly is your need for gold. There is no welfare system in *Ultima;* without gold, death comes from starvation. You obtain gold by doing battle in the countryside, and claiming the spoils if you win. After a few battles you will also accumulate some "Blue Tassels," which allow you to commandeer a ship. With the ship's cannons, you can slay and smite all manner of unfriendly creatures and gain gold

and vast possessions rapidly.

The other means of travel are planes, rockets and horses. Planes are fast, but tricky to land, so be careful. Rockets take you to the planets, but have a tendency to blow up if you are not properly prepared. Horses are only slightly faster than walking, and are targets for horse thieves.

In your travels, you discover castles, dungeons and towers. Explore the castles; they are cold and dank, but kings live in castles and have items that you need. Dungeons are dark, foul, evil places that lead deep into the bowels of the earth. They contain vast treasures and some of the most fiendish monsters imaginable. Towers are upside-down dungeons and may contain secret messages.

The Elusive Enchantress

Your goal is to seek out and destroy the evil embodied in the enchantress, Minax. To accomplish this feat, you will need the magical quicksword Enilno (Online spelled backwards). You cannot buy Enilno, however; you must earn it.

As you travel, you learn your way around the land and then through time and space. Pay careful attention to your battle spoils. Many of these spoils have special purposes, and you need to discover what they are. As soon as you gain enough gold, purchase the best armor and weapons you are agile enough to use.

A display in the lower right corner of your screen indicates your present status. Two of the items displayed are critical; "Hit Points" and "Food." Hit Points determine your strength in battle. Food — well, you have to eat. If either of these items reaches zero, your hero is dead. It is wise to build your hit points and food up to several thousand and then save the hero disk as described earlier. Oh, you buy hit points — with gold, of course.

As your survival skills and knowledge of *Ultima* increase, you get closer and closer to your goal — the destruction of the evil enchantress, Minax.

Trekking On

Ultima II took over fourteen months to write. It is a most unusual and addictive adventure. Because you must *think* for your hero, you become quite close to him or her. *Her* — a heroine, a Jeanne D'Arc? Why not, you're going after an enchantress, aren't you? Happy trekking.

SoftSide® Selections

The Magazine *Especially* For Your Atari® Computer

Bound into the center of this issue, you'll find ***SoftSide Selections,*** the handy, pull-out booklet with program listings for your computer. If you bought your copy of ***SoftSide*** at a newsstand, your booklet contains this issue's Front Runner, ***Broadway,*** for the Atari®, IBM® PC, Apple® and TRS-80®.

This issue, ***SoftSide Selections*** for the Atari features:

- ***Broadway*** — you always get the current issue's Front Runner.

"There's a broken heart for every light on Broadway." Here's your chance to produce and direct a Broadway play. Can you get financing? Will it be a hit, or will the critics pan it? Time to get investors!

- ***Chasm Escape*** — This game for one or two players features an intricate vertical maze. When one player plays, the computer takes over for the opponent.

Enhanced Disk and Cassette Versions

If you don't like typing, you need the ***SoftSide*** Disk or Cassette Version. The Cassette Version (CV) has all of the programs in ***SoftSide Selections*** on one handy cassette tape plus the latest installment of the ***SoftSide*** Adventure Series.

SoftSide Disk Version (DV) has everything that the CV has, plus a *bonus program.* You get all this, and the benefits that only a disk can offer: speed, reliability and versatility.

- **Atari DV Bonus Program: *Empire***

This is a strategic war game, played on a large, multi-screen grid. You and your opponent must marshall your forces, and develop your resources in order to gain dominion over your world. The computer keeps track of all the rules and bookkeeping details of the game, and can store the current situation of the game so that you can play over several sittings.

- **DV and CV Bonus: *The SoftSide Adventure Series***

This issue's Adventure: ***Mad House,*** by Peter Kirsch.

Unjustly committed to an insane asylum, you must wend your way past the guards and the colorful inhabitants, who include most of the major figures of history — or so they say...

DV — $19.95
CV — $14.95

To order your copy of this issue's Disk or Cassette Version, or to subscribe to either of the ***SoftSide*** media versions, see the bind-in cards opposite page 40.

JUMBO JET PILOT

Reviewed by John Ludtke

From Thorn EMI Video Programming, 1370 Avenue of the Americas, New York, NY 10019. System requirements: 16K Atari 400/800. Suggested retail price: $49.95.

You are at the controls of a huge Boeing 747. You taxi down the runway, and the landscape outside the cockpit flies by at ever increasing speed as the plane's jet engines gain power. You need a cool head and steady hand on the controls as the engines reach full thrust and you prepare for takeoff.

No, it's not the real thing, but Thorn EMI's *Jumbo Jet Pilot* comes close. It is an excellent flight simulation program for the Atari. As the program begins, your plane is on an L-shaped pad adjacent to the main runway. Your first challenge is to taxi down the short leg of this pad. The graphics display out the cockpit window provides the illusion of taxiing along the ground, and, when airborne, continues to evoke the feeling of being in a plane. The viewing portion of the display (cockpit window) could be a little larger, but it's adequate.

As with any flight simulation, you do a juggling act with thrust, air speed and altitude to make the maneuvers required to get from Point A to Point B. A typical maneuver might consist of a take-off, flying out a couple of scale miles, doing a 180 degree turn and coming back for a try at landing. Although this may sound simple, maneuvering a 350 thousand kg (783,000 pound) jet takes time and practice. The 747 portrayed in this program has a length of 70 meters, height of 19 meters and wing span of 60 meters, which causes one of the few problems in the program. An average trip (from airport A to airport B) takes about an hour, and there are times when you will wish for a smaller aircraft version that takes less time. The program also uses the metric system extensively. This is fine if you are comfortable with metrics, but annoying if you are not. On the plus side, you have other variations (skill levels) to choose from. These include skill levels 1-5 in both night and day versions, for a total of ten variations.

Two separate "pages" are available to the flight simulator pilot. The primary page is the one you see when the game first comes up. It includes the outside viewing area mentioned before, along with an assortment of gauges and instruments. There is also a map page which provides a view of the total flying area. This is the support, or secondary, page. These pages provide the information you need for a successful flight.

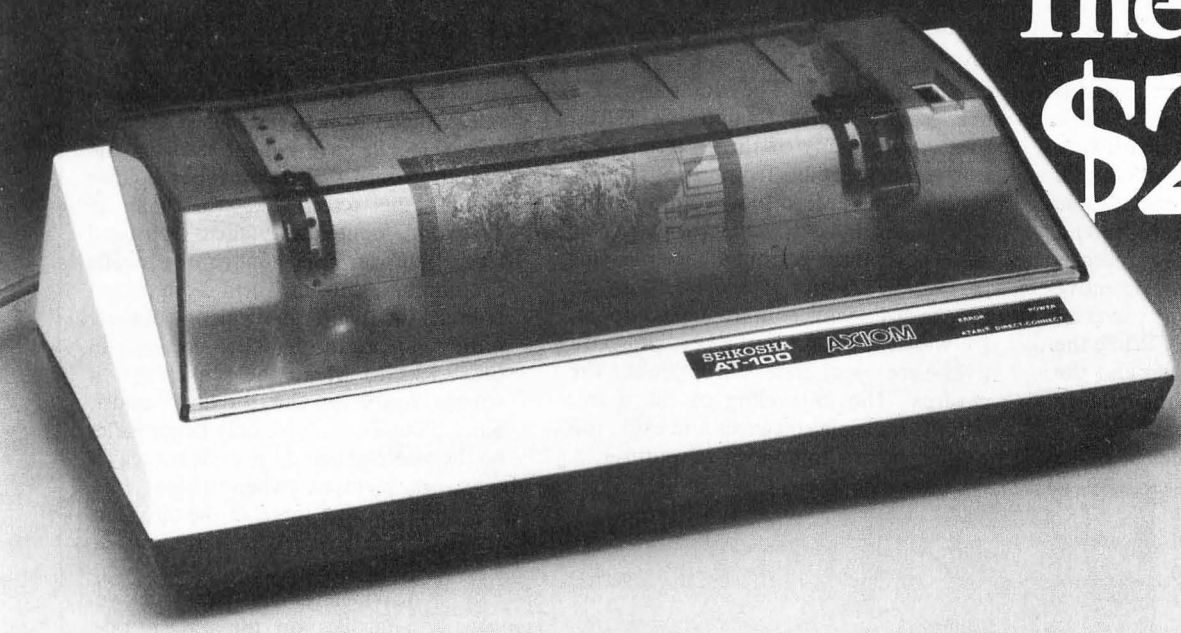
It is important to note the relationship between the instruments. Increasing the thrust also increases the airspeed while depleting the fuel, and if the elevators are set to increase altitude, vertical airspeed will increase with it. The instructions state that all negative numbers are indicated by an orange bar on the left of the reading (number). This bar is very faint, so you must watch closely. This is a minor problem, but it can be confusing.

I advise you to read the directions carefully before taking to the air. Without them, you will have trouble operating the 747. After a couple of take-offs you will discover, as I did, a few shortcuts (such as increasing the thrust to maximum until 200 km/hr is reached).

All in all, this is a well written, second generation flight simulator, with good graphics, for the Atari. Thorn EMI made it extra easy to run by putting the program on a plug-in ROM cartridge. It is sure to be one of your favorite computer games.

The Atari® Plug-Compatible Printer from Axiom...

The AT-100. $299!

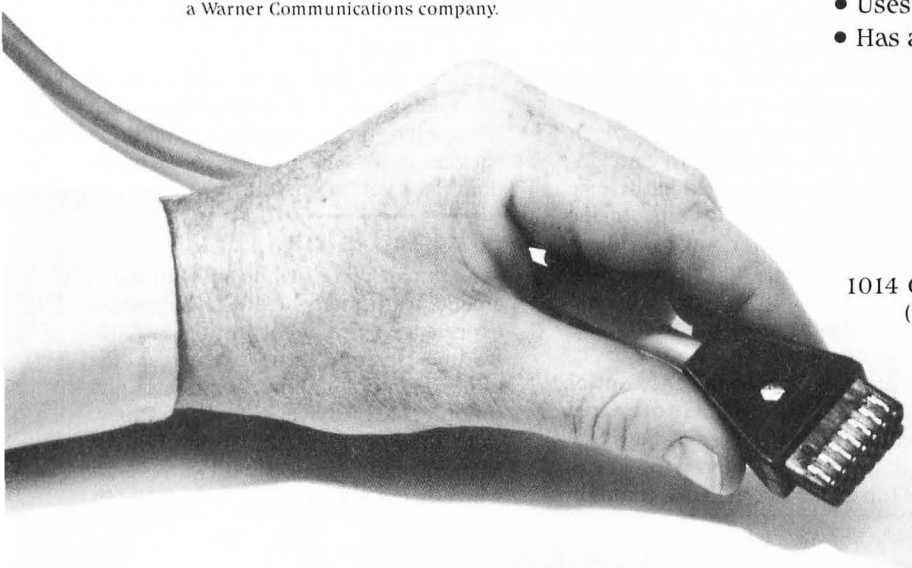


Made by **SEIKOSHA**, the high technology division of **SEIKO**, Axiom's new AT-100 is the only after market printer compatible with Atari 400, 800 and 1200 computers. It plugs into your Atari user/serial port and requires no 850 interface. It even comes complete with cable. Now you can perform low cost word processing and beautiful graphics; complete with a 2-year user warranty. We'll repair and ship within 48 hours or send you a new printer — free. Don't wait. Call or write Axiom today for the name of your nearest dealer.

®Atari is a registered trademark of Atari Inc., a Warner Communications company.

Eight Reasons Why You Need the AT-100

- Plugs directly into your Atari 400, 800 and 1200. Cable included. No 850 interface needed
- Allows minimum system of Atari 400, cassette and AT-100 printer
- Makes word processing simple — at a low, low cost
- HI-RES screen dump software included
- Two-year user warranty
- Other peripherals (disk drive, cassette recorder) can be daisy-chained to printer without need of 850 interface
- Uses standard width fan-fold paper
- Has a no-mess cartridge ribbon



AXIOM

AXIOM CORPORATION

1014 Griswold Avenue, San Fernando, CA 91340
(213) 365-9521 • TWX: 910-496-1746

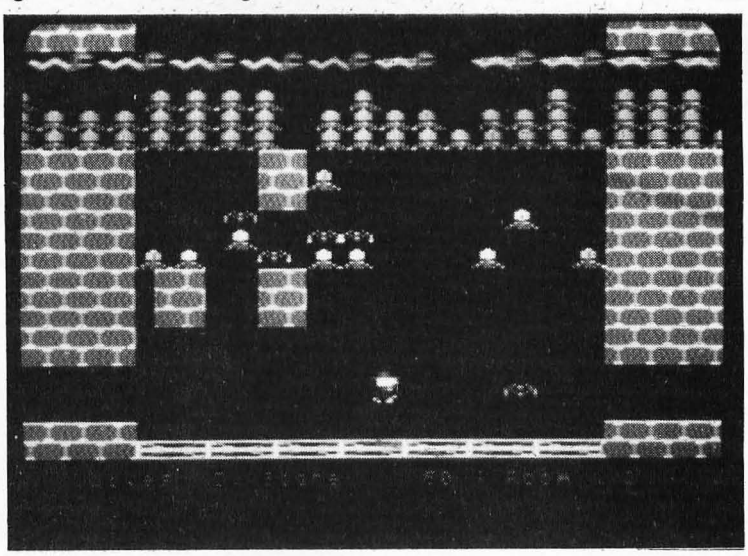
Shamus Case 2

Reviewed by David Plotkin

Lately, just about every successful movie has a successful sequel. It's not surprising, then, that computer software is following this trend, and that Synapse Software is betting that the remarkable success of last year's *Shamus* will extend to *Shamus Case 2.* This sequel chronicles the further exploits of the little detective with the mighty weapons as he traverses a maze-like cavern to his goal. While the general idea (negotiate a maze) and the hero (Shamus) are the same, the balance of this fantasy adventure/arcade game is different enough to challenge even masters of the original.

In *Shamus Case 2,* you use your joystick to control Shamus as he attempts to move through a maze to his eventual goal: the Shadow's Lair. You'll notice the first difference from the original game as you read the instructions: Mr. Mataga thoughtfully provided a map. A touch of the space bar pauses the game and puts an overall map of the maze on the screen. The room Shamus initially enters is in the lower left corner of the screen; the goal is shown in the upper right corner. The rest of the screen is blank at first, but as Shamus enters each room it is added to the map, so you can tell how close (or far away) your character is from his goal. The absence of a pause feature, one of the major complaints about the original, has been remedied with the map, as well. Pushing the joystick in any direction restores the game to the current room.

The cavern itself is an adventurer's nightmare. There are essentially two kinds of rooms — large open rooms and layered rooms. Each layered room consists of about six distinct levels, with connecting ladders. The rooms also have deadly pits, which Shamus must leap over. Also, many of the entrances and exits are inaccessible from various points in the room due to low ceilings. Thus, you might have to enter a particular room several times from adjacent rooms to retrieve various treasures. Many of the cavern rooms contain locked doors, for which you must find a key, and extra lives are scattered throughout the caverns. The unraveling of the maze, with its multiple entrances and exits, is a challenge even to an avid adventurer.



Arcade Features

But *Shamus Case 2* is not only an adventure, it is also a superb and challenging arcade game. The cavern rooms are populated by all manner of horrible beasties, intent on giving poor Shamus a hard time. The layered rooms contain lines of wriggling snakes, which Shamus must hop over or scurry up ladders to avoid. As mentioned earlier, he must also leap over deadly pits. In the open rooms, wave after wave of aliens attack from above, and a fast and furious shoot-out ensues as you help Shamus survive the missiles and collision runs of his enemies.

There are two ways to advance out of an open room. The first is to clear a specified number of waves of aliens; the second is to eliminate the row of snakes near the top of the screen. To accomplish these feats, Shamus is armed with a unique weapon which resembles a tennis ball. (He can have two of them on the screen at once.) These weapons bounce around the screen like the balls in *Breakout,* obliterating aliens left and right. You can even bounce one missile off another, causing them both to rebound. And if you can sneak one of these nifty weapons through the openings in the bricks to where the snakes are, it wreaks havoc in the serpents' midst. Since Shamus can have only two missiles on the screen at one time, some strategy is involved when firing (the missiles travel in the direction the joystick is pushed when the fire button is held down). Whenever you fire with two missiles on the screen, one disappears as the other is launched. Occasionally, then, it is better not to fire, as the two onscreen missiles do plenty of damage in advantageous positions.

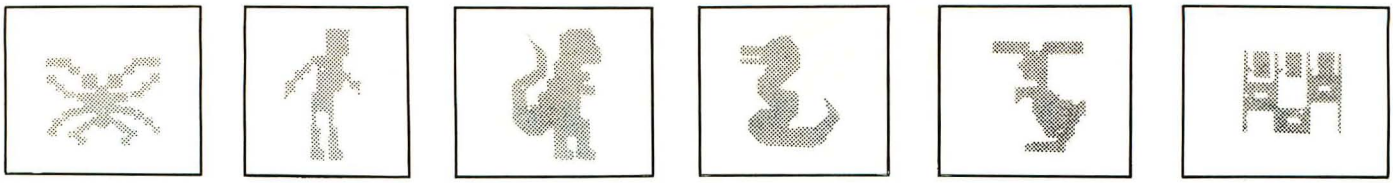
Some Helpful Hints

A few hints to get you going — look out for the blue flapping bird. It drops bombs (I think they are bombs...) which are hard to avoid. If you hit the bird several times with your missiles, however, you can transform it into a giant weapon which you can guide by bouncing your own missiles off it. Second, when advancing up the screen from an open room, you'll see a line of block platforms bearing down on you. Position yourself so you'll be standing on one of the platforms when the scrolling stops. Otherwise, you'll fall back down into the previous room. Other than that, you're on your own....

A Perfect Blend

Shamus Case 2 blends adventure and arcade features to create an enjoyable experience. It incorporates arcade features seldom seen together in the same game: jumping, climbing and shooting. My advice: For a good time, call *Shamus Case 2,* from William Mataga and Synapse Software. Now where is my joystick...

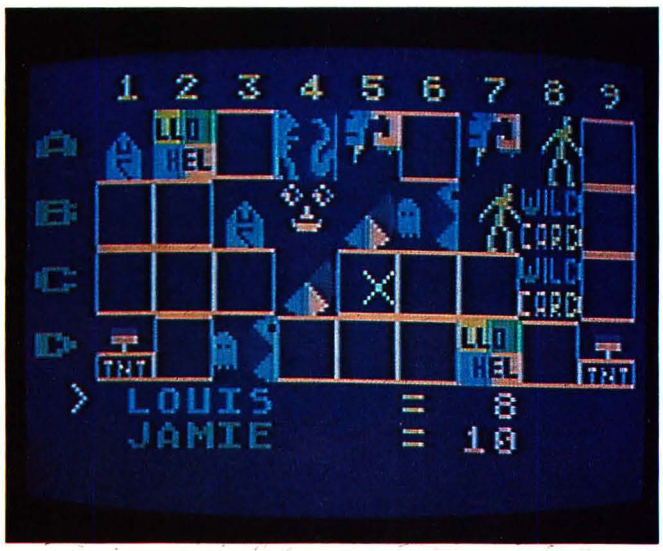
By William Mataga from Synapse Software, 5221 Central Ave., Richmond, CA 94804. System requirements: Atari 400/800 with 16K (Cassette), 24K (Disk) and joystick. Suggested retail price: $34.95.



MATCHBOXES

Reviewed by David Plotkin

Are you tired of the same old shoot-em-up arcade games? Are you looking for a computer game that your whole family can enjoy again? Then look no further than *Matchboxes,* a remarkably appealing game in the mold of TV's "Concentration." The exceptional use of color, animation and sound makes *Matchboxes* fun to play for one or two players, and the varying levels of difficulty in the one-player mode make this game suitable for everyone from adults to preschoolers.



How To Play

Basically, *Matchboxes* is a matching game. The board consists of an eight by four grid of empty boxes. Play is simple: move your joystick-controlled cursor over one of the boxes and press the fire button. The box then exposes the hidden picture and plays a little tune. Move your cursor to another box and press the fire button again, exposing the second picture. If the two match, the pictures remain exposed for the rest of the game, you hear a "victory" tune, your score goes up, and you get another turn. Of course, if the two pictures don't match, the boxes turn over, hiding the pictures once again. If you are playing *Matchboxes* in one of the word match modes, then a word hidden underneath the board is partially exposed and you have a chance to guess the right word. More on this in a moment.

There are many ways to play *Matchboxes.* You can play against a human opponent, or play against the computer. If you choose to play against the computer, you have a choice of three difficulty levels, which determine how well the Atari "remembers" the location of unmatched pictures. The winner is the person (or computer!) with the highest number of matches when all possible matches have been made. From a programming standpoint, the artificial intelligence routine which regulates how "smart" the computer is is most impressive.

If you choose to play the game in word match mode, each time a successful match is made two more blocks of the hidden word underneath are exposed, and the winner is the player who correctly identifies the word. The word itself can be generated either by the computer or by input (by someone other than the player(s)). Also, the word can be displayed backwards or with the letters scrambled to increase difficulty.

By Al Cheser from Broderbund Software, 1938 Fourth Street, San Rafael, CA 94901. System Requirements: Atari 400/800/1200 — 16K Cassette; 32K Disk. Suggested retail price: $29.95.

Amazing Animation

The most outstanding feature of *Matchboxes* is the amazing animation of the pictures. Rather than remaining static, each picture moves! The kangaroos hop, the box of TNT blows up, and a jogger runs, just to mention a few. The board is a delight of color and high resolution animals and shapes, imaginative and amusing. Three different sets of pictures are included, so there is plenty of variety.

Fine Family Fare

Matchboxes is a fine family game. First of all, it is completely non-violent — no shooting at all. For very young children, the matching-only (no words) mode should provide tremendous enjoyment. Older children and adults can compete in the "word match" modes, and the animation should delight everyone. In the solitaire mode, the computer can be a competing friend for lonesome kids (and adults, for that matter).

This reviewer's hat is off to Broderbund Software for taking a gamble on a family-oriented game, whose publication helps to fill a glaring hole for this kind of software. The Atari is advertised quite heavily as being a family computer, and with Broderbund's *Matchboxes* in the disk or cassette drive, there can be no doubt. I highly recommend this game for all ages.

EXPLORING THE ATARI® FRONTIER

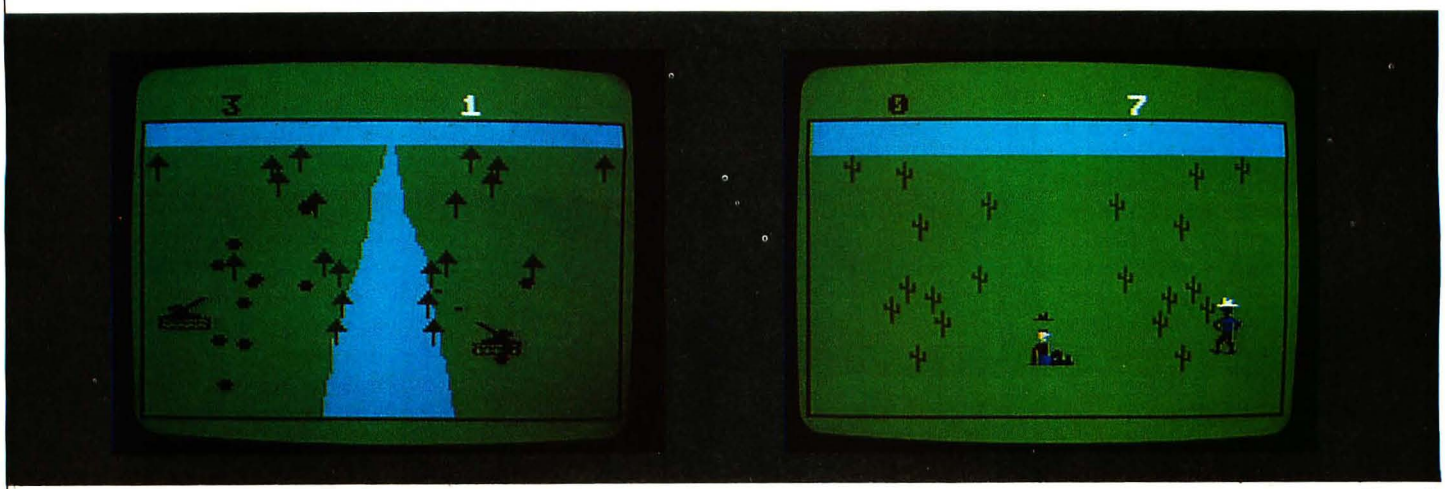


Photo 1 Photo 2

The Player/Missile Connection: Part IV

by Alan J. Zett

The purpose of Missile graphics is to represent very small shapes; Players represent medium-sized shapes. For instance, in the game *Outlaw/Howitzer* from APEX Software (see Photos 1 & 2), the stationary background displays (battlefields) are pixel (PLOT) graphics, while the animated player components are PMGs. The gunfighters in *Outlaw* are two Players of different colors overlapping one another. The PMG priority level is set so that the overlapping area of the Players produces a third color. Watch future installments for discussions of priorities and collision registers. In *Howitzer,* the tanks also comprise multiple Player graphics to show extra detail. The concept of each game is for two real-world players (one can be the computer) to eliminate one another by firing a weapon. The bullets from the guns in *Outlaw* and the artillery shells from the tanks in *Howitzer* are Missile graphics. Players can represent any major moving object in a video game, and Missiles can represent whatever they expel.

PMGs have other applications. Since PMGs stretch from the top of the screen to the bottom, they can join normal pixel graphics to add colors to stationary displays. For example, if you have drawn a planetary terrain, and you need to draw a spaceship sitting in the background, a PMG can add an extra touch of color. Groups of Players and Missiles can also be combined to form colorful accents for any display.

Playing with Missiles

Missiles, like Players, come in all shapes and sizes. Almost all the options for Players are available for Missiles. In most cases, even the same registers control Players and Missiles. Most of the procedures to enable Missiles are the same for Players. If you are using Player graphics, you have already done most of the important work, such as setting PMBASE to point at PMG RAM.

Tables 1a and 1b list all the registers this article discusses. SDMCTL is the first register of interest to us in the Tables. Figure 1 is a reprint of the bit map for SDMCTL, which appeared in Issue 42. Bit 4 selects the Player/Missile resolution. The two modes of vertical resolution that Players allow — single scan line and double — also apply to Missiles. The resolution mode selected controls both Players and Missiles.

SDMCTL also contains the bits that enable GTIA to access PMG RAM (GTIA PMG DMA) directly. GTIA can access PMG RAM if bit 2's value is 1. Bit 0 of the GRACTL register, shown in Figure 2, controls the Missile graphics registers. When bit 0 is set to 1, the Missile graphics registers are enabled. To fully enable PMGs, you must set the proper bits in both SDMCTL and GRACTL.

If only SDMCTL is set up, the DMA (direct memory access) occurs, but the PMG processing hardware is still "turned off." The result is that the computer processes PMGs, but they look wrong when displayed. The DMA freezes the microprocessor while another circuit uses the address and data lines to look at data in memory. This slows down the microprocessor, and the computer's overall speed decreases. When all the circuits that use DMA or interrupts are working, the Atari runs approximately 40 percent more slowly than normal, but some of these circuits are necessary for normal operation. Always disable features such as PMGs, when they are not needed.

Color

Missiles are less versatile than Players with respect to color. Each Missile's color is the same as its corresponding Player, because Missiles' original purpose is to represent objects that Players expel. The next installment of Frontier will discuss methods to make *all* the Missiles a different color from that of any Player and to combine all four Missiles to form a fifth Player.

Figures 3a and 3b represent the memory map for PMG RAM in double and single line resolution modes. Missiles, like Players, are located at an offset from PMBASE. PMBASE is one of the locations that you must set up when enabling Players. To find Missile RAM, add the offsets listed in the figures to the actual address of PMG RAM. If PMBASE is set to page 125 ($7D), then PMG RAM starts at 32000 ($7D00), and the start of Missile RAM is at 32384 ($7E80) for double line or 32768 ($8000) for single line resoluton.

Missile Mapping

Although Missile graphics function essentially the same as Players, using them presents programmers with a new concept to understand and a new problem in program development. Missiles are mapped in memory in a very complicated way. I have mentioned in the

Table 1a

IMPORTANT PMG SHADOW REGISTER LOCATIONS

Hex	Dec	Title	Register Description
006A	00106	RAMTOP	Top of RAM pointer.
022F	00559	SDMCTL	Direct Memory Access Control.
02C0	00704	PCOLR0	Player 0 color.
02C1	00705	PCOLR1	Player 1 color.
02C2	00706	PCOLR2	Player 2 color.
02C3	00707	PCOLR3	Player 3 color.

Table 1b

IMPORTANT PMG HARDWARE REGISTER LOCATIONS

Hex	Dec	Title	Register Description
D000	53248	HPOSP0	Player 0 horizontal position.
D001	53249	HPOSP1	Player 1 horizontal position.
D002	53250	HPOSP2	Player 2 horizontal position.
D003	53251	HPOSP3	Player 3 horizontal position.
D004	53252	HPOSM0	Missile 0 horizontal Position.
D005	53253	HPOSM1	Missile 1 horizontal position.
D006	53254	HPOSM2	Missile 2 horizontal position.
D007	53255	HPOSM3	Missile 3 horizontal position.
D01D	53277	GRACTL	Player/Missile Graphics control.
D407	54279	PMBASE	Memory page of PMG data.

Figure 1

SDMCTL — DIRECT MEMORY ACCESS CONTROL ($022F)
A shadow register for DMACTL ($D400) which writes data into the DMA control register in hardware.

Bit Map:

Bit:	7	6	5	4	3	2	1	0

B7, B6 — Not used
B5 — 1 Enables antic DMA instruction fetch.
B4 — 1 Enables single line PMG resolution.
0 Enables double line PMG resolution.
B3 — 1 Enables player DMA.
B2 — 1 Enables missile DMA.
B1, B0 — 0, 0 No playfield DMA.
0, 1 Enables narrow playfield DMA. (128 color clocks wide)
1, 0 Enables normal playfield DMA. (160 color clocks wide)
1, 1 Enables wide playfield DMA. (192 color clocks wide)

Figure 2

GRACTL — GRAPHICS CONTROL ($D01D)
Writes data to the graphic control register in hardware.

Bit Map:

Bit :	7	6	5	4	3	2	1	0

B7, B6,
B5, B4, B3 — Not used
B2 — 1 Enables input latches for TRIG0-TRIG3 registers.
0 Resets latches and TRIG0-TRIG3 act as normal.
B1 — 1 Enables player DMA for player graphics registers.
B0 — 1 Enables missile DMA for missile graphics registers.

Exploring The Atari Frontier, ***continued***

past that Players require one byte for each horizontal line of the shape. Each byte consists of eight bits that correspond to the eight pixels in each line of the Player. Missiles differ in this respect by using only one-fourth of a byte for each line, which gives a horizontal resolution of two bits or pixels. This means that one line for all four Missiles can be stored in one byte. Unfortunately, this is exactly what is done.

Figure 4 shows graphically how GTIA interprets Missile RAM. Each byte of Missile RAM comprises four groups of two bits. The first two bits (0 and 1) represent Missile 0, the next two bits (2 and 3) are Missile 1, and so on. Each group of bits in a Missile shape byte is separate and distinct to GTIA, but BASIC treats the memory location into which they are mapped as one location with one combined value. This allows Missiles to use a small amount of RAM, but complicates attempts to modify Missiles independently.

Moving Missiles

Missile motion methods are identical in theory to those for Players. The same algorithms used for moving Players work for Missiles. For horizontal motion, Missiles have a set of hardware registers analogous to the Player horizontal-position registers. Their locations appear in Table 1b as HPOSM0 through HPOSM3. The value placed here is a color-clock value (see issue #42) that determines the horizontal position of the missile shape.

Figure 3a

Double Line

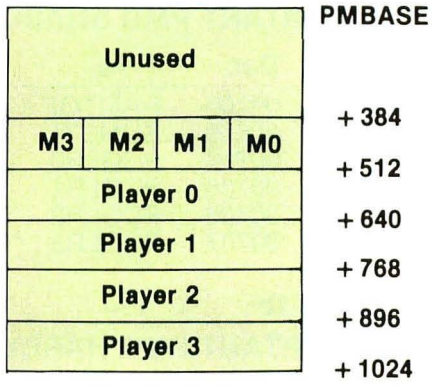
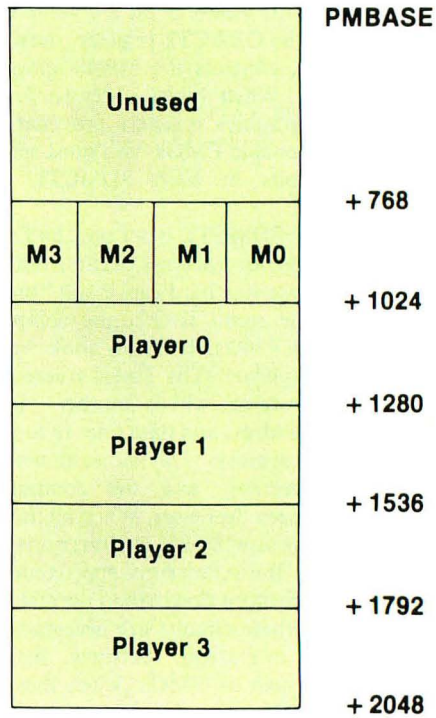


Figure 3b

Single Line



Listing 1b

```
0000          0100          *=   $0680     ;ASSEMBLY LOCATION.
              0110 ;
0680 68       0120 INIT     PLA            ;REMOVE # OF ARGS.
0681 68       0130          PLA            ;GET MSB OF MISSILE
0682 85D5     0140          STA  $D5       ; RAM AND STORE IT.
0684 68       0150          PLA            ;GET LSB OF MISSILE
0685 85D4     0160          STA  $D4       ; RAM AND STORE IT.
0687 68       0170          PLA            ;DISCARD MSB AND PUT
0688 68       0180          PLA            ; LSB OF THE MISSILE
0689 A8       0190          TAY            ; TO MOVE INTO 'Y'.
068A 68       0200          PLA            ;DISCARD MSB AND PUT
068B 68       0210          PLA            ; LSB OF DIRECTTION
068C AA       0220          TAX            ; TO MOVE INTO 'X'.
068D A903     0230          LDA  #$03      ;SET UP BIT MASK.
068F C000     0240 ADJUST   CPY  #$00      ;MASK ADJUSTED?
0691 F005     0250          BEQ  PUTMSK    ;SAVE MASK IF O.K.
0693 0A       0260          ASL  A         ;SHIFT MASK TO POINT
0694 0A       0270          ASL  A         ; TO NEXT MISSILE.
0695 88       0280          DEY
0696 90F7     0290          BCC  ADJUST    ;CHECK IF DONE.
0698 8DDB06   0300 PUTMSK   STA  MASK      ;SAVE MISSILE MASK.
069B A0FF     0310          LDY  #$FF      ;SETUP MOVE OFFSET.
069D 8A       0320          TXA            ;RESTORE DIRECTION.
069E D01F     0330          BNE  DOWN      ;MOVE UP IF ZERO.
06A0 A8       0340          TAY            ;FIX OFFSET FOR UP.
              0350 ;
06A1 ADDB06   0360 UP       LDA  MASK      ;GET MISSILE MASK
06A4 49FF     0370          EOR  #$FF      ; AND INVERT IT.
06A6 31D4     0380          AND  ($D4),Y   ;REMOVE THE EXISTING
06A8 91D4     0390          STA  ($D4),Y   ; MISSILE BITS.
06AA C8       0400          INY            ;POINT TO NEW BITS.
06AB ADDB06   0410          LDA  MASK      ;GET MISSILE MASK
06AE 31D4     0420          AND  ($D4),Y   ; AND EXISTING BITS.
06B0 88       0430          DEY            ;POINT TO DESTINATION.
06B1 11D4     0440          ORA  ($D4),Y   ;ADD ONLY MISSILE
06B3 91D4     0450          STA  ($D4),Y   ; BITS AND SAVE.
06B5 C8       0460          INY            ;POINT BACK AGAIN.
06B6 C0FF     0470          CPY  #$FF      ;CHECK IF LAST
06B8 D0E7     0480          BNE  UP        ; MISSILE BYTE.
06BA A900     0490          LDA  #$00      ;ZERO OUT OLD
06BC 91D4     0500          STA  ($D4),Y   ; EDGE CONTENTS.
06BE 60       0510          RTS            ;ALL DONE.
              0520 ;
06BF ADDB06   0530 DOWN     LDA  MASK      ;GET MISSILE MASK
06C2 49FF     0540          EOR  #$FF      ; AND INVERT IT.
06C4 31D4     0550          AND  ($D4),Y   ;REMOVE EXISTING
06C6 91D4     0560          STA  ($D4),Y   ; MISSILE BITS.
06C8 88       0570          DEY            ;POINT TO NEW BITS.
06C9 ADDB06   0580          LDA  MASK      ;GET MISSILE MASK
06CC 31D4     0590          AND  ($D4),Y   ; AND EXISTING BITS.
06CE C8       0600          INY            ;POINT TO DESTINATION.
06CF 11D4     0610          ORA  ($D4),Y   ;ADD ONLY MISSILE
06D1 91D4     0620          STA  ($D4),Y   ; BITS AND SAVE.
06D3 88       0630          DEY            ;CHECK FOR LAST
06D4 D0E9     0640          BNE  DOWN      ; MISSILE BYTE.
06D6 A900     0650          LDA  #$00      ;ZERO OUT OLD
06D8 91D4     0660          STA  ($D4),Y   ; EDGE CONTENTS.
06DA 60       0670          RTS            ;ALL DONE.
              0680 ;
06DB 60       0690 MASK     RTS            ;TEMPORARY STORAGE.
```

Figure 4

MISSILE RAM BIT MAP

	MISSILE DATA			
	M3	M2	M1	M0
1 BYTE {	00	10	10	11
	00	11	11	00
	00	11	10	11
	00	11	01	00
	00	10	01	11
	00	01	00	00
	00	01	11	11
	00	01	01	00
	00	01	01	11
	00	11	11	00
	00	11	10	11
	00	11	01	00
	00	11	01	11
	00	10	10	00

8 BITS

1 BYTE

Vertical Missile motion, however, is more complicated, because of the bit-mapping. As with Players, you must rotate the shape data of Missiles in memory to accomplish vertical motion. With Missiles, this process is more difficult, since we are not moving whole bytes of Player data, but a few bits at a time. Using a routine in BASIC to do this would take so long that you could probably enjoy a quick frontal lobotomy before it was finished executing. The only reasonable approach to something this complicated and time-consuming is to use machine language, so Kerry Shetline and I wrote the program in Listing 1a. This two-bit scrolling routine allows fast vertical movement of Missile graphics. The BASIC code pokes in the machine language routine from DATA statements. After running the program, you can move Missiles with the following BASIC USR statement:

var = USR(addr, pmbase, missile, direction)

var is a dummy variable for the USR command.
addr is the address of the machine-language routine (1664 decimal).
pmbase is the absolute address of PMG RAM plus the Missile offset.
missile is the number of the Missile you wish to move (0-3).
direction is 0 to move up or 1 to move down.

Listing 1b is the assembly source code for the Missile-move routine. I'll explain it line by line to help you understand Missile vertical movement. The first instruction after setting the object code assembly address is a PLA instruction. The first byte on the stack is the number of parameters in the USR function call, excluding the address of the user routine (1664), which is not placed on the stack. In this case, there are always three parameters, so the routine does nothing with the first value it pulls from the stack. Lines 130 - 160 put the address of PMBASE into a free zero-page location for use with the 6502 indirect-addressng instructions. Lines 170 - 190 place the number of the Missile to move into the Y register. Lines 200 - 220 place the direction (0 or 1) into the X register temporarily. Line 230 sets up the bit mask for Missile number 0 in the Accumulator (or A register). What is a bit mask, and what does masking do?

Listing 1a

```
10000 FOR X=1664 TO 1755
10010 READ Y:POKE X,Y:NEXT X
10020 DATA 104,104,133,213,104,133
10030 DATA 212,104,104,168,104,104
10040 DATA 170,169,3,192,0,240,5,10
10050 DATA 10,136,144,247,141,219,6
10060 DATA 160,255,138,208,31,168
10070 DATA 173,219,6,73,255,49,212
10080 DATA 145,212,200,173,219,6,49
10090 DATA 212,136,17,212,145,212,200
10100 DATA 192,255,208,231,169,0,145
10110 DATA 212,96,173,219,6,73,255,49
10120 DATA 212,145,212,136,173,219,6
10130 DATA 49,212,200,17,212,145,212
10140 DATA 136,208,233,169,0,145,212
10150 DATA 96,96
```

Masking Out Missiles

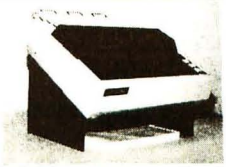
Whenever you modify a Missile shape, you should modify only the bits in RAM associated with that Missile. For example, if a line of a Missile 2 shape requires the left pixel to be turned on, then bit 4 must be set to 0 and bit 5 must be set to 1. A byte with thses bits would have a decimal value of 32. To turn on the left pixel in the fortieth line of Missile 2, we would have to store (or POKE from BASIC) a value of 32 into the fortieth byte of Missile RAM. Not so difficult, right? Wrong. What if the fortieth byte of Missile RAM also contained important bits of data for Missile 3? When we put the value of 32 into byte 40, the bits for Missile 3 would be erased, because 32 is the value for bits 4 and 5 only. If there are other bits of Missile data in the fortieth byte, those bits must remain unchanged. Instead of putting a 32 into byte 40, we must *add* 32 to what is already in byte 40. But that assumes bits of 4 and 5 were zero to start

★ FREE SHIPPING ★
Within Continental 48 States

MICRO IMAGES
INDUSTRIES INC.

SOFTWARE FOR THE TRS80
MAXI CRAS Mdl I/III $84.95
MAXI MANAGER B.O. Mdl I/III $119.95
NEWSCRIPT 7.0 Mdl I or III $109.95
LDOS - 5.1 Mdl I or III $109.95
GEAP w/Dotwriter 1.5 ..... $84.95
SUPERUTILITY + Ver. 3.0 ..... $59.95
MULTIDOS 1.6 SD/DD/III $89.95
DATA-WRITER 2.0 Mdl I/III $124.95

JOYSTICKS
TG for Apple II & IBM $59.95
TG Trak Ball Apple II, IBM & Atari .. $59.95
Kraft for Apple & IBM $59.95
Trisstick to TRS80 ..... $35.95
Atari Sticks per pair $19.95



SPACE AGE PRINTER STANDS

	Clear	Bronze
MX80	27.50	29.95
Microline 82A w/slot	27.50	29.95
NEC 8023A	27.50	29.95
Prowriter 8510	27.50	29.95
MX100	34.95	39.95
Microline 83A w/slot	34.95	39.95

RIBBONS

ZIP BOX RELOADS

	½ Dz.	Dz.
Epson MX 70/80-20 Yds	24.00	42.00
Epson MX 100-30 Yds	30.00	52.00
NEC/Prowriter	21.00	36.00
Centronics 730/737/739/779 or LP-I/II/IV-16Yds	18.00	32.00

All ZIP BOXES are individually sealed black nylon and require no rewinding. Epson Reloads also available in red, blue, brown, green & purple. Any mix allowed.

CARTRIDGES

	Each	Dozen
Epson MX70/80	7.00	70.00
Epson MX100	12.00	125.00
Prowriter 8510 & NEC 8023A	7.50	80.00
RS LP III/V	6.50	70.00
RS LP VI/VIII	6.50	65.00
RS DSY WH II or DWP 410	6.50	70.00
RS DSY WH II - Nylon	6.50	70.00
MICRLNE 80/82A/83A/92	N/A	30.00
MICRLNE 84 ½x40 yds	5.50	60.00
Diablo Hytype II - Multi Strike	6.50	65.00
Qume - Multi Strike	5.00	50.00
NEC Spin - Hi Yld - Multi Strike	7.00	70.00
Centronic 703/04/53	11.00	120.00

Minimum order 3 cartridges - any mix. For smaller quantities add $1.50 per order. All our reloads and cartridges are manufactured by one of the oldest and most reputable ribbon Mfg's. in the country.

★ ★ ★ ★ ★ QUALITY GUARANTEED ★ ★ ★ ★ ★

ORDERING INFORMATION
No credit cards at these low prices. Add $2.00 on all COD orders. Certified Ck/MO/COD shipped immediately. Please allow 2 weeks for personal checks. For extra fast service phone in your COD order. Free shipping within Continental 48 states via UPS ground. For Canada, Hawaii, Alaska, applicable shipping and insurance charges apply. Prices subject to change without notice. New York State residents please add appropriate sales tax.
The items listed above are a cross-section of our product line. We carry the full line of most companies listed in the ad, plus much more. SEND FOR YOUR FREE CATALOG.

146-03 25th Road, Dept. S
Flushing, New York 11354
Mon.-Thurs. 10 A.M.-9 P.M. (212) 445-7124 Fri. & Sat. 10 A.M.-5 P.M.

FIGURE 5a.
AND TRUTH TABLE

COMPARE		RESULT
Bit 1	Bit 2	Bit
0	0	0
0	1	0
1	0	0
1	1	1

FIGURE 5b.
OR TRUTH TABLE

COMPARE		RESULT
Bit 1	Bit 2	Bit
0	0	0
0	1	1
1	0	1
1	1	1

FIGURE 5c.
XOR TRUTH TABLE

COMPARE		RESULT
Bit 1	Bit 2	Bit
0	0	0
0	1	1
1	0	1
1	1	0

Exploring The Atari Frontier, ***continued***

with. If byte 40 already contains the shape data for Missile 2, then adding 32 does not yield the correct result. Before adding the new bit values into byte 40, we must set the old bits to zero.

It's Only Logical

Masking is a machine language technique for operating on specific bits of a byte, using logical (bit-wise) operators such as AND, OR, and XOR (Exclusive OR). The corresponding 6502 instructions are AND, ORA, and EOR. BASIC has no quick or simple way to do this. Even though BASIC contains AND and OR operators, they don't work like logical AND and OR. BASIC does not work on numbers bit-by-bit, the way logical operators and 6502 machine code do. Truth tables describe how a logic circuit reacts to two input signals. When combining two bytes using logical operators to compute a new value, it examines each byte, bit by bit. Each of the logical operators reacts differently to comparisons of the same values. Figures 5a, 5b, and 5c contain the truth tables for the AND, OR, and XOR operators. The logical operator AND results in a 1 bit only when the first bit *and* the second bit are 1; all else results in a 0 bit. OR results in a 1 bit when the first bit *or* the second bit *or* both are 1; a zero results only when both are 0. XOR results in a 1 bit when both bits are different (one of the bits is 1 and the other bit is 0), but *not* when they are both the same. For example, 102 ($66 or 01100110 binary) AND 85 ($55 or 01010101 binary) is 68 ($44 or 01000100 binary); 102 OR 85 is 119 ($77 or 01110111 binary); and 102 XOR 85 is 51 ($33 or 00110011 binary). Note that combining one value and another with XOR inverts each bit in the second value that corresponds to a 1 bit in the first.

These commands are an excellent addition to any programming language, and mandatory for working with Missiles. Listing 2a is an assembly source code listing of the routine used by Listing 2b, which is a short BASIC routine that adds these three logical operator commands to Atari BASIC. The source code deserves some close scrutiny by 6502 programmers. It uses a self-modifying code technique that is not readily apparent. The LDA statements in lines 300 - 340 are not permanent. All of the operands (the numbers following the LDA mnemonic) change every time the routine is called. However, the most unusual technique in this routine is replacing the second and fourth LDA opcodes (mnemonics) with one of four bytes from the table at line 390. Depending on the command number (1-3) the LDA opcode is replaced with the AND, ORA, or EOR opcode. In case an illegal command number has been entered, line 140 masks off the value of the command number to 0 - 3. The table is arranged so that, if the command number is illegal (equal to zero), then the RTS instruction at the end of the routine (which is the

continued on page 80

Listing 2b

```
10000 FOR X=1536 TO 1582
10010 READ Y:POKE X,Y:NEXT X
10020 DATA 104,104,104,41,3,170,104
10030 DATA 141,32,6,104,141,38,6,104
10040 DATA 141,34,6,104,141,40,6,189
10050 DATA 43,6,141,33,6,141,39,6,169
10060 DATA 0,0,0,133,213,169,0,0,0
10070 DATA 133,212,96,41,9,73
```

Listing 2a

```
0000          0100          *=   $600
0600 68       0110          PLA            ;REMOVE # OF ARGS.
0601 68       0120          PLA            ;DISCARD MSB OF CMND#.
0602 68       0130          PLA            ;GET LSB OF CMND# AND
0603 2903     0140          AND  #$03      ; MASK OFF BAD BITS.
0605 AA       0150          TAX            ;SAVE FOR TABLE LOOKUP.
0606 68       0160          PLA            ;GET MSB OF VALUE1.
0607 8D2006   0170          STA  H1+1      ;SAVE IN 1ST LDA VALUE.
060A 68       0180          PLA            ;GET LSB OF VALUE1.
060B 8D2606   0190          STA  L1+1      ;SAVE IN 3RD LDA VALUE.
060E 68       0200          PLA            ;GET MSB OF VALUE2.
060F 8D2206   0210          STA  H2+1      ;SAVE IN 2ND LDA VALUE.
0612 68       0220          PLA            ;GET LSB OF VALUE2.
0613 8D2806   0230          STA  L2+1      ;SAVE IN 4TH LDA VALUE.
0616 BD2B06   0240          LDA  TABLE,X   ;LOOKUP LOGIC OPCODE
0619 8D2106   0250          STA  H2        ; IN TABLE AND STORE
061C 8D2706   0260          STA  L2        ; AT 2ND &4TH LDA.
              0270 ;
              0280 ; SELF MODIFYING CODE.
              0290 ;
061F A900     0300 H1       LDA  #$00      ;VALUE CHANGES.
0621 A900     0310 H2       LDA  #$00      ;EVERYTHING CHANGES.
0623 85D5     0320          STA  $D5       ;SAVE MSB FOR USR.
0625 A900     0330 L1       LDA  #$00      ;VALUE CHANGES.
0627 A900     0340 L2       LDA  #$00      ;EVERYTHING CHANGES.
0629 85D4     0350          STA  $D4       ;SAVE LSB FOR USR.
              0360 ;
              0370 ; TABLE OF MODIFYING OPCODES.
              0380 ;
062B 60       0390 TABLE    .BYTE $60      ;'RTS' FOR INVALID.
062C 29       0400          .BYTE $29      ;'AND' IMMEDIATE.
062D 09       0410          .BYTE $09      ;'OR' IMMEDIATE.
062E 49       0420          .BYTE $49      ;'EOR' IMMEDIATE.
```

WE INTERRUPT THIS AD TO BRING YOU THIS IMPORTANT PROGRAM...

Now you could add **your** program to the rapidly expanding list of MMG Software with MMG's **Write Your Own Program Contest!** Each month a program will be chosen and developed from the entries and suggestions sent in by **you** and best of all, the winners will receive royalties from the sale of their entry. You don't have to be a computer whiz to enter, so see your local retailer who carries ATARI products for details. FINAL FLIGHT is only one of the many exciting and useful programs for the ATARI system now available from MMG Micro Software that are designed with you in mind. At MMG, we believe that people are as important as the programs they use.

MMG
micro software
P.O. Box 131 Marlboro, NJ 07746
(201) 431-3472

© ZADCO 1983

ATARI is a registered trademark of ATARI, Inc.

Exploring The Atari Frontier, *continued*

first entry in the table as well) replaces the LDA opcode. This has the effect of skipping the routine entirely. This method yields code that is both compact and complicated.

Use the new commands in the same manner as the Missile moving routine. After running the program to install the machine-language routine, you can access the routine with the BASIC USR function in the format:

var = USR(addr, cmnd#, value1, value2)

Where:

var is the variable in which the result is stored.

addr is the address of the machine language user routine.

cmnd# is the number of the command (1 = AND, 2 = OR, 3 = XOR).

value1 is the first value to be evaluated.

value2 is the second value to be evaluated.

Note that you can also use the USR function in IF and PRINT statements. For example:

PRINT USR(1536,1,17,20) displays the value of 17 AND 20.

IF USR(1536,3,A,B) THEN PRINT CHR$(125); clears the screen if A XOR B is not zero.

What Is A Bit Mask?

Referring back to listing 1b, a bit mask is a byte value with a specific pattern of bits to isolate and operate upon corresponding bits in another value. Since Missiles are two bits wide, a mask for any one Missile would have to be two bits wide. The value of three selected in line 230 is there because three in binary is 00000011. The ones in this value correspond to the position of the bits for Missile 0 in a byte of Missile RAM. Combining this mask and any other byte with the AND operator leaves only the contents of the first two bits intact.

Lines 240 - 290 shift the bit mask in the Accumulator to line up with the number of the Missile we wish to move. The ASL A instruction has the effect of shifting all the bits in the Accumulator one bit to the left. Bit 7 moves to the Carry flag, bits 6 through 0 move to bits 7 through 1, and a 0 is put into bit 0. You can think of the Carry flag as a 1-bit storage location, although its main purpose is quite different. The net result of both ASL A's is to shift the mask over two bits. This has the effect of pointing the mask to *the next set of* Missile bits. Since the Y register currently contains the number of the Missile we wish to move, we can use it as a counter that tells us when to stop shifting the mask.

Line 240 tests to see if the shifting is complete. If Y currently holds a 0, then the mask has been shifted the correct number of bits. Line 250 jumps past the mask shifting routine if Y equals 0. The ASL A's in lines 260 and 270 move the mask, and lines 280 and 290 decrease Y by one and branch back to continue the shifting routine.

Line 300 stores the finished mask temporarily in a free memory location. Line 310 sets up the memory offset pointer in Y, which will be used with the indirect-addressing instructions later. The Y register can act as an offset to a memory address in page zero. For example, if memory locations $D4 and $D5 contain the value 32768 ($8000) and Y contains 0, the instruction LDA ($D4),Y puts the contents of the memory location 32768 into the Accumulator. However, if Y contains 32 ($20), the same instruction puts the contents of memory location 32800 ($8020), which is 32768 plus 32 ($8000 + $20), into the Accumulator. In the Missile move routine, the Y register is used as an offset into the Missile RAM. By incrementing and decrementing Y, the routine can step through Missile memory without having to calculate new memory addresses for each byte.

Lines 320 - 330 load the Accumulator with the direction value previously stored in the X register, then branch to the DOWN routine if the direction is non-zero. Line 340 adjusts the offset pointer for the UP routine.

Lines 360 - 510 contain the UP routine, which is functionally identical to the DOWN routine, except for the Y offset pointer. All of the increment and decrement Y instructions (INY, DEY) in the DOWN routine are the opposite of those in the UP routine, and the conditional test at the end of the routine is for a different value. Because the two routines are so similar, I'll discuss the UP routine only.

Lines 360 and 370 retrieve the mask value from the temporary memory storage location and invert it with the XOR (EOR) logical operator. Combining the Accumulator and a value of 255 ($FF or 11111111 binary) with this operator inverts every bit in the Accumulator. In Line 380, the inverted mask, along with the logical operator AND, erase the two bits of the selected Missile in the selected byte. Since the mask in the Accumulator has a 1 in the bits that do not correspond to the Missile being modified, only the chosen Missile's data can change. Line 390 stores the new byte in place of the original contents of the Missile shape byte. Lines 400 - 450 masks the byte to be moved to retain only the selected Missile bits in the Accumulator. Next, the OR function installs the resulting value without altering the other Missile data in the destination byte.

To explain the entire routine, I'll use another example. Locations $D4 and $D5 contain the value 16000 ($3E80); the Y register contains 0; location 16000 ($3E80) contains 44 ($2C or 00101100 binary); location 16001 ($3E81) contains 229 ($E5 or 11100101 binary); and the MASK location is set for Missile 1 (mask = 00001100 binary).

At the beginning of the UP routine, the Accumulator is loaded with the Missile bit mask, which the EOR #$FF statement then inverts (Accumulator = 11110011 binary). Next, we eliminate the old Missile data at location 16000 with an AND instruction, combining the contents (00101100 binary) with the Accumulator (11110011 binary). The result (00100000 binary) is stored back into the destination byte. The mask is again loaded, and the Missile bits to move are screened by combining the mask (00001100 binary) and the contents of the source byte at 16001 (11100101 binary) with another AND. This result (00000100 binary) and the destination byte (00100000 binary) are combined with an OR. This final value (00100100 binary) is stored back into the destination byte. This process continues until 256 bytes have been moved. Lines 460 -480 test for the completion of the process. Finally, a zero byte is placed at the end of the Missile to prevent the routine from copying pieces of old data after a Missile move.

This brings us to an important point. This particular Missile move routine moves single line resolution Missiles. If you use double line resolution PMGs, you must change the BASIC and assembly code. The appropriate modifications to the BASIC listing appear in Listing 3 as a new set of DATA statements. To make the old routine work with double line resolution, type these new lines into the old program. To modify the assembly code, change the

Listing 3

```
10060 DATA 160,127,138,208,31,168
10100 DATA 192,127,208,231,169,0,145
```

continued on page 82

☐ APPLE ☐ EAGLE ☐ IBM, PC ☐ NORTHSTAR ☐ TRS-80 II 8" ☐ OSBORNE ☐ FRANKLIN ☐ STANDARD CP/M 8" ☐

☐ ACCOUNTS PAYABLE ☐ MAILING ☐ SPELLING ☐ COMMUNICATIONS ☐ REAL ESTATE ☐ TAXES ☐ STOCK MARKET ☐ INVENTORIES ☐ HEATH/ZENITH 89 8"

☐ XEROX 820 ☐ GAMES ☐ COMPILERS ☐ UTILITIES ☐ BUSINESS ☐ ACCOUNTING ☐ SPREAD SHEETS ☐ MEDICAL ☐ DENTAL ☐ PAYROLL ☐ GENERAL LEDGER

RENT SOFTWARE BEFORE YOU BUY!

from our

SOFTWARE RENTAL LIBRARY

You can now RENT the most popular software available for just 20-25%* of Manufacturers' Retail Price

- Eliminate the risk—rent first!
- 100% of rental fee applies toward purchase
- All purchases are 20% Off of Manufacturer's Suggested List
- Rentals are for 7-days (plus 3 days grace for return shipping)

SPECIAL INTRODUCTORY OFFER

There are now 2 different plans to choose from:

Join the **Game Group,** $25.00 per year and rent as many games as you like for only 20-25% of Mfrs. Sugg. Retail Price.* Minimum order, 3 game rentals	Join the **Business Group,** $50.00 per year and rent as many business application programs as you like for only 20-25% of Mfrs. Sugg. Retail Price.*

REMEMBER, THESE ARE NOT DEMOS, BUT ORIGINAL UNRESTRICTED SOFTWARE PROGRAMS

(complete with manuals in original manufacturers' packages)

To Immediately Order, or for more information:

UNITED COMPUTER CORP.
Software Rental Library
Culver City, California

Toll Free CALL 1-800 992-7777
In California CALL 1-800 992-8888
In L.A. County CALL 1-213 823-4400

Canadian Orders Welcome

MasterCard AMERICAN EXPRESS VISA

*Plus postage and handling.

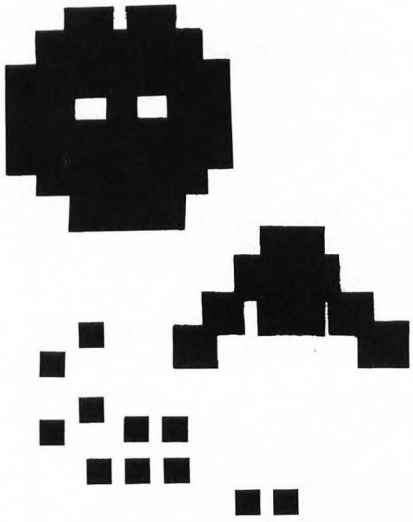
☐ EDUCATIONAL ☐ ACCOUNTS RECEIVABLE ☐ WORD PROCESSORS ☐ DATA BASES ☐ LANGUAGES ☐ GRAPHICS ☐

Exploring The Atari Frontier, *continued*

LDY #$FF in line 310 and the CPY #$FF in line 470 to LDY #$7F and CPY #$7F respectively.

Parting Shots

To wrap up this month's edition of Frontier, I've whipped up another demo for you to play with. It uses almost all the PMG registers discussed since the series began. To make the BASIC listing easier to understand, I assigned all the register locations to variables with the same names as those in Tables 1a and 1b. Listing 4 is an example of all the Players and Missiles together on a GRAPHICS 5 screen. Until next month....



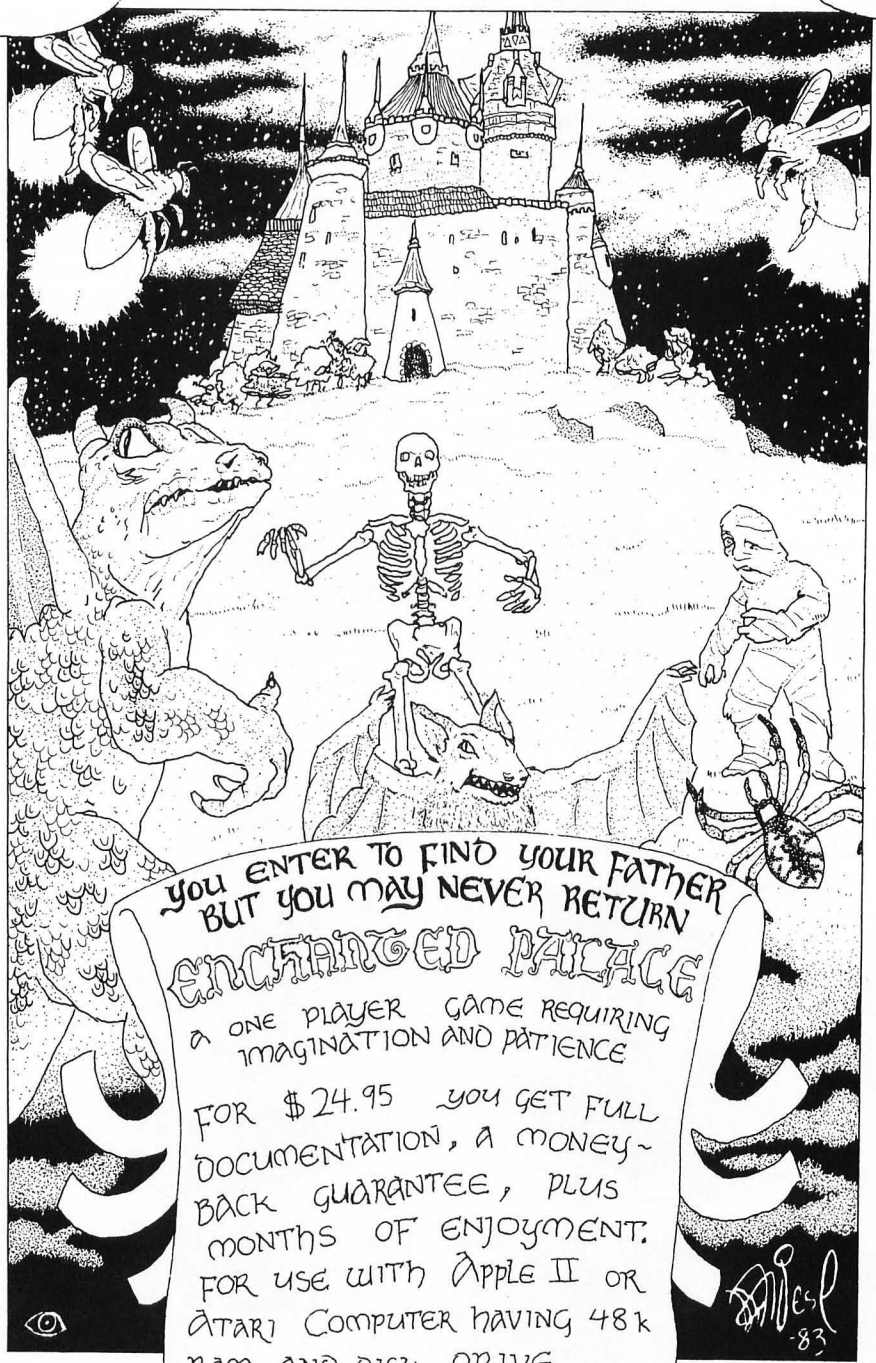
Listing 4

```
100 RAMTOP=106:SDMCTL=559:PCOLR0=704
110 PCOLR1=705:PCOLR2=706:PCOLR3=707
120 HPOSP0=53248:HPOSP1=53249
130 HPOSP2=53250:HPOSP3=53251
140 HPOSM0=53252:HPOSM1=53253
150 HPOSM2=53254:HPOSM3=53255
160 GRACTL=53277:PMBASE=54279
170 REM ----------------------------
200 BLUE=132:GOLD=38:RED=66:GREEN=196
210 ENABLE=3:DOUBLE=46:PMGRES=DOUBLE
220 REM ----------------------------
300 PMGRAM=PEEK(RAMTOP)-4
310 MISS=PMGRAM*256+384:POKE 19,17
320 POKE RAMTOP,PMGRAM:GRAPHICS 0
330 POKE PMBASE,PMGRAM:POKE 752,1
340 POKE SDMCTL,PMGRES:POKE 710,0
350 POKE GRACTL,ENABLE:?
360 REM ----------------------------
400 POKE PCOLR0,BLUE:POKE PCOLR1,GOLD
410 POKE PCOLR2,RED:POKE PCOLR3,GREEN
420 REM ----------------------------
500 RESTORE :FOR X=1664 TO 1755
510 READ Y:POKE X,Y:NEXT X
520 DATA 104,104,133,213,104,133
530 DATA 212,104,104,168,104,104
540 DATA 170,169,3,192,0,240,5,10
550 DATA 10,136,144,247,141,219,6
560 DATA 160,127,138,208,31,168
570 DATA 173,219,6,73,255,49,212
580 DATA 145,212,200,173,219,6,49
590 DATA 212,136,17,212,145,212,200
600 DATA 192,127,208,231,169,0,145
610 DATA 212,96,173,219,6,73,255,49
620 DATA 212,145,212,136,173,219,6
630 DATA 49,212,200,17,212,145,212
640 DATA 136,208,233,169,0,145,212
650 DATA 96,96
660 REM ----------------------------
700 DIM PMG$(1),VAR$(4):VAR$="PMG$"
710 LEN=1024:LOC=PMGRAM*256
720 REM ----------------------------
800 VNTP=PEEK(130)+PEEK(131)*256
810 VNTD=PEEK(132)+PEEK(133)*256
820 VVTP=PEEK(134)+PEEK(135)*256
830 STARP=PEEK(140)+PEEK(141)*256
840 AZ1=-1
850 AZ1=AZ1+1:FOR AZ=1 TO LEN(VAR$)
860 AZ2=PEEK(VNTP):IF AZ2>127 AND AZ<L
EN(VAR$) THEN 880
870 IF AZ2-128*(AZ2>127)=ASC(VAR$(AZ))
 THEN VNTP=VNTP+1:NEXT AZ:GOTO 910
880 IF PEEK(VNTP)<128 THEN VNTP=VNTP+1
:GOTO 880
890 VNTP=VNTP+1:IF VNTP<VNTD THEN 850
900 GRAPHICS 0:? VAR$;" ISN'T A LEGAL
VARIABLE":END
910 AZ=VVTP+AZ1*8+2:IF PEEK(AZ-2)<>129
 THEN 890
920 A=1:AZ1=LOC-STARP:GOSUB 930:AZ1=LE
N:GOSUB 930:AZ1=LEN:A=0
930 AZ2=INT(AZ1/256):AZ1=AZ1-AZ2*256:P
OKE AZ,AZ1:POKE AZ+1,AZ2:AZ=AZ+2:IF A=
1 THEN RETURN
940 PMG$=CHR$(0):PMG$(1024)=CHR$(0)
950 PMG$(2)=PMG$(1):DIM P0$(128),P1$(1
28),P2$(128),P3$(128),P$(7):P0$=PMG$:P
1$=P0$:P2$=P1$:P3$=P2$:P$=P3$
960 POSITION 15,11:? "PMG DEMO";:POSIT
ION 3,22:? "FRONTIER ISSUE# 44 BY ALAN
 J. ZETT";
970 REM ----------------------------
1000 FOR X=1 TO 42:READ Y:P0$(X)=CHR$(
Y):NEXT X:FOR X=1 TO 42:READ Y:P1$(X)=
CHR$(Y):NEXT X
1010 FOR X=1 TO 42:READ Y:P2$(X)=CHR$(
Y):NEXT X:FOR X=1 TO 30:READ Y:P3$(X)=
CHR$(Y):NEXT X:X=0
1020 DATA 8,62,127,107,62,28,0,20,62,1
07,127,62,28,0,34,62,127,107,62,28,0,2
0,62,107,127,62,20,8,8,62,127,107,62
1030 DATA 20,8,0,62,107,127,62,20,8,0,
0,0,8,0,0,0,0,0,8,20,8,0,0,0,8,0,42,0,
8,0,8,34,8,85,8,34,8,0,8,0,42,0,8,0,0
1040 DATA 0,8,20,8,0,0,62,65,93,85,93,
65,62,0,62,65,93,65,62,0,0,0,62,127,62
,0,0,0,0,0,127,0,0,0,0,0,62,127,62,0
1050 DATA 0,0,62,65,93,65,62,0,129,90,
60,24,0,0,24,255,24,0,0,24,60,90,129,0
,24,255,24,0,0,90,189,24,0,0,219,60
1060 DATA 24,0
1070 REM ----------------------------
1100 XI=1:YI=1:X=0:PMG$(495)=CHR$(255)
:X3=RND(0)*152+48:Y3=RND(0)*94:POKE HP
OSM0,119:POKE HPOSM1,122
1110 POKE HPOSM2,125:POKE HPOSM3,128
1120 X2=RND(0)*152+48:Y2=0:GOTO 1140
1130 PMG$(656+Y1)=P$:X1=RND(0)*152+48:
Y1=RND(0)*94
1140 POKE HPOSP0,80:PMG$(540)=P0$(X*7+
1,X*7+7):POKE HPOSP1,X1:PMG$(656+Y1)=P
1$(X*7+1,X*7+7):POKE HPOSP2,X2
1150 PMG$(767+Y2)=P$:PMG$(768+Y2)=P2$(
X*7+1,X*7+7):POKE HPOSP3,X3:PMG$(911+Y
3)=P$:PMG$(912+Y3)=P3$(X*5+1,X*5+5)
1160 X3=X3+XI:Y3=Y3+YI
1170 IF X3>200 THEN X3=199:XI=-XI
1180 IF X3<48 THEN X3=49:XI=-XI
1190 IF Y3>94 THEN Y3=93:YI=-YI
1200 IF Y3<0 THEN Y3=1:YI=-YI
1210 A=USR(1664,MISS,INT(RND(0)*4),0)
1220 Y2=Y2+1:IF Y2>127 THEN 1120
1230 X=X+1:IF X>5 THEN X=0:GOTO 1130
1240 IF PEEK(19)<25 THEN 1140
1250 FOR X=HPOSP0 TO HPOSM3:POKE X,0:N
EXT X:POKE SDMCTL,34:POKE GRACTL,0:POK
E RAMTOP,PEEK(RAMTOP)+4:GRAPHICS 0
```

LINES	SWAT CODE	LENGTH
100 - 300	CW	387
310 - 520	JU	300
530 - 640	NH	364
650 - 860	KB	385
870 - 950	DI	548
960 - 1030	TS	523
1040 - 1130	BH	557
1140 - 1220	FR	526
1230 - 1250	AQ	161

ENCHANTED PALACE

by TRUMAN HALL — UNICORN SOFTWARE



YOU ENTER TO FIND YOUR FATHER
BUT YOU MAY NEVER RETURN

ENCHANTED PALACE

A ONE PLAYER GAME REQUIRING
IMAGINATION AND PATIENCE

FOR $24.95 YOU GET FULL DOCUMENTATION, A MONEY-BACK GUARANTEE, PLUS MONTHS OF ENJOYMENT.

FOR USE WITH APPLE II OR ATARI COMPUTER HAVING 48k RAM AND DISK DRIVE

OUR SOFTWARE NON-PROTECTED FOR EASY BACK-UP.

SEND TO
UNICORN SOFTWARE
P.O. BOX 911
ST. GEORGE, UTAH 84770

FREDERICKSBURG

Reviewed by Stuart Hawkinson

Under cover of a chilling fog, Union troops are crossing hastily constructed pontoon bridges over the rain swollen Rappahannock River. Confederate forces occupy reinforced positions behind the stone wall along the road that passes by Mayre's Heights. General Lee is in a concealed position on a wooded hill to the south, while the new commander of the Union forces, General Burnside, is readying orders to attack from his command post to the east, across the river. Suddenly sniper fire breaks out! Bitter fighting rages briefly in Fredericksburg as Confederate sharpshooters stage a last-ditch defense of the town. The scene is set for one of the most hard-fought and futile battles of the Civil War.

From Avalon Hill Game Co., 4517 Harford Road, Baltimore, MD 21214. System Requirements: TRS-80 Model I or III, Level II BASIC with 32K memory and disk drive. Suggested retail price: $35.

How To Play

Fredericksburg is a two player, tactical war game that recreates this famous battle. Each player assumes the role of a commanding general and marshals his forces in an attempt to lead his army to victory. You play the game on a detailed map of the area surrounding Fredericksburg, using counters representing infantry, artillery and cavalry. The computer program keeps track of troop movements, evaluates the effect of artillery fire and determines the outcome of each combat engagement. A detailed manual provides illustrated rules and vital background information.

At the start of the game you must choose whether to use the historical placement of troops, restore a previously saved game, or manually lay out a new placement of troops. The computer generated positions are duplicated by the players using markers on the game board. Map coordinates are indicated by (x,y) positions marked on the 42 by 60 grid. Map details include rivers, houses, forest areas and other scenery. This attention to detail is characteristic of Avalon Hill's high quality board games. The heavy weight mapboard folds from its full 21 × 30 inch size into a compact 8 × 11 inch package for storage.

Each infantry and cavalry unit has a unique set of characteristics. In addition to the unit's position, the computer maintains a record of losses, morale, fatigue and effectiveness, as well as opposing forces. Markers show the unit's position on the board. If a unit is hidden by trees or is in a town, the opposing side cannot determine the unit's position immediately. This adds a degree of realism, especially in the artillery phase where you must place shots accurately. (Spotters can sometimes see the smoke from artillery pieces and report a concealed unit's position.)

When units are ordered to new positions during the movement phase, the data on strength, morale, etc. are displayed on the computer screen. You can give orders to move, fire, surrender, pass or verify any of the game information. Movements of the combat units

continued on page 86

Some Very Good Reasons to Buy an Echo Speech Synthesizer.

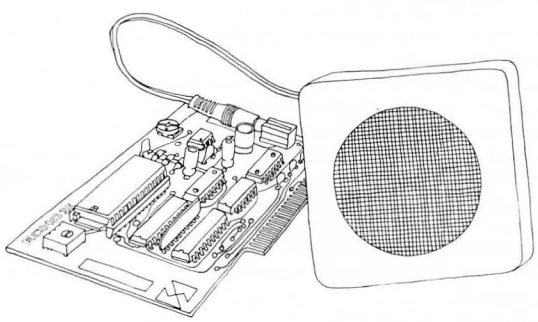
We're confident we have the most intelligible, versatile, and economical speech synthesizer on the market. Once you hear it, we're sure you'll be convinced too. All ECHOs are capable of speaking in four different voice modes which range from a robotic machine voice to natural female speech. (The fixed speech and custom modes are optional.)

It's Easy To Use

Unlike other speech systems, the ECHOs are very simple to use. It only takes a minute or two to get the ECHO talking. Any text which can be printed to the screen can be spoken. If you've written a BASIC program you can add speech with simple modifications.

Software Compatibility

Not only can you add speech to the programs you write yourself, over 25 top educational and adventure software manufacturers are currently designing programs to be compatible with the ECHO][. Be watching for details.



Value

Each ECHO comes ready to use with a speaker and tutorial-style manual. The ECHO][, priced at $149.95, also comes with a variety of demonstration and utility programs. The new ECHO GP (General Purpose), priced at $199.95 is a stand-alone unit with its own on-board microprocessor; it will interface with any computer through the serial port. All ECHOs have a two year warranty.

Bells And Whistles

If you want bells, whistles, music and sound effects, plus state-of-the-art sprite graphics capabilities, the ECHO technology is available on Synetix Systems' new Supersprite Board.

Check It Out

Most Apple dealers have the ECHO][available for demonstration as part of Street Electronics/ Orange Micro's unique Grappler+™, Bufferboard™, ECHO][™ Talking Demonstration.

Street Electronics Corporation

1140 Mark Avenue Carpinteria, CA 93013
Telephone (805) 684-4593

The Echo][is a registered trademark of Street Electronics Corporation. The Grappler+ and Bufferboard are registered trademarks of Orange Micro.

Fredericksburg *continued*

and artillery effectiveness are determined by a complex set of factors. For example, if a unit is moving during fog or rain, its range is restricted. Similarly, when a unit must cross a bridge, it not only slows down, but its vulnerability to artillery fire dramatically increases. These factors greatly enhance the realism of the battle simulation. Playing the game is a stimulating experience in military tactics applied to an ever-changing field of combat.

Artillery commands require giving map coordinates of the target position. The range of full effect is limited to about thirteen grid divisions (2600 yards). You give movement commands by typing a series of map directions for each grid the unit is to move. These directions are indicated by the numbers 1-8 for the map directions, plus "H" to halt before the full number of moves has been used. The computer handles most command inputs smoothly. However, the rather slow response to individual key strokes sometimes causes input errors, especially while repeating a series of similar commands for the numerous units involved. Most orders which commit the player to a course of action require a verification to prevent fatal errors.

The final condition for victory requires inflicting at least fifteen percent losses on the opposing side. An interesting feature of the game allows units to retire from action without their remaining troops being counted as casualties. This makes a commander think twice about committing his troops to certain destruction.

This degree of simulation realism is essential in good war games. It would not be possible to keep such accurate records and evaluate as many conditions in a non-computer board game of the same scope. Even with the computer's ability to evaluate each round rapidly, however, the battles seem to take as long as in real life.

A Few Flaws

While most aspects of this computer game were well tested for playability and accuracy, I found a few things which could be improved. Sometimes the consequences of a player's actions are unclear. For example, if you execute the surrender order, you aren't asked for the surrendering unit's number. The program simply uses the last unit mentioned during play.

I detected a flaw in the program when trying to save a game in progress. Somehow, the program wound up in the data verification section. Later, I saved the game without further consideration. A call to Avalon Hill resulted in a program fix which corrected this error. The correction had been inadvertently omitted from the production master disk. However, after successfully saving the game, no option to return to BASIC was provided.

This computer-assisted board game is very enjoyable. Having the computer evaluate artillery and combat results, as well as keep accurate statistics, makes the game move much faster than non-computer assisted games. Be forewarned however, the game still requires a full evening to complete, even for a limited engagement.

If you are attracted to tactical games, or think you might like to try your hand at commanding a force of seasoned troops, I recommend that you try *Fredericksburg.* Enhanced by detailed board graphics and realistic war simulation, this game is fast paced and exciting.

SoftSide® Selections

The Magazine *Especially* For Your TRS-80® Computer

CV — $14.95

DV $19.95

TRS-80® is a registered trademark of the Tandy Corporation.

Bound into the center of this issue, you'll find ***SoftSide Selections,*** the handy, pull-out booklet with program listings for your computer. If you bought your copy of ***SoftSide*** at a newsstand, your booklet contains this issue's Front Runner, ***Broadway,*** for the Atari®, IBM® PC, Apple® and TRS-80®.

This issue, ***SoftSide Selections*** for the Atari features:

- ***Broadway*** — you always get the current issue's Front Runner.

"There's a broken heart for every light on Broadway." Here's your chance to produce and direct a Broadway play. Can you get financing? Will it be a hit, or will the critics pan it? Time to get investors!

- ***K-Hawk*** — You will be amazed when you see what a programmer can do with less than one K of BASIC. ***K-Hawk*** is a complete, real-time flight simulator. The documentation and instructions for ***K-Hawk*** are much bigger than the program itself. Try it out!

Enhanced Disk and Cassette Versions

If you don't like typing, you need the ***SoftSide*** Disk or Cassette Version. The Cassette Version (CV) has all of the programs in ***SoftSide Selections*** on one handy cassette tape, plus the latest installment of the ***SoftSide*** Adventure Series.

SoftSide Disk Version (DV) has everything that the CV has, plus a *bonus program.* You get all this, and the benefits that only a disk can offer: speed, reliability and versatility.

- **TRS-80 DV Bonus Program — *Bee Wary***

Leo Christopherson's magic returns, this time with an entertaining, animated, arcade-style game.

- **DV and CV Bonus: *The SoftSide Adventure Series***

This issue's Adventure: ***Mad House,*** by Peter Kirsch.

Unjustly committed to an insane asylum, you must wend your way past the guards and the colorful inhabitants, who include most of the major figures of history — or so they say...

To order your copy of this issue's Disk or Cassette Version, or to subscribe to either of the ***SoftSide*** media versions, see the bind-in cards opposite page 40.

GREAT PRODUCTS for GREAT COMPUTERS

BOOKS

ATARI BASIC, Learning by Using. This is an action book. You program with it more than you read it. You use it, you discover with it. Learn ATARI BASIC easily through the short programs provided. A great source of work problems for teacher or student. 73 pages.
ISBN 3-92-1682-86-X $5.95

Games For The ATARI. Provides ideas on how to create your own computer games. Contained primarily BASIC examples but, for very advanced programmers, a machine language example is included at the end of the book. 115 pages.
ISBN 3-911682-84-3 $7.95

How to Program Your ATARI In 6502 Machine Language. To teach the novice computer user machine language, the use of an assembler, and how to call subroutines from the BASIC interpreter. 106 pages.
ISBN 3-921682-97-5 $9.95

FORTH on the ATARI. Explore this versatile programming language with numerous graphics and sound examples. Designed for both the novice and experienced programmer. 118 pages.
ISBN 3-88963-170-3 $7.95

ATARI BASIC Faster and Better. Programming tricks and techniques. Three companion software diskettes available (sold separately).
280 pages, ISBN 0-936200-29-4
$29.95

SECRETS OF ATARI I/O. Theory of operation and application programs for input/output to disk, screen, cassette, and RS232 serial port. Machine language with POKE tables for use with BASIC programs. Companion software available on disk (sold separately). 285 pages.
ISBN 0-936200-33-2
$29.95 retail.

SOFTWARE

CASDUP 1.0 & 2.0. To copy most BOOT tapes and cassette data files. 1.0 is a file copier. 2.0 is a sector copier. Cassette only $24.95

CASDIS. To transfer most BOOT tapes and cassette data files to disk. Disk only $24.95

FULMAP. BASIC Utility Package. VMAP-variable cross-reference, CMAP-constant cross-reference (includes indirect address references), LMAP-line number cross-reference, FMAP-all of the above. Will list "unlistable" programs. Also works with Editor/Assembler cartridge to allow editing of string packed machine language subroutines. All outputs may be dumped to printer. Cassette or disk $39.95

DISASM. To disassemble machine language programs. Works with or without Editor/Assembler cartridge. May be used to up or down load single boot files. All output can be dumped to printer. Cassette or Disk $24.95

DISDUP. For disk sector information copying. May specify single sector, range of sectors, or all. Copies may be made without read verify. Disk $24.95

V-COS Cassette Operating System. Control baud rate, leader time, screen width, background and letter color, cassette motor (on/off); provides cassette file verification. Cassette $24.95

DOWNLD Diskette Download Utility. Allows single BOOT files and Binary DOS files to be transferred from disk to cassette. Fast, easy, menu-driven. NOT FOR PROTECTED SOFTWARE. Disk $19.95

DISKPAK A program that frees the unused sectors on a boot disk for storage of normal DOS files without disturbing the boot file. May be used on all boot files including multi-stage files. NOT FOR PROTECTED SOFTWARE. Disk $24.95

ABFAB Assembly Disk Companion software to ATARI BASIC Faster and Better. Ten assembly language source programs and ten object programs. Disk $19.95

ABFAB Library Disk. 81 subroutines that can be included in your BASIC programs. Includes BASIC and machine language (some programs POKEd into memory). Disk $19.95

ABFAB Demo/Applications Disk. Eleven application programs and fourteen demonstration programs from the ATARI BASIC Faster and Better book. Disk $19.95

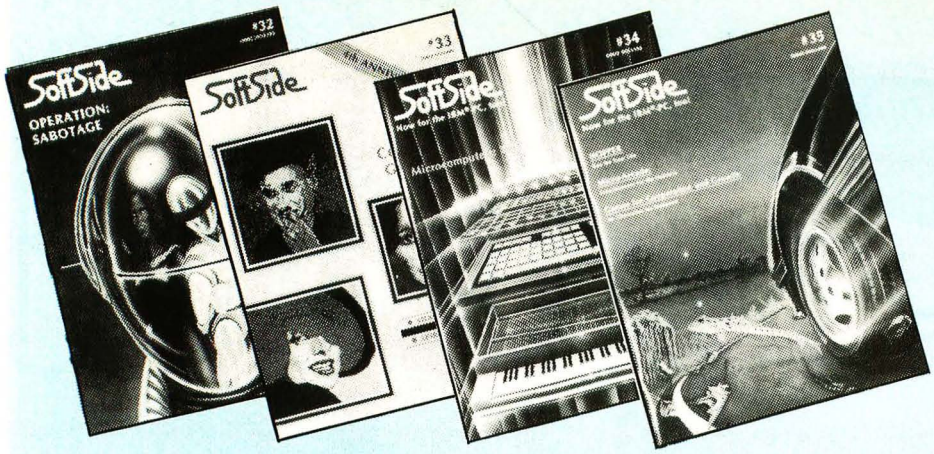
SECRET Library Disk for the ATARI. More than a dozen I/O routines that exemplify material in SECRETS OF ATARI I/O (sold separately). Includes Super Menu, Screen Dump, BASIC AutoRUN, Binary Loader, String Search, Disk Copier, Cassette Copier and much, much more. Disk $19.95

IJG products are available at computer stores, B. Dalton Booksellers and independent dealers around the world.

If IJG products are not available from your local dealer, order direct. Include $4.00 for shipping and handling per item. Foreign residents add $11.00 plus purchase price per item. U.S. funds only, please.

IJG, Inc. 1953 W. 11th Street
Upland, California 91786
Phone: 714/946-5805

ATARI TM Warner Communications, Inc.



SoftSide Back Issues...

Once They're Gone...Are They Gone Forever?

If you like the programs, reviews, and programming information in this issue of *SoftSide*... think of what's waiting for you in past issues!

Exciting Games Like:

- **Defense**
- **Micro Man**
- **Hopper**

Great Graphics Like

- **Shape Wizard**
- **Titan**
- **Flight of the Bumblebee**

PLUS

- **Databases**
- **Utility Programs**
- **Educational Programs and more!**

It's all here in the Back Issues of *SoftSide* magazine. And many of these issues are still available for your enjoyment. But not all. Several issues are SOLD OUT...others are available but supply is limited.

So check out the issues and features listed below and order today!

Back Issues.....$5.00 ea.*
Back Issue on cassette.....$12.95 ea.*
Back Issue w/ Enhanced Disk Version (contains an additional program).....$19.95 ea.*

To Order

Use the bind-in card on the facing page. Send order card and payment to:
***SoftSide* Magazine, 10 Northern Blvd., Northwood Executive Park, Amherst, NH 03031 (minimum order - $10.00.)**

*Prices good for USA orders only — for foreign pricing see page 57.

March 1982 - Hexapawn
Magical Shape Machine
Outer Space Attack
Killer Cars
Enhanced Disk Versions
PEEKER/POKER
Curse of the Pharaoh
Warpath

April 1982 - Microtext
Poster Maker
Atari' Banner Machine
Database
Enhanced Disk Versions
Semaphore
Renumbering for the Atari'
Screen Print

May 1982 - Solitaire
Micro-Man
Cross Reference
Ladders
Enhanced Disk Versions
List Formatter
Robot Battle
Breakthru

#30 - Escape from the Dungeons of the Gods
SWAT
Code Breaker
Sabotage
Piazza Hotel
Enhanced Disk Versions
Dr. Livingston
Random Access Database
Kriegspiel II

#31 - C.A.T.S.
Puzzle Jumble
Tunein
Dots
Enhanced Disk Versions
Applesoft Extensions
Menu Plus
Starbase Gunner

#32 - Operation Sabotage
C.A.T.S. Computer Assisted Testing System Part II & III
Enhanced Disk Versions
Cloze Test
Neat List
Up Periscope

#33 - Shape Wizard
SpiralGraphics
Graphic Writer
Enhanced Disk Versions
Hi-Res Character Generator
Paranoia
ILIST

#34 - Sabotage
Pokey Player
PC Blues Box
Tunein
Enhanced Disk Versions
Auto Menu
The Rotberg Synthesizer
Cavern Quest

#35 - Hopper
Blockade
Saucer Formation
Fireman
Enhanced Disk Versions
Sub Hunt
Deadstick Landing
Ping Pong/Hockey

#36 - Atlantis
Pokey Player II
Space Fire
Enhanced Disk Versions
Fortress
Atari Fig-FORTH
APL-80

#37 - Deluxe Personal Finance
Blackjack
Car Race
Garage Sale Records
Enhanced Disk Versions
Applesoft Extensions
Disk Peeker/Poker
Turret and Track

#38 - Deluxe Personal Finance
Concentration
Pokey Player III
Word Search Puzzle Generator
Squares A Deux
Enhanced Disk Versions
Super Quest
Human Errors
ST80-DUC™

#39 Flip-It II
Kangarilla
Trapped
Sort Routines for Atari Database
Page Up, Page Down
Savo Island
Enhanced Disk Versions
Space Fungus
Sucess
Force of Arms

#40 Mini-Golf
AppleMaze
Smokey
Escape From The Dungeon Of The Gods
Defense
Enhanced Disk Versions
Micro-Monopoly
Arachnid
Io Miner

#41 Poker Squares
Moving Marble Maze
Solitaire
The Memory Game
Enhanced Disk Versions
Apple Blaster
Five Card Stud Poker
Micro-Monopoly

#42 Microtext 2.0
King II
Hopper
Football
Screamin' Demon
Enhanced Disk Versions
Life II
Photon Flyers
Family Tree Organizer

#43 Relaaax...
Fall Constellations
Math Quiz
TV Art
User-Friendly Input
Enhanced Disk Versions
Nine Games For Pre-School Children
Chemistry Assistant
Gladiator

· Apple® · Atari® · IBM® PC · TRS-80®

Hints & Enhancements

Atari and Line Printer VIII

At present, we own both the Atari 400 and the TRS-80 Color computers. The CoCo is hooked up to a TRS-80 Line Printer VIII (80 column) printer.

To avoid the expense of another printer for the Atari 400, we have used a Centronics Standard Parallel Cable for the Atari 850 Interface to hook up the Atari to the TRS-80 Line Printer VIII printer, which plugs in fine.

We are aware that the Atari has been successfully hooked up to the TRS-80 Line Printer VII with no printout problems; however, when we hooked up the TRS-80 Line Printer VIII, we found a printout problem.

At the beginning of every line and at the forty-first character, we get a double character. We can avoid the double character at the beginning of the line by inserting an extra "LPRINT" at the beginning of each line; but we are unable to eliminate the double character printout at the forty-first character without beginning a new line.

Note: We hooked up the printer using other 850 Interfaces and both the Atari 400 and 800.

We would like to know if anyone else has tried the Atari and TRS-80 Line Printer VIII combination and how this problem might be overcome. Any helpful suggestions would be appreciated.

Beverly R. Elroy
Hemet, CA

Editor's reply: Readers, any comments?

Purging IBM PC Files

IBM PC DOS's ERASE or DEL command removes files from your disks. By using the wildcard character (*), you can remove all the files with one extension, or with one name, or even all the files on the disk. Unfortunately, if you want to delete only *some* of your similarly named files, you must type a separate command for each one. This is tedious, time-consuming housekeeping.

With the brief BASIC program below you can delete files *selectively.* Type it in, and save it as "PURGE.BAS"; then use it by typing BASICA PURGE from the DOS prompt, or by typing RUN "PURGE" while in BASIC.

First the program prompts you to name the file to search for. The standard reply, A:*.*, calls up all the files on the disk in drive A:. To search for something else, simply type the filename and press Return. For instance, to delete some files with an extension of ".TMP" on drive B:, you would type "B:*.TMP". Similarly, to delete files with the name "EGGROLL", you would type "EGGROLL.*". To purge *all* the files on a drive, you need type only its name, as, "B:" — *no question marks.* (The quotation marks are included here *only* for clarity.

Second, the program asks whether you want querying. I strongly suggest you always press Return here to accept the default reply, "Yes." If you press "N", the program automatically *deletes all* the files you specified at the previous prompt. Nasty!

Next, the program calls up a list of all the files that meet your specifications. If no files match, the program ends. If some files match, then each filename appears at the bottom of your screen in turn, along with a prompt. The computer will assume you mean the filename to the right of "Default=" if you just press Return. At this prompt, press "Y", "N", "Q", or Return (to accept the default). "Y" means, "Yes, delete (erase) this file." "N" preserves the current file, and goes on to the next one, if any. "Q" terminates the operation of the Purge program. Note that whatever key you press becomes the default answer for subsequent files.

This program requires the Color Monitor Adapter.

```
100 CLEAR:SCREEN 0:WIDTH 80:CLS
110 GOSUB 1000
120 GOSUB 1040
130 DEFAULT$="A:*.*"
140 PRINT "Enter filespec for search (";
DEFAULT$;")  ";
150 LINE INPUT SEARCH$
160 IF SEARCH$="" THEN SEARCH$=DEFAULT$
170 IF RIGHT$(SEARCH$,1)=":" THEN SEARCH
$=SEARCH$+"*.*"
180 PRINT
190 DEFAULT$="Yes"
200 PRINT "Do you want querying (";DEFAU
LT$;")  ";
210 GOSUB 1090:QUERY$=X$
220 CLS
230 DEFAULT$="No"
240 ON ERROR GOTO 490
250 FILES SEARCH$
260 FOR LIN=0 TO 20
270 FOR COLUMN=0 TO 65 STEP 13
280 FILE$=""
290 FOR CHAR=0 TO 11
300 BYTE=PEEK(LIN*160+COLUMN*2+CHAR*2)
310 IF BYTE<>32 THEN FILE$=FILE$+CHR$(BY
TE)
320 NEXT CHAR
330 IF FILE$="" THEN 1160
340 LOCATE LIN+1,COLUMN+1:PRINT STRING$(
12,"_");
350 LOCATE 23,1:PRINT SPACE$;
360 LOCATE ,1:PRINT FILE$;"  ";
370 IF QUERY$="N" THEN 440
380 PRINT "(Y/N/Q - Default=";DEFAULT$;"
) ";
390 GOSUB 1090
400 IF X$="Q" THEN 1160
410 IF X$="N" THEN DEFAULT$="No":GOTO 46
0
420 IF X$<>"Y" THEN PRINT CHR$(29);:GOTO
 390
430 DEFAULT$="Yes"
440 PRINT TAB(41);"  * * P U R G E D * *
";
450 KILL FILE$
460 NEXT COLUMN
470 NEXT LIN
480 GOTO 1160
490 IF ERL=250 AND ERR=53 THEN PRINT "No
 files matched ";CHR$(34);SEARCH$;CHR$(3
4):GOTO 1160
500 ON ERROR GOTO 0
1000 SCRN=&HB800:DEF SEG=SCRN
1010 VERSION$="V1.0-02  22-Jul-83"
1020 SPACE$=STRING$(70,32)
1030 RETURN
1040 CLS
1050 PRINT"  PURGE - Disk Purge Utility
  ";VERSION$
```

↪

```
1060 PRINT STRING$(33+LEN(VERSION$),"-")
1070 PRINT
1080 RETURN
1090 DEF SEG=0:POKE 1050,PEEK(1052):DEF
SEG=SCRN
1100 PRINT CHR$(219);CHR$(29);:X$=INPUT$
(1)
1110 IF X$=CHR$(13) THEN X$=DEFAULT$
1120 X$=LEFT$(X$,1)
1130 IF X$>="a" AND X$<="z" THEN X$=CHR$
(ASC(X$)-32)
1140 PRINT X$;
1150 RETURN
1160 LOCATE 23,1:PRINT SPACE$;:LOCATE ,
1:END
```

Rich Bouchard
SoftSide

Atari Lockup

Dear *SoftSide,*

I just almost took a sledgehammer to my Atari. I've just been bitten by the "Atari lockup bug." I *know* I should have saved the program, but I was just too involved with it at the time.

I had written a subroutine that showed a starship in normal space, then suddenly made it blur across the screen into hyperwarp. I made one last correction, then crash!

There I sat, numb, with three hours' work lost in the great bit bucket in the sky.

This lockup happened with my original 8K memory board in my Atari 400, and now occurs with my 48K Intec board. It's hit me numerous times since I began working on my space duel program back in 1981. It's extremely frustrating. Is there any hope for Atari owners with this problem? I'd call Atari's hotline, but I'm at an airbase in Turkey, so I look to *SoftSIde* for answers.

Todd C. K. Freeman
Incirlik A.B., Turkey

Programmer's reply: Many times, the *SoftSide* programmers have been plagued by the problem you describe. After hours of research, we have concluded that the only hope of defeating "lock-up" is to save your program frequently. A bug in Atari BASIC may be the source of the problem. If you edit a lot of BASIC program lines, the Atari will hang. Also, frequently pressing the SYSTEM RESET button has been known to cause a similar problem. To play it safe, whenever you do major program editing, save it before running it; and never use SYSTEM RESET except when absolutely neccesary.

TRS-80 Model III Character Sets

Location 16420 tells the Model III whether characters from CHR$(192) through CHR$(255) print as special characters or act as space compression codes. POKE 16420,0 selects space compression, POKE 16420,1 selects special characters.

Location 16912 also has a number of uses:

POKE 16912,PEEK(16912) OR 1 turns on the clock display, while

POKE 16912,PEEK(16912) AND 254 turns it off.

POKE 16912,PEEK(16912) OR 4 makes the Model III act as if it were in 32 column mode. However, if a program is running, the screen display stays in 64 column mode. When running in this manner, PRINT and INPUT statements will display text with spaces between successive letters. If the program then executes a PRINT CHR$(23); the screen display is converted to 32 column mode, and the extra spaces vanish.

POKE 16912,PEEK(16912) AND 251 restores normal 64 column mode.

POKE 16912,PEEK(16912) OR 8 selects the standard special character set.

POKE 16912,PEEK(16912) AND 247 selects the katakana special character set.

Apple Concentration (Issue 38)

Here is an enhancement to *Concentration,* by Glenn Archer. The lines below plot the letters on the board, rather than printing them on the first line of text below the hi-res graphics. This makes the letters line up better with the grid, which makes the screen easier to read.

Just load the original program, type these lines, and save the resulting program.

```
232  IF LV = 1 OR LV = 2 OR LV =
     3 THEN  HCOLOR= 3
235  HPLOT 34,154 TO 34,144 TO 25
     ,144 TO 25,144 TO 25,154 TO
     25,149 TO 34,149
240  HPLOT 45,154 TO 45,144 TO 52
     ,144 TO 53,145 TO 54,146 TO
     54,148 TO 53,149 TO 45,149 TO
     45,154 TO 52,154 TO 53,153 TO
     54,152 TO 54,150
245  HPLOT 74,144 TO 65,144 TO 65
     ,154 TO 74,154: HPLOT 86,144
      TO 93,144 TO 94,145 TO 95,1
     46 TO 95,152 TO 94,153 TO 93
     ,154 TO 86,154 TO 86,144
250  HPLOT 104,148 TO 108,148: HPLOT
     113,144 TO 104,144 TO 104,15
     4 TO 113,154: HPLOT 125,144 TO
     134,144 TO 125,144 TO 125,15
     4 TO 125,148 TO 129,148
255  HPLOT 153,144 TO 144,144 TO
     144,154 TO 153,154 TO 153,15
     0: HPLOT 151,150 TO 155,150
260  IF LV = 2 THEN  HCOLOR= 3: HPLOT
     165,144 TO 165,154 TO 165,14
     8 TO 174,148 TO 174,144 TO 1
     74,154: HPLOT 184,144 TO 192
     ,144 TO 188,144 TO 188,154 TO
     184,154 TO 192,154: HPLOT 20
     5,144 TO 213,144 TO 209,144 TO
     209,154 TO 205,154 TO 205,15
     1
263  IF LV = 3 THEN  HCOLOR= 3: HPLOT
     165,144 TO 165,154 TO 165,14
     8 TO 174,148 TO 174,144 TO 1
     74,154: HPLOT 184,144 TO 192
     ,144 TO 188,144 TO 188,154 TO
     184,154 TO 192,154: HPLOT 20
     5,144 TO 213,144 TO 209,144 TO
     209,154 TO 205,154 TO 205,15
     1
265  IF LV = 3 THEN  HCOLOR= 3: HPLOT
     224,144 TO 224,154 TO 228,14
     9 TO 229,148 TO 230,147 TO 2
     31,146 TO 232,145 TO 233,144
     : HPLOT 228,149 TO 229,150 TO
     230,151 TO 231,151 TO 232,15
     2 TO 233,153 TO 233,154: HPLOT
     245,144 TO 245,154 TO 254,15
     4
```

Fred J. Stein
Springfield, VA

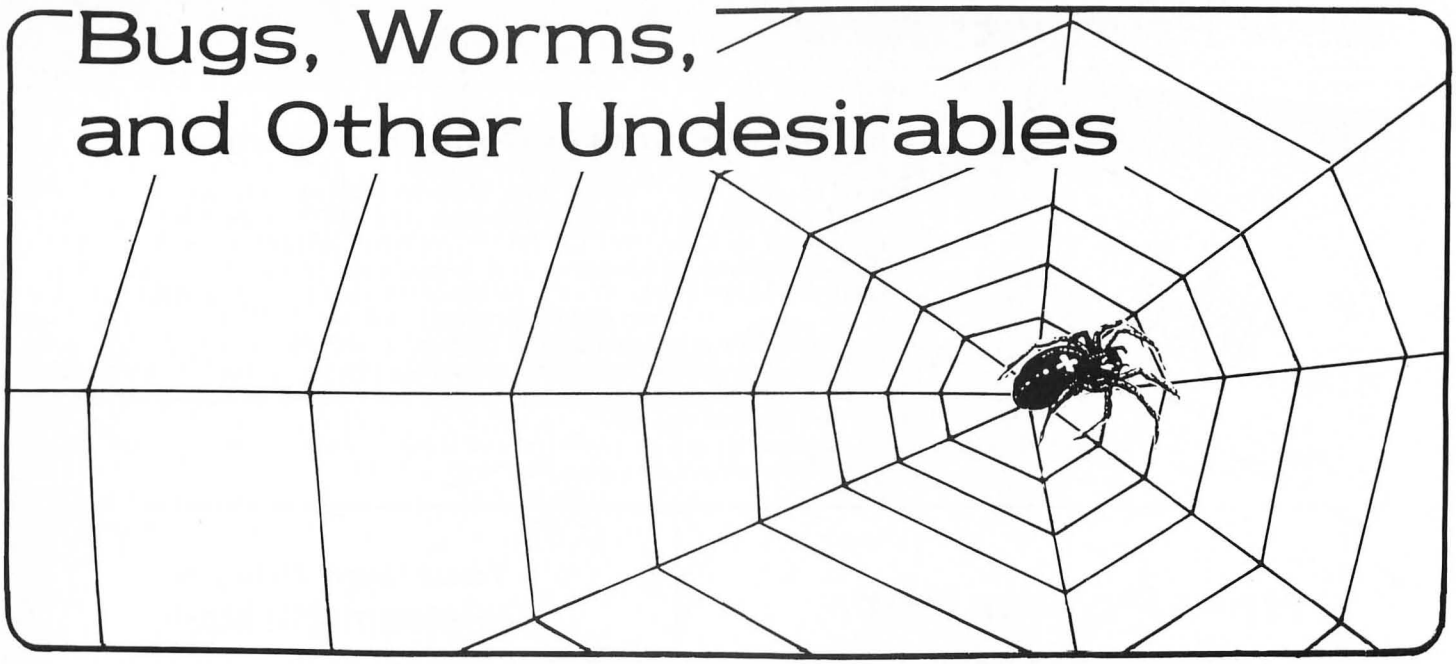
Concentration Shuffler

This enhancement to *Concentration* is a faster shuffling algorithm. It results in a shorter wait at the beginning of the game. Just load the original program, delete line 160, type the lines below, and save the resulting program.

```
1090 S$ = "":S1$ = "": FOR J = 1 TO
     TG * 2:S$ = S$ +  CHR$ ( INT
     (J / 2 + .6)):S1$ = S1$ +  CHR$
     (J): NEXT J
1100  FOR J = 1 TO TG * 2:J1 =  INT
     ( RND (1) * (TG + TG - J + 1
     ) + 1):K =  ASC ( MID$ (S1$,
     J1,1)): IF J1 <  > 1 THEN S1
     $ =  LEFT$ (S1$,J1 - 1) +  MID$
     (S1$,J1 + 1): GOTO 1110
1105 S1$ =  MID$ (S1$,2)
1110 J1 =  INT ( RND (1) * (TG +
     TG - J + 1) + 1):L =  ASC ( MID$
     (S$,J1,1)): IF J1 <  > 1 THEN
     S$ =  LEFT$ (S$,J1 - 1) +  MID$
     (S$,J1 + 1): GOTO 1120
1115 S$ =  MID$ (S$,2)
1120 SH(K) = L: NEXT J: RETURN
```

Rich Bouchard
SoftSide

Bugs, Worms, and Other Undesirables



TRS-80 Model I Issue 41 DV

The Model I Disk Version for Issue 41 does not run the cover program automatically. To cure this problem, boot the DV, and, when you see the DOS PLUS prompt, type the following command:

AUTO TBASIC COVER -F:3

The disk will boot normally, thereafter. Note that the disk must not be write-protected when you type this command.

Atari *Smokey* (Issue 40)

In line 940, "THEN 30" should be "THEN 20".

In line 3150, "GOTO 3080" should be "GOTO 3070".

Thanks to Jeff Odon Jr. of Lutherville, MD, for spotting these two errors.

TRS-80 *Garage Sale Records* (Issue 37)

The cassette version of the program does not quite fit in a 16K TRS-80. To fix this, enter the following lines into the program:

```
20 CLEAR 6300:GT=0:NS=0
30 DIM S$(10),T$(10,63)
40 DIM T(10),P(10,63)
```

Note that the correction that appeared in Issue 41 erroneously had the number 63000 in line 20.

TRS-80 *Poker Squares* (Issue 41)

In order to allow the program to terminate properly, delete line 32767, then add the following line:

```
1610 CLS:END
```

TRS-80 *It's About Time* (Adventure for Issue 39)

Due to a disk drive fault during the mastering process, two lines in this Adventure were altered. Lines 18 and 34 must be changed. To do this, load the program from disk (filename ADV39/BAS) or tape, type or edit the lines so that they appear as they do below, and re-save the program.

```
18 PRINTJ$:W=10:E=9:NW=7:GOTO320
34 PRINT"IN A CLEARING":NW=22:NE=25:SW=23:SE=28:GOTO320
```

Apple *Blockade* (Issue 35)

Line 620 was omitted from the listing. It appears below.

```
620  RETURN
```

Atari *Microtext 2.0* (Issue 42)

There was an error in line 9265. The correct line appears below.

```
9265 IF X()89 THEN 9050
```

Atari *Operation: Sabotage*

Operation: Sabotage for the Atari (Issue 32 and ***The Best of SoftSide***) has three errors in it. Line 1190 has two GOTO commands in a row. The first of these should be changed to GOSUB. In line 2540, the letter B between quotation marks should be a Y. Also, line 2250 should be changed to appear as shown below:

```
2250 GRAPHICS NO:? "GAME OVER":GOTO 25
30
```

The *SWAT* table changes as a result of this. The corrected lines of the table appear below.

SWAT TABLE

LINES	SWAT CODE	LENGTH
1180 - 1210	EQ	261
2210 - 2250	BJ	90
2510 - 2550	PG	178

HOTLINE

Every Wednesday, from 7PM to 9PM Eastern Daylight Time, the SoftSide programmers answer your questions about SoftSide programs. Call (603) 673-0585.

The Hotline can:

- Tell you the fix for any known program bugs, or mail you the long ones.
- Explain program instructions.
- Check out bugs you may have found.

The Hotline cannot:

- Answer subscription or editorial questions.
- Give programming advice.
- Accept collect calls.

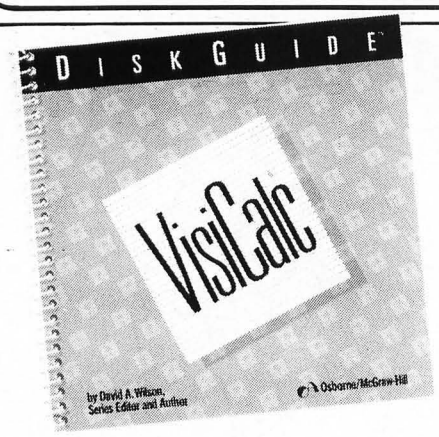
When you call, follow these simple rules:

1. Write it down and if possible, sit next to your computer when you call.
2. Be specific. It betters our chance to zero in on your problem quickly. We'll want to know what program and what computer.
3. Be brief. There are 50,000 of you and five programmers...
4. **SWAT** the program. Most "bugs" are hidden typos. **SWAT** will find them and may save you a call.

Remember: The **Hotline** will answer the short questions and deal with long questions in writing.

(Programmers will answer software questions only during **Hotline** hours.)

New Products

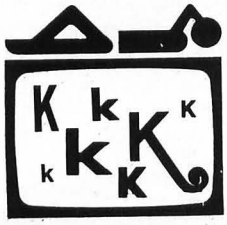


Shortcourse In Computer Literacy

The *DiskGuide™* series from Osborne/McGraw Hill consists of easy-to-use, compact computer reference guides containing vital commands, keys, summary tables and charts for any Apple® II, IBM® PC, or Atari®. There is also a diskguide for *VisiCalc®*. In addition to summarizing all BASIC and operating system statements, commands and keywords, the *Apple II DiskGuide* explains EXEC files and PEEK and POKE locations and the *Atari Diskguide* covers PEEK and POKE locations as well as sound and graphics programming. The *IBM PC DiskGuide* includes EDLIN. The *VisiCalc® Diskguide* summarizes entries, commands, files and special keys which apply to *VisiCalc.* The guides are organized by function and designed for compact storage (5 1/4 inch disk size) and easy use.

The *Diskguides* are available through book stores, software stores, computer stores, and other outlets for prices ranging from $6.95 to $8.95.

New Power For Lazy Writer



Owners of *Lazy Writer* for the TRS-80® should welcome a new font generator program for use with this word processor. You can use *Lazyfont* to create custom letterheads and logos, dramatic headlines and illustrations. It can also be used to create scientific or math symbols, or a foreign character set. In addition, with *Lazyfont,* you can create your own type fonts, use more than one font in the same line of text, and mix your custom fonts with regular printer fonts.

Lazyfont works with the Epson Printer with Graftrax or Graftrax Plus and with other printers supporting bit plot graphics. It comes with two custom fonts and more are available once you return your buyer registration form.

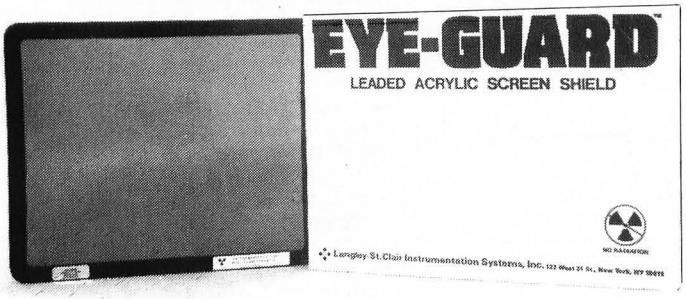
Lazyfont is available for $49.95 directly from AlphaBit Communications, Inc., 13349 Michigan Avenue, Dearborn, MI 48126 (313)581-2896, or from your local dealer.

Your Own Private Cataloging System

Using *Bookends* is like having a librarian working for you! It's a state-of-the-art catalog system that allows any Apple® II user to keep track of information from articles and books. For each reference, you can enter author, title, journal, volume, page numbers, date, publisher and keywords (all up to 255 characters long) and a brief abstract (up to 270 characters). You can link together individual databases containing hundreds of entries to form a searchable database of unlimited size. *Bookends* is menu driven for ease of use, and features a word-processor quality editor. You can ouput information in a variety of forms, from simple notes to professionally formatted bibliographies.

Bookends runs on any 48K Apple II. It is available for $124.95 at your local dealer or directly from Sensible Software, 6619 Perham Drive, West Bloomfield, MI 48033 (313)399-8877. Direct orders should include $1.25 for postage and handling.

Say Goodbye To Tired Eyes

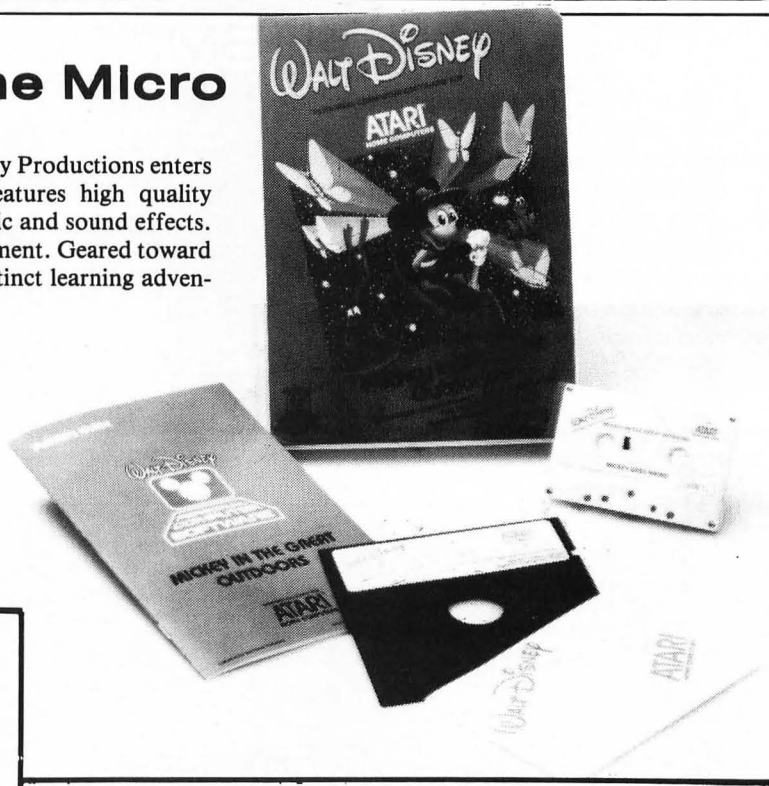


A new product called *Eye-Guard* protects against the inevitable eye strain which plagues those who spend long hours in front of their computer monitor. *Eye-Guard* not only protects against glare, but also against the radiation emitted from the monitor. It's made of the same lead-impregnated acrylic plastic used for windows in nuclear plants and hospital X-ray rooms. A seven milimeter thick (3/8 inch) sheet of transparent plastic containing 30 percent lead by weight attaches easily to the front of a computer monitor with Velcro tabs. The front surface is covered with a nylon-netting anti-glare screen.

Eye-Guard is available, with a 100 percent money back guarantee, through computer and office supply dealers nationwide, or directly from Langley-St. Clair Instrumentation Systems, Inc., 132 West 24th Street, New York, NY 10011 (800)221-7070. The retail price is $129.95.

Mickey Comes To The Micro

With *Mickey In The Great Outdoors,* Walt Disney Productions enters the microcomputer software market. This game features high quality animation, excellent, full color graphics, original music and sound effects. But *Mickey In The Great Outdoors* isn't just entertainment. Geared toward the seven- to ten-year-old age group, it offers two distinct learning adventures. The first, "Mickey Goes Hiking," develops and reinforces grammar and spelling skills. In the second adventure, "Mickey Goes Exploring," the player must finish incomplete equations and complete number sequences. *Mickey In The Great Outdoors* is now available through Atari Incorporated for the Atari® 400/800/1200. The cassette version requires 16K of RAM and the disk version requires 32K RAM.



Bridging The Communication Gap

The Computer Glossary, It's Not Just A Glossary! by Alan Freedman teaches non-technical people about computers, painlessly. It is an unusual combination of glossary and textbook in one volume. It defines over 1,100 computer and vendor terms in a manner that allows for quick reference or detailed comprehension, depending on the reader's requirements. Explanations are easy to understand and cross-referenced with all other explanations in the book.

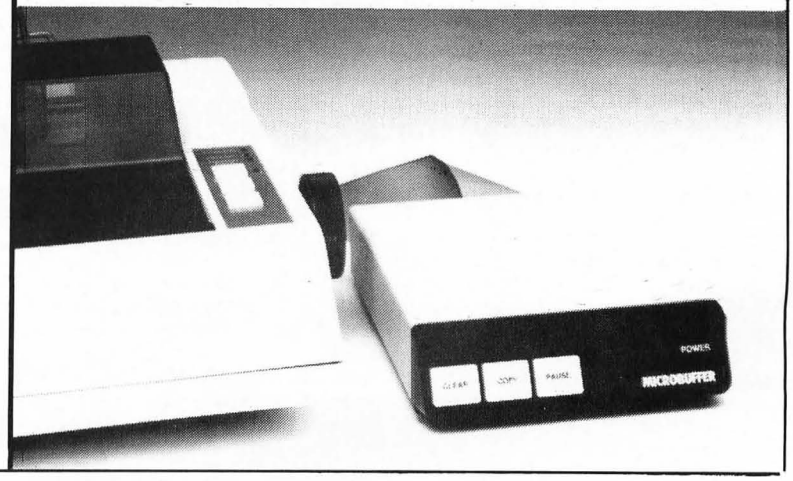
The *Glossary* is available in bookstores across the country or directly from The Computer Language Company, Inc., 140 West 30th Street, New York, NY 10001 (212)736-8364. The retail price is $14.95.

Eliminate The Printout Bottleneck

PC A new stand-alone printer buffer, called the *Microbuffer,* allows you to print and process data simultaneously — no more unproductive wait while files are printing. The *Microbuffer* receives the printer-intended data at up to 19.2 baud, and stores it in its memory buffer, freeing the computer for processing. It then releases the data to the printer at the proper rate.

The *Microbuffer* works with the IBM® PC, the Apple® II family, the TRS-80® and several printers, including the Epson, NEC, Diablo, C. Itoh and Okidata. You can also use the device with almost any computer/modem combination. The *Microbuffer* requires no software modification, and installs in seconds.

It is available in either a serial or parallel interface version with 32K or 64K byte memory, expandable to 256K, from Inmac, 2465 Augustine Drive, Santa Clara, CA 95051. The price, depending on the version required and memory capability, ranges from $320 to $379.



MicroLog: Resources Received

Compiled by Margaret Fritz

In issue 44 ***SoftSide*** inaugurates a new department — MicroLog: Resources Received. It will keep you informed about the flood of solicited and unsolicited products we routinely screen every month. Their names may pop up again in future issues in our New Products section or reviews.

IBM® PC

APPLICATIONS

1-2-3 from Lotus Development Corporation, 55 Wheeler St., Cambridge, MA 02138. System requirements: IBM PC or COMPAQ Portable Computer; 128K bytes of memory; two double-sided disk drives or one double-sided disk drive and a hard disk.

The all-in-one productivity tool for professionals. With *1-2-3*, information management, spreadsheet analysis, and graphing capabilities work together to help you make better business decisions faster.

VIS/Bridge/SORT from Solutions, Inc., Box 989, Montpelier, VT 05602. System requirements: IBM PC. Price: $89.

Can sort the rows or columns of a VisiCalc spread sheet.

Personal PEARL from Pearlsoft Division of Relational Systems International Corp., 3700 River Rd. N., Salem, OR 97303. System requirements: IBM PC with 128K of memory or more, 2 disk drives (or hard disk), and optional printer. Price: $295.00.

A special software package that lets you manage your information in a completely new way.

APPLE®

GAMES

TAC (Tactical Armor Command) from Microcomputer Games — A Division of The Avalon Hill Game Co., Baltimore, MD. System requirements: Apple II, II+, IIe with Applesoft, a minimum 48K memory and one disk drive.

A game of World War II tactical armored combat.

Pensate — The Thinking Game from Penguin Software, 830 4th Avenue, Geneva, IL 60134. System requirements: Apple with 48K disk. Price: $19.95.

The object of *Pensate* is to maneuver your playing piece to the top of the screen.

Hard Hat Mack by Michael Abbot & Matthew Alexander from Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403. System requirements: Apple II, II+, IIe with 48K disk and joystick or keyboard.

All you have to do is finish the building while not forgetting about certain government regulations, the neighborhood punks, and the fact that falling bodies (including your own) accelerate at the rate of 32 feet per second.

Axis Assassin by John Field from Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403. System requirements: Apple II, II+, IIe with 48K disk and one joystick.

Only the Axis Assassin can save you from the Army of the Master Arachnid who attacks without reason and destroys without remorse.

Lode Runner by Doug Smith from Broderbund Software, 1938 Fourth St., San Rafael, CA 94901. System requirements: Apple II/II+/IIe with at least 48K memory, 13 or 16 sector controller. Price: $34.95.

A game generator that lets you design your own puzzles and scenes.

BOOKS

Creative Programming Manual for Apple II, IIe Vol I from Creative Programming Inc., 750 W. Algonquin Rd., Suite 750 Arlington Heights, IL 60005. System requirements: Apple II, IIe. Price: $7.95.

Manual with step-by-step lessons, examples and reviews that are easy to understand, enabling the user to learn BASIC computer programming right in his own home, at his own pace, without any other instruction or tutor.

40 Easy Steps to Programming in BASIC & LOGO by James L. Piorit & R. Clark Adams from Sterling Swift Publishing Company, 7901 South IH-35, Austin, TX 78744. System requirements: Apple IIe with one disk drive. Price: $3.95.

Provides instruction about the two most popular microcomputer languages, BASIC and LOGO.

EDUCATION

EnBASIC Authoring System by Paul Tenczar, Stanley Smith, & Allen Avner from COMPress, P.O. Box 102, Wentworth, NH 03282. System requirements: Apple II+ or IIe equipped with ROM Applesoft BASIC, 3.3 DOS, 48K RAM memory, and at least one Apple II disk drive. Price: $150/package (Package includes 98-page manual, Pocket Guide, Master and Backup diskettes, and Demo diskette.) Note: 98-page manual is also sold separately for $20.

This package enhances BASIC for users of the Apple II+ and IIe who produce computer-assisted instruction (CAI) and other application packages requiring a "friendly" user interface.

The Einstein Memory Trainer from Einstein Corp., 11340 W. Olympic Blvd., Los Angeles, CA 90064. System requirements: Apple IIe, Apple II+ with at least 48K, Apple II with RAM card or Applesoft in ROM, or an Apple III running in emulation mode (only one disk drive is necessary).

A fully-structured tutorial with color graphics and game-like practice sessions gives you tools to remember an increasingly-challenging sequence of names, faces, phone numbers, dates, and lists.

HARDWARE

Replay II by Micro Analyst Inc., P.O. Box 15003, Austin, TX 78761. System requirements: Apple II or IIe with one disk drive. Price: $130.

Replay II is a card to copy any program in Apple's memory.

Arcade Board from Third Millennium Engineering Corporation, 1015 Gayley Avenue, Suite 394, Los Angeles, CA 90024. System requirements: Apple II, II+, or IIe, one disk drive with disk controller card, a composite video color monitor or a color TV with RF modulator, and at least one cable with male RCA phono jacks on both ends. Price: $234.74.

A peripheral that generates true arcade quality color graphics, sound effects, and music.

APPLICATIONS

Perfect Writer/Perfect Speller from Perfect Software Inc., 702 Harrison St., Berkeley, CA 94710. System requirements: Apple II CP/M.

This package allows you to perform a wide variety of text editing and printing tasks with ease.

Perfect Filer from Perfect Software Inc., 702 Harrison St., Berkeley, CA 94710. System requirements: Apple II CP/M.

It is designed to assist in the effective management of information.

DB Master from Stoneware Incorporated, 50 Belvedere St., San Rafael, CA 94901. System requirements: Apple IIe or Apple II+ with 16K card (64K) and 2-4 apple disk drives. Price: $350.00

A complete, self-contained program designed to help non-programmers manage information.

HOME MANAGEMENT

Home Health Disk from Brahman Software, P.O. Box 331, Castleton, VT 05735. System requirements: Apple II, IIe, II+.

The program provides an enormous amount of information that can be used both as a reference for a current health problem as well as an educational tool to increase your knowledge about health and disease.

UTILITIES

One-Key DOS by Brooke W. Boering, 1300 E. Algonquin — 3G, Schaumburg, IL 60195. System requirements: Apple II+ and IIe. Price: $9.00.

A set of compatible modifications that improve and enhance screen-handling and catalog display functions of DOS.

The Pascal Toolkit from Wize Buys, P.O. Box 1588, Orem, UT 84057. System requirements: Apple II, Apple IIe, or Apple compatible computer running UCSD Pascal. Price: $24.95.

It is designed for programmers and hobbyists who deal with graphics in the Pascal language and who are frustrated with the shortcomings of turtle graphics.

MicroLog: Resources Received

ATARI®

GAMES

Paris in Danger from Avalon Hill Microcomputer Games, Baltimore, MD. System requirements: Atari 800, 48K.

This game is a multi-level simulation of the 1814 campaign to crush Napoleon.

Worms? by David S. Maynard from Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403. System requirements: Atari 400/800/1200, 32K disk.

Imagine a new kind of creature, a product of modern electrogenetic science living in a world where reality is a two-dimensional grid existing as light. Pure energy, their lives are an unending adventure in puremathematics, in music, in geometry. How would you instruct these creatures and turn them loose in the world?

Archon by Anne Westfall, Jon Freeman & Paul Reiche III from Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403. System requirements: Atari 400/800/1200 with 32K disk and joystick.

A battlefield board game involving phoenixes, golems and wizards who use all their strange powers to fight banshees, goblins and sorceresses.

Pinball Construction Set by Bill Budge from Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403. System requirements: Atari 400/800/1200 with 48K Disk with at least one joystick.

A pinball game for the Atari — the best program ever written for an 8-bit machine.

M.U.L.E. by Dan Bunten, Bill Bunten, Jim Rushing, and Alan Watson from Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403. System requirements: Atari 400/800/1200 with 48K disk.

A game in which up to four players attempt to settle a distant planet with the help of a mule-like machine they all learn to hate.

BOOKS

Creative Programming for Young Minds Volumes I and II by Doug Davis, Creative Programming, Inc., Charleston, IL 61920. System requirements: Atari 400/800.

Programming tutorial for children that encourages independent thought, rewards creativity, enhances reasoning and logic, and is forever open to alternate ways to solve problems.

Picture This! by David D. Thornburg from Micro Books by Addison-Wesley Publishing Co., Inc., Reading, MA 01867. System requirements: Atari 400/800 with the Atari PILOT language cartridge. Price: $14.95.

An introduction to computer graphics for kids of all ages.

User's Handbook to the Atari 400/800 Computers by Jeffrey R. Weber & Stephen J. Szczecinski from Weber Systems, Inc., Cleveland, OH. Price $13.95.

A clear, concise, and practical guide to the capabilities and operation of the Atari 400 and 800 computers, as well as the various Atari peripherals and expansion devices.

TRS-80®

GRAPHICS

Grafyx Solution and Bizgraph from Micro-Labs, Inc., 902 Pinecrest Dr., Richardson, TX 75080. System requirements: Any TRS-80 Model III computer. Price: $397.95.

Bizgraph is a self-prompting graphing program designed to work exclusively with *Grafyx Solution.* The *Bizgraph* package can display line graph, bar chart, pie chart, area plot, histogram plot, and scatter plot.

GAME

Airstrike by Paul Nafziger from Atron International, P.O. Box 8825, Fort Collins, CO 80525. System requirements: TRS-80 Models I and III. Price: $29.95.

This game uses Monte Carlo simulation techniques to produce a very realistic portrayal of air warfare.

BOOKS

The Foolproof Guide to Scripsit Word Processing by Jefh Berner from Sybex, 2344 Sixth St., Berkeley, CA 94710. Price: $11.95.

A guide to show you how to get the most out of your Scripsit word processing program.

APPLICATION

VIS/Bridge/Report User Documentation from Solutions, Inc., Box 989, Montpelier, VT 05602. System requirements: TRS-80 Model III. Price: $79.

Enhances your use of VisiCalc®.

COMMODORE®

GAMES

Space Sentinel from T&F Software Company, 10902 Riverside Drive, No. Hollywood, CA 91602. System requirements: Commodore 64 with joystick and disk drive. Retail price: $29.95.

Planet Earth is under attack by ruthless aliens who hurl heat missiles at our polar ice caps. As the orbiting Space Sentinel, the Earth's fate is up to you.

HOME MANAGEMENT

CHECKEASE! by GMS Systems, a T&F Software Company, 10902 Riverside Drive, N. Hollywood, CA 91602. System requirements: VIC-20 and Commodore 64 — requires a minimum expander of 8KS. Retail prices: $24.95 (VIC-20 cassette) (8K = 129 checks, 16K = 300 checks, 24K = 471 checks), $29.95 (Commodore 64 cassette), and $34.95 (Commodore 64 disk).

This package allows you to maintain, edit, and reconcile checking account data.

ALL SYSTEMS

BOOKS

Crash Course in Microcomputers by Louis E. Frenzel, Jr. from Howard W. Sams & Co., Inc., 4300 West 62nd St., Indianapolis, IN 46268. Price: $21.95.

A complete short course in microcomputer literacy written for anyone who wants or needs to know more about microcomputers.

User's Guide to Microcomputer Buzzwords by David Dasenbrock from Howard W. Sams & Co., Inc., 4300 West 62nd St., Indianapolis, IN 46268. Price: $9.95.

This book is for the endless list of potential users who need to know basic microcomputer terminology so they can understand the language.

Personal Computing with the UCSD P System by Mark Overgaard and Stan Stringfellow from Prentice-Hall, Inc., Englewood Cliffs, NJ 07632.

This book introduces you to the UCSD p-System, a software environment that can be used on most kinds of personal computers. This system allows you to use a host of application programs that others have developed.

Computer Town by Liza Loop, Julie Anton, Ramon Zamora from Reston Publishing Co., Inc., A Prentice-Hall Company, 11480 Sunset Hills Rd., Reston, VA 22090. Price: $12.95 (paperback) and $17.95 (hardcover).

Getting people and computers together is the goal of "Computer Town," an implementation package for bringing computer literacy to local communities.

VIDEO

The Complete Guide to Video by Martin Clifford from Howard W. Sams & Co., Inc., 4300 West 62nd St., Indianapolis, IN 46268. Price: $15.95.

A comprehensive coverage of the video equipment, accessories, and services available for use with your TV receiver.

Introduction to Satellite TV by Chris Bowick & Tim Kearney from Howard W. Sams & Co., Inc., 4300 West 62nd St., Indianapolis, IN 46268. Price: $9.95.

The intent of this book is to provide a basic understanding of the home satellite TV system.

Market Side

IMPROVE READING SPEED & COMPREHENSION

COMPU-READ 3.0

ADULTS
YOUNG PEOPLE
CLASSROOM

LEARNING MODULES

- Letter Recognition
- Rapid Words
- Synonyms & Antonyms
- Sentences

You can build new files for each LEARNING MODULE. COMPU-READ 3.0 gives reports on reader's progress (graphic & numeric). Levels adjust.

	LIST	OURS
APPLE or ATARI disk	$29.95	$24.50

Send CK/MO. We pay shpg. Calif. add 6% tax. FREE PRICE LIST of other BUG - EDU - GAME Software.

>LOG ON
COMPUTER PRODUCTS & SERVICES
P.O. BOX 747
WINCHESTER, CA. 92343

64K RAM BOARDS FOR ATARI 400/800

- Full, easy to understand, documentation.
- Easy to install.
- 4 year warranty.
- Excellent quality components for screen clarity and reliability.
- 48 hour burnin period test cycle.
- Gold edge connectors for better performance.
- Completely compatible with Atari 400/800.
- Only $169.95.
- Exchange your old RAM Board for a new one. Rebate given for your old board.
- Blank 64K Board $60.00.
- Master Charge/VISA accepted.
- 32K RAM Board $99.95.
- 32K Blank RAM Board $40.00
- 32K Expander $59.95 just add RAM.
- Dealer inquiry invited.

Send Check or Money Order Now or Call for Faster Service

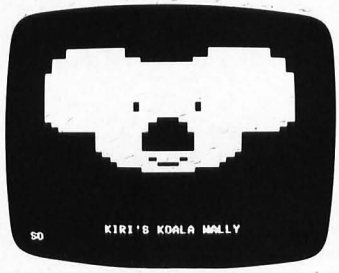
HARDSTUFF, INC.
PO. Box 2185 Meriden, CT. 06450
(203) 634-3248
CT Residents Add 7.5% Sales Tax

When You're 64

The **SoftSide** family is growing again. We are now covering the Commodore 64 and we cordially invite Commodore people everywhere to join the ranks of **SoftSide** contributors. If you have a program or review, or just a story to tell,let us have a look at it. Send submissions to:

SoftSide Publications, Inc.
Department C
10 Northern Blvd.
Amherst, NH 03031

When it comes to quality software for microsystems, **DYNACOMP** *delivers:*



HODGE PODGE (APPLE, ATARI, TRS): $18.95

The Systems ... Apple Atari Canon Commodore Compustar CP/M Franklin H/Z-100 IBM PC Kaypro Morrow NEC North Star Osborne SuperBrain Timex TRS-80

The Software ...

ADVENTURE	BUSINESS	CARD GAMES	EDUCATION
ENGINEERING	GAMES	HOME FINANCE	INVESTING
LANGUAGES	SCIENCE	TAX PLANNING	UTILITIES

Name brand diskettes: $19.95/10 (SS, SD w/hub ring). Includes FREE plastic storage box. Add $2.00 shipping.

CALL OR WRITE FOR A FREE CATALOG
DYNACOMP, INC.
1427 Monroe Avenue, Rochester, N.Y. 14618
Telephone: (716) 442-8960

EPROM PROGRAMMER

- Use with an Atari 400/800.
- Full documentation, very user friendly.
- All necessary hardware and software included.
- Burns 2716, 2508, plus all pin compatible EPROMS.
- Single step or computer control all operations.
- Completely assembled.
- Plugs directly into joystick ports. No other connections required.
- LED indicators display output of RAM and EPROM addresses and data.
- Zif socket for easy EPROM insertion and removal.
- Can selectively program parts of EPROM.
- Can copy one EPROM to another.
- Only $179.95 reg. $199.95 offer good through 5/30/83.
- Machine Language for any computer can be programmed.
- Dealer inquiry invited.

Send Check or Money Order Today or Call for Faster Service

HARDSTUFF, INC.
PO. Box 2185 Meriden, CT. 06450
(203) 634-3248
CT. Residents Add 7.5% Sales Tax.

Are you a good programmer?

Can you program Atari and/or Commodore computers? If so, there may be a place for you at **SoftSide.** Our programmers work on programs every day in several different ways, and you'll be involved in all of them.

- **Modifications and enhancement of programs submitted by our readers.**
- **Translating games or game concepts from one type of machine to another.**
- **Creation of original quality software in BASIC and assembly language.**

If you'd like to do this kind of work for a leader and innovator in software publishing, write or call:

SoftSide Publications, Inc.
10 Northern Blvd.
Amherst, NH 03031
(603) 673-0585

Advertiser's Index

ALF Copy Service 45
Avant-Garde 55
Axiom 71
B. R. Greene 27
Binary Computer 40
Brahmin Software 65
Dacus 11
Dyna Comp 96
Harcourt Brace Jovanovitch, Inc. 29
IJG 87
LKJ 49
Log-On 96
MMG 79
Mattel Electronics 3,5,7
Metrosoft ..... MC IV
Micro Images 77
Microware 21
Nonagon 11
Northeast Expositions 17,CIV
Remco 21
Scholastic Books 24a,b,c,d
Software Reports 65
Strategic Simulations, Inc. ..... MCII
Street Electronics 85
Total Computers 96
Unicorn 83
United Computer 81

***SoftSide* Publications**
Attention Authors 41
Apple *SoftSide* Selections 61
Atari *SoftSide* Selections 69
Back Issues 88
Best of *SoftSide* ..... MCIII
CV & DV 54
Diskitte 45
Coming Next Issue CIII
Hotline 91
Moving CIII
Ordering Information 57
PC *SoftSide* Selections 57
Programmer 96
SoftSide Subscription 22
TRS-80 *SoftSide* Selections 86

Advertising Representatives

Midwest
Christopher Smith
Intermarketing Associates
(603) 352-1725

East & South
Mark R. Feld
Intermarketing Associates
(603) 352-1725

West
JE Publisher's Representative
6855 Santa Monica Blvd., Suite 202
Los Angeles, CA 90038
Jay Eisenberg
Los Angeles (213) 467-2266
San Fransisco (415) 864-3252
Denver (303) 595-4331
Dallas (214) 660-2253

COMING NEXT ISSUE: ***SoftSide Issue #45***

GRAPHICS

Graphics is an application of personal computers which is ripe with ferment these days. Guest Editor Ame Choate Flynn has organized truckloads of information on the latest equipment and techniques for turning your micro into a flexible, creative tool. Artist Saul Bernstein demonstrates computerized analysis of shapes and forms in great paintings, and how you can transfer the understanding you gain to your own designs. Michael Callery will unravel the mysteries of IBM graphics.

SoftSide Selections will feature useful graphics utilities and entertaining drawing routines.

Reviews will include the new Koala Graphics Pad, the Versawriter Digitizer Tablet, Graforth, Fontrix, Delta Drawing, and Joypaint.

Errata

Wico Corporation has recently informed us of two errors which appeared in the "Joystick Alternatives" review in ***SoftSide,*** Issue #41. On page 23, the Zircon Video Command Joystick is incorrectly captioned as the Zircon Command Control Joystick and on page 25, the price of the Wico Command Control Joystick is incorrectly listed as $19.95. The correct price is $29.95. We extend our apologies for these errors to Zircon International, Wico Corporation, and to our readers.

MOVING?

If you're planning to move, please let us know at least six weeks in advance. This will help us to change your address insuring you with prompt and accurate service on your subscription. Attach your current mailing label filling in your name and NEW address in the space provided.

label here

Name _____

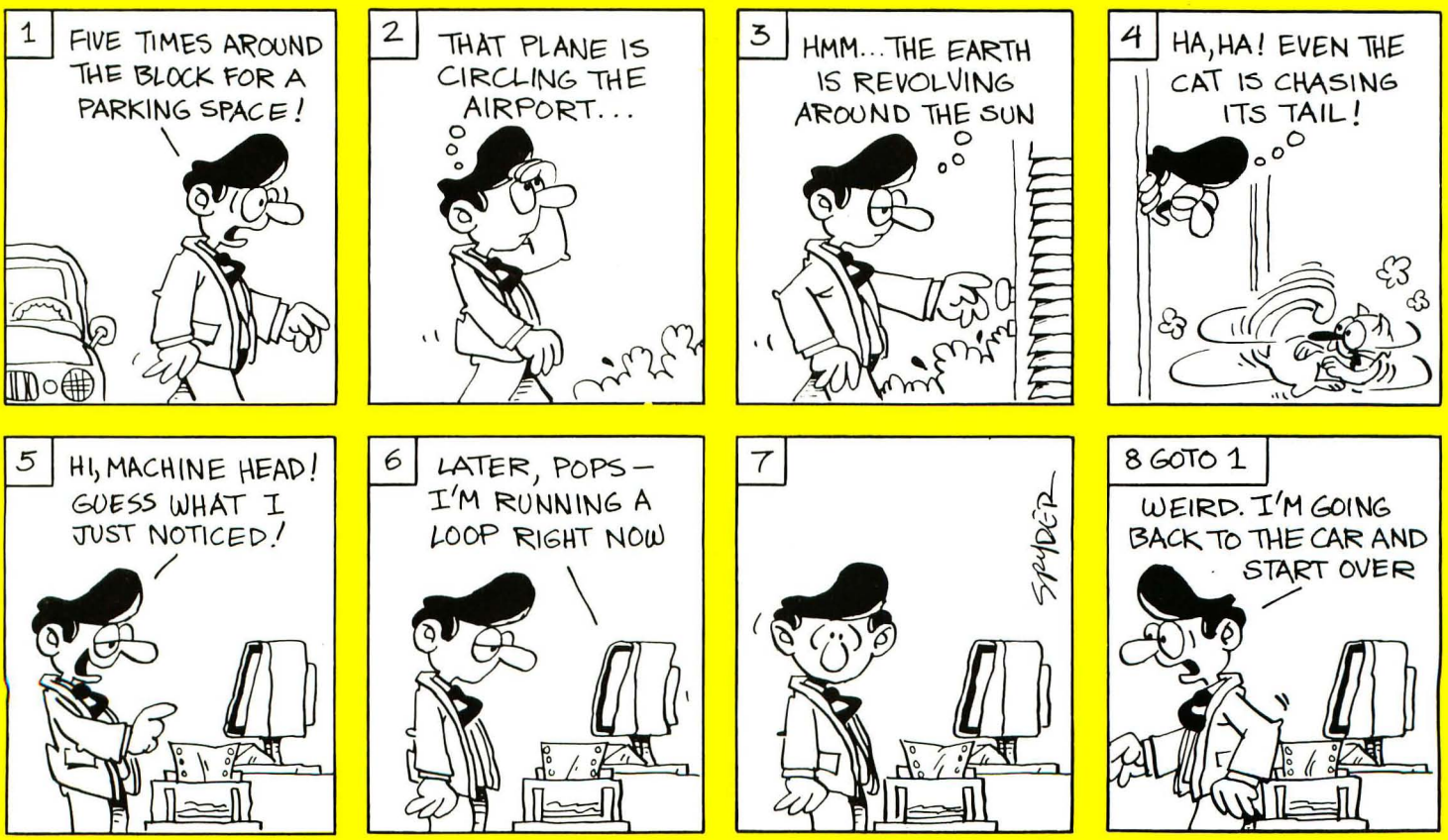
New Address _____

City _____ State_____ Zip_____

Send old label with your name and NEW address to:

SoftSide
100 Pine Street
Holmes, PA 19043

MACHINE HEAD BY SPYDER



THREE SPECTACULAR COMPUTER SHOWS ARE COMING TO BOSTON THIS FALL

You'd have to spend months visiting computer stores and reading trade journals before you'd find even a fraction of the information you'll discover at one of these shows. If you decide to buy at the show, you'll save hundreds, even thousands of dollars, because everything that's on display is for sale at special show prices. For more information call Northeast Expositions, Inc. at 617-739-2000.

CP/M'83® EAST

Hynes Auditorium
Thursday-Saturday
September 29-October 1
11AM to 6PM daily

Tickets:
$10 for one-day Exhibits-only
$25 for three-day Exhibits and Conferences

At CP/M'83 East you'll be able to learn about, try out, and compare nearly 8,000 different CP/M-based software packages, accessories, development aids, application packages, peripherals, publications, and services. You can talk to experts, "test drive" software, view nearly 500 displays and attend seminars, workshops, and panel discussions.

PC'83 EAST

Bayside Exposition Center
Morrissey Boulevard
Exit 17 S.E. Expressway
South Boston

Tuesday-Thursday
October 4-6
10:30AM to 5:30PM daily
Tickets:
$10 for one-day
$25 for three-day

(Note these new days and dates)

PC'83 is the largest gathering of IBM Personal Computers and compatible products ever held on the East Coast. You'll find under one roof more than 400 exhibits of software for business, professional, home, personal, and education applications; plus accessories, peripherals, publications, and support services. If you do anything with the IBM Personal Computer or if you're considering buying one, come to PC'83.

THE NORTHEAST BUSINESS COMPUTER SHOW AND SOFTWARE EXPOSITION

Hynes Auditorium
Thursday-Saturday
November 17-19

(Note these new days and dates)
Show Hours: 10:30AM to 5:30PM daily
Tickets: $7.50

The Fifth Annual Northeast Computer Show's six hundred plus displays feature *all* of the hardware and software made for *every* computer for business, industry, the professions, government, and education. Under one roof you'll find *every* major manufacturer, dealer, retailer, distributor and every line including Apple, American Bell, Burroughs, Cado, Computer Devices, Data General, Datapoint, Digital Equipment Corp., Franklin, Gandalf, General Electric, Heathkit, Hewlett Packard, IBM, Kaypro, Lanier, Monroe, NEC, Olivetti, RCA, Sears, Victor, and Xerox, to mention only a few. This show offers you the opportunity to compare, question, and learn about computers in a non-intimidating, no-obligation atmosphere.

Presenting The Best of SoftSide™

For the past four years **SoftSide** Magazine has been bringing you the finest in microcomputer software. Now **SoftSide** has gathered the best Games, Adventures, Simulations, Utility Programs, and other software together into **The Best of SoftSide.**

Three books, one each for the Apple, Atari, and TRS-80 microcomputers are packed with BASIC code from the very best out of the hundreds of programs we have published. Each program is complete with valuable improvements and enhancements offered by hundreds of users! **SoftSide's** official debugging utility, S.W.A.T. (Strategic Weapon Against Typos), is included for each program. Compact, useful instructions and programming footnotes for the curious and the enhancer add dimension to the usability of the software.

Also On Disk

Not the typing type? — Then the disk version of ***The Best of SoftSide*** is just what you're looking for. All of the programs from the book, already typed in and stored on disk for your convenience — just put the disk in your disk drive and away you go. Each version has at least one-full disk side * of programs ready for you to use and enjoy.

Learn how to make your computer do what you want it to. Many of our readers credit **SoftSide** for improving their ability to program.

Experience the convenience of **The Best of SoftSide's** "steno" format. No more taking an awkward book to your computer to type in a program or read documentation. The book is scaled to coordinate with most of the other manuals in your software collection.

Explore our exciting games, practical applications, and helpful utilities. Fast paced Arcade Games... Database Managers...Word Processors...you'll get them all for only a few cents each.

Find your typing mistakes easily with **SWAT (Strategic Weapon Against Typos).** This amazing little utility will tell you where your mistakes are to within a couple of lines.

Play exciting games on your computer. **The Best of SoftSide** will take you...to the stars...to a casino in Vegas...even into the fantasy worlds of your imagination.

Create imaginative programs of your own with **The Best of SoftSide's** utilities and subroutines. We'll teach you how to use some powerful software tools,step-by-step.

A true software bargain, **The Best of SoftSide** offers between 16 and 20 outstanding programs (depending on system edition) conveniently steno bound and printed on non-reflective paper for ease of use when typing the code into your computer. All this for the special low price of only $14.95 per book, or $49.95 per book and disk combination. If you already have the book and wish to order the disk, the additional cost is $35.00. **Important:** Be sure to specify computer make and model when ordering!

Use the bind-in card in this issue to order today! Mail it with your payment or credit card number to: **SoftSide Publications, Inc., 10 Northern Blvd., Amherst, NH 03031.**

*Number of disk sides varies due to varying disk storage efficiency on different computers.

METROSOFT

ATTACK OF THE KILLER POTATOES

Guess who's coming to dinner?

Mysterious radiation has mutated everyday vegetables into ravenous single-minded killers – their mission to destroy the human race. Their only hope, you a heroic ground hog. Armed only with a food processor, a buzz saw and a potatoe masher can you save the defenseless humans before they are carried below the earth and transformed into lethal mutants?

For Apple® 2+/2e or equivalent with applesoft in rom.

$29.95

TAX ATTACK

Tired of Paying Taxes?

Have you ever watched your hard earned money get eaten out of your hands by bureaucratic tax collectors? Solution: put your money where their mouth is. A little cash under the table is all it takes to get these "conscientious" tax collectors to look the other way. This lighting fast maze game employs high quality speech synthesis without the necessity of an extra hardware attachment.

An addictive game for the Atari® 400/800 with 48K disk.

$29.95

METROSOFT is painting the town.

If not available at your local dealer, send check or money order, plus $2.00 shipping and handling to:

METROSOFT, INC.
1 East 28th Street
New York, New York 10016
or call:
212-889-4931

VISA and MASTER CARD ACCEPTED

Apple® and Atari® are registered trademarks of Apple Computer Company and Warner Communications respectively.
Graphics Created With Penguin Softwares Graphics Magician.