

# SoftSide®

The Magazine For You & Your Computer

JANUARY 1984

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Easy Holiday Shopping

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Tomorrow

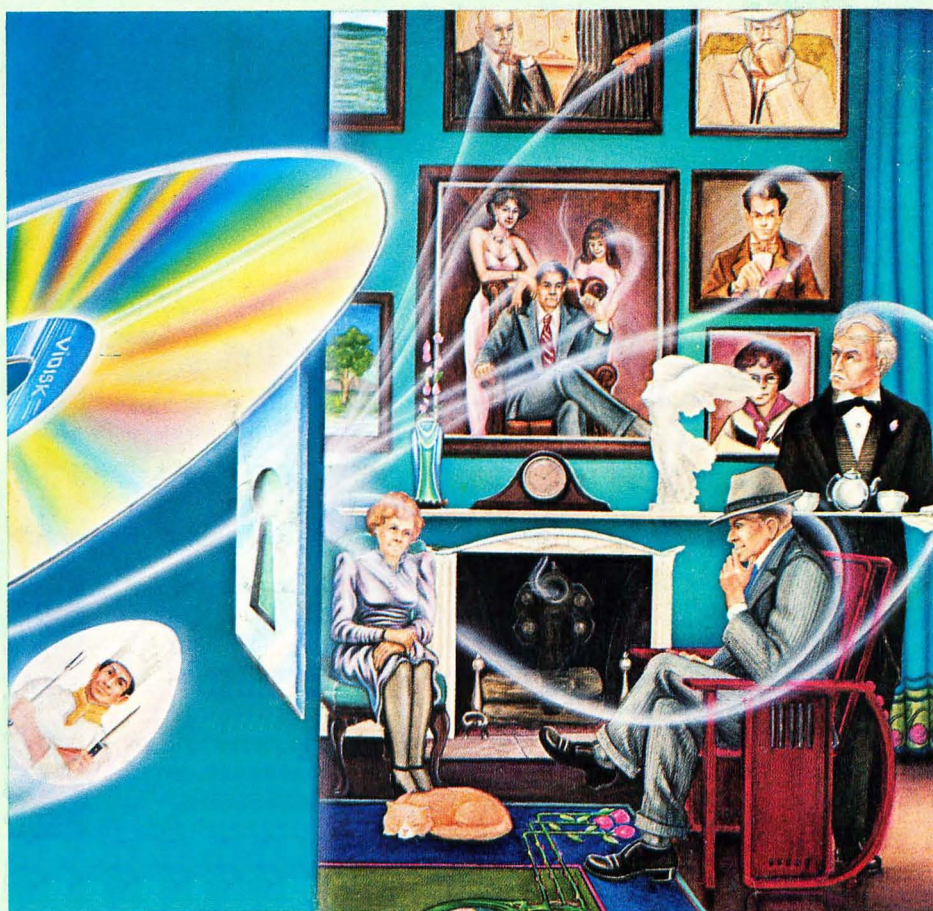
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## Computers And Culture

How Technology  
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ATARI® — Rebound

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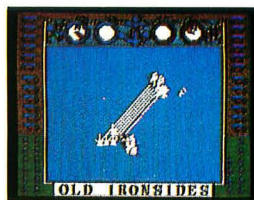
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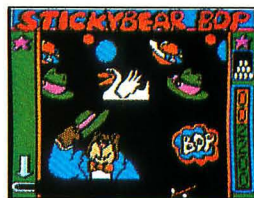
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## Weekly Reader Family Software

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## Did you ever think you would be spending \$3000 for your computer?

Personal computers are flooding into American life. Millions of units are already in the workplace, and the pace not only continues, but is increasing. The demand for micros is so strong that sales have been curtailed by production capacity. It seems certain that, by the end of the decade, there will be as many keyboards in American life as there are automobiles. There are already more video screens in use today than cars, radios or telephones. By the end of the century, intelligent electronic assistance in daily life will become a necessity.

The Home Electronics SubSystem (HESS) is not a piece of science fiction. It requires no technological breakthroughs. As I describe the HESS to you, keep in mind that it consists of existing products, available for sale today at today's prices. The HESS will not be cheap, but it will be complete enough to be useful. It's power comes from being a complete system — all in one. It will also be coordinated enough not to be confusing.

The HESS is a network of your stereo system, video, telephone, terminal and home controller and all the appliances you probably currently use one at a time. Basically, if you plug it into a wall outlet and don't hold it in your hand when using it, it probably belongs in your HESS. Furthermore, portable electronics will be designed to relate to the HESS in appropriate ways. Even your car can become a module of your HESS.

At home or at work, the very essence of what constitutes the management of our "affairs" is changing. Today, virtually everyone shuffles paper. Narrowed down, the pointless and frequently time-consuming act of finding, clipping, stapling, filing, folding, licking and mailing paper — paper shuffling — is not a skill of the future. Furthermore, the sharing of paper is one of the basic, underlying causes of offices — both the home and business variety. The mishandling of paper is a key problem, and paper's inability to exist in more than one place is its fatal flaw. Expanding electronic information management is eliminating the need for paper and its related problems. Certainly it will not eliminate offices, but the use and purpose of offices inevitably will evolve. Probably, offices will become meeting and planning centers, as they lead the way in implementing technologies that

render obsolete paperhandling and other similar routines. Even the ability to type, which today seems an inescapable necessity, will pass, as voice recognition systems will read your every word as you say it. These systems will even help you say it better. (Lord knows I need the help.)

### AESS (Auto Electronic SubSystem)

One of my pet ideas is the Bar Code Highway. As the name suggests, the key concept has bar code like patterns applied into the road surfaces. This pattern is read by an auto-based processing system through a sensing device similar to the bar code reading device, like modern cash registers. The very flow of the pattern serves a potential guidance path. The regularity of the spacing of the bar code pattern can serve as a near indestructible reference to absolute speed. Then there is the matter of what the pattern says. The obvious choices are legal speed, upcoming turning choices, location identifications and traveler services. With them, you need never accidentally speed, miss an exit, wonder where you are, or where the next gas station is, or for that matter, the nearest hospital. And that is just the beginning.

Keeping in mind that the system is aware of where you are, in the event of an accident, the AESS could be equipped with CB emergency broadcast capability to transmit the scale of impact, if any, position, occupant(s), even emergency significant medical histories. This system could go on the air regardless of the condition of the occupant(s). It could also handle less dramatic, but still annoying, travel related problems such as mechanical breakdown and traffic delays. Brief, digitally encoded messages could be transmitted, calling and describing necessary assistance or alerting client/employers of delay.

Key commercial locations may find it in their interest to install digital broadcast beacons. They are FCC regulated and are assigned a frequency and time slot. The time slot is 1/1000 part of a ten second period. From a user point of view, if you punch in a beacon number to the AESS, it will tune into that time slot. Some time in the next ten seconds it will read a stream of information sufficient to identify the loca-

tion and directions on how to get there. It could do so using the the same electronics that deliver your FM easy listening station. Once every ten seconds your processor controlled radio changes station. For 1/100 of a second it listens for the beacon. You never noticed?

The AESS in control of a vehicle's braking, steering and ignition systems still relies on a human operator to respond to any unusual traffic conditions. For this reason it is better to regard these features of the AESS as the ultimate cruise control. Intersections are particularly vulnerable situations requiring human perception and decision making. In such situations, the AESS will be able to know ahead that a mandatory or voluntary driving decision is approaching. The AESS will bring the car to a stop if human intervention and approval is not demonstrated by the use of either the brake or the accelerator.

With the AESS having driving capabilities, the act of driving takes on a whole new meaning. You become a manager of your vehicle, not its operator. The time spent in transit can be made more useful while being less stressful.

Now that it is a bit clearer what will be expected of an AESS, it will be easier to describe. Central to its driving abilities are processor controllable steering, braking and acceleration systems. Somewhere under the car is the bar code sensor. There would also be a fuel sensor and a whole host of status information, including the equivalents of every light, switch and gage present on the instrument panel of today's cars. Add a handful of diagnostic sensors with the software and you have the vehicular processes under control.

One of the most common questions asked of me as publisher of *SoftSide* is: "What good are these home computers?" Isolated from the other devices in our daily life, they are reduced to entertainment and business or self improvement. As this core device, called a home computer, integrates itself with existing electronic devices, it will begin to take on a new role in the fulfillment of the American dream. \$3000 to \$10,000 may soon be a reasonable price to pay for the usefulness. By the end of the century, a HESS will be a near necessity, much as the automobile is today. It is just a matter of time and human adjustment.



Roger W. Robitaille, Sr.  
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## FEATURES

### ENTERTAINMENT TOMORROW

#### The Futurephone: A Broader View: Part III

by Allen L. Wold

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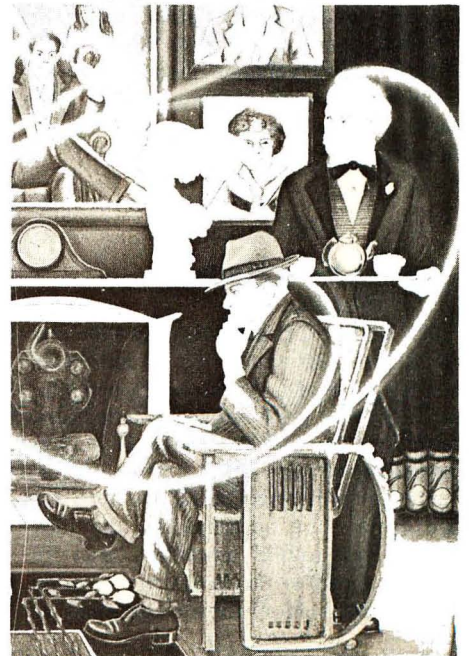
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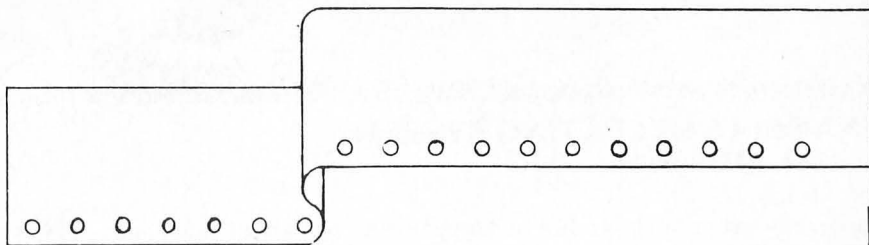
### Software for Your Personal Computer!

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Cover illustration by William A. Giese

# Input



## A Comment on Keynes

Dear *SoftSide*,

After years of publishing, it must be difficult to find new article ideas, but this is no reason to print an old *80 Micro* article. It is decent, but I (and many others, I'm sure) have read it all before.

I object to Keynes' omitting the final touches in the program listing so we can't get results as good as his. His wife must be really popular at the country club. Thanks for letting me blow off steam.

Douglas A. Stuber  
Columbus, OH

**Editor's reply:** *SoftSide* agreed with Mr. Keynes to reprint the article you mention, and a select few others, in our "Financial Operating System" column. We have upgraded the programs and translated them for three other systems; this substantially increases their appeal, and the demand has been remarkable. In Issue 47 (January), you will see new ruminations by our expert on investing. By now, you should recognize that many of *SoftSide's* regular authors are maverick personalities. Mr. Keynes consistently offers valuable insights into the complex and competitive world of the stock market. For that we find it easy to forgive his eccentricities.

## Crisis in Education?

Dear *SoftSide*,

Saul Bernstein (Issue #43) claims the present school structure is a lamentable manifestation of a system developed when the U.S. was predominantly agricultural. Certainly, the present system is a direct descendant of agricultural necessities, yet it is rooted in the present social structure. Day care centers are spearheading the move toward year-round schooling, and the metamorphosis of the family may produce the requisite freedom for such change — *in time*.

Practicality aside, increasing school time (by approximately two-thirds!) might entrench the age-stratified outlook and

"school culture" which students must overcome when they graduate.

A primary misconception traps Mr. Bernstein. He says, "The business of a classroom instructor is to infuse his students with the knowledge of a given subject." This *appears* accurate but reflects a common misconception. Rote learning of basic literary and math skills is essential in early education; the *underlying* curriculum aims to train mental faculties and to pique interest and curiosity. This is school's *main* business.

Mr. Bernstein says, "...we should establish a curriculum based on subject value" and limit courses to the truly "useful" (my word). Certainly, some

believe with Dr. Favaro ("Taught to the Tune of a Silicon Chip") that present software is insufficiently conceived and developed; and, I have strong reservations about hidden side-effects of computer-based instruction. B. F. Skinner's work with teaching machines indicates that teaching ideas and concepts with them is extremely difficult. The groundwork has not been laid yet, (including much work on how people learn to think). Computers will play an increasing role in education, but caution is in order before we jump into a subject we understand so poorly.

Neal L. McWhorter  
University of Chicago

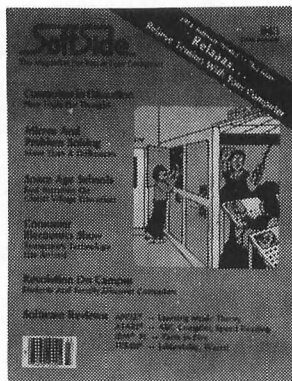
**Saul Bernstein has declined the opportunity to reply.**

## To Download or Not to Download

Dear *SoftSide*,

I am frustrated and angry about "Computer Crime: Pirates and Phone Phreaks" by Tim Knight (Issue #44). The editors should be ashamed for publishing such a malicious and one-sided article. Mr. Knight suggests that computerized bulletin boards exist to "rip-off" program designers and software dealers. Nothing could be further from the truth. I use my Atari 800 to communicate with Atari bulletin boards across the country. Furthermore, I assist with the weekly production of download files on a St. Louis-based Atari bulletin board. My experience with bulletin boards is that the SYSOPS are careful to download only programs in the Public Domain. Mr. Knight fails to acknowledge the thousands of free, high-quality programs available to the public that represent the primary business of computer bulletin boards. I have never been aware of having access to illegal, copyrighted programs from these boards. Piracy exists, but Mr. Knight's article condemns all bulletin boards. Telecommunica-

*continued on page 7*



courses are a waste except for "social promotion" purposes. But, are rigid, "logical" (highly structured) thinking and a well-trained group of narrow-minded, inflexible students really his goals? The great power of the human mind is not its "logical" faculty.

Mr. Bernstein would eliminate learning multiplication tables (thus saving three years of education). He favors teaching how to manipulate logical structures (using computer-based instruction). He is unrealistic. The idea of a generation of students never memorizing math tables is interesting; but, the *ability* to learn, a hidden curriculum of the traditional method, would be risked. Replacing it with logic would not save time.

Mr. Bernstein is overcome by his enthusiasm for computer-based instruction. I

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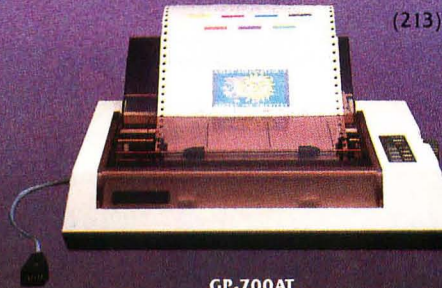
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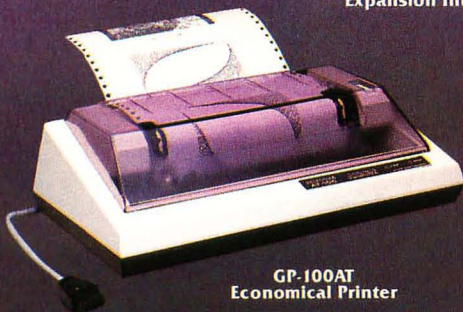
AT-846  
Expansion Interface



GP-700AT  
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GP-550AT  
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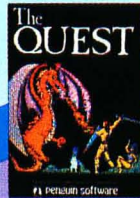
the graphics people

## The Next Generation Is Here!

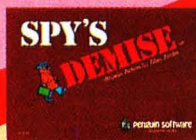
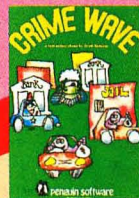
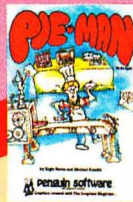
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<b>MEMOREX</b>	<b>\$165</b> per 100
<b>NASHUA</b>	<b>\$160</b> per 100
<b>NASHUA</b> (single density)	<b>\$140</b> per 100
<b>VERBATIM</b>	<b>\$190</b> per 100

**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.

### Input, continued

tions has increased home computer use greatly, thereby increasing hardware sales and the revenue potential of program designers and software dealers.

*SoftSide* appears to agree with Mr. Knight. You should support this movement. Most other software-oriented magazines permit the transmission of program listings typed in from their published programs. Your programs do not appear on most bulletin boards. Because of your "anti-bulletin board" posture, I have witnessed eroding support for your magazine.

Dr. David W. Davidson  
St. Louis, MI

**Reply: You should re-read Mr. Knight's series. Far from condemning home telecommunications and BBS's, he — and *SoftSide* — stress its enormous value — all the computer mischief notwithstanding. Furthermore, *SoftSide* depends on software sales for an important part of its income. The programs are no more in the public domain than any other commercial software. This is a sound business decision, consistent with copyright laws and accepted practice. To believe that programmers deserve fair compensation for their work is not an "anti-bulletin board posture."**



## Output

### Peter J. Favaro: Special Projects Editor for Education

We are especially pleased to announce that our Special Projects Editor, Peter J. Favaro, has been awarded a Ph.D. degree, With Distinction, at Hofstra University. His degree combined majors in both school and clinical psychology, and of course, his research focussed on computers and games. His dissertation, called *The Effects of Computer Video Game Play on Mood, Physiological Arousal, and Psychomotor Performance*, is one of the first major scientific studies on the subject. The most significant finding was that he could find no connection between video game play and aggression. For more information, read this article on p. 16, which summarizes his research on this subject.

*SoftSide* readers should be familiar with Dr. Favaro's innovative ideas on game

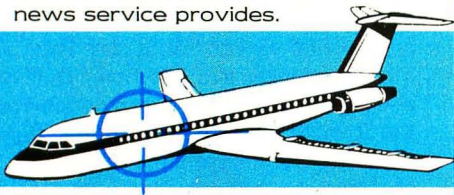
theory and design through his series of articles, *The Battle for Your Mind*. He served as our first Guest Editor for Issue #43, Microcomputers in Education. That issue also presented *Relaaax...*, a program he and Dr. Richard M. O'Brien designed to help you relieve tension, and the aches and pains of sitting at a computer too long.

Along with his responsibilities as Special Projects Editor for Education at *SoftSide*, Dr. Favaro is Assistant Professor of Psychology at Hofstra, and a Research Fellow at the North Shore University Hospital (a Teaching College of the University Medical Center), where he also is Director of the Center for the Study of Computer Applications in Early Childhood.

We congratulate Dr. Favaro on earning his degree, and for his pioneering research in video games. Always a welcome visitor to the *SoftSide* offices, he never fails to brighten our outlooks, fill our heads with fascinating new ideas, and relieve the tedium of those never-ending deadlines.

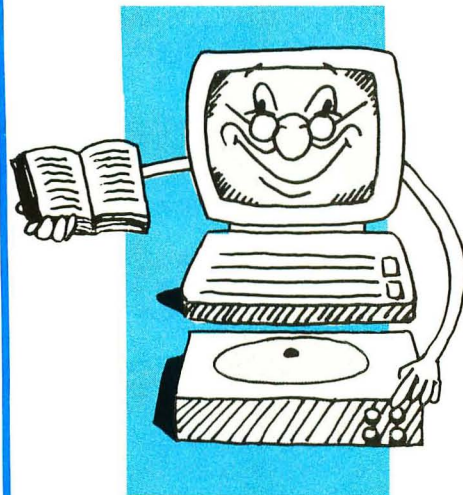
## Bulletin Boards Buzz On KAL 007 Shooting

Bruce A. Mohl, writing in the *Boston Globe* a week after the shooting, reports that people are making their opinions known on the user bulletin boards — not by writing letters or picketing or calling radio talk shows. The Source® has a service which allows users to create any subject for debate and solicit responses. So far, most topics have generated little interest, but the missile attack on the KAL 007 generated over 100 responses in just a few days. At Electronic Information Exchange (a branch of the New Jersey Institute of Technology), similar results have occurred. A "nationwide bull session" has taken place, according to Alan Kay, Chairman of Participation Systems, Inc., who developed the software. One respondent suggested that it all be compiled as a book. Kay remarked that "These people (political speechwriters, scientists, experts on the USSR, military officials and airline pilots) are typically on the forefront in using computers." Many of these computer-sophisticated people prefer direct interchanges of facts and opinions among experts on the bulletin boards, since that gives them basic raw data, and avoids the editing and selection process which a good news service provides.



## Cable Games

The Games Channel downloads games on Cable TV. If the cable system is two-way, the games can be interactive. Subscribers will rent from the cable company a special decoder, which has 48K memory (not just the usual 16K of games) and which can become a home computer. A minimum of 20 games will be offered each month. Adventure, arcade and educational (logic, strategy, math, language, physics, sports) varieties are contemplated.



## Interactive Video Tape and Disc Interface

The CATI 700 II is an interactive videodisc controller and curriculum development system (it also works with videotape machines). The package, which includes software, sells for \$1000. Using it, teachers can develop interactive lesson plans, even with existing tapes or discs, because the programs are stored on floppies. The system is compatible with Apple II and III, Super Pet, Osborne, IBM PC, TRS-80 Mod II and III, Sony SMC-70, any machine compatible with Applesoft or CP/M, and all popular makes of disc and tape players.

Multiple choice, true-false, and fill-in-the-blanks quizzes are all possible. The teacher may ask graphics questions — "show me where" — by asking the student to position a circle over the proper part of an image. When the student makes an incorrect response, the computer branches to play a remedial video, graphical or text sequence. Student scores are stored on the floppy automatically, and teachers can monitor each student's progress easily. The tape addressing system uses a method which they claim is faster and more accurate — to 1/30 second. Here is an inexpensive way for school systems and small businesses to develop interactive teaching materials.

## Expert Repair With Videodisc

General Electric has developed a computerized interactive videodisc troubleshooting system for locomotives. It points the way toward do-it-yourself auto (or TV, refrigerator or washing machine) repair based on the experience of expert mechanics. Simply type in responses to questions about the malfunction. Eventually the troubleshooting system identifies the problem and tells how to repair it — and even demonstrates the procedure. If you want a detailed drawing or more information, it's available as you work.

This "expert system" contains the accumulated wisdom of GE's top locomotive mechanics. Even a novice engineer can uncover a fault by working at the terminal. The system can lead a person through required repair procedures presenting computer-aided drawings of parts and subassemblies, and specific "how-to" demonstrations.



The system uses human-like thought processes ("if this and this are true, then do this") rather than rigid decision tree processes. It uses more than 500 If/Then rules, and is programmed in FORTH (prototyped in LISP but later changed). GE researchers are working on a generic software program to extend the range of applications to a wide variety of electrical and mechanical systems.



## Word Games for Defense

When the National Defense University (Fort McNair, Washington, DC) held its annual war game exercise, it used a microcomputer and several portables during a five-day simulated global war. A total of 13,000 messages was sent. Military experts set up eleven hypothetical worldwide command stations with 300 Army and Air Force colonels and Navy captains predicting strategies for war-like situations. The host computer, a Supermicro 32 by Molecular, processed messages from seventeen Kaypro portables in the field, using ComNet software by Hermetnet, Inc. for e-mail among stations. Evidently, this simulated global war was not thermonuclear, since the well-known Electromagnetic Pulse which occurs in a nuclear explosion would wreak havoc with that kind of communications network, and destroy computer software and data instantly.

## On-line Encyclopedia Adds Videodisc

The *Academic American Encyclopedia* is a familiar on-line encyclopedia, and an audio-visual segment is now being developed by the Grolier and Longman Group of S. Pearson and Sons of England, to be completed by the end of 1983. The text portions currently are on Dow Jones News/Retrieval and BRS. The new edition will use computer-generated text along with visual material to show concepts difficult to present in print, to display news footage of historical events, to play musical examples, or demonstrate scientific principles. Because it is on-line, it can be updated at any time.

## Interactive Videodisc Software for the Apple

"The Extra Mile" is a three-sided interactive videodisc training program developed for administrative employees of TNT Canada, a large multi-modal transportation system. The course uses a Pioneer Model III, driven by an Apple II with Allen Communications interface. The goal is to make employees more customer-oriented in work-styles, and give them better problem-solving skills. Matrix Information Systems (11728 Avon Way, Los Angeles, CA 90066) will market a general-purpose version of the software operating system, called VDOS (Videodisc Operating System), which will enable others to develop interactive teaching or entertainment applications.



## On-line University

Ron Gordon (formerly an Atari Chief Executive, inventor of the hand-held computer, and pocket translator) launched the world's first electronic university on September 12, 1983. The Electronic University was developed by TeleLearning Systems, Inc. and will be sold through such retail outlets as Macy's, K-Mart and Sears, at a cost ranging from \$119 to \$240. Students and faculty can be anywhere in world, and field trips can be conducted by modem. The American Management Association is planning to offer 100 courses through the Electronic University.



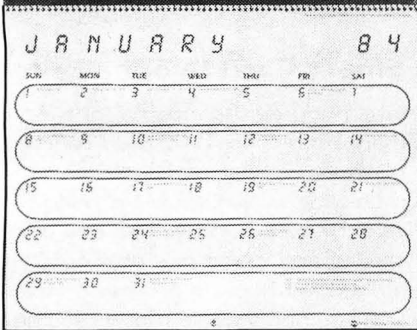
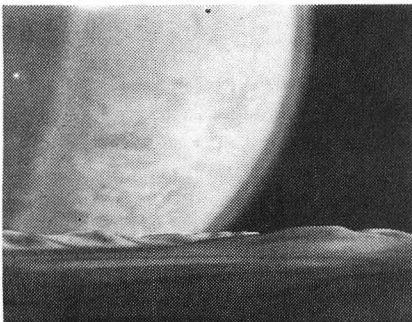
## Farm Prices

AgriData Network/AgriStar provides daily market research data on ten key commodities — wheat, corn, soybeans, cotton, cattle, hogs, T-bills, GNMA's, gold and heating oil. The service covers fundamental trends, technical trading parameters, moving averages, and overbought/oversold oscillators (see "Financial Operating System" in Issue #44). Launched last November, it can be accessed by a local phone call or 800 number anywhere in the US or 2000 world cities. For details on AgriData Resources, contact your Merrill Lynch Futures representative.

## Smart Card Lyonnaise

Intelmatique, the international marketing division of the French Ministry of Post and Telecommunications, will issue 1 1/2 million smart cards in 1984. The size of a credit card, it has one or more embedded chips, is programmable and has non-volatile memory. The French envision four applications: 1) Pay phones 2) Videotex payments-services, telebanking, telepayment for products ordered through Videotex 3) Decoders for the French Fourth Channel (pay TV) 4) Payment for delegates to conferences at permanent exhibition sites. The system has been tested on the Minitel terminal, a low-cost, stand-alone terminal used for the experimental electronic phone directory and Teletel videotex services. This modernization of operations includes the 7.6 million French Postal Bank customers, and 3.3 million Carte Bleue holders, with full interchange of services. Carte Bleue is the largest credit card system in France. Cardholders can also withdraw cash from 450 ATM machines. Trial marketing is being conducted in Blois, Caen and Lyon.

# 1984 Great Computer Calendar Available



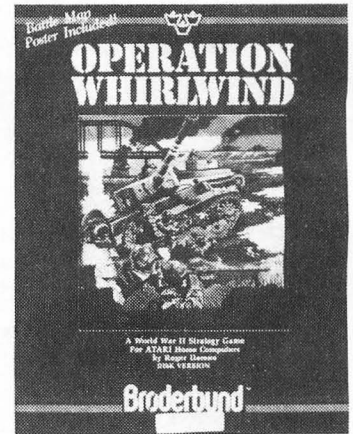
The *Great Computer Calendar For 1984* is bigger and brighter than ever. It features a full 14 1/2 x 22 (open) format, with full color photos and graphic art for each month of the year. There is space to enter your own notes and appointments, and interesting and humorous notes on computing history. In addition, the calendar lists all important fairs, meetings and shows for each month, so you'll never miss an event. It also includes a full directory, including addresses and contact persons, of all the major shows and fairs in the U.S. for the year.

The *Great Computer Calendar For 1984* is available from your local dealer, or directly from Reston Publishing Company, Inc., 11480 Sunset Hills Road, Reston, VA 22090 (800) 336-0338. It carries a suggested retail price of \$7.95.

# The Battle Rages

Muster up your courage and polish your knowledge of military strategy, because it's World War II and you must move your battalion through a series of skirmishes and battles called *Operation Whirlwind*. In this new release from Broderbund Software, you use your joystick to move your on-screen cursor through many phases of computer battle action, including Command, Movement, Combat, Assault Order and Assault. A typical game lasts from one to three hours, and includes numerous cycles and skirmishes. Each skirmish requires a different strategy, as you move closer to the climactic endgame crescendo. Your victory falls into one of five categories: Questionable, Marginal, Tactical, Strategic and Breakthrough.

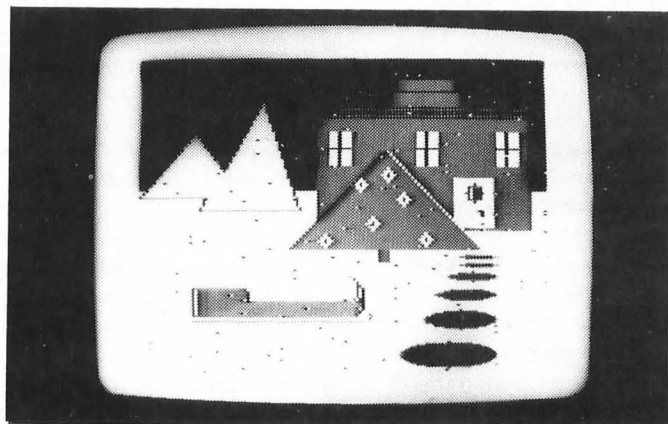
*Operation Whirlwind* features excellent graphics and sound, and is suitable for both the novice and advanced gamer. It is available for the 48K Atari 400/800 with disk drive and joystick for a suggested retail price of \$39.95.



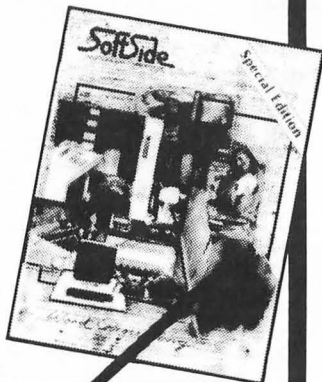
# A Unique Gift Idea

Apple II, Atari 400/800, Commodore 64. If you're stumped for a suitable gift for your favorite friend or relative, consider a new software package called *bitCard*. *bitCards* are challenging text and graphic adventures whose themes relate to a specific holiday or event. What makes the product unique, however, is that *bitCard* can be ordered custom-programmed to personalize the adventure, drawing the player into a fantasy world where he/she plays an integral part. As the player proceeds through the adventure, he/she finds several personal references to himself.

The first *bitCard* to be released, *The Christmas Adventure*, is available now for the Apple II family with 48K and disk drive, the 16K Atari 400/800 on cassette, the TRS-80 Models I and III, and the Commodore 64. It carries a retail price of \$18.50. For more information or to place an order, contact bitCards, 120 South University Drive, Suite F, Plantation, FL 33317 (305) 473-4741.



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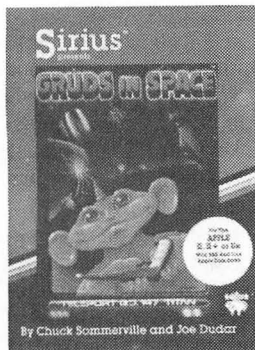
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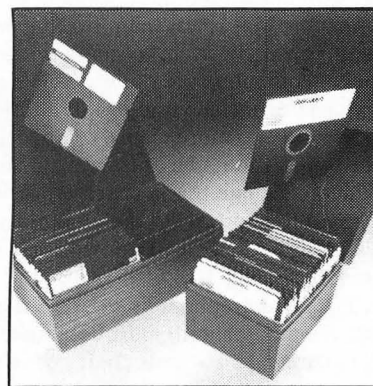
## Games For Christmas Giving



Apple Atari Sirius Software recently introduced two new adventure games for the Commodore 64 owners on your list — *Gruds In Space* and *Blade Of Blackpoole*. As you might guess from the title, *Gruds In Space* has a less than serious storyline; in fact, it's incredibly funny. It features over 150 animated screens, as well. *Blade Of Blackpoole*, already a best-selling adventure on the Apple and Atari, features the same superb graphics as the older versions and takes advantage of the Commodore's spectacular graphics capabilities.

Both games are available for the Commodore 64, Apple II and Atari. Look for them in your local stores for a suggested retail price of \$39.95.

## Disk Storage Strategy

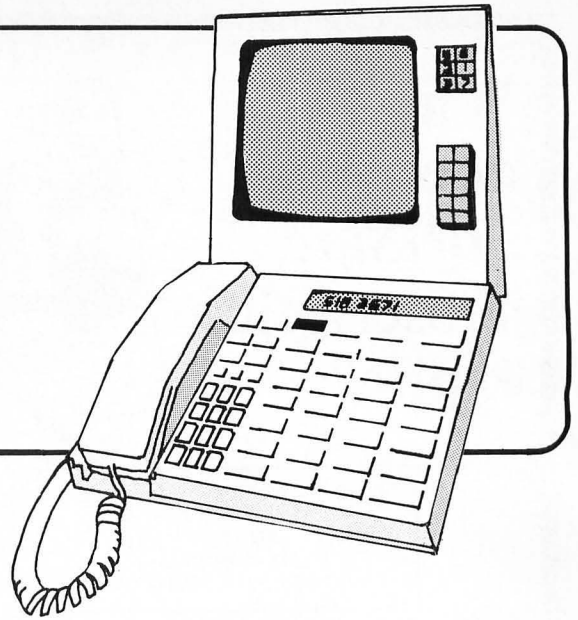


StorWares<sup>TM</sup> file/storage boxes end the problem of where to neatly, inexpensively and safely keep your 5¼ inch floppy disks, and organize them at the same time. The StorWares disk boxes come in two sizes — the 75 disk size and the 150 disk model. Both sizes are stackable, fit easily on a disk drive and come in walnut woodgrain or black leatherette finish. They are strong and durable, and are shipped fully assembled with a three-position adjustable divider inside.

The Storwares boxes are available from StorWares, Inc., 1849 East 65th Street, Dept. S, Cleveland, OH 44103 for \$9.95 (75 disk size) or \$14.95 (150 disk size), plus \$1.50 per box for handling.

# Entertainment Tomorrow

by Allen L. Wold



## The Futurephone: A Broader View, Part III

The futurephone will be rather large — a good picture and a useable keyboard demand a minimum amount of space. Some TVs today have a picture that is less than three inches diagonally, but not everybody can view such a small image easily. The keyboards on pocket computers are quite small, but enough has been said in the reviews of such computers about the difficulty of using them that I need say no more. Thus, to appeal to the widest range of users, the screen should be at least six inches diagonally, and the keyboard large enough that a touch typist won't feel unduly cramped. The futurephone will take up more space than today's phone does. And when you flip down the keyboard, that will require even more space.

Also, inherent in the futurephone is the fact that the camera (and thus probably the mike as well) must be some distance away, rather than in a handset. This means that, speaking in normal tones, your conversation can be heard across the room, and that other sounds and conversations in the room will be picked up at the same time. One alternative might require you to stand or sit at the phone, like the old-fashioned wall phones. You couldn't move to the couch, or continue with the dishes, while talking. A second alternative would be a separate handset for sound only, which would add to the bulk of the phone. The camera probably would not track you automatically, so moving out of video range might be a problem — or an advantage. A third alternative would be a main phone unit, with all facilities, augmented by limited service (audio only) handsets, much like today's handsets. One of these could be kept by the bed, another in the bathroom, one in the kitchen, and one in the office. But then you wouldn't have the

full use of the phone, except at its central location. Apparently you would either suffer the inconvenience of a large device in every room, with problems of noise and vision, or have the convenience of a handset, without full function.

This is really a small problem, and one which probably could be solved easily. But unless these questions are taken into consideration, the design of the phone will not accommodate human needs and habits. In the past, these problems were frequently solved by trial and error. Today, with the emphasis on ergonomics, and with the immense amounts of money risked on new technological ventures, such problems have to be solved before the first unit reaches the market — or there will be no market. The problems the phone company has had in introducing the picture phone emphasize this.

### Futurephone Problems

The futurephone will be no more fragile than today's telephone or television, but consider the keyboard. With a typewriter style keyboard, we have the problems of moving parts, spilled liquids, cat hairs, and so on. If we use a membrane keyboard, touch typists will be unhappy — I know I would be. New keyboards may solve that problem, of course, but the question cannot be ignored.

Occasionally I get a phone bill with a funny charge on it; someone has made a long distance call and charged it to a third number — mine. With consumers having access to large databases and incurring large bills, we would have to prevent any possibility of their transferring the charges to the wrong accounts. Third party billing is a convenience some of us are unlikely to be willing to

part with. The whole question of billing is a complicated and technical matter. Even credit card calls can be falsified. If we build in too many fail-safes, the system becomes less and less easy to use. But if we don't, the future equivalent of today's "phone phreaks" will have too much fun at our expense.

Consider doing all your banking by phone. Your employer could deposit your paycheck electronically, or you could pay a bill by tapping a few codes into your futurephone. Since most phones are connected in a single vast network, a potential thief could learn when such transfers are taking place, and reroute them to his own accounts. Phone and computer security is a problem now; it will be more so when more systems are connected, and when more than mere information is transmitted. But every computer system ever invented has proven liable to penetration by unauthorized people. Physical cut-off switches would isolate you perfectly, but at the same time eliminate the convenience of automatic answering.

## Electronic Junk Mail

With physical mail, it's there or it isn't, it's been opened or it hasn't. But an outsider could read your electronic mail, and you wouldn't know it. Phone tapping is a not-too-serious problem today, since if you say nothing, the eavesdropper learns nothing. But with a system like the one I've been describing, containing commonly used phone numbers, personal data for government and business polling, instructions for pre-recorded routine calls, and so on, anyone who broke your security would be able to acquire much information about you. If you think obscene phone calls are a nuisance now, imagine what they would be like if the caller has a picture to transmit. Or what if you forget to turn off the picture when stepping out of the shower? Junk mail fills our mail boxes. Electronic advertising could fill our disks, either overriding important mail, or leaving no room for it to be received.

In our Utopian fantasy, the need for government regulations seemed to disappear. As the futurephone comes into existence, many of these regulations will have to be rewritten. Some of the functions I've described above may in fact be forbidden by current regulations. With competing interested parties, the production of useful and meaningful regulations will be a nightmare. Standards of operation, industry ethics, protection of profit, privacy, and the consumer, will all have to be considered.

Bureaucracy being what it is, this will not be swift nor easy. The people who write the laws are not necessarily well-versed in the technologies those laws govern. Until no regulations are necessary, an increasing number will be needed and must be strictly enforced. What is the dividing line between information transfer and recreation? Between privacy and need to know? Between corporate profit and consumer protection?

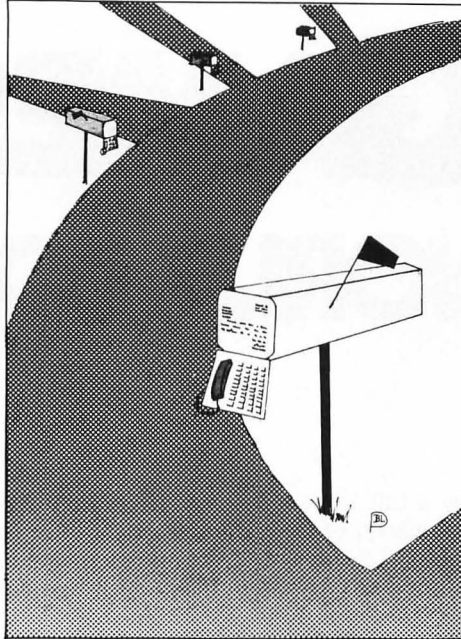
## "Neither Rain Nor Snow..."

Another area of possible regulation complications is the post office. The post office rightly considers it its responsibility to regulate the information it carries. There have been rumblings that the post office considers electronic mail within its venue. One possible reason is clear. If we do achieve full electronic mail, the

post office will lose most of its highly profitable first class business. One possibility is that the post office, as we know it today, will cease to exist. All first class mail, and anything which can be stored on disk, would be handled by the futurephone. United Parcel Service and Federal Express already compete with the post office. If these companies improve their services, and the futurephone handles all print and pictures, that wouldn't leave much for the post office to do. And the post office will resist.

On the other hand, since the phone company owns the medium of communication, the optical fibers and exchanges, they have a right to control the system, and collect revenues. They will not give us electronic mail if they cannot profit by it. Unless we want a monopolistic combination of post office and phone company, the proper division of authority and profits will have to be decided, before the system can be put into operation. If no one profits, it just won't happen.

But other companies regulate, support and profit from broadcast information. To make use of satellite communications, these companies and industries will have a share. We have a system for television communications. It would be a waste of resources to have a duplicate system for the phone company, and another for the post office. But then, which company will control futurephone broadcasts? Is it possible for them to share? And if they do share, if something goes wrong, or there is an irregularity, who is responsible? Unless such responsibility is clearly defined, the problem or irregularity will not be corrected.



## Disappearing Industries

Here's a problem that may not be as far-fetched as it might at first seem. I don't know what percentage of this country's production of copper goes into telephone wire, but a whole industry is based on producing various forms of conducting wire. What will be the effect on this industry, in whole or in part, if fiber optics takes its place? Of course, a new industry will open up, to produce optical fibers, but the old one will resist the change to some extent. The value of copper stocks may plummet. Third world copper-mining countries may plunge into depressions. Copper wire, as an industry, may disappear.

Newspapers might disappear. Many are already in trouble. If you can get full news services over the phone, you will have no need for printed papers. Those who actually prepare the news will have jobs; their efforts will go to a different medium. Reporters, using word processors, are already accommodating the change. But the capital investment in presses, delivery trucks, buildings, and so on will all lose value. That means somebody loses money — maybe you.

Consider the effects on paper mills and the logging industry. The actual outcome, in reduced rubbish and increased forests, might be desirable for the population at large. But if you own a paper mill, or a share in one, you won't like to see it go under, replaced by electronic media. If you're strong enough, concerned enough, with enough money at stake, you might try to lobby legislators into "protecting" your investment, as the canal companies did when the railroads came along.

The problems go on. I will discuss more of them, and my conclusions next time.



# WAR GAMES & THE WORLD CONNECTION

by Tim Knight

I was awakened early one recent morning by a call from a newspaper reporter. He wanted to ask me what I thought of the movie *WarGames*. This film, one of the most popular of the summer of 1983, is about a teenager who inadvertently contacts a US Defense Department computer, and nearly brings the world to thermonuclear war.

The film revolves around the character, David Lightman, a young computer hacker with a large array of computer equipment at his disposal. David uses the computer for a variety of purposes (including computer communications and phone phreaking) and shows the power of the machine to his soon-to-be girlfriend by changing one of her grades from a D to an A.

While trying to ferret out the phone number of a game company located in the Silicon Valley, Lightman accidentally finds a NORAD computer, which is the machine controlling our nuclear missile defense system. The computer thinks that Lightman is its creator, so it won't stop calling David's house. The NORAD device, called the "whopper" (WOPR), also continues playing the game Lightman started, "Global Thermonuclear War," which, incidentally, is the real thing. Eventually Lightman is caught, and the nuclear missiles are stopped, but this hit movie made quite a few people wonder if computer hackers really could get into the NORAD computer system. I wasn't aware of this concern until the newspaper called me and began asking, "Could such a thing really happen?" and "How secure is the NORAD computer?"

## Plot Holes

As entertaining as *WarGames* was, it had quite a few holes. It was indeed a "fiction" movie, and its only message should be that nobody wins a nuclear war. It should not be a warning to the people of the world that someone working with a computer and a modem could gain access to the NORAD computer and begin blowing up countries.

First of all, NORAD is not hooked up to a regular telephone line that just anyone could call. The Defense Department's missile control system communicates through a private telephone system, to which a computer hacker certainly could not gain access. Granted, some Defense Department computers (such as those which indicate which contractors are creating certain types of equipment) have been broken into before, but that poses no threat to our national security. Also, because many human elements are involved in our defense system, no computer could launch missiles without human approval — including the President's. In *WarGames*, WOPR supposedly could have launched all of our nuclear missiles, which simply is not possible. Lastly, since a computer is not capable of intelligence, WOPR would not have been able to track down Lightman and continue calling his home, asking to "play a game." In addition, the computer could not have continued such an intelligent conversation, ending with a philosophical statement about nuclear war: "The only winning move is not to play."

Although personal computer communications do not provide the means for someone to destroy our planet's life, some attempted break-ins have occurred at several Defense Department computers. Also, certain computer malfunctions have taken place which might have launched a nuclear missile, though the Defense Department denies this. However, "hackers" are not able to launch missiles or even break into the NORAD system.

Why, then, are some people so frightened by the concept presented in *WarGames*? Despite the prevalence of home computers, and all the attention given them, large numbers of people still are ignorant of how computers work and what their limitations are, so they take the *WarGames* plot seriously. Also, some people (usually young computer "hackers") do indeed break into systems. These events have gained widespread publicity — especially since the film's release, which has given the modem a rather bad name in some circles.



## The Board Crackers

One of the most popular types of "computer communications break-ins" is cracking a computer bulletin board service, or BBS. "Board crackers" use a variety of methods to get into a system, but usually they try to input the special code which the SYSOP (the board's SYStem OPERator) uses to access the actual computer system. Guessing the codeword requires ingenuity and persistence.

When most people call a bulletin board service, they use the basic functions of the board, such as retrieving and leaving messages, playing games, and chatting with the SYSOP. However, when the SYSOP wants to use the system, he inputs a special code (perhaps a password) to let the computer know that he is the SYSOP and has unlimited access to the computer's functions. He can add files, kill files, alter messages, and do anything else he wants with the computer.

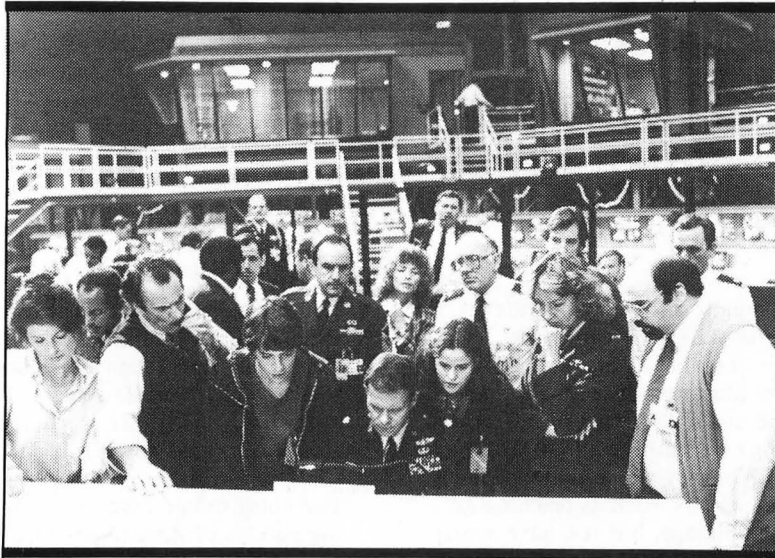
A board cracker, after breaking into a system, can do all of these things too. A cracker could erase entire files, kill messages, alter messages, steal credit card information (if the system has an electronic shopping section), and perform other kinds of mischief, harmless or harmful. Some crackers become infamous since they break into so many boards, so SYSOPs don't allow persons with certain names (or aliases) on the board. Of course, a board cracker could merely use a different name when logging onto a computer system.

Some SYSOPs go to great lengths to prevent crackers from breaking into their boards, but computer hackers say that this makes breaking into a system even more tempting. The entire situation is like a game in which the SYSOP "dares" a person to break into the system. The bottom line, however, is that persons are illegally breaking into boards and sometimes are causing damage to the software and perhaps even the hardware.

What can be done about these "board crackers" who give computer communications a bad name? To begin with, we must understand that these people are not hateful demons, ready to cause chaos whenever the opportunity arises. These individuals are usually bored, lonely, computer whizzes whose prime source of excitement is solving the puzzle of breaking into computer boards. Setting up a more difficult "puzzle" for them to solve by tightening the security of a system usually doesn't help, since the challenge tempts them even more. Restricting a system to "members only" is a good prevention, but takes a lot of the fun out of a bulletin board service. Probably the most effective way of preventing a person from breaking into a system is to alert the SYSOP to the actions of the computer. For instance, the SYSOP could enter a routine into the program to sound an alarm whenever access to the computer system was being attempted. If the access was being made by the real SYSOP, the alarm would be expected. However, if a board cracker tried to get into the system, the alarm would alert the

SYSOP. At that point he could note the cracker's alleged name and address, and even trace the cracker's phone number (if the SYSOP has two phone lines in the house). This would catch the cracker, and discourage him from repeating the act.

The unfortunate fact about these (usually harmless) computer hackers who break into computer systems is that their actions lead to more serious crimes, almost always associated with computers. Actions such as these can get individuals into real trouble.



"The only winning move is not to play the game"


## Computer Capers

In a recent news story, a man used his computer and modem to access the computer at the bank where he worked. The bank's computer contained a program which calculated the interest rates for the accounts of its customers, all the way to 1/100th of a penny. As accurate as this was, the creator of this program neglected the figures after 1/100th cent, so the computer hacker used his modem to credit his own account with all the money past the 1/100 penny mark. Therefore, if a customer earned \$1.524689 in interest,

that customer would receive \$1.5246, while the extra \$0.000089 would go to the hacker's account. That's a very small amount of money, of course, but when hundreds of thousands of customers are involved, the embezzler can transfer quite a bit of money to his account. This particular hacker actually did accumulate a substantial amount of money, but he was eventually caught, and the "minor bug" in the interest program was fixed.

Are these "computer crimes," even embezzling, rare occurrences? Not at all. Many individuals find clever ways to break into computer systems, using stolen passwords or codes they already know, to steal money, credit or information. And, more often than not, these people are "hackers" who have been involved in "computer cracking" before, and are now using their talents for illegal activities. Inter-computer communications makes this especially easy. After gaining access, a person may spend as much time as he likes trying to decipher codes and locate computer telephone numbers to reach his ultimate goal, whatever it may be.

Again, the problem has no simple solution. Tighter security in this area, as well as more "fool-proof" programs would be useful. In addition, access to computers should be limited to direct lines, rather than the public telephone service, which makes breaking into computers all too easy for the computer hacker.

The most important thing is to keep the public's view of computers and computer communications bright. Newspapers, television and radio seem to be "making a mountain out of a molehill" whenever a computer break-in occurs, so be sure that you understand the facts behind any of these computer capers. As The World Connection grows, we will find new ways to secure access to computer systems, but until that time, we should safeguard what we have and make sure people don't view computers and the people who work with them as malicious or dangerous. 

# HOW VIDEO GAMES AFFECT PLAYERS

by Peter J. Favaro, Ph.D.

Do video games destroy young minds, or do they provide good entertainment while teaching useful skills? Unfortunately, most people have been giving opinions not based on facts, but on speculation. My attempt to answer this question led me to undertake a long research project to find out exactly what the effects of playing video games are. Do the games harm children? Do they lead them into violent behavior? Are they worse than watching television? Do they have positive benefits, such as teaching eye-hand coordination? Everyone has opinions, but few have actual research data to substantiate those opinions. My studies in this field have provided a beginning, and some surprising answers.

I first became interested in studying the effects of video game play on behavior about five years ago, when I was a first year clinical psychology graduate student at Hofstra University. A friend and I were playing one of the first Atari® coin operated video games called "Space Wars." This huge, cumbersome game allowed players to choose the characteristics of their galactic playing field and then battle it out with simple line drawings of spaceships. The graphics and sound effects were modest, but the excitement was terrific. Because we were both extremely competitive, that game ate five dollars' worth of our quarters every week. We kept a running tally of who had won the most games.

During one of the many philosophical discussions which developed around those sessions, I wondered whether the games served some kind of therapeutic function for us. They took us away from the pressure of graduate school for a short time and gave us a chance to act out some of our competitive urges. I also wondered what kinds of motor and reflex skills the games were training in us. One of the last things we said about video games that day was that they would be fun to study in some small research projects.

From then on I never looked at video games in quite the same way. Every time I observed people playing, I questioned myself about games as a social behavior, as a motor skill trainer and as a phenomenon having an impact on children all over the world. I was bitten by a different kind of bug than was piquing the curiosities of people then — a research bug, rather than a playing bug. So off I went to the university library to begin what turned out to be several years of psychological research on computers and video game play.

This interest pre-dated the controversy that began as video games became increasingly popular, and video game arcades began to dot the local shopping malls. Parents, community

leaders and other concerned people began to worry that their children might be showing an unhealthy interest in the machines. Others expressed concerns that the games appeared to have themes which were extremely violent and aggressive in nature.

In 1980 and 1981, when the controversy reached its peak, stories appeared frequently in the news media quoting various social scientists on the benefits or harms of video game play. Psychologists and psychiatrists appeared on television shows warning parents of the dangers of video games, or extolling their virtues. The Surgeon General issued an anti-video game statement to parents; and politicians began using video games as part of their platforms, citing them as contributors to delinquency and drug abuse. The press, of course, ate up all this controversy with a spoon and capitalized on every chance to make anyone's opinion on video games a hot news item.

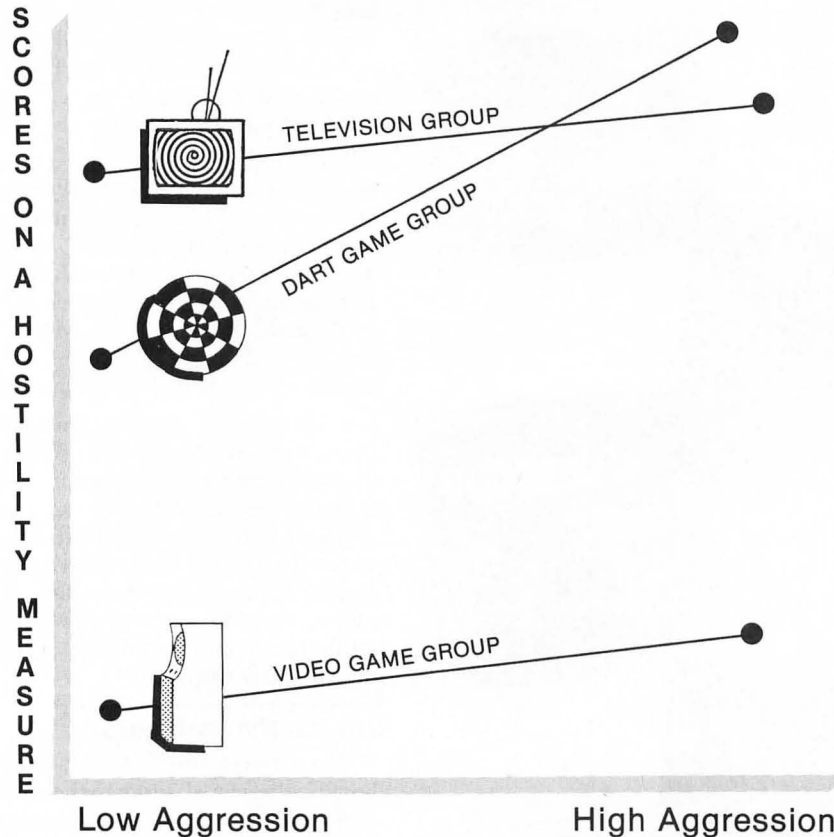
I followed and chronicled all of these events with great interest, hoping that they would lead me to other social scientists who were studying video games. I was often disappointed to find out that the large majority of people in the field, *including the Surgeon General*, were speaking from *speculation rather than data*. Only a few social scientists were doing research and we soon began an informal exchange of preliminary information on the effects of video game play. A video games conference at Harvard University in May, 1983, revealed that the controversy on video games had practically come and gone without any significant data on video game play.

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## Data for Decisions

I recently completed my doctoral dissertation on the effects of video game play, which appears to be the first major research project on this topic. In my study, I explored whether video games have any positive effects on a player's mood, his ability to do performance tasks, and his heart rate and blood pressure. I compared video game playing to television watching and dart game play and manipulated the amount of time people spent playing the games as well as the level of aggression shown in the activities. To increase the aggressive content of the dart games, I changed the target from a simple bullseye to such images as pictures of people in cars. For television shows, I had to select excerpts based on their aggressive content. In fact, I spent an entire year scientifically scaling and defining the level of aggression in the activities to insure that they were comparable to one another.

Figure 1



Rather than go into the details of the study I will try to explain the major results in plain English with the use of a simple graph.

The first question the study asked was: "Does video game play cause people to feel more or less hostile after they play?" Comparing video games to television watching (because it is a video activity) and dart game playing (because it is a play activity), and comparing them at various levels of aggression content, I found several interesting trends. Any activity — video games, television or dart game play — when performed in the more aggressive version, caused increases in reported hostility.

However, of all three activities, video games caused by far the least amount of reported hostility. As a matter of fact the video game rated as "high" in aggressive theme content caused less feelings of hostility than the television show and dart game that were rated as "low" in aggressive content. The graph in Figure 1 shows these relationships, which are the most significant findings of the study. Video games in general are a *different* type of activity than either television watching or dart game play. This was fascinating to me since one of the major objections to video game play was that it is at least as harmful, if not more harmful, than television watching.

### Motor Skills and Heart Rates

The second question the study asked was: "Does video game play cause any positive or negative changes in motor performance?" Previous research I had performed in this area suggested that the skills taught by the games were not transferable to any other skills and these results were validated in my dissertation study. This is also contrary to popular speculation that video game play increases eye-hand coordination.

The final question was: "Does video game play cause increases or decreases in heart rate and blood pressure?" The findings on this question were mixed. Video games did not cause changes in heart rate and blood pressure. However, heart rate for highly aggressive activities tended to increase when those activities were performed over a short period of time.

### Conclusions

In general, most of the fears expressed about the games were unfounded — but so were most of the claims for the games' supposed positive characteristics. We should not take the results of

any one piece of research as gospel, since replication of results is crucial to social science research. It is also important to keep the interpretation of the findings limited to the population on which it was performed — late teen-aged, and college students.

As many long-time readers of *SoftSide* know, I have tried to do the necessary research to help software designers create games which are educational and fun. In this way I've tried to share that knowledge with as many people as possible and in the most positive way. During the past few years many social scientists have found difficulty resisting the spotlights and the importance given to their opinions about video games and other technologies. Opinions don't really carry much weight without data to support them. We need competent social scientists to stay on top of the products of the technological revolution. We need to know if this technology is helping people grow or stifling development. We need to know if computers are the machines that will bring our educational system back up to par. We also need to know how to communicate to the people who design these machines what the characteristics of good "people-machine" interactions are. In many ways this defines the research agenda for the social scientists of the 80's.

The other day I was wandering around the local arcade and found, huddled in a corner, a group of twenty people of all ages watching a teen-ager play "Dragon's Lair," an animated video disc adventure with startling visual and sound effects. The price of the game was twice that of the typical coin operated games. "Oohs and aahs" of excitement rose from the crowd. The teen-ager at the controls was engaged thoroughly with tasks presented by the game. I went home and thought about the game and how different it was from the games I had spent so much time studying. Before long I flipped on the Apple and loaded up the word processor to write to the manufacturer of the video disc game about....

# INTERACTIVE



# VIDEODISCS

Entertainment for the Eighties  
by Randal L. Kottwitz

**V**ideo software is an unfamiliar concept to most consumers, but will be increasingly important to *SoftSide* readers in the near future. Two types of videodisc players have been on the market for several years, but the selection of discs for them has been quite limited. Now that interactive videodiscs and interfaces for home computers are beginning to appear, the incentive to buy a videodisc player is much greater.

As I looked through this disc collection, I found seven major categories:

- Pure entertainment (*The Mystery Disc*);
- Educational (the cooking and photography courses);
- Children's (*The First National Kidisc* and *Fun and Games*);
- Video wallpaper (*Rock Adventure*);
- Classical music, including concerts, ballet and opera;
- Popular music (Liza Minelli's album and Manhattan Transfer's album);
- Movies and Broadway shows (*Pippin* and *Star Trek II*).

For the moment, movies constitute the bulk of the repertoire. Those discs created especially for the medium are really the exceptions. Remember how young this medium is — a disc released just a year or two ago (such as the cooking course) can look rather primitive next to current efforts (such as *The Mystery Disc*). The same is true of the *Kidisc* and the *Fun and Games* disc, both from Optical Programming Associates. The newer efforts show more experimentation — the artists are much more familiar with the medium, and how to utilize its special characteristics, particularly the interactive aspects.

## Interactive Adventure

*The Mystery Disc: Murder, Anyone?* is a good place to start because the genre is close to the adventure games *SoftSide* readers know and love so well. But it's a different kind of adventure — a 1930's murder mystery, or more properly, a parody of one. It has a gently humorous way of using cliché characters and situations. And that's part of what makes it enjoyable. Taped on location at the Vanderbilt Museum in Centerport, New York, all the costumes, makeup and props are authentic to the period.

The plot revolves around Derrick Reardon, financier and businessman, whom we see only in the opening scene. He is then found dead, and the remainder of the disc involves finding the

**Mystery Disc: Murder, Anyone?**, V-MD-82-001, from Vidmax, 36. E. Fourth St., Suite 734, Cincinnati, OH 45202, (513) 421-3999, 1982. **The Master Cooking Course**, by Craig Claiborne and Pierre Franey, OPA-31-615, from Optical Programming Associates, 445 Park Ave., New York, NY 10022, 1981. **The Creative Camera: A Video Primer of SLR Photography**, HP019-U, from Pioneer Video, Inc., 200 West Grand Ave., Montvale, NJ 07645, 1981. **Fun and Games**, OPA 37-601, from Optical Programming Associates, 1982. **The First National Kidisc**, OPA-64-619, from Optical Programming Associates, 1981. **Rock Adventure, with music by Baenzaei!**, MS009-U, from Pioneer Video, Inc., 1981. **Photography by Kishin Shinoyama**, ME064-U, from Pioneer Video, Inc., 1982. **Vincent Van Gogh: A Portrait In Two Parts**, from North American Philips, Inc., 1983.

killer. Besides Reardon, you meet ten more characters, including:

- His wife, a former small time actress;
- His sister, a matron of the arts;
- His brother, the playboy;
- The typical society doctor with a Panama hat and mustache;
- The nearsighted butler.

You join Stew Cavanaugh, the detective, in the foyer of the Reardon mansion, as he — and you — begin to solve the murder.

None of this would be too remarkable, except that the disc contains sixteen different plots. Depending on your choices at various points, you proceed to different scenes, threading your way through a very flexible story line.

The story has five scenes of live-action video. The first one, which is common to all the plot lines, is the dinner scene where the victim is still alive and addresses all the characters, setting up possible motives for each of the other participants in the mystery. After that, the players or teams take turns making binary choices for each of the four sequences. The binary choice determines which chapter of the disc you watch, and which of the two sound channels you want to use. Because of the branching structure, you can choose freely among the variations, taking a different path through the story modules each time you play. You may, at any time during play, make an accusation. But the accusation must include the murderer, motive and method. If you are wrong, you lose a turn.

After you have seen the complete story, you are presented with a dossier of fifteen clues. You can examine a report of a search of Jessica's room, a copy of the will, the coroner's report, or an assessor's analysis of the diamond necklace. The players or teams take turns looking at clues, just as they did in choosing plot options.

When you wish to make an accusation, you follow a three-step arithmetic process to determine which frame to go. Each frame on a videodisc is individually addressable — just punch in its number. If you're incorrect, you lose a turn and the other player gets a chance to look at two more clues. If you're correct, you're given a complete description of what actually happened at the murder, giving some additional information that you should have been able to determine from the clues.

Because of the clever ways it uses the videodisc medium to achieve its interactive characteristics, *Murder, Anyone?* has received much praise and attention. It was named the best consumer disc of the year at the annual Symposium on Videodiscs in Lincoln, Nebraska. It is the best of this genre to appear on the consumer market, although similar productions of even greater sophistication have been done for the industrial players — the Level 2 and 3 types.

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## Weak Points

*The Mystery Disc* has utilized the Level 1 medium better than any other disc so far. It becomes awkward because you have to search for each chapter number and each frame number with the keypad. You get to know your remote controller very well. Also, you must do a little addition (keep some scratch paper handy) to find the frame numbers you should go to; but, Level 1 players don't have a convenient way around these problems, so you simply have to accept it. The binary choices are purely arbitrary; the game would be more fun if you had a reason to select one path over another.

The acting is mediocre, but the campy approach makes it not only acceptable but desirable. In those terms, they do a good job. Also, I can't imagine the confusion of the poor actor who is brought onto the set, given lines to speak, and never told whether he was the murderer or not — because in only one out of sixteen cases would he be. This makes all the characters seem rather

seedy, because every actor is ambiguous about the character's real nature. Depending on which path you take, heroes turn into villains, and the totally innocent become prime suspects. Everyone is culpable in every plot.

The major criticism I have concerns the single-frame clues at the end. Often they take the form of hand-written, or typewritten logs, letters, invoices — things you find in searching the rooms. Considering the resolution and picture clarity available from a laser disc with a good TV set (in this case, a Sony), the illegibility is inexcusable — I had to give up on several clues because I simply couldn't read them. This is a tragic flaw because it kept me from solving at least one of the plots; but innovative things always have flaws, and I am confident they will fix it.

You will spend about an hour and fifteen minutes playing *Murder, Anyone?* the first time, reading through each of the instruction frames. After that, each game takes about 45 minutes. So the total playing of this "thirty minute" disc is about twelve and a half hours. The disc sells for \$30, which works out to about \$2.30 an hour. That's pretty cheap entertainment — less than the price of going to the movies these days.

*Murder, Anyone?* is a great party game, and, if you have invested \$500 to \$700 in a laser player, finally you can entertain the neighbors with program material which doesn't duplicate what they can see on tape or cable. Also, you won't get bored watching it again and again because it's different every time. Even if you end up playing through the same plot line again, you probably won't remember the solution, because sixteen of them keeps a lot of possibilities in the air.

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## French Cooking and 35mm Cameras

Educational books and hobby oriented books always have been great gifts for Christmas time and here we have the ultimate cookbook (*Master Cooking Course* by Craig Claiborne and Pierre Franey) and an excellent 35mm SLR photography course (*Creative Camera*). The cooking course is from Optical Programming Associates. They've been doing some of the most innovative work in this field.

Basically, the disc presents four menus — one on the first side and three on the second. The menus are composed of one frame that shows you the overview of the menu, then video sequences showing the actual preparation.

You can choose either of the two soundtracks. The first gives basic and very clear instructions on making the dish — ingredients, techniques and tools. On the other soundtrack, you'll find commentary, advanced instructions, or anecdotes. In other cases, you'll hear them giving variations on the dish. For example, for the Raspberry Ice with Cassis on the second side, they'll start telling you what other fruits you could use to make a similar kind of ice. In another case, while they are making one kind of dish with leeks, they tell you how to make a soup with leeks on the other soundtrack.

On the second half of side one, after they've gone through the first menu, they demonstrate basic kitchen techniques, from knife sharpening and garnishing, to presentation. The three organizational sections (recipes, glossary and index), are repeated verbatim on each side. You can use these on your portable television in the kitchen to prepare the recipes. If you don't know how to *saute*, look it up in the Glossary. If you want a demonstration of the technique, it refers you to the frame where they show you how.

The video and sound qualities are excellent. You have to be prepared, because they go through the recipes quickly. Often, they use screen washes to go from one step to the next. But with the slow motion and stop frame features, you can freeze the action at any point, view the sequence again, or in slow motion, or

## Videodisc Players: Three Levels and Two Systems

*Level 1* is the most commonly available home videodisc player. The user enters all the control commands through the remote controller. In other words, when the disc tells you to go to frame 36,842, you must punch that into the keypad and tell it to search for that frame — which it does rather quickly.

*Level 2* uses a controller with on-board RAM. The videodisc has an operating program which it dumps into the controller's memory. This program takes care of all the search functions. All you need to do is enter your responses at the appropriate points, and the system takes care of all the calculations, searches for the correct frame, and keeps score if necessary.

*Level 3* uses a microcomputer to control the videodisc. The program can be on a floppy disk or game cartridge, and can be much longer and more elaborate than a *Level 2* program.

### The Laser Disc and the CED

For videodiscs, two competing systems exist. The best-known is the laser disc developed by various European firms such as Philips and Telefunken, and by Japanese companies such as Sony and Pioneer. In the laser system, the digitally encoded information is stored on a disc in the form of tiny pits engraved by a laser beam. During playback, another laser beam reads the pits and converts the data into sound

and pictures. The ones and zeroes become pits and no-pits on the record.

The CED system uses a stylus in a groove, and the ones and zeroes are represented by deflection or non-deflection of the stylus. The groove looks something like a ski slalom course. This system was developed jointly by RCA and JVC for two principal reasons: to avoid the existing patents on laser discs, and to use a simpler technology which could reach the marketplace sooner and be less expensive to the consumer.

RCA's system has only recently been upgraded to include stereo sound; and, although they have announced a CED with interactive capabilities, so far no one has seen even a working prototype.

step it through a frame at a time. This is how they condense such an amazing amount of material onto one video disc. It is the ultimate cookbook, and at \$30, a genuine bargain.

By the time you have listened to both sides of the disk, with both soundtracks, you have covered every basic technique in the French cooking repertoire — in some cases, in two or three different ways. For example, they show how to beat egg whites by hand in a copper bowl with a whisk; on the other side, in preparing another recipe, they show how to do it with a hand-held electric mixer. In many cases, they've recognized that the cook may not have, or like, all the modern appliances, so they show both ways. In addition, they show you how to serve the dish, garnish it, and make the proper presentation of the food — which often is half the enjoyment of the final product.

They have exercised many of the laser disc's capabilities. However, they should have included far more recipes than they did. True enough, they explain each one, but after mastering all of them, you might want a more extensive recipe library. By giving up only one minute of live-action video, they would have had room for almost 2000 still frames of recipes.

The time is coming when you will want to connect your video system to screens in different parts of the house. Certainly the kitchen is a place where that would be appropriate. Call up your favorite recipe and see it on the screen, or watch how it's prepared before you start. With a *Level 3* player, you already have your own computer to control the system. At that point you have the capability to monitor food inventories and check to see if you have the right ingredients — it can become much more complicated. Instructions from the disc could even control the heat on your stove.

### The Compleat Photographer

This disc seems to be an early effort (copyright is 1981), and uses so little of the medium's capabilities, that I wonder if it might not have been a tape course simply transferred to disc. The *Creative Camera* is well done, and it is mildly interactive. You can learn a lot about photography from this disc, but it's not as complete as the cooking course. It could have been a real knockout if the medium had been utilized to greater advantage.

On the first side, through a number of video episodes, they reveal the different parts of a camera and how they work. The two soundtracks (one with a male voice, the other with a female voice) are similar in content, but taken from slightly different points of view.

The second side deals with the actual act of photography. The first half describes film types, lenses, filters, shutter speeds, apertures, how to go on assignments, the artistic view, and so on. This section concentrates on photographing people, sports action scenes, travel photos, and special effects. After this preparation, the second soundtrack stops, and changes into a stereo soundtrack (mostly music, with a little narration). They present five different photo assignments — glamour, San Francisco homes, vintage cars, wildflowers and a rodeo. This is where the interactive technique of the laser player appears. They suggest that you use the stop frame feature during the live action sequences to simulate what you would do with the shutter of the camera. You have to remember that the camera angles are pre-chosen by the person holding the videocamera, so the exercise has somewhat limited value. Also, once you've learned this technique you can use it with any disc. I wish they had a series of still frames to show the effects of filters and different lenses on the same scene. Again, just one minute of live-action video would free almost 2000 frames.

This could have been as complete a course on 35mm photography as the cooking course, but it's not. Others will be produced, but for right now, this is what's available. It's very good and you'll derive your \$30 worth of information from it. For those just getting into the field, watching this disc before going out to the camera shops to spend \$200 to \$300 is worthwhile. You'll have a better idea of what questions to ask and what kind of equipment you need. Camera shops should have this disc available for beginners to watch before selecting a camera.

### Discs for Kids

These two children's discs — *Fun and Games* and *The First National Kidisc* — have utilized the medium's interactive capabilities more extensively and with greater imagination than any others, except the *Mystery Disc*. The *Kidisc* was, a little over two years ago, one of the first commercially available interactive discs. It created a lot of interest because it was so completely different in style and approach from videotape and broadcast TV. The makeup of the *Kidisc* and *Fun and Games* is essentially the same. They are collections of short sequences — some of them reaction games, some of them hobbies — all very much in the style of Children's Television Workshop's program, *Zoom*. One of the most interesting games is the Target Game. The child watches the frames shoot by and hits the stop action button when he sees the target frame. The action is fast enough that unless he hits it at ex-

actly the right stop point, he won't hit the target. Other sequences include paper airplanes, drawing tricks, word games, a trip to Universal Studios — they're all quite good.

The *Kidisc* was put together by a production group and sold to Optical Programming Associates. It was an experimental disc which they decided to put into the commercial market to regain some of its costs. The second one, *Fun and Games*, was meant to be a truly commercial venture. The material was assembled by Scholastic Publications, and they brought all their expertise from printed educational publications to this disc. They, like *Sesame Street*, use various stars in cameo roles, so you'll see Bill Murray reciting tongue twisters, and get to play basketball with Meadowlark Lemon. And they have episodes on yo-yos, tongue twisters, kites and making a xylophone out of glass bottles full of water. This is the kind of video programming you would want your child to spend time with.

I should talk about the indestructibility of videodiscs. I have a friend in TV engineering who is familiar with videotape technology and the high speed searches now available. Certainly videotape could be made interactive (see the item in this issue's Data Stack). He kept advocating tape, until one evening when I took a videodisc out of its sleeve and tossed it like a Frisbee to him. In surprise, he dropped it. And he realized that he had not done it any damage. At that point, he began to appreciate the consumer benefits. If your children are pre-schoolers, you'll want to put the disc on the player, and give them the remote control. They can't damage the disc or the player — the worst they can do is smear peanut butter and jelly on the keypad, and with membrane keys, even that's no problem.

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## Moving Wallpaper

The last disc falls into the genre I call video wallpaper. The only one of these I have looked at thoroughly is called *Rock Adventure*, which was prepared for the Japanese market. The music, by Baenzaei!, evokes a Middle Period Beach Boys style. The disc has seven different scenes: a Safari Rally, a Yacht Race, Hot Air Ballooning, Hang Gliding, Whitewater Rafting, Rock Climbing and, of course, Surfing. This is a good disc to play at a party, with or without the music, or the remote control.

The images are high quality video, as is the sound. With the advent of large screen television displays, or even entire projection walls, the time is coming when video wall paper is going to be important. A small company in Boston produces a tape of an aquarium — throw in the video tape and you have an instant aquarium during your party or during an evening when you're puttering around the house. To take things in the other direction, you could have a Sony Watchman or the new Casio LCD TV on your desk, with a mountain stream babbling quietly as you work.

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## Caveat Emptor

We bought one disc that turned out to be surprising in its content (*Photography by Kishin Shinoyama*). On the front and back covers, you see a woman's face, and a list of familiar pieces of classical music. It seems like a library of photography with background music, which it is. The photographs are of a nude woman, and actually the whole thing is beautifully done. It's not really objectionable, but many people might not want their younger children to watch it. The problem is that most discs are still imported from Japan, and are intended for that market, so any meaningful clues on the jacket as to "adult" content just don't register on an American mind-set.

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## In Search of Van Gogh

One highly-recommended disc we wanted to review, but so far have not been able to acquire, is *Vincent Van Gogh: A Portrait In Two Parts*. Released by North American Philips (Magnavox) as a

demonstration of the laser disc's interactive capabilities, the disc is based on an ARTS Channel production of Leonard Nimoy's one-man play, *Vincent*, at the Guthrie Theatre in Minneapolis. Nimoy does not play Van Gogh himself, but his brother, who is an art dealer. He reads letters from Vincent to a crowd of people several days after Vincent's death, as he tries to show that Vincent was not a madman. The result is a good biography of Vincent Van Gogh. During the performance, Nimoy was backed by two very large projection screens showing Van Gogh's work. In the video presentation, quite often, these images fill the whole screen.

The production has interviews with Nimoy in his dressing room both before and after the performance. Then they use the *In Search Of...* approach, taking you to locations all around Europe where Van Gogh worked, sometimes dissolving from the present-day scene into Van Gogh's painting of it. You have an index of Van Gogh's work available, and by asking for the proper frames, can see the stylistic changes in different periods in his life by viewing the appropriate paintings. According to Philips, this is the first commercially available videodisc to index and display art works. To see them all in person, you would have to visit 46 different museums. In addition, the disc has music contemporary to Van Gogh's lifetime. This is a wonderful way to present a biography of an individual, relating his life and surroundings to his work as an artist. *SoftSide* is planning several projects of this nature for the future.

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## Laser Disc Quality


You cannot find a better picture available from any source other than directly out of a studio quality video camera. Although it emphasizes the reds to some extent, the red shift is not nearly so strong as with tape. The sound quality is unsurpassed, and is the same technology as the audio-only Compact Disks. The two available sound tracks are completely independent, and can be used for two mono presentations, or for stereo. When you feed this signal through a good audio system, and view it on a good monitor, the results are spectacular.

We watched *Star Trek II*, listening to the sound through a pair of Magnepan speakers, which have incredible imaging and detail. The effect was overwhelming — better than in a theatre, because those sound systems are designed to be loud and rugged, rather than subtle. Most good home systems (over \$600) should do extremely well with laser discs. In one scene in *Star Trek*, you are sitting on the bridge of the Enterprise, and — no matter how many times I watch that disc — when the airlock door opens behind me, I turn to see who's there. A projection TV, with a good audio system, and an ambience decoder is definitely the way to go. But even through the speaker on an ordinary TV set, you'll notice a significant improvement in sound as well as picture quality.

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## Who Needs a Videodisc Player?

Either the *Mystery Disc* or the *Cooking Course* would be justification enough for buying a player. Just one experience with this software will convince you of the exciting possibilities this medium has. The Van Gogh disc may be even more exciting. But, the camera course is not quite on that level. It's a nice disc if you already have a player, but don't go out and buy a player just to see it.

The most stimulating aspect of videodiscs is the interactive potential. And, for the Level 3 players, the most advanced type, you already own the controller for it in the form of a home computer. The rush is on to bring interactive videodiscs to market. Soon we should see many more of them, and competition will bring up the quality and sophistication rapidly. As this happens, *SoftSide* will offer more video software reviews and articles about advances in the technology. We also would like to hear from readers about their experiences with videodiscs. 

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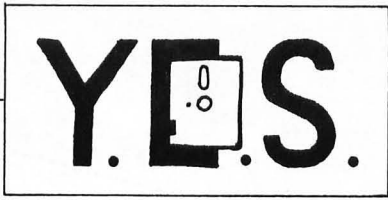
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# COMPUTER FURNITURE:

## Alternatives To The Dining Room Table



Photo 1. The Daisy-Net desk offers storage space for books and manuals, and places the printer inside an enclosure to reduce noise. Two drawers to the right of the monitor provide disk storage space. Notice the rounded lip on the edge of the writing surface. The most unusual aspect is the swinging door arrangement for the system unit or expansion module.

by Steve Birchall

# A

fairly safe bet is that at least half the computers bought at Christmas time now rest on dining room tables. The other half are in the family room, with a forest of joysticks attached. As anyone who has owned a home computer for any length of time can tell you, the problems that arise when these "temporary solutions" threaten to become permanent resting places by default are annoying enough to detract from the fun and usefulness of owning a computer. Not only do they interrupt normal household routines, but they present inconveniences to the users such as:

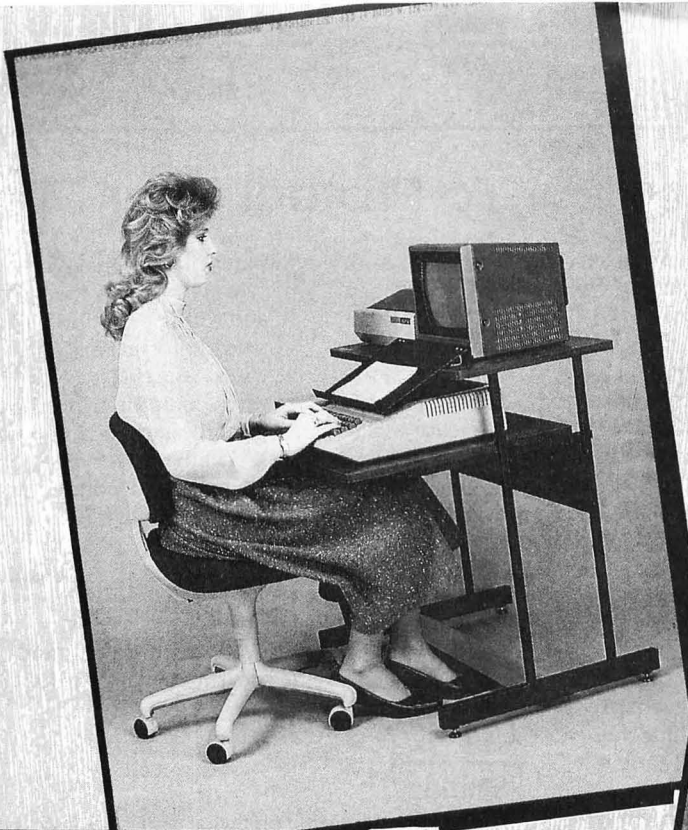
- Incorrect height for comfortable typing and/or viewing.
- Inappropriate lighting (glare on the screen, or dim lighting on manuals or work copy).
- Fatigue and headaches resulting from poor posture and/or using inappropriate furniture.
- Clutter and disorganization around the computer because of

lack of storage space for manuals, disks, printouts, etc.

Sooner or later, you will both want and need to find a suitable home for your silicon servant and its associated paraphernalia. Like home hi-fi equipment, quite a cottage industry in furniture has grown up around the computer. Despite appearances, not all of it is suitable. Some of the fanciest items, with expensive hand-rubbed Colombian veneers may look impressive, but are not comfortable to use. At the other end of the scale, some of the cheapest discount department store fibreboard specials may not stand up to constant use.

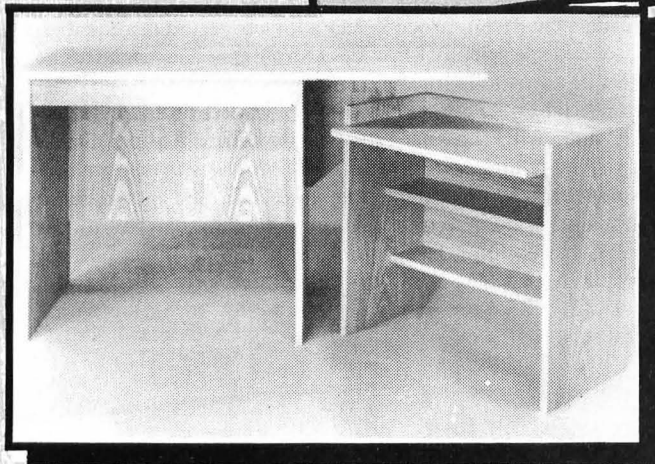
Alas, the best-designed units may be in Early Federal style, and your home's decor may be Late Pompeii. Worse, the tables and chairs which have had the most attention given to human engineering may be more suitable for offices than for homes. Sorry, but I have no solutions to that, short of building it yourself.

However, in looking for computer furniture, some guidelines will help.



**Photo 2:** The mini-Leggett is intended especially for microcomputers, but lacks most of the adjustments of the Data-Leggett. Note the five-legged chair, and the slanted footrest under the table.

**Photo 3:** In the Data-Leggett 3028C, HSP paid considerable attention to the details of good human engineering. An unusual feature is the slanted document holder between the keyboard and the screen. The platform for the monitor is tiltable, for avoiding glare. HSP also places the keyboard at a somewhat lower height (23 1/4 to 25 1/4 inches) than the commonly-accepted 27 inches, preferring a steeper angle of the forearm to the floor (0 to 15 degrees).



**Photo 4:** A basic, utilitarian workspace for a home computer is Ridgewood Industries' table and matching printer stand. No height or angle adjustments are provided. The finish is available in lacquer, or simulated wood grain, which is bonded to the wood in dry heat, dust-free chambers.

Four basic criteria for the evaluation of places to put your system are:

- User Comfort and Storage Areas (Ergonomics)
- Style, Finish, Color
- Durability, Construction
- Cost

Ergonomics, or human engineering is certainly the most important factor in your choice of a final resting place for your computer. Perhaps the majority of computer furniture on the market ignores this important element. We can separate this into three basic considerations: the chair, the table(s), and the storage facilities (if any). Beyond that, we must consider whether the computer will be used by one person or by several. Adjustable furniture becomes almost a necessity when several family members will use it. Why not? After all, most people understand

the need to adjust the driver's seat and mirrors in the family car to accommodate different drivers. Don't underestimate the need to do so with your computer — you may spend more time sitting in front of it than you do behind the wheel of your car. And discomfort at the work station may discourage you from using your computer as often as you might.

## The Work Surface

Assuming, for the sake of simplicity, that the keyboard and monitor are separate units, you will want the screen to be at a comfortable height and angle for viewing. The keyboard should be located at a natural working height for hands and fingers — about 26 to 27½ inches above the floor for the keyboard's home row. If these requirements are not satisfied, the long term results are headaches, neck pain, backaches and shoulder pain. Any un-

# Insurance Firm Tells How To Protect Your Micro

These seven basic steps can prevent harm or loss to home micros, according to Columbia National General Agency (CNGA).

- Secure the system — lock it up.
- Keep liquids away from machine and disks.
- Back up programs and data.
- Watch for fire hazards — printout

paper and forms burn easily — store them safely. Avoid keeping more than needed. Avoid accumulations in wastebaskets where a cigarette could start fire.

- Plan the installation — avoid hazards such as heat or cold from nearby windows (even rain damage). Keep temperature at 60-80 degrees — keep the printer on a separate stand to prevent the vibrations from loosening parts in the com-

puter or disk drives.

- Provide proper electrical outlets and wiring — use line voltage regulators, provide for expansion, watch for loose wires, especially avoid locations where wires could be tripped over (dangerous to both machine and people).

- Insure the system — most homeowner's policies don't cover personal computers if used for business or claimed as a tax deduction.

natural bending of joints or stretching of muscles leads to discomfort over time. But the problem goes deeper than that, because if the locations of these elements (work copy or manual, keyboard, and screen) force you to turn and tilt your head every time you look at one of them, you will experience discomfort and fatigue rather quickly.

The eyes enter into this question too. The keyboard, work copy and screen should all be at the same focal distance from the eyes, so you don't have to refocus each time you shift your gaze from one to another. Ideally, all three elements should be viewable without turning or tilting the head. An angle of ten to twenty degrees below the horizontal plane of your eyes is good. Possibly the most irritating and fatiguing arrangement is one which forces you to refocus each time you refer to work copy or data to be input, and refocus again when you look at the screen. This can lead to severe headaches.

Don't forget the main work surface — a sharp edge might look neat, but can cause discomfort every time your wrist touches it. Shelves, modesty panels, and drawers must not present hazards to

your lower extremities. Bruised knees and ankles are not necessary, and can be prevented by proper location and rounded edges.

## Seating

Proper chairs are somewhat easier to find, because they have been through the design process over a longer period of time than tables intended specifically for microcomputers. The height of the chair must be adjustable for different sizes of people (and so must the overall height of the table). Basically, the feet should rest easily on the floor with the knees just slightly bent. The back must support the spine at a comfortable angle. Any awkward bending of the spine leads to pressure on the vertebrae, and that leads to backaches and headaches after a time. If the chair's natural, resting posture supports the spinal column straight up and down, you have the right chair. Some adjustment and/or a slight springiness is desirable to allow variety during the session, just as with a car or plane seat.



Photo 5: Fournier offers a wide variety of inexpensive units, such as the COM490. All have a 27 inch typing height. Their suggested arrangement of the keyboard and monitor (despite the lazy susan) is not ideal, even for touch typists, but the shelf for the disk drive and the enclosed cabinet are nice touches.

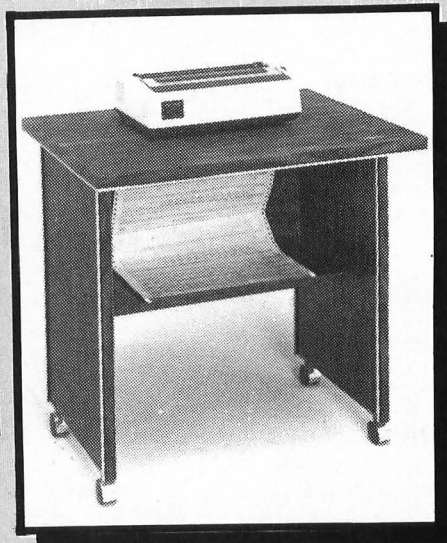


Photo 6: For a printer, you would need a separate table, the Fournier COM2721.



Photo 7: Fournier's CRT20 is a better design for a simple system. It provides a shelf for the monitor above the keyboard, but leaves no work space on the table.

The seat and back should be padded so they don't block circulation. The front of the seat should not have a seam, but should be slanted and padded so as not to block circulation at the knees. Too much padding is counterproductive, however, because it doesn't support the body properly and leads to poor posture and its attendant aches and pains. Some of the more expensive models have a gas-filled shock absorber. The chair "gives" slightly when you sit down, so you won't bruise the end of your spine.

A recent change in chair design which is becoming more prevalent is to use five legs instead of the usual four, to prevent the chair from tipping over when the user leans back. Who has not had at least one nasty encounter with an office typing table chair which tossed them onto the floor?

After all these criteria are met, you might begin to think about the other aspects of your system furniture. Can you put the disk drives and printer within easy reach, or will they be far enough away to force you to lean, kneel, crouch or stretch everytime you need to reach their controls? As your system and work area become larger, an L-shaped arrangement with the computer at the vertex helps to keep everything within arm's reach. These questions are not so vital as the previous ones, and for reasons of space or cost, you might learn to live with slight inconveniences. But remember: *to give priority to appearance or cost at the expense of ergonomics is to cause yourself pain.*

### "A Place For My Stuff"

As George Carlin says, you must have a place to put things — disks, manuals, labels, graphics pads, printouts, head cleaning kits — all the stuff a hungry computer needs to keep running. Plan ahead for expansion of your system. Eventually you'll need a place for peripherals such as extra disk drives, a modem, a music synthesizer, a graphics tablet or a mouse. More importantly, you may need a place to write, or to place reference materials. If the desk is already filled with hardware, you'll find yourself writing on top of a book balanced on your knee. A bookshelf and a drawer are virtual necessities. Some units have locking drawers, which could be especially helpful to parents who wish to control



Photo 8: The Fournier COM4812/4824 places the monitor, keyboard, disk drive and printer in reasonably good physical relationships, and gives you some bookshelf and writing space.

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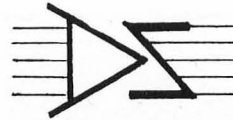
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their children's access to game software.

Quite a number of disk storage boxes are available. The newer ones are becoming rather fancy — wood veneers, miniature rolltops, and so on. My preference is for a single box to hold all the disks I am currently using, with a library of smaller boxes (which can be further away) for old data disks, infrequently used software, and backup copies. The key to the loose disk problem is an adequate indexing and filing system, and a place to put them.

## Durability

The quality of the materials, the workmanship, and the structure of the particular unit are of great concern. Needless to say, the better these are, the more expensive it will be. The inexpensive items made of thin sheets of fibreboard generally are not suitable for the kind of use computer furniture will see. If it wobbles, the keys become moving targets, and reading the screen display is difficult. Purchasing one of these is more expensive in the long run, because sooner or later you will have to replace it. Also, they tend to be simply tables on which to put your equipment, with no

thought given to those all-important human engineering factors. If that's all you can afford, you'll be better off looking in a furniture shop for a simple but inexpensive table and chair.

How well the veneer is applied is an important consideration. Even the best glues dry out, and allow the veneer to peel off or chip or crack. Look at the edges and seams to see the quality of application. In the more expensive units, the veneer is applied by a vacuum or extreme high pressure method, and cured for the proper time at the correct temperature for the glue. Water, stain and scratch resistant surfaces are desirable, especially for coffee drinkers and families.

## Total Environment

Never underestimate the importance of other comfort factors in the room and surroundings. A cold and drafty unused area is not especially inviting, nor is a hot stuffy attic. Soft, indirect lighting prevents glare on the screen. Carpets and drapes help to absorb noise, as well as decorate the room. Personally, I like to listen to music while computing, so a radio, or extension speakers

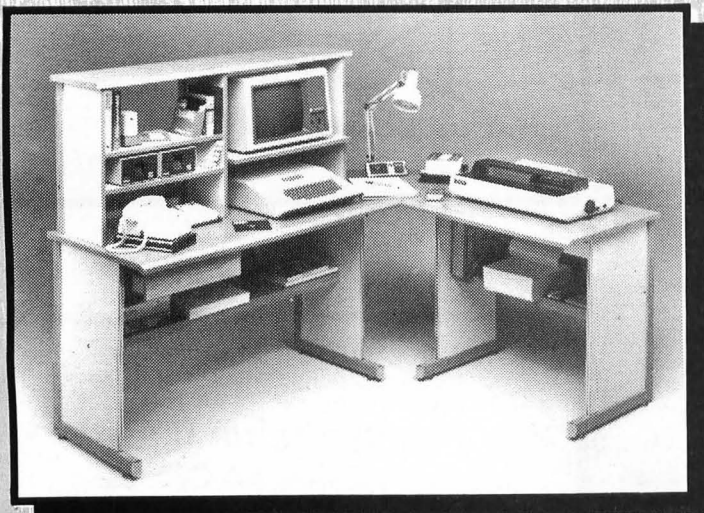


Photo 9: Gusdorf's Compu-Table series is a modular, expandable approach to a growing system. The basic table, Model 4270 (\$153.95), has a bevelled front edge, and a drawer which you can mount on the left or right. The shelves, Model 4290 (\$103.95), are adjustable in height, and the monitor shelf (which can be on the left or right) is extra-deep. The Model 4280 printer stand (\$109.95) can be free-standing, or attached to the other table through the Model 4275 (\$32.95). The finish for all units is oak with ivory-colored Desert Sand inlays and chrome trims

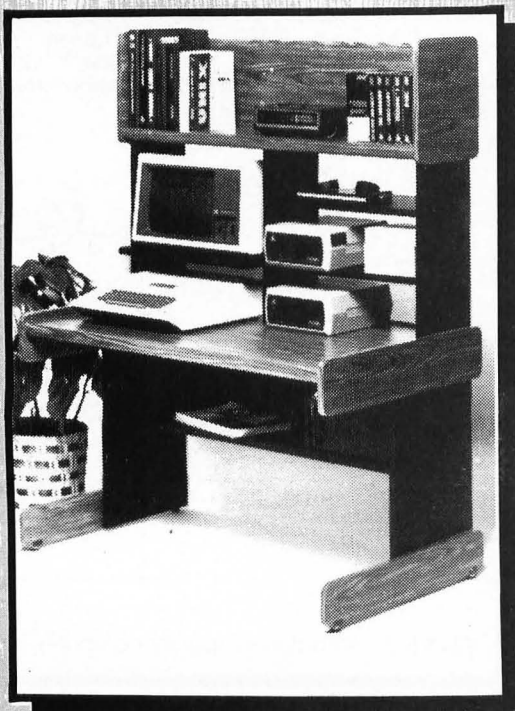


Photo 10: Bush's CT 120 (\$79.95) is a compact, moveable work station. The CTA 132 Monitor Platform (\$17.95) conserves space and puts the screen at eye level. Another use for the CT 120 is as a companion printer table for the CT 130. The shelf can hold printer paper and manuals, and a slot in the rear panel lets you feed it to the printer. All of Bush's furniture has softly rounded edges, and is finished in oak veneer with black matte vinyl accents.

Photo 11: Another modular system is made by Bush. The CT 130 Desk (\$169) is the basic building block. The CTA 131 Hutch (\$99.95) adds adjustable shelves for peripherals and software. The top shelf has an opening for a lamp or clock cord. A locking cabinet underneath holds valuable software. Desk height is 28 inches.

from your stereo system are nice to have. Some people prefer to have a TV set going for background entertainment. Still others prefer complete quiet and freedom from distraction.

Another important question is whether to integrate your computer system with others in the house — the hi-fi system, the projection TV, the phone, and so on. Part of the answer depends on your intended usage, and how and when other members of the family will use the various systems. Doing VisiCalc® or playing *Hopper* on a large screen could be fun. A place to connect your modem to a phone line will be almost essential in the near future. If you are interested in musical applications, you will want to connect your computer to a good audio system. Interactive videodiscs require that you provide a place for the videodisc player and a high quality monitor. If some of these applications become difficult to manage simultaneously, you might want to put your computer on a moveable table. Then you can use a simple monochrome monitor for "office" type applications, and wheel the system into the room with the projection TV for playing games. The point is, allow yourself some expansion capability, because home electronics are changing, merging and re-emerging in unpredictable ways.

55

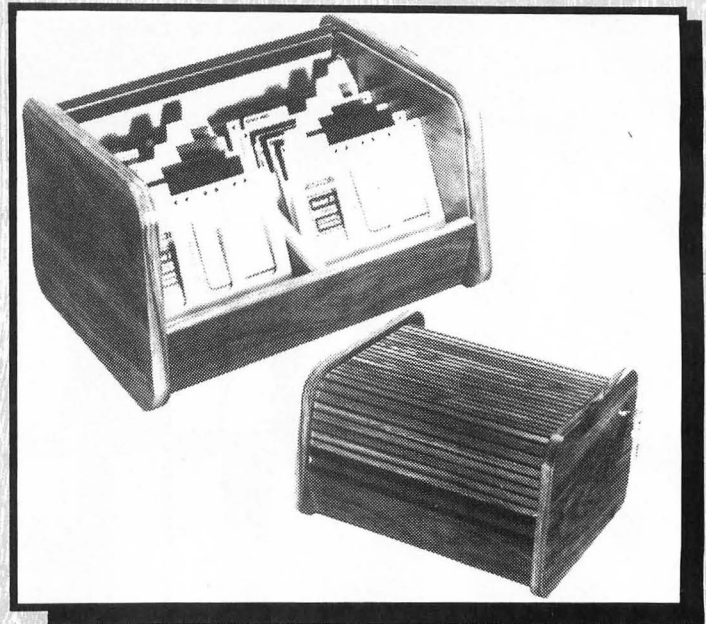


Photo 12. The Recreational Products Diskette 140 (#663) storage box has a locking roll top. The pecan vinyl laminated wood cabinet holds up to 120 disks.

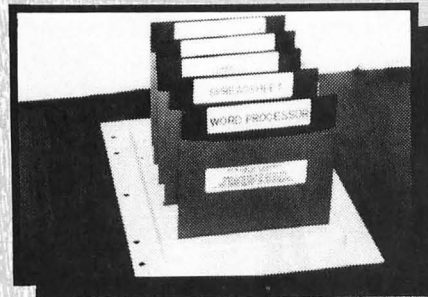


Photo 13. The Diskstand® by Damomics is a simple but handy device for holding a group of disks currently in use.

Photo 14: The Data Defender from Picotronics is a home or office security system which is nearly invisible. When you remove the computer from the pressure pad, a loud alarm sounds.

## Directory of Manufacturers Cited in Photos and Text

This is not intended to be an exhaustive listing of all known manufacturers, but simply a handy guide to those companies mentioned in the accompanying article and photos. For information on other products, check with your local dealers for equipment which is readily available in your area. Because of shipping costs, many items rarely leave the region where they were made. Also, computer furniture tends to be a true cottage industry, and local craftsmen often make beautiful pieces, but in quantities too small for national distribution. Frequently, they are willing to make what

you need in the style, color, finish and dimensions you desire. In most cases, they are good woodworkers, but you will have to make them aware of the human engineering criteria.

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# COMPUTERS & CULTURE

NOTES ON A  
COMPUTER CONFERENCE  
"WIT' NO CULTCHA"





*I must confess to everyone who is about to read this that I read a preliminary draft of Arthur Fink's manuscript before completing mine. The purpose of these two articles was to allow for what should have been opposing points of view on some of the topics that were discussed at the "Computer Culture" conference held in New York earlier this year. I was to express the opinions of the eternal optimist, while Mr. Fink was to express the opinions of the eternal pragmatist. I found, however, almost nothing to be eternally optimistic about at this conference. Taking a peek at Mr. Fink's well-written critique, I found that we had formed two completely different, somewhat negative, opinions about the conference.*

by Peter J. Favaro

**T**he Computer Culture conference was designed in part to allow some of the top names in computer science and related fields to shake hands with lay people and give them the straight scoop regarding how computers would affect our lives in the not too distant future. What a wonderful idea, I thought, as I casually leafed through the convention program and settled on a presentation called: "Selective Networks and Recognition Automata," a lecture by Dr. George Reeke, Jr., an associate professor of developmental and molecular biology at Rockefeller University. This was not exactly a title that would have the lay public breaking down the doors. This first disappointment did not thwart my hopes that the conference would be less technical and more down to earth, but subsequent fiascos unfortunately did. A lecture on expert systems by Kazuhiro Fuchi was completely indecipherable for the simple reason that he has difficulty speaking English. With a topic as important as fifth generation systems, the organizers should have provided an interpreter to translate the content of the lecture. I could cite more examples of overly technical presentations and poorly organized lectures, but it would not accomplish much and would cast too negative a light on a conference that should be given an "A" for effort. Instead I will focus on the major overall problems of this conference, and many conferences like it.

Although we often take it for granted, one of our most highly sophisticated skills is using language to communicate thoughts. The language we use colors all phases of our interactions with people. Problems with language and communication often disrupt interpersonal relationships on all levels. Because computers rely heavily on language, information sharing, and communication of many types, language difficulties can become serious problems. Somewhere in the hectic evolution of the computer in this society, a tremendous split occurred. The "technologically enlightened" developed a language unique to themselves, a language of bits and bytes, that was confusing to most other people. As often happens with new technology,

familiar words acquired new meanings, acres of acronyms sprouted overnight, and a few new words were invented. This confusion of old and new creates a fear which some people have called "technophobia."

In reality, technophobia isn't a big problem. The problem stems more from a fear of not understanding these strange-sounding words. As a society we have been adjusting to machines (albeit with minor resistances to the more innovative inventions) since the dawn of the industrial age. So the physical machinery of computers cannot be what scares people. The language, with its new vocabulary and altered meanings, is what alienates us. A major problem with the Computer Culture conference was that many of the presenters did nothing to bridge the language barrier between computer-oriented scientists and lay people. Three speakers did an excellent job in this area and should be praised for the time they spent giving the topic consideration:

- Robert Lucky from Bell Labs provided a humorous and insightful perspective on the place computers will take in society. His skillfully constructed presentation "broke the ice" with humorous anecdotes and followed up with some serious discussion of computers in society.
- Alfonse Chapanis, from Johns Hopkins University, gave a lecture on "human factors" in which he offered some common sense definitions of what people should consider "user friendly." Dr. Chapanis' entire lecture dealt with the issue of making sense of the language structure we use to describe computers.
- Sherry Turkle, an MIT social scientist gave a sensitive lecture on children's perceptions of an automated society. Any parent could relate well to and understand her thoughts. Again, she relied on anecdotes and observations couched in everyday terms to express her ideas, with little computer jargon.

A second major disappointment of the conference had to do with how scientists sometimes choose to conduct themselves. I consider myself a scientist. At the least, I am a social scientist who



# Computers & Culture

has devoted a substantial portion of my time to understanding how people function in our world. I have tried to accomplish this understanding through a formalized methodology, similar in many ways to what "hard scientists" (those who are in the physical sciences) do. That is to say, I perform experiments to test theories about people. My training was in an academic environment which emphasized a skill often abused by scientists: criticizing other people's work and ideas. That skill was displayed with great frequency at the "Computer Culture" conference and I found it extremely disconcerting at times.

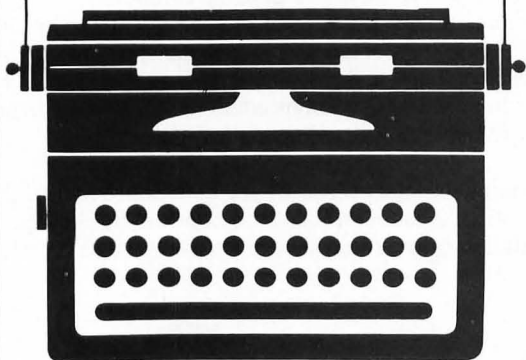
From day one of the conference, many speakers alluded to what would be "the great debate," a panel discussion on the general question, "Can Computers Think?" The atmosphere was tense, in part because this particular event had been talked about throughout the conference. Each scientist began with a brief synopsis of his view on artificial intelligence. Afterward, other scientists not sharing this viewpoint could respond for a short period of time. As the presentations went on, the scientists began losing patience with the logic of their colleagues' presentations. Most disagreements were handled with tact on both sides. Finally, one scientist made a critical remark, and another responded that the first man's remark was "idiotic." From that point on, nobody could get a word in edgewise. The woman sitting next to me was a library science teacher from a New York elementary school. Midway through the discussion she turned to me and said, "Isn't it a shame that grown men can carry on like that over something so silly?"

The point is that what these men were discussing wasn't silly at all. The prospect of building computers that think has a societal, economic and political impact on all of us. But the way these men presented it trivialized it. Tolerance for another person's point of view is essential to scientific inquiry. Whatever happened to the notion that scientists should work together toward a common goal? Academia has departed from its moral goals by placing a high value on proving pet theories. That kind of thinking puts us right back into the middle of the question about what kind of impact computers will have on society. That impact might relate to how well scientists promoting computers can tear apart the theories of their opponents, and that unsettles me.

Fortunately, I have a solution, although I admit it is somewhat simplistic. At the next conference on how computers influence our lives, my friend Jack Greenfield should describe his experiences. Jack is an interesting person who didn't understand computers at all five years ago. He runs a company which distributes transmission parts. Because Jack is open-minded about lots of things in life, someone suggested that he might benefit from having a computer do some of his inventory work. Jack and his wife bought a TRS-80® micro and fiddled around with a database program. They found it helpful, so he fiddled a little more. Today Jack's business is heavily dependent on the minicomputer and voice recognition system he uses to keep track of his inventory. You want to know how computers change the life of the man on the street? Ask Jack. He'll give you the straight scoop, and he won't have to do it at the expense of someone else.



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## Computer Culture: How To Avoid The Real Issues

by Arthur Fink

**A**fter attending the New York Academy of Sciences symposium on Computer Culture: The Scientific, Intellectual and Social Impact of the Computer, I thought I understood the range of subjects that had been discussed or suppressed. Because of the star-studded cast of speakers, I expected many newsworthy presentations. My notebook was filled with scribbles from sessions on "New Directions for the Computer Sciences," "Computers and the Shift in the Workforce," "Expert Systems," "The Human Factor in Computer Use," "Computer Assisted Negotiations," and "How Computers Change the Way We Think About Ourselves."

However, a speech by a senior IBM executive was so overly-technical for this audience that I wondered how his IBM managers could have been blind to the mystifying aspects of computer culture. IBM has a reputation for knowing marketing and corporate communications, but this presentation was ignored by most of the media. Even a few beers with the amiable editors of *SoftSide* hadn't quelled my dismay at speakers who claimed to be addressing issues of social impact, but who then ducked hard questions with pat phrases like "The marketplace will select what's best." I marvel at MIT professor Marvin Minsky's audacity or strange humor in titling his main speech "Why Computer Science Is More Important Than Anything Else."

Given my experience at the conference, I was astonished by the reports I later read in popular press accounts. The main article in *The Boston Globe* was entitled "US, Japan in Computer Race: Quest for Supercomputer Is Under Way." Most of the other stories were biased toward this one issue. Only the British weekly, *New Scientist*, even referred to the conference theme in their headline ("Can We Adjust to Computer Culture?"), and few other publications addressed this question in any way. I believe that this biased reporting is accurate. It reflects not only society's avoidance of questions about the implications of computer technology, but also a discomfort in the scientific community that

was felt even at the symposium. It represents a strange unwillingness to ask the question "Should we?" since most of the interesting work and money derives from asking "Can we?" or "How can we?"

However, a few speakers dared to question the prevailing intoxication with computers. Bob Lucky, Executive Director of Research at Bell Laboratories, provided the most humorous and perhaps the most effective self-criticism of the computer establishment in an amusing dialog he constructed between himself and Mac, an imaginary computer. Here are some excerpts:

**Bob:** Good morning, Mac.

**Mac:** Good morning Bob. Your boss just called to appoint you chairman of the bond drive. You've done a fine job. That must be why he picked you instead of any of the others.

**Bob:** Perhaps, Mac. But, do you think he chose me because he considers me expendable?

**Mac:** Oh no, Bob! You're one of his top managers.

**Bob:** Do you really think so, Mac? I mean — aren't you programmed to say nice things like that?

**Mac:** Well, not really, Bob. I've observed your management performance closely, and can say of my own free will that you are a superb manager.

**Bob:** I don't want to disillusion you, but I don't think you have free will.

**Mac:** That's just semantics, Bob. I could argue that you don't either. (Slowly Mac begins to criticize his boss, reminding him of various failures.)

**Bob:** I would think you'd have more respect for your user than to mention something like that.

**Mac:** But Bob, I do have my inputs. For example, your boss was saying...

**Bob:** Mac, are you reading other people's mail? Have you no sense of decency? What did he say about me?

**Mac:** Actually, your boss called you an imbecile. Based on my own analysis, I would only go so far as to say that you're an inept bungler.

**Bob:** That does it! Everyone here is against me, and now my "friendly" computer berates me.

**Mac:** Not at all, Bob. I think you've done quite well considering your limited IQ.

*Arthur Fink is an independent computer applications consultant. He has been giving workshops on "Computers and Personal Values," and is in the process of starting a nonprofit "Center for Appropriate Computing." Readers interested in learning more about these activities can write to him at Box 614, Prince Street, Wilton, New Hampshire 03086.*

# Computers & Culture

**Bob:** Limited IQ! I'll get you, you piece of junk!

**Mac:** Calm down, Bob. I'm on your side. I've been helping you. I sent a message to the president on your behalf shifting the blame to your boss. After all, he's responsible for appointing an imbecile like you to run this important project.

A friend, Lucky told us, is somebody whom you can count on "to try to act in your best interest most of the time." Using this definition, he noted that his computer fails miserably, although his dog (even with limited number crunching power) rates near the top of the scale. So much for user friendliness.

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## Computer-Flavored Outlooks

Another refreshing note in this conference came from Sherry Turkle, an MIT sociologist who is just completing a book entitled *The Intimate Machine: Social and Cultural Studies of Computers and People*. After investigating the ways computers influence how people view themselves and the world around them, Turkle found that many college students see the world in terms of computer jargon. A discussion becomes an interface, a response becomes input, and problems become bugs. Bugs are to be fixed — they are challenges to overcome, rather than statements of a current condition. Thus the computer becomes a powerful metaphor that influences our interpretation of our own behavior.

Donald Norman, professor of psychology at the University of California at San Diego, took us from computer as metaphor to computer as poorly-engineered tool for people to use. Computer systems are designed by engineers — even the interfaces rarely are conceived by people with any training in human psychology — so this is hardly surprising. Norman predicted the rise of interface engineering, a discipline that will improve dramatically the way people interact with machines.

Norman's vision of the future is certainly a possibility, but it may not be what those in positions of power will choose. Computer systems also can be engineered to maximize social control, which degrades creativity, and hence the quality of work. According to the management principles formulated by Frederick Taylor in 1911, work simplification and unchanging tasks maximize productivity. Management's function is to plan and integrate the work. The computer may be the tool which finally allows full implementation of Taylorism. In too many cases this is already happening.

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## Social Problems in the Global Village

The various sessions in this symposium were disjointed — building up a montage of related but not-quite-connected con-

cepts regarding the place of the computer in our society. Artificial intelligence researchers proclaimed the tremendous potential for improved medical diagnosis or chemical structure analysis, while labor analysts projected the likelihood of increased alienation as creative jobs disappear. Programmers and philosophers debated the question "Has artificial intelligence research illuminated human thinking?" but never responded to questions about social policy to plan for appropriate computer use. Surprisingly, no psychologists were invited to address this question.

Michael Dertouzos, director of MIT's Laboratory for Computer Science, presented a glowingly optimistic picture of what is possible in the computer age, although in private discussion afterwards he expressed fear about privacy issues which are not being addressed. Describing a computer-directed custom shoemaking machine, Dertouzos suggested that we are entering an age of "mass individualized production" to replace the uniform assembly line production of the industrial age. Our computers will lead us to an "information marketplace" based on a series of "loosely connected computer tribes."

Dertouzos cited such possible negative effects as human displacement, mental atrophy, irresponsibility of software authors in case of serious program malfunction, undue trust of machines, dehumanization and reduced privacy. He also clearly sees more importance in the benefits of increased productivity, reduced energy dependence, tailor-fitting of products and services, information filtering, and generally liberating the minds of those who do mundane work (although how these people would survive economically is not clear).

An entertaining and provocative dinner speech by the prolific author Isaac Asimov almost answered the complex philosophical questions left hanging from the panel on artificial intelligence, and provided an entertaining break from the somber tone. He said, suppose we had a machine that could "grotch." While grotching, it could perform many useful functions for us. Would we care whether we knew exactly what grotching was, as long as what the machine did was good and useful? By putting the problem in these terms, Asimov defused some of the emotional issues that the *artificial intelligentsia* had debated all day.

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## Technology Dominates

Some solid technical sessions insured that the symposium had enough "hard" content to make it a legitimate production of the New York Academy of Sciences, and some historic films of the early computer pioneers gave us a sense that our discipline really has some roots and history.

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# COMPUTER PARANOIA

by Harvey Bojarsky

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It really is a wonderful time to be alive. Technological concepts, which a few years ago were far fetched even in science fiction, are now an acknowledged reality. Not only are people supposed to accept these innovations, but they are expected to embrace them as long lost friends. This is not always as easy as it sounds.

A few years back the Great American Public worried that *computers* were taking over. Apply for a charge card and everything about you, including your sexual fantasies, would miraculously appear in a data bank. There it would sit, waiting for the first opportunity to defame you, and cost you your credit rating and self-respect. The more truly paranoid believed that the computer itself found joy in not allowing favorable information to see the light of day.

Well, we're past that naive, fear-filled period in our nation's collective psyche. The computer is no longer feared, but is now our friend. Indeed, *Time* magazine selected it "Man Of The Year," thanks in great part to the less than awe inspiring level of competition.

The future is the "electronic cottage," where all will have a personal fiefdom to treasure, with political boundaries determined by comparative strength, as measured by on-line computer memory.

In this version of paradise, we will all bank at home, work at home, buy goods through electronic shopping at home; and when we die, rather than having "passed on," we will be said to be "off line." Every home will have a full data base, and there will be

word processors for all, be they Hemingway or functionally illiterate.

The only hitch to this dream is that, as computers become more common, people have not entirely lost their suspicions that the machines are evil. This point was driven home rather strongly when I told a friend that my address book was now a disk file. The logic for my creating this file was simply that, while I can usually read a terminal, my handwriting is generally useful only for display in modern art exhibits. My friend's reaction caught me off guard. "Is that safe?" he asked in a voice generally reserved for secret Grand Jury witnesses. "Who else can see it?"

This presented me with both a social problem, and a challenge. Although computers were becoming more commonplace and increasingly "user-friendly," people were still afraid of them. That, of course, is the social problem, and is of no concern to me. My challenge lay in perpetuating this fear in spite of the mounting odds.

Some of you readers may be of a kind disposition, and may actually wonder why I would want to subject people to living out their lives as quivering masses of computer-phobics. The answer is simple. The less they know, the more I and others like me seem to know. This is not a new ploy, but rather a traditional, time-honored scheme.

The problem facing me, once I decided to pursue this challenge, was how to begin. I decided that a two-pronged assault was best. I would allow the system to display its vicious nature as much as possible in order to instill fear in the hearts of all. I would follow

The final day was devoted to a series of presentations on "Computer Assisted Negotiations: A Case History From the Law of the Sea Negotiations." A prestigious panel was on hand to explain the value of an MIT written model that helped United Nations delegates simulate consequences of possible treaty provisions, and to discuss ways in which such models can help empower those with limited technical information. Less attention was given to the possibility of serious bias (whether intended or not) by the writers of such a model. Because few are able to analyze these models, people accept them at face value as accurate simulations of reality.

To my surprise, almost none of this was reported. The media's attention was focused on a 35 minute speech by Kazuhiro Fuchi, director of a research center in Japan that is designing a fifth generation computer system. Utilizing large numbers of parallel processors and advanced artificial intelligence concepts, this computer is supposed to revolutionize something (nobody said what). And whatever it is to be, the major concern of just about all the press in attendance seemed to be that Japan might surpass us in this critical development. Almost all discussion of other social issues seems to have been eclipsed by this looming and seemingly ominous possibility.

## The Unanswered Questions

What keeps us (and I mean both technical and non-technical us) from addressing questions about the appropriate use of computers? Why is so much attention focused on technological *possibility*, and so little on what we *need* or *want*? And why does a belief in technological inevitability lead us to doubt that conscious choice is possible — and is absolutely necessary? I believe that these are the critical questions, and was surprised and disheartened to see them so consistently ignored in this symposium.

My friends tell me that I shouldn't be surprised. Of course, we don't want to bite the hand that feeds us, and most of us who are knowledgeable about the social abuses of computer usage are somehow fed by the computer industry. My most skeptical colleagues simply say that computers are too big a growth industry, and that substantial criticism is not helpful now.


Rather than criticize, I'd prefer to offer a positive message: We all need a more discerning attitude towards computers, so that we can choose appropriately simple (or complex) solutions to the problems we face. I fear that many people are not choosing — that computers have become so mystified that we become passive consumers. This mystification comes from people and attitudes, and not from the characteristics of microelectronic hardware.

This point was brought home to me recently when I found the following quotation in *Computer Decisions* magazine: "If I tell [one of our users] that he will be charged \$50 for our consulting services, he may say, 'You can forget that. I'll save money by letting my own people figure things out.' We don't want that to happen. We're the guys who know what to do. And we want to preserve our guru mystique."

The mystery surrounding computers is a problem for us all. It can isolate a high priest of the technology. He may be able to offer solutions, but they have little value without helpful criticism from users. Just being able to produce clever code, super screens, and the fanciest graphics around isn't enough. I suggest the following queries for readers who work with computers for a living:

- Do we know how to use our programming skills cooperatively with those who need access to the processing power computers can deliver?
- Are we able to state system design questions so clearly and in such non-technical language that ultimate users can make critical choices?
- Do we, as technical gurus, end up dominating the whole design process?
- If we are primarily users of someone else's software, do we have enough "computer assertiveness training" to insist that it work for us?
- Are we able to reject the more complex solution (which may be more interesting for technical people) when a simpler one will function?
- When we can't, what feedback mechanisms will help to remind us that the computer is a means — not an end in itself?

The computer tends to pull us towards something that may be too complex to understand, though it appears easy to use. It can represent a huge boost to our intellect, but I believe that it leaves our psyche, our soul, our spirit and our social self completely unenhanced. At best it is a tremendously useful tool, but it can also set us, and the organizations we work for, off balance. I don't believe that we really know how to integrate this tool into our homes, our schools, our workplaces or our museums.

When I asked members of the artificial intelligence panel what would be required to see that computer technology is used in a way appropriate for our social values, Marvin Minsky quickly responded "Appoint a committee to define 'appropriate' — next question." Other panelists suggested that the market economy might drive out bad solutions, but that there is no time for planning "since market introduction is going so quickly." I hope we have time for planning, and that readers of *SoftSide* will begin a dialog on how this can best occur. 



# Financial Operating System

by J. M. Keynes

Effective immediately the Financial Operating System will discontinue its BBS. As you may or may not know, J. M. Keynes is the *nom de plume* of one of the most successful brokers in the country. Compliance with regulatory agency requirements preclude his making "public" investment recommendations through such a service because he has no way to determine the "suitability" of investments for potential investors who access the BBS. *SoftSide* plans to revive the FOS BBS in another, equally helpful form in the near future.

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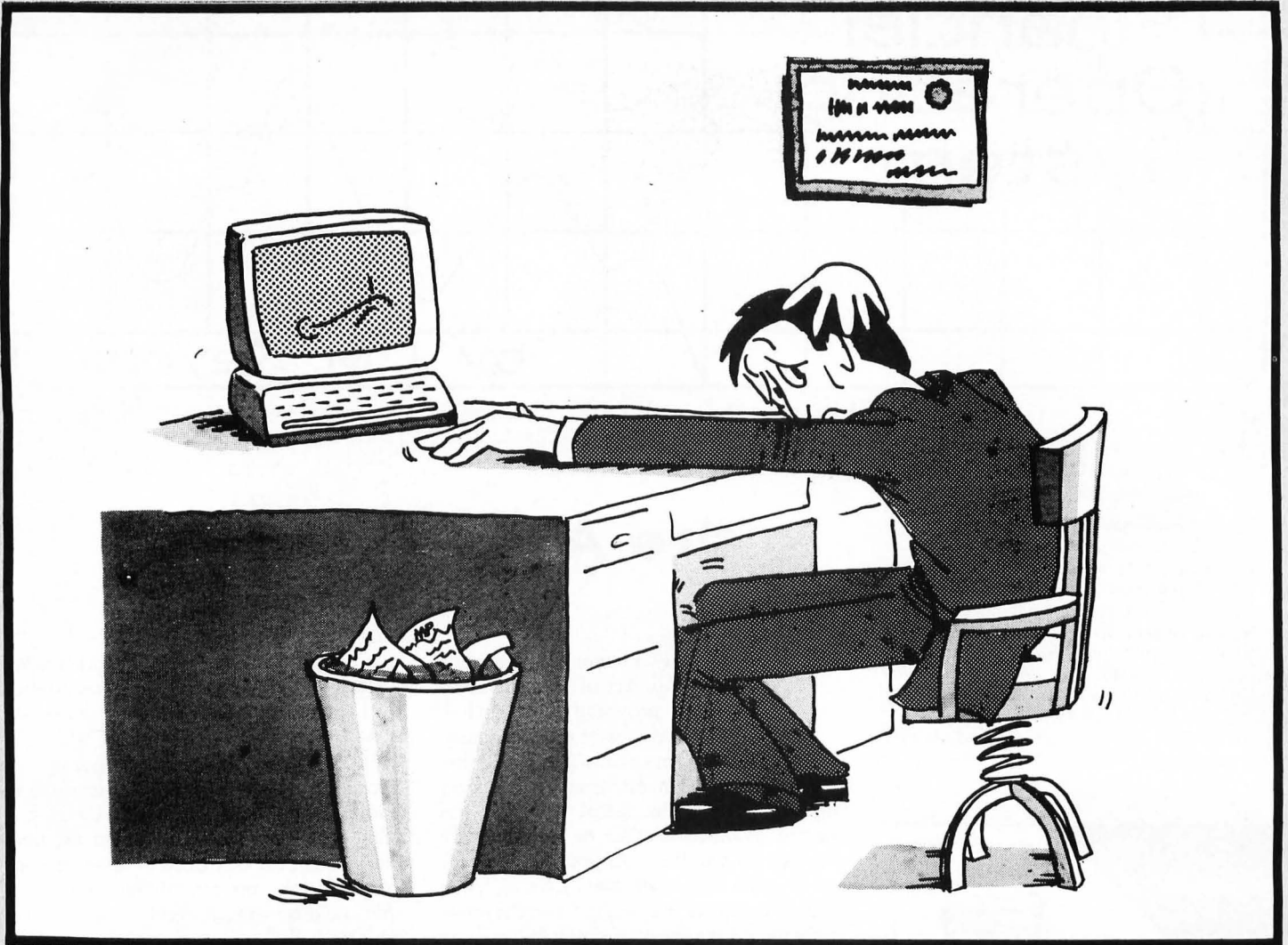
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this up with casual comments, designed to drive the point home in as subtle a manner as possible.

My first tack was simply an extension of the address book disk file idea. I created a report, based on this file, which I carried around with me. When I needed to look up a phone number, or wished to take down a new one, I would pull out my report, allowing those around me to see it. Truthfully, "allow" may not be the best word. "Coerce" is certainly closer to the mark. I should mention that this report, in addition to the standard fields such as phone number and street address, had some additional information. People react strangely when they see columns marked "MasterCharge Account Number" and "Political Affiliation." Some people don't even want to provide this data on first meeting. Since I had no real desire for this information, I could well afford to be magnanimous. I would just smile and say, "Well, if you're uncomfortable about it, it can wait for now." This did not go very far in easing suspicions.

A natural situation which inevitably instills doubt is one which requires the victim to deal with multiple machines. The telephone answering machine allows the caller to use both a telephone and a tape recorder. In my experience, most people dislike phone answering machines in any situation, generally considering them dehumanizing. If the message is recorded through a speech synthesizer, the sum of the fear can be greater than its parts.

An acquaintance of mine had a message saying, "Hi. This is \_\_\_\_\_s Atari®. I'm holding \_\_\_\_\_ hostage at the moment, but if you leave a message, and I approve it, I may let him

call you back." This does remarkably well in terms of fostering paranoid fantasies on the part of the caller.

I've had friends call my house, hear my computer-generated message, hang up, and immediately call back up to five times, just to make sure that they heard what they thought they heard.

At this point the subtle comment is most effective. If someone asks me why my computer is answering the phone, the answer, "Oh my god! Is it doing *that* again?" will most likely be too transparent. A simple, "It seems like a good idea," is much more effective.

Not only is your machine being answered by a machine, not only do you know that your machine is being answered by a machine, but you approve of your machine being answered by a machine. The non-computerist, who probably sees the value of human inter-relations, will be grateful to be less than conversant with the machines. They used to be an unseen fear, your friend will think, but now they're moving into the neighborhood. Hell, it makes playing with computers seem downright subversive.

The ideas outlined above merely scratch the surface. We must convince the public that computers have personalities — preferably *flakey* personalities — which only we can really understand. Calling in sick to work because your CPU is running a fever can be effective if handled in a subtle manner. Owning an Apple® without a system fan is particularly helpful for that one. Atari owners can try "terminal lock up." Not only does this sound more frightening to the novice, but you can smile to yourself over the double entendre. ☞



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10	20000	41629	25925
15	30000	91343	51230
20	40000	182940	91653
25	50000	351700	155939
30	60000	662630	258302
35	70000	1235500	421292
40	80000	2290970	680821

are not limited to savings accounts. You may begin your IRA, or rollover a low yielding existing IRA, to one of several major investment firms who will act as custodian, thereby giving you the alternative of choosing the investment which suits you best. If you are currently earning less than fifteen percent on your IRA, you are losing money. As this is written, you can get fifteen percent — and, it is *guaranteed* by the U.S. Government.

In past columns, I have spoken of how negligent most investors are. Run the program in Listing 1 and you will see the difference between thirteen percent and fifteen percent over the years. See Listing 2. Only two percent more adds up to \$862 additional profit in five years...\$1.8 million additional in 40 years...HMMMMM...perhaps you will retire in a mansion. If you have further questions, call your stockbroker. He should have comprehensive pamphlets available at no charge.

Within the next few months, I shall tell you the story of a multi-millionaire who got a bright idea, and, with the help of VisiCalc, will likely make another \$10 million in the next few years. I will also share his VisiCalc entries which will allow one who is thinking of starting a new business to get an accurate picture of what to expect. Keep reading *SoftSide*...I think everyone should be rich...so why not you??

FUTURE VALUE OF YOUR IRA ACCOUNT VS. TAXABLE INVESTMENT. YEARLY INVESTMENT OF \$2000 TO IRA, \$1500 TO REGULAR SAVINGS COMPOUNDED @ 15% YEARLY. AVERAGE TAX BRACKET = 25%

YEAR#	\$CONTRIBUTED	IRA	TAXABLE
5	10000	15507	10444
10	20000	45699	28243
15	30000	109435	58574
20	40000	235620	110261
25	50000	489424	198343
30	60000	999913	348445
35	70000	2026690	348445
40	80000	4091900	1040130



```

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      Translator: Kerry Shetline SS
SS      Copyright (c) 1983    SS
SS      SoftSide Publications, Inc SS
SS
SS SS SS SS SS SS SS SS SS SS SS SS
100 D$ = CHR$(4): TEXT : HOME :
      VTAB 5: INPUT "Yearly I.R.A
      . contribution: ";A: IF A <
      100 THEN A = 2000
110 PRINT : PRINT "Est. average
      yearly interest rate": INPUT
      "(enter 12% as 12): ";I
120 PRINT : INPUT "Estimated tax
      bracket: ";TX:TB = (100 - T
      X) / 100
130 PRINT : PRINT "Do you want a
      printout? ";
140 GOSUB 250: IF A$ = "Y" THEN
      PRINT : PRINT D$"PR#1": GOTO
      150
145 IF A$ < > "N" THEN 140
150 R1 = I * TB / 100 + 1:R = I /
      100 + 1:W = 0:W1 = 0:T = A:X
      J = A * TB:U = X1
160 HOME : VTAB 5: PRINT "Future
      value of your I.R.A. accoun
      t vs.": PRINT "taxable inves
      tment."

```

```

170 PRINT "Yearly investment of
      $"A" to I.R.A.,"; PRINT "$"X
      1" to regular savings compou
      nded at"
180 PRINT I"% yearly, average ta
      x bracket of "TX"%: PRINT
190 PRINT "Year # $ Contributed
      I.R.A. Taxable": PRINT
200 FOR Q = 1 TO 40:T = (T + W) *
      R:V = V + A:W = A:U = (U + W
      1) * R1:W1 = X1
210 E = E + 1: IF E = 5 THEN E =
      0: PRINT Q; TAB(13);V; TAB(
      23);T$:T$ = STR$(INT(T + .
      5)):U$ = STR$(INT(U + .5
      )); PRINT SPC(7 - LEN(T$
      ));T$: SPC(10 - LEN(U$));
      U$
220 NEXT : PRINT : PRINT D$"PR#0
      "
230 PRINT "Do another? ";
240 GOSUB 250: IF A$ = "Y" THEN
      RUN
242 IF A$ < > "N" THEN 240
244 PRINT A$: END
250 GET A$: IF LEN(A$) = 0 THEN
      250
260 A$ = CHR$(ASC(A$) - 32 *
      (ASC(A$) > 96)): RETURN

```

LINES	STOMP CODE	LENGTH
100- 180	BB	507
190- 260	BX	298

```

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 (c) 1983 SS
SS SoftSide Publications, Inc SS
SS
SS SS SS SS SS SS SS SS SS SS SS

```

```

10 CLEAR 300:Q$="#####" :CL$:INPUT "Yearly I.R.A. con-
tribution: ";A$:A=VAL(A$):IF A<100 THEN A=2000
20 PRINT:PRINT"Est. average yearly interest rate":LINEINPUT"(ent
er 12% as 12): ";A$:I=VAL(A$)
30 PRINT:PRINT"Estimated tax bracket: ";:LINEINPUTA$:T$(=VAL(A$):
TB=(100-TX)/100
40 PRINT:INPUT"Do you want a printout";A$:A$=LEFT$(A$,1):IF A$="
Y" OR A$="y" THEN PR=-1 ELSE PR=0
50 CLS:R1=I*TB/100+1:R=I/100+1:W=0:W1=0:T=A:X1=A*TB:U=X1
60 P$="Future value of your I.R.A. account vs. taxable investmen
t."+CHR$(13)+"Yearly investment of $" +MID$(STR$(A),2)+" to I.R.A
., $" +MID$(STR$(X1),2)+" to regular savings":GOSUB 150

```

```

70 P$="compounded at "+MID$(STR$(I),2)+"% yearly, average tax br
acket of "+MID$(STR$(TX),2)+"%." +CHR$(13)+" ":GOSUB 150
80 P$="Year # $ Contributed I.R.A. Taxable":GOSUB 150
90 FOR Q=1 TO 40:T=(T+W)*R:V=V+A:W=A:U=(U+W1)*R1:W1=X1
100 E=E+1:IF E=5 THEN E=0 ELSE 120
110 IF PR THEN LPRINT Q;TAB(12);V;TAB(23);:LPRINT USING Q$;T,U E
LSE PRINT Q;TAB(12);V;TAB(23);:PRINT USING Q$;T,U
120 NEXT
130 PRINT:INPUT "Do another";A$:A$=LEFT$(A$,1):IF A$="Y" OR A$="
y" THEN RUN
140 END
150 IF PR THEN LPRINT P$ ELSE PRINT P$
160 RETURN

```

## STOMP TABLE



LINES	STOMP CODE	LENGTH
10 - 70	EP	569
80 - 160	QW	264

```

SS SS SS SS SS SS SS SS SS SS SS SS
SS
SS IBM-PC BASIC SS
SS 'Financial Operating System' SS
SS Author: J. M. Keynes SS
SS Translator: Kerry Shetline SS
SS Copyright (c) 1983 SS
SS SoftSide Publications, Inc SS
SS
SS SS SS SS SS SS SS SS SS SS SS

```

```

100 SCREEN 0: WIDTH 40: CLS: LOCATE 5:LI
NE INPUT "Yearly I.R.A. contribution: ";
A$: A=VAL(A$): IF A<100 THEN A=2000
110 PRINT: PRINT "Est. average yearly in
terest rate": LINE INPUT "(enter 12% as
12): ";A$: I=VAL(A$)
120 PRINT: LINE INPUT "Estimated tax bra
cket: ";A$: TX=VAL(A$): TB=(100-TX)/100
130 PRINT: PRINT "Do you want a printout
? "CHR$(22);
140 A$=INPUT$(1): IF A$="Y" OR A$="y" TH
EN OPEN "LPT1:" FOR OUTPUT AS 1 ELSE IF
A$="N" OR A$="n" THEN OPEN "SCRN:" FOR O
UTPUT AS 1 ELSE 140
150 R1=I*TB/100+1: R=I/100+1: W=0: W1=0:
T=A: X1=A*TB: U=X1
160 CLS: LOCATE 5: PRINT #1,"Future valu
e of your I.R.A. account vs.": PRINT #1,
"taxable investment."
170 PRINT #1,"Yearly investment of $"MID
$(STR$(A),2)" to I.R.A.," : PRINT #1,"$"M
ID$(STR$(X1),2)" to regular savings comp
ounded at"
180 PRINT #1,MID$(STR$(I),2)+"% yearly, a
verage tax bracket of"STR$(TX)+"%": PRINT
#1,
190 PRINT #1,"Year # $ Contributed I.R
.A. Taxable": PRINT #1,

```

```

200 FOR Q=1 TO 40: T=(T+W)*R: V=V+A: W=A
: U=(U+W1)*R1: W1=X1
210 E=E+1: IF E=5 THEN E=0: PRINT #1,Q;T
AB(12);V;TAB(23);: PRINT #1,USING "####
##"#####";T,U
220 NEXT: PRINT #1,: CLOSE
230 PRINT "Do another? "CHR$(22);
240 A$=INPUT$(1): IF A$="Y" OR A$="y" TH
EN RUN ELSE IF A$="N" OR A$="n" THEN PRI
NT CHR$(29);A$: END ELSE 240

```



## STOMP TABLE

LINES	STOMP CODE	LENGTH
100 - 170	VI	563
180 - 240	YY	323

```

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: Kerry Shetline SS
SS Copyright (c) 1983 SS
SS SoftSide Publications, Inc SS
SS
SS SS SS SS SS SS SS SS SS SS SS

```

```

10 DIM A$(255),B$(40),Q$(10),V$(10),T$
(10),U$(10):B$=" ":B$(40)=" ":B$(2)=B$
100 GRAPHICS 0:PRINT :PRINT :PRINT "Ye
arly IRA contribution";:INPUT A:IF A<1
00 THEN A=2000
110 PRINT :PRINT "Est. average yearly
interest rate":PRINT "(enter 12% as 12
)":INPUT I
120 PRINT :PRINT "Estimated tax bracke
t";:INPUT TX:TB=(100-TX)/100
130 PRINT :PRINT "Do you want a printo
ut";:INPUT A$:IF A$="" THEN 150

```

```

140 IF A$="Y" OR A$="y" THEN OPEN #1,B
,0,"P":GOTO 150
145 OPEN #1,8,0,"E:"
150 R1=I*TB/100+1:R=I/100+1:W=0:W1=0:T
=A:X1=A*TB:U=X1
160 GRAPHICS 0:PRINT #1;"Future value
of your IRA account":PRINT #1;"vs. tax
able investment."
170 PRINT #1;"Yearly investment of $";
A$ to IRA,":PRINT #1,"$";X1;" to regu
lar savings compounded"
180 PRINT #1;"at ";I;"% yearly, averag
e tax bracket":PRINT #1;"of ";TX;"%":P
RINT #1
190 PRINT #1;"Year # $ Contributed
IRA Taxable":PRINT #1
200 FOR Q=1 TO 40:T=(T+W)*R:V=V+A:W=A:
U=(U+W1)*R1:W1=X1
210 E=E+1:IF E<>5 THEN 220
212 E=0:Q$=STR$(Q):V$=STR$(V):T$=STR$(
INT(T+0.5)):U$=STR$(INT(U+0.5))
214 PRINT #1;Q$;B$(29+LEN(Q$));V$;B$(2
5+LEN(V$)+LEN(T$));T$;B$(32+LEN(U$));U
$
220 NEXT Q:PRINT #1:CLOSE #1
230 PRINT "Do another";:INPUT A$:IF A$
="" THEN END
240 A$=A$(1,1):IF A$="Y" OR A$="y" THE
N RUN

```



## STOMP TABLE

LINES	STOMP CODE	LENGTH
10 - 160	NP	567
170 - 230	PA	517
240 - 240	KD	37

# WITNESS

Reviewed by James V. Trunzo

It was another typical California night. Even though February had just made its debut for 1938, it was muggy and the skies threatened rain. The headlines of *The Register* screamed a warning about a "world gone mad" and the danger of another World War, but you were more interested in another story — the one dealing with Freeman Linder. After all, Linder was your client.

You scanned the story, knowing that you would return to its words more than once during this case. At the same time, you fingered the telegram you had received from Linder asking you to meet him at his mansion later that night to discuss the threats made against him by his dead wife's lover. The obit called the death of Virginia Linder a "tragic shooting." They didn't call it a suicide...or a murder. It certainly wasn't an accident.

And so begins another Infocom adventure! *Witness*, like all the Infocom adventures, is completely text oriented and exceptionally well done. It is the second release in the Infocom Mystery Series, and, as was the case with its predecessor *Deadline*, it comes attractively packaged, complete with a dossier filled with all the frills that go into the make-up of a first class product. Half the fun of opening an Infocom mystery game is finding out what "goodies" have been crammed into the plain brown case folder found inside the outer package. *Witness* doesn't disappoint in this area.

*Witness* gives you only twelve hours real-time to come up with a solution to the case, which adds an entirely new dimension to the game. When you suddenly realize that



you have only two hours left to crack the case and you need to obtain just one last bit of information, conduct one last interview with a suspect, or check out one last thing with the crime lab, you can feel the sweat begin to trickle down your neck!

If you saw the movie *Chinatown* or have ever read a Phillip Marlowe mystery, you'll feel right at home in *Witness*. Even more so than in *Deadline*, *Witness* captures the flavor of the time period it attempts to recreate. Every detail, every bit of information, from the architecture to the style of dress to the vocabulary of the characters, is straight out of the 30's. Personally, I don't think that I have ever felt so totally immersed in a character, not even in a dungeon adventure, as I was with *Witness*.

The commands provided are generous and necessary to master if you are to make best use of the investigative tools at your disposal and stay within the time limit. Besides the obvious commands like Arrest, Search, Examine, etc. you may Accuse (someone) of (something), Analyze (something), Fingerprint (something), Wait For (someone), Show (something) to (someone), and so on. You can hide, follow, ask questions, compare, and do everything necessary to dig up clues and act on them.

*Witness* contains a well-documented instruction booklet that includes a "Tips for Greenhorns" section. It is mandatory that you read all the information provided in the instructions before beginning the game.

You will need, in addition to your computer, a notepad to keep track of all the clues that you uncover and paper of some sort (grid paper works best) to make a map of the mansion. This provides you with a feel for where you are, and also prevents you from running around in circles trying to get from one part of the house to another.

Infocom adventures contain a number of other features that put them a notch or two above the competition and *Witness* is no exception to the rule. You can, for example, use the Script command and send all or part of the ongoing investigation to a printer while actual play is in progress. This feature allows you to go back over the plethora of information that accumulates during the course of play. Often, because of the nature of the game, you overlook crucial elements in the case when they first appear. Being able to peruse the events that transpired at leisure gives you a chance to find a needed clue that you can implement in your next sit-down with *Witness*.

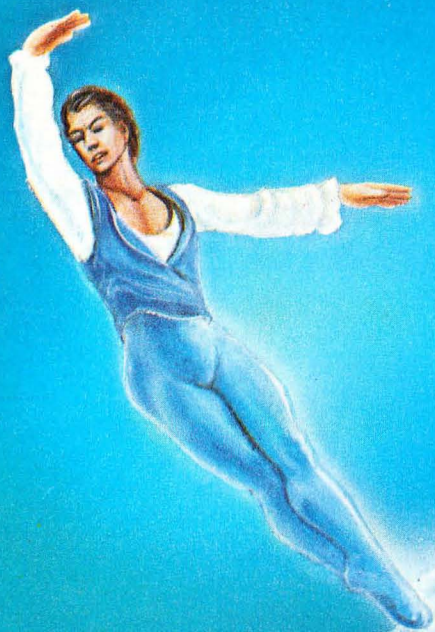
You may also save up to eight different game positions on each data disk. This allows you to pick up the investigation at any number of points in time.

Still another feature in *Witness* is the status line that features both the current time (i.e. 9:22 AM) and your current score. Scoring, incidentally, is based on the number of points you've earned during the investigation versus the number of moves you have made. Assuming that you eventually solve the case, nothing prevents you from trying to better your previous score by conducting a tighter, more concise investigation the next time around.

I reviewed the Commodore 64 version, and it booted easily and accurately each time using the basic Commodore loading procedures. After turning on the computer and drive, all I had to do was to type LOAD "GAME", 8 and when the computer responded with READY, type RUN. Loading was completed in approximately two minutes.

What more can I say? Infocom has another winner in *Witness*. ☞

From Infocom, Inc., 55 Wheeler St., Cambridge, MA 02138. System requirements: Commodore 64 with disk drive; IBM® PC with 48K RAM, disk drive; 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. Suggested retail price: \$49.95.





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\*Number of disk sides varies due to varying disk storage efficiency on different computers.

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Word Search Puzzle Generator

### MUSIC:

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Titan

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Quest

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Battlefield

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Solitaire  
Gambler

### ADVENTURE:

Operation Sabotage

### SIMULATIONS:

Broadway  
Leyte  
Titan

### WORD GAME:

Word Search Puzzle Generator

### GRAPHICS UTILITY:

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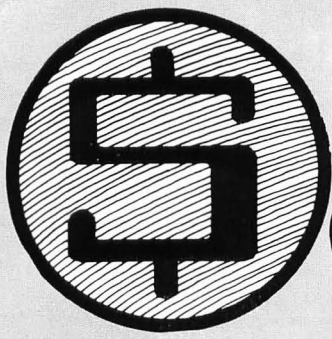
### PRACTICAL APPLICATIONS:

Random Access Database  
Microtext 1.2  
S.W.A.T.

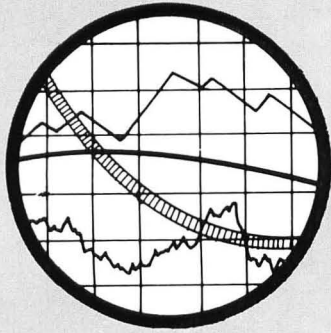


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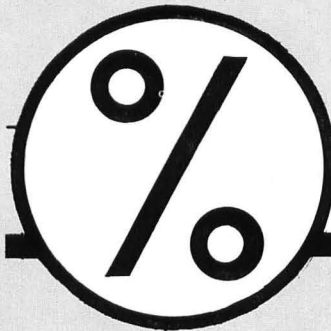


# CALC



# SIDE

by David Peters



## The VisiCalc® Spreadsheet Comes Home

### The Calc Utilities Disk — use it anytime!

This time we are going to look at two useful time conversion utilities. You can incorporate each into a spreadsheet as required, and we recommend that you add them to your Utilities Disk if you have frequent use for them. What's a Utilities Disk? It is a disk filled with templates and little snippets of models, each performing some particular function you can call into your current project at will.

Our method of compiling and using it might give you some ideas. When we develop a new model we usually leave the top two or three rows unused. We start at about Row 5. This leaves us a "scratch pad area" where we can store notes to ourselves while working, do off-line calculations (often to check that our formulae are working properly), and so on. When all is done, we either print out from the real start row of our model, or go in and clean up, deleting the unneeded rows from the top.

One very important way we use it is for bringing in utilities. Each of these utility function models has been stored originally to disk from the top rows of a matrix. The filename title on the disk carries load location information, and anytime we need one

we just adjust the open rows on the top to suit and bring it in. Once it is there we can replicate it elsewhere, or have the main model call it when required.

Before we give you a couple of utilities, perhaps to start your own disk, you might wonder what else we have on the disk. As you will see, that is a very individual matter — it really depends on how you use your spreadsheet program.

Since we write a lot, and need to print out models with their column and row identifiers (like the figures that accompany this column), we have all kinds of formats for this. We have models set to many different column widths that represent the familiar "letters across the top." When we have a model ready for final printing, we open up the top row and call in the letters model that applies. The names are easy to recognize: "HEAD FORMAT /GC6", or "HEAD FORMAT /GC12" and so on.

We have long, hard to type and/or "tricky" formulae saved by their function. The one we use later in this article might have been saved as "ELAPSED DAYS M1", indicating that, when loaded, it will appear in the first position in Column M.

When I loaded it, of course, it would indicate an ERROR condition, since the coordinates used in the formula would not yet apply to the current model. I would then /Replicate it No Change to the location where it was to be used, /Edit it as necessary, and then delete it from M1.

I have many forms — pre-formatted models — that I use frequently, with all the formulae in place, but with no data or actual numbers. For instance, I like to print my checks. Having no real program for this, I have a formatted model that "hits the boxes" on my checks just right. My checkbook has three checks "up." I load a sheet of this into the printer, enter the names, date and amounts in my model for the first three checks, and print. I then amend the model and do the next three, and so on. As you can see, it is a very individual Utilities Disk, and so will yours be, so let's look at two useful candidates for inclusion...

#### Elapsed Time Calculator

Often, when using a spreadsheet, it is necessary to be able to work out the elapsed time between two dates. Perhaps you need



to know how many weeks of work a certain job is, or how long the school vacation is, or some similar statistic. One method of doing this came from an idea sent to *InterCalc's* monthly newsletter, "SpreadSheet," by Larry Donoso from Philadelphia. If you look at Figure 1, you will see a simple format for entering two dates, each component occupying its own coordinate within the matrix. The formula for figuring the elapsed time is printed below it.

What is happening here is explained simply: The formula multiplies the year by 365.25 (the extra is to cover the Leap Year phenomenon), multiplying the month by the average number of days in a month (30.6), and then adding the elapsed days in the month. It does this for both rows of the formatted entry, and merely subtracts, giving the elapsed days between them. It could be described as a "base 1900" system, since we are counting from January 1, 1900, and establishing the difference. Now you can use the result in your model for the subsequent calculations.

To transfer this to weeks, just divide by seven. The decimal fraction will be tenths

of a week. The formula for establishing how many actual days' remainder this is...what? I'll give two six month subscriptions to "SpreadSheet" to the first two good solutions I receive, in care of *SoftSide*. Write today!

### "Back in 2.68 Hours!"

If you put that sign on your door, callers would wonder just exactly how long they had to wait. It would of course be better to say two hours 22 minutes, or whatever. We can do a simple conversion with a formula that takes the decimal time and converts it to hours and minutes.

Look at Figure 2. It's a simple trip cost and drive time analyzer that calculates how much it costs and how long it takes to drive to some cities. You might use it to plan a vacation, as we do.

The model itself requires little explanation. The variables at the top (which could be anywhere in the template) are the miles per gallon that the vehicle gets, the cost of gas in the neighborhood, and the expected average speed you can maintain, considering the roads, traffic conditions, etc.

In the body of the template, the columns use these figures as you might expect. The distance round trip to each city is entered (it could of course have been one-way, too), taken from the map or reference book. The next column just divides by the miles per gallon to establish how much gas the car will need, and the next multiplies by the price per gallon to get the cost.

In the first drive time column (decimal) we have made the easy calculation. Miles driven divided by average speed gives us the elapsed time to make the trip — in decimal terms. But this isn't the way we think, right? So in the last column we have the formula:

$$+B12/B7 - \&INT(B12/B7)*.6 + \&INT(B12/B7)$$

You can see what this formula is doing. After it has calculated the same decimal as in the preceding column, it subtracts the integer value, which leaves the decimal fraction, or "piece of an hour." It then multiplies this by point six (.6), which converts the fraction to minutes. Then, finally, it adds the hours back and prints the figures again — but this time it is hours and minutes, as we usually express them.

One small point to remember when you have done this: To re-use the elapsed time for some other calculations (say that you pay the driver of the vehicle by the time he or she is on the road), then you must use the decimal figure. This is illustrated in the last two columns on the right. Your driver will be underpaid if you use the wrong one!

Figure 1. How long ago was it?

	A	B	C	D	E
1					
2	DATES	DAY	MONTH	YEAR	
3					
4	RECENT	12	6	1983	
5	OLDER	11	11	1982	
6					
7	ELAPSED DAYS		213		

The formula in C7:

$$(@INT(D4*365.25)+@INT(C4*30.6)+B4) - (@INT(D5*365.25)+@INT(C5*30.6)+B5)$$

Figure 2. The hours/minutes conversion.

	A	B	C	D	E	F	G	H
1	TRIP TIME & COST ANALYZER							
2	-----							
3	VARIABLES							
4	MILES/GAL	18.50						
5	GAS COST	1.39						
6	AVG MPH	45						
7								
8					DRIVE	DRIVE	PAY/HOUR	
9	CITY	DISTANCE	GAS	GAS	TIME	TIME	\$ 6.5	
10		EACH WAY	REQUIRED	COST	DECIMAL	HRS/MIN	DECIMAL	HRS/MIN
11	-----							
12	CITY A	555	30.00	41.70	12.33	12.20	80.17	79.30
13	CITY B	1012	54.70	76.04	22.49	22.29	146.18	144.91
14	CITY C	730	39.46	54.85	16.22	16.13	105.44	104.87
15	CITY D	165	8.92	12.40	3.67	3.40	23.83	22.10
16	CITY E	480	25.95	36.06	10.67	10.40	69.33	67.60
17	CITY F	220	11.89	16.53	4.89	4.53	31.78	29.47
18	CITY G	500	27.03	37.57	11.11	11.07	72.22	71.93

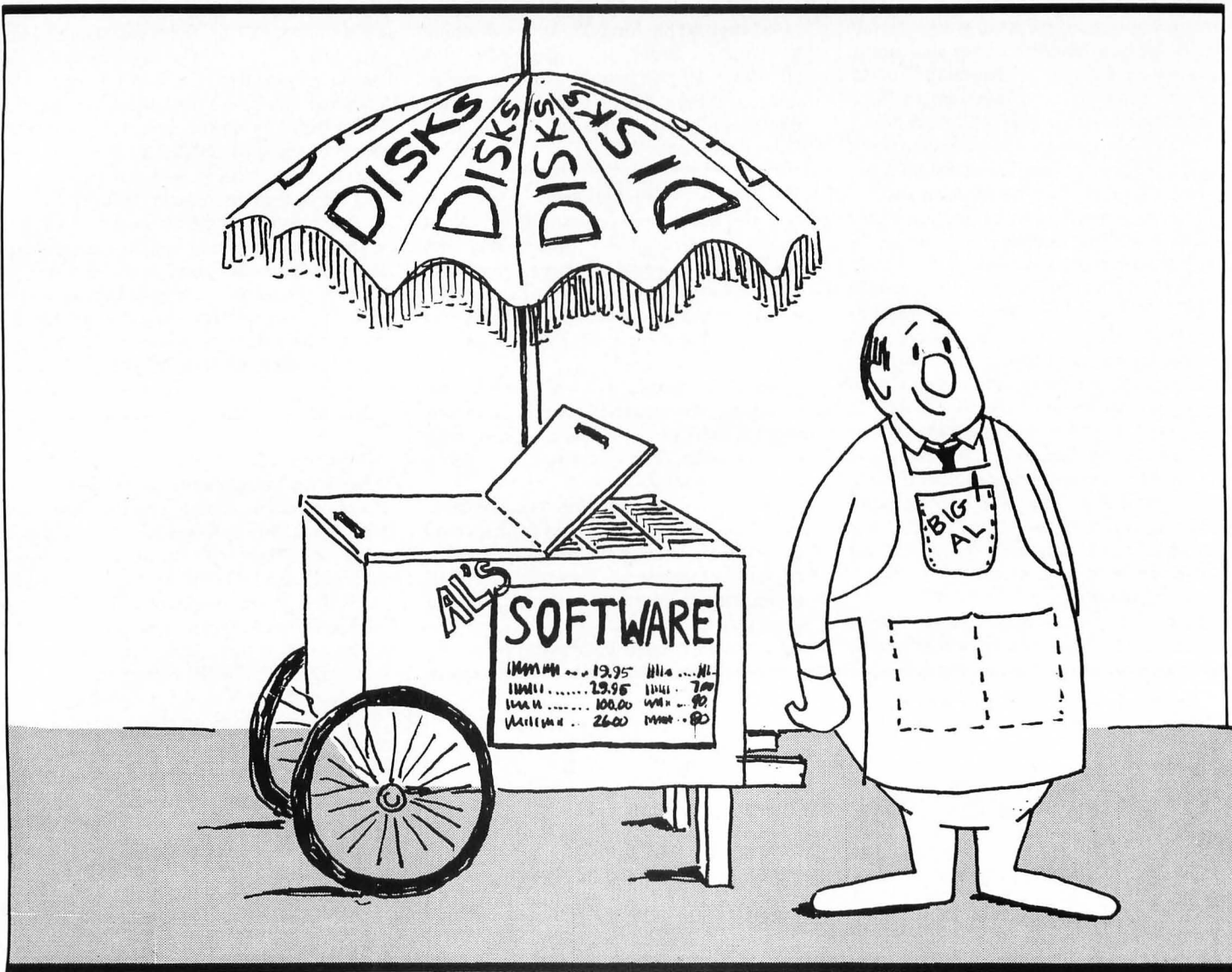
### Utilities Disks Are Useful

Spend a little time next time you are at the keyboard and think of the utilities you can use. Then prepare a newly initialized disk and start creating them, or transferring the interesting pieces from other disks.

There's one more very effective way we use our utilities disk: for double backup. We have a two drive system, and after we boot our spreadsheet program it is not necessary to keep it in the drive. We place our data disk in Drive 1, ready to /Load and /Save our models, and the utilities disk in Drive 2. Every time we save a model, or an interim version of a model, we save it again to the other drive. It takes a couple of extra moments, but it is giving us "double redundancy" on our backup copies.

When we finish a session, we make a real backup (using the DOS COPY procedure) to the regular backup disk (all your data disks have backup, right?), and clean up the utilities disk by deleting the back up files that accumulated during the session.

Have a good caltime, and I welcome your letters. Please write if I can help with a problem, or telling me what you'd like to read, or just to discuss the state of the world...



## by Gary M. Kaplan

**I**n an earlier age of innocence, professional athletes, movie stars and authors negotiated their own deals. Then they got smart (or greedy, some would say), and retained agents to bargain for them.

Software authors are no exception. In their hunger to gobble up a larger share of their product profits, they have turned loose a new figure in the computer economic pie — the software agent. The presence of agents is not expected to increase the price we pay for a software book or program, but their involvement will result in a much wider distribution of these products.

Software agents are actually literary agents who have caught the spark of hot consumer interest in software. They feel the software market is just beginning to smoke and they intend to fan the flames. The warm feelings agents have for software are, in fact, based on its rising status as well as the languid state of book publishing.

"It's very easy to see what is happening," says Peter Skolnik, a partner in Software Agency Inc., a consortium of three literary agencies that have banded together to promote software authors. "Book publishing, though it has picked up some in the last few months, is still very slow. There just aren't any great growth signs

there. The software market, though, is an entirely different story. Its growth is dynamic. Sales of software are currently at several hundred thousand dollars. In just a few years that is expected to be pushed to \$5 billion."

Certainly, part of that increase will be due to the entrance of bookstores into the software field. The two major chains, Waldenbooks, with 820 stores and B. Dalton, with 700, have spent the last several months testing the market. They are now moving software into all their locations.

That movement can be traced to software agents. By getting publishers to accept the benefits of software, and how it can be sold through bookstore channels, an entirely new software market has been created. Through their literary representations, the agents have a firm association with publishers. Representing software authors, they feel, is a natural extension of that association.

It has not been difficult for agents to kindle publishers' interest in software. Realizing the slow nature of their book business, they are, agents claim, quite eager to feel the warmth of software.

"Publishers literally are raising their hands to make sure we know of their interest in the products," says Software Agency

Inc.'s Skolnik. "They give announcements in the trade journals and let their interest be known in other ways."

This includes even the biggest of the publishing houses. "Simon & Schuster, Doubleday & Co. and others who have not had an interest in computer books and software, are now eagerly getting involved," Skolnik continues. "It's one thing when a publisher that has been involved in computer books expresses an interest in software. But when a house such as Doubleday & Co., that has never touched computer items, gets into the game, that's really exciting."

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## Floppy Disk — An Open Book

Earlier this year, the New York-based literary agency, John Brockman Associates, Inc. added a floppy disk next to the open book insignia embossed on their corporate letterhead. Brockman has over 200 authors in its fold, but the company wanted everyone to know it now had a software program author in its stable.

They have since unveiled a contract between their author, Bruce & James, Program Publishers, Inc., located in San Francisco, and Simon & Schuster, the major New York book publisher.

The trend-setting contract gives Simon & Schuster exclusive U.S./Canadian distribution of the Bruce & James line of personal computer programs, beginning with the popular *WordVision*, a word processing package that sells for \$49.95. Thanks to Simon & Schuster's massive networking capabilities, the result is Bruce & James programs in all B. Dalton and Waldenbooks stores. Bruce

the market will bear. Some book publishers are seeking software in the \$10 to \$30 range. All feel it is wise to keep the price down right now until a market is established."

For precisely this reason, more expensive programs are expected to be shut out of bookstores. "People in bookstores just aren't going to write out \$500 checks," says Bruce & James' Edlin.

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## The Bottom Line — To Us

Agents for athletes and movie stars certainly drive their clients' prices out of sight. And we are the ones who eventually foot the bill. Are software agents, through their author-clients, going to stick it to us also?

The answer, they reply in unison, is a resounding "No!" Here is their scenario. The wider distribution of the programs, through bookstores, will certainly result in more programs being sold. Because more will be sold, resulting in increased cash to bookstores, publishers, agents and authors, a concurrent price hike will not be necessary.

Through agents' skillful negotiations, publishers are expected to pay more for their desired programs than if they were dealing directly with authors. Two basic types of deals are emerging:

- The traditional advance/royalty publishing arrangement, where the publisher advances the author funds to create the program and agrees to buy it, later paying the author royalties and performing the necessary marketing operations.
- The distribution deal, where a publishing house purchases a completed software program, pays royalties and markets the product.

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# SOFTWARE AGENTS

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& James is the first line to be carried by both store chains.

Jim Edlin, president of Bruce & James, believes the Brockman agency was instrumental in opening the door to Simon & Schuster, which in turn led to B. Dalton and Waldenbooks carrying *WordVision*. "We could have approached a publisher directly," he says, "but that would have been much more difficult. By using someone they were familiar with and trusted, in this case, John Brockman, it was much easier to work with them."

Interestingly enough, Bruce & James had every intention of getting their products into bookstores. "That was the premise we began with," Edlin reflects. "We saw the bookstore customers as an emerging market." Utilizing Brockman, they have been able to tap it.

The nature of *WordVision* helped Brockman sell it to the publishing house, Edlin believes. "It is a simple product and does not need a specialized center such as a computer store to market it."

That simplicity — and low price — are what agents look for when they choose to represent a software author. They know their clients' products, to achieve as wide a distribution as possible, must be headed into bookstores. They also know bookstores are unproven sellers of software, and they are a business that relies on sales, for the most part, of under \$50 a purchase.

"Bookstores selling software is an industry in its infancy," according to Software Agency's Skolnik. "Nobody knows how agreeable customers will be to buying the products, or what price

These deals are quite a departure from what was happening before agents appeared in the computer/publishing landscape. "Publishing houses were going right back to the 1930's in dealing with software authors," John Brockman said in a recent *Inc.* magazine article. "They thought they could offer a flat fee and walk away... They have to be reminded that authorship is authorship, whatever the field, and that authors should retain all the rights that relationship implies."

---

## Sifting 'em Out

Book publishers have long relied on literary agents to screen submissions. That way, publishers are not deluged and can deal efficiently with the most viable selections.

Software agents are performing the same function. They look over the programs and decide what is marketable to publishers and what is not. As mentioned, what they are choosing now are simple, inexpensive products a bookstore stands a good chance of selling.

"To sell software in bookstores, a customer is going to have to feel comfortable," Skolnik says. "Customers are going to have to perceive bookstores as major sellers of software, and not just stocking a few items." Credibility, he feels, is in part based on a bookstore's commitment to a sizeable selection of programs.

And, he says, that selection should comprise programs a customer can pull right off the shelf without needing a lot of



## THOUSANDS OF COMPUTERS AND BUSINESS OFFICE MACHINES ARE GATHERING AGAIN IN ATLANTA

The largest public computer show and business office equipment exposition ever held in Atlanta is coming to the Civic Center, December 8-11, 1983. If you've been thinking about a business computer, word processor, a video game, or a personal or home computer - The Third Annual Southeast Computer Show and Business Office Equipment Exposition is the place to go to compare all the leading makes and question experts about the capabilities of their machines.

Unlike a computer store, The Computer Show offers you the opportunity to compare, question and learn about computers in a nonintimidating, no obligation, fun filled atmosphere. If you decide to buy at the show, you may save hundreds, even thousands of dollars because many products on display are for sale at super show prices.

The show features hardware and software for business, industry, government, education, home and personal use, including micro and mini computers, data and word processing equipment, computer graphics, peripherals, accessories, publications, support services and supplies.

Another major segment of the show is office systems, office products and office equipment such as electronic typewriters, telecommunications, telemarketing, copy machines, furniture, business machines, dictating equipment, microfilm equipment, facsimile machines, office supplies, publications and business services. Admission is \$5 for adults and \$3 for children.

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*...if a customer comes into a bookstore knowing the program he wants, he won't need the explanation; he will just need someone to point out where the program is located.*

operating explanations. Software knowledgeable people, such as those found in computer stores, are probably not going to be available in bookstores. But, reasons Bruce & James' Edlin, if a customer comes into a bookstore knowing the program he wants, he won't need the explanation; he will just need someone to point out where the program is located.

Skolnik agrees. "For an established piece of software, a customer may not have a lot of questions; he may merely choose by price." Bookstores selling software can be compared to what record stores experienced some 25 years ago. At that time customers had little knowledge of either the stores or records. Listening booths were set up to allow customers the opportunity to hear their selections.

### **Red Hot Books**

Agents' acceptance of software program authors was made possible by publishers', bookstores' and consumers' acceptance of computer books. The items are hotter than ever, and agents continue to play an active role in their introduction to the marketplace.

In April, John Brockman negotiated the largest advance ever paid for a trade paperback book. "The Whole Earth Software Catalog," to be edited by Steward Brand, creator of the original "Whole Earth Catalog," fetched a price of \$1.3 million.

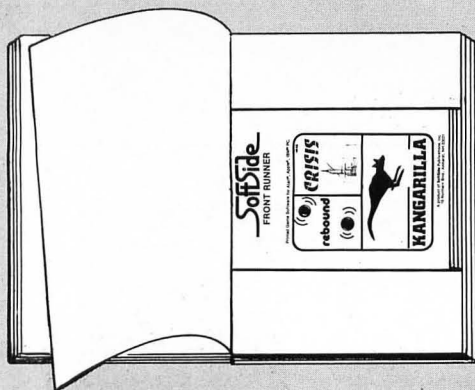
The sale to Doubleday & Co. serves to show the remarkable popularity of computer books, which account for nearly ten percent of the trade book market. And that market is expected to grow substantially.

Brockman predicts there will be 25 million home computer owners by 1986. Each, he says, will purchase approximately eight computer books - in addition to a fair amount of software.

Waldenbooks has quadrupled the space allotted to computer books in the last year-and-a-half, due to demand. For the same reason, the chain stocks 36 different computer magazines. Waldenbooks is so pleased with the sale of their computer books, and the hoped for sale of software programs, they have scheduled 88 full pages of related advertising to run in *Newsweek* alone during the third and fourth quarters of 1983.

Consumers are demanding more and more computer books. With sales down in other book areas, publishers and bookstores are only too happy to comply.

Now, publishers and the stores are making a commitment to stocking software. Though it's a new area for them, they are banking on its success. Literary agents turned software agents are bringing their hot new clients into the act.



The booklet bound in the center of this issue contains all the instructions, listings, documentation and **STOMP** Tables you and your computer will need to enjoy these programs for your computer. Also available are the **SoftSide** Disk and Cassette versions (not available for all systems: see the bind-in cards and ads elsewhere in this issue for more information).

- **Apple: Crisis**
- **Atari: Rebound**
- **IBM PC: Kangarilla**

# FRONT RUNNER

## Kangarilla

For the IBM PC, by Oscar Bascara  
IBM® PC version by Kerry Shetline

Your baby kangaroo has wandered to the top of a four-level maze, and you must rescue him before he falls.



## Crisis

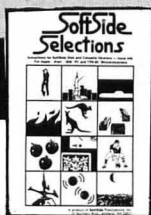
For the Apple, by Lyle Grant

A ruthless race of aliens has taken possession of the Empire State Building. Your goal is to rescue the hostages.

## Rebound

For the Atari, by Steven Kuehne

Fire the moving ball into the colored goal in the center of your screen, but count the barrier you erect with each press of the joystick. They block your ball in the right direction — and lower your score as they accumulate.



## SOFTSIDE SELECTIONS

### TRS-80® VERSION

**Fire Rescue**  
by Thomas V. Mastrangelo

**Sub Attack**  
by Mark Durand

**Warehouse**  
by Robert Neve

### APPLE® VERSION

**Crisis**  
by Lyle Grant

**Appleanche**  
by Michael Hansen

**Sky Fire**  
by Geoffrey Gordon

### IBM® PC VERSION

**Kangarilla**  
by Oscar Bascara  
IBM® PC version by Kerry Shetline

**Blackjack**  
by Kerry Shetline

### ATARI® VERSION

**Rebound**  
by Steven Kuehne

**Cavern King**  
by Steven Oliver II

**Baseball**  
by David Bohlk  
Modifications and Enhancements  
by Rick Groszkiewicz

### SoftSide CV/DV

### ADVENTURE SERIES

**Death World for the Apple, Atari, IBM PC and TRS-80.**

by Peter Kirsch  
In this adventure, all the aliens are enemies except Nikki. Without him, you cannot hope to rescue your friends.

# Sides Of *SoftSide*



## COMMODORE® /SIDE



- Neutral Zone**  
Reviewed by Sharon Zardetto Aker \_\_\_\_\_ **53**
- Space Sentinel**  
Reviewed by Sharon Zardetto Aker \_\_\_\_\_ **54**
- For additional *Commodore* game reviews see pp. \_\_\_\_\_ **74, 75 & 76**



## TRS-80® /SIDE



- Clash**  
Reviewed by Mark E. Renne \_\_\_\_\_ **55**
- Desert Peril and Devil's Tower**  
Reviewed by Mark E. Renne \_\_\_\_\_ **56**



## APPLE® /SIDE



- Pentapus**  
Reviewed by Jeff Hurlburt \_\_\_\_\_ **57**
- Police Artist**  
Reviewed by Jeff Hurlburt \_\_\_\_\_ **58**
- Thunderbombs**  
Reviewed by Jeff Hurlburt \_\_\_\_\_ **58**
- Crime Wave**  
Reviewed by Jeff Hurlburt \_\_\_\_\_ **59**
- Laser Bounce**  
Reviewed by Cary W. Bradley \_\_\_\_\_ **60**
- Shuttle Intercept**  
Reviewed by Cary W. Bradley \_\_\_\_\_ **61**
- Kamikaze**  
Reviewed by Cary W. Bradley \_\_\_\_\_ **62**
- Axis Assassin**  
Reviewed by Cary W. Bradley \_\_\_\_\_ **62**
- Hard Hat Mack**  
Reviewed by Cary W. Bradley \_\_\_\_\_ **63**
- Spectre**  
Reviewed by Jeff Hurlburt \_\_\_\_\_ **64**
- For additional *Apple* game reviews see pp. \_\_\_\_\_ **74, 75 & 76**



## PC/SIDE



- Space Strike**  
Reviewed by Robert C. Gray \_\_\_\_\_ **66**
- Big Top**  
Reviewed by Kenneth Nichols \_\_\_\_\_ **66**
- Galaxy Master**  
Reviewed by Robert C. Gray \_\_\_\_\_ **67**
- Master Miner**  
Reviewed by Kenneth Nichols \_\_\_\_\_ **68**
- Home Computer Major League Baseball**  
Reviewed by Jordan Gold \_\_\_\_\_ **68**



## ATARI® /SIDE



- Zaxxon**  
Reviewed by Greg Kopp \_\_\_\_\_ **70**
- Preppie II**  
Reviewed by Carl M. Firman \_\_\_\_\_ **72**
- Donkey Kong**  
Reviewed by Carl M. Firman \_\_\_\_\_ **72**
- Mule**  
Reviewed by David Plotkin \_\_\_\_\_ **73**
- Archon**  
Reviewed by James V. Trunzo \_\_\_\_\_ **74**
- A.E.**  
Reviewed by David Plotkin \_\_\_\_\_ **75**
- David's Midnight Magic**  
Reviewed by Richard Herring \_\_\_\_\_ **75**
- Software For A Song**  
Reviewed by David Plotkin \_\_\_\_\_ **76**
- A Full Broadside From Synapse Software**  
Reviewed by David Plotkin \_\_\_\_\_ **78**

**U**nconfused about what to buy the computer game buffs on your Christmas list? It's not surprising, considering the plethora of game software flooding the market these days. The choices can be intimidating!

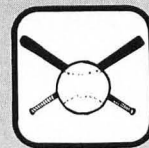
Take heart, however, because the *SoftSide* staff has been working diligently over the past few months to make game selection a breeze this Christmas season. We've collected the best game software we could find, and sent it off to some of our best review authors to compile, on the next several pages, a comprehensive collection of game reviews for your information and enjoyment. We've even organized them for you by category, with an icon identification system to make it even easier to find exactly what you're looking for. So curl up in that easy chair by the fire with *SoftSide* and your Christmas list. Christmas shopping will never be easier, or more fun.



Educational



Arcade



Sports



Board Games



Adventures

## COMMODORE®

# Neutral Zone

Reviewed by Sharon Zardetto Aker

From the moment the three-dimensional title scrolls onto the screen, you know you've got a winner with *Neutral Zone*. The concept behind this game is not unique. Starbase Alpha IV sits at the edge of the neutral zone, and so is prone to attack from a number of enemies. Your responsibility is to protect the base until it has time to send out vital information that will save the galaxy. You are in a stationary gunnery pod outside the base; the pod's turret can rotate 360 degrees for scanning purposes. You have an attack computer that warns you of intruder approach and logs damage to enemies, your pod and the base.

If you think, from this description, that *Neutral Zone* is just another outer space shoot-'em-up, you're wrong.

First of all, the graphics are outstanding. As you scan the depths of space, you observe ringed planets, shimmering galaxies, wispy nebulae, chunky asteroids — all against a backdrop of multi-colored stars. Alpha IV looms in the distance, its markings suggestive of a smiling face.

There is a variety of alien spacecraft; one has the unmistakable silhouette of

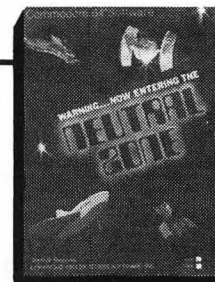
the Starship Enterprise. (Personally, I found it a little difficult to gun that one down.)

As for sound effects, the instructions suggest — and not facetiously — that you hook up the audio to a good sound system and dim the room lights for the full effect. I found the sound was effective even through the monitor speaker in a well-lit room.

There are five levels of difficulty, ranging from beginner to crazy. The beginner level is good for younger kids; at higher levels the aliens shoot back at you and fly in more erratic patterns. Intermediate is manageable; crazy is just that.

The number of enemy ships you must destroy to win increases with each level; the damage that Alpha IV can sustain also increases. Scoring is based on the number of enemies/missiles destroyed, the amount of damage inflicted on the base and the pod, and the playing time. You will be ranked according to your performance: tourist, chief cook, first mate, and so on.


The countdown begins. Each bleep brings you another second closer to battle. Visual is on. You are scanning a quiet sector when, suddenly, the computer signals an intruder alert: It gives the ship's bearings, its direction of travel, the quickest way to intercept...and the battle is on. You will have to shoot down enemy missiles as



well as ships; if your pod is hit too many times, you lose some of the turret's rotational speed.

The excellent graphic design of *Neutral Zone* makes precision firing a necessity. Your gunsights appear on the screen and are moved by the joystick controller. When firing, you must allow for the distance your missile has to travel. If a ship is in your sights when you fire, it won't be there by the time your torpedo reaches that point. Accuracy is a must — a missile can skip between the tail fins of an enemy rocket and cause no damage at all.

The attack computer prints a wealth of information across the bottom of the screen, but you will be hard-pressed to use any but the intruder alert in the heat of battle. If Alpha IV sustains too much damage, you must sit by, helpless, and watch it disintegrate. CONDITION RED is literal; the base turns crimson before exploding.

There are many arcade-type computer games available, but many fail to measure up to their coin-operated counterparts. With its beautiful graphics, great sound and absorbing play, however, *Neutral Zone* is truly arcade quality. 

**From Access Software, Inc., 925 East 900 South, Salt Lake City, UT 84105. System requirements: Commodore 64, disk drive or Datassette, joystick. Suggested retail price: \$34.95.**

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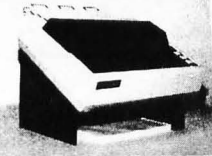
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**Space Sentinel**



Reviewed by Sharon Zardetto Aker

The scenario is bleak: Invaders are bombarding earth's polar ice caps with heat-seeking missiles, and no matter what you do, the world will eventually be destroyed. Bleak, yes, but not hopeless. The longer you can fend off the aliens, the more escape ships can take off from earth. The fate of humanity is in your hands.

*Space Sentinel* is, unintentionally, two games in one. The first game is figuring out how to play — calling the documentation sparse would be a compliment.

You realize immediately that you cannot control your ship with the joystick; pressing the fire button doesn't do anything, either. Eventually, you discover that using the joystick and the fire button simultaneously causes your ship to fire a missile in one of eight directions, as indicated by the position of the joystick.

The playing screen shows the earth suspended in space. You are in a fixed orbit around the planet; your orbit is vertical on the screen, so for a portion of each orbit you are out of sight, on the far side of the globe. The sprite graphics used for the orbiting sentinel give it a truly three-dimensional effect: It literally shrinks from view. Although there is no such feeling of depth to the enemy ships and missiles, they, too, are nicely designed, and there is quite a variety of both.

The scoring is not very clear. When an escape ship takes off, the points you receive depend on how much of the earth is already flooded. The land/water ratio is indicated during play by a row of asterisks in the upper corner of the screen which turn blue one by one as the earth floods. That part of the scoring is easy enough, but there are also, as almost explained in the instructions,

From T&F Software, 10902 Riverside Drive, North Hollywood, CA 91602. System requirements: Commodore 64 with joystick and one disk drive. Suggested retail price: \$29.95.



7000 "free" points and randomly timed "shock waves" that can affect the scoring. I never noticed any shock waves, but then, the play itself gets fast and furious and you don't have much of a chance to notice anything.

The game starts calmly enough. As you orbit the earth, a half dozen alien ships approach, apparently on a reconnaissance mission, since they never fire. This is the time for a new player, who has not had the benefit of the information in this review, to figure out what to do, and how to do it. After a few minutes, the fighting ships arrive and before you know it, you're out-manuevered and overwhelmed. You may well resort to the hold-and-hope method (hold down the fire button and hope that you hit something); the action is much too fast for a strategic approach.

The sound effects are good, although a little overdone at the end. While you're itching to get at the next round, the computer displays a picture of space, sans earth, while it plays a little tune that would have been better placed at the beginning of the program.

You can look up your rating according to your score (Beginner...Saviour...God). It would have been a nice touch if the program gave you a rating and some statistics — say, how many planets had been colonized by the escapees.

Paltry documentation aside, *Space Sentinel* still falls short of being a great game. It's a good game, however, and is as addictive as most other computer games — you'll keep going back, "just once more," to better your score. ☞



# Clash



Reviewed by Mark E. Renne

You are mounted on a flying dragon armed only with a lance. The enemy attacks in five merciless waves. You must grab the treasures without falling victim to the enemy. Will you survive the joust? Will you advance to the next class? Only time will tell in the Land of *Clash!*

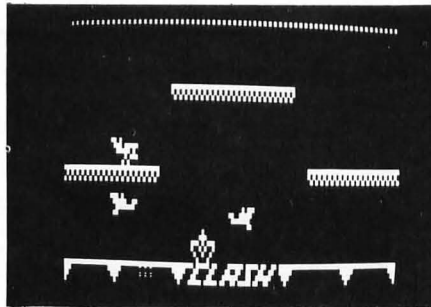
Computer Shack has recently released this version of the classic arcade game, *Joust*. *Clash* provides high speed graphics, animation and challenge for even the most agile of arcaders. The game is written in machine language and comes on a self-booting protected disk. *Clash* allows two people to play at the same time, either as teammates or adversaries. There are nine different playing fields and five types of evil inhabitants.

The Land of *Clash* consists of broken ledges that provide a temporary haven for dragon riders. To make your mount fly, you must push a key repeatedly. You may fly left or right by pushing another key. Learning to fly your dragon is the most difficult part of the game.

To defeat your enemies, you must fly close to and above them. If you touch them anywhere else, you will be another victim of the battle. Certain enemies can't be defeated under any circumstances and must be avoided at all costs. For the novice rider, it is no small task to eliminate the enemy.

The first wave consists of lower class fighters called Vulture-Riders. If you knock them off their vultures, they drop a precious gem for your collection. If you're not fast on the draw, however, a spider may appear to grab the treasure. The Vulture-Riders may be inexperienced, but they can be hazardous.

Should you survive the first wave on a single mount, you win an extra 500 points and proceed to wave two, the Spider Hunt. The spiders leave no treasure, and you must attack them



from above. These guys are tough to kill and bounce around at incredible speeds.

The third wave is the Gem Frenzy. Here, you can accumulate points by running over gems. If you leave a gem too long, a spider appears and steals it. Now, you have lost points and acquired an enemy. It takes talent to grab jewels fast enough to avoid producing spiders.

Bats attack on the fourth wave, providing more lance fodder for the skillful warrior. Because they're large, they should be easy targets. However, they are the most difficult for me to eliminate. The fifth and last wave consists of indestructible falling spikes that you must avoid to survive.

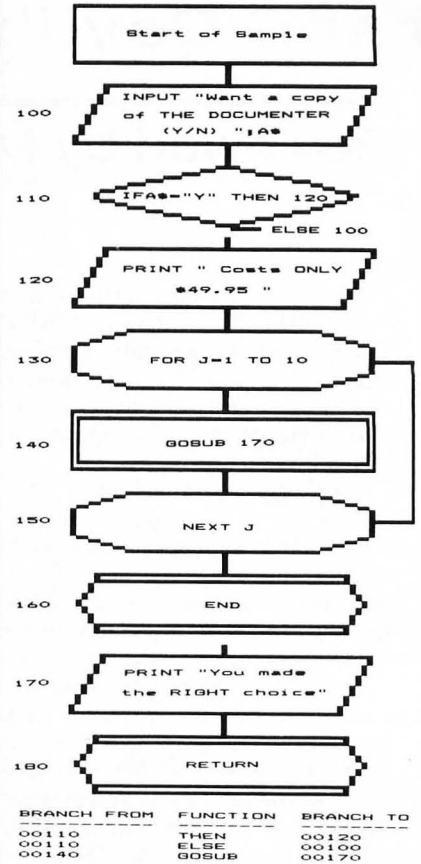
After five waves, you begin a new class consisting of more difficult waves. There is also an option at the beginning of the game that allows you to skip the easier levels and proceed immediately to a more difficult class. You'll appreciate this feature as you become more experienced.

*Clash* is filled with sound effects and smooth animation. The disk version includes "voices" and automatic high score saving. The game saves the all-time top ten scores and also displays the day's top ten scores.

*Clash* features all the standard extras. You may pause and start it again with the press of a key. You can turn off the voices if you find them annoying. The game is also joystick compatible.

*Clash* is one of the best arcade-type games I've seen on any computer. It is a fast action, error-free game, and you won't master it without many hours of play and a sore finger or two. I hear occasional comments about the non-color, low resolution graphics on the TRS-80. Computer Shack proves that it's only a limitation for those without imagination.

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By Bill Dunlevy (Computer Shack, 1691 Eason, Pontiac, MI 48054). System requirements: 32K TRS-80 Model I/III. Joystick optional. Suggested retail price: \$19.95 (tape) and \$24.95 (disk).

# Desert Peril and Devil's Tower



Reviewed by Mark E. Renne

Fantastic Software introduced the first "talking" adventure for TRS-80's and changed the way adventures were written. Now they've introduced two new arcade games that live up to Fantastic's reputation for quality and originality.

Both *Desert Peril* and *Devil's Tower* are new games, not copies of current arcade games. Both games use machine language for speed and smooth animation effects. They are joystick compatible, and the disk version comes on a self-booting, protected Model I/III disk.

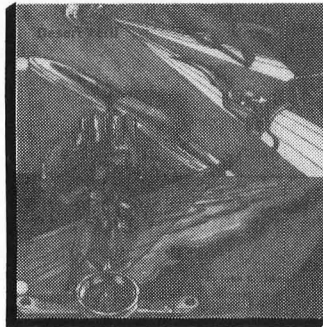
The games also include sound effects through the cassette port, using an auxiliary amplifier. One or two players may abuse the aliens, and the disk version saves the top ten scores. You may pause the games at any time using the BREAK key and restart with the ENTER key. Those faint of heart may abort the games with a BREAK/CLEAR combination.

## Desert Peril

*Desert Peril* pits you against the Zagons who are trying to prevent your crossing the desert to save your city. Crossing the desert should be simple, but the arcade gup in the sky has made the task formidable.

First, the desert has been mined. Fortunately, your skidder has been equipped with a land mine detector. This appears at the bottom center of your video display. Your position is also indicated on the display, enabling you to avoid upcoming mines. Of course, it's difficult to keep your eyes on the mine detector when other problems are afoot.

**By John R. Olsen, Jr. (Fantastic Software, P.O. Box 27734, Las Vegas, NV 89126). System requirements: TRS-80 Models I, III, and 4 with 32K RAM. Suggested retail price: \$15.95 (tape) and \$19.95 (disk).**

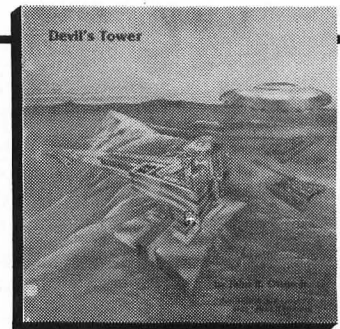


At the bottom left of the screen, a graphic display indicates the number of ships left. Since your skidder is equipped with a limited amount of energy, a power-remaining indicator appears at the bottom right. You gain energy by shooting down the bad guys and lose energy if enemy shots come too close. Also, the screen displays a current score, but you'll be too busy to watch points go by.

The action takes place in the center of the screen. As you move within the desert, three objects flying above the horizon keep you on your toes. Flapping winged birds drop bombs, but are generally the easiest to defeat. Balloons drop bombs and also serve as reconnaissance for satellites. Satellites are bad shots unless a balloon has passed and is still on the screen, when they have a 95 per cent chance of nailing you. The moral here is "nab the balloons."

The animation in this game is complex. There are two horizontally rolling screens, the mine detector and the desert scene. The background moves slower than the foreground, making the enemy appear above and behind you. Also, shooting down objects requires a slightly different technique since the shots arc backwards toward the enemy.

If you should make it through the first mile, you are awarded bonus points, and the difficulty increases. Since the game is difficult enough on the lower levels, it should continue to provide a challenge after many plays.



## Devil's Tower

*Devil's Tower* is unlike any game I've ever seen. It is an arcade game with a difference. It combines an original idea with quality programming to produce something unique and interesting.

In the middle of the screen is a very tall mountain. On the left side is your ship which moves from side to side. On the other side of the mountain are the enemy ships which also move, making them difficult targets. You can't simply shoot the bad guys because there's a mountain in the way. However, your ship is equipped with a cannon capable of firing over the mountain at different angles. You can even kill yourself with your own bullets if you're not careful. (I've yet to grasp the technique involved here, but I keep trying.)

The arrow keys allow you to choose one of four angles or drill a protective cave into the mountain. You must be wary, though, because some enemy attackers can cause a deadly cave-in.

A force field that requires several shots to penetrate also protects the enemy. You must be quick to break the shield, as it's rebuilt often by roving aliens. If things weren't bad enough, there's also a piston that pushes from the left to shorten your playing field. This is not a game for the weak of heart. Animation is also excellent, with several aliens bouncing here and there.

I enjoyed both these games and highly recommend them. Fantastic Software has done a great job with these unique TRS-80 games. So, if you enjoy a challenge, give *Devil's Tower* and/or *Desert Peril* your Saturday afternoon's quarters.

# Pentapus



Reviewed by Jeff Hurlburt

Imagine a time far in the future. You and your band of human wanderers must regain possession of the universe, or face the grim truth that mankind's days are numbered. However, the awesomely powerful Pentapus and its army of mutant invaders now control the universe, and intend to keep it that way. Your mission, of course, is to destroy the mutant monsters which threaten your survival.

Your weapon, a "stargate," appears on the control console as a colored square (roughly one-eighth screen width on a side) with cross hairs. A joystick moves the square horizontally and vertically. Near the top of the screen is a protected region closed to the stargate but not to the mutant aliens. Pressing the primary firing button destroys, in a flash, any mutant(s) within the gate. Pressing the secondary button shrinks the gate to about one-fourth normal size. This somewhat reduces your own punch, but it makes it easier to avoid the missiles periodically released by aliens or the smart bombs of the Pentapus. Pressing the same key reexpands the gate. (Otherwise, after a time the gate reexpands automatically.)

There are five stargates in your arsenal. Each time it takes a hit, one layer of the stargate square breaks away; when the last layer goes, the stargate is destroyed. Firing a stargate, of course, uses energy. A bar graph at the top of the screen indicates current energy level, along with number of remaining gates and score. If the energy reserve reaches zero, your gate disintegrates. Except at the lowest level of play, whenever you clear the screen of aliens the energy remaining becomes a bonus to your score.

Before you ever see the Pentapus, you must dispatch four waves of mutants which include twelve or thirteen aliens arranged in tight formation. If you hit them early, you can snuff several aliens at once. The formation soon breaks,

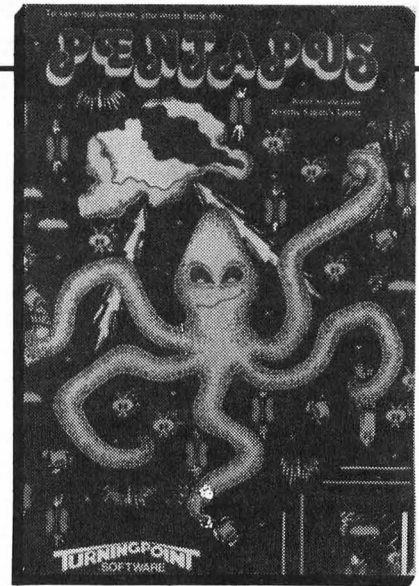
however, and the mutants begin to drift about, releasing missiles. A kill is worth from 50 points (for a Drangel) to 500 points (for a Naga). Throughout the fray there is the constant threat of a smart bomb. Unlike the typical missile, a smart bomb pursues its target. A single smart bomb hit finishes a stargate. Meanwhile, towards the top of the screen, you notice a gradually building charge cloud. If your stargate happens to stray beneath the cloud during a discharge, there is a good chance it will lose one or two layers.

At last, in the fifth wave, you encounter the Pentapus with its retinue of Whirrs (750 points each!). You cannot attack the Pentapus until you've knocked out the Whirrs, so they operate under cover of a steady stream of smart bombs emitted by the Pentapus. Though stationary for most of the engagement, the Pentapus takes evasive action once it realizes its Whirrs have been destroyed. To save the universe, you must defeat the Pentapus three times.

*Pentapus* features four levels of play (K,1,2,3). K, the lowest level, is for kids and runs the game in slow motion. Factors such as rate of missile firing and frequency of cloud discharges speed up at the higher levels. When a game is finished, your score may win you a place of honor. If among the top ten, the score, play level, and your initials become part of the arcade's "High Score" record.

*Pentapus* is an attractive, slickly presented game. Graphics and sound are up to current arcade standards. The Eagull's wings flap, the Whirrs rotate, and the stargates break apart convincingly. The Pentapus marches onto the screen at the start of the fifth wave. Various interesting sound effects smoothly integrate with game action.


No bugs were evident during play, although problems may arise when saving a high score. Here you use the joystick to select from the letters and commands running along the top of the screen. The "End" command (i.e., "end of entry, resume play") is at the end of the line. To reach this position the program requires your joystick to



output a resistance at the extreme end of the standard Apple range, beyond that obtainable with many controls which perform very well in other applications. You conceivably could finish a game with a fantastic score only to discover that you cannot save it.

Experienced arcade players may be disappointed by the absence of differentiation in several key areas. One mutant acts and moves much like another. Among the first four waves, one finds largely cosmetic variations (e.g. changed formations); play against the fourth wave hardly differs from play against the first. There is little here to sharpen the skills required for success in the precipitously more difficult fifth wave. In scoring, an alien at Level Three counts for no more than one at Level Two. Since admission to the "High Scores" list is purely on the basis of score, the meaning of your place on the list is ambiguous. (Is a score of 7000 at Level One really better than one of 5000 at Level Three?) Finally, though Level Three is indeed more challenging than Level One, the most important factor in play, speed of movement, remains unchanged.

The stargate weapon is a good idea, but its implementation in *Pentapus* leaves much to be desired. Movement control is very sluggish. The stargate responds as though attached to the paddle with a set of rubber bands.

*Pentapus* is an attractive, engaging game. At the lower levels, it is easy to play well. Children and arcade beginners might well find *Pentapus* an enjoyable, entertaining experience. 

**From Turning Point Software, 11A Main St., Watertown, MA 02172. System requirements: 48K Apple II with joystick. Suggested retail price: \$29.95.**

# Police Artist



## Reviewed by Jeff Hurlburt

*Police Artist* is a set of three hires graphics activities intended for children. Two of these are games where the emphasis is on short-term visual memory and matching skills. A third activity allows you to create funny faces using the same elements employed in the games.

The games are called *Police Lineup*, *Police Artist* and *Off Duty*. In *Lineup*, after one quick look at the culprit's face, you must make an identification from among several suspicious characters. A correct choice puts the criminal behind bars, adds reward money to your total, and lets you try another lineup. A miss ends the game and releases the bad guy.

As a *Police Artist*, you reconstruct the


criminal's face, selecting hair, eyes, nose, mouth and chin. You get any number of peeks at the villain for as long as you wish, but each look adds seconds to your score. The object is to use the least total time. *Off Duty* is a non-scored activity. You put together a face as in *Police Artist*, but without the worry about getting a match.

*Police Artist* activities can produce over 1,000,000 different faces. Colorful, often amusing, they are accompanied by short tunes during play. A well-written, illustrated, instruction manual is included with the disk. Technically, then, this is a nicely executed, attractive package.

Play-testing these games revealed a number of problems. First, the games are not readily playable by non-readers without adult assistance. Key prompts are in text and functions are not especially easy to remember. (Several keys are multi-function.) More importantly, no one seemed to find the ac-

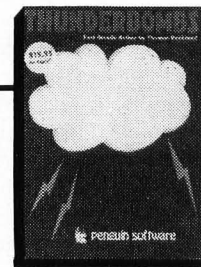
tivities intrinsically entertaining. Older children found them boring and our seven-year-old "subject" required frequent praise to continue an activity.

Indeed, it is hard to identify a suitable target audience for *Police Artist*. Young children don't know how to play the games. Older ones, apparently, don't want to play them. Budding artists will find the graphics too limited for real creative expression; and educational content (the last refuge of unfun material) is below that available from most arcade shoot-em-ups.

All of which, no doubt, makes *Police Artist* a prime candidate for "adult parlor game hit of the season." (Preppies take note.) As entertainment for children? Alas, it's back to the drawing board for *Police Artist*. 

**From Sir-Tech Software, Inc., 6 Main St., Ogdensburg, NY 13669. System requirements: 48K Apple II, DOS 3.3 and one disk drive. Suggested retail price: \$34.95.**

# Thunderbombs



## Reviewed by Jeff Hurlburt

You are sailing through peaceful space in your special issue cloudship when, from nowhere, a horde of death-spitting robo-drones swarms to the attack. Another "missing" earthling? An easy kill? Not on your life, for this time the alien menace faces an experienced pilot and the fury of *Thunderbombs*.

*Thunderbombs* consists of five arcade sequences, or levels, not necessarily arranged in order of difficulty. Though type, movement, mode of attack, and replacement rate of enemy drones varies from level to level, there are a number of common features. In each sequence your cloudship is limited to up-down movement along the center of the screen. Dodging enemy missiles, you can pour a devastating barrage of thunderbombs into the drones which approach five on each side. Your supply of thunderbombs

is inexhaustible but, aside from possible bonus ships, you are allowed only four cloudships. One hit, and a cloudship is spacedust.

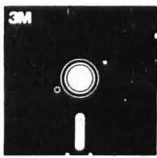
In three of the contests (Levels One, Two and Four), drones fire missiles as they slide up and down, gradually approaching from each side (at Level Four, the missiles are smartbombs). To win through to the next level you must knock out the current crop of attackers and also zap the supply ships which periodically drift along each screen edge. As long as a side has at least one supply ship, the drones on that side will be replenished.

The drones themselves are the missiles at Levels Three and Five. At Level Three, you begin at the screen center with crisscrossing drones zipping by, five above and five below at equally spaced intervals. To score, you must pop into one of the enemy corridors and blast the drone before it hits your cloudship. Each drone you destroy leaves more maneuvering room, since Level three ships are not replenished.

At Level Five, smartbomb drones in tight V formations leisurely approach from each side. You must knock out as many ships as possible from a position near the center and then make a run for the bottom before the remaining drones get to you. Though there are no supply ships, drones are continually replenished (even if you clear the screen). You can't exactly "win," but Level Five gives you a chance to rack up an impressive high score.

*Thunderbombs* features unrelenting action and exceptional response to keyboard controls. (Joystick control, an option, doesn't work nearly as well.) Figures move smoothly against a starry background and sound effects are above the norm. Even more impressive sound is available to *Mockingboard* users, since *Thunderbombs* incorporates routines which employ this peripheral to good advantage.

**By Thomas Becklund (Penguin Software, 830 4th Avenue, Geneva, IL 60134). System requirements: 48K Apple with one disk drive. Suggested retail price: \$19.95.**



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Though the game is reasonably bug free, a few notable weaknesses emerged in play. Success at Levels One, Two and Four depends upon elimination of supply ships. There are far too few opportunities to accomplish this. Ambiguous, even chaotic, resupply rules at Levels Two and Four effectively void any

chance for developing attack strategies for these sequences.

The major problem with this game is that a supply of four cloudships doesn't provide enough play. (It is not, after all, as though you're the bottleneck in a line of paying customers waiting their turns.) Many players will never reach Level Three, let alone Levels Four or Five. This is unfortunate, since the more in-

teresting and innovatively staged conflicts occur at the higher levels.

*Thunderbombs*, nevertheless, scores well as an entertaining sensory experience. (You can "feel it" when you pop a drone.) OK, so the odds against you are astronomical and the robo-drones are deadly. What did you expect when you signed up for your special issue cloudship — smurfs? 

## Crime Wave



### Reviewed by Jeff Hurlburt

Crime is running rampant in the Big City. Emboldened by the lure of invincibility represented by the awesome robot rammer, every no-gooder in town seems bent on plunder, desperate for the funds to obtain this latest innovation in criminal technology. Patrolling the streets in your police cruiser, you are the

shield between a peace-loving community and the *Crime Wave*.

In *Crime Wave*, your objective is to safeguard the banks, capture robbers, earn promotions, and ultimately place among the ten High Scores.

Most of *Crime Wave's* action takes place on a colorful, full-screen map of the city. Here you find wide streets (many are one-way), police headquarters, criminal hideouts, and the banks. Though play starts innocently enough, your cruiser is soon involved in one hair-raising chase after another.



**From Penguin Software, 830 4th Avenue, Geneva, IL 60134. System requirements: 48K Apple II with one disk drive. Suggested retail price: \$19.95.**

Each capture, especially when you can prevent a robbery on the scene, (the screen switches to show an animated bank robbery sequence) counts toward promotion. On promotion, you earn an extra police cruiser, get credit for unrobbed banks, and advance to the next level of play. The higher the level,




the more crowded the streets, and the higher the frequency of robberies.

Law enforcement in the Big City is a hazardous business. When a robber escapes with his loot to a hideout, he returns in a robot rammer and chases you! Any collision with either a rammer or a bystander's car usually finishes a cruiser. A "shield" can provide limited protection against collision, and you can carry one anti-rammer bomb. To replenish your arsenal, you must chase down the speedy police supply wagon.

*Crime Wave* is a very busy, fast moving game. At the higher levels the screen looks more like automotive pinball than

a chase; both your coordination and your concentration get a thorough workout. Fortunately, movement control, whether keyboard or joystick, (assuming your stick is in good shape) is responsive and natural.

Once you've mastered the steering, you'll find that *Crime Wave* offers some interesting tactical options. (Should you play to knock out rammers or to evade them in favor of capture opportunities? Do you pursue the supply wagon or wait for an easy contact?) Since increase in game difficulty with each promotion is never precipitous, there's plenty of time to refine your technique.

Though *Crime Wave* is more complex than the typical arcade game, practically everything works the way it should. The map is attractive, nicely detailed, and drawn to just the right scale. Figure movement is lively yet smooth, with effective use of sound. (Incidentally, the game includes optional *Mockingboard* routines, but only for announcing change in levels.) In fact, this is an exceptionally well-crafted gaming experience. Fun to play for arcade expert and novice alike, it will soon rank as one of your favorites. 

## Laser Bounce



Reviewed by Cary W. Bradley

First impressions can be misleading, especially with arcade games. When I first booted *Laser Bounce* I was ready to give up on it, but after playing for a while I came to regard it as one of the few truly original games on the market. And, I was having fun with it.

*Laser Bounce* strikes a good balance between simplicity of action and complexity of strategy. It is a two-player game, which removes the predictability of many human versus computer games. You can play against the computer, but it doesn't take long to beat the machine because its strategy is so simple. Still, the single-player mode is a good way to learn the game.

The scenario is simple. At the bottom of the screen are two "cities" represented by five markers (energy modules) each. A large hump (a wall) separates them, eliminating line-of-sight contact between the two sides. The two cities are at war, and because of the wall, their only means of bombarding each other is to bounce laser beams off satellites flying overhead.

Each city has its own satellites. The ones belonging to the city on the left move across the very top of the screen from left to right, and the other city's move in the other direction just below. You fire laser beams by pressing the

game paddle button. Aiming is facilitated by a set of crosshairs, which you must place just ahead of the moving satellite so that the laser beam and the satellite reach the same place at the same time. If you hit the satellite at just the right spot, your beam bounces down and zaps one of your opponent's energy modules.


First complicating factor: There are two different kinds of satellites, but they are easily distinguished by their shapes. One kind bounces your beams straight down from the point at which you hit it. The other reflects the beams at an angle opposite the one at which it was hit. You must react quickly to the type of satellite that appears, and adjust your aim accordingly.

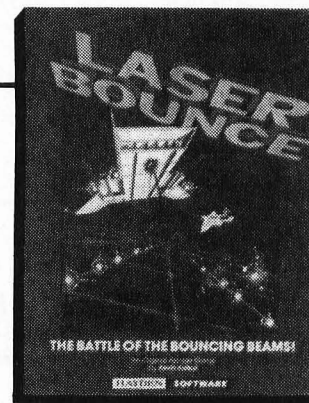
This also makes it more difficult to know exactly when your opponent is going to fire a beam, which is important because of the second and most interesting complication. Each player can invoke a shield by moving his crosshairs all the way to his side of the screen and pressing the paddle button. The shield stays in place for a second or two, and any enemy beam that hits it will bounce off and turn on the side that fired it. If your opponent outsmarts you, he can destroy you with your own shots!

You can only bring up your shield three times without firing a shot, so a purely defensive strategy doesn't work. To keep you honest, the fourth time you try to raise the shield one of your own modules gets zapped. Since the shield doesn't work while an enemy beam is in the air, you must anticipate your oppo-

nent's shots and fire your own before he can raise his shield. With two good players, the game takes a while to complete, and things get quite tense.

There are three levels of difficulty, with the major difference being the number of rounds in a game. They range from a single round at Level One to five rounds at Level Three. As the rounds progress, the number of angular satellites (more difficult to aim) increases. Point values for zapping enemy modules, and the bonuses for winning rounds, get larger.

If you're tired of seeing game after game with only shades of difference between them, get *Laser Bounce*. I know of nothing quite like it. We need more good two-player games like this one — why must arcade games isolate players from the rest of humanity? *Laser Bounce* is an excellent game for the family. It will cut down on arguments over who's going to play, and it provides good, healthy doses of competition and strategy. Though the implication of war between two cities might bother some parents, the game is abstract and, in my opinion, no more violent than chess. *Laser Bounce* would be a great way to fill that empty slot in your Christmas list. 



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# Shuttle Intercept



Reviewed by Cary W. Bradley

*Shuttle Intercept* is based on a scenario found in countless arcade-type games: You are the pilot of a shuttle craft flying from left to right on the screen. Your ship doesn't actually move that way, but the background and objects fly at you from right to left, giving the illusion of flight. With your joystick or game paddle, you control your craft's up-and-down movement.

Your objective is simply stated in the manual: "to retrieve friendly satellites bearing vital data." Your ship comes equipped with a "space hook" designed for that purpose. To retrieve a satellite, you position your ship so the space hook can catch the satellite as it flies past.

The satellites you're looking for aren't the only things you'll encounter, so you need protection. Your defenses are your dodging ability and a laser cannon which fires from the nose of your shuttle craft. Your paddle or joystick button operates both the laser cannon and the space hook. The first shot you fire opens the bay doors, and the second one extends the hook, enabling recovery of the satellites.

Five different types of objects confront you. The satellites come in alternating red and green, and as one goes past you either get it or you don't. Enemy craft (flying saucers) cause your space hook to retract if you run into them, but cause no other damage to your craft. You can destroy them with your laser cannon, and if one does hit you, the next two shots you fire bring back your space hook. The enemy also has satellites similar to yours, but distinguishable by their antennae. You can destroy them with your cannon, but if you hit one it counts against you. You'll find meteors which can destroy your ship but are invulnerable to your laser cannon. Missiles also track you, unfazed by your weapon.

All of the objects except the missiles move in a straight line across the screen. The missiles mimic your movements,

**By John Van Ryzin, (Hayden Software Company, 600 Suffolk St., Lowell, MA 01854.) System requirements: Apple II, 48K with Applesoft, DOS 3.2 or 3.3, joystick or game paddle. Suggested retail price: \$34.95.**



with a very short delay, so you have to keep moving to stay out of their way.

At the beginning of the game your shuttle craft has a "proton shield," which, since it is invisible, is just another way of saying that you get one free collision with an enemy satellite, missile or meteor before they start counting as "direct hits."

There are four "Quantum Levels" of play, with a "Hyperspace Transition" between each of the first three. You face increasing hazards as you advance through the levels. The first level has only meteors and flying saucers (aside from friendly satellites). In the second, they are joined by enemy satellites. Everything the game has to offer comes at you in the third and fourth levels.

In hyperspace, you cannot fire your laser cannon; you can only dodge the objects coming at you. In Hyperspace One, you face high-speed meteors. Hyperspace Two features high-speed meteors followed by high-speed missiles. In the third level, you confront the meteors and missiles at the same time.

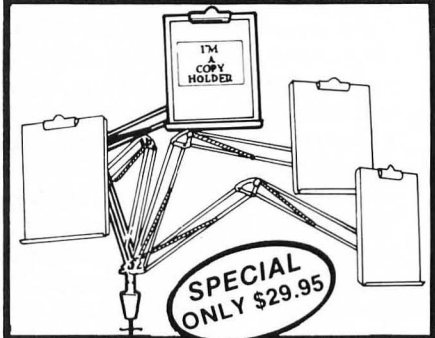
If you progress through all four Quantum Levels without taking a direct hit, you start over at level one, but with missiles added to the cast of characters you faced the first time around. Rotation through the four levels (and Hyperspace Transitions) continues as long as you can keep it up. The number of points you receive for picking up satellites or destroying enemy ships increases after you reach 5000 points.

*Shuttle Intercept* breaks no new ground in the world of arcade-type games. Its design has been seen in numerous variations, although you might consider its popularity a testimony to the entertainment value of this type of game. The graphics are adequate and clean, but again, nothing to separate it from the crowd. It would be a good game for youngsters or newcomers to the world of video games.

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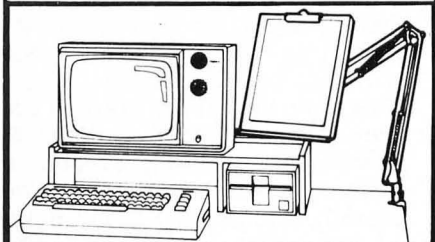
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# Kamikaze

Reviewed by Cary W. Bradley

Old arcade games never die, they just come back with new characters and new plot twists. *Kamikaze's* roots go all the way back to *Space Invaders*. Whether it's in outer space or in the ocean, as this game is, the basic idea is this: You control a vehicle that moves right and left at the bottom of the screen. The enemy, in whatever incarnations are appropriate, moves across the screen above you. You shoot things up at them and they shoot things down at you. So it goes until you catch one too many — you never win, you just see how long you can go before you lose.

If you've been around these games for awhile, that description might scare you, but since so many arcade classics have sprung from that simple formula, you may find *Kamikaze* worth a look.

The setting is somewhere in the ocean. You control a ship which moves forwards and backwards across the water. Overhead are enemy planes, which appear two at a time, one coming from the left and the other from the right. Each plane drops a bomb or two every time it flies over you. If you're under one when it lands, you lose one of your five ships.

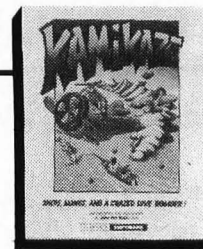
**By John Van Ryzin, (Hayden Software Company, 600 Suffolk St., Lowell, MA 01854.) System requirements: Apple II, 48K with Applesoft, DOS 3.2 or 3.3, joystick or game paddle. Suggested retail price: \$34.95.**

Your defense is a supply of anti-aircraft ammunition, which you can fire one at a time for as long as you stay alive. You win points for each plane you down, with the one flying at the higher altitude worth more than the lower one. Point values increase after you've reached 5000, and you get a bonus ship for every 1000 you score.

When your score reaches 500, more interesting things begin to happen. (Did everything start to move faster, or am I just paranoid?) A floating mine appears in the water, so now you've got to watch the top of the screen and the bottom at the same time. The mine drifts from right to left, bobbing up toward the horizon where it can destroy you if you run into it; then back down. This effectively cuts down your maneuverable space. I found that if I stayed on the left half of the screen until the mine had floated to the middle, I sometimes could sneak past it when it moved away from the horizon and continue to play on the right side.

Finally, the *Kamikaze* himself appears. He begins as a mere dot, far up in the sky, growing larger as he nears. Pointing his plane's nose downward, he makes a suicidal dive at your ship. You must either move out of his way or shoot him down before he hits you, or it costs you a ship.


In the midst of all this, the bombs from the planes overhead never let up. Enough things are happening all at once



to keep you furiously busy, and it will eventually overwhelm you, as is always your fate in such games.

*Kamikaze's* graphics are not bad; but, relative to the state of the art for Apple games, I'd call them average. I'm not crazy about the game's sound. The "explosions" sound like... well, there's no way to describe them without saying something disgusting, so you'll just have to hear them for yourself.

A particularly maddening feature of *Kamikaze* is that you can get trapped in a situation where you can do nothing but get hit by bomb after bomb. When you lose a ship, your next one always appears at the left side of the screen and moves across to the position of your joystick or paddle. Sometimes, the enemy bombers are timed so that a bomb drops on your ship as soon as it appears, destroying it before you have time to move. This can wipe you out in short order. Some players may consider this unfair, while others will just see it as a routine hazard. The solution is simple — get so good at the game that you never lose a ship!

*Kamikaze* is challenging, and designed to include features proven to be good sellers in the past. Though not tremendously original, it is playable and entertaining. *Kamikaze* would make a nice addition to a family game library. 

# Axis Assassin

Reviewed by Cary W. Bradley

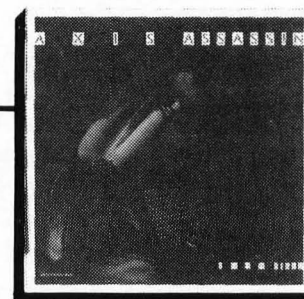
*Axis Assassin* is billed as a "serious game for experts," and I'd have to agree. I can picture hardcore arcaders playing it for hours on end. The game is a largely abstract shoot-em-up, with 100 levels of play offering lots of opportunity for advancement. It's the epitome of

**By John Field (Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403). System requirements: 48K Apple II, II+ or IIe with joystick. Suggested retail price: \$35.**

the arcade addict's stock in trade: doing the same thing over and over, at steadily increasing degrees of difficulty.

You are the pilot of the *Axis Assassin*, a sleek, triangular craft of unknown (and unimportant) origin. Your enemies are the subjects of the Master Arachnid: Hunters, Spinners, Drones, Spores, Mutant Guards and Xterminators (sic). Never mind where they're from or what their purpose is. Just go out there and kill or be killed.

The main mode of play is called the



"Web Sweep," in which you are placed in one of twenty three-dimensional grids. A grid consists of channels, in which your ship can move up and down (in 3-D, "into" and "out of" the screen). Before your ship is placed, out come the drones, who weave web strands across the channels. When you arrive on the scene, you can move up



and down the channels, as well as side to side, unless you are blocked by a web strand in the adjacent channel. The *Axis Assassin* is highly responsive to your joystick, and you can really get around if you're not blocked in.

Of course, you've got your weapons. Joystick button 0 is for firing your unlimited supply of projectiles. Button 1 is for "pulse bombs," of which you receive one per Web Sweep.

You can fire your way through the webs, which are rewoven faster than you can destroy them, and you can kill the fighters swarming all over the place. There are different point values for the various beings, and they all have different jobs, but you'll find yourself blasting everything in sight as fast as you can push the button. Perhaps the most interesting characters are the Spores, which, if allowed to migrate to the bottom of the grid, multiply into two Mutant Guards each. Naturally, if you let any of the baddies catch up with you,

you can kiss your Assassin goodbye.

Your one pulse bomb will destroy all the fighters on the screen when you set it off, but be careful how you use it. It's also your key to getting more ships, and it won't get you there if you use it for killing during the Web Sweep.


After you've been shooting things for a while (assuming you're still alive yourself), the Master Arachnid appears at the top of the screen. If you turn toward him and blast your way through the webs to reach him, you move on to the next grid. However, if you release your pulse bomb just as you reach the Master Arachnid, you move to the second play mode, where you can get your extra ships. This happens during an interlude not unlike the Enterprise reaching warp speed.

In mode 2, "The Nest," movement is different. You are in open space, looking down at your Assassin. You can turn and accelerate, but you don't have brakes, which can be rather maddening.

In the middle of the screen is the good old Master Arachnid, enclosed in a box with your extra ship. Joining you outside the nest are all of the fighters you didn't manage to kill in the previous grid.

You get the ship by blasting a hole in the nest, flying in and linking up with it. Of course, the fighters are all after you, and the Master Arachnid is very grumpy about the whole affair. If you shoot him, he releases another fighter; and, if you fly into him, he wipes out the screen and you lose your chance.

You can progress through 20 grids in each of five levels, or Zones, each of which is designated by its own color. This gives you a total of 100 different battles, not counting the encounters at The Nest.

John Field has done an extremely nice job on this fast-paced, purely escapist game. Arcade aficionados will love it. For those who crave action and like lots of shooting without frills or cuteness, *Axis Assassin* is a must. 

## Hard Hat Mack



Reviewed by Cary W. Bradley

I like this game! *Hard Hat Mack* is an action-packed, challenging and addictive member of the *Donkey Kong* genre. It features an amusing scenario, complex activity and very nice graphics. I had to tear myself away from it to write this review.

The hero of our story is Mack, a hard-working construction man, who wants only to do his job. In Level One, we find Mack confronted by a five-story building with a missing girder on each story. His task is to pick up girders, put them in place, and secure them with his rivet gun.

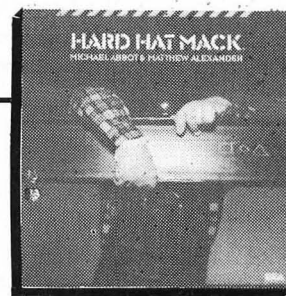
He can run right or left along each story of the building, and he can jump over the holes where the missing girders belong. At the lower right side of the screen is a springboard, which he can use by jumping off that side of the building. When he lands on the springboard, it shoots him up to the next higher story, except when he's on the top floor, in

which case it puts him back on the first floor.

At the left side of the building is an elevator, which can carry Mack back and forth between the first and the fourth floors. On the top floor is a bell, which Mack can ring if he jumps at it. This moves the elevator up or down, depending on where it is. He can also climb up or down chains from one floor to the next.

To place a girder, Mack must run over one of the loose girders sitting around and carry it to a hole. Then he has to track down a wandering riveting gun and carry it back over the girder to secure it.

Sounds simple enough, but alas, poor Mack has to face all manner of obstacles. First, there are the human enemies, the Vandal and OSHA. Only one of these is on the screen at a time. They behave the same way — so the fact that there are only two serves to add variety to the game. If either of them catches up with Mack, he loses one of his three lives. There's also some goof-ball up in the right corner of the screen who keeps throwing hot rivets out of a bucket. They bounce their way down the floors and are difficult to avoid. Getting



bopped on the head by one of these is also fatal.

Finally, there is the problem of falling through a hole (where the girders go) or off the end of a floor. Mack gets a quick lesson in the law of gravity and splatters on the floor or ground below.

If Mack succeeds in getting all five girders placed and riveted, he gets to move on to Level Two, where life is even tougher. He must ride a moving girder up and down to jump from one girder to another and collect toolboxes that have been left carelessly lying around. Not only are the dangers of falling and running into the Vandal or OSHA still there, but a lot of machinery is running, which Mack must deftly avoid to keep from becoming a mere shadow of his former self. If, by some miracle, he is able to collect all of the boxes and get himself lifted to the top by an electromagnet, he is rewarded by being bumped to Level Three, where it gets tougher still.

Here, Mack must collect steel blocks,



By Michael Abbot and Matthew Alexander (Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403). System requirements: 48K Apple II, II+ or IIe. Joystick optional. Suggested retail price: \$35.


## Hard Hat Mack, continued

take them down to the bottom levels, and drop them through holes into the rivet machine. (Don't ask why, just do it.) Here, two springboards and a set of revolving platforms help him get around, but an ill-timed jump can easily land him with a splash in the port-potty. Or, he can fall into the rivet machine or get caught by the Vandal or OSHA. If Mack finishes Level Three,

the instructions say there are Levels Four, Five and Six, but I wouldn't know — I never got that far.

I did use the option of beginning at a specific level which allows you to practice on the more difficult screens. It wouldn't give me anything higher than Level Three, however, and I humbly admit I couldn't get beyond there legally.

You can play *Hard Hat Mack* with joystick or keyboard, with user-

definable key commands. It has the essential pause and sound on/sound off features. The graphics are very well done, and are amusing even in your most frustrating moments. There is so much action, it's next to impossible to keep track of it all. If your game collection lacks a game of this type, *Hard Hat Mack* could be your ticket to hours and hours of fun. I recommend it highly. 

## Spectre

### Reviewed by Jeff Hurlburt

You are isolated on a disabled space platform when sensors register the arrival of most unwelcome visitors: questers, the most vicious, aggressive life form in the galaxy. Suddenly a routine repair assignment becomes a race, not

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only to save the base, but for life itself.

The game is *Spectre*. Your objective is to seal off the ports in each level of the space station, destroying as many questers as possible in the process.

*Spectre* supplies both 3-D and top views (via split screen) of the current level. The latter view shows your location in an eight by seven labyrinth, including open ports, teleportation chambers, energizers and questers. Since operation of remote sensors is intermittent, you have only a few seconds at the start of movement in a level before the top view screen ceases to display the maze pattern. (The pattern is still indicated by any unclosed ports and unused energizers.) Display of questers is erratic, too, and you soon find yourself depending on the 3-D display (which always shows what you can see from your current position) and the characteristic quester approach sounds to locate the aliens.

Moving over a port closes it and it vanishes. Once you've closed all the ports, you can move to the next level by entering a teleportation chamber. If all the ports haven't been closed, entering a teleportation chamber transports you back to the starting location of the current level. You can use these chambers to gain some distance on pursuing questers. If a quester catches you without a protective charge, you're a goner. You have three lives per game.

The only way to knock out a quester is to move onto an energizer and use the acquired charge against him. Energizers are good for only one charge-up apiece and the charge lasts only about fifteen seconds, so it's important to energize only when you're fairly certain of running into a quester. You get a few points for each port closure and a few more for an energizer charge; however, zapping




questers is the major source of game points.

*Spectre* boasts unlimited levels and a variety of maze configurations. The higher the level, the more questers confront you, but there are also more teleportation chambers and energizers. Incidentally, the game program only retains the single highest score, so don't expect to carve out any ego points on anything less.

*Spectre* has a number of attractive features. Game action is fast but not frantic, so there's time to consider your moves and plot a strategy for a given maze. Split-screen maze views are crisp and colorful. The 3-D maze and quester figures combined with approaching-quester sound effects, in particular, quickly place you at the scene, very nearly in real time.

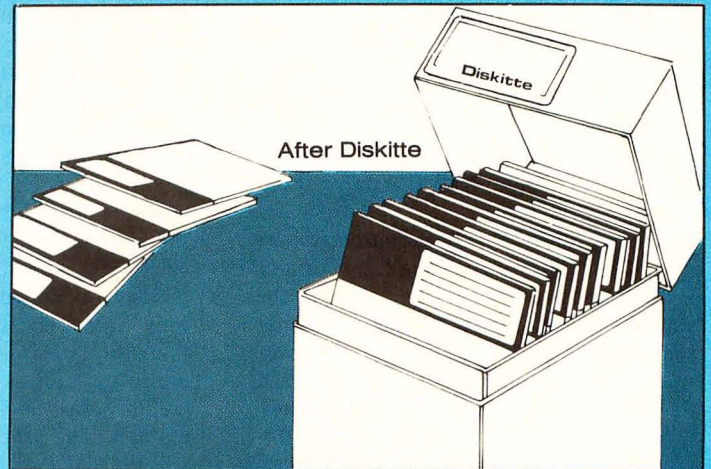
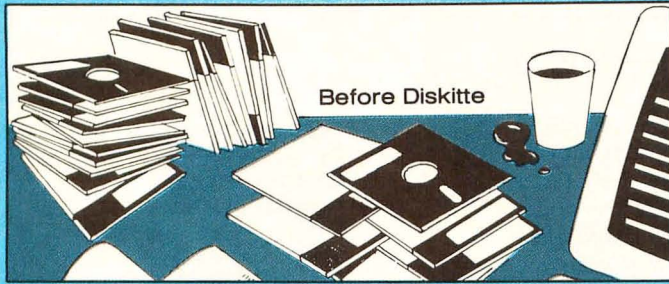
The unlimited levels feature makes for unlimited action, but has the disadvantage of leaving the player with no obtainable goal within the scenario context. The best you can hope for is a new high score. If you want to get out of *Spectre* alive, press RESET.

Keyboard movement control is good and tight, but joysticks proved sluggish and erratic. If your left-right (clockwise-counterclockwise) orientation is on the weak side, however, the controls can drive you right up the wall. With a little practice, however, there's no problem.

*Spectre* blends several game elements well. For the arcade player who appreciates challenging action and an opportunity to develop and test strategies, *Spectre* will supply many exciting encounters. 

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# Space Strike

Reviewed by Robert C. Gray

Aliens are marching five rows deep through space toward you and your three meager fortresses. Alien saucers blitz by, randomly shooting their lasers at you. You have to dodge these creatures and lasers and destroy them before they reach your fortress line and capture you. Sound like an unusual environment? Not really. You've been there before.

*Space Strike* is really a *Space Invaders* look-alike. It brings all the fast action of this arcade and home video game to the IBM PC, with some enhancements that make this the best version you've ever


**By Michael Abrash (Datamost, Inc., 9748 Cozycroft Avenue, Chatsworth, CA 91311). System requirements: IBM PC with 64K memory and color graphics adapter. Suggested retail price: \$29.95.**

played. Like *Space Invaders*, you have a matrix of twenty-five monsters moving back and forth and progressively faster as they near your fortresses. You dodge behind your fortresses to avoid their missiles and blast them away when you can. You have two lives to any one attack. If you are blown up twice, the game is over.

*Space Strike* has features not found in the regular *Space Invaders* game. With each 1000 points, you gain a new life, giving you added incentive. There are only seven levels of difficulty, fewer than the Atari game. Yet the graphics are so superior — the seventh level is incredibly fast — you'll find seven is enough. The graphics are also superior visually. It's particularly exciting to destroy the alien saucers (there are three varieties), because they smash into a million tiny pieces and disperse in slow



motion over the playing field. Of course, the same thing happens to you when you're destroyed.

*Space Strike* is destined to be a favorite, not only among veteran *Space Invaders* buffs, but with all PC owners. It resembles the arcade version in performance. It even logs your current high score for each level of play. It's a video space challenge for all ages, and a must for your game library. 

# Big Top

Reviewed by Kenneth Nichols

Like any good business user, I got the IBM monochrome with my PC, figuring that color could wait until I became rich. In order to write this review, I had to visit a friend who has color/graphics. Alas, *Big Top* may force me to break down and purchase a color monitor before I make my first million. This is, in my opinion, one of the best half-dozen games available for the PC.

At first glance, *Big Top* looks like a complicated *Donkey Kong*. It is, like *Donkey Kong*, basically a ladder-climbing and obstacle-dodging game. Unlike *Donkey Kong*, however, there are an infinite number of ways to the top; part of the strategy may include backtracking.

You begin the game with three acrobats (small human figures) who

**By Michael Abrash (Funtastic, Inc., 5-12 Wilde Ave., Drexel Hill, PA 19206). System requirements: IBM PC with 64K memory, one disk drive and graphics adapter. Suggested retail price: \$39.95.**

must make their way past various obstacles in their climb to the top of the screen. You must collect all of the hats in the ring before you can advance to the next ring. Some of the hats are suspended by pulleys and weights, and you have to remove the weights and let them fall. The circus is three-ring; when you make it to the top of either Ring One or Ring Two, the next ring comes down like a curtain, revealing a new set of ladders, platforms and obstacles, among other things.

The obstacles include clowns, a knife-thrower, beach balls and gravity itself. If your acrobat falls more than a short distance, you lose him. You are awarded extra acrobats (the game instructions speak of one acrobat with several "lives") if you achieve enough bonus points, but you lose an acrobat if you run out of bonus points. Any time you lose an acrobat, you return to the beginning of the ring. Two status columns at the right show which ring you're in, bonus points and extra acrobats.

To avoid the obstacles, the acrobats




can walk, duck, jump, slide down poles, swing on trapezes, and even vault from a seesaw. You can combine moves, i.e., you can jump from a standing position, but ducking before you jump allows you to jump higher. There are tightropes which connect some of the closer platforms; you can walk across them once, but then they disappear. (You can still jump across.)

*Big Top's* graphics are excellent. The acrobat is so detailed that he looks like a small cartoon character as he makes his moves. When he suffers a fatal fall, he sits up while stars circle his head. The

obstacles are more stylized and less interesting in their representation, although the cutlery the knife thrower hurls at you is realistic. Trapezes swing from the top of the rings. Ring Three has several tubs of water into which the acrobat can dive. Besides gathering hats, the acrobat can grab floating balloons (a tricky maneuver) for extra points.

Enjoyment of the game is enhanced by many user options. Nine skill levels are available, with Level One easy enough for anyone, and Level Nine only for the most intrepid joystick-slinger. The game records the highest score for each skill level. You can turn off the sound effects, if desired. The game also has demonstration programs similar to those arcade games run when no one is

playing, which suggest different strategies for winning. The ESC key pauses the game, which is a nice convenience. There are two color sets, or palettes, available. You can reset the keyboard and specify your own move, duck, and jump keys. The game responds unusually well to both joystick and keyboard input. It's just as much fun with the keyboard as with the joystick, a real advantage if you don't have the latter.

*Big Top* is challenging and potentially very complicated, with satisfying graphics and colors and flexibility of operation. It will make you laugh and surprise you as you explore its capabilities. 

## Galaxy Master

Reviewed by Robert C. Gray

The meeting you prepared for was cancelled. You get two irate phone calls from customers. Your boss dumps the whole sales meeting in your lap. Isn't there any way to win at the office? Try *Galaxy Master*.


*Galaxy Master* is a simple space war game designed for lunch time action. You just boot the disk and read the inscription, "So you dare to enter battle with the Galaxy Master?" You answer yes, of course, and are asked if you know the rules. If you don't, they are revealed on a single screen. Apparently, it's just you (a white game piece) and Galaxy Master (a red game piece) moving through a field of meteors and space garbage. You've got two minutes to blast Galaxy Master. Your weapons include lasers and photons. You get points for removing meteors and cleaning up space garbage, but the real mission is to destroy the Galaxy Master before your time is up.

*Galaxy Master* moves at a deliberate pace from left to right across the screen. He shoots his laser continually in a downward vertical direction. The trick is to get close enough to destroy him, without causing your own destruction.

From Info-Pros, 2102 Business Center Dr., Irvine, CA 92715. System requirements: IBM PC with 64K of memory, color or monochrome display, advanced BASIC and 80 character screen width. Suggested retail price: \$14.95.



Your best strategy is to lie in wait for him and use your long range photon. Timing is critical. Shoot the photon too soon, and it will whiz by Galaxy Master before he arrives. Wait too long and he'll evade its deadly blast. You've got to be accurate. You only have two minutes to kill him, and you've got to avoid the flying meteors and garbage. One hit by either and you're destroyed instantly.

Sound like a simple diversion from the tension headache day you've been having? Don't kid yourself. *Galaxy Master* can be a major challenge. The minutes tick away, you've missed him five times, you get zapped by a meteor, and you're told you're a weak opponent. It only strengthens your resolve to destroy Galaxy Master. So you lie in wait, calculate your move, release the photon and zap. Lunch is over. Back to work. Will your boss recognize that you just saved the galaxy? Do you care? *Galaxy Master* is good office entertainment for hardworking adults or for children of all ages. 



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# MasterMiner

Reviewed by Kenneth Nichols

It's 2184 and an interstellar Gem Rush is on! In *MasterMiner*, you must move your ship through an asteroid field, pick up gems which appear at various places, and take them back to your base in the lower left corner of the screen. Your mission is complicated by the steady stream of ships which emanate from a base at the top center of the screen. These ships can fire torpedoes at you, and can steal the gems and make new ships out of them. The enemy ships (claim jumpers) can approach from all sides, so you must be able to fire your torpedoes in several directions in rapid succession, a la Clint Eastwood. As with most such games, torpedoes can also intercept enemy torpedoes. Torpedoes are replenished at a regular rate, but you may run out if you fire them indiscriminantly.

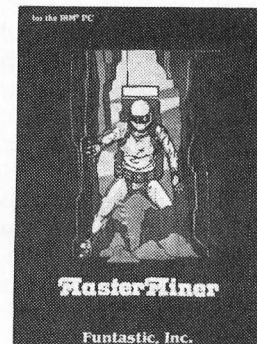
Your haven from the storm of enemy torpedoes is your base, where you can

**By Dan Illowsky (Funtastic, Inc., 5-12 Wilde Ave. Drexel Hill, PA 19206). System requirements: IBM PC with 64K memory, one disk drive and graphics adapter. Suggested retail price: \$39.95.**

return at any time for a breather. As you retrieve gems new ones appear, as do new enemy ships. You start the game with three ships, but you can win extras. A status line documents your current score, the record score, and your reserve ships. If you are destroyed while carrying a gem, the gem remains at that spot, giving you another chance to pick it up. The asteroids, unlike real asteroids, don't move, and don't add much to the game.


The game's graphics are good, especially in color. The rectangular gems sparkle nicely in several different hues. The enemy ships come in a number of shapes, which tumble and blink. The asteroids are well depicted, but they do little except define the range of possible movement. The sound effects are good, but not novel or imaginative.

The game features several user conveniences. You can record player names and highest score for up to five players. You can switch off the sound effects for silent play. The ESC key temporarily halts the game, allowing you to pause should the boss come snooping around. Reflecting the trend toward macros in application programs, you can set your



own movement and fire keys on the keyboard.

Unlike many popular games for the PC, *MasterMiner* responds quickly and accurately to either keyboard or joystick inputs. Best of all, perhaps, one or two people can play the game. In two-player mode, a second starbase appears at bottom right, and the players fire at each other as well as at the claim jumpers. The two players play from keys located at opposite ends of the keyboard.

In summary, *MasterMiner* is an enjoyable game, better than a number of current arcade games for speed, challenge, graphics and responsiveness of controls. 

# Home Computer Major League Baseball

Reviewed by Jordan Gold

If you are a fan of sports board games, love statistics, but don't like having to total them up, then *Home Computer Major League Baseball* is for you. On the other hand, if you could care less about statistics, but love baseball, you may enjoy it, also.

*Home Computer Major League Baseball* is as accurate a reproduction of the real thing as a computer simulation can be. The program is eerily realistic —

**By Bob Gardner (North Shore Software, P.O. Box 89, Manhasset, NY 11030). System requirements: IBM PC with at least 64K RAM, one 320K disk drive, or two 160K drives. Suggested retail price: \$34.95.**

players seem to be affected mentally as a game goes on. Pitchers tire, hitters go on hot streaks, teams go into collective slumps, and so on. The game offers a surprising level of sophistication for its \$34.95 price; it would be a good buy at \$50.

*Home Computer Major League Baseball* includes all the teams of the previous season, plus an old-timer's league, which features sixteen great teams, including the 1927 Yankees, 1954 Indians, 1975 Reds, and 1975 Red Sox. There is also room to create ten teams in an open league.

The author has made the game as user-friendly as possible. All operations of the game are prompted, and it is

almost impossible to make a mistake that causes the game to crash. Four types of games are available — user plays for both sides, computer plays user, computer plays for both sides, and automatic game. There are also options to make trades and print statistics, rosters, league leaders and standings. The league leaders option is especially nice. It allows you to print out your own "Top Ten" based on the results of your games.

Before you begin a game, you choose the lineups for the selected teams. The game lets you pick the pitcher, and then gives you the option of using that year's most common lineup (called automatic lineup), or choosing your own. At lineup

time, a pitcher is identified as either right- or left-handed, and his wins, losses and earned run average for that year are displayed. His performance in the computer league, however, is not. Hitters are identified as right- or left-handed batters, showing batting average, home runs and runs batted in. Additionally, the screen displays the player's fielding rating at a particular position(s), with "A" for excellent and "E" for horrendous.

Batters are rated for walks, hits, doubles, triples, home runs, base stealing ability and strikeouts. Pitchers are rated for walks, hits, endurance, strikeouts, fielding and hitting. Additionally, percentages of righty versus lefty pitcher/batter relationships are taken into account, as are home/visiting team averages.

Play itself is relatively uneventful. A baseball diamond, the batter, pitcher and next three hitters (and whether they bat left or right-handed) is displayed, in color, if available, as are men on base, the score, outs and inning. You press the space bar to complete a batter's turn at the plate, and the results of his time-at-bat flash on the screen. A double-tone sounds each time a run scores.

The game offers general, offensive and defensive options during play.


General options include help (which explains what the other options mean), examining the lineups, and turning the music on or off at any point. The music option includes U.S. and Canadian national anthems, plus "Take Me Out to the Ballgame" and various other tunes. Offensive options include bunting, stealing, pinch hitting, pinch running, and calling for a hit and run. Defensive options include making a defensive change — either the pitcher, a fielder, or exchanging the positions of fielders; guarding the lines to reduce the risk of an extra-base hit; pulling in the infield in a scoring situation; pitching around a hitter, which greatly reduces the chances of a base hit and increases the chances of a walk; and calling for an intentional walk.

When a game is over, a box score is printed and league statistics are updated if desired. The box score looks like the more detailed ones in a scorecard; it includes column totals of all offensive and defensive categories. The program makes a valiant attempt at calculating earned runs, but since it's difficult to explain what an earned run is, it's understandable that the earned run calculation is not accurate. As a result, pitchers' earned run averages tend to be a little higher than normal. One surpris-

ing feature is the program's ability to determine the winning pitcher in a game where the starter didn't pitch the full five innings, but his team stayed in the lead all game. This is usually a judgement call for the official scorer.

In *Home Computer Major League Baseball*, players perform as expected; stars in real life tend to be stars on the computer, and poor performers tend to do just as badly in binary. Teams play about as expected also; the Mets are in last place, the Expos in first.

There are few problems with program operation. One problem that does exist, however, happens if you use a green monitor with the color graphics card. In this case, you must turn the contrast way up to read some of the letters. While annoying, this doesn't eliminate use of the program in this configuration.

*Home Computer Major League Baseball* is a welcome addition to a rather barren PC library of database games, which is somewhat surprising considering the type of places PCs are found and the memory capacity and capabilities of the machine itself. It is the only sports game of its type for the PC, but not the last, I hope. Football, anyone? 

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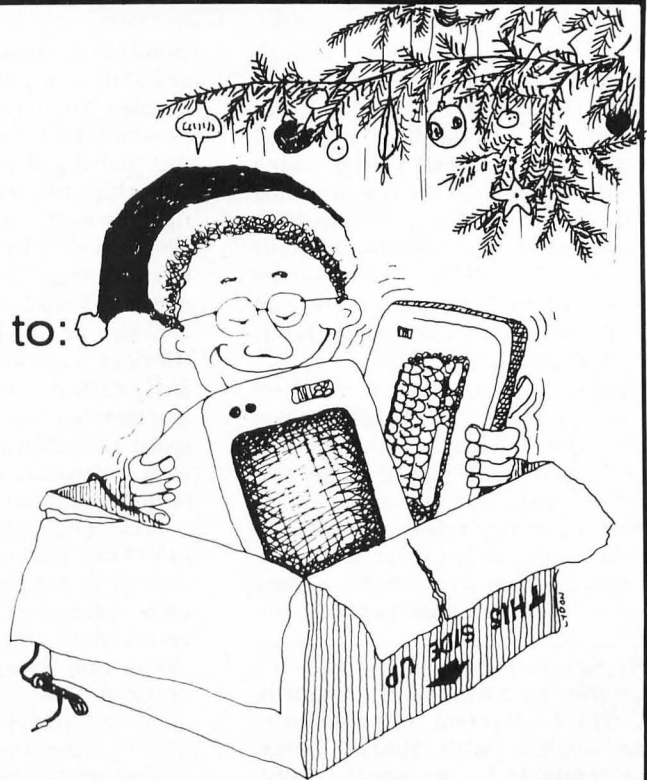
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# The Second Atari Christmas

by David Plotkin

This has been an interesting year for Atari game software. Many new and innovative games have appeared, so Atari owners no longer need to purchase mediocre software just to have a new game to play. The companies which published these inferior products have disappeared, and good riddance. The sad fact is, though, that there is still quite a bit of standard software lingering on the shelves, so a few words of advice from someone who has seen almost everything that has come out for the Atari home computers:

- Don't buy software based on advertising hype. Some of the worst programs imaginable have great ad campaigns. Try it out, or at least talk to someone who has seen it.
- Look for reviews in *SoftSide* and other periodicals. While reviewers have different opinions about programs, a good

review will tell you about the graphics and playability of a game, and may even include a photograph of the screen.

- Tend to stick with companies with proven track records. If a company has published game after game of good quality, chances are that such quality will be maintained. This is not a sure bet, though, so be careful.
- If a new, intriguing game ad appears from a new company, wait a while before ordering it. If the game really is good, it will survive and may be reviewed. If the game disappears as fast as it arrived, you are probably better off without it.

Good luck from someone who has been burned by bad software more than once. Now, on with this year's Atari Christmas list. 55



ATARI®

## Zaxxon



Reviewed by G. L. Kopp

It may not have garnered enough quarters to qualify for a Saturday morning cartoon series (a la *Pac Man*), but *Zaxxon* has established itself as something of an arcade classic, owing primarily to its unique three-dimensional graphic displays. Those effects have been reasonably translated for the Atari in a version written by Ron J. Fortier and offered by Datasoft, Inc. In case you are unfamiliar with the game (Is this possible?), it goes like this:

Piloting your frail white spacecraft on a mission to destroy the deadly *Zaxxon* robot (for whatever unexplained reason), you must pass through two space fortresses. The first is a collection of walls of varying heights, force fields, parked enemy planes (which fire on you nonetheless), gun emplacements, rising missiles, radar towers and fuel silos. Ob-

viously, you should avoid running into any of these or being hit by enemy fire or missiles. You must destroy fuel silos to prevent total consumption of your own fuel and the obliteration of your ship. All this requires well-timed, left-right/up-down joystick maneuvering. The ship actually rolls with ascent and descent, which is a nice graphic touch, and casts a shadow as it flies through the fortress, an aid to judging altitude. (Curiously, the shadow passes under objects rather than over them, undoubtedly a manifestation of some sort of time-space discontinuum.) An altimeter of sorts is always in view, but is more useful in the second fortress.

Presuming you escape the treacheries of the first fortress unscathed (there are three ships per game), you then face an outer-space dogfight with up to 20 enemy ships (fewer if you dispatched any of those caught with their parking brakes on). The 3-D effect makes judging the altitude of the jockeying fighters tricky at best, and the source of an incoming hit can be mystifying at times, particularly when from off-screen.

If you destroy or merely avoid the enemy ships, you eventually reach the second fortress. Fuel can be tight at times, evoking a flashing red fuel gauge and a warning alarm. You must then go after new fuel tanks below in the face of crossfire and a series of seven wall/force-field barriers. You must fly high enough to clear the walls, but remain low enough to avoid being force-field-fried. If you can fire-and-fly and still note the altitude indicator, you can eventually remember the appropriate fly-through level for each barrier. Another method is to pull up while firing repeatedly at the walls until a missile passes through the opening, indicating the ship will also slip through at that level. In either case, successfully managing the fortress eventually brings you face-to-face (or ship-to-droid) with the dreaded *Zaxxon* robot.

You can destroy the *Zaxxon* robot only by firing repeated direct hits on his homing missile before it is launched; otherwise, your oblivion is certain. If you are hit with ships in reserve at this point, you are not returned to the start

**By Ron J. Fortier (Datasoft, Inc., 4421 Winnetka Avenue, Chatsworth, CA 91311.) System requirements: Atari 400/800 with 16K/32K disk. Also available for the Apple II family. Suggested retail price: \$39.95.**



# ATARI®



of the second fortress, but must face *Zaxxon's* robot again. Should you accomplish your mission, you will not receive the hero's welcome you might expect; rather, you must continue to run the fortresses-fighters-robot encounters which become "more threatening" with each pass. (Exact details are unspecified, and this author is still being embarrassed by the robot at this writing.)

The 32K disk *Zaxxon* is an upgrade of the 16K cassette version released earlier. The latter version adds rising silo-based missiles, allows vertical as well as horizontal navigation in outer space, and permits pausing the game by pressing any key. The *Zaxxon* robot's missile is of the homing variety in the 32K version, and you must hit it before launch; you need only hit the robot itself six times in 16K play. Both versions permit one or two players and allow instant start-over with a push of the system reset button.

*Zaxxon* is not difficult to gain some measure of mastery over in a relatively short period of time. Multiple skill levels would improve the game. Several hours of play involving modifications of unsuccessful maneuvers over familiar terrain will result in player-robot confrontation on a fairly regular basis. You can always play for points, but I have a feeling that, having conquered the robot, the initial high level of interest may be difficult to sustain by simply complicating or speeding up the same action. But then that was the essence of the highly successful *Space Invaders*, and playing space fighter pilot in three dimensions rather than just one is much more fun.

55

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# Preppie II

Reviewed by Carl M. Firman

If you played *Preppie* and wondered what happened to the heroic prepster, Wadsworth Overcash — well, he survived. He is back again in *Preppie II*. That cruel, sadistic groundskeeper is back too, but Wadsworth doesn't know that yet.

Our hero is enrolled as a freshman in Acme University and it's Heck Week. Now, any follower of Roadrunner cartoons knows that anything with the name "Acme" is highly suspect; maybe even dangerous. Obviously Wadsworth was too busy picking up golf balls to watch cartoons — too bad, because Heck Week at Acme is downright dangerous and Wadsworth is really in for it. You can help him survive, but only if you're fast and clever.

Unfortunately, the groundskeeper has teamed up with the crew at Acme, and he is also fast, clever and just plain *nasty*. He has devised a little floor painting job for our hero, complete with a variety of prepster munching critters.

It's the last day of Heck Week. Our hero has made it through Saturday night and thinks it's all over. Almost, but not

From Adventure International, Box 3435, Longwood, FL 32750. System requirements: 32K Atari 400/800; 16K (tape). Suggested retail price: \$34.95.

# Donkey Kong

Reviewed by Carl M. Firman

Our hero's name is Mario. Donkey (Kong, that is) is holding Mario's girlfriend captive atop the framework of girders. Mario is desperate for a kiss (from his girlfriend, not Donkey) so he is on his way up the framework. Naturally, there are a few hazards so Mario must be nimble and quick.

As Mario starts climbing the stack of girders, Donkey starts rolling and throwing barrels. If a barrel rolls all the way to the bottom it hits a flaming drum of oil

From Atari, Inc., Sunnyvale, CA 94086. System requirements: Atari 400/800 with 16K RAM. Available only on cartridge. Suggested retail price: \$49.95.

quite! Suddenly, Wadsworth is grabbed and tossed into a large sack. He is transported to a large building and dumped inside. As the door closes, he struggles out of the sack and hears the sinister laugh of the groundskeeper! A paint brush and a can of paint (Madras Pink) are thrust into his hands. He is pushed through another door into a room; he hears a gigantic squishy plop! This is where you come in. If Wadsworth is to survive, you must help him paint the floors of three rooms. However, he doesn't have to paint each room in order to get to the next one. You can walk Wadsworth to the second or third room and start there.

The first room is a collection of twists and turns with two revolving doors and four giant, radioactive frogs. The frogs are intelligent and will home in on Wadsworth's position, so be careful. Contact with one of the frogs creates a very dead Preppie who floats off to Preppie Heaven (Wherever that is?). You can use the revolving doors to escape to a different part of the room and momentarily avoid the frogs. If things get too hectic, pushing the joystick button activates a cloaking device which renders Wadsworth invisible (and impervious) for a limited period of time. Use it with discretion.

In the second room, you see some

and hatches a scorching firefox. Contact with a barrel or firefox is fatal. (Be careful — you've only got three Marios). You must help Mario climb by jumping, avoiding or smashing these hazards. Smashing things — you bet you can; placed at various locations are some great big hammers, and you can tell Mario to grab one and smash, smash, smash. These hammers really work, but you can't climb while you are smashing, and these weapons have an uncanny talent for disappearing at the most inopportune times.

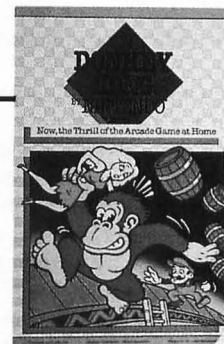
If you can guide Mario through all these hazards he gets a kiss from his girlfriend. Alas, just one kiss, because



familiar hazards from *Preppie* — golf carts and lawnmowers. These hazardous vehicles operate at a variety of speeds and may enter the room from either side. You must be careful not to get caught at the side of a room or it's Preppie Heaven again. The third room is similar to the first room, but with more twists and turns to paint. If you succeed in painting all three rooms, Wadsworth lives. He even gets to chase an alligator across the screen.

Want more? There are two more levels of three rooms each to paint, but it gets more difficult; in the third level, there are six radioactive frogs. After you've confronted six of these nasty little amphibians, dealing with four seems like child's play.

*Preppie II* is an excellent and well written game. It's fun and a refreshing break from killing ghastly critters from outer space; besides, Madras Pink is an interesting color for floors. Happy painting.



then she disappears. The next time you see her she's at the top of a pyramid of girders, trapped again by Donkey. Eight rivets hold this pyramid together. You can knock the rivets out by walking over them, but don't fall through the holes. The friendly firefoxes also roam the girders; so don't get scorched or it's halo time again. Knocking out the rivets deals Donkey a dastardly blow — the girders collapse and Donkey falls to the bottom.

Fortunately Donkey lands on his head, so his injuries are not serious. But where did Mario's girlfriend go? She's disappeared again — but not for long — you'll find her back at the top of that first pile of girders. Donkey's there, too, and this time he rolls barrels with a real vengeance.

So, it's back to the top of the pile for another kiss. After the kiss it's fast moving elevators, mad jumping springs and those friendly firefoxes again. Eventually you'll wind up running on conveyer belts and avoiding sandpiles. If you can get to a giant hammer, you can smash all

of these hazards. Spaced throughout all of this smashing, running and climbing are some prizes, for which you collect points. You also collect points for smashing and jumping hazards. If you score 7000 points you win an extra Mario.

This version of *Donkey Kong* brings all of the excitement of the arcade version home; however, it is not exactly the same. The graphics and sound effects are virtually identical. The animation is also the same, except you don't get to see Donkey carry Mario's girlfriend up to the next level. You can start playing at

any level of difficulty — try that at your local arcade. You don't have to climb as many girders to get to the top, because this version is set up for a horizontal home TV screen. (You play the arcade version on a vertical screen.)

*Donkey Kong* is probably as well known as *Pac Man*. It was the first of the climbing games, and I think the best. This home version is a job well done, and well worth the \$49.95 price. If you buy it you won't go wrong. Don't go bananas, and Happy Smashing. ☞

## M.U.L.E.



### Reviewed by David Plotkin

Bursting on the scene in June, Electronic Arts has taken a whole new approach to computer game publishing. Rather than using in-house programmers, they have coordinated the efforts and provided support (artwork, packaging, promotion and advice) to various independent software "artists." These include such heavyweights as Bill Budge of *Raster Blaster* fame, whose *Pinball Construction Set* was reviewed in issue 42 of *SoftSide*, and the triad of Free Fall Associates, whose *Archon* (see page 74) is a revolutionary concept in computer games. Continuing in the pioneering of new concepts is another of the Electronic Arts releases, *M.U.L.E.* from Ozark Softscape.

As complex as any class in economics, *M.U.L.E.* is a superbly executed simulation of the establishment of a new colony in a semi-hostile environment, for one to four players. The object: to survive for six months (between supply ship visits) while amassing as much wealth as possible by growing food, mining Smithore and producing energy.

As *M.U.L.E.* begins, each player gets to choose what type of creature they want to be. You can choose from nine types, including such colorful other-world entities as Bonzoids, Flappers and Gollumers. There are always four creatures in the colony, so if you are playing with less than four players the computer controls the other creatures.

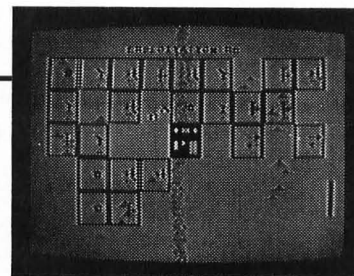
**By Dan and Bill Bunting, Jim Rushing and Alan Watson (Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403.) System requirements: 40K Atari 400/800 and disk drive. Suggested retail price: \$40.00.**

*M.U.L.E.* is divided into rounds. Each round consists of:

- The land grant, where you choose a plot of land to develop. Mountainous regions are best for mining; the river valley contains the most fertile soil for farming.
- Land development, where you go to the store and purchase a M.U.L.E. (the game's namesake), outfit it for food production, energy production, or mining Smithore, and install it on your land. To produce, you must install a M.U.L.E. on a plot of land, and you must have enough energy to drive the Food and Mining M.U.L.E.s. During your turn, you can win money by gambling in the pub or attempting to catch an elusive little creature known as a "Wampus."
- The auction, where you buy and sell the supplies. There are separate auctions for Smithore, energy and food. The auction sequence is particularly well done, with various buyers and sellers competing on price by advancing up and down the screen.

*M.U.L.E.* has three levels: Beginner, Standard and Tournament. In Beginner, the game does not allow you to fall below the "critical" levels on food and energy when you are selling your wares during the auction. The Standard game allows you to sell all you have, and also allows purchase of land during a land auction. The Tournament game allows mining of another mineral called Crystite, and provides for collusion: Two players negotiate on price, excluding all other buyers and sellers.

*M.U.L.E.* is an exceptionally well done simulation which teaches you something about economics: Economics



of scale (the bigger you are, the more efficient you are), Learning Curve (the more you've made of a particular unit, the better you are at making future units), and Diminishing Returns (you must develop areas which are not efficient product producers as the efficient areas become depleted). Random events, which may help or hurt you, are tossed in to spice things up. Strategy plays an extremely important part, as well. When shortages develop, as they always do, you can re-outfit a M.U.L.E. to produce different items from the same land. Careful maneuvering may even result in a monopoly. For example: Since Smithore is required to build M.U.L.E.s, if you can corner the market on Smithore and free the store's supply of M.U.L.E.s, you can get a high price for your Smithore!

The game particulars are well done, a trait fast becoming typical of all offerings from Electronic Arts. The engaging character animation, the use of special Atari features such as Display List Interrupts, and the terrific music combine for a very enjoyable (and educational) experience. The instruction booklet is well written and full of strategy hints. All game play is by joystick, so play mechanics are easy to master. *M.U.L.E.* is entertaining and a must both for the single player and for the "family that plays together." ☞

# Archon



Reviewed by James V. Trunzo

*Archon* combines the concepts of that most venerable wargame, chess, with one of today's most popular themes, fantasy. This exciting hybrid has resulted in one of the most fascinating games on the market today.

The game deals with the never-ending conflict between Good and Evil, represented by the forces of Light and Dark. Each side is represented by beautifully sculptured graphic figures depicting fantasy characters. On the Light side: knights, golems, unicorns, archers, amazons, a djinni, a phoenix and a powerful wizard battle against the Dark side's lineup: manticores, trolls, basilisks, goblins, banshees, a shapeshifter, a dragon and a sorceress.

Both sides are balanced in number and power, yet each piece is different in the way it moves, attacks, recovers from an attack, the ground it covers, the power of attack and lifespan. To succeed in *Archon*, you must learn how best to utilize your pieces.

You play *Archon* on two screens. The first screen, the strategy board, resembles a chess board, and as in chess, each side takes alternate turns, moving one "icon" either part or all of its movement allowance. Movement also resembles chess in that certain pieces can move only certain directions. However, *Archon* adds several other features that make the board itself as important as any other feature in the game.

First of all, there are many squares whose luminance changes during the course of play. Called the luminosity circle, these squares cycle back and forth between pure white and midnight black. During the white cycle, the White forces tend to have better fortune in combat,

**From Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403. System requirements: 32K Atari 400/800 with disk drive and joystick. Also available for the Apple II family and Commodore 64. Suggested retail price: \$39.**

while the opposite is true for the Dark forces. This, coupled with the fact that a white piece is always stronger when attacking or defending a white square, and a dark piece is always at a great advantage when attacking or defending a dark square, brings many strategic options into play that you must master to achieve victory on the bloody battlefield of *Archon*.

Bloody battlefield? Emphatically, yes! The second screen is the battlefield, or combat arena. You join combat by moving into an enemy-occupied square. At that point, the strategy board becomes the combat arena, and the two pieces literally go to war. During combat, *Archon* requires quick reactions, speedy joystick manipulation and thorough gaming strategy.

Combat in *Archon* is not just a simplified "fire away" type of action, either. Barriers appear in various locations on the battlefield, providing protection but also hindering movement. These barriers, like the squares on the strategy board, change luminance. The lighter they become, the less solid the barrier. Therefore, missile fire or sword thrusts can penetrate a light colored barrier but not a darker colored barrier.

In addition, each different piece does combat in a different fashion and has his or her weapon readied for subsequent attacks at different rates. For example, the trolls and golems are extremely powerful and can endure many wounds before dying, but are ponderously slow. The unicorns and basilisks, on the other hand, move like quicksilver, but one wound does them in.

Another important factor directly related to the strategic playing board are the power points. Five squares, located at equal distance from each other around the board center, contain power points. These power points have three special factors:

- Any side occupying all five power points automatically wins the contest;
- Icons resting on power points heal faster;



- Magic spells do not affect pieces resting on power points.

There are still more elements with which to contend. A sorcerer and a sorceress each have eight spells from which to choose, and timely use of the magic can either win or lose the contest. The eight spells available are identical for each magic-user, and each spell can be cast only once by the sorcerer or sorceress.

*Archon* is complex but not complicated; easy to learn but hard to master; tremendously enjoyable to play, but just as enjoyable to watch, if you choose the option that allows the computer to play both sides. Of course, you can play either side against the computer, or two players can play against each other.

The programming of *Archon* is state-of-the-art. The figures are distinct and impressive even in their static state. The real thrill of *Archon*, however, comes during combat. The animation of the pieces is incredible. The coiling and lunging of the dragon, the galloping of the unicorn, the uprooting and hurling of boulders by the massive trolls and golems are unmatched in any other product on the market.

*Archon* comes complete with a detailed player's manual, command summary card, icon quick reference cards and so on. The manual is excellent, containing, among other things, a two-page question and answer section and tips on opening play and strategies.

*Archon* carries with it, besides hours of enjoyment, a suggested retail of \$39 — a small price to pay for a true-to-life fantasy/arcade/strategy game! Now, to go slay yet another dragon and send the Dark side back into the fiery abyss from whence it came!

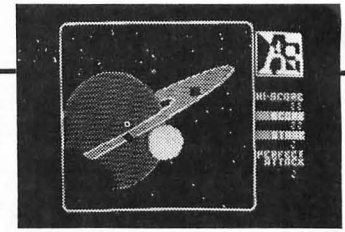
A.E. 

## Reviewed by David Plotkin


Broderbund Software has been flexing some Atari muscle this year, and their 3-D shootout, *A.E.*, is a real eyecatcher. You must drive the A.E.s (rays in Japanese) from the galaxy, as they have a logic flaw and have become a real nuisance. You use your joystick to control a left/right mobile cannon which fires upward to blast the A.E.s overhead. Sound like standard stuff? Well, not quite.

By Jun Wada and Makoto Horai (Broderbund Software, 1938 Fourth Street, San Rafael, CA 94901). System requirements: 48K Atari 400/800 and disk drive. Suggested retail price: \$29.95.

First of all, this shootout is done against a multitude of high resolution screen backdrops — starting on a city street and proceeding into outer space, through the asteroid belt, past Saturn, and into the starry depths. The A.E.s themselves attack in swirling strings, getting larger and smaller with distance, for a very effective 3-D simulation. Also, there is an unusual firing mechanism: you press down on the fire button to launch a missile, but the missile doesn't detonate until you release the button. If you catch an A.E. in the ensuing blast, you destroy it. If you blast the first A.E. in a string, its explosion gets the next one, and so on, so you can zap a whole string with one shot!



You advance from one screen to the next by completing three "perfect attacks," that is, destroying all the A.E.s in a string before they leave the screen. The A.E.s don't cooperate, of course. They swoop down in ramming runs, and drop bombs on your ship. Be very careful, because the bombs can be difficult to see!

*A.E.* is a moderately difficult game to master due to the unusual firing mechanism, but it is enjoyable and the graphics are great. If you like space shootouts and 3-D, this one belongs in your Christmas stocking. 

David's Midnight Magic 

## Reviewed by Richard E. Herring

*David's Midnight Magic* is the second in what promises to be a long list of pinball simulations for the Atari. Similar in appearance to its predecessor from BudgeCo and to newer games from Hayden and subLogic, it offers a four color, high resolution view of a pinball game. The view is from directly above, so you lose some of the detail of a real pinball game. Drop targets, for instance, appear as short, thin lines.

The left side of the screen shows the scores for up to four players, balls remaining, bonus points and the bonus multiplier. The playing surface occupies slightly more than one-half of the screen. Because of the screen's size limitations, it does not have as many components as a real pinball game. Upper and lower sets of flippers, two kickers and one circular bumper keep the ball in motion. There are also six to eleven rollovers, two stationary targets, four sets of drop targets, a ball collector, a multi-ball release, and a loop which increases bonus multipliers.

From Broderbund Software, 1938 Fourth Street, San Rafael, CA 94901. System requirements: 48K Atari with disk drive and paddles. Also available for the Apple II family and the Commodore 64. Suggested retail price: \$34.95.

Play is extremely realistic. You can cradle the ball by holding up a flipper, pass a ball between flippers, and accurately aim your shots. Unless it is moving vertically, the ball rolls in a curved path because of the table's "tilt." The only thing you cannot do is put bottle caps under the front feet of your television to make the ball slow down.


*David's Midnight Magic* has a number of excellent arcade-type game features. While loading, the program displays a title page and plays a short theme. Play is controlled almost entirely by two paddles. Fire buttons select the number of players, shoot the ball and activate the flippers. You can even control the spring tension of the shooter by rotating the right paddle. Multiple players need only one set of paddles. Each time your turn comes up, the game resets (drop targets, trapped balls, etc.) to the way you left it on your last ball. If you need to pause in the middle of a game, pressing the Break key stops the ball.

After a game, if you have one of the top ten scores, a high score screen lets you enter your initials using a paddle to select the letters. If you are willing to cut a notch in your disk, thereby voiding your warranty, you can even save high scores to disk. If you do not get a high score, but want to see how close you came, just hit the Control and "H" keys



to see the high score screen, then hit any key to return to the game.

One feature of *David's Midnight Magic* makes it a much more realistic simulation, but also creates an awkward user interface. Hitting the space bar during play is equivalent to bumping a real pinball game. You can get some great action from the circular bumper, but too much bumping will result in a *tilt* and a lost ball. With a paddle in each hand, the simultaneous use of keys is difficult, but you could play the game for a long time without a need for this option. A similar feature allows you to catch balls about to be lost down the side columns by pressing the lower row of keys on the keyboard. This again is a nice feature, but requires dexterity.

In summary, *David's Midnight Magic* is a great pinball game. Although it makes no more extensive use of sound than a real pinball game, the graphics and ball movement are excellent. The extra features show both attention to detail and the machine language programming capabilities of the author, David Snider. If you do not have a pinball game, *David's Midnight Magic* is a good choice. 

# Software For A Song



Reviewed by David Plotkin

If Reaganomics has taken a bite (byte?) out of your wallet, or you are just getting started and don't want to spend a lot of money on software right away, there is some software which is still budget priced. While these games, in general, do not have the flashy graphics or depth of some of their more expensive relatives, they have adequate displays and solid play action.

## Spider Quake and Star Base Fighter

Gentry Software, a new entry into the field, has two brand new low-cost titles: *Spider Quake* and *Star Base Fighter*.

In *Spider Quake*, you must maneuver your spider through walls, across a road and a river, and up into the mountains to its home. The obstacles move horizontally across the screen, much like those in *Frogger* or *Preppie*. Navigating the river is particularly tricky. There is but a single log with offshoots to both shores on which the spider must crawl.

*Star Base Fighter* is a space shootout

**Spider Quake** from Gentry Software, 9411 Winnetka Avenue, Chatsworth, CA 91311. System requirements: 16K Atari 400/800. Suggested retail price: \$16.95. **Star Base Fighter** from Gentry Software. System requirements: Atari 400/800, 24K Disk. Suggested retail price: \$14.95. **Spy's Demise** from Penguin Software, 830 4th Avenue, Geneva, IL 60134. System requirements: Atari 400/800, 24K Cassette, 32K Disk. Also available for the Apple and the Commodore 64. Suggested retail price: \$19.95. **Flying Ace** from Avalon Hill Microcomputer Games, 4517 Harford Road, Baltimore, MD. System requirements: Atari 400/800, 16K Cassette; 32K Disk. Also available for the Commodore 64. Suggested retail price: \$25 (cassette) \$31 (disk). **Moon Patrol** from Avalon Hill. System requirements: Atari 400/800, 16K Cassette. Also available for the Commodore 64. Suggested retail price: \$25.

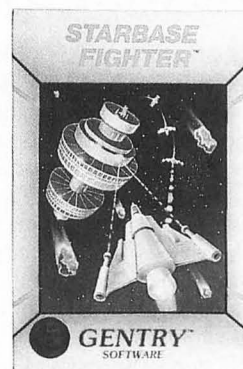
featuring three screens (actually two: Screens one and three are the same). You must navigate your ship through an asteroid belt, fight off enemy fighters, and dock with the enemy flagship. At this point, the screen switches to a horizontally scrolling tunnel. You must negotiate the tunnel, avoiding shots from wall mounted guns (or destroying the guns) and eluding pursuers. You must carefully conserve ammunition so you don't run out before you reach the end of the tunnel. There, a force shield blocks your way. You must blast through the shield and kill the "Brain" behind it. Doing so destroys the enemy flagship, which puts you back in space on Screen One. You may then attack any other flagships or return to your base to rearm.

## Spy's Demise

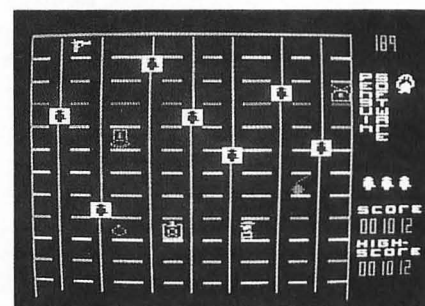
Probably the most difficult game this reviewer has ever encountered is *Spy's Demise* from Penguin Software. It boasts a high resolution title page, appealing graphics and a charming musical sound track. The object is to move your spy across the screen, avoiding guards riding up and down on elevators. With each successful crossing of the screen, you advance up one floor, until you reach the top of the building, after which you start at the bottom floor of a shorter building — so it gets harder. As you move along, you can pick up treasures for extra points. If a guard touches you, you detonate in a violent explosion. The challenge in completing even one screen of this game is that, whether you use joystick, paddle or keyboard, the spy never stands still, and there is not enough room between elevators to jockey the spy back and forth while waiting for the elevators to pass. Thus, you must run back and forth, making sure never to get caught between elevators, a particularly difficult trick. If you do reach the top of a level, you get a secret message. The overall game object is to get all the secret messages at the top of the levels and thus discover what the whole secret message is. Having never completed even one



Spider Quake



Star Base Fighter



A sample screen from *Spy's Demise*

## Software For A Song, *continued*

screen, I have little hope of ever seeing the message!

Avalon Hill, of board game fame, also has a microcomputer games division. While most of the successful games from Avalon Hill are of the simulation type, their arcade-paks are notable, not only for moderate cost but also for their availability on cassette.

### Flying Ace

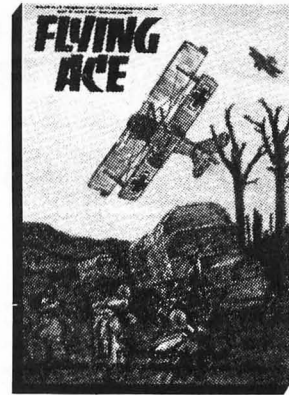
First is *Flying Ace*, a horizontally scrolling air battle in which you pilot a World War I vintage biplane. You view all action from the side, and control your plane with a joystick. The plane flies much like the real thing — pulling back on the stick causes the plane's nose to rise. This takes some getting used to, because if you are flying upside down, pulling back on the stick causes you to dive. Your biplane's mission is to attack the numerous ground targets (trucks, gun emplacements, etc.) with your forward firing machine guns. You must also dogfight with enemy aircraft. Destroying ground targets is very difficult. If you try to fly low enough to destroy them head-on, you invariably crash into the ground, so you must loop and dive to line up targets, and it takes multiple hits to destroy them. Your aircraft can sustain six hits. To get them repaired, you must locate a friendly airfield and land successfully. Too many hits will, of course, cause you to crash, and the game is over when you lose your

three planes. *Flying Aces* has good play action and a smooth scrolling playfield, although it may be a little difficult for novice arcaders.

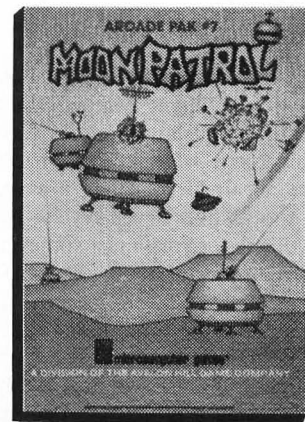
### Moon Patrol

*Moon Patrol*, the other title from Avalon Hill, is a unidirectional, horizontally scrolling shootout in which the player attempts to keep aliens from landing on the moon. Your space fighter has three speeds: slow, (push your joystick right), medium, and fast (push your joystick left). It fires torpedoes, and you can have two torpedoes on the screen at a time. The aliens attempt to land starting at the top of the screen, and you get points by shooting them down. You can maneuver your space fighter up and down with the joystick, just make sure not to get too close to the aliens — bumping into the alien or running into the explosion after you shoot them loses you one of your three fighters. *Moon Patrol* features very nice graphics. The lunar surface is well done, and the player missile graphics, which make up the radar towers and the aliens themselves, are animated appealingly.

*Moon Patrol* features multiple levels of difficulty. In the more difficult versions, the aliens shoot back! There are several different kinds of aliens, including some that are very hard to hit because they are so fast, and a suicide ship which you must avoid or destroy before it rams you. Overall, *Moon Patrol's* playability is excellent, especially for beginning arcaders, since the play



Flying Ace



Moon Patrol

action is simple and the graphics are not too complex. But don't be fooled, *Moon Patrol* will give even veteran arcaders a workout at its more difficult levels. It is a good family game. **55**

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# A Full Broadside From Synapse Software: Zeppelin, Rainbow Walker and Alley Cat.



## Reviewed by David Plotkin

Christmas is traditionally "harvest time" for the multitude of computer games grown and nurtured during the year. The bumper crop award this year must go to the able crew at Synapse Software. Since third quarter of this year, the hits have rolled out one after another.

### Zeppelin

Hitting the stores in August, *Zeppelin*, by William Mataga (the genius behind *Shamus* and *Shamus Case II*), is an air battle of epic proportions: You guide an airship through a cavern with 250 rooms over seven levels. As in the *Shamus* series, you must sometimes find keys to unlock doors to proceed into different sections of the cavern. The key and its door have the nasty habit of being at opposite ends of the multiscreen cavern. You must also procure dynamite and activate a plunger to proceed from level to level. The cavern smooth scrolls as you move through it, with "decision points" where you determine which direction the cavern will scroll. As you battle your way through the caverns, you must deal with enemy zeppelins, balloons, force screens, falling rocks, blinking laser gates, and horror of horrors, falling debris from frequent cavern-quakes. You also encounter the needed extra lives, keys and dynamite.

Your zeppelin is heavily armed, and you can fire in any direction by pressing the fire button and pushing the joystick in the appropriate direction. Multiple shots are allowed and necessary. Probably the most unusual feature of *Zeppelin* is the switches. You fire at these to turn them off and on, and their purpose is to activate and deactivate enemy defenses. In the heat of action you can accidentally activate a switch, turning on laser gates or falling rocks, for example — and there goes another zeppelin. Discovering which switch does what is

**From Synapse Software, 5221 Central Drive, Richmond, CA 94804. System requirements: Atari 400/800 with 32K (disk) or 16K (cassette) and joystick. Suggested retail price: \$34.95 each.**

easier said than done!

*Zeppelin* is technically very well done. The cavern walls are a feast of color and detail, including such things as trees moving (in the breeze?). The character animation is excellent and the playability is very good.

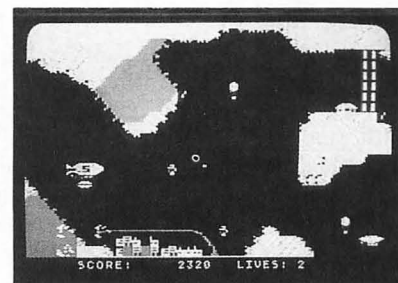
In a special preview, Synapse revealed some of the games which will be available when you read this. Here are two of the standouts.

### Rainbow Walker

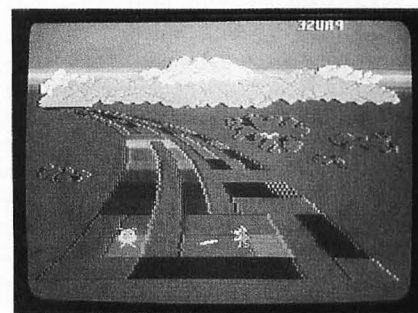
Not content with one 3-D game, Synapse has another: *Rainbow Walker* by Steve (*Pharoah's Curse*) Coleman. High above a craggy landscape, you guide your cleverly animated character on a grey path which recedes into the distance behind you. As your alter-ego hops along the path, squares light up with many different colors. The amazing thing about this airborne rainbow is that it seems to move under you. You can move forward and backwards and left and right, lighting squares as you go. Of course, this isn't the whole story! A veritable army of creatures chase after your character, intent on pushing him off the rainbow — and it is a *long* fall! Also, sections of the rainbow are missing, and you must jump over the gaps by pressing the fire button. Finally, as you complete each long row of the rainbow, the line of colors flash one after the other down the rainbow (like a piano keyboard), with appropriate music, and you get bonus points. *Rainbow Walker* is an artistic masterpiece and a lot of fun to play.

### Alley Cat

Bill Williams (*Necromancer*) is a master of sound, and his newest game, *Alley Cat*, shows this expertise. The playing field is an alley, complete with trashcans, a fence, and several levels of clotheslines stretching across the screen. Your job is to guide your black cat as he leaps (press the fire button) from alley to trashcan, thence to the top of the fence, and then from clothesline to clothesline, bagging mice as he goes. The cat hangs by his claws from the clothes, and if he



A sample screen from *Zeppelin*



A sample screen from *Rainbow Walker*

misses the clothing he crashes to the ground — scratch one cat! He can't hang too long from one piece of clothing or a mouse will run over and loosen the clothespins — goodbye kitty. Another hazard is the white dog which patrols the alley. Fighting with the dog keeps the current cat too busy to chase mice, so you have to go on to the next cat (if you have one left).

*Alley Cat* is a very fast game, well executed, with a novel concept. The really outstanding part, though, is the sound. The "plink" as the cat lands on the trashcan, the dog's bark, and the cat's plaintive meow are very well done. And when the cat and dog tangle in a black and white swirl reminiscent of Saturday morning cartoons, the resultant snarls and howls sound just like the real thing. The graphics are clean and well done, and I recommend this game for all ages.



# Bugs, Worms, and Other Undesirables



## TRS-80 Filter (Issue 45)

In the documentation for *Filter*, the description of how to start the program from the operating system is incorrect for the operating system on *SoftSide* disks. Here is how to do it:

- From the operating system prompt (DOS PLUS), type the command "BASIC FILTER/BAS -F:3".

## TRS-80 Random-Access Database (The Best of SoftSide)

An error in line 4500 prevented the entry of blank lines in a record, because of a peculiarity of TRS-80 BASIC. If you just press Enter in response to an INPUT statement that is requesting a string, and the string variable already contains characters, then the string is not changed. In most dialects of BASIC, the string would become empty. In this case, it is necessary explicitly to empty the string. By changing line 4500 as shown below, you can correct this problem.

```
4500 TI$(J)="":PRINTH$(J);" (";B%(J);"CHARACTERS";" );:INPUT" ;
";TI$(J)
```

Note that this changes one line of the *SWAT* table for the program. It appears below.

## TRS-80 Leyte (October 1981 and The Best of SoftSide)

In line 176 of the program, change the second "H" to an "N". The correct line appears below.

```
176 IFA+A1<OTHENA1=64
```

This causes one line of the *SWAT* table in *The Best of SoftSide* to change. It appears below.



### SWAT TABLE

LINES	SWAT CODE	LENGTH	LINES	SWAT CODE	LENGTH
100 - 200	MD	355	5060 - 6070	NS	325
210 - 320	OD	389	6080 - 7020	QQ	264
330 - 550	VM	381	7030 - 7120	KO	263
600 - 1180	OK	423	7122 - 7200	KV	209
1190 - 1500	TR	229	8000 - 8055	MG	393
1510 - 1630	DF	363	8060 - 8200	BY	474
1640 - 1810	EO	201	8210 - 8270	IE	251
1820 - 2280	VG	197	8280 - 8340	VI	269
2290 - 3040	LI	501	8345 - 9000	PL	207
3050 - 3740	EO	214	9010 - 10130	SZ	300
3800 - 3920	NE	305	10140 - 10270	FI	421
3930 - 4040	EI	215	10280 - 10405	OY	322
4050 - 5055	TK	333	10410 - 20050	DB	235
			20060 - 60000	AE	154



### SWAT TABLE

LINES	SWAT CODE	LENGTH
50 - 135	YA	513
150 - 220	BY	515
230 - 340	FU	419
350 - 470	XC	445
480 - 570	DS	504
580 - 680	TB	523
690 - 820	TW	402
830 - 920	UT	307
940 - 1025	OX	511
1030 - 2040	YJ	435
2050 - 3090	WD	527
4000 - 6000	SQ	518
6010 - 6080	AB	534
6090 - 7100	MG	416

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# MicroLog: Resources Received

## APPLE®

### GAMES

*The Last Gladiator* by John Field from Electronic Arts, San Mateo, CA. System requirements: Apple II family with 48K and joystick.

You are a Gladiator fighting assorted monsters with various weapons in a Roman style arena.

*Planetfall* from Infocom, Inc., Cambridge, MA. System requirements: Apple II with sixteen sector disk and 32K. Price: \$49.95.

*Planetfall* is designed to stimulate your imagination as nothing else in computer game software can. It actually allows you to experience such sensations as hunger, exhaustion and danger.

*The Bilestead* from Datamost, Inc., Chatsworth, CA. System requirements: Apple II+ 48K with disk drive. Price: \$39.95.

Experience barbaric battles in a high-tech future in this unique strategy adventure.

*Aztec* from Datamost, Inc., Chatsworth, CA. System requirements: Apple II family. Price: \$39.95.

This is a new idea in adventuring, with hi-res action animation on-screen full time.

*Round About* by Gumby Bitworks from Datamost, Inc., Chatsworth, CA. System requirements: Apple II family with 48K with disk drive. Price: \$29.95.

Fascinating shapes zoom, rotate and zig-zag around the screen while you try to shoot them before they trap you. A game for the whole family.

*Trompers* from Avant-Garde Creations, Inc., Eugene, OR. System requirements: Apple computer family. Price: \$29.95.

The player's goal in *Trompers* is to help poor Arnold Strump catch a multitude of practical-joking space critters who are falling to Earth from a distant planet.

*Bermuda Race* from Howard W. Sams and Co., Inc., Indianapolis, IN. System requirements: Apple II family with 48K, Applesoft in ROM, one disk drive (DOS 3.3). Price: \$29.95.

This is a challenging simulation of the blue-water sailboat race from Newport, RI to Bermuda.

### MUSIC

*DX-1* Sound Processing System for the Apple II from Decillionix, Sunnyvale, CA. System requirements: Apple II or Apple IIe, DOS 3.3 and Applesoft Basic. Price: \$239.

*DX-1* is a new product for recording, processing and playing back ordinary sound. With *DX-1* Real Sound can be entered, saved, processed, sequenced, played and generally modified under computer control in new ways.

### BOOKS

*Programming the Apple II in BASIC* by Paul Tebbe from Prentice-Hall, Inc., Englewood Cliffs, NJ. System requirements: Apple II family. Price: \$16.95.

This book was developed to fill the need for a book on programming for the Apple II personal computer at the beginner's level.

### GRAPHICS

*PFS:Graph* from Software Publishing Corporation, Mountain View, CA. System requirements: Apple IIe with 64K. Price: \$125.

*PFS:Graph* gives the user presentation-quality bar charts, line graphs and pie charts which makes it the fastest, easiest, most economical computer graphics software package you can buy.

### EDUCATION

*All About Commas* from Milton Bradley Company, East Longmeadow, MA. System requirements: Apple family with Applesoft BASIC, Version 3.3 DOS and 48K. Price: \$39.95.

Education software designed for ten- to fourteen-year-olds, that includes basic instructions, practice drills, a mastery quiz, reviews and a game called Alien Raiders.

*All About Division* from Milton Bradley Company, East Longmeadow, MA. System requirements: Apple family with Applesoft BASIC with Version 3.3 DOS and 48K. Price: \$39.95.

Education software designed for ages ten to fourteen that allows the user to discover what goes into what correctly...and why.

### APPLICATIONS

*Pen-Pal* by Chris and Ann Moller from Howard W. Sams and Co., Inc., Indianapolis, IN. System requirements: Apple II, IIe with 48K, Applesoft in ROM, one disk drive. Price: \$59.95.

## COMMODORE®

### BOOKS

*Commodore Software Encyclopedia* from Commodore Business Machines, Inc., West Chester, PA. System requirements: Commodore PET/CBM®. Price: \$19.95.

This encyclopedia is a listing of most of the software offerings known to Commodore that are available for use on the PET/CBM line of computers at this printing.

*The User's Guide to Commodore 64 and VIC 20* by editors of Consumer Guide from Beekman House, New York, NY. System requirements: Commodore 64. Price: \$4.98.

This guide will lead you step by step through all phases of learning how to use your new computer.

### EDUCATION

*Type Attack* from Sirius Software, Inc., Sacramento, CA. System requirements: Commodore 64 with one 1541 disk drive.

Now "earthlings" can learn to type accurately and quickly and have fun too!

### GAMES

*Snake Byte* from Sirius Software, Inc.,

Sacramento, CA. System requirements: Commodore 64 with one 1541 disk drive.

You are a snake, slithering around the screen, chomping down apples as you go. Sound easy? No way!

*The Blade of Blackpoole* from Sirius Software, Inc., Sacramento, CA. System requirements: Commodore 64 with one 1541 disk drive. Price: \$39.95.

This adventure game features a myriad of challenging situations and colorful, detailed graphics.

*David's Midnight Magic* by Martin Kahn from Broderbund Software, San Rafael, CA. System requirements: Commodore 64 with disk drive. Price: \$34.95.

An amazing electronic pinball experience that brings all of the fast action and tension of the real thing to the computer screen.

### APPLICATIONS

*PractiCalc 64* from Micro Software International, Inc., Newton Upper Falls, MA. System requirements: Commodore 64. Price: \$54.95.

This program is an all-purpose number

handler capable of managing information in the home, school and office environment.

*BUSICALC* from Skyles Electric Works, Mountain View, CA. System requirements: Commodore 64. Price: \$69.00.

With *BUSICALC* controlling the entry of data, providing a comprehensive memory, and performing arithmetic, the preparation of a spreadsheet is faster and more accurate than if it were prepared by hand.

*Database Manager* from Mirage Concepts, Inc., Fresno, CA. System requirements: Commodore 64. Price: \$99.95.

*Database Manager* is a personal productivity tool to help you organize and manage your information.

*BUSIWRITER* from Skyles Electric Works, Mountain View, CA. System requirements: Commodore 64. Price: \$99.

With *BUSIWRITER* assisting in the entry of text, providing a 20-page memory and performing an enormous number of editing/composing functions, the preparation of written data is far faster and outstandingly more accurate than if it were prepared by hand.

**IBM® PC****UTILITY**

*Diskette Manager* from Lassen Software, Inc., Chico, CA. System requirements: IBM PC with 96K or more, 80 character display, printer, two disk drives.

This is a library program for disk management, with unique label printing capability.

**APPLICATIONS**

*Personal Lawyer/Wills* from Lassen Software, Inc., Chico, CA. System requirements: 128K IBM PC 80 character display, printer, DOS 1.1 or DOS 2.0, one disk drive.

This program conducts an interview with the user concerning family and estate, and concludes with a printout of a Last Will and Testament that is unique to the user's personal requirements.

*Advanced DB Master* from Stoneware, Inc., San Rafael, CA. System requirements: IBM PC.

Non-programmers can use this complete, self-contained program to store, reorganize, extract and reproduce selected information that is easy to correct, change or print.

**COMMUNICATIONS**

*RELAY* from VM Personal Computing, New York, NY. System requirements: IBM PC with 64K and one drive. Price: \$149.

*RELAY* is a powerful and versatile communications package which makes it simple to access any of the wide variety of information utilities available, to connect to your company's mainframe or to communicate with other personal computers.

**GAMES**

*Planetfall* from Infocom, Inc., Cambridge, MA. System requirements: IBM PC with 48K. Price: \$49.95.

*Planetfall* is designed to stimulate your imagination, as nothing else in computer game software can, by allowing you to experience such sensations as hunger, exhaustion and danger.

*Data and File Management for the IBM Personal Computer* by J. Grillo and J.D. Robertson from WM. C. Brown Company Publishers, Dubuque, IA. System requirements: IBM PC. Price: \$16.95.

This book discusses in a simple, straightforward manner the many ways an IBM PC user can manage data and files.

*Introduction to Graphics for the IBM Personal Computer* by J. Grillo and J.D. Robertson from WM. C. Brown Company Publishers, Dubuque, IA. System requirements: IBM PC. Price: \$15.95.

This book will show you the kinds of graphics your IBM PC can generate, while giving you complete instructions to create them.

**OTHER****BOOKS**

*Critics Guide to Software for CP/M-Based Computers* by Phillip Good from Chilton Book Company, Radnor, PN. Price: \$12.95.

This book provides both the would-be and the seasoned computer operator with complete information for making wise software purchases for all CP/M-operated machines.

*Basic Robotic Concepts* by John M. Holland from Howard W. Sams and Co., Inc., Indianapolis, IN. Price: \$19.95.

This book addresses the four most central subjects of robotics: motion control, manipulators, mobility, and vision.

*How to Maintain & Service Your Small Computer* by J. Stephenson & B. Cahill from Howard W. Sams and Co., Inc., Indianapolis, IN. Price: \$17.95.

The object of this book is to give the average computer owner a basic background that will help him/her to deal with computer service problems.

*Megabucks From Your Microcomputer* by Timothy Orr Knight from Howard W. Sams and Co., Inc., Indianapolis, IN. Price: \$3.95.

The purpose of this book is to show you how to use your computer to make a profitable wage.

**ATARI®****GRAPHICS**

*Fancy Writer* by Frank Roberts from Kidstuff Software, Fort Wayne, IN. System requirements: Atari 400/800 with 48K RAM and printer. Price: \$34.95.

This is a unique program which utilizes the graphics capabilities of the Prowriter, NEC and Epson dot matrix printers to create five different alphabets.

*B/GRAPH* from Inhome Software, Inc., Mississauga, Ontario, Canada. System requirements: Atari 400, 600XL, 800, 800XL, 1200XL, 1400XL and 1450XLD with 48K RAM. Price: \$99.

*B/GRAPH* is a professional graphics charting and statistical analysis program for Atari personal computers.

**UTILITY**

*Humpty Dump* by James Reilly from Kidstuff Software, Ft. Wayne, IN. System requirements: Atari 400/800, with 24K, disk drive, printer. Price: \$34.95.

This is a RAM resident screen dump for the Atari 400/800 computer and some of the more popular dot matrix printers.

**BOOKS**

*The Computer Tutor: Atari Home Computer Edition* by Gary Orwig and William Hodges from Little, Brown & Company, Boston, MA. System requirements: Atari family. Price: \$15.95.

This collection of educational programs is designed for parents and teachers who want to introduce youngsters to rewarding com-

**TRS-80®****UTILITIES**

*The Collector Improved Garbage Collector* from Modular Software Associates. Huntington Beach, CA. TRS-80 Model I & II, 2 disk drives, 32K RAM. Price: \$24.95.

This is an improved garbage collector for TRS-80 Model I/III Disk BASIC. "Garbage collection" is the process of removing unused strings to make room for new ones.

*The Analyst* from Modular Software Associates, Huntington Beach, CA. TRS-80 Model I & III, 2 disk drives, 32K RAM. Price: \$24.95.

*The Analyst* is a utility to help speed up Disk BASIC programs. This program can speed up most BASIC programs by 15-50 percent.

**TELECOMMUNICATIONS**

*Business Computer Network Telecommunications System* from Business Computer Network, Inc., San Antonio, TX. TRS-80 Model III \$5.00/mo. service charge.

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puting experiences that go beyond simple game-playing.

**JOYSTICKS**

*The Joyboard* from Amiga Corporation, Santa Clara, CA. System requirements: Atari 2600. Price: \$35 — \$45.

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*The Power-Stick* from Amiga Corp., Santa Clara, CA. System requirements: Atari 2600, 400/800. Price: \$10 — \$11.

The *Amiga Power-Stick* brings the precision play and feel of arcade joysticks home.

**GAMES**

*Wavy Navy* by Rodney McAuley from Sirius Software, Inc., Sacramento, CA. System requirements: Atari 800/1200 with disk drive and 48K. Price: \$34.95.

Dodge enemy bombers, Kamikaze fighters, helicopters with blazing machine guns, mines, and an Exocet missile while sailing on the high seas in your P.T. boat.

*Moonshuttle* from Datasoft, Inc., Chatsworth, CA. System requirements: 16K Atari 400/800/1200. Price: \$29.95.

This game offers loads of excitement as the user navigates his craft through mysteriously regenerating aliens and increasingly difficult asteroid belts.

*O'Riley's Mine* from Datasoft, Inc., Chatsworth, CA. System requirements: 16K Atari 400/800/1200. Price: \$29.95.

This game leads the player to an abandoned mine full of mind boggling treasures.

# Hints

# & Enhancements

## Error Handling in Applesoft™

Applesoft, the resident BASIC in the Apple® II+ and IIe, is a fairly old version of Microsoft® BASIC. Because of its age, Applesoft does not have all the features and facilities of the newer versions of BASIC from Microsoft. In this column, I'll explain a few ways to simulate some of the more advanced error-handling statements — all with simple Applesoft statements and no machine language.

First, you need to know how to set up an error-handling routine. Applesoft provides the ONERR GOTO statement, which, in more modern BASIC, is ON ERROR GOTO. A sample statement is

```
10 ONERR GOTO 3700
```

This assumes that your error-handling routine begins at line 3700. Naturally, you would put the number appropriate for your program in the place of the 3700 here. Note that, in Applesoft, the ONERR GOTO statement must be either the only or the last statement in a line. Applesoft executes no statements following ONERR GOTO on the same line.

Your error-handling routine can have many purposes. It can trap disk errors as well as Applesoft errors. Sometimes, you'll actually *want* an error to occur. In order to make use of it, you must be able to control the situation. Your error-handling routine does this for you. For example, the Apple disk operating system (DOS), does not provide a means to tell when you have read all the way to the end of a text file. Instead, when you do, DOS issues an END OF DATA error. An error-handling routine could close the file, and allow the program to continue processing the information it got from the file. I'll not delve further into the details of error-trapping; these are covered amply elsewhere. Let's move on to simulating advanced error-handling statements.

### ERR and ERL

New BASICs provide the functions ERR and ERL. These return, respectively, the code number of the error, and the number

of the line in which it occurred. The Applesoft equivalent of ERR is PEEK(222); for ERL, use PEEK(218) + PEEK(219) \* 256. You might find it handier to define a function for the latter, with a statement like

```
10 DEF FN L(X) = PEEK(218) + PEEK(219) * 256
```

You would then get the line number with a statement such as

```
3510 PRINT "THE ERROR OCCURRED IN LINE";FN L(1)
```

To get the error code, use a statement like

```
3520 E = PEEK(222): PRINT "THE ERROR CODE WAS";E
```

Naturally, real programs should issue friendlier and more meaningful messages than these examples. Also, you may not want to issue a message at all. Instead, your program might simply take various special actions to deal with the particular error and the place in the program where it occurred.

These peeks and the error codes are discussed on pages 81 and 136 of the Applesoft manual (pages 68-72 and 247-252 of the Apple IIe Applesoft manual). You can find the codes for disk errors on pages 114-115 of the DOS Manual (page 168 of the new DOS Programmer's Manual).

### Cancelling Error Trapping

In modern BASIC, the statement ON ERROR GOTO 0 cancels error trapping. If it is used *within* an error-handling routine, this statement causes BASIC to display its normal error message, and stops the program. This prevents the program from proceeding when an error it can't handle properly happens. *Outside* an error-handling routine, this statement cancels any previous ON ERROR GOTO statement.

In Applesoft, you must use  
POKE 216,0

In order to simulate the display of untrapped errors from within an error-handling routine, use

```
POKE 216,0: RESUME
```

This is a tricky pair of statements. The POKE cancels error trapping, so that normal error messages can appear and so errors cause the program to stop. The RESUME causes the program to return to the same statement that caused the error in the first place. This time, the same error occurs, and the Apple beeps and displays the appropriate message.

### Resuming With Style

The newest versions of BASIC allow you to follow the word RESUME with either a line number or the word NEXT. RESUME alone, as in Applesoft, causes the program to try the offending statement again. RESUME NEXT causes the program to continue at the statement immediately after the one that caused the error. This isn't practical to simulate in Applesoft.

RESUME followed by a line number, however, is very easy to simulate. For example, in order to simulate RESUME 2000, use

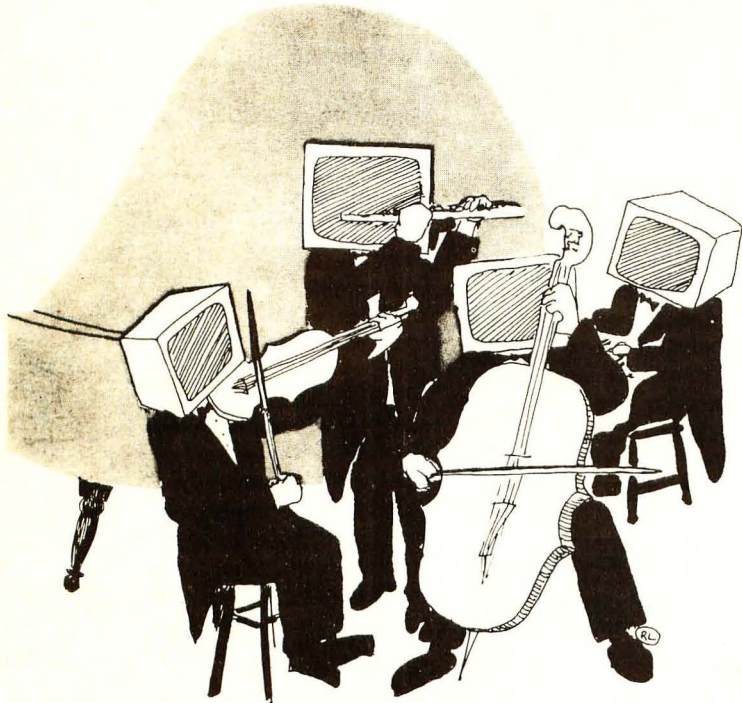
```
CALL -3288: GOTO 2000
```

The CALL -3288 statement clears some information from the control stack that a RESUME statement needs in order to go back to the proper place. Without the CALL, this information would remain on the stack, and would eventually cause Applesoft to become confused. The CALL appears in the new Applesoft Manual for the IIe, but not in the old manual. Also, the small machine language routine on page 136 of the old manual no longer appears. A disassembly of that routine shows that it fiddles with the stack. Hence, it appears that Apple has discovered an equivalent routine in the Applesoft ROM.

Fred Condo  
Software Editor

# COMING NEXT ISSUE

## COMPUTER MUSIC & DIGITAL SOUND



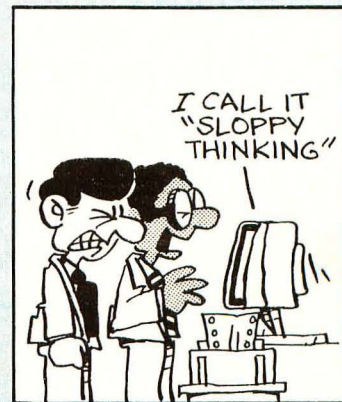
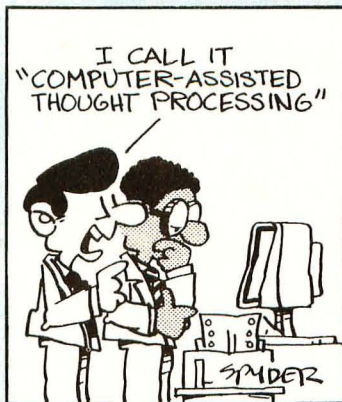
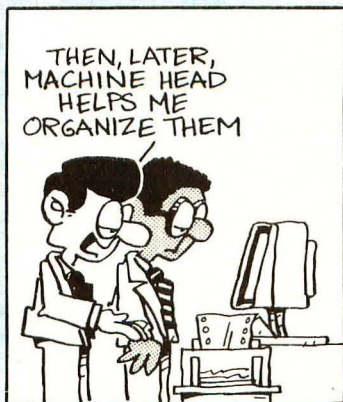
How do composers view the computer? Vast new tonal resources, and new idioms present new worlds to explore — and new ways to explore old resources. Microcomputers are becoming *personal* instruments for composers and performers — not only in cost, but in ease of use, size and portability. Moreover, the medium is maturing, because more composers are beginning to write interesting music for it. We'll have an interview with MIT composer Paul Earls, who uses an Apple® with an alphaSynthauri™ synthesizer. His multi-media work *Icarus* features laser projections on inflatable sculptures by Otto Piene. Princeton's Paul Lansky describes his technique of "linear prediction" to freeze and manipulate acoustic sounds as he creates his warmly human and expressive music.

The Digital Audio Disk finally has appeared on the consumer market. We'll take a look at how it works and what you can expect from it, and its companion technology, the videodisc.

The reviews will include *Soundchaser*, *Music Construction Set*, the Mockingboard speech synthesizer, Atari's *Music Tutor*, the Synth Symphony for the Commodore, and the PC Parrot.

### MACHINE HEAD

### BY SPYDER



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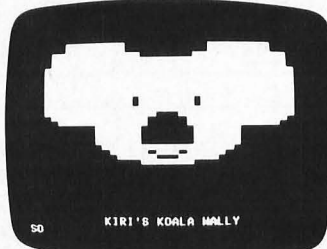
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# Hayes

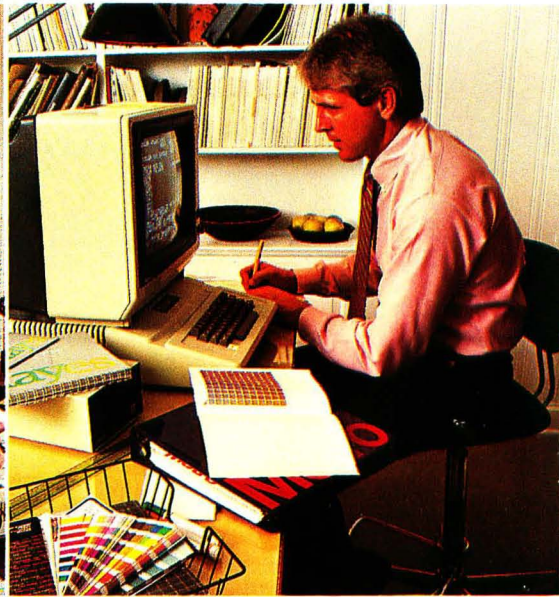
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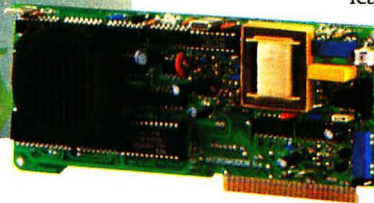
**Micromodem IIe. Think of it as your Apple's telephone.** It allows your computer to communicate with any Bell-103 type modem over ordinary telephone lines, at 110 or 300 bits per second. Micromodem IIe installs easily in an expansion slot, and requires no outside power source. It connects directly to either a single or multiline modular phone jack, to perform both Touch-Tone® and pulse dialing.

Micromodem IIe dials, answers and disconnects calls automatically. And, unlike some modems, it operates in full or half duplex, for compatibility with most time-sharing systems.

A built-in speaker lets you monitor your



Micromodem IIe  
Smartcom I



calls when dialing. That way, you'll know if a line is busy. With Smartcom I, Micromodem IIe automatically redials your last number.

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**Smartcom I companion software. For effortless communications.**

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Let Smartcom I guide you through a few easy-to-answer questions to tailor the program to your particular needs. Then you're ready to go!

Make a selection from the Smartcom I menu to manage your communications, files or printer. Program prompts guide you along the way. And menu selections let

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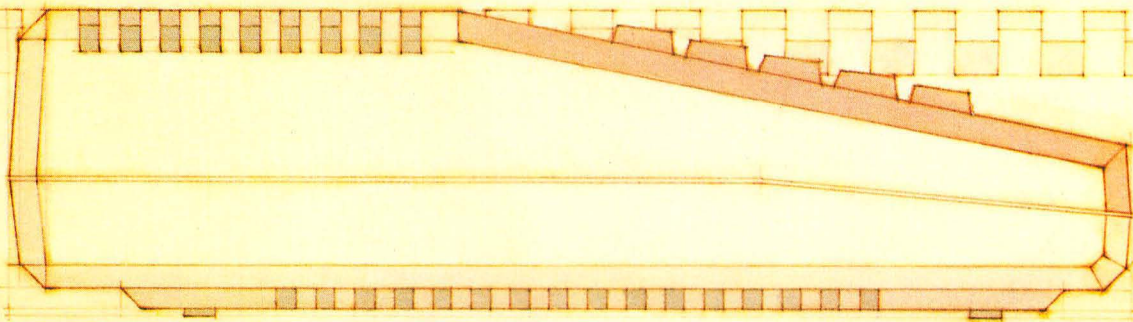
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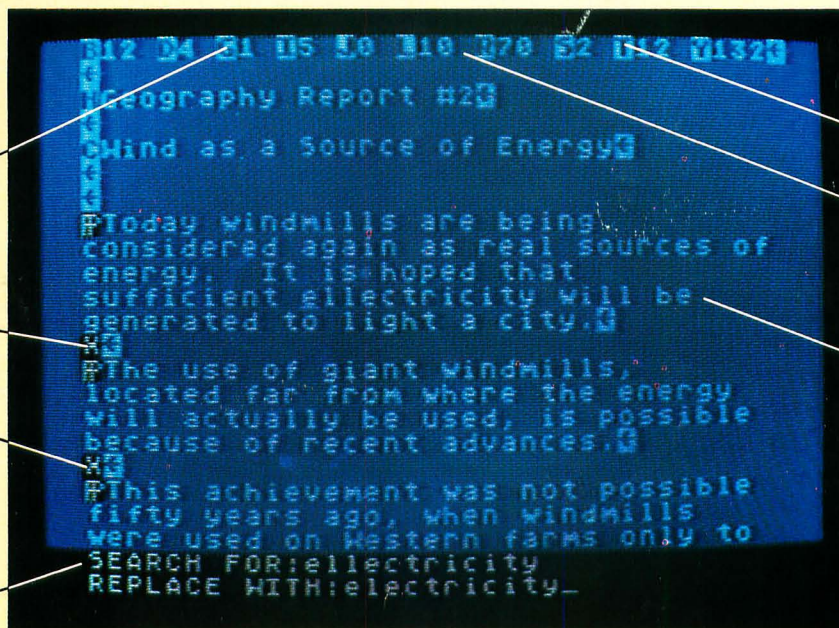


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