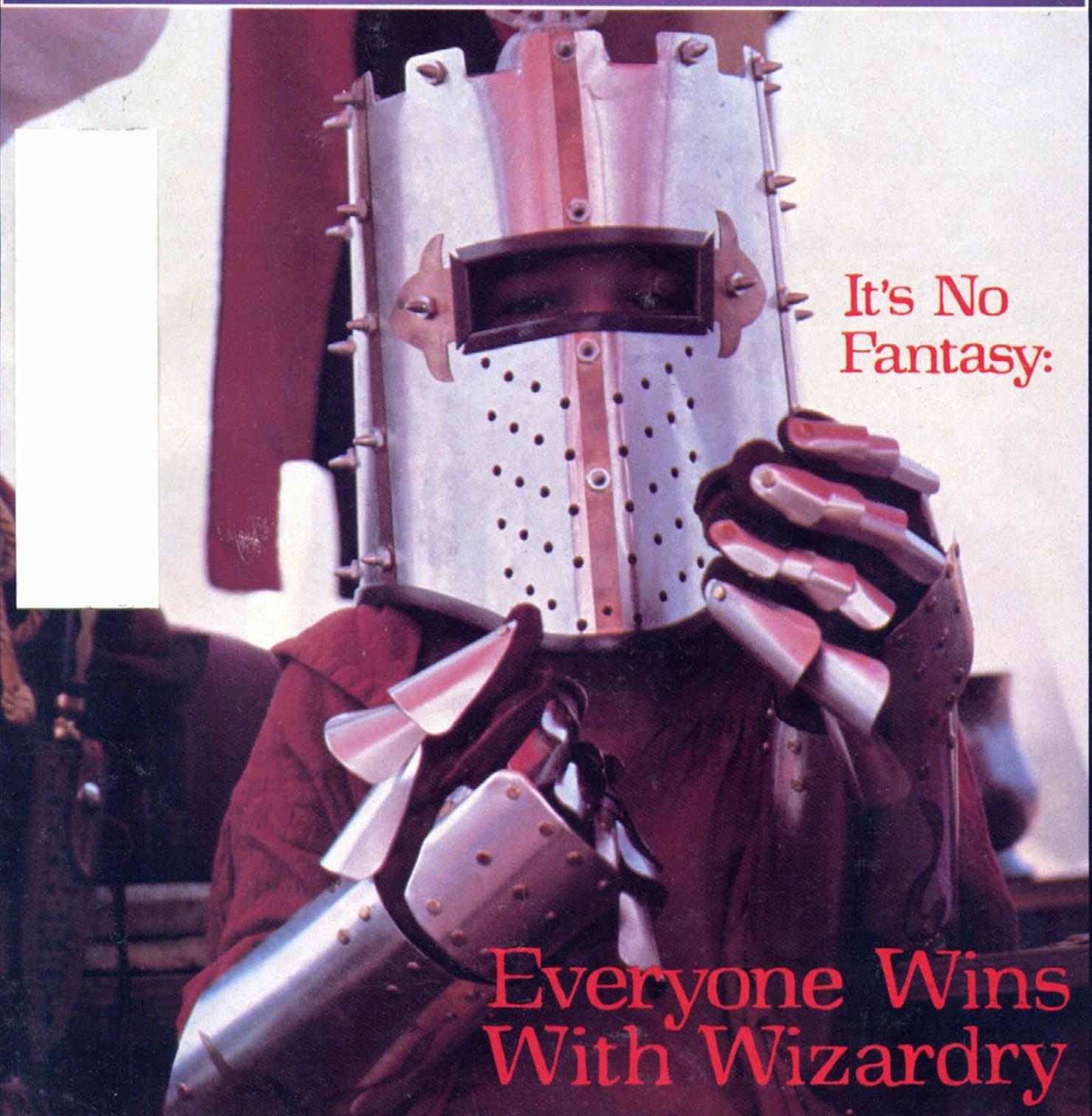


SOFTLINE

VOLUME 1

MARCH 1982

\$2.00



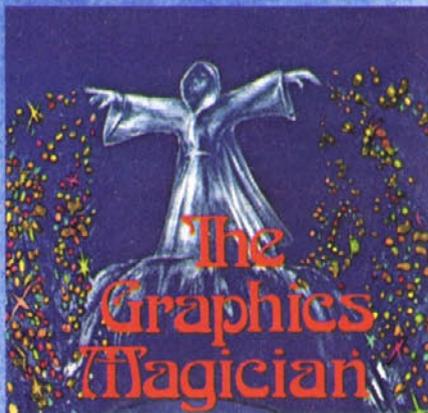
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Penguin software



The Leader in Apple Graphics



by Chris Jochumson and Mark Pelczarski

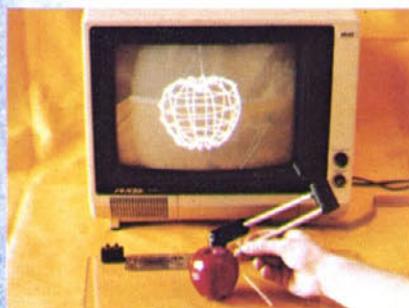
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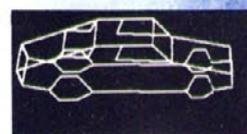
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Shaping Up Graphics

I am an amateur at machine language programming. I am at the point where I know all the commands and what they do, but don't know how to combine them for any complicated programs. I was quite surprised to find out that I can answer all of Mark Seybold's questions (November 1981).

First, shape tables in machine language are the same as Basic, except for the index at the beginning. In machine language you have to tell the Apple where the start of the specific shape is, not just the table. You first use the routine called *hposn* to get the hi-res cursor where you want it. To use it, load the A-register with the vertical (Y) value. The horizontal (X) value is tougher. The most significant byte (MSB) of the X value is put in the Y-register. The least significant byte (LSB) is put in the X. Now, you Jump to Subroutine at \$F40D. Now that the Apple knows where to put it, you turn to the shape itself.

The *xdraw* subroutine is at \$F65D. Before using it, the A-register must be loaded with the rotation factor. The Y-hi,X-lo setup is again used, but now for the start of the shape itself. A small table not unlike the old shape table could be made. That I'll leave to you.

Draw is the same as *xdraw* but a color must be specified. Load the X-register with a color 0-7 and JSR to the *hcolor* subroutine at \$F6FO.

Second, there are two ways to have multicolored shapes. First, you can draw multiple shapes at the same time. The other method is quite different. For white, the shape must have two dots touching horizontally. For violet, the *hcolor* = 3 and the dot must not touch nearby dots horizontally. Also this dot in the shape must have an even X-value. Green is the same, but with an odd X-value. When *hcolor* = 7, the even X-value is blue and the odd is orange. Remember, they can't touch. (This is why a starfield you make is different colors.) If you like games with ships that change colors, draw the shape on even and odd lines.

Third, you say a bullet hits a plane. Okay, you know where the plane is drawn and you know where the bullet is drawn. (Incidentally, to use this method, you must start your vectors from the middle of the ship when you make your shape.) We now must talk about horizontal and vertical leeway. This is how far from the middle of the plane the shape extends. For example, your shape is twenty pixels (dots) long and six high. To hit the plane, the bullet must pass within ten horizontal pixels of the middle of the plane. Thus, the horizontal leeway is ten. You must take the absolute value of the bullet's X-value minus the plane's X-value and see if it is below ten. The same method is used for the vertical checking. If both check out, it is a hit. How do you make sure it is a bullet that hit it? Simple. Check for the bullet only.

Lastly, how to make music play without stopping your game. All right, the plane's been hit. Here is what is called

explosion-in-progress. Set a variable (which was previously 0) to the number of things to do. In your main game loop check to see if it's not 0. If not, go to a subroutine. The subroutine might say that if $XIP=5$, then draw the first explosion shape and sound a note. After this, it should decrement XIP ($XIP=XIP-1$) and return. The next time through the loop XIP would equal 4 and do a different thing. This would continue until $XIP=0$, the end of the explosion. This will slow up a Basic game a bit, but not totally.

Well, I hope I've answered your questions, Mark.

Tom Hall
New Berlin, WI

In answer to Mike Cooper's letter in January's issue.

One way you could save a shape table on disk is using an "Exec File." Here is a program for Applesoft that would save your shape table.

```
5 D$=CHR$(4) : REM A CONTROL-D
10 PRINT D$;"OPEN N" : REM N IS THE NAME
    OF YOUR PROGRAM
20 PRINT D$;"WRITE N"
30 PRINT "CALL -155" : REM ENTERS MONITOR
40 PRINT "R" : REM R IS THE SHAPE TABLE
50 PRINT "T:B" : REM T IS THE LOCATION
    WHERE THE TABLE IS STORED AND B IS
    THE STARTING ADDRESS OF THE TABLE
60 PRINT "S:B" : REM S IS THE HIMEM, B IS THE
    SAME
70 PRINT "CLOSE N"
```

To use this program type "Exec N": More information on this is in the DOS Manual and in the *Applesoft II Basic Programming Reference Manual*.

David Bayard
Richmond, VA

I have spent months experimenting and trying to figure out the same things that Mark Seybold from West Covina, California inquired about in Directline.

I would deeply appreciate any of this information you could give to me. This information means a lot to me since hi-res graphics seem to be too complicated for me to figure out in machine language. Such things as how to use shape tables from machine language, how to create multicolored shapes, how to make an explosion or collision check, and how to create sound effects without stopping the action are questions that I need answered. Also, any information on animation would interest me.

John Haegele
Wyckoff, NJ

Avant-Garde Spells Fun

Congratulations to Avant-Garde on their *Word Scrambler* and *Super Speller*. At last I have found a spelling program that's as fun to use as a video game. I only wish it had been around when I was young.

Jan Engel
Iowa City, IA

Tune In on Tape

I really want to learn about hi-res graphics. I've written a few "saucer-type" games and would like to clean them up a bit. I also use SubLogic 3-D graphics, which are really fast, and I've written a program that turns Integer Basic into an extended-type Basic (it has *hgr*). Really makes hi-res easy and is way faster than Applesoft hi-res (but what isn't?).

I don't have DOS and would like to see a better selection of software on cassette (fat chance) especially from these companies: On-Line Systems, Muse, BudgeCo, Avant Garde, IDSI, Sirius, Broderbund, Gebelli, Cavalier, and Apple too (no angels).

How about a compiler (Applesoft or Integer) on cassette!

I would also like to see a monthly column about SubLogic 3-D graphics.

By the way, if you're playing *Apple Invader* (Creative Computing) and the game freezes (you hit invader same time he hits you, just hit reset and type 283G instead of 280G. This retains hi-score.

E. Macsinka
Oakland, NJ

In Defense of "Sharing"

Do you suppose that the "average man" cited in your article on "piracy" of Atari's *Pac-Man* game could tell a cover or sample article in your magazine from a similar cover or article in, say, *Softalk*, or some other competing computer magazine, at a distance of ten feet? Luckily for you, the "audio-visual" copyright precedent cited in the article doesn't apply to magazines, or you might find yourself hauled into court by a "gutsy DA" and charged with "magazine concept piracy" or some such concept.

Similarly, while I don't think anyone questions that "shoplifting is a crime", as stated on the cover of your January 1982 issue, it might be questioned whether or not, say, buying a sweater in a store, ripping the threads, and then constructing a similar sweater (using the purchased one as a pattern) with one's own labor and skill constitutes shoplifting—although of course the store manager might feel that, if the person who did this gave or sold the duplicate sweater to a friend, he has been "robbed" of the right (?) to sell a sweater from his stock to the friend.

The above examples may seem absurd, but I think they are better analogies to the situation with Atari, and the whole (overblown) issue of software piracy in general. Mr. Tommervik seeks in his article to expand the concepts of "piracy" and "ripoff" from stealing or illegally copying a piece of software, to simply writing one which is similar or resembles one already in existence. This is pernicious. Consider the case of someone who comes up with an accounting package (why, after all, should such arguments be limited to the rather puerile field of computer games). Then another person, let's call him Joe Schmuckatollah, comes up with another accounting package that does much the same things that the first package does—maybe some of them a little better. Can the author of the first piece of software scream "piracy!" and "ripoff!" and then haul Joe into court or con-

strain him from selling his product?

I see no reason why the arguments Mr. Tommervik indulges in could not be used to cover such a case—unless of course the final display of information on the screen was so radically different that the hypothetical “average man” could somehow tell the difference between them at ten feet.

In other words, it seems clear to me that what is at stake here is less a question of protecting the rights of software authors to the fruits of their labors, than it is a question of whether the initial (or alleged initial) producer of a category of software has a right to some sort of special legal protection from competition—Mr. Tommervik makes this clear himself, in some of his phrases, “When Atari turned to the home entertainment market, expecting little competition, they found—much to their chagrin—that their expected advantage had been dulled . . .” or “. . . Drikschneider was forced to cease manufacturing and selling its competitive (emphasis added) game.” Competition, which stimulated the home computer and software market, is now some kind of a villain, a handmaiden of “piracy” and “rip-off” and such blather.

Mr. Tommervik made reference to “20th-Century Fox buying the exclusive rights to a bestseller, only to find out that a Betamax version existed and was doing brisk business.” The situation would seem closer to a film company that distributes only VHS cassettes, and owning the rights to a 1982 remake of *Beau Geste*, arguing that they should have the right to repress and halt Betamax videocassette sales of earlier versions of the film on the grounds that these sales somehow “hurt their market,” and such sales constitute a “theft” of said sales. The issue is not unauthorized use of Atari’s product, but the distribution of a similar product for a machine for which Atari does not furnish a version of theirs. Unless one was to assume that satisfied Apple users who have invested from two to six thousand dollars in an Apple system are likely to chuck it and buy an Atari computer solely because of the availability of *Pac-Man* on the Atari, it is difficult to see how the existence of *Pac-Man* for the Apple hurts Atari in the least—how can it? Atari’s version works solely on the Atari computer. The Apple software market is a completely different one.

Even if it were conceded that the existence of other programs which resemble *Pac-Man* somehow eats into Atari’s market, I really fail to see how this can be labeled “piracy” or a “ripoff” unless such programs are actual copies of Atari’s code. This is—to put it mildly—unlikely. Competition is how the market operates, and if Atari feels that they somehow ought to be protected from competition by yelling “ripoff” and “piracy” they are likely to be wrong. It is especially disturbing that they seem to feel that they have the right to suppress competition because of the “high development costs” of \$5 million (much higher, I would imagine, than any development cost of their competitors). This is, of course, tough for them, but to argue that in the marketplace one has some sort of legal right to be protected from competition, or that one has a right to expect some sort of return based on one’s development cost, is one to give all economists, whether Marxist, laissez-faire, Keynesian, or some other philosophy, the galloping giggles. Overprotectionism of that kind can only lead to total stag-

nation and destruction of the home computer market.

I am a programmer and a consumer of programs. While I don’t steal or pirate copies of other people’s programs, I do purchase software with the idea of seeing how I can improve on it. I have yet to go into the software publishing business, but if I did publish a program, and someone else came up with an improved program that did more, better, and faster, and sold it for half the cost, I wouldn’t run screaming to the “gutsy federal attorneys” with some sob story about how someone was “stealing” my (sic!) chunk of the market. I’d try to write something even better myself, or, failing that, try to license the other guy’s better program myself. That’s how free enterprise works.

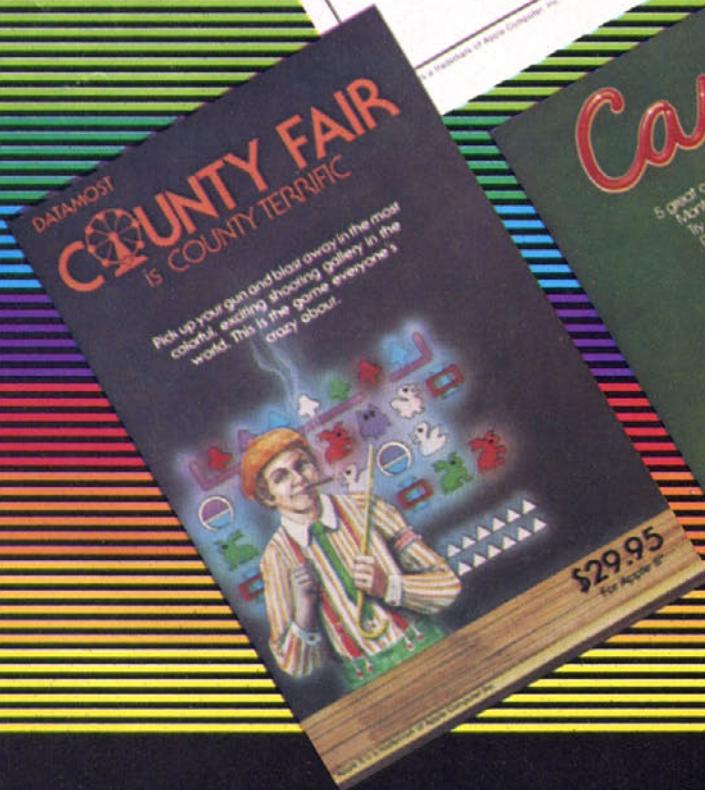
As far as prosecuting “pirate enclaves” for “ripoff,” I think this would be total suicide for the software industry. Get some things through your thick heads: Groups like the ones you attack are the major purchasers of the software. They purchase it because they can spread out the cost by sharing the program, and because they can use the software for barter tokens. This constitutes theft of nobody (regardless of what overpaid attorneys or badly-written laws may say), any more than I would be “stealing” from *Softline* by lending a buddy of mine my copy of your magazine so he could read an article in it. (Is that “stealing” your “right” to sell him his own issue of the magazine?) To assume that the “nine unauthorized” copies of a piece of software (or whatever) would be replaced with “authorized” copies at \$50 to \$500 each is stupid. Frankly, whatever it may cost the programmer in terms of development time, no software on the market is really of such value to the average end user. As someone who would like to get into publishing and selling one of my programs to even one third of the computer clubs and alleged “pirate enclaves” in the country, and if they make two hundred, two thousand, or two billion copies from that point on I could care less.

If my software can’t make money from the initial sale, then it is probably overpriced, or just not damn good enough to deserve making money, regardless of how much I have invested in development, etc.

I know people in the software business who have made money hand over fist, despite heavy unauthorized copying of their software by dealers and individuals. I see no reason why competent people should require the kind of overprotection Mr. Tommervik seems to feel is necessary and good.

I would also like to address this to Mr. Tommervik, and to other overexcited individuals who like to rant and rave about “software piracy” and “ripoffs”—to say nothing about his pompous closing paragraph, in which he pontificates about “law, conscience, and personal ethics,” to say nothing of decrying a “pioneer syndrome”. I would like him to comment on the “ethics” or “personal conscience” of a manufacturer who withholds details of his computer’s internal architecture or of the inner workings of his operating system in order to make things hard for independent software authors, or who requires, say, that a business or club purchasing ten of his computers buy “registered authorized factory copies” of one each of the language, operating system, and word processor for each machine at prices of \$500 each per program, that is \$1500 per machine? (For a total of \$150,000 in software costs—not bad “earnings” for a sale

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Or what about the manufacturer who sells either a business or personal user on how wonderful and useful his computer will be, doing everything from playing games to watering the lawn to doing taxes and employee payroll, but who neglects to inform the poor sod until after he's purchased the computer that the software for these applications is "not included" in the price tag of from \$2,000 to \$6,000, and that for some of the business applications the user will have to buy a special business software package for \$1,000 dollars, a Business Basic at \$1,200, and a CP/M operating system for \$500, plus a ten-inch Winchester hard disk drive off-line storage device if he has more than twenty employees, to say nothing of a printer? It is practices like these that lead to the "piracy" of software, and I sure wish that the AI Tommerviks of this world would address themselves to them, instead of raving about "pioneer syndromes" and blandly assuring us that software is not overpriced "because the author and the software house must get a reasonable return on their investment."

John P. Strang
Long Beach, CA

Gamers' Piece of Eternity

Here is an inquiry to those great programmers that we know and envy: I have yet to see all-time high scores (with players' initials) kept on disk. This is one feature game software lacks. Why don't you do it?

Peter M. Mauro
Providence, RI

Spaced Out Scores

I like to compare the high game scores in your "High Scores" section to my own modest accomplishments on the same games, but I must say your credibility is somewhat strained so long as you insist on listing the high score for *Alien Rain* as 17,735,500. Either Alan Lee (who claims to have achieved this score) has a creative memory or your typesetter tacked on a few extra zeroes. My best score is 7,020, nothing to brag about, I admit, but several thousand higher than the few other people I know who've played *Alien Rain*. Mr. Lee's high score is there more than 2,000 times better than mine.

Can that be? Being charitable to Mr. Lee in the following analysis, let us say that a player will average 1,000 points each time he clears all the enemy ships (my average in the 7,020 game was about 650), and let us say it takes thirty seconds to clear the screen (forty-five to sixty for me, but I don't doubt others are much quicker). This means Mr. Lee must have cleared the screen 17,735 times in his record game, and that he took nearly 148 hours to do so—over 6 days. If Mr. Lee in fact did so, I applaud his game-playing ability and stand in even greater awe of his bladder capacity.

I suggest that, before you print such outlandish claims, someone on your staff who is familiar with the game review the claim and check it out first.

Eric A. Brill
San Francisco, CA

I would like to take issue with either the validity of the

Apple Galaxian score of 17,735,500 or the sanity of Alan Lee. My personal high score of 65,660 took approximately forty-five to fifty minutes. If Mr. Lee scored at the rate of 100,000 points per hour (approximately 15 percent faster), it would take nearly eighteen hours to complete his phenomenal game. I would like proof of this accomplishment.

With some of the games listed, there are two scores, the programmer's and consumer's top scores. If a large difference exists between #1 and #2, as probably exists with *Galaxian*, please list both so we mere mortals will have something to compare to.

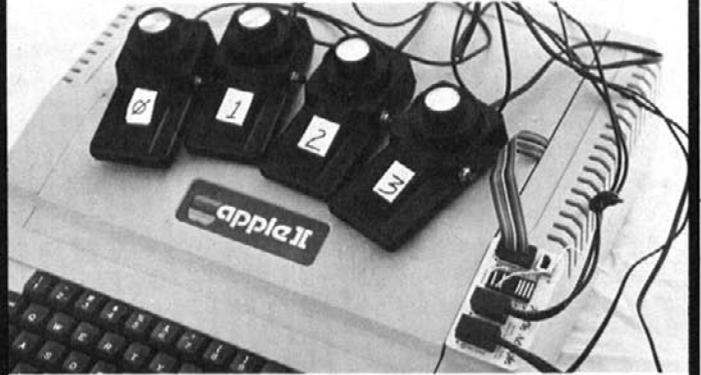
Douglas M. Smith
Oak Park, IL

I am writing concerning some questions asked in Volume 1, Number 3, regarding high scores printed on the back page of *Softline*. A Mr. T. Krier of Poughkeepsie, New York, asked, "How does someone score 17,535,500 on the game *Alien Rain*? Well, to put it as simply as possible, I don't believe Mr. Alan Lee of Brighton, Massachusetts, did in fact score the 17.5 million, at least not by himself. Now don't get me wrong, I'm not calling Mr. Lee a liar, I just question his ability to play for such a long period of time, without the help of another person or two.

The reason I say this is because, being a great fan of *Alien Rain* myself, it takes me an hour to score 100,000 points. That's right, an hour! So for me to score 17.5 million points it would take 175 hours or 7.29 days. That's a whole week!!! But, let's say Mr. Lee is faster and better at scoring

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the high points. So we'll say it takes him only 30 minutes to score 100,000 points. Now that's 87.5 hours or 3.6 days. No one in their right mind is going to sit in front of their Apple computer for 3.6 days, let alone an entire week!

I'm not saying you can't reach a score of 17.5 million, because you could if you had the time. You see when you reach 98,000 or 198,000, etc., for each alien you hit you receive an extra ship until the ships you are hitting finally add up to 100,000. It's easy to get about 20 extra ships just right there not even including the extra ship you get every 3,000 points. For instance I played the other day and scored 280,000 points and decided to quit because I just didn't have the time.

Now if Mr. Lee found a way to get into the program and create a freeze option like the one in *Bug Attack*, then I see the possibility of his score. Since I have never had the time to reach a million points, there may be a subroutine that doubles or even triples the score of each alien hit, when you reach a certain score.

Now, Mr. Lee, unless you had friends help you or you created a freeze option or the score doubles at a certain point, then I don't think you could have scored your 17,535,500. And if you did, I pray you had a fan for your Apple.

I would welcome any response from Mr. Lee or anyone else who may have an opinion as to this great bewilderment.

Jack Bendickson
Phoenix, AZ

The score Alan Lee reported was one that he and a group of friends achieved, working in relay, and Lee reported it that way to Broderbund. Between Broderbund and the printed page, that detail got lost. The highest individual Rain score to reach us by press time for the next issue will replace the group. They retire with our congratulations on what must have been a grueling effort. Thanks also to all of you who noticed and spoke up.

Congratulations on the third issue of *Softline*! It's getting better and bigger with each issue and it's easy to foresee its growth paralleling *Softtalk's*! I for one am avidly awaiting a 200-page *Softline*!

The only thing that disturbs me so far are some of the ridiculously "high scores" on the back page—without proof of any kind, someone's going to start endless rounds of one-upmanship. Perhaps if you published only those scores that are saved to the disk, such as *ABM* or *Rings of Saturn*, more authors would incorporate such features in their future programs.

Kenneth T. Lim
Cupertino, CA

Readers of *Softline* may be interested in a hidden feature that I have discovered in the game *Snoggle*. If you have been frustrated in your attempts to move on to advanced levels, there is a way to obtain a constant supply of Snoggles.

Whenever you are being devoured by a ghost, press and hold the shift and control keys, press the M key, then release all three keys. You will be rewarded with a complete new set of Snoggles.

You can play indefinitely this way, although the game

begins to act somewhat bizarre at around 100,000 points.

I can't guarantee that this will work with all versions of *Snoggle* (I bought mine shortly before they were pulled from the market), but it is worth a try if you've given up on reaching the higher levels. I have gotten to level three immediately.

One problem that might arise is your "High Scores" page. Maybe you could print two scores for *Snoggle*—one for legitimate scores and the other to reward perseverance in using control-shift-M.

Garry Galbreath
Charlotte, NC

I wish to compliment you on your excellent magazine, *Softline*. Also, I wish to report a very high score on my favorite arcade game as follows:

Crop Duster by Slipshod Software 14,375 (13 cows)

I would have done even better if I hadn't kept hitting those !!!@ cows. They practically fill the entire screen.

Victor De Grande
Staten Island, NY

Ogre Is Okay on Atari

I read with enjoyment your article in the January *Softline* about the adventure game *Attack of the Three Toed Ogre*. I own an Atari computer and would like to program the game for my machine, but I am unfamiliar with Applesoft Basic and do not know how to convert the program to Atari Basic. Can you help me out?

Robert D. Sobieski
Roseland, NJ

The *Attack of the Three-Toed Ogre* will run essentially as is on the Atari. Incidentally, the first statement in line 1075 should have read: IF YH > 10 THEN PRINT "THUD. . . TAKE THAT MR. OGRE."

Surprise Package

I am writing to you to tell you about a game that is full of surprises. It is called *Horizon V*. My high score is 10,105. That was made on my second day after receiving it. Nasir really outdid himself again! The first time was with *Gorgon*.

The game is what everyone says—*Gorgon* in 3-D. It is more than just that. It has a belly dancer in it that you can watch when you get tired of playing. It also has shields! Also, after the fourth level the game says "ouch" if your ship gets hit by the oncoming G-bellians. (What a surprise that was!) After each game you can save your high scores onto disk.

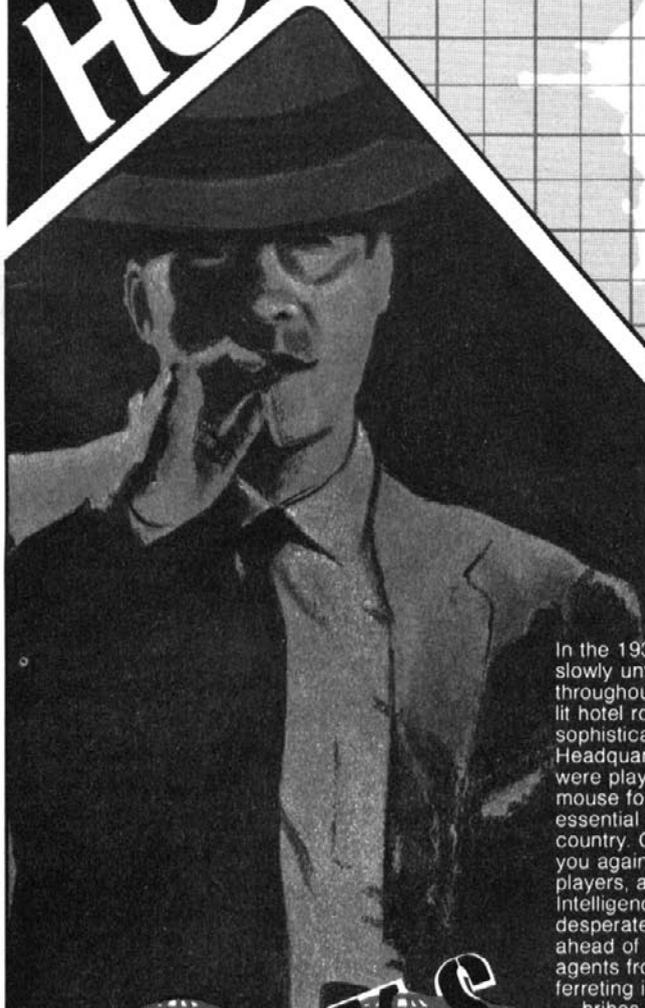
I forgot to tell you that you can even change the keyboard around (for your controls). You can also use a joystick (I wish you can do that on *Gorgon*!).

This game is great! There is a lot more I could tell you, but I am sure I have already spoiled some of the surprises to be found with a purchase (original) of *Horizon V*.

Mark Fraioli
Stamford, CT.

Send your letters to Directline, *Softline*, 11021 Magnolia Boulevard, North Hollywood, CA 91601. 

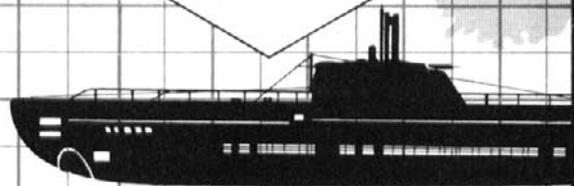
2 FROM HORIZON



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What Price Software?

Part 2 of The Great Arcade / Computer Controversy

by *ALLAN TOMMERVIK*

Whenever examples of snappy repartee and quick thinking are being bandied about, one or more baseball stories seem bound to surface.

One of the favorites involves a famous umpire and a famed, albeit obstreperous, star. As things transpired this particular day, neither was having a very good game. Neither team was finding the umpire's ball and strike calls especially edifying—the obstreperous star being particularly biting in his umpire-baiting comments.

In the late innings, the umpire declared the star out on a called third strike, at which time the star went nearly berserk. Amid his tantrum, he hurled his bat into the air.

The umpire had taken the increasingly scathing comments of the players with as good grace as he could muster, but this obvious gesture of disagreement and disrespect was more than he could stomach. As the bat reached the apex of its flight, the umpire roared, "If that bat comes down, you're out of the game."

The arbiter was using the most rudimentary of principles—what goes up, must come down—to eject the player from the game. These days, even that seemingly universal law seems to have been repealed. Perhaps Jupiter fly-bys do come down, but they certainly don't come down on the earth from whence they came.

Monetary Mass Drivers. And the long, uninterrupted inflationary spiral has clearly repealed that principle as it pertains to prices. Nowhere is that point clearer than in computer software, where it seems there's no upper limit.

The groans that were heard when *VisiCalc* was introduced at just under \$100 in the spring of 1980 are nothing compared to cries of outrage at some of the current prices. *VisiCalc* now goes for \$250; *Time Zone* just surpassed *Wizardry* and some Strategic Simulations war games as the most expensive game at \$99.

In fact, there seems to be price snobbishness in the computer software marketplace. Lower-priced product,

both entertainment and applications, seems to get short shrift. The attitude of most buyers seems to be that they'd rather pay a few dollars more for a more versatile program; the cost effectiveness of that enhanced versatility seldom enters the equation.

Nevertheless, harking back to the days when barter was the means of exchange, pirates excuse their actions on the grounds that software publishers gouge the end user with exorbitant prices.

Disregard for the moment the question of right and wrong in unauthorized copying. This rationalization falls apart on economics alone.

Do-it-Yourself VisiCalc? The first means of determining the true value of a program to any particular end user should be for that end user to ascertain how much time, starting from scratch, it would take him to develop and debug the program himself.

If the end user's time is worth \$10 an hour, he could only spend 25 hours programming *VisiCalc*. Clearly, on this basis alone, the higher-priced software becomes a bargain. Anyone who can write *VisiCalc* or *DB Master* in twenty-

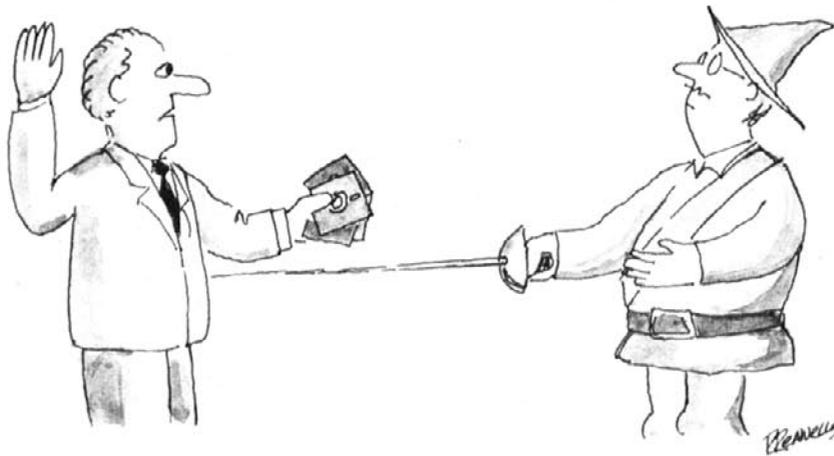
there's lots more to software publishing than counting profits.

Journey to the Bottom Line. Consider a typical arcade game that sells for \$30. Sixty percent of the retail price is pocketed by the retail store and the distributor. That means that the publisher gets \$12 for his \$30 product. That's already alarmingly close to the \$7 the end user would claim as a "fair" price.

The publisher usually has a royalty arrangement with the author calling for various percentages. While the legal mumbo jumbo obfuscates the facts, the average royalty rate in a situation such as the one described, where the publisher uses one or more aggressive distributors, is about 30 percent.

That's another \$3.60 out of pocket. Now the publisher has \$8.40 for the program. From this he must buy disks, provide copying services, prepare packaging and documentation, spend money on advertising, pay the overhead necessitated by those activities, and, if he's lucky, pocket a nickel or so.

A minimum effort in these areas will produce a copied disk for about \$2.20, packaging and documentation for



"YOU'RE ROBIN WHO FROM WHAT USER GROUP?"

five hours should be programming instead of complaining about the high cost of software.

Even that \$50 game becomes a bargain . . . unless you're one of the rare individuals who could do it in five hours, bug-free.

But, cry the end users, that's the value of mass merchandising. Everyone shares in the development costs to bring the unit price down to manageable proportions.

How, retort the publishers, is that unit cost reduced by the activities of pirates?

There are those oversimplistic folks who declare that any piece of software can be sold for \$7, which takes in the cost of the disk and plenty of profit margin. Rumors of high royalties paid to software authors have not exactly dispelled the thought that the road trod by software publishers is paved with gold.

The failure of Programma International, once the kingpin of software publishers, provides graphic evidence that

about \$1 if it's a simple game—more for complex games or applications software—and about \$1.20 for advertising and promotion.

It's a quirk of reality that the actions of the marketplace actually drive some of these costs higher by making them objects of negotiation. It does not escape most persons intelligent enough to be authors of commercial software that sales can be enhanced by better packaging and by more extensive advertising.

These areas then become objects of negotiation when the author compares offers from various publishers. This causes the publishers to compete for successful authors by promising more attractive packaging and more extensive advertising.

When the public was still buying software in baggies with mimeographed documentation and was learning about the product through word of mouth, the lower costs of packaging and promotion enabled software suppliers to

charge less.

Now that the buying public has become more sophisticated, those costs drive the price of software up. The dynamics of the marketplace—remember the 60 percent-40 percent split—actually dictate a \$5 retail price increase for each \$2 spent by the software publisher.

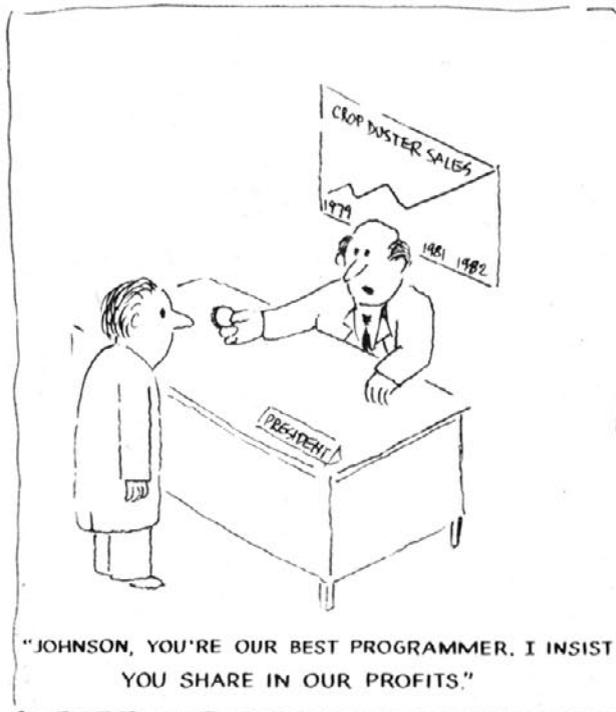
High-Risk Occupation. Returning to a ploy of the numbers, we've reduced the publisher's income to \$4 and we haven't considered his rent, his accounting costs, his taxes, his customer support expenses, or any of the other myriad details end users expect of software publishers in a mature marketplace.

In this scenario, a minimum break-even sales figure would be two thousand. But now we have to reckon with the specter of unauthorized copying—either by protection-breaking pirates or by nibbler-wielding ones. Suppose the publisher assumes the conservative stance that five thousand end users will be interested in his program and that his unprotected disk will result in only one unauthorized copy for each legitimate sale. The publisher sees that he must sell 80 percent of the remaining market to break even.

His profit will come only out of the remaining five hundred users, if he can find them.

The publisher's response is predictable. Will he forsake those five thousand end users? Absolutely not! He'll hire an expensive copy-protect gun to cut down on the unauthorized copies by injecting the most sophisticated copy-protection techniques known.

By doing so, he maximizes his chances for sales to his prospective constituents, but cuts into potential revenue even more. Now twenty-two hundred becomes his break-



even figure, but he may have as many as fifteen hundred additional potential sales on which to make his profit.

Another way of looking at it is that the publisher in the above example now needs 44 percent market penetration to his observed constituency to break even. In any more businesslike industry, that would be an unacceptable risk.

Only in an industry like this, where most of the publishers are more notable for their optimism than for their good business judgment, would you see a continuing flow of high caliber product in the face of the deprecations of the end user who is the object of the publishers' affections.

Wasted Talent and Stunted Growth. Not to be overlooked is the hypothesis that the publisher will spend 10 percent of his income on advertising. In a market rife with piracy, the publisher needs to create an instant demand and capitalize on this demand. Piracy hurts only the software publisher and author; the magazine publisher stands as one of the greatest beneficiaries of the pirates' activities because of the software publisher's need to disseminate news of his products widely and rapidly. It is notable nevertheless that there's a never-ending tirade in publications against pirate activities.

That's because the publications tend to take a longer view of the marketplace. And that view mandates profits for all portions of the microcomputer industry to ensure a continuing flow of goods and services.

Piracy, in either the corporate or the personal form, merely saps the industry. It deprives pirate and nonpirate alike of the energies of some of the industry's brightest programmers—installed instead as copy protection experts.

Were piracy minimized, the industry could mature faster and the unit prices could be lower for each product. If those selfish, pragmatic reasons are not enough, think of the poor author. According to both statute and common law, he has the right to the fruits of his labor.

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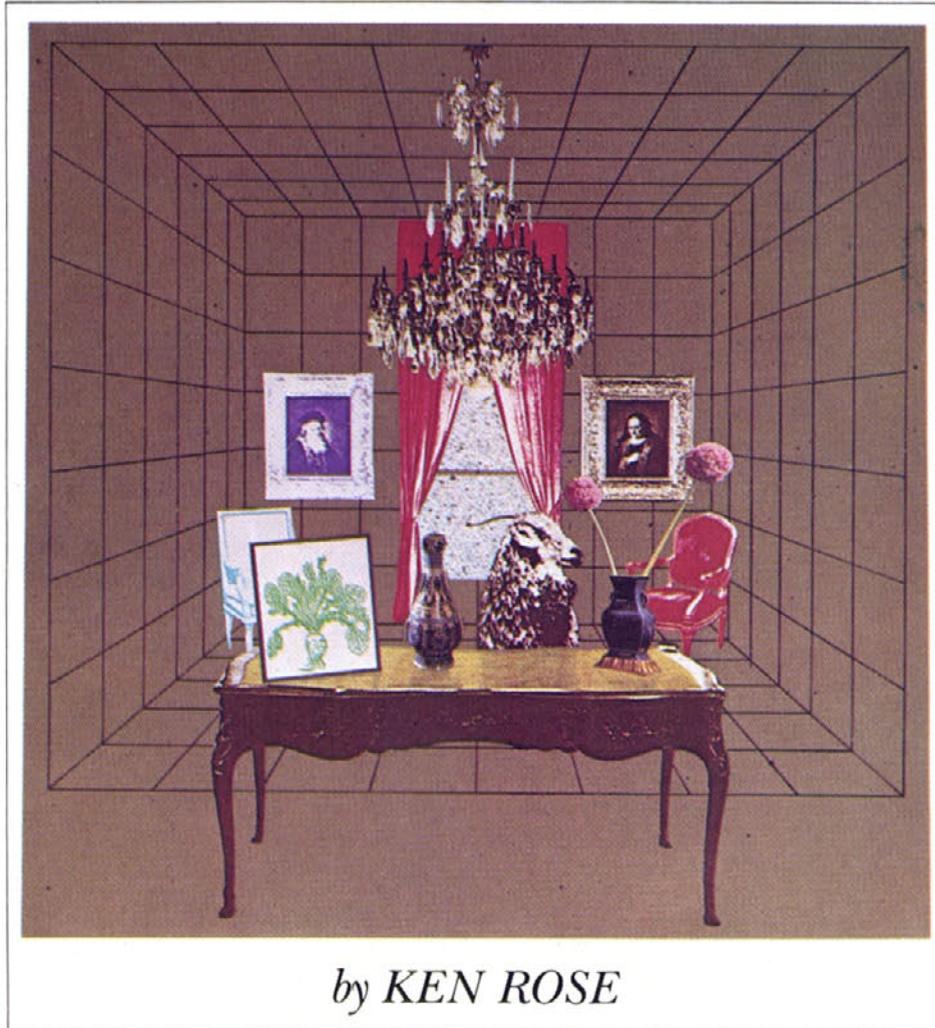
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Adventures in Adventuring

Please Parse the Zork



by *KEN ROSE*

The most famous scientist in the whole wide world was being interviewed just before going into retirement.

"Doctor," he was asked, "looking back over all of human history, can you tell us, what is the outstanding invention, the greatest contribution ever made by anyone during the annals of man's history?"

"The thermos bottle," replied the sage.

"The thermos bottle? Do you mean to say that the thermos bottle supersedes the use of fire . . . the thermos bottle overshadows the wheel, electricity, the harnessing of the atom, the airplane?"

"Yes. The thermos bottle."

"But why, sir?" He was pressed.

The wise scientist looked at his questioner. "Because," he said, "if you put something into it hot, it stays hot. And, if you put something into it cold, it stays cold."

"So what?" said the interviewer.

The old man looked at him and tugged on his beard. "How do it know?"

Understanding Was Never Easy. As is the case with so many of our marvelous inventions, it only knows because we tell it. And our faithful computer also only knows something because we tell it, because we communicate with it.

Take the matter of adventure games, for instance. Let's consider how an adventure game understands and interacts with us. Along the way, we'll take a look at the state of the art in adventure game understanding—*Zork*.

Most adventurers have seen or played the *Colossal Cave* adventure—what's often called the original *Adventure*—either on a main frame, mini, micro, or in the form of an electronic game. You'll recall that communication within the game is usually accomplished by giving two-word commands consisting of a verb and a noun.

In a typical situation, you might say, "Get snake," to which the computer might respond, "Okay," or, "The snake bites you and you're dead" or "I don't understand." The computer also understands a few one word or one letter commands, such as "East" or "E" for "Go East" or "Inv" or

"I" for "Inventory," meaning "List out the items I have in my possession."

In the program, there are word and noun tables. As each word is input, it is looked up in the tables to see if it is legitimate and to see if the verb and noun "go together." An appropriate message is then selected from the text messages contained in the program and printed to the screen.

Let's tell the computer to "Get snake." How does the computer know that you have told it two words, *get* and *snake*? A moment's reflection will bring you to the conclusion that something recognizes the blank space between the two words and says, "Aha, there is a blank space. The first word must end here, and the second word must start after the blank space." If this is what you imagined, you're exactly right.

You Should've Paid Attention When They Taught You To Diagram Sentences. The breaking down of a group of words into its grammatical components is called parsing, and the mechanism—the program logic, if you will—is called a parser. Most adventure games use a very unsophisticated parser similar to the one used in the original *Adventure*.

Except *Zork*.

In 1977, David Lebling and Marc Blank decided to produce a better parser. They did this because they greatly enjoyed the original *Adventure* but were troubled by the limits to communication with the game. Over the next couple of years, they wrote *Zork* on a PDP computer, giving their game the ability to recognize adjectives and to understand conjunctions and multiple sentences.

Say you're in a room and find three buttons to push—a red button, a green button, and a yellow button. In a typical adventure game, one with a fairly unsophisticated parser, the ensuing action might go like this:

"Push button," you say.

The computer responds, "Which one?" or, "I don't understand."

After thinking it over, you go back to your original tack.

"Push red," you type, and the computer understands.

Only when you figure out that "Push red" is the two-word command the computer is set up to respond to will the computer do your bidding.

In *Zork*, you can say "Push red button" and the computer understands exactly what you mean. In fact, *Zork* allows you to string commands together. You can say, for instance, "Push red button then push green button. Go north.", and the computer would know just what to do. Once you get into the habit of using this feature, it's very difficult to go back to the old two-word mode. Another superlative command in *Zork* is "Get all." This allows you to get every item in a room without having to type in each item one at a time. This command is complemented with a "Drop all" command.

Phoning It In. You probably know already that a modem (modulator/demodulator) is the device that you use to hook up your computer through the phone lines to other computers. You probably also know that there are bulletin boards you can access that have all sorts of entertaining information computer folks love. One of the major uses is trading information and hints on adventure games.

In late 1979 and through 1980, bulletin boards were buzzing with comments like "How do you open the egg?" and "Is there anything worthwhile in the echo room? If there is, how can I talk to the computer over the echos?" *Zork* had started making the mainframe circuit and was provoking a lot of interest. In fact, a *Zork* user group formed in Milwaukee. In 1981, *Zork I* was brought out for the Apple Computer and the bulletin board networks really started humming with people looking for clues and hints.

According to Dave Lebling, about two-thirds of the original *Zork* was used on the Apple version of *Zork I*.

In the fall of 1981, *Zork II*, which is about the same size as *Zork I*, was brought out. It contained most of the remainder of the original *Zork*, along with additional material. *Zork III* is currently in the mill and will, according to Lebling, finish up the series.

Zork II contains another new feature, one found in no other currently available adventure—the ability to carry on conversations with some of the characters you meet along the way.

Epicaresque. But *Zork* has a larger attribute that makes it different from all others—it is truly an epic adventure.

When you start out in *Zork I*, you are in a forest. As you wander around, you eventually come to a house in a clearing. After some trials and tribulations, you are able to enter into the Great Underground Empire. Upon entering, you must battle several nasty folks and, if you defeat them, you can continue on your journey.

Your trip takes you down an underground river, through a mine with strange machinery, and to weird and mysterious temples and dungeons. Always lurking in the dark are the mysterious grues, waiting to pounce on you if you give them the slightest opportunity. There is one not-too-difficult maze that must be thoroughly explored if you are to complete the adventure successfully. The object of this adventure is to collect treasures and store them. When you have done this, you will find another opening into the empire that puts you in position to tackle *Zork II*.

Zork II is subtitled "The Wizard of Frobozz." While you can play it independently of *Zork I*, the practice you get in *Zork I* will stand you in good stead, because *Zork II* is tough. Not impossible, but tough.

A Fierce and Funny Fellow. As you journey down the corridors of the Great Underground Empire, you will meet and talk to the great Wizard of Frobozz himself. Unfortunately, he doesn't like you very much, and with his affinity for "F" words such as "float," "fall," and "fence," he'll give you fits in completing his assignment. There is also a balloon ride that takes you briefly out of the underground, a beautiful princess with an affinity for unusual animals, and a visit to the Empire Savings Institution where you may meet the gnome of Zurich.

Humor, adventure, multiple plot lines, and a really good parser commend this adventure as the best there is at this stage of the game.

Early on, we talked about the computer's recognizing words in a table. Answering the question "How do it know?" by referring to tables and parsing and all that jazz just may not satisfy your curiosity. So let's go on.

Stringing Along. In Basic, there is a function called

string handling. A string variable differs from a numeric (or real or integer) variable in that it's able to store letters of the alphabet as well as representations of numbers and most characters found on a keyboard. A string variable is designated by a dollar sign (\$) following a variable name, and the information in the variable must be enclosed by quotes. VI\$ is a string variable named VI. VI\$ = "piglet" would tell the computer to store the word piglet in the variable VI\$. A function called *len* allows you to find out how many characters are stored in a string variable. If we ask the computer to *print len (VI\$)* and VI\$ = "piglet" the computer will print the number six.

Another function, called *val*, allows you to find out what the number value in a string variable is. If VI\$ = "piglet" and we say *print val (VI\$)*, then the computer will print 0. But if VI\$ = "72" then the computer will print 72 when asked for the value of VI\$. This doesn't seem like a big deal, except that 72 in a string variable ain't really a number in the same fashion as 72 in a number variable.

Another function of string handling in some Basics is the ability to pluck out letters or blocks of letters from a string. These functions are not available in all Basics, but there is usually some way to emulate them.

They are *left\$, right\$* and *mid\$*. Respectively, they can select characters starting at the left side, right side, or the middle of a string variable. If VI\$ = "piglet" and we say *print left\$(VI\$,2)*, the computer will print *pi*. Asking the computer to *print right\$(VI\$,2)* will cause the computer to print *et*. And saying *print mid\$(VI\$, 3,2)* will have the computer print *gl*, because we have told it to print two letters starting at the third letter.

What Happened to the Frog? With all this in mind, it's time to take a look at the program listing that illustrates these principles. Note that if your computer doesn't have the *left\$, right\$,* or *mid\$* functions, lines 235, 240, and 270 will have to be modified. Since what these lines do is look through the string to find a blank, you can modify a *get* routine or other string inspection routine, which your Basic does understand, to do the same thing. In line 930, we check for a yes or no answer by looking at the first character at the left side of the string. This is also easily modifiable. As always, if you have a question, drop me a note.

This little program also illustrates how a nine-word vocabulary can be used in a lot of ways.

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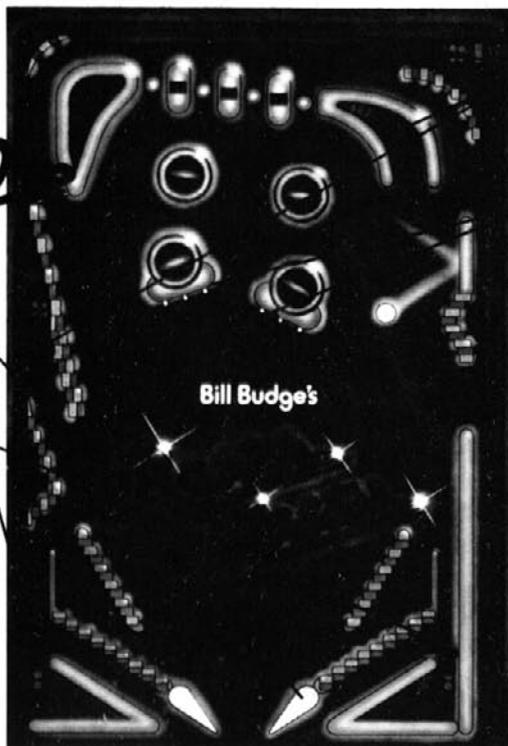
5 HOME : REM CLEAR SCREEN
10 REM HOW DO IT KNOW
15 REM DIM VARIABLES
20 DIM V1$(10),N1$(10)
25 REM LOAD DATA INTO VARIABLES
30 FOR A = 1 TO 4
35 READ V1$(A)
40 NEXT A
45 FOR A = 1 TO 5
50 READ N1$(A)
55 NEXT A
100 REM THE STORY STARTS HERE
105 PRINT "YOU'RE STANDING IN A ROOM. IN
    THE "
110 PRINT "MIDDLE OF THE ROOM ARE THESE
    ITEMS:
115 PRINT
120 REM LISTING OUT THE ITEMS
  
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```

125 FOR A = 1 TO 4
130 PRINT N1$(A)
135 NEXT
140 PRINT : PRINT
145 GOTO 200: REM GOING TO THE PARSER
150 REM BACK FROM THE PARSER. CARRYING
    OUT THE INSTRUCTIONS
155 IF V$ = "EAT" THEN GOTO 505
160 IF V$ = "SMELL" THEN GOTO 545
165 IF V$ = "DRINK" THEN GOTO 565
170 IF V$ = "GIVE" THEN GOTO 580
200 REM HERE'S HOW IT'S DONE
205 V$ = "";N$ = ""
210 PRINT "WHAT DO YOU WANT TO DO? ";
215 INPUT "";A$
220 REM NOW WE'LL BREAK DOWN THE INPUT
    INTO VERB AND NOUN
225 REM FIRST GET THE VERB
230 FOR A = 1 TO LEN (A$)
235 IF MID$(A$,A,1) = " " THEN X = A + 1:A
    = 0: GOTO 260: REM THIS LOOKS FOR
    THE BLANK SEPARATING THE WORDS
240 V$ = V$ + MID$(A$,A,1)
245 NEXT A
250 X = A - 1: REM IN CASE THERE'S ONLY
    ONE WORD. IF X= THE WHOLE LENGTH
    OF THE STRING, THE NEXT LINE WILL
    SEND YOU BACK TO THE BEGINNING
255 IF X = LEN (A$) THEN PRINT : PRINT "I
    CAN'T ";V$;" NOTHING.": PRINT : GOTO
    100
260 REM NOW GET THE NOUN
265 IF X = LEN (A$) THEN PRINT : PRINT "I
    CAN'T ";V$;" NOTHING.": PRINT : GOTO
    100
270 N$ = MID$(A$,X, LEN (A$) - (X - 1))
275 REM CHECK TO SEE IF VERB IS GOOD
280 FOR A = 1 TO 5
285 IF V$ = V1$(A) THEN A = 0: GOTO 305:
    REM VERB IS O.K.
290 NEXT A
295 PRINT
300 PRINT "I CAN'T ";V$;" SOMETHING.": PRINT
    : GOTO 100
305 REM CHECK TO SEE IF NOUN IS GOOD
310 FOR A = 1 TO 5
315 IF N$ = N1$(A) THEN A = 0: GOTO 155:
    REM EVERYTHING CHECKS AND NOW
    WE'LL DO SOMETHING.
320 NEXT A
325 PRINT : PRINT "SORRY, THERE'S NO ";N$;"
    HERE.": PRINT : GOTO 100: REM
    SOMETHING'S WRONG SO WE HAVE TO
    START OVER
500 REM HERE'S WHERE THINGS HAPPEN
505 REM EATING THINGS
510 IF N$ = N1$(3) THEN CO = 1: PRINT :
    PRINT "I'M IN LOVE.": PRINT : GOTO 100
515 PRINT : PRINT "I CAN'T EAT A ";N$: PRINT :
    PRINT "BURP! I GUESS I CAN.": PRINT

```

```

520 FOR A = 1 TO 4
525 IF N$ = N1$(A) THEN N1$(A) = "";A = 0:
    GOTO 535
530 NEXT A
535 X = 0: FOR A = 1 TO 4:X = LEN (N1$(A))
    + X: NEXT : IF X = 0 THEN GOTO 900:
    REM CHECKING TO SEE IF EVERYTHING
    EATEN
540 GOTO 100
545 REM SMELLING THINGS
550 IF N$ = N1$(1) THEN N$ = N1$(5)
555 IF N$ = N1$(3) THEN N$ = "SKUNK
    CABBAGE"
560 PRINT : PRINT "THAT SMELLS LIKE A";
    N$;"" : PRINT : GOTO 100
565 REM DRINKING
570 IF N$ = N1$(4) THEN PRINT : PRINT "THAT
    WAS THE LAST BOTTLE OF SACRED
    ALE.": GOTO 900
575 PRINT : PRINT "YOU CAN'T.": PRINT : GOTO
    100
580 REM GIVING THINGS AWAY
585 IF N$ = N1$(1) THEN PRINT : PRINT
    "WHAT? ";: GOTO 595
590 PRINT "YOU CAN'T GIVE A ";N$;
    "ANYTHING.": PRINT : GOTO 100
595 INPUT "";N$: IF LEN (n1$(2)) > 0 AND N$ =
    N1$(2) AND CO > 0 THEN GOTO 800
600 PRINT : GOTO 100
800 REM AND HERE'S THE WINNING OUTCOME
    OF THE GAME
805 PRINT : PRINT "THERE IS A CLAP OF
    THUNDER AND THE "
810 PRINT "HIGH PRIEST OF YORE APPEARS,
    MARRIES"
815 PRINT "YOU AND THE PRINCESS, GIVES
    YOU HALF"
820 PRINT "A KINGDOM AND LEAVES. YOU
    HAVE WON.
825 PRINT "UNFORTUNATELY, THE PRINCESS
    HAS JUST"
830 PRINT "TURNED BACK INTO A GOAT."
835 END
900 REM AND HERE'S THE LOSING OUTCOME
905 PRINT : PRINT "OH OH. YOU HAVE
    OFFENDED MARVIN, CHIEF"
910 PRINT "GOD OF ADVENTURE PLAYERS AND
    BARBERS."
915 PRINT "HOWEVER, HE MAY GIVE YOU JUST
    ONE OR"
920 PRINT "MORE CHANCES TO PLAY
    AGAIN."
925 PRINT
930 PRINT "DO YOU WANT TO? ";: INPUT "";A$:
    IF LEFT$(A$,1) = "Y" THEN RESTORE :
    GOTO 30
935 END
950 DATA "EAT","DRINK","SMELL","GIVE "
955 DATA "GOAT","FLOWER",
    "BOTTLE","PRINCESS"

```

GameLine

Ricochet

By Bernie De Koven and J. W. Connelley.

Those who lust after the perfect, frictionless billiards table will love *Ricochet*.

The program accommodates two players competing against each other or one player battling any of four different computer opponents, each of which plays a different strategy. The game plays effortlessly, requires little start-up time, and is incredibly addicting.

The best way to learn *Ricochet* is by playing a trial game. Imagine a rectangular field with the human player occupying the left side, the computer the right. Each side has two launchers, one in each corner, containing five shots. At the start of a match, both sides have two bumpers, placed midway vertically between the launchers. Six paddles per side, positioned in triangular, bowling-pin fashion, complete the starting configuration.

A ball, once launched, will travel in a straight line until a wall or paddle deflects it at a neat ninety-degree angle. A turn consists of firing a shot from either launcher or of moving from one to six paddles. All paddles must be moved in the same direction; if you move one upward, you must also move the others upward during that same turn.

When a paddle is hit, its orientation changes from vertical to horizontal, or vice versa. Should the ball hit a bumper, it will pause while the appropriate points are tallied and then continue; if the ball strikes a launcher, it will stop, ending the turn. In this case, the launcher is also put out of action for two turns.

The firing player gets one point apiece for each paddle hit, even if the paddles hit are his own. It's a different story with bumpers and launchers. If the computer's bumpers or launchers are hit, the human player gets points, regardless of the origin of the shot; by the same token, the computer opponent always gets points if the human player's bumpers or launchers are hit.

The field is gridded so the movement of a given shot can be calculated more easily. (This is true for every variant except the fifth, which contains no grid marks.) Tracking a shot is relatively easy the first few times across the board, but becomes a more difficult proposition as paddles are struck and flipped. The path the ball will follow is based on events that have yet to occur, making absolute results hard to predict in the case of a complicated shot.

The best part of the game is the handicap feature. Matches consist of the best two of three games in variants one and two, and of the best three out of five in variants three through five. Should you suffer a severe defeat in your first game against the computer, the computer will raise the point value of its bumpers or remove one of the player's bumpers (or both) for the second game, thereby making it easier for you to score and harder for the computer to do so. This handicapping process continues throughout the

match, depending on which side wins a game.

Defensive play is just as important, if not more so, than offensive play. Firing first thing can be unwise; the ball is likely to bounce off one wall, three paddles (for three points), another wall, and then strike the shooter's other launcher (ten points for the other side and temporary loss of the launcher). In addition, if you're a novice, you may want to try letting the computer make the first move.

Ricochet is a grand game for a computer, even when two people compete against one another, since the program sets up a situation that would be hard to duplicate in real life (unless you're prepared to invest in a vacuum chamber and two spacesuits). With an average match length of ten to thirty minutes, the game never becomes tedious. Its appeal plays on that of pool; we'd all like to be able to make those multi-cushion shots, if only our hands could carry out the complicated maneuvers calculated by our minds. **DB**

Atari 400 or 800: cassette, 16K; disk, 32K. TRS-80: 32K. Apple 48K ROM Applesoft. \$19.95 from Automated Simulations, P.O. Box 4247, Mountain View, California 94040; (415) 964-8021.

Russki Duck

By Eric Knopp and Alan Merrell.

Lord help us. The MX missile plans have been stolen by cruel and vicious, not to mention thieving, enemy agents of a rival superpower from across the oceans.

You're an agent for the CIA and your mission is to recover the stolen MX plans and return them to CIA headquarters. You know only that the plans are hidden in a fake duck that's packed in a shipping crate. Fast, merciless foreign agents will kill anyone who tries to find the plans. That is, if the fiends catch you.

It comes as no revelation that technology has not always been used for the best purposes, what with neutron bombs and the threat of particle beam death rays in the future. But there's no reason computer games have to take the subject so seriously. Eric Knopp and Alan Merrell have fashioned an amusing game that's more challenging than it first appears.

The playing field of *Russki Duck* includes a main map of two parallel streets separated by a highway buzzing with futuristic cars and a park; the sidewalks are crowded with pedestrians.

Each street has about ten stores and institutions, including a bank, flower shop, warehouses, post office, computer store, and foreign embassy. In every building, including CIA headquarters, you are likely to find enemy agents. You can disable them with a hammer or fool them by wearing a mask. But if they catch you, you're dead. You have four incarnations and five chances to find the duck.

Most of the buildings have particular objects that belong in them. Throughout the game, enemy agents are constantly stealing items from one building, and depositing them in another. This is where the strategy comes in. Those

aren't pedestrians after all; they're the enemy agents, and you can track their whereabouts. The main map comes up every time you enter and leave a building, giving you ample opportunity to devise a scheme to outwit the enemy.

To find the duck, you must leave the main map to search through the buildings, some of which have more than one room. Along the way, you must pick up a screwdriver, hammer, and other objects you need for recovering the plans, but you can only carry one object at a time. Hiding objects is tricky, but it can be done. Truly skilled players will watch the main map, spot enemy agents entering a building where something is hidden, follow them, and beat their brains in with a hammer.

The instructions state that you have to be right on top of an object to pick it up, but it's possible to grab an object at a dead run if you hit the space bar at just the right time. Smaller objects often are found lying on larger objects, making the search that much more difficult.

Returning the MX plans to the CIA is what wins the game, but that has little to do with scoring. The longer you refrain from turning in the plans, the more points you can build up. Points are awarded for deactivating the bombs contained in each carton in which the duck isn't and by returning items to their stores of origin.

Russki Duck has a lot to offer. The animation is super throughout and very colorful. In the course of a game you will deactivate bombs, handle fruit, diamonds, and everything in between, dodge cars, and unlock a duck. While it's not a terribly difficult game, once you get into the spirit, *Russki Duck* is a fine way to lose your mind for an hour or two, if that's your pleasure. **DH**

Apple II, Apple II Plus, Apple III (emulation mode), 48K, disk. \$34.95 from Gebelli Software, 1771 Tribute Road, Suite A, Sacramento, CA 95816; (916) 925-1432.

Space Invaders

The ever-popular *Space Invaders*, now translated for the Atari home computer, proceeds at the same slow, inexorable beat, as rank upon rank of invaders march across the screen. *Space Invaders* has twelve game variations, the most formidable being one in which ultrafast enemy laser beams home in on a befuddled player who has only three lives. The beginner would be wise to elect game variation one, in which the enemy's laser beams are slow and a player has five lives or turns. Even this easy variation proves to have two different phases, each with its own strategy.

Each time the invaders complete a pass across the screen, they drop a notch lower. The lower they are on the screen, the less time the player has to retaliate. As a beginning player, you learn that the way to delay a pass across the screen is by trimming successive columns from the flank of the invaders. Should this tactic fail, you must make a quick dash to the opposite flank to trim the retreating column. You must fire quickly and accurately. A miss leaves the laser cannon inoperative until the last shot has cleared the top of the screen. While the player is defenseless, the invaders can strike again and again.

As the alien fleet is reduced in numbers, the remaining ships move faster and faster. The last ship is a blur, whizzing back and forth across the screen, a notch lower each time. If it touches the ground, the game is over! Zap it and the game gets tougher.

Each time a fleet of invaders is cleared from the screen, a second fleet emerges about an inch lower on the screen than the first. Each inch means a fraction off the time available for initiating a counter-attack. After seven fleets have been eliminated—not an easy feat, but within the range of most players after a week of practice—something happens. It's a remarkable enough happening that you feel you ought to be given a T-shirt or something. No, we're not going to tell you what it is.

The game still is not over. Though the emerging aliens almost brush against the bottom of the screen, their march continues. In this second phase of the game, the player must make his initial dash past the very mouths of the alien cannons, firing as he goes. A single miss is fatal, for the moment an alien touches the ground, the game is over.

Space Invaders is too demanding for players age six and under. Nongamers may fall victim to the first close-in encounter. For the rest of us, one and two player versions, slow and fast variations, and a homing laser beam option offer hours of competitive challenge at a quite reasonable price. **PG**

Atari 400, Atari 800, 16K, cassette. \$34.95 from Atari, Box 427, Sunnyvale, CA 94086; (800) 538-8547; in California (800) 672-1404.

Energy Czar

Economics majors and potential presidential advisors may really go for this one; others might not.

For starters, *Energy Czar* is not really a game at all; more precisely, it is a simulation, one that breaks the primary rule for simulations: Never be boring.

Energy Czar presents a simplified view of our energy structure, and puts the player in control of eight types of



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energy used in the United States. In order of decreasing importance these are: coal, oil, natural gas, uranium, hydroelectric power, solar power, wind power, and biomass.

To win, you must achieve a rating of 75 percent in a public opinion poll that evaluates how effectively you manage these resources. You are called upon to make decisions about prices, which can be frozen or thawed; taxes, which can be raised or lowered; safety standards, which affect the death rate that's related to using various forms of energy; energy supply; and energy use.

The public opinion poll rates how well you do in dealing with such variables as growth, deaths per unit of energy produced, and inflation; it also registers an overall opinion of your energy management skills. If your rating is less than 25 percent, you lose.

You also lose if you deplete a particular resource. Closely observing the supply and usage graphs will help you guard against this problem. Should you accidentally deplete a resource (and you will, many times), the screen will clear and announce the shortage . . . and that's it. The charts you've examined so painstakingly are lost forever, and there's nothing to do but start from absolute scratch again. This is annoying.

Playing *Energy Czar* requires that you take copious notes. In fact, the paperwork required is staggering. The instruction booklet provides three pages of blank charts; numerous photocopies of these charts are required in order to play the game even once.

Also frustrating is the absence of cause/effect relationships. With so many variables to deal with, it's difficult to determine which policies affect which ratings in the poll. Some connections are obvious—rationing and taxes are bad for growth, for instance, and taxes also contribute to inflation—but most are far from obvious. Reduce the working variables, though, and a slow game becomes even slower.

Our current dependence on fossil fuels, which this simulation emphasizes, is a bit depressing; even more depressing is the difficulty you experience when you attempt to alter that dependence. An initial selection slants the game toward pro-fossil, pro-nuclear, or pro-solar. Winning, the manual claims, is much easier with the first choice. Loosely translated, this means that success is darned near impossible with either of the other two.

It can take as long as 135 years, twenty-seven agonizing turns, and ninety long minutes to win this game with a pro-fossil bias. Some may feel that the final screen display is not worth the time and labor needed to get it. **DB**

Atari 400 or 800, cassette only; 16K. \$14.95 from Atari Inc., Box 427, Sunnyvale, CA 94086; (800) 538-8547; in California (800) 672-1430.

Twerps

By Dan Thompson.

Clint Eastwood once made a movie nobody saw that consisted entirely of scenes of him fighting his way out of increasingly dangerous situations, against overwhelming odds, building to a destructive climax that he could not possibly survive.

It was called *The Gauntlet* and, though *Twerps* isn't quite so harrowing, that would have made an apt subtitle for this game.

The name of this game is fuel. You will never have enough of it. From the moment you (Captain Twerp) leave your space station to rescue the twerps stranded on a hostile asteroid, you must start cutting your losses. You must blast a hole through the orbiting space invader types just big enough to run through, perform your mission while warding off attacks by marauding glingas and gleepnoks, and fight your way back the way you came. The scoring of points is incidental here; you may rack up a couple of dozen if you're real lucky. Survival is its own reward.

As you develop strategies, the game subtly adjusts to counteract them. The normally rather lackadaisical orbiters suddenly uncork a wall of fire (dodging: extra fuel). If you try to sneak through to save fuel, you will be invariably presented with an outrageously distant landing pad to leap-frog over to (more fuel). Once planetside, where you may have previously labored relatively unmolested, you will have to dig in at every crater (still more fuel) to escape the now remorseless gleepnoks and near ever-present glingas.

Needless to say, you'll never go home again.

Twerps is elaborately and lovingly done, with modulated sound effects to give the impression of far and near-distance, and a large portion of the usual Sirius whimsy (so to speak). Our demo disk began to decay markedly in heavy use (though in truth, this made it more interesting, with millions of twerps suddenly falling all over the screen in what looked like multiple-exposure strobe photography), but reset made all well again.

From space invader mode, to lunar lander mode, to what could only be called twerp mode, the game integrates several arcade genres into something approaching a narrative. For once, the game scenario in the documentation is actually a fair representation of what's on the disk. It tells a story, and it is therefore involving.

For this reason, you will probably wind up playing it long after you have totally given up on the insurmountable fuel problem. In today's dog-zap-dog arcade game world, the degree of frustration is a coefficient of the degree of the worth of the game.

Twerps also can teach you a lot about the art of fuel conservation. And though it may make you weep and moan, tear your hair and gnash your teeth, as with most of the best arcade games, that is the idea. **AC**

Apple II, Apple II Plus, Apple III (emulation mode); 48K, disk. \$29.95 from Sirius Software, 10364 Rockingham Drive, Sacramento, CA 95827; (916) 366-1195.

Horizon V

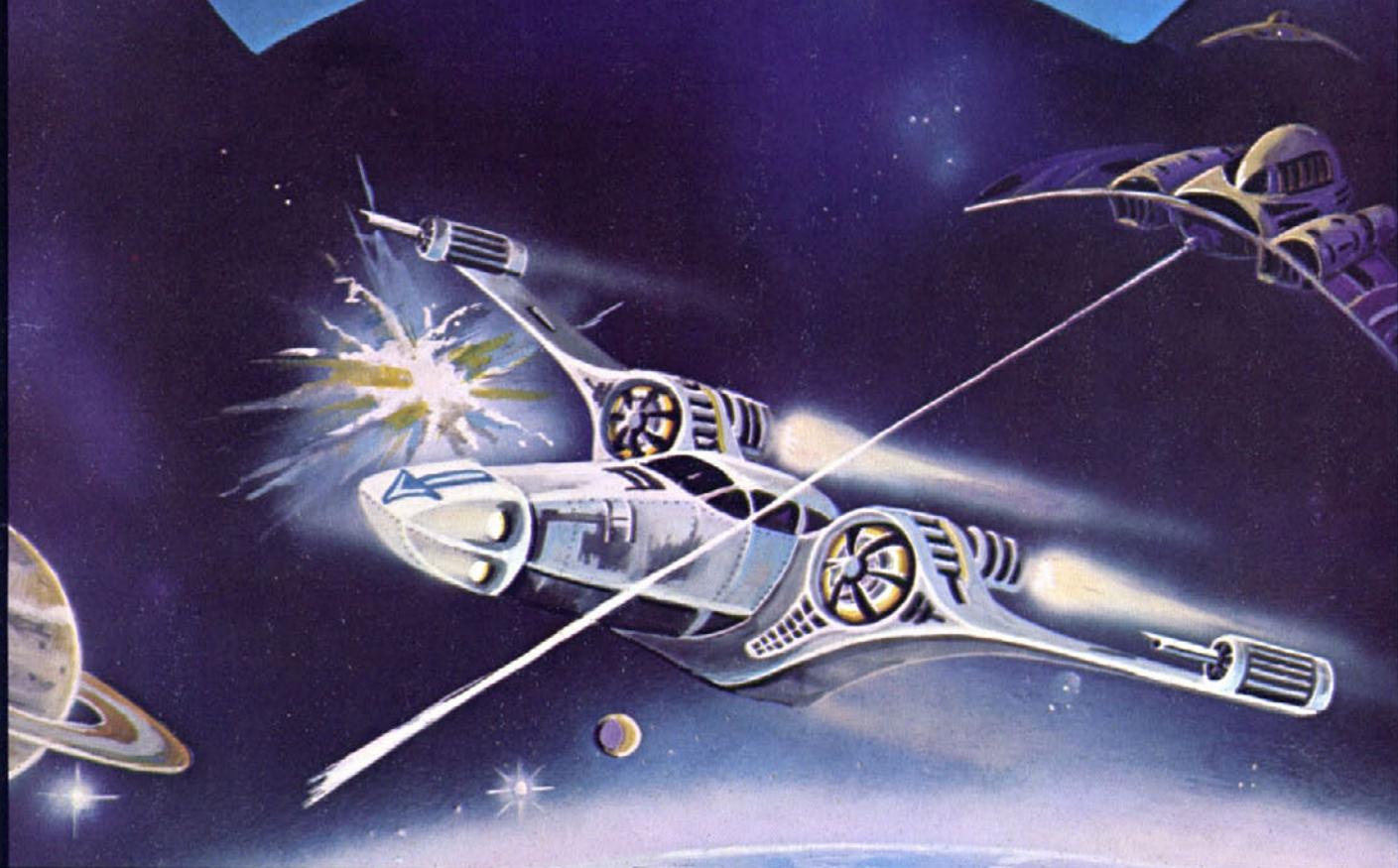
By Nasir Gebelli.

Nasir's latest game is a good followup to *Gorgon*, but not a great one. Publishing through his own company, Gebelli Software, Nasir has been busy lately, and the fruits of his labor are to be found in *Horizon V*.

Picking up where *Gorgon* left off, *Horizon V* places you on a planetoid that is swarming with malicious aliens. You've got an exhaustible supply of fuel and a certain amount of protective shields, along with a ship that handles at best like a garbage truck on an icy road. There is a certain spot on the planetoid that sends you into a time warp filled with more annoying aliens. After you've killed all the aliens

to page 52

THRESHOLD



ON-LINE SYSTEMS introduces arcade gaming as an art form. **THRESHOLD**, by **WARREN SCHWADER** and **KEN WILLIAMS**, features fast smooth animation, **HI-RES** graphics, and more challenge than you'll find in any other arcade game on the market.

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What Does the Computer Teach Best?

by SHERWIN STEFFIN

Many consumers and classroom teachers believe that the computer can have nearly equal utility in almost any area of instruction, provided that well designed software is employed. In this issue, we'll examine that view and evaluate the applicability of instructional software to various curriculum areas.

The Three Learning Domains. By the time we reach adulthood, we have learned literally millions of facts and relationships and have mastered any number of skills. In addition, we know how to participate in a multitude of activities. If we take a minute to analyze the things we've learned, we can divide them into three distinct but interacting categories of tasks.

The first of these categories consists of tasks that we associate with formal schooling, namely, reading, writing, and arithmetic. These are the thinking and intellectual problem-solving tasks the public schools are charged with teaching. Writing a letter, solving an algebra problem, conversing in a foreign language—all are tasks that come from this category of learning. This category of learning tasks is sometimes called the cognitive domain.

Physical activities that require skill are also learned behavior. The very young child needs to learn such simple tasks as crawling and walking. The adult needs to go through the same learning process in order to learn the skills involved in performing as a concert pianist. All are skills that require coordination and, in many cases, strength. These skills are brought together by the fact that they are psychomotor skills; that is, that they require neuromuscular learning. This group of skills or learning tasks is classified as the *psychomotor domain*.

The third area of learning is the hardest to describe in objective terms. It is the emotional or *affective domain*. Included in this body of learning are the development of emotional and interpersonal skills, recognition and definition of a set of personal values, and other skills we commonly associate with the process the schools call "socialization." These skills are resistant to measurement and to observational inferences about behavior. They represent instead the internal framework and contextual setting by which people make personal choices for themselves.

Interdependency in Action. These three domains are not independent of one another. If a person wants to play football, for instance, it is not enough that he or she possess the requisite psychomotor skills of running, kicking, and throwing. The aspiring player must also be able to deal with, at one level, the rules of the game, and at a higher level, the decisions about strategies that can be employed in the hope of winning the game.

Learning to play football requires the interaction of the cognitive domain and the psychomotor domain. Other skills in the psychomotor domain may be far less dependent

on cognitive activity. Swimming and bicycling are examples of two activities that can be taught with little emphasis on the learner's use of thinking skills.

By the same token, a person's religious views have both an emotional component and an informational component. The receiver of such information constructs a framework of analysis based on his or her emotional predisposition, and on the informational content. Religious beliefs involve an interaction of the cognitive and affective domains.

Now that you've waded through some fairly heavy theoretical stuff, let's see how all of this relates to the computer as an educational tool.

Suppose you were asked what you thought might be the best educational uses for a computer. You might answer off the top of your head that drill and practice activity in such areas as arithmetic, spelling, and foreign language is one of the best uses. Further thought might lead you to the idea that more complex skills than rote memory can be taught; you might begin to perceive using the computer as a tutorial device for teaching problem-solving rules in algebra or grammar.

At the same time, you might also surmise that although the computer does help users to develop very, very fast eye-hand coordination through hundreds of hours of home-arcade game play, it is not a very useful tool for teaching the purely psychomotor skills. A person is unlikely to become a star football player or an Olympic swimmer as a result of the computer instruction received on how to participate in these sports.

The assertion that the computer leaves something to be desired as a teacher of psychomotor tasks is certainly one with which most people would agree. And yet, elegant and sophisticated microprocessors are being used extensively in physical movement analysis, contributing much new information that the human teacher of psychomotor skills can use with students.

At first glance, it may also seem unlikely that the computer has much value in the teaching of affective skills. Consider for a moment, however, some potential applications. One such area is weight control. A carefully designed diet program is one area in which the computer can be enormously helpful.

Weight control results from a combination of knowledge of the impact various foods have on our weight and a whole variety of attitudes and values that each of us holds about our own well-being and physical appearance. A diet program that helps us control our eating behavior in terms of self-defined objectives clearly impacts on this affective domain of learning.

Hard and Soft Curricula. Generally speaking, educational software is most frequently designed to address skills within the cognitive domain. Yet, even within this domain,

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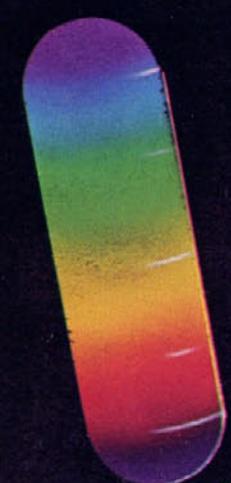
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there are clear differences between the kinds of skills that are best taught through the use of CAI and those that are better suited to other instructional methods.

While there is immense diversity throughout this country in regard to the specific subject areas taught by elementary and secondary schools, there is great commonality in the concern of school administrators that students receive instruction in a number of definable curricular areas.

Every student moving through the elementary/secondary system in the United States is presented with a curriculum that includes reading, English composition, basic math skills, world and American history and geography, and some level of introduction to the physical and biological sciences. These subject areas may be said to represent the core of the American educational curriculum.

There are, of course, many subject and content areas not listed in this core curriculum that are provided to many students but not to all. Specialized science courses such as physics and chemistry; classes in literature and American government; wood, metal, and mechanical shop courses; home economics; physical education; and foreign languages—all are components of what might be regarded as a second level of curricular offerings in the schools.

Continuum View. These curricular offerings can be viewed as if placed along a continuum. At one end are those subject and content areas in which instructional outcomes are both very clear and very measurable. Included here would be such areas as math, spelling, and some aspects of reading.

In the middle of the continuum are such content areas as physics, chemistry, and general biology. In these areas, we are somewhat less certain about what learning we intend to have happen, yet careful analysis of the curriculum will provide some consensus among various teachers about intended learning outcomes.

Finally, we have areas of the curriculum such as composition, literature, history, and art. Educators disagree sharply about just what the learner should be able to do after having had instruction in these areas.

The ease with which we can design effective instructional strategies that involve the use of the computer and other media is directly related to the degree to which we know what we want the learner to be able to do after instruction. As described in earlier articles, educational objectives or goals must be stated in clear, unambiguous, observable, measurable terms in order to be of the most use.

Let's expand on this point by considering for a moment a typical history class. Certainly, there are rote memory objectives for any course in American history, but what about objectives beyond this? What do we expect students to be able to do after completing a course in American history? Frequently, teachers talk in terms of wanting their students to understand our American heritage, develop an appreciation for the contributions of various presidents, or comprehend the impact of the Civil War on American development.

Even a cursory examination of such statements of intended outcome reveals how difficult it's likely to be to design instruction in a step-by-step sequential fashion that

will ensure achievement of such outcomes. And, as we all know, step-by-step planning is essential when it comes to designing curricular materials that are to be presented to learners via computer. Thus, the designer of curricular materials for computer instruction must attempt to create materials that will be suitable across a wide segment of the population in such subject areas—a formidable task, indeed.

Conversely, programs in math are relatively easy to implement from an instructional design standpoint. Intended or expected learning outcomes are known in advance—we want the learner to be able to add any two-column set of numbers, or to solve quadratic equations of a specified type, and so on. In such instances as these, the fact that we know what we want the learner to do makes it relatively easy to test whether our efforts toward instruction have been successful or not.

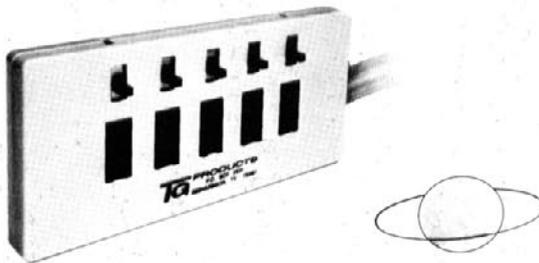
Concrete Objectives Pave the Way. Generally, in situations where learner objectives are clear and agreed upon the computer is in an excellent position to serve as an instructional tool. But to the degree that objectives are vague or ambiguous, or where there is wide discrepancy in the views of various teachers about intended outcomes, lecture/recitation, classroom discussion, written essays, or the viewing of well prepared film or video demonstrations are likely to be more useful tools than the computer.

When you are examining educational software packages with an eye toward purchase, it's a good idea to consider not only the quality of the software, but also the appropriateness of its use within a given content area. SL

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New Players



DATAMOST

Dave Gordon, the president of DataMost, freely admits that he's not a programmer. "I'm a people person," says Gordon, "and I have to deal in relationships. This is very important to me."

Aggressive, but very friendly, Dave Gordon has been in the business for a long time. In April 1978, Steve Wozniak gave Gordon his first disk drive, a ten-sector prototype. Gordon got to know the Apple when he went to work for the boys in Cupertino as a consultant.

A CPA who lost his fascination for figures, Gordon followed his natural inclination to collect by setting out to form his own software publishing house. His goal was to provide an outlet through which computer owners could get many programs of all different kinds.

Using aggressive marketing techniques, Gordon built Programma International into a prolific company that offered at its peak nearly one hundred fifty programs. It was a grand scheme at a time when there was a dearth of software for the Apple, and Programma was number one in the Apple market for many moons.

Programma's success was such that the company grew too fast and cash flow problems developed. It became too

much for Gordon to manage and he sold Programma to Hayden in September 1980. Unfortunately, Programma didn't fair much better with Hayden and Gordon left the company a few months later.

Soon after leaving Programma, Gordon began thinking of starting another software publishing company and spent the next six months gathering resources. In October 1981 DataMost shipped its first product, and it has kept games and other software coming at a fairly brisk pace since then.

Gordon feels that one of his greatest assets is his ability to put himself in the shoes of a typical consumer. With his extensive knowledge of software for the Apple, Gordon believes he has a clear idea of what people want to buy and what it takes to make a good program.

Most of DataMost's programmers work freelance on a royalty basis, though some in-house programming is done. Dan Illowsky is a talented game programmer whose *Snack Attack* is yet another addicting eat-the-dots game, one that at its fastest speed is positively frightening. Illowsky is credited for DataMost's latest release, *County Fair*, a home arcade game that simulates a shooting gallery in an amusement park.

At heart a businessman, Gordon has steered DataMost toward the business market with such programs as *Tax Beater* and *Real Estate Analysis Program*. His company also publishes Randy Hyde's book on using 6502 assembly language and has entered the word processor market with *Write-On*, originally a Rainbow Computing product, available for the Apple II and Apple III.

DataMost may be branching out, but Gordon promises to continue publishing games at a torrid pace. Scheduled for release soon is *Swashbuckler*, a game that features hires sword fighting. *Missing Ring* is a hi-res adventure that will be out some time later this year.

Dave Gordon is married and has two children, eleven and thirteen years old. He has to do battle with his kids every weekend for use of the Apple. Like their father, they are dedicated gamers who spend a lot of time hunched over the keyboard battling devilish micro enemies.

Gordon believes that the Apple family is still young and that this is why so many of the bigger names are good friends. It may not always be this way, but as long as people like Gordon still care, the Apple world will be a reminder of how competitors can coexist when they choose to. "I always appreciate good programming," says Gordon, "no matter who has done it."

With a childlike delight in new software, Gordon has realized one of his dreams: he's having fun. "When a hobby becomes your business and you make money at it, it's a dream come true. I'm playing all the time and I'm very happy." With his customers happy playing the games he publishes, Dave Gordon seems to have found the fabled pot of gold at the end of the rainbow.



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The folks at Horizon Simulations, from left to right: front row—Lori Lantz, James Speedling, James C. Landes, Carlton Ryan, Vince Zauskey, Pam Brence, Teri Graber; second row—Randy Turner, Jerry Adcock, Steve David, Glenn Thain, Jim Leiterman, Eddie David; in back—Glenn Clapp.

HORIZON SIMULATIONS

Blazing the Oregon Trail, frontiersmen opened up the Pacific Northwest just in time for the onrush of land-hungry Americans. These men met with and weathered all kinds of misfortune; something drove them on. They were doing something no one had ever done before.

It takes a lot of courage to survive when danger is on the other side of the next bush. The microcomputer world is a frontier and a pretty wild one at that. Not everyone has what it takes to start a new company, particularly one that centers on the game market. Jim Landes, president of Horizon Simulations (White City, Oregon) is one of those brave enough to face the wilds.

Measuring in at six feet, with brown hair and moustache, Landes majored in business at Southern Oregon State and has been interested in games for as long as he can remember. He worked in a game store in Medford, Oregon and started designing his own board games. As his talent developed, Landes came up with an idea for a game that would play on a computer. But trying to implement the game on his own with no real computer experience proved too much for the young Landes.

Then he found a programmer who thought his idea was great. Working together, they attempted to produce a game called *Star Reach*. Unfortunately, the time wasn't right; the programmer decided not to tackle computer games, and the *Star Reach* project was scuttled.

In May 1981, Landes got a fresh start, teaming up this time with two programmers, Glenn Clapp and Jerry Adcock. The three of them created *Shadowhawk I* for the Apple and Atari computers. Horizon Simulations was formed in July 1981 and product was first shipped in November.

Landes believes that for certain kinds of games the market is too saturated. The board and arcade game fields are tough ones to crack, but computer games are still relatively new. After doing a fair amount of marketing research, Landes

chose to concentrate on computer games, making it his goal to exploit the computer to the maximum in the course of a game. *Shadowhawk I* reportedly does this and more.

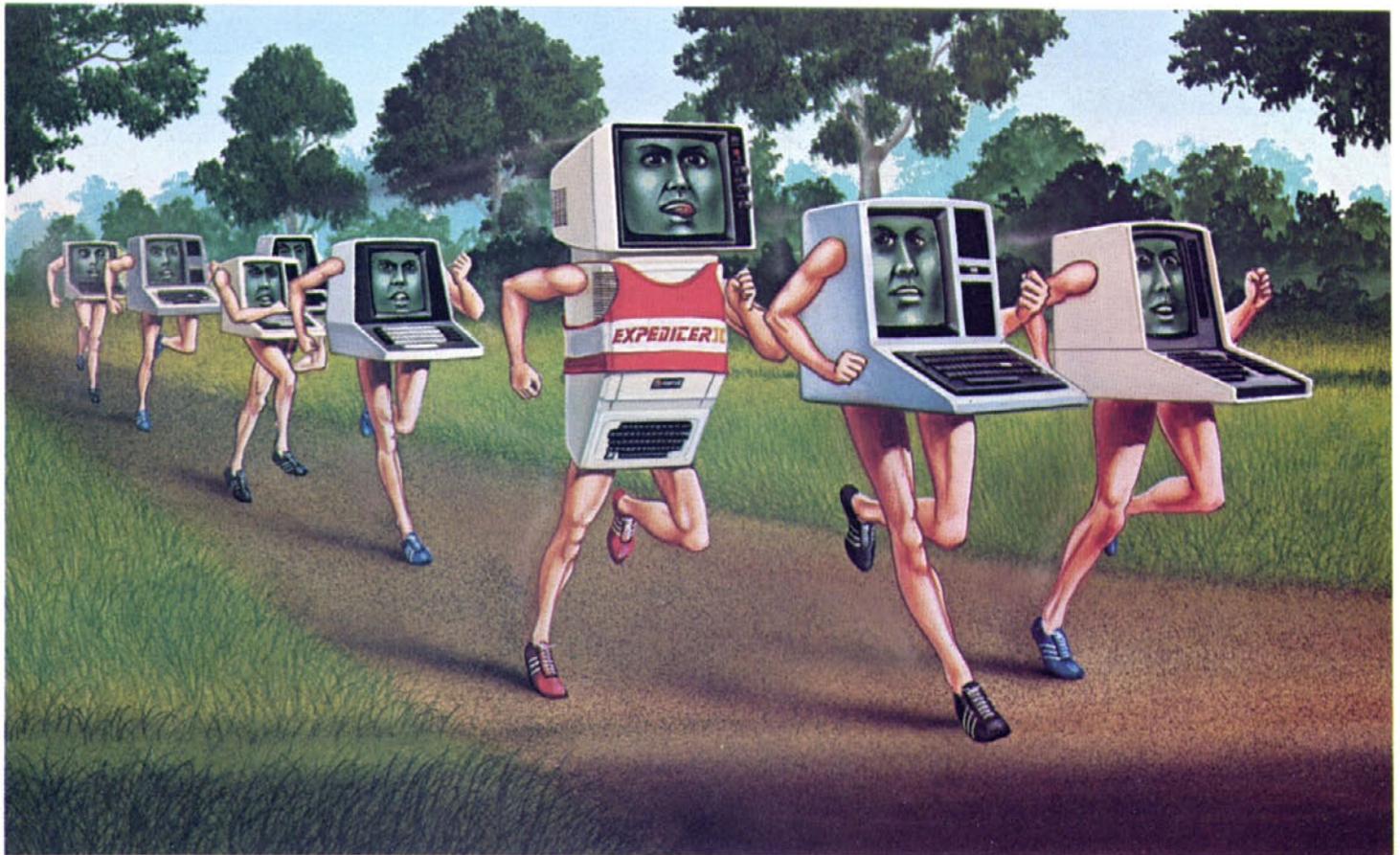
Deciding which computer—Apple or Atari—to make a game is something Landes spends a great deal of time hashing over with his programmers. Conversions are tough to do, so only a select few games will be made for both computers. Landes investigates the possibilities of a game—animation, graphics, sound—and on the basis of this information decides which computer the game will look and play best on.

Horizon Simulations has two new games on the market for the Apple and Atari. *Cloak and Dagger* is a spy game set in the thirties. A single or multiple player game, *Cloak and Dagger* has you searching for pieces of information while trying to stay alive in the hostile espionage underworld. *Fathom 40* puts you in command of a super U-boat that is the last hope of the Third Reich. Despite an ad line that reads "Der Fuhrer will not be disappointed," *Fathoms 40* holds promise of being a very hot game on the market. Coming soon for the Atari only is *Scalawag*, which, if the title is any indication, ought to be a jolly old blankety-blank pirate game. Two more games are coming soon for both the Apple and the Atari. *Champions of Ageroth* will feature hi-speed animation, and *Galactic Zoo* should feature some true animal humor.

With an uncanny knack for designing games, Landes is off and running. A dedicated fantasy role-playing fan, Landes seems to be in no danger of running out of ideas.

Residing in and working out of White City, an industrial area of Medford, Jim Landes is doing what he wants to do most. With ten employees, he has a growing business to manage and a lot of time to think up games. Blazing trails in the microcomputer wilderness, Horizon Simulations promises to bring us all plenty of entertainment in the years to come.

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It was in the fall of the fifth year of the fanatical wizard Werdna that our campaign began. What season or year it is now, none of us knows. I believe we are on the ninth level of this accursed dungeon, but time and distance are ever shifting, and reality is fleeting.

As we break camp, my five companions and I sort out our weapons and supplies. We have accumulated wondrous treasures and mighty weapons. Dreams of returning to enjoy the subtle pleasures that this shared booty could bring fill our wakeful sleep. Sezmar, the samurai; Hawkwind, the ninja; and Sarah, the priest, are the vanguard. Moradin, the thief; Prospero, the mage; and Tuck, the bishop, bring up the rear.

We slowly make our way down the zigzagging corridor. Suddenly, the eldritch light cast by Sarah's lomilwa spell reveals a secret door. Kicking the door open, we charge into a small room. Unfortunately, the hellhounds, demons, and deadly creeping coins do not welcome company. A fierce battle ensues that shakes the very foundations of the dungeon. Hawkwind slays a lycarus with his bare hands,

while Sezmar dispatches hellhounds with his murasama blade. The tide of battle turns and twists in a kaleidoscope of weapons and mystical energies. Finally Prospero ends it. While Sarah shields us behind a maporfic spell, Prospero casts the dreaded tiltowait spell. We are victorious!

Bare, magic-blasted walls hardly reward our heroic effort. Our luck suddenly takes a dramatic turn—downward! The secret chute masks the hidden entrance to the tenth level. The final path to Werdna's lair is open. As we are standing around, slapping each other on the back, the air is pierced with a maniacal laugh . . . Werdna waits! Sobered, we regroup, heal our wounds, and set out again. We have no delusion: our greatest challenge lies ahead.

Resolutely raising our banner high, we stealthily tiptoe forward. We quickly vanish in the stygian darkness. Momentarily, our banner shines with its great war cry, "Trebtor Sux!" Then it too vanishes as distant sounds of battle reverberate.

—Book IV, Chapter 9, of the *Wizardry Chronicles*

Come Cast a Spell with Me

Plumbing the Depths of the



If this excerpt stirs excitement within you, then you are on your way to being addicted to one of the most innovative waves sweeping the country. Riding high on the crest of the popularity of computer role-playing games is *Wizardry*. It has been widely acclaimed as the finest and truest adaptation of the Dungeons and Dragons type game yet brought to the computer screen. Besides hitting the top ten on the charts, in the minds of many *Wizardry* should be the 1981 winner of the best game award. The second scenario, "Knight of Diamonds," due for mid-March release, may well capture the 1982 award.

Epic Insomnia. In the short time since *Wizardry's* introduction, the ripple effect stemming from this unique program has astonished even its creators, Robert Woodhead and Andrew Greenberg. Hordes of fervent *Wizardry* groups (many suffering from acute insomnia) have sprung up around the country. The section of post devoted to games on the Source has been almost completely taken over by *Wizardry* players. When a message was left on the Source looking for input for this article, the deluge of response was phenomenal and diverse. These were some of the comments:

"It sure helps to relax a person after a hard day at work. That troll does look like my boss!"—Mike, Omaha.

"The greatest joy in the game is getting those rare treasures. The other joy is mapping out all the contortions of the maze."—Harry, Brookline, Massachusetts.

"The dawn frequently breaks as a session ends. Luckily my boss is as addicted as I am."—Bill, Freeport, Maine.

"What do you call a sixteenth level ninja with +3 plate, a +3 shield, a +2 helm, silver gauntlets, a Ring of Healing, and a Shuriken? You call him Sir!"—Jon, Richardson, Texas.

Some of the responses were more sobering:

"I think combat in this game is like warfare of the future: controlled on a computer terminal, impersonal, calculated."—Dale, San Francisco.

"Sometimes I submerge myself so much into my characters, I lose almost all sense of my own identity. I once played for three days straight without coming up out of the game. When my party was finally devastated, I almost broke down into tears."—Dave, Seattle.

Real-World Sorcery. Others related *Wizardry* to the real world. For example, from a lengthy interview with Harry Conover of Computer Simulated Sports comes this business application:

"I'd liken *Wizardry* to a fantasized system of personnel management. As the manager of a small group of individ-

Wizardry Phenomenon

by ROE R. ADAMS III





Dzymar.
dwarf samurai
from Avon, Connecticut.
Created by John Hanny.

uals, each with their own strengths and weaknesses, you must manipulate the members' performances against the 'competition' so that they achieve a certain goal. In *Wizardry*, as in real life, the goal can be mere survival, or the quest for power, or, over the long haul, the pot of gold."

Another spanner of worlds is Chuck Dompas. He has brought *Wizardry* to academe. "CS470 (Teaching Fantasy Simulation)" is in the catalog of courses for Penn State University in New Kensington, Pennsylvania. It is a graduate level continuing education course primarily for teachers and educators. The focus of the course is game theory



Haukwind.
elfin ninja,
a permanent resident of
Gilgamesh's Tavern,
according to creator Roe Adams.

and application. *Wizardry* was chosen as the most sophisticated computer fantasy game.

"The response has been so great that I hope to offer shortly an entire course centered around *Wizardry*. All the diverse elements that the course seeks to cover are contained within the scope of this game." Dompas feels that, through the impetus of his course, *Wizardry* will find its way into many other high schools and colleges as a valuable teaching aid.

Creating Characters, Building Lives. That prophetic tomorrow is a reality today for Dr. Ron Levy, a board-certified child psychiatrist and author of the book, *New Language of Psychiatry*, published by Little, Brown & Company. *Wizardry* has become an added diagnostic and therapeutic tool in his Williamsville, New York, practice. How this came about he recently conveyed in a letter to Sirtech, the publishers of *Wizardry*.

"This game, which allows children to create a group of adventuring characters and to journey through a maze where they fight battles with monsters, has turned out to be surprisingly helpful to me in my work with children who have emotional problems. . . .

"The child, let us call him Jim (I have changed his name), was living in a family where there were serious marital problems. Jim, an otherwise bright and capable child, had begun doing poorly in elementary school several months before I saw him. I saw Jim on an emergency basis after he had announced to his family that he was going to kill himself. When he came to my office, he let everyone know that he did not want to be there and he refused to talk to me at all.

"This sad-looking school-age child sat quietly in my office staring at the floor, while his parents sat in my waiting room worrying about him. Because this child had declared his intention to commit suicide and was uncooperative with my efforts to interview him, there was little I could do at that point other than to consider admitting him immediately to a psychiatric hospital for his own safety and for further evaluation.

"However, with the help of your game, I was able to move beyond this apparent impasse. Jim agreed to play video games on my Apple computer and he became fascinated by my description of the *Wizardry* game. He made a set of characters, gave them names, and played nonstop for almost an hour. After the first half hour, he was willing to discuss with me what he was doing in the game, and I was able to learn a great deal about him from what he had told me and from watching him play.

"I found out that he was not as depressed as he seemed and that he was able to become enthusiastic about something he was interested in; and we were able to talk about some of his worries, using the game as a springboard. At the conclusion of this visit, he told me he had no intention of killing himself because he 'wanted to come back and play some more.' In this case, as in several others, I have been able, by using your game, to evaluate correctly children who initially appeared much more disturbed than they really were. . . . Although you intended to create a recreational game, you have inadvertently provided me with a marvelous tool for my work with children."



Sarah,
human priest
from Brookline, Massachusetts.

Created by Deborah Conover.

During our interview with Dr. Levy, several related thoughts were brought forward.

"Wizardry is considerably different from *Ultima*, because the perspective of *Wizardry* is always subjective, while *Ultima* is objective." He felt that this difference hampered *Ultima* as a role-playing game.

Dr. Levy also felt that the development of a character through the dungeon parallels, in many ways, the growth of the child. The levels are similar to age brackets, such as the difference between a five-year-old and a six-year-old.

"In a child's description of what his hero can accomplish often lie clues to some of the obstacles and troubles the child experiences in his own life. . . .

"What the character is able to do is what the child fears to do."



Tuck,
elfin bishop
from Noho, California.

Created by Mary Taylor Kollo.

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Prospero,
hobbit mage
from Brookline,
Massachusetts.

Created by Harry Conover.

One for All and All for One. This train of thought prompted a hypothesis put forth to Dr. Levy:

Wizardry is very different from most role-playing games in that it is designed for parties of six, rather than for solo explorers. In fact, the dungeon inhabitants are so powerful that no one character could survive long by himself. Therefore, unlike the typical game where you become the single character, here you must develop six different characters, each with their own persona and talents. Then the characters' mutual advancement and interaction becomes your goal. This is strongly reminiscent of Herman Hesse's classic concept of the "fragmented man," whereby each character becomes a different fragment of your own personality.

Dr. Levy considered this hypothesis was quite valid and applicable here. "Certainly one of the game's strongest fea-

tures is that the child has much more total involvement with six characters than with one character." As to the therapeutic value of the game, he stated that "this game seems to draw together a number of features that evoke in children many of their fundamental anxieties and to hold out to them the prospect that, with repeated attempts, anxiety-provoking situations can be overcome. . . .

"That is the lesson of the game, that if you keep trying and don't overextend your abilities, you will steadily progress toward a goal."

In his letter to Sir-tech, Dr. Levy closed with this endorsement:

"I believe other professionals who work with children will find the game as useful as I have, and I strongly recommend that child psychiatrists and child psychologists seriously investigate the use of games such as *Wizardry* in the evaluation and treatment of children with emotional disorders."

International Spell. The effects of *Wizardry* are slowly spreading worldwide. A call to a colleague in England brought forth several interesting facts. There the game is selling strongly. England has been heavily into role-playing games for a long time (they feel they invented miniatures), and they are rapidly embracing *Wizardry*. He related that there was a small group of fanatical *Wizardry* players on a nearby air force base where, during work, one has to duck constantly to avoid being blasted by flying lorto and molito spells.

There is also talk in England of organizing *Wizardry* contests, where the winner would be the person whose team

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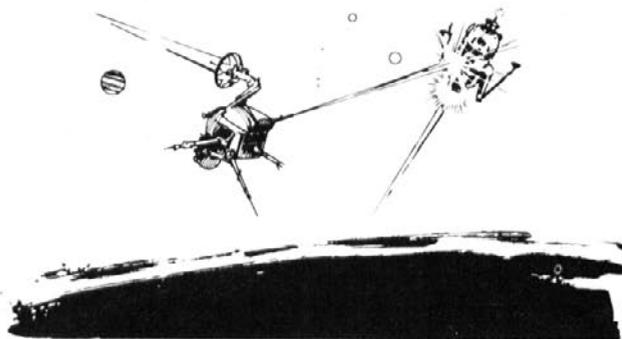


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Created by Manuel Deloso III.

brought out the most gold in a fixed time limit. The event would be grouped into sections by the overall level average of each team, so that it would be fair, and everyone would use the same scenario. There is great enthusiasm for the idea in England; perhaps similar tournaments will be sponsored in the United States.

A great true-life story was related by Harry Conover:

"I've a friend, a high-ranking public official, who's deathly afraid of flying. He's been playing *Wizardry* ever since it came out. His addiction has become so bad that he dreamt he was on a plane that started to spin toward the ground. Rising from his seat, he cast the *Wizardry* spell *kadorto* (which brings characters back to life, even if they are ashes). Immediately the movie screen in the front of the cabin lit up with 'Spell failed' . . . and he knew all was

lost."

War in the Wee Hours. For a moment, step with us through the mirror for a wry touch of perspective, as related by Harry's wife Deborah.

"It was all those 'beep-beep-beeps' at four in the morning that got to me. I knew Harry had solved *Zork* and *Zork II* in record time, but his involvement with this game *Wizardry* was bizarre.

"So I lurched into his office and was silenced with a wave of his hand. 'Jeez,' he muttered, 'six level-ten mages, three chimeras, and three nightstalkers!!!'

"I looked around the room and saw only Pepsi bottles, maze maps, and a man hunched over the keyboard.

"'Harry, it's four in the morning. You can fight them tomorrow.'

"'No. They must be dealt with now' was his abrupt reply, and his fingers flashed across the keyboard.

"'There,' he said, turning and smiling at me, 'that takes care of them! And 6,742 experience points for me and the crew!'

"'Harry, come to bed,' I said, leaving for a saner haven.

"'In a minute,' came his reply, wafting out of his office, 'I've got to get back to the castle first.'

"So, if you see a thirty-four-year-old man outside a castle, tell him to come to bed."

Our spell is wearing thin, time is fleeting. If you can linger, someone is offering free rounds of drinks at Gilgamesh's Tavern and Boltac's Trading Post is running a half-price sale on copper gauntlets. Want to come along? It is only just down the road and turn left. . . . SL

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*The
Wonderful
Wizard of
Ogdensburg:*

*An
Interview
with
Robert
Woodhead*

by MELISSA MILICH

Once upon a time in the computer industry when several fantasy adventure role-playing games were already on the market, a young man took an existing idea, added some high-level programming to it, and created a game that was truly an adventure.

The game is called *Wizardry* and the programmer is Robert Woodhead. Woodhead is a little like a wizard himself. He has the foresight of Merlin, the intelligence of Gandalf, and the bumbling eccentricities of the great Oz. He is an absolute wizard when it comes to programming.

The result of a collaboration between Woodhead and Andrew Greenberg, who designed the game, *Wizardry* is a game apart from others of its genre. Its success probably rests on its unique qualities: No other game allows as much flexibility in building your own characters, designating strengths and weaknesses that have clear effects; more important, no other game allows you to take groups of characters, up to six at a time, into the dungeon, where they interact and work together to overcome monsters and obstacles. Characters can trade gold and equipment freely, cast beneficial spells on each other, and change position in the expedition to benefit all. Or they can all run from monsters; if one runs, all run.

A Fellowship Feeling. People love *Wizardry* and they

can't tell you why. Robert Woodhead has a theory. "It's a projective game," he explains. "People tend to put their personalities on the characters they invent."

The world of *Wizardry* can be populated with characters of different races—dwarf, elf, gnome, hobbit, and human—and different classes, starting as mages, priests, fighters, or thieves; characters can earn the right to become samurai, bishops, ninjas, and lords. The dungeon has ten levels to conquer and there are numerous personal levels through which your characters progress as they gain experience and strengthen their attributes. You can create as many as twenty characters per disk, any six of which you can gather in the tavern to send on expedition into the maze. Together your band fights monsters, searches for treasure, or has a good old time at the inn.

According to Woodhead, who graduated with a degree in psychology from Cornell, his game offers players a chance to release emotions and pent-up frustrations. "A lot of professional psychologists and psychiatrists use this game with their patients," he says. "It allows the player to encounter groups of monsters, bash in their heads with a sword, and barely get out alive."

Sometimes the characters don't get out alive.

But it's just a game, right?

Chips Off the Old Block. Those who play the game religiously will tell you that when a character they've created, one with whom they've spent many hours fighting battles and finding treasure, if that character dies, well, it's a little like losing a good friend.

And that in part explains the success of the game. The creators of *Wizardry* have done something that poets, storytellers, and filmmakers always attempt but don't always achieve—getting the audience to care.

"It's not a character down there. It's you that's swinging your sword at the monsters," says programmer/psychologist Woodhead. "You've created that character. It's at least a part of you and you don't want it to die."

Fortunately, in *Wizardry* you have opportunities to cast healing spells or to journey to the Temple of Cant in hope of bringing your fallen heroes or heroines back to life.

Many people have noticed likenesses between *Wizardry* and the noncomputerized game, *Dungeons and Dragons*. The concept of the games is quite similar, but the execution of the concept is very different.

In *Dungeons and Dragons*, all the calculations involving battles, strengths, and armor have to be done by the players themselves using paper and pencil. Woodhead has programmed all the calculations in *Wizardry* into the game, which takes care of all the paperwork for the players. More to the point, playing *Dungeons and Dragons* requires that one person must create the dungeon. In *Wizardry*, the fully furnished dungeon is a major integral part of the program.

Dormitory and Dungeons. Woodhead stresses that the creation of *Wizardry* involved an equal partnership. In June of 1980, he thought he'd like to do a computer fantasy game and he happened to mention his idea to Greenberg, a friend at Cornell. Coincidentally, Greenberg was already at work on a game of that type, which he was calling *Wizardry*.

Woodhead liked the name and the idea for the format of the game. What he didn't like was that *Wizardry* at this stage was written in Basic—way too slow, he said. So they took the idea, kept the name, redesigned the database, and Woodhead rewrote the game in Pascal to speed it up.

By late September of that year, the first version of *Wizardry* was running. Full of bugs, but running. Woodhead estimates that there were at least a thousand bugs in the original program, but those were worked out in the course of several weeks of late-night sessions. In November of 1980, *Wizardry* was ready to go outside.

Publisher Sir-tech chose the New York Computer Show for *Wizardry's* debut. People liked the game and wanted to order copies on the spot.

Runtime Was Slow. But the time—and Apple—wasn't ripe. The release of *Wizardry* had to wait until the availability from Apple Computer of its runtime system, which allows programs written in Pascal (like *Wizardry*) to run on Apples without language systems. During the wait, Woodhead refined the game further and incorporated improvements suggested by players of the early version.

By spring of 1981, Apple Computer had come through with the runtime system and review copies of the improved

game were being distributed. Early copies of *Wizardry* were sold at the 1981 Applefest. A few people reported bugs, and work resumed. By late September 1981, *Wizardry* was being shipped out the doors of Sir-tech, its publisher, in which Woodhead is a partner.

And still, *Wizardry* improves. The program is so complex and complete that playtesting isn't sufficient for trying every possible move. So, occasionally, early players would try something no one else had tried and run right into an insect Woodhead didn't plan on. It was time for an update.

But the updating process didn't stop with killing the bugs or with incorporating suggested changes. Players of the older versions notice other subtle changes: bubbles coming from bubbly slime, less money and many more experience points for killing the Murphy's ghosts in the seven-door room, new monsters. These are the changes Woodhead has thought of since the previous version.

"I'm never really satisfied with *Wizardry*. I'm always working on it."

The latest version is available free from dealers or through friends to all who own older versions. The new version has an update routine that takes five minutes or so to modify old versions without hurting characters.

Whelping of a Wizard. Robert Woodhead was born in Tunbridge Wells, Kent in southeastern England in 1957 and spent the first seven years of his life there. Has his British heritage been responsible for his fascination with castles, warriors, and other aspects of the old English folklore evident in *Wizardry*?

"No, not really, but it did inspire my love for Marmite, fish and chips, and Roundtree's Fruit Gums."

It was during his teens that Woodhead's family moved to Ogdensburg, New York. The Ogdensburg Free Academy, where he attended high school, didn't offer any computer instruction, so on Saturday afternoons Woodhead's mother drove him to a college twenty miles away where he could learn programming.

In 1975, he enrolled at Cornell University. Cornell boasts a prestigious graduate program in computer science, but, at the time Woodhead attended, there was no computer science major for undergraduates.

Woodhead's second interest was psychology, so he majored in that. As it turned out, it was easy for Woodhead to combine his psychology studies with his interest in computers because a good deal of the homework projects involved using campus mainframes.

"I really enjoyed my major, and it's a great thing to have for parties."

Juggling Habits. When they learn of his psychology background, people sometimes ask Woodhead's ideas on the alleged phenomenon of hackers or computer junkies—those overzealous computer users that sit in front of the screen too long. Do they really exist?

"I've known computer junkies, or computer nerds—whatever you want to call them—guys who get addicted to the machine and need to get their daily fix from it. I've seen it in a lot of people, but there's a point between just being enthusiastic and being neurotic."

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"I was a victim of this at one time," Woodhead admits, "but now I can walk away from the machine if I need to without feeling bad. I'm not addicted to it anymore. If someone offered me a week's vacation and I couldn't bring my computer along, I'd still go."

Although he's still basically an amateur psychologist, Woodhead offers some advice to those who are worried that they might be turning into nerds. "Too much of anything can hurt you. Even water."

Besides computers and psychology, Woodhead enjoys water skiing, scuba diving, and watching television. He can also juggle.

"Andy [Greenberg] taught me that. I started out with two balls, and worked my way up to three. But then somebody stole one of the balls, so I'm now juggling two balls and a Rubik's cube. The hard part is trying to solve the Rubik's cube while I'm juggling."

He's kidding, of course. We hope.

Involuntary Tithing for the Dole. Software pirates are anathema to Woodhead. He estimates that there are as many pirated copies of *Wizardry* as there are legitimate ones. "My income has been cut in half by pirates. Whether they realize it or not, they're ripping me off, and most of them are normally fine, upstanding citizens."

Woodhead considers some of the opinions held by pirates "absolutely outrageous." Every pirate believes that there are mitigating circumstances in his or her case that justify making the illegal copies.

"They claim that software companies are ripping them off. They claim they really didn't need the program, that they wouldn't have spent the money on it anyway."

He tells of a pirate he met on a computer bulletin board line. An attorney by profession, the person felt he was justified in pirating a copy of every existing software program because he was a "collector."

"This guy is a lawyer and if he got caught I'd love to see him state his case in court. He'd be laughed right out of the courtroom. And, I hope, disbarred."

"It just offends me that this can happen. Lawyers, doctors, other people whose professions depend on their ability to think clearly and logically—it offends me that they can be involved in something so dishonest."

Woodhead believes that individually facing up to what they are doing and examining the long and short term effects of their actions might stop some pirates. But, "Greed is human nature, and piracy is one of the few things I'm pessimistic about. I don't think it will end."

After the Blue Ribbon. How does Woodhead see his future? "Well, I'm British, so I can't be elected President. But seriously, I don't know. The computer industry twirls around so fast, so I think I'll continue to do what interests me, because that's what I seem to do best."

"Obviously, I'd like to get rich but, given the choice, I'd choose personal fulfillment over cash."

Although a few of his plans are top secret, Woodhead revealed some. He'll be devoting more effort to promoting his other game, *Galactic Attack*, which he believes could be a "real sleeper." He'll also finish the project he and Sirtech's Gordon Eastman are working on together—a home-arcade game called *Star Maze*.

He'd like to do more collaborating, pairing his programming talents with, for example, a graphics expert to create another big hit.

"Computer programming is just a very complicated game. You take something nice and complicated and make it nice and simple. It's a rush to get the machine to do something you told it to do."

And programming has its rewards. About eight thousand copies of *Wizardry* have been sold to date, and Woodhead enjoys the fan letters and phone calls he receives. Except one.

"I'd like to state in print that the tenth level can be reached very easily from the ninth level. People call me in the middle of the night to ask about that, but the clue is right in front of them."

Present Rewards and Gifts to Come. Nevertheless, it's the phone calls and letters from devoted *Wizardry* fans that have made all the headaches and frustrations worth it.

"They're the most ego-gratifying things," says Woodhead proudly. I'm overwhelmed by the response.

"*Wizardry* is not just a product of Andy and me. It's also a product of all the players who have offered suggestions."

And so it comes as no surprise when Woodhead says that his future plans also include creating even more scenarios for the game.

Wizardry. It's likely to become as necessary to play it on your micro as it was to see *Star Wars* at the local movie theater. And, equally likely, the happy wizard of Ogdensburg will go right on adding enhancements to an already great game. SL

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Deadline: An Interlogic Mystery

Arthur Conan Doyle loved logic, delighted in deduction, and created a character who took these pleasures of the mind to the ultimate, all in the service of good. The means was the solving of mysterious crimes; the medium was the short story; the result was a new genre of fiction that would sell more words than any other save the bible: the mystery. The immortal vehicle for Doyle's expression was Sherlock Holmes.

In years to come, generations hooked on computer mysteries may well look back to Marc Blank and Dave Lebling with the same respect that mystery novel readers have for Doyle; these two have created the first wholly interactive mystery for the computer. And it's dynamite.

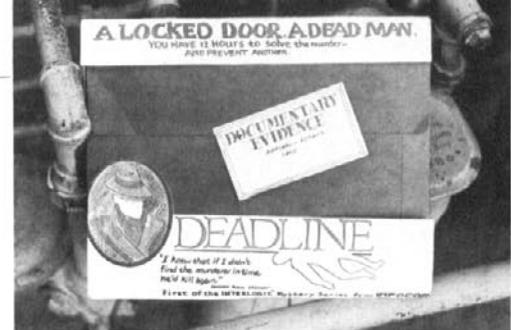
Before you ever insert the disk, you're likely to be totally enthralled by *Deadline*, the first episode in a planned series of Interlogic Mysteries from Infocom, which is Blank and Lebling. You know these two from *Zork* and *Zork II*; no lightweights.

Fingerprints and Fine Print. *Deadline* is an honest to goodness murder mystery, in which you are Sherlock Holmes, Hercule Poirot, Jane Marple, Nero Wolfe, Mike Hammer, Adam Dalgliesh—take your pick. It arrives in packaging unlike any software package preceding it. The disk comes in a dossier file, full of documentary evidence—establishing your beginning point in the mystery.

Opening the dossier reveals an introductory letter to you—the chief inspector—from the victim's attorney. An apparent suicide, businessman and philanthropist Marshall Robner had been under extreme stress because of the failing fortunes of his twenty-five-year-old company. His partner was urging a merger with a larger, stronger firm. In addition, Robner was constantly worried about his ne'er-do-well son George; he had spoken to the attorney very recently about drawing up a new will, a task that was to have been consummated this week.

Other documents are a lab report, an official police photograph of the victim as found, an envelope of tablets found near the body, a medical examiner's report, suspects' fingerprints, and transcripts of interviews with each of the people vitally concerned with Robner, most of whom were present in the house at the time of death.

Also included is the *Deadline* Inspector's Casebook. This is the documentation for the game, but never does it step out of character. As in *Zork*, you can use full sentences with *Deadline*; in fact, the vocabulary is greatly expanded. The casebook explains how to interrogate witnesses and suspects, how to accuse, how to make transcripts of conversations and documents you find—you can print out any segment of your game playing or all of it. It tells you how to have things analyzed in the police lab (Sergeant Duffy



is never far away) and how to handle evidence. You can examine carefully, a time-consuming process, or wait for things, and if something goes on within the range of your senses while you're so occupied, you have the option to quit examining or waiting and deal with the event of the moment.

The Time for Crime. You have just twelve hours to solve the mystery. A clock is constantly on screen letting you know just where you are. Time is important: you need to be in particular places at particular times. At the outset, you know of only one of these; the will reading is set for noon. As you play, you'll learn that other characters are going about their business despite your presence. Sometimes, you'll want to be privy to that business. Sometimes, you won't care.

For example, at a certain time, the housekeeper makes her rounds. If you haven't gotten to a particular place before her, you'll never see an important piece of evidence, because she'll take it away—quite innocently. On the other hand, at a certain point, the deceased's secretary goes into her bathroom to brush her hair. You could care less. But the delight is that she does it, that everyone is doing something all the time, regardless of you.

Of course, certain things you may choose to do will change others' behavior; but, until you do such things, the people of *Deadline* pay little attention to you.

There are many endings possible in the *Deadline* case, but only one ending reflects the perfect solution, the one in which all the pieces fit. You may even make the appropriate arrest and still achieve a less than perfect ending because some stone is unturned. When you do solve it all, you're offered an authors' summary of the progression of events.

At worst, a second murder occurs—yours. Next to that in bad endings is a second murder that isn't yours. Short of these, you can elicit cool thanks for what help you did give or you can get yourself fired. It all depends on you.

The Perfect Setup. *Deadline* incorporates all the finesse in programming we've come to expect from Infocom. Saving is simple and quick with accommodation for eight different saves; it does require a separate disk and it will take advantage of two disk drives if you have them. One is no problem though.

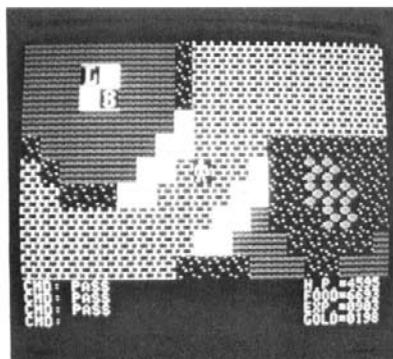
During play, you can repeat a command by typing merely “,” again, and you can use the escape-I, J, K, and M to retrace something you've written before if you want to change it just a bit.

The logic is impeccable, as is the progression of events you are capable of setting in motion. You must set certain ones in motion to win.

Appealing is the idea of a free evening in which you're comfortably ensconced in an overstuffed wing chair before a flickering fire, sipping fine wine and tasting the rare essence of Conan Doyle. Hercule Poirot liked the notion so much that he chose this setting as the one from which to solve many of his cases.

But better still is the pleasure of sitting on the edge of your computer-desk chair unraveling the mystery yourself. This is the pleasure of *Deadline*. Stake out a spot at your dealer's door before opening on the day this package is expected to arrive; you'll want to be first in your neighborhood to meet *Deadline*.

Ultima II



What if you could go back in time to a when before everything began, mosey along as civilizations were forming, then jog into today's hustle and rush? What if you could influence the way things are today by changing something in one of those far-off eras? What would you change? What would you hope your changes would make better?

A Quick Study. Last summer, Lord British took a month off from lording to learn assembly language, and learn it he did. As a result, *Ultima II* works with ten to twenty times the speed of the original *Ultima*.

But that isn't all that has changed. The universe has grown, or at least gained detail; monsters have become more versatile, with magic spells that show on screen; not all dungeons go deep because some take the form of towers; and time travel is available throughout the game, with full worlds to explore in several time periods.

This is clearly part of the *Ultima* series. You'll recognize Lord British's distinctive style as soon as you boot *Ultima II*: clean colors, neatly laid out in patterns of lawn, forest, water, and mountain—added attraction: water is constantly aglitter with moving waves. People and monsters are cleanly drawn, tiny, detailed figures.

Towns and castles, along with newly added villages, are similar in layout to those in the original *Ultima*, with a major change. Now you walk around in a town or castle just the way you roam the countryside; you can only see a bit at a time. Still there are the armories, the weapons shops, the transport shops, the pubs. But now the hints you get at the pub depend on how much you tip the newly worldly-wise bartender.

Fancy Meeting You Here! Many more people inhabit the towns, and you can talk (transact) with all of them. You may even run into someone you know.

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disappear. But if you keep on watching even longer, it will reappear. Such structures are time doors. If you catch one and enter it, you're transported to another time and place on earth. Unless you recognize the locale, the only way to discover where and when you are is to journey to Australia, where earth's only signpost remains through all time periods.

Times run from Pangea, before the continents had separated, to the future. In addition, you can find yourself in the time of legends, an extremely dangerous place. Stay put where you arrive, though, and you'll have the chance to go anywhen.

The differences are subtle between BC, which is not dated except by the causeway that still joined the lands that would be Alaska and Siberia, and 1500 AD, which resembles most the present.

Prophecy of Doom. The future map is not so future: the twenty-first century. But the map is very different from today's. Combining a pessimism sadly rampant among young people today with his natural enthusiasm and a moral sense that insists on the bad guys getting the worst of it all, Lord British has assumed a nuclear holocaust to have changed the face of the earth by that date.

The largest segment of land to be replaced by ocean is in the Middle East. "Iran was first to go!" the lord announced. Russia is reduced to swamp surrounding a new sea. China too is swampland. Much of Europe is gone, and all is disjointed; but England remains ("There'll always be an England").

The New World has not escaped unscathed. Canadians

must cross what might be called the Gulf of New York to reach Kentucky, and the Gulf of Mexico now laps the shores of the King Ranch. California escaped the bomb; it had long since eroded into the Pacific. Or perhaps it should be called the Atlantic-Pacific, since those two great bodies now flow easily one into the other through the thousand mile breach that replaces the troublesome Panama Canal as well as all the rest of Central America.

This touch of real and severe problems is pretty heavy stuff for a light and airy fantasy game, especially as it seems to be taken for granted that that's the way things will go and that there's nothing we can do about it. But in *Ultima II* we have ready access to the distant past as well as to the near and foreboding future. Take advantage of it; maybe you can affect that future.

In Quest of New Worlds. In the original *Ultima*, some of the quests and ordeals were of shaky necessity. In *Ultima II*, events are far more dependent on one another. Thus, you must truly earn the ability to leave this planet for the far reaches of space. And, when you get there, you'll find it worthwhile. There will still be aliens flying about that must be overcome, but you'll have nine reasons to want to go to the trouble: the nine other planets in our solar system. Each one is a world you can explore. Oh, did you say there are only nine planets altogether in our solar system, so we must mean eight others? Lord British—who is the offspring of a real-life space explorer, United States astronaut Owen Garriott—declares there are ten, the tenth being a small planet—although probably larger than Pluto—that travels in an oblique orbit usually outside Pluto and sometimes inside. Remember, we knew about Pluto years before we could see it. And the lord's parent has been a lot closer than most of us.

This is a fantasy game, and fantasy abounds in the natures of the other planets. Have you ever thought of Mercury? How about mostly ocean, with occasional swamps out of which, even more occasionally, spring mountains. Pluto: solid mountains but for a small island of grass and trees. Another planet is almost all grassland, another heavily forested with clumps of mountains barricading cities. Jupiter, planet of fortune and luck astrologically, is freeform land and water masses swirling about; Saturn, planet of responsibility and sobriety, is patterned and samely. Only Planet X, the tenth planet, has a castle; how curious to meet the king who lives in it.

The Lady Is a Tramp. If you successfully completed the original *Ultima*, you killed the evil Mordain in his time palace and destroyed the cursed gem with which he wielded malevolence on the universe. It is the wrath of his colleague, the enchantress Minax, that compells you to take on this second adventure. Minax, securely hidden in time, holds great power over the acts of humans. To save the world from being inundated by her vengeful spite and wicked actions, you must find her and destroy her. When you do, all the universe and all time will be and will have been better.

Ultima II is scheduled for April release for play on the 48K Apple II. As a result of Lord British's new association with On-Line Systems, both *Ultima* and *Ultima II* may be translated for the Atari 800 in the near future. **SL**



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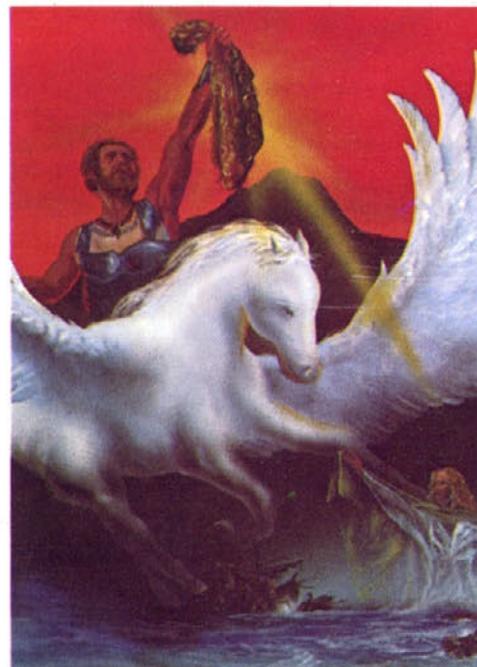
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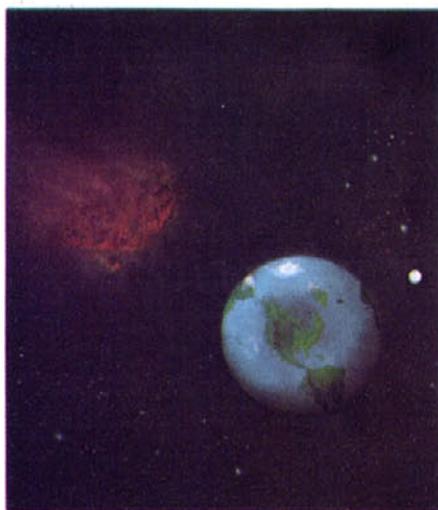
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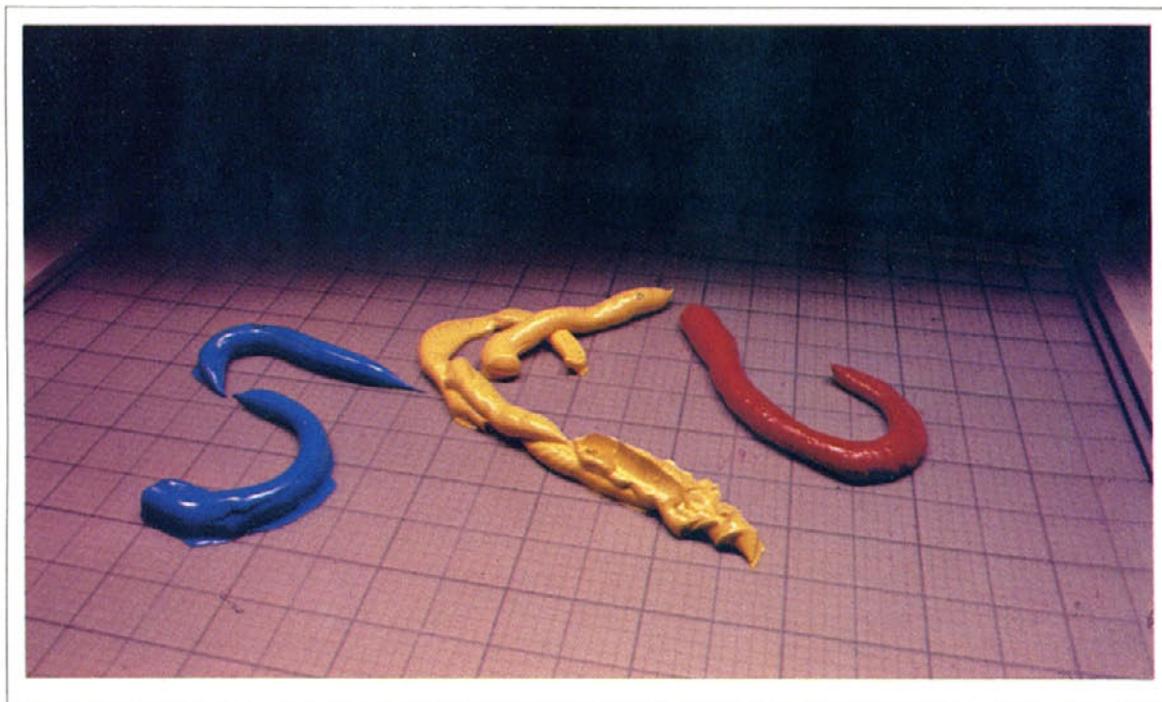
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Apple II Graphics:

*Color Me Blue . . .
or green . . .
or purple*



by KEN WILLIAMS

Welcome to part four of our series on Apple II graphics. In this installment, we shall concentrate on how color is produced on the hi-res screen. In the process, we hope to shatter some common myths. For instance, there's the one about how many dots exist on a row on the hi-res screen. Did you say 280? Before you finish this article, you may agree that 40, 140, 280, and 560 are all legitimate answers.

We'll be presuming that you have a thorough grasp of the material covered in prior issues, especially hexadecimal numbering and the use of the Monitor. It will also be helpful if you have copies of the prior installments of this series, the *Apple II Reference Manual*, and the *Applesoft Reference Manual*, near at hand.

The overall appearance of an image produced by your Apple is greatly affected by the resolution in which it is drawn. A circle can be drawn nicer, for instance, on a 100

by 100 dot matrix than on one that's 2 by 2. The more dots you have to play with, the nicer the image you can produce.

Along the y axis of your hi-res screen, you always have 192 dots to use. This number does not change whether you are in black and white or in color.

Unfortunately, the x axis is nowhere near so simple. When you're working in black and white, 280 dots can be produced on a row, but only 140 colored dots can be seen. Add to this the limitations imposed by not being able to place an orange dot next to a green dot (in general) and you've opened up a real can of worms.

For convenience in developing animation routines for the Apple, it helps to think of the hi-res screen as being in one of the modes we'll talk about now. These are not hardware-defined modes, nor will you find any soft switches to turn on and off. Rather, they are ways to structure your

thinking that will, we hope, simplify the coding you must do when you program your game.

560 Dots. Let's do an experiment. First, turn off the color on your monitor (or television). Now go into the Monitor (*call - 151*); you'll see the asterisk prompt. Turn on hi-res graphics (enter C050 and press return, then C057 and press return).

Now clear the screen by entering 2000:0, then 2001<2000.3FFEM. (If all this seems confusing to you, rereading the first two installments of this series should help.)

Next, turn to page 21 of the *Apple II Reference Manual*. Compute the memory address of the first byte of each screen line for the first fourteen screen lines. The results of your figuring should give you the following list:

\$2000
\$2400
\$2800
\$2C00
\$3000
\$3400
\$3800
\$3C00
\$2080
\$2480

\$2880
\$2C80
\$3080
\$3480

We want to *poke* the hex values 01, 81, 02, 82, 04, 84, 08, 88, 10, 90, 20, A0, 40, C0 into the bytes we have just identified. To do this, enter 2000:01, then 2400:81, then 2800:02, and so on into the Monitor until you have entered 3480:C0. As you *poke* values into memory, you should see a diagonal line appear.

Wait a second. We just *poked* a green dot (01) into line 0 of the hi-res screen and a blue dot (81) into line 1 of the hi-res screen with the color turned off. Isn't it reasonable to expect that the result of our activity would be two dots exactly on top of each other? Why isn't this what happens?

Let's answer these questions with actions rather than words. Try *poking* the following values into the same addresses: 01, 01, 02, 02, 04, 04, 10, 10, 20, 20, 40, 40. These values are the same as the ones we entered a moment ago, except that every other value does not have the high bit turned on.

Now we get what we expected—seven sets of two dots on top of each other. Notice that the diagonal line that results this time is nowhere near as smooth as the one we got before; this is because we are dealing now in only 280-dot resolution rather than in 560.

We've just demonstrated that the Apple has the potential to turn on 560 dots on any screen line. Unfortunately, Apple's hardware designers used only forty bytes to represent these 560 dots. Each byte can turn on or off seven dots; which set of seven out of the possible fourteen from each byte is determined by whether or not the high bit is set.

You're probably asking yourself what good it is to have 560 dots, only half of which can be lit from any one byte. In a later article we'll be exploring some tricks to take advantage of this peculiarity. It's possible to create eighty-column screens with beautiful character sets using this method, with half the dots on hi-res screen 1 and the other half on hi-res screen 2. This method also makes possible the production of very smooth graphs.

280 Dots. The vast majority of the game programs written today for the Apple work under the presumption that the hi-res screen has 280 dots on any given horizontal line. With rare exceptions, this is not the best possible mode to think in. Consider, for instance, the fate of a green monster drawn on an odd x coordinate.

Recall from last time that a green dot can never be drawn on an odd x coordinate. Therefore, if we were to draw a monster along these coordinates and then specify green as the color we want, no monster would appear. There are only 140 possible x coordinates that a green monster could be drawn on: the even ones.

Let's try another example, this time in Applesoft.

From the Applesoft prompt, enter *hgr*. If the prompt character goes away, press return until it reappears at the bottom of the screen. Enter *hcolor = 1*. This sets the current color to green. Now draw a vertical green line by entering *hplot 0,0 to 0,20*.

Nothing happens. There is absolutely no change. How

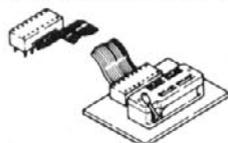
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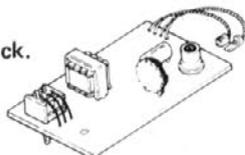
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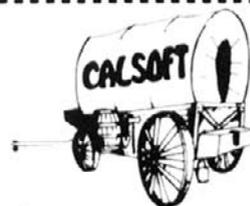
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can this be? How can Apple claim 280-dot resolution when only half of the dots can be used?

The simple truth is that you have 280 dots to play with only if you are working in black and white. What we've just discovered in attempting to draw a vertical green line by *hplotting* 0,0 to 0,20 is that if we are working in green we can draw on only half of the x coordinates. The same is true for violet, orange, and blue; we can draw on only half of the x coordinates. It can also be said that no more than 140 white dots can exist, for it takes at least two dots in a row to form white.

Most gamemakers either think of the hi-res screen as having 280 x coordinates animate either in black and white or, working in color, they always add two to the x coordinate when moving an object (thus simulating 140 mode). These methods come up short for many applications. When printing text on the screen, such as for a scoreboard, for example, you'll get much better resolution by using the 280 or 560 dot modes.

140 Mode. Generating a colored dot on your Apple requires the use of two memory bits. Since forty bytes are allocated to represent each line and seven bits per byte are used to represent screen dots, we compute that 280 bits are in use for screen mapping (40 x 7). Given that two bits are used to represent a colored dot (one on and one off for blue, orange, green, and violet, both on for white, and both off for black), it becomes convenient to think of each line of the hi-res screen as containing 140 colored dots.

Unfortunately, this method of looking at the hi-res

screen breaks down in most cases where two different colored dots are placed side by side. For instance, when an orange dot is followed by a blue dot, you get a white dot. There's no way of avoiding this; it's a consequence of the general rule governing Apple graphics that says any two dots on in a row will always appear white.

Here, for your your convenience, is a summary of the effect of contiguous dots on the hi-res screen:

<u>if a dot is</u>	<u>and is followed by</u>	<u>then you will get</u>
violet	violet	violet
violet	green	violet and green
violet	white	violet and white
green	violet	white
green	green	green
green	white	white
white	violet	white
white	green	white and green
white	white	white
blue	blue	blue
blue	orange	blue and orange
blue	white	blue and white
orange	blue	white
orange	orange	orange
orange	white	white
white	blue	white
white	orange	white and orange
white	white	white

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What should be reinforced by this is that when you're dealing with hi-res graphics on the Apple II, there's just no way to win except to spend literally weeks thinking about and planning for the graphic effect you wish to achieve before you jump into code.

Probably the best argument in favor of using 140-dot mode holds true only for machine language programmers: in 140, your x and y coordinates fit in one byte. Even Basic programmers stand to benefit from this; some of the machine language routines we'll be using later on in this series depend on 140 mode for their speed.

40 Mode. Perhaps it seems to you that the safest way to think of the hi-res screen is to pretend it has only forty dots, each of them one byte wide. To explore this idea further, let's try another experiment.

Enter the Monitor with the command `call -151`. Turn on hi-res graphics with the commands `C050` and `C057`. Enter `200:AA`. Then enter `2001<2000.3FFEM`. This will set the enter screen to a byte of orange followed by a byte of blue. You'll probably notice that a black line separates the orange and blue columns. Once again, this happens because we have turned off two bits in a row.

The point here is that even with one byte per dot there just isn't an easy way to predict what you will get when plotting on the hi-res screen.

How Many Colors? Now that we've all become totally confused about the number of columns on the hi-res screen, let's take a quick stab at determining the number of colors the hi-res screen can display.

According to page 89 of the *Applesoft Reference Manual*, the Apple is capable of displaying eight colors (black1, green, blue, white1, black2, violet, orange, and white2). Since the two blacks and the two whites are indistinguishable, we are left with only six colors.

But what about all those games and graphics packages that claim to produce twenty-one or even one hundred colors? Let's do another experiment.

Enter the following Applesoft program:

```

10  HGR
15  SZ = 15
20  FOR C1 = 0 TO 7
30  FOR C2 = 0 TO 7
40  GOSUB 1000
50  NEXT C2,C1
99  END
1000 FOR Y = 0 TO SZ STEP 2
1010 FOR X = 0 TO SZ
1020 HCOLOR = C1
1030 HCOLOR = C2
1040 HCOLOR = C1
1050 HCOLOR = C2
1055 NEXT X,Y
1099 RETURN

```

When you run this program, you should see dozens of colored squares drawn in the upper left-hand corner of the screen. To increase the size of the squares, change line 15 from `SZ = 15` to `SZ = 30`. You'll find that the larger the

value for `SZ`, the larger the square.

All we're doing here is displaying squares comprised of alternating colored lines. However, you should see, for instance, that when green and white are alternated, the color of the resulting square could be termed lime-green. This blurring of colors when they are placed next to each other is what makes it possible for companies to produce more than the standard six colors.

A variation on this theme is a checkerboarding effect used in several games that are on the market now. For example, dark orange may be produced by checkerboarding (in 140 mode) orange dots and black dots. Other more complex schemes may mix alternate horizontal lines of green with lines of alternating green and black. The combinations are endless.

In general, no matter how you look at it, the Apple II can generate only six colors. When different colors are situated close to each other, they will seem to blend and produce a new color. This approach has been used successfully in many games; we'll come back to it later in this series.

What's Ahead. By now you probably have an idea of the work and thought that's involved in planning for color before you can begin programming a game. It's not uncommon to spend weeks working on color design and coordination before beginning to program.

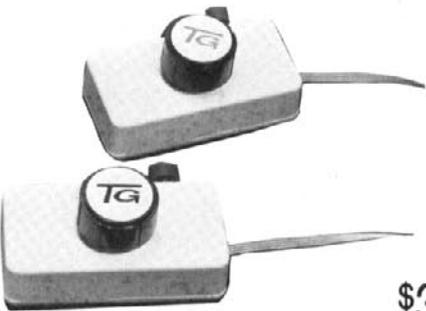
In the lessons ahead, we'll be using routines that require you to think in 140, 280, and 560 modes. Next time, we'll look at shape tables and begin to look at animation. Specifically, we'll be talking about such things as flicker and speed.

See you then.

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Gameline

from page 20

in the time warp, you must dock onto this swirling vortex-like ship in order to refuel.

As you are flying over it, the planetoid is represented as an animated grid plane scrolling underneath in one of the best three dimensional effects for an Apple game seen in recent times. The G-bellians, as the aliens are known, fly around and stake out certain parts of the planetoid. It is something of a challenge to try to end their miserable existence. With either keyboard or joystick, it is difficult to get them in your sights long enough to hit them.

Fortunately, not all the aliens are out to revenge their brothers' and sisters' quick demise at your hands. In fact, most of the aliens seem listless and dimwitted. It is possible to have two dozen encounters within a game and not get fired on once. If you do get fired on you're given plenty of time to activate a shield. Destroying the aliens in the time warp at first seems a little more difficult, with much seeming to depend on dumb luck. This is the only time you are forced to kill aliens, and after a few playings it gets pretty easy to kill them all.

It is hard to be critical of someone as hardworking as Nasir, but the feeling remains that *Horizon V* is not as good a game as it should be. It doesn't provide enough challenge. More often than not you are killed because you run out of fuel.

Getting more fuel is fairly exciting, though not too chal-

lenging. After you've accomplished that, it's back to the ennui of hot dogging over a planetoid frying aliens. Nifty animation and all, but one expects more from a top name like Nasir. If this seems harsh, it's because we're used to judging Nasir by the highest of standards. A good game from him would be a great one from anybody else.

There will undoubtedly be those who will find nothing lacking with *Horizon V* and it should do well on the marketplace. Still, one can't help but feel that Nasir should have spent more time on it and incorporated more elements. *Horizon V* never calls for a rush of adrenalin as *Gorgon*, *Beznan*, and *Crossfire*.

All criticisms aside, Nasir is a superb animator and his games are a delight to behold. There will surely be many more to follow this one. **DT**

Apple II, Apple II Plus, Apple III (emulation mode); 48K, disk, either DOS. \$34.95 from Gebelli Software, 1771 Tribute Rd., Suite A, Sacramento, CA 95815.

Galactic Chase

Galactic Chase, home version of *Galaxians*, is a jazzy little number with plenty of syncopation, offrhythms, and unsettling encounters. It's too complex for eight and under; moms and dads may find that brains, native intelligence (such as knowing how to negotiate a six-way freeway interchange . . .), and endurance may give them a slight edge over the fast reflexes of their offspring.

The galaxians swoop and soar and drop bombs. Points are given for destroying each alien ship. While it would seem prudent to destroy the aliens before they destroy you, twice the number of points are awarded for shooting an alien on the wing as for nailing a sitting duck.

You have a choice of weapons. You can attack with missiles or kill by direct contact. The latter resembles the Indian tradition of taking coup, in which an Indian warrior would ride into battle armed only with a slight wooden stick. Indeed, once you have eliminated thirty-one of the alien fleets, or ten fleets in the second game variation, your missile launching system shuts off and you can kill aliens only by direct contact. Of course, while riding in to take coup you run the gauntlet of both bombs and kamikaze aliens.

Galactic Chase has one and two player versions, plus slow and fast variations. You receive an extra man at a score of seven thousand, and another at the sixteenth, thirty-second, and forty-eighth fleet encounters. At higher score levels the game automatically switches from the slow to the fast variation. Eventually the missile launcher jams, forcing you to fight for every last point. High scores in this game are something to be very, very proud of. **PG**

Atari 400, cassette, \$24.95; Atari 800, cassette or disk, \$29.95. 16K. From Spectrum, 26618 Southfield Road, Southfield, MI 48076; (313) 552-9092.

Borg

By Dan Thompson and Jeff Allen.

There has been a lot written about dragons and their roots in mythology and medieval lore. Inherently evil, dragons are usually vicious, strong, and merciless. Although they may prefer young maidens, dragons will kill anyone who gets in their way.

Dragons are the foes you have to contend with in *Borg*,

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a new home-arcade game from Sirius that incorporates elements of adventure games. Playable with keyboard, paddle, joystick, or Sirius Joypoint, *Borg* pits you against a castle full of dragons, most of which are armed with weapons that shoot bullets. The castle has ten rooms and the object of the game is to find and kill the evil Grud whose castle it is and escape without getting snuffed yourself.

Some dragons are not too smart. They run into electrified walls and each other, and they shoot each other. You must kill all the dragons in a room before you can go on to the next room. The first room is fairly easy as the dragons are not armed; they're just waiting to be slaughtered. From the second room on, the dragons are armed, though not too fast with the trigger finger.

The rooms in the castle are simple-looking mazes, though they usually aren't that simple. Some walls are electrified and if you walk into them you're nothing but a memory. Walls that you can walk through also can be fired through. Any dragons on the other side have a clear shot at you. It takes several playings to become familiar with the first few rooms and which walls are passable. Then, you just have to avoid being killed and kill all the dragons, and it should only be a matter of time before you find the room that has the Grud in it.

If this were all there is to *Borg*—shooting dragons and figuring out mazes—it would be a fairly easy game that offered a fair amount of enjoyment. But it's not that easy after-all.

The game gets its name from the grandfather of all dragons, used by the evil Grud as a last resort. *Borg* is big and

mean. He can stomp through any electrified barriers and he kills anything he comes in contact with, including other dragons. If you stay in a room too long, *Borg* is called by Grud (the audio portion proclaims loudly "Borg," which may make your dog give you a funny look).

You can't kill *Borg*, but it is possible to run away from him. When you clear a room of dragons and *Borg* is chasing you, he speeds up. Even at this speed it is still possible to escape *Borg*, but you can't hesitate or make a wrong turn, particularly in the later mazes. One nice thing about the dragon *Borg* is that he kills the other dragons indiscriminately. You can control which direction *Borg* chases you by moving around, thus offering the chance to eliminate a few stray dragons.

The first two mazes take a little time to master. The third is much tougher, with all the paths going diagonally. The fourth looks just as tough. Past there it is anybody's guess. It'll probably be days before you find the Grud. It looks easy at first, but don't let it fool you.

Dan Thompson's animation is amusing and diverting. The running character is especially well realized. The dragons are cartoonish and look like silly goons, wagging their heads, running into walls, and shooting each other. *Borg* hops like a big kangaroo with a squishing sound. The room design by Jeff Allen is first-rate and successful in the most important feature: once you've spent half an hour solving a maze, you can't wait to try the next one. **DM**

Apple II, Apple II Plus, Apple III (emulation mode); 48K, disk. Either DOS. \$29.95 from Sirius Software 10364 Rockingham Drive, Sacramento, CA 95827; (916) 920-1195. **SL**

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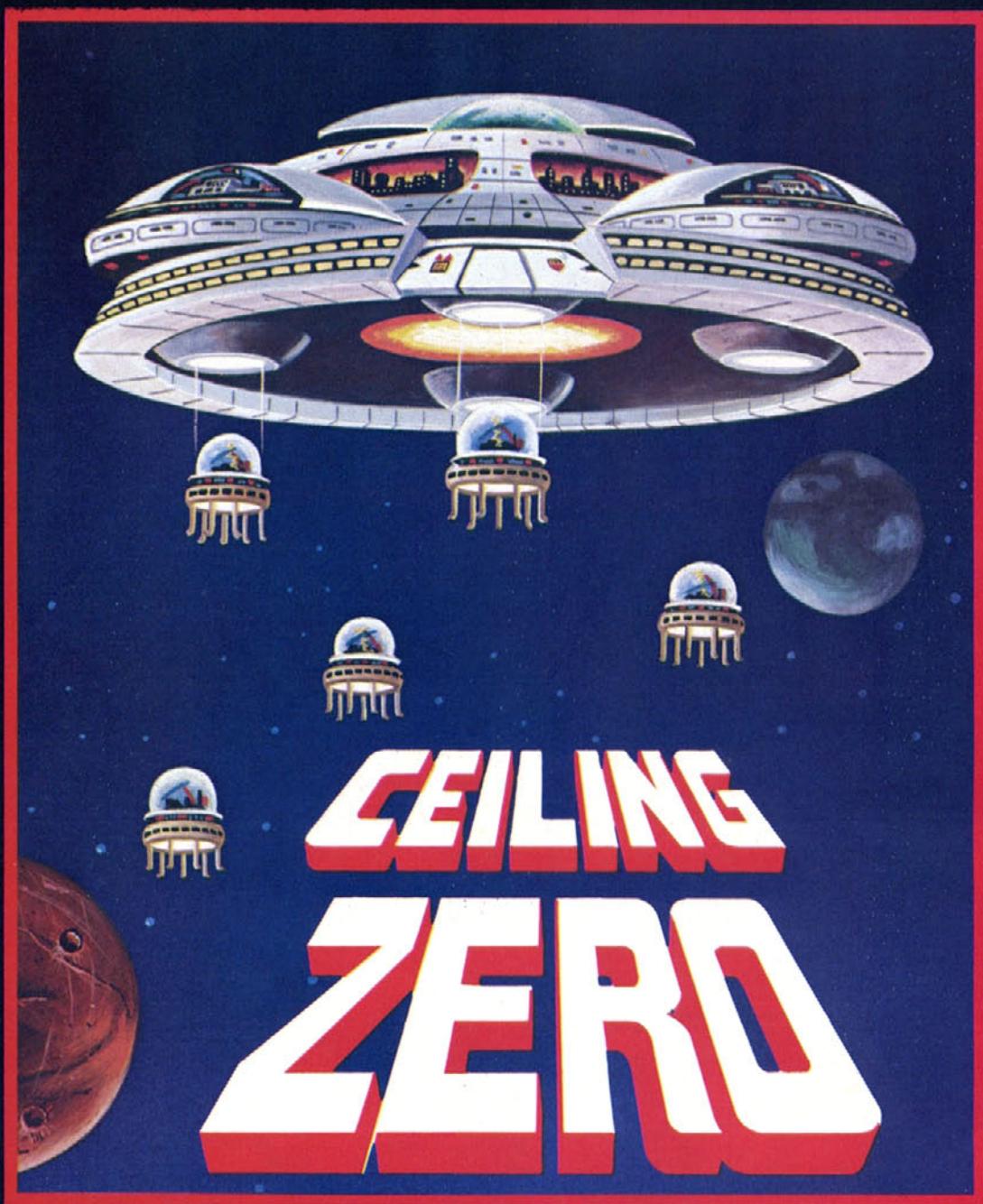
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The Eating Game

by
PHILLIP
GOOD



Two great themes run through American history: the lone soldier holding off a thousand crazed Apache, and the pie-eating contest.

The soldier found his modern counterpart in *Space Invaders* and *Apple Galaxian*; the business of eating, the subject at hand, is now riding a peak of popularity in the microcomputer world.

The American past is rife with New England clam bakes, Maryland crab feasts, Hawaiian luaus, Kiwanis breakfasts, ice cream socials, and Texas barbecues (remember the scene in *Giant* where Elizabeth Taylor throws up?); with corn on the cob, buffalo burgers, hot dogs steamed in beer, tacos in sashimi, black-eyed peas and cornpone; with chicken and dumplings, pancakes with syrup (lots of it!), and home-made American apple pie.

There have been many, many attempts to re-create this pioneer spirit: a pie-eating contest on "I Love Lucy," ice cream gorging on "Captain Kangaroo," and the spirited bidding in *Oklahoma* when Curly and Judd go head-to-head for Laurie's box lunch.

View from the Rising Gorge. Perhaps the man who has best captured the element of contest in American eating habits is Anthony Burgess, a British writer who spent most of his adult life as an expatriate in Malta, Malaysia, New

York, and Italy. In his eschatological spy novel *Tremor of Intent*, Burgess pairs off good and evil, black and white, across the dining trough.

"Well now," says Theodorescu, "I will make a bargain with you. Whoever eats the less shall pay for the wine."

Hillier, the spy of the novel, is reluctant to engage in the contest; Theodorescu is a man of formidable proportions. But Theodorescu continues. "At table I fear the thin man. The fat laugh and seem to cram themselves, but it is all so much wind and show."

They have red mullet and artichoke hearts, fillet of sole Queen Elizabeth with sauce blonde, shellfish tart with sauce Newburg, souffle au foie gras, avacado halves with caviar and a cold chiffon sauce, fillet mignon a la romana (with a little butterfly pasta and a few zucchini on the side), roast lamb persillee, and onion and Gruyere casserole with green beans and celery julienne.

It is over the desserts—peach mousse with sirop framboise, cream dessert ring Chantilly with zabaglione sauce, pears Helene with cold chocolate sauce, cold Grand Marnier pudding, strawberry marlow, marrons panache vicomte—and the after dinner sweets—chocolate rum dessert garnished with whipped cream and Kahlua, and orange marmalade creme bavaroise—that Hillier throws up. (Indeed,

few Burgess readers confronted with that orgy of sauces and cremes and sweets make it all the way through without some urge toward regurgitation.)

Soup's On! All this is by way of introduction to the eating game, the latest craze that is sweeping America and rotting the minds of her youth. We find eating games in bars, in arcades, on home video, on the toy shelf, and in the prominent displays of microcomputer software.

The elements of the eating game consist of the maze or playing board, the ghosts (or eaters), the food (or eatees), the control points (or energizers), and you (the consumer).

The essence of the game (and here, there are overtones of Burgess's spy novel, as well as of the eternal struggle between good and evil) is to eat the eaters before they eat you.

You accumulate a score in two ways: first, by swallowing the food or eatees as you go; second, by swallowing the eaters. For a brief period after a control point is triggered, the eaters turn into eatees (usually marked by a change in color), and you can accumulate such bonuses as two hundred, four hundred, eight hundred, and sixteen hundred points by eating all four eaters in succession. Unfortunately, at the end of this all-too-brief period, the eaters change color again and are ready once more to attack and eat the unwary consumer. Should you succeed in eating all the food (dots) on the board, the food supply is regenerated, the waiters bring a fresh tablecloth and utensils, and the banquet begins anew.

First Course. The prototypical eating game may be *Hun-*

gry Boy, a program for the Apple II imported from Japan by Astar International. There is a single game board, almost but not quite quadrilaterally symmetrical (exits on the top and bottom but not the sides permit the player to escape momentarily from the clutches of the ghosts).

The food in *Hungry Boy* consists of little dots. There are four ghosts, nicknamed Inky, Pinky, Blinky, and Clyde, and four control points, one in each sector of the board. The game ends when the player has been "eaten" three times, although a player may eat food and ghosts indefinitely.

Each time the table board is cleared, the ghosts move faster, though their point value remains the same. A surprise feature of *Hungry Boy* is a "coffee break" that occurs after the game board is cleared the second time, in which the ghosts prepare a . . . surprise.

Hungry Boy sells for \$24.95 from Astar International, 5676 Francis Avenue, Chino, CA 91710.

Jawbreaker is one of the most popular of the eating games. The main course is Life Savers, the player is represented by a set of teeth, and the ghosts are smiling faces (which change color and frown when they are ready to be eaten).

Jawbreaker offers some interesting and original audio-visual effects. A gay carnival tune heralds the game's first appearance on the screen, and, between game boards, a toothbrush polishes the player's "teeth." The player receives an extra set of teeth (that is, an extra life) for each three times he clears the game board. Thus, skillful play can prolong the game.

Jawbreaker is available for Apple and Atari from On-Line Systems, 36575 Mudge Road, Coarsegold, CA 93614, for \$29.95.

Have Some More. *Ghost Hunter* for the Atari offers the player a choice of fifteen game boards. A sixteenth alternative results in the random selection of a new floor plan each time the board is cleared. There are one and two player versions of this game. In the two player version, the players may compete alternately or head-to-head on the same game board. Since player markers cannot pass through one another, blocking an opponent's escape in the head-to-head variation literally can feed him to the wolves.

A handicapping feature makes *Ghost Hunter* more competitive. Either player may handicap his piece by slowing it down; this lets the less experienced player compete on more equal footing with a more experienced opponent.

Ghost Hunter also offers an invisibility feature and a regeneration feature. Enough variety, in short, to keep the game interesting for a long, long time. It's available from Arcade Plus, 5276 Hollister Avenue, Santa Barbara, CA 93111, for \$39.95.

Bezman for the Apple makes a radical departure from eating game tradition by starting with only one ghost. Since the player's piece is faster than a ghost (also a departure from tradition), the game seems trivial indeed. But not for long. On the second game board, there are two ghosts. And on the next, there are three. Each time the game board is cleared, the ghosts and the eater move faster and faster until they are almost a whirling blur.

Bezman is from Bez, 4790 Irvine Boulevard, Irvine, CA 92714, for \$22.95.

Strategy and Tactics. All of the eating games require

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nimble fingers, flexibility of mind (lack of an escape route can be fatal), and keen eyesight. There is a single element of strategy—to wit: don't eat the control dot until you see the whites of the ghosts' eyes. Ideally, you should wait until all four ghosts are gathered near a corner and then, and only then, consume the energizing dot. The rationale for that policy is that points for eating ghosts are significantly more valuable.

Choosing an Eating Game. There are many excellent eating games to choose from, and you'll probably want to buy more than one. Focusing on a few factors, including responsiveness, variety, challenge, and audio-visual effects, can help you to narrow the selection.

The responsiveness of the controls is probably the single factor that's most crucial to your enjoyment of an eating game. Ask any older athlete (Bobby Riggs, say) and he'll tell you that the greatest frustration is knowing what to do but not being able to do it fast enough. Ditto for the frustration with any arcade game where the brain is always a step ahead of the controls. You dodge, but your piece doesn't respond. Some fun! *Jawbreaker*, written in assembly language, is very responsive, which may do much to explain its popularity.

Having a wide variety of game situations to choose from maintains player interest longer (giving you more for your money) and, in a family situation, may make it possible to have several winners (good for family morale). *Ghost Hunter's* variety of game boards, plus its two-player options, make it number one in this category.

To sustain the player's interest, a game must challenge

the expert as well as the beginner. As the score rises, the opposition should grow stiffer and the handicaps greater. In *Bezman*, the number of ghosts increases with each of the first few clearings of the board; after that, clearing the board is a signal for the game to speed up. The challenge appears insurmountable, so, of course, the player won't give up.

Snack Attack, a late entry in the genre, also provides for levels of ability. The beginner may enjoy what is to the skilled player the excruciatingly slow pace of level 1; the veteran may bypass it, choosing any level to begin.

Although traditional in the format of the eaters and player—they travel at equal speeds, there are four eaters, and so on—*Snack Attack* presents three different mazes in sequence (as does *Bezman*), and, also like *Bezman*, reaches extremely challenging speeds on high levels.

Snack Attack comes from DataMost, 19273 Kenya Street, Northridge, CA, for \$29.95.

Sound and color, the background of crunching noises, the flicker of color as the score changes—all are essential elements of the eating game. Some players gain as much satisfaction from the crunching, munching, lip-smacking demolishment of the food as they do from attaining a high score.

On the practical side, unless you can distinguish the eater from the eatee, your fate is sealed. Unfortunately, some players may find it difficult to make this important determination, given the color variations of some of the eating games. Take a test drive at your local computer store before you buy.

Bon appetit.

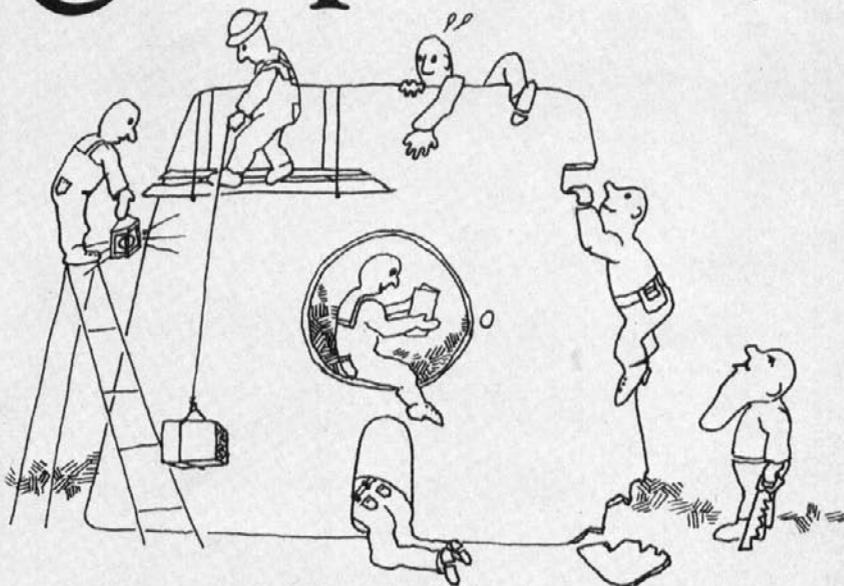
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Over a thousand Apple owners already belong to the largest software co-operative in the world. In Micro Co-op's bi-monthly newsletter our experts review and compare the latest software packages available for the Apple, keeping you up to date on the newest developments in applications, simulations, utilities, education, and gaming. In addition to our opinions, compilations of member surveys let you know how others rate software AFTER they've purchased and used it; information that will help you save money. You can also buy almost all your software through the co-op at special member prices,* because we purchase in quantity as a group. We keep products from almost every publisher in stock regularly so we can provide immediate service to our members.

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Softline Salutes

When Destry came to Bottleneck, the town was a mess. With all the institutions run by fools and bullies at the behest of outlaws, honest citizens could only try to hold onto their rightful property, living in fear and resentment of the lawless chaos that oppressed them all and destroyed their self-respect.

Vandals and hoodlums tore up the streets with gunfire

just for kicks while citizens bolted their doors and hoped none of the rowdies would think to light a torch.

Destry wore no gun and he didn't like gunfire. He hated to fight people. When the townspeople learned this of their new sheriff, they were greatly disheartened. How could such a person deal with the likes of their outlaws? How could he possibly hope to clean up the town? Surely he would

The following letter appeared in the Open Discussion section of the March *Softtalk*:

In conjunction with the release of *The Graphics Magician* and the updated *Complete Graphics System II*, Penguin Software is announcing a new policy with our applications software for the Apple. *The Complete Graphics System II*, *Special Effects*, and *The Graphics Magician* will all now be available on nonprotected disks.

We've been torn between two points of view. As computer users, we appreciate the ability to have several working copies of our applications software, and even the ability to go in and modify the code, if desired. We'd use programs such as *VisiCalc* or *DB Master* for dozens of other applications if we could have them running off several separate disks and didn't have to guard our master copies with such extreme care. Being programmers also, occasionally we'd like to adapt a program slightly to our system or our needs. On locked disks, much of a software product's potential usage goes untapped.

On the other hand, as publishers we've been drawn into the prevailing point of view that lack of copy protection means greatly decreased sales due to casual "piracy." This is not just a crazed overreaction; we've all been to user group meetings, homes of acquaintances, and even some computer stores where we've been aghast at the almost encouraging attitude toward copying copyrighted software, most of which took authors months, maybe years, to perfect.

The real scare here is that many of us have decided to take a risk on a very new industry and trust our livelihoods to it. Suddenly, individuals out there become statistics, some of which say that for every nonprotected program sold there are at least a dozen "pirated" copies. Those kind of numbers could really wreak havoc on paying the bills. Scary? Yes.

From these conflicting points of view, our desire to make a good product better won, but not by much, over our fear of tampering with something that is already going well. Our policies, from pricing to support, have always been very consumer-oriented. Ultimately, it is from that viewpoint that we decided to go ahead with removing the protection. We feel that you, the consumer, are entitled to software as useful as possible for the money you spend.

Our hope is that the added convenience will result in more sales, not less, and that the software market has matured to the point where people realize that the result of illegal copying is less convenience for everyone with all software. We hope that people will think twice before accepting copies from friends, and we hope to be able to continue this policy and start a new trend toward improved usability of all applications software.

Please don't abuse our trust in you.

Mark Pelczarski, President, Penguin Software

Penguin Software

have to change his ways; surely he would have to fight.

They didn't count on Destry's courage. Easygoing and quiet, when he spoke, Destry made clear that he meant what he said and that he'd back it up.

Destry never did put on that gun. He never did fight. He behaved as he believed it was right to behave, he played the cards his way because that was the way they ought to be played. In the process, he drove the rascals out, put the vandals in jail, and brought order out of chaos. As the citizens of Bottleneck saw Destry stand up to the outlaws on his own terms, their kind of terms, they came to respect him. They began to know pride again, and hope returned to their spirits, reviving their courage.

Before long, the citizens rallied behind Destry, and soon they, too, were standing up to the bullies.

The outlaws were driven away; the town and its people prospered.

This is a fairy tale, folklore of our country's beginnings. But the principles it represents and the power of those principles are not make-believe. They exist, and, in the long run, they work.

There are others in the Apple community who have refused to protect their software despite the statistics, and we salute them all. Most have given in and locked up their product, but they're to be highly credited for holding out as long as they did. Some who rely on others to program for them can hire programmers only by promising to protect.

But no one before has announced to the world, as loudly and clearly as he knew how, that he was without protection.

Mark Pelczarski and Penguin Software are telling the world they wear no guns. They may get hurt. But they're also showing the world that they have high standards; that they have the courage to stick by those standards despite the risk; that they refuse to accept the terms of piracy but will govern themselves and their company on their own terms. In turn, they will treat the honest citizens of the Apple world on the terms those people deserve, not on terms dictated by outlaws. They will not assume the worst of us.

For their outstanding guts and for treating us, the users, with respect, regardless of the potential expense, *Softline* heartily salutes Mark Pelczarski and Penguin Software.

May the Jesse James of disk crashers take up permanent residence with anyone who attempts to pirate their software.

SL

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*uses structured program control:
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iteration
subprogram

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— missing data indicated; makes bar graph for % of suggested intake

— complete user's guide

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High Scores

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 An asterisk * appearing before a high score indicates that Softline has received verification for that score.
 Because we have not required verification, unasterisked scores are not to be dismissed.

Game	Publisher	Score	Player
ABM	Muse	*65,536	Norman Fong, San Francisco, CA
Alien Rain	Broderbund	*17,735,500	Alan Lee and friends, Brighton, MA
Alien Typhoon	Broderbund	629,700	Matthew George, Tallahassee, FL
Apple-oids	California Pacific	14,220	Jon Hickey, Norra, RI
Apple Panic	Broderbund	512,860	Chris Horpy, Westminster, CA
Asteroid Field	Cavalier	623,000	Jeff Feldman, Miami Beach, FL
Asteroids	California Pacific	4,962	Ron Flickinger, Ft. Wayne, IN
Asteroids in Space	Quality	319,315	Mark Adams, Salt Lake City, UT
Autobahn	Sirius	1,500 miles	Jason Greenberg, Highland Park, CA
Beer Run	Sirius	2,489	Dave O'Neil, Manassas, VA
Bezman	Bez	*65,757	Al Tommervik, North Hollywood, CA
Blister Ball	Creative Computing	1,782 (2 player)	Kerry Stetline, Neil Radlick, Morristown, NJ
Borg	Sirius	5,100	Norman Fong, San Francisco, CA
Bug Attack	Cavalier	79,608	John Roberts, Los Alamitos, CA
Ceiling Zero	Turnkey	*7,130	Pam Nitto, Binghamton, NY
County Fair	DataMost	*1,669	Pam Nitto, Binghamton, NY
Crop Duster	Slipshod	14,375	Victor De Grande, Staten Island, New York
Crossfire	On-Line	*315,540	Al Tommervik, North Hollywood, CA
David's Midnight Magic	Broderbund	*494,820	Jay Sullivan, program author
Death Star	California Pacific	*1,158,600	Terry Sullivan, Agoura, CA
Dog Fight	MicroLab	*1,361	Marc Tanenbaum, San Jose, CA
Epoch	Sirius	1,880	William Tung, Towson, MD
Epoch	Sirius	206,040	Sandy Marks, Houston, TX
Falcons	Piccadilly	212,000	Jeff Feldman, Miami Beach, FL
Firebird	Gebelli	101,875	Andrew MacKenzie, San Francisco, CA
Galaxy Gates	Magnasoft	65,050	David Ginsburg, Troy, NY
Galaxy Wars	Broderbund	47,450	Vince Capocci, Canton, OH
Gamma Goblins	Sirius	16,640	Bob Farr, Trenton, NJ
Genetic Drift	Broderbund	29,750	Norman Fong, San Francisco, CA
Gobbler	On-Line	193,400	Alan Harrington, Naples, FL
Golden Mountain	Broderbund	82,600	Joey Grisaffi, Houston, TX
Gorgon	Sirius	*67,900	Norman Fong, San Francisco, CA
Hadron	Sirius	*17,670	Dick Nitto, Binghamton, NY
Head-on	California Pacific	175,320	Brian Fargo, Newport Beach, CA
Hi-Res Computer Golf (Beginner's Course)	Avant-Garde	Low Score *66	Jim Combes, Rohnert Park, CA
Horizon V	Gebelli	46,100	Norman Fong, San Francisco, CA
Jawbreaker (Apple)	On-Line	153,580	Mark Besse, Worcester, MA
Jawbreaker (Atari)	On-Line	73,220	Mark O'Green, Mesa, AZ
Meteoroids in Space	Quality	13,355	Willy Howell, Norton, MA
Missile Defense	On-Line	368,796	Dennis Quinn, Inglewood, CA
Mission Escape	CE Software	*3,161	Steve Allen, Des Moines, IA
Mouskattack	On-Line	49,600 (2 player)	Mike Jack, Doug Vickery, Acton, MA
Neutrons	Dakin5 (Level 10)	*681,500	Norman Fong, San Francisco, CA
Norad	Southwestern Data	*6,720	Jon David Nitto, Binghamton, NY
Olympic Decathlon	Microsoft	10,901	Steve Rothenberg, Mayfield Heights, OH
Orbitron	Sirius	*142,000	Norman Fong, San Francisco, CA
Outpost	Sirius	25,952	William Tung, Towson, MD
Pegasus II	On-Line	40,430	Billy Phillips, Murray, KY
Phantoms Five	Sirius	42,670	Steve Rothenberg, Mayfield Heights, OH
Photar	Softape	169,140	Norman Fong, San Francisco, CA
Planetoids	Adventure International	322,460	Jon Beggs, Colorado Springs, CO
Pulsar II	Sirius	*27,540	Jon David Nitto, Binghamton, NY
Raiders of the Lost Ring	Cavalier	32,640	Jon Poklop, Park Ridge, IL
Raster Blaster	BudgeCo	4,528,625	Conor Cunningham, Plano, TX
Red Alert	Broderbund	22,070	Allan Padgett, Dallas, TX
Rings of Saturn	Dakin5/Level 10	544,272	Adam Springel, Farmington Hills, MI
Russki Duck	Gebelli	241,000	Norman Fong, San Francisco, CA
Sabotage	On-Line	44,612	David Uri, Irvine, CA
Snack Attack	DataMost	12,640	Norman Fong, San Francisco, CA
Snake Byte	Sirius	36,630 (Level 17)	Terry Sullivan, Agoura, CA
Sneakers	Sirius	110,434	Dan Cohen, Aston, PA
Snoggle	Broderbund	*311,380 (Level 28)	Ron Flickinger, Ft. Wayne, IN
Space Eggs	Sirius	38,400	Eric Sussman, Studio City, CA
Space Quarks	Broderbund	4,200	Howard Rumsey, Princeton, NJ
Space Warrior	Broderbund	44,441	William Tung, Towson, MD
Star Dance	USA	*2,638	Dick Nitto, Binghamton, NY
Star Thief	Cavalier	15,200	Jason Greenberg, Highland Park, IL
Suicide	Piccadilly	*6,320	Dick Nitto, Binghamton, NY
Super Invader	Creative Computing	99,675	Steve Rothenberg, Mayfield Heights, OH
Tail Gunner	California Pacific	*20,189	Charles Campbell, San Jose, CA
Taxman	Hal Labs	269,990	Brian Fitzgerald, program author
Thief	DataMost	104,760	James Ruggieri, Santa Cruz, CA
Threshold	On-Line	11,500	Roby Warmington, Laguna Beach, CA
Thunderbird	On-Line	560,000	Jason Greenberg, Highland Park, IL
Torax	Creative Computing	19,960	James Ruggieri, Santa Cruz, CA
Track Attack	Broderbund	*27,806	Neil Radlick, Morristown, NJ
Tranquility Base	California Pacific	4,356	Parry Forcier, San Rafael, CA
Tsunami	California Pacific	*1,540	Brian C. Donnelly, Ipswich, MA
Wormwall	Creative Computing	12,336	Kerry Stetline, Morristown, NJ
Wormwall	Sirius	106,860	Dennis Heaton, Adak Island, AK

Just when you thought it was safe to go back underground again.



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Zork II is the extraordinary successor to Zork I, which hit #4 on the SOFTALK Top 30 in its first month on the market. Both run on 32K Apple II's with a 16-sector disk drive. And both are available now.

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