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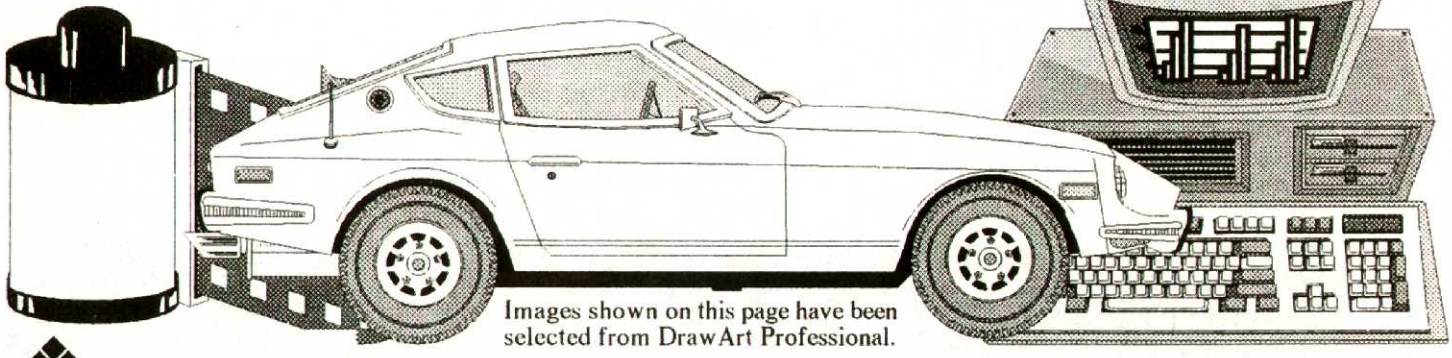

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NOVEMBER/DECEMBER 1988

ATARI EXPLORER

THE OFFICIAL ATARI JOURNAL

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REVIEWS

DEPARTMENTS

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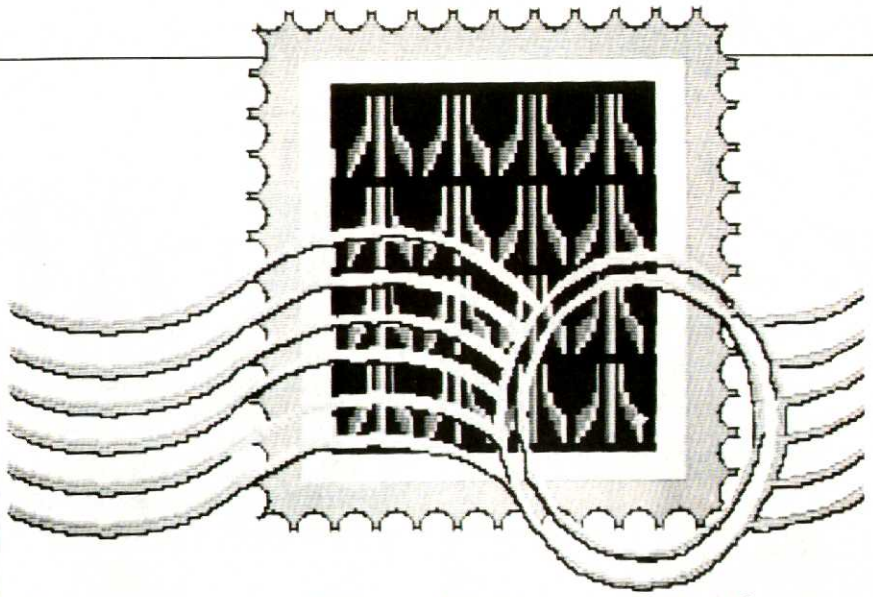

Letters To The Editor

Support Your Local Magazine

Dear Editor:

Having just read an editorial in *ST Informer* about the survival difficulties faced by certain Atari-related publications, I feel compelled to write to those publications to which I am currently subscribing simply to thank them for providing such a valuable service to the Atari community.

Even more important, perhaps, I would hope to encourage other Atari owners to support as many of these publications—including yours as they can afford. The price for most publications is relatively small compared to the value of a good reviewer's comments on Atari products.

I should probably point out that I am not an employee of Atari Corp. or *Atari Explorer* (I am simply a music teacher in a beautiful but nondescript part of Western Montana), and I have owned an Atari 1040ST for over year now and am an ardent, unashamed ST *fanatic*.

So, thank you—all of you—at *Atari Explorer* for your outstanding magazine. Even though you are not "ST-specific," I do hope that ST owners will continue to support your magazine. If they don't, they will miss out on a great deal!

Ron Bewick
P.O. Box 272
St. Regis, MT 59866

Keeping The Sales Force Happy

Dear Editor:

This is to acknowledge the manner in which Ms. Diana Goralczyk handled my Atari 1040ST complaint. She could not have done a better job, and, of course, I am very grateful.

I am now very satisfied with my ST—so satisfied, in fact, that I have convinced two of my co-workers to purchase 1040s, bringing the total number in the office to five.

Ms. Goralczyck is making a major contribution to the bottom line by keeping users, who are by far the best sales force, happy!

L.P. Wong
P.O. Box 25007
Honolulu, HI 96825

In Search Of Mandelbrot

Dear Editor:

We are interested in finding a program for the Atari 800XL that would draw one miniature Mandelbrot set on-screen. Ideally, the screen would display a view of the set in color that would show a reasonable magnification of the filaments and curlicues near the boundary of the set. Can you suggest such a program?

Arnett W. Counts
East Los Angeles College
1301 Brooklyn Ave.
Monterey Park, CA 91754

We have never seen such a program, but perhaps other readers have some ideas. If you can help Professor Counts, please write to him directly.

Software Previews

Dear Editor:

After reading the letters in the May/June issue of *Atari Explorer*, I thought I would pass along my feelings on the subject of piracy and commercial software.

I recently downloaded demo versions of three commercial packages—*Easel*, *Zoomracks II*, and *ST Talk Professional*—that were made available on CompuServe. Having had the opportunity to use these abridged versions of the products, I was able to make an intelligent decision as to whether or not the product would fill my needs. I did not have to waste money buying software that I couldn't use.

I would like to thank the manufacturers of these programs for making them available for preview. If more publishers adopted this practice, I think you would see far less "borrowing" of software.

Bill Stanis
4313 Duquesne Ave.
Culver City, CA 90232

STs in Action

Dear Editor:

I am an Atari ST owner and a subscriber to *Atari Explorer* since 1986. Most of the issues are interesting, but I think you should also produce articles regarding the use of these machines in industry and higher education.

I am an engineer, and I am sure there are many other professionals like me who have chosen the ST over other computers despite negative remarks by colleagues who are using the more established machines. I think your readers would like to know what is being done with Atari computers.

Hor Tek Lip
808-A Lorong Petani
05200 Alor Setar
Kedah, Malaysia

We are always on the lookout for stories about novel uses of Atari computers, but we really need your help. If you know of a person or organization that is using Atari computers in an unusual way, please write to us and let us know about it.

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Letters To The Editor

Pause For Thought

Dear Editor:

I note in your review of *Xevious* (Sept/Oct '88) that the product offers no pause feature.

I understand that a coin-op game cannot have a pause feature because those quarters are someone's livelihood, but home computer games should offer the option to pause. When I get to the top level and my heart is pounding, I need a pause to get everything back together.

If the people who wrote the software used it at home with a wife, kids, and dog, they would include a pause.

I congratulate Bill Kunkel for mentioning that *Xevious* has no pause and hope that other reviewers will follow his example.

James Caron
Box 3917
Steinbach, MB R0A 2A0

Function Key Functions

Dear Editor:

I was dismayed by the shallow review of *WordPerfect* by Frank Kofsky. Mr. Kofsky described several genuine problems with the initial release of the product, which have since been corrected by the Wizards from Utah via *free* updates.

But his fixation on the layout of the function keys surprises me. He either did not receive a function key template or chose not to mention it. The "bewildering" array of commands is quite clearly displayed on that template.

As to the logic of the command layout on the template, I would personally prefer to hit a function key alone to invoke the most-used commands (as opposed to striking another key, such as Shift, Control, or Alternate, in combination with a function key).

The layout of the *WordPerfect* function keys has been used on hundreds of thousands of keyboards throughout the world and blends in beautifully with other WordPerfect Corporation products, including *DataPerfect*. Someday, despite the aid of critics like Professor Kofsky, we may see some of these products for the ST.

I was sorry to see Mr. Kofsky's tirade given such prominence in what I consider to be a very fine publication for Atari computers. If you want balanced reviews of products, get balanced writers . . . don't just publish two reviews of the same software.

Martin Brown
263 Los Banos Ave.
Walnut Creek, CA 94595

More On WordPerfect

Dear Editor:

I was delighted to see your two good reviews of *WordPerfect*. I have had *WordPerfect* since Beta 4.1 for the Amiga, and it is, as *Info* editors said, "the word processor you love to hate."

AmigaWorld and *Amazing Computing* both published "reviews" that could only have been written by people who had never used *WordPerfect*. And, of course, they didn't publish my letters—or any of the others I'm sure they got—about their reviews.

So you are to be commended for your honesty. Thanks.

Robert A. Jenkins, Ph.D.
22901 Shagbark Lane
Chicago Heights, IL 60411

WordPerfect for Business

Dear Editor:

In defense of *WordPerfect*, yes, a casual writer should save money with a public domain word processor. Business people, however, would do well to invest in the package. Office temporaries who know one *WordPerfect* can easily adapt to different computers, using commands that are common to IBM, Macintosh, and Atari. I might add that the Atari ST would be the best computer on which to train new secretaries, because it allows them to learn both keyboard and mouse commands.

As for the brouhaha over piracy, I find much confusion as to what constitutes piracy. The simple copying of a friend's commercial disk certainly is, but what about buying software from other users or buying computers with software thrown in? How does one recognize pirated software in a public domain library or on a local BBS?

As president of the NOVATARI user group, I have advocated keeping our BBS, our libaries, and our Atarifest show clean, but it requires constant watching by many.

Georgia Weatherhead
3130 Cedar Grove Dr.
Fairfax, VA 22031

Buying and selling used software—whether as a single package or bundled with used hardware—is not only legal but, in many cases, the only way to obtain some of the classics. Remember, however, that as the seller, you must relinquish not only the original disk and documentation but any backups you may have made. If you buy used software, be sure that you get the original disk and documentation. The same caveats apply to trading.

As for recognizing pirated software, common sense is your best guide; if a program looks to good to be free, it probably is. With very few exceptions, public domain software simply lacks the professional "look and feel" of a commercial product. You can protect yourself by avoiding downloads from bulletin boards completely and dealing with a reputable user group or a public domain software dealer, such as Brad Roltgen Enterprises in Fresno, CA.

Corrections

On page 33 of the Sept/Oct '88 issue, George Woodside is quoted as saying that "MichTron . . . has released a public domain virus called Vaccine." Obviously, what MichTron has actually released is a public domain virus *killer* called Vaccine.

The number for Hi Tech Expressions published in our review of *Print Power* (Sept/Oct '88, p. 64) was incorrect. The correct number for Hi Tech Expressions is (212) 941-9703.

In the same issue, the price of the Atari XF551 disk drive was listed as $199.95. The correct price is $219.95.

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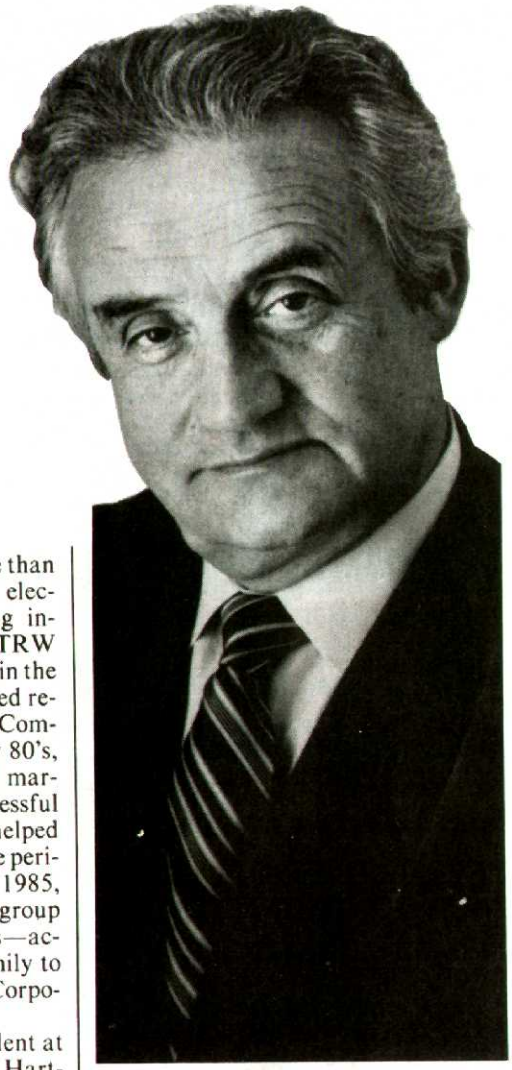
An interview with Sig Hartmann, Atari's new executive VP for public relations

Inside Atari



By D.F. SCOTT

Sigmund Hartmann has more than 25 years experience in the electronics and data processing industry. As vp of data systems for TRW Corporation, he was instrumental in the creation of the first computer-based retail credit reporting system. At Commodore during the 70's and early 80's, he assisted with the creation and marketing of the enormously successful Commodore 64 computer and helped shepherd the company through the period of its most rapid growth. In 1985, Hartmann—along with a small group of hand-picked Commodore execs—accompanied Jack Tramiel and family to Sunnyvale to help rebuild Atari Corporation.

Currently executive vice president at Atari and president of software, Hartmann has wielded considerable power in bringing about Atari's renaissance. Having recently added executive vice president for public relations, to his list of titles, his current mandate is to open doors—to "get the word out" that Atari has set its sights on major business, professional, and commercial markets, and is committed to forging a strong new relationship with dealers and end-users. In the following candid interview, he shares some of his unique insider's perspective with *Atari Explorer* readers.

Atari Explorer: Last year, at the Consumer Electronics Show in Chicago, you said you were involved in a project to create an *Excel*-like product for the ST (*Excel* is Microsoft's popular and powerful spreadsheet for the Apple Macintosh).

Sig Hartmann: I'm happy to announce that we do have a product like that now—a very high-end product with more and better features than *Excel*. I expect it to go into beta testing by the end of July and be released to the public in the fourth quarter.

Dealer Relations

AE: This news ought to be exciting to dealers. *Excel* has been given credit for a lot of Macintosh sales, I'm told. On the subject of dealer relations, a recent statement by August J. Liguori (Atari's vp for computer operations) suggests that Atari wants strongly to emphasize one-to-one relationships with dealers. Yet Mega system dealers in the U.S. are complaining of delays in receiving hardware. Can you comment on this?

SH: We want to develop a relationship with our dealers like the relationship Compaq has with their dealers. Compaq's strength is basically an excellent, loyal dealer base—very strong. The major reason is that Compaq always gives a lot of support to their dealers and makes certain that they have a good return—that they make money. We know that in order to sell the STs, we've got to have good distribution, and to build up good distribution, we want to have an excellent relationship with dealers. We want to work closely with them, listen to them, and get them to the point where our relationship can be successful for both sides. That's what we're starting to do now, very strongly.

For example, we just had a Dealer's Council meeting here at Atari corporate headquarters . . . the first of its kind. We wanted to hear what dealers had to say about doing business with Atari. We wanted them to air their dislikes, learn what they would like to see and how we can strengthen our relationship with our existing dealer base. So we picked 15 of the major dealers from across the country, and they came out here, and we had an excellent meeting.

As to the second question, yes, the U.S. dealers do have to wait—there's delay before they get the hardware. The major reason for this is our success in the European market, where the ST has already been established as a standard. To maintain our leadership in Europe we need to satisfy demand, so most of the machines we're producing now get shipped to Europe.

A secondary problem that has affected production involves the pricing of DRAM. I believe, however, that by October that problem will disappear. By the fourth quarter, we should be able to ship all the machines for which a demand exists.

AE: As it stands today, 520s and 1040s are being sold at Federated outlets. In some regions Federated's marketing plan is to undercut the competition's prices—to sell for the lowest possible price. It's hard for a specialty store to compete where a Federated store is right down the street, promising to sell at the lowest possible prices.

SH: I really believe that if you look at Federated's pricing today and compare it with dealer pricing, you're going to find that our specialty dealer pricing is probably lower than Federated pricing. Thus, I do not see that kind of competition being a problem today.

Connectivity and Supercomputing

AE: Speaking of Compaq, as we were a moment ago, both the Compaq DeskPro 386 and the Macintosh SE are being pushed right now as network hubs. Does Atari plan to make an appearance in the network field?

SH: We are in the process of getting some network products put together, though I can't give you release dates.

It's critical for us to have network

capability with our Megas in order to attack the business marketplace. However, we're not ignoring other aspects of connectivity, either. For example, I just visited a firm called ETA Systems, a subsidiary of Control Data Corporation that develops supercomputers ranging in price from $20 million down to just under $1 million. Neil Lincoln, their vp of technology, showed me four or five STs they're using as intelligent terminals for their supercomputer systems. Secondly, they're using STs as development stations for writing supercomputer software.

ETA is sponsoring a contest whereby they'll be donating a million-dollar system, including STs as terminals, to the high school that develops the best technical software package. The chief scientific people at ETA are really sold on the ST—especially Neil Lincoln, who really believes in the Power Without the Price motto and sees ETA's own computers as representing Power Without the Price on the high end. ETA is the first company to come out with a supercomputer for under a million dollars.

We're basically working together with ETA on some advertising and marketing strategies. They may attend the Comdex show with us and be in our booth, running their systems with STs tied on as intelligent terminals.

AE: When you talk about supercomputers, I'm reminded that Atari has its own Transputer-based development project now going on. Some users seem to feel that in the process of developing such a high-end product, Atari is forgetting about the regular users on whom its success has been grounded.

SH: The Transputer machine on which we're working is going to be a small, but pretty high-priced, type of device. I can see it being used in universities and by people who do special graphics or other processing-intensive applications. And I agree, the Atari Transputer is simply not going to be a home machine or probably even a small business machine for the general market.

However, the existing Mega and ST machines offer tremendous power to the normal user. Right now we have the 520, the 1040, and the Mega line, all of which are excellent general-purpose computers.

Marketing Plans

AE: What about future marketing plans in the U.S? I keep running into people who still don't know about the new Atari.

SH: It's a problem with PR and advertising. First, advertising takes money and resources. Why should you advertise if you don't have enough machines to sell? You have to look at it as a matter of when to advertise and when not to advertise.

Second, you have to maintain a certain amount of awareness in the marketplace. We have plans to make certain people aware that Atari is a sound, profitable company—that we are still in the business of producing computers which, in our view, offer solutions to the customer at the lowest price. But we can't do that until we have enough merchandise to sell.

Right now, we are limited in what we can sell here in the U.S.A. That will turn around very, very quickly. You can already see a slight change in the positive direction; more and more parts are becoming available for sale in the U.S. I think that within the next two months, supply should stop being a problem.

AE: On a completely new track, you've been pretty close friends with Jack Tra-

"Jack and I know each other now for approximately 18, 19 years. I respect Jack. I believe he is really, truly a genius in his own right, a self-made man."

miel, haven't you?
SH: Jack and I know each other now for approximately 18, 19 years. I respect Jack. I believe he is really, truly a genius in his own right, a self-made man. Let me tell you, the guy's just a dynamo in my opinion. There's only one Jack in this world.

AE: So you were around while the man stamped out millions of Commodore 64's, laid them on the market, and made them to this day the most widely-distributed home computer in America?
SH: Correct. Commodore went from $300+ million to $600 million the next year to $1.2 billion the year after that. That was between 1982 and 84. It was a tremendous reward for all of us personally, not just financially.

We took a company and doubled the sales every year, with equivalent increases in profits. As an individual, it's fine to get financially compensated, but just think of the personal satisfaction. We got tremendous satisfaction from taking a company—and I'm sure this is just the way Jack feels—and making it a billion-plus-dollar corporation.

AE: Can the success of the Commodore 64 be duplicated in today's market, or has the market changed too much?
SH: We believe that will happen. Not only that, we are positive that it's not a question of "will it happen again?" but only of when it will happen. We hope that we are the company that will come out with that type of product—a product that can revive the home market.

AE: Michael Katz (Atari executive vp for entertainment electronics) sees a very bright future for the old 8-bit XE computer. Could this system be your successful product?
SH: There is no question that the 8-bit line is not dying. It's going to continue to be sold. But I think the next success will be a 68000-based machine. It will be a 16-bit machine, not 8-bit. The next push will be a high-end machine. The reason for this is that the public—the younger generation—is more familiar with technology and is demanding more power.

AE: Does that mean a mass-market ST? An ST game machine?

"The basic ST is going to continue to be modified and upgraded, and it's going to be upward-compatible. It's going to grow into a more souped-up machine."

SH: No, not a game system. I think it's going to be a general-purpose machine.

AE: When you say, "going to be," does this mean you're working on something? Not the current model ST, but something else?
SH: The current ST has a lot of potential, but we are naturally always trying to improve our machine.

AE: Back when Jack was in charge of Commodore, I talked with him and some other Commodore people at the National Computer Conference. At that time, the Vic 20 was the big machine, and they had something in the works—a prototype of the Commodore 64 that they called Max—which they expected to take over the market and last two years.

After that, they expected to bring out another product that would last, maybe, three years. Clearly, the market response to the C64 changed Commodore's plans for product life expectancy, but what about the basic Tramiel philosophy? How long a life span can you see for the ST?
SH: The strength of our company—the strength of Sam and Jack Tramiel—is that they react very quickly to the marketplace. We make very, very quick decisions. We look at the market, see what's out there, get feedback from our customers, and then we start doing something.

But even though we're responsive to the market, we understand that product continuity has as much to do with engineering and planning as with market pressure. The way we see it, the basic ST is going to continue to be modified and upgraded, and it's going to be upward-compatible. It's going to grow into a more souped-up machine.

A 68030?

AE: By "souped-up," do you mean it will support a 68020 processor eventually?
SH: We are working on—and we've demonstrated a very rough prototype of the engineering model ST at the Hanover Fair—a 68030 machine. We won't have a 68020. We believe, why go with a 68020 when you can reach directly for a 68030?

AE: In other words, you say to the Amiga 2000, "I'll see your '20 and raise you '10."
SH: We're doing what we always do. We like to leapfrog over whatever the competition is doing. We are now in the process of working on a 68030 machine. Keep in mind that when we come out with our machine, it's going to be very upward-compatible. It should be able to run TOS software and any other software.

The message is: we think our main ST is a beautiful architecture, beautiful machine. We're going to continue to improve it—just like the Macintosh. You don't see the Macintosh dying. My feeling is, we're going to continue to add the features our customers want.

The key thing is to develop a huge base of software for the ST; we want to make sure people can continue to use it. When people make an investment in software, they don't like to suddenly throw all that software out when they want to get a newer, more powerful machine. We believe that if the customer suddenly says, "I want to get a faster machine—a more high-end Atari com-

"He can't fool me with all this generosity. He makes it all back selling his computerized mailing list."

puter," he should be able to use the base of software he's already familiar with.

AE: When you get this 68030 machine, is it something you'll be able to sell through your Federated outlets?
SH: That I can't tell you; we don't have a strategy put together yet. However, when we come out with the 68030 machine, it will definitely go to our specialized dealer base. That's why we have been developing a very strong dealer base.

I can see the 68030 machine being an OEM (Original Equipment Manufacturer) machine as well—a machine that we manufacture under contract for final packaging and sale by other companies—makers of specialized workstation packages, and so on. We already have prospective OEM customers asking when we're going to have it available. A lot of people are watching for an opportunity to work with us.

AE: Can you take care of your specialty store, official, and VAR dealer base and sell through the Federated stores at the same time, or are the two outlets going to clash with each other?
SH: No, I think the Federated Group is, to us, just another retail store. I believe it's not in the cards for Federated to sell a high-end machine—like a Unix machine, for example—because such machines require so much support.

AE: I understand that Atari is in the process of deciding whether or not to build their own semiconductor fabricating plant. A recent analysis in *Electronic Product News* suggests that Atari doesn't have the kind of cash flow needed to make such a large investment feasible at this time. Any comment?
SH: We do have enough funding. We have plenty of cash available. There's a lot of ways you can buy a company. For example, we bought Atari, Inc. from Warner Communications, and if you remember, that didn't require a lot of cash. A lot of times, semiconductor companies have come to us with offers of partnership, because we know how to put their chips to use.

AE: But would you be willing to go through that whole process again—assuming somebody else's debts, for example.
SH: When Jack was at Commodore, we had an integrated company, because we had our own semiconductor plant. Jack's plans are the same. He wants to have total integrated capability. If Sam and Jack . . . and I've got to emphasize Sam's role here, too—as president, he's crucial to the decision-making at Atari today. If Sam and Jack feel that's what they want to do, they're definitely going to do it. My feeling is that our company will be an integrated company; we have started it already, and we're going to continue.

AE: If and when you build such a plant, do you foresee doing some outside sales to other, smaller manufacturers?
SH: I can only say what Jack would say: "Basically, I'm here to make money. If we can make money, we sell products to anyone." If you notice, at Commodore, we sold products to Atari, but Atari didn't hurt us because of it.

We're not there yet, so I can't tell you what Sam is going to do. Really, however, what we really want to do is to be able to control our own destiny. With totally integrated capacity, you control your own destiny. Jack has always believed in that and demonstrated the principle at Commodore. Sam and Jack's plans are to do the same thing here. ■

"My feeling is that our company will be an integrated company; we started it already, and we're going to continue."

New computer languages; news about the Abaq; and a way to convert Atariwriter files

User Friendly

By JOHN JAINSCHIGG

User Friendly is dedicated to sharing the best material culled from the dozens of Atari user group newsletters sent to our editorial offices each month. These newsletters range from several photocopied pages stapled together to professionally typeset publications that rival the quality of consumer magazines.

All of the reprints found here appear with the gracious permission of their authors and the publishers of the newsletters in which they first appeared. While very attempt is made to retain the style and flavor of the original, most items are edited for length and clarity.

Note to newsletter editors: If *Atari Explorer* is currently on your user group's mailing list, please check the address. Many groups are still sending their newsletters to us by way of Sunnyvale—a route that adds weeks to the delivery time. If we are not already on your mailing list, we would like to be. Please send all newsletters to *Atari Explorer* at 7 Hilltop Rd., Mendham, NJ 07945.

New Language

From the July, 1988 issue of the SBACE Gazette (Santa Barbara Atari Computer Enthusiasts, P.O. Box 3678, Santa Barbara, CA 93130) come these very funny excerpts from an article by Steve Parker, discussing aspects of a proposed new computer language called Babbage.

C.A.R. Hoare, in his 1980 ACM Turing Award lecture, described two ways to design software: "One way is to make it so simple that there are obviously no deficiencies, and the other way is to make it so complicated that there are no obvious deficiencies." The designers of Babbage have chosen a third option—Babbage is a language that has *only* obvious deficiencies. Babbage programs are so unreliable that maintenance can begin before system integration is completed. This guarantees a steady supply of jobs in the programming marketplace.

Structured languages banned GOTOs and multiway conditional branches by replacing them with the simpler IF-THEN-ELSE structure. Babbage has a number of new conditional statements that act like termites in the structure of your program:

WHAT IF: Used in simulations. Causes branch before evaluation of test conditions.

OR ELSE: Conditional threat, as in: Add these two numbers **OR ELSE.**

WHY NOT? Executes subsequent code in a devil-may-care fashion.

WHO ELSE? Used for polling during I/O operations. It also offers a wide variety of looping structures, such as . . .

DON'T DO WHILE NOT: This loop is not executed if the test condition is not false (or if it's Friday afternoon).

DIDN'T DO: The loop executes once and hides all traces.

CAN'T DO: The loop is pooped.

MIGHT DO: Depends on how the CPU is feeling. Executed if the CPU is "up"; not executed if the CPU is "down" or has had its feelings hurt.

DO-WAH: Used to write timing loops for music software ("rag timing").

In a similar vein, this item from the June 1988 issue of DAL-ACE (P.O. Box 851872, Richardson, TX 75085), submitted by James Duke, who got it "somewhere else," proposes some additional mnemonics for assembly language:

ACQT: Advance clock to quitting time.

ATARIWRITER FILE CONVERTER

ATARI KEY

- Any Atari 8-Bit Computer
- Disk Drive
- Atari Basic

```
10 REM "by Ron Starkey, PACUS, Green Bay, WI"
20 REM "From an idea by DOUG LONG"
30 REM ________________________________________
40 DIM F1$(15),F2$(15):poke 702,64
50 ?CHR$(125):?"  EOL To LF+CR File Utility":?
60 ? "A utility program that converts"
70 ? "the Atari ATASCII EOL (155),"
80 ? "to the ASCII CR (13) and LF (10)"
90 ? "characters.":?
100 ? "........Use Dn:FILENAME.EXT format"
110 ? "From Filespec>";:INPUT F1$
120 ? "To Filespec>";:INPUT F2$
130 IF F1$=F2$ THEN ? CHR$(253):? "You don't want to do
that!":GOTO 310
140 ?:? "Insert disk(s),":? "Press START when ready.";
150 IF PEEK(53279)<>6 THEN 150
160 OPEN #1,4,0,F1$:OPEN #2,8,0,F2$
170 TRAP 290:REM TRAP EOF ERROR
180 ?:?:? "Working";
190 REM ________________________________________
200 GET #1,A
210 IF A = 155 THEN 260: REM ATASCII EOL
220 IF A>250 OR A<122 AND A<160 THEN 200:REM
    GRAPHICS CHARACTERS
230 IF A>159 AND A<251 THEN A=A-128:REM CHANGE
    INVERSE CHARACTERS
240 IF A<32 THEN 200:REM IGNORE CONTROL CHARACTERS
250 PUT#2,A:GOTO 200:REM PUT CHARACTER IN OUTPUT FILE
260 PUT#2,13:PUT#2,10:REM PUT CR AND LF IN FILE
270 ? ".";:GOTO 200:REM SHOW EACH EOL REPLACED
280 REM ________________________________________
290 CLOSE#1:CLOSE#2
300 ?:? "Done. File converted."
310 ?:?:? " Press SELECT to reRUN."
320 IF PEEK(53279)<>5 THEN 320
330 GOTO 50
```

BA: Branch anywhere.
BM: Branch maybe.
CHI: Call for help immediately.
CISR: Change instruction set randomly.
CNV: Curse network vehemently.
DWIT: Do what I'm thinking.
FFF: Fire fazers on full.
ICBA: Ignore compare, branch anywhere.
ITEM: IF-THEN-ELSE-MAYBE.
LFA: Loop for a while.
OMT: One more time.
RPM: Read programmer's mind.
SDIT: Shut down if thunderstorm.
SPSW: Scramble program status word.
TET: Think evil thoughts.

Notes From Perihelion

From the July issue of Alien Speaks, the journal of the Atari Lovers of Illiana (c/o Jeff Coe, 706 Center St., Crown Point, IN 46307), comes a report on the Abaq ST peripheral, currently under development by Perihelion, Ltd., in England. The Abaq project has received a lot of attention, as it aims to provide very high-speed and parallel computing capabilities by employing the controversial Inmos Transputer parallel processing engine. The report was downloaded from the Blue Moon BBS and is attributed to a Perihelion insider.

Hardware Specification: The base machine incorporates a T800-20 Inmos RISC-type Transputer (10 mips) (channels exist for installing a network of up to four Transputers), 4Mb of buffered DRAM plus 1Mb of video RAM, color blitter, true DMA, SCSI port for 40Mb (minimum) hard disk, and three internal expansion slots. Mega ST used as I/O processor.

Graphics modes: 1280 × 960 × 4 bits/pixel; 1024 × 768 × 8 bits/pixel; 640 × 480 × 8 bits/pixel; 512 × 480 × 32 bits/pixel (24 bits color, plus 1 overlay bit and 7 tag bits).

Blitter: Perihelion Blitter is based on work done by Dr. Phil Willis at the University of Bath. Implements very fast 2-D raster graphics operations, such as fast font drawing. Using blitter, square area fill runs at 128 megapixels/second; arbitrary two-color character drawing runs at 64 megapixels/second.

Operating System: Helios, a true distributed operating system, developed for managing networks of Transputers. The distributed nature of Helios is transparent, both to the user at his terminal and to programs running within it which need never be aware of the exact location of any services. It may be thought as a "software backplace," providing an infrastructure within which processes can locate and communicate with each other.

The unique aspect of the Atari/Perihelion design is that it provides multiple processors within a single workstation. The use of multiple processors means that it is possible to write application programs that make use of the parallelism inherent in such systems (Editorial translation: You can write programs the different parts of which can execute simultaneously on different processors—i.e., true parallel processing.) Applications can run as traditional, single processes (in parallel with others) or multiple processes, communicating via pipes, each of which is assigned its own computing engine.

Converting Atariwriter Files

From the June/July 1988 Pacus Report (Packerland Atari Computer Users Society, 2714 South Eleventh Pl., Sheboygan, WI 53081) comes Ron Starkey's short, but very useful utility for Atari 8-bit owners who handle text files.

A major difference between the Atari ATASCII format and the more standard ASCII format is the ATASCII use of character code 155 for the end of line (EOL) character. ASCII uses both the carriage return (CR) code 13 and linefeed (LF) code 10 instead of EOL.

The program in Listing 1 can be used to convert *Atariwriter* files containing EOL (155) characters to the LF and CR format. This is useful for uploading a text contribution to your favorite newsletter and for exchanging text files with other brands of computers.

From *Atariwriter*, use the SAVE ASCII command to save the file to a disk; then convert the file using this program. If you use the cartridge-based *Atariwriter*, you must delete the format line from the top of the document before saving to a disk. Then you can use the converter on the saved file. With either version of *Atariwriter*, you should avoid using printer control characters to produce underline, boldface, paragraph indent, center line, etc. ■

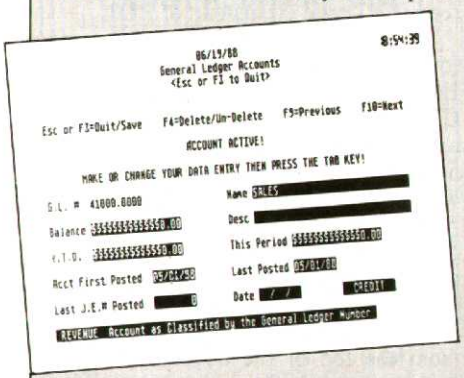
New software for Atari 8-bit and ST computers

New Products

PRODUCTIVITY SOFTWARE

Hi-Tech Advisers announces the Hi-Tech Accounting Series for the ST, an accounting system designed for non-accountants. *Part #1, Accounts Payable*, keeps track of the vendor number, invoice number, description, due date, invoice date, and purchase order number for every bill. It prints checks and manages up to 99 different bank accounts.

Part #2, General Ledger, provides a sample chart of accounts, allows accounts to be added at any time, posts



automatically from journal to ledger, and calculates trial balances, profit and loss statements, and balance sheets.

The packages sell for $69 individually or $129 for the pair.

Hi-Tech Advisers, P.O. Box 7524, Winter Haven, FL 33883, (800) 882-4310 or (813) 294-1885.

The Inventory Manager for the Atari ST is now being distributed by authors Walt and Carol La Foret. The program can handle between 4300 and 40,000 records, depending on the storage medium. Part numbers and descriptions can be up to 16 characters in length, and as many as 254 vendors can be assigned to the inventory. $39.95.

Walt La Foret, P.O. Box 166, Fountainville, PA 18923.

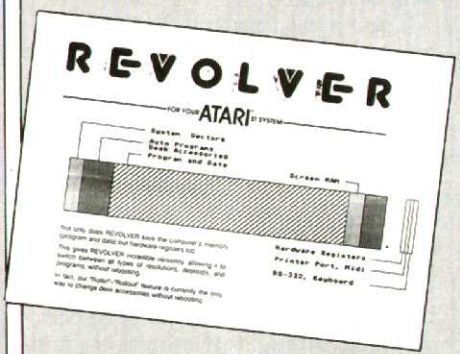
Video Title Shop Graphics Companion II from **IntelliCreations** for Atari 8-bit systems features professionally-created graphics canvases for business, home, and school. Also included are border fonts, character fonts, and clip art fonts covering sports, outdoor events, holidays, and general subjects. $19.95.

IntelliCreations, 19808 Nordhoff Pl., Chatsworth, CA 91311, (818) 886-5922.

BRE Software has released five disks in the *Clip Master* series of clip art for use with desktop publishing programs on the Atari ST. Subjects include animals, food, music, Christianity, plants, Americana, designs, school, and transportation. $19.95 each.

BRE Software, 352 W. Bedford, Ste. 104, Fresno, CA 93711, (800) 622-7942 or (209) 432-2159.

UTILITIES



Intersect Software announces *Revolver* for the Atari ST, a utility that can take a TOS, GEM, or TTP program and stop it at any point, then write it to disk, allowing you to pick up where you left off at a later time. You can also set a timer to save a program at specified intervals. Additional features include full-disk commands, control panel options, and a screen snapshot utility. $49.95.

Intersect Software, 2828 Clark Rd., Ste. 10, Sarasota, FL 34230, (800) 826-0130 or (813) 923-8774.

KIS Terminal 3.0 from **Alpha Tech Computers** is a full-featured terminal program for the Atari ST. Features include five file transfer protocols, four terminal emulations, a built-in .ARC shell, autodial capabilities, 20 function-key macros, and scan dialing of multiple numbers. $29.95.

Alpha Tech Computers, 2901 Wayzata Blvd., Minneapolis, MN 55405, (612) 374-3232.

Solar Powered Software announces version 3.0 of *Solarpak*, an integrated desk accessory for the ST. The program offers a print spooler, which allows up to eight files—each with different print attributes—to be queued for printing. Also included are a reset-tolerant RAMdisk and a screen saver, which turns the monitor off during periods of inactivity. $30.

Solar Powered Software, 1807 N. Evergreen, Chandler, AZ 85224, (602) 899-6992.

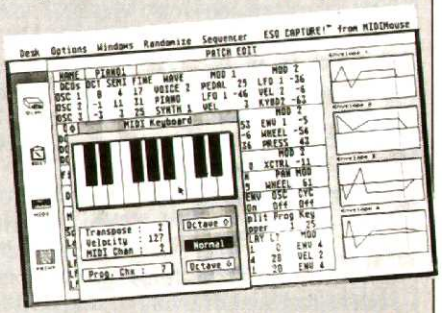
MUSIC SOFTWARE

Digidesign announces two new programs for the Atari ST. *Notator*, developed by C-Lab of West Germany, extends the capabilities of C-Lab's Creator sequencer to provide a uniform MIDI recording/sequencing and music-editing environment. The program converts sequences to standard musical notation in real time and permits editing and note entry either in standard notation or via graphic representation of a raw MIDI event sequence. Other features include display of up to 32 staves, a broad range of note values, clefs, and musical symbols, and the ability to insert and edit text in scores. $595.

Sound Designer is a digital sample editor for the ST, compatible with 20 sampling keyboards, including the Ensoniq Mirage and EPS, E-mu Emax, and Roland S-10. The program can display up to three waveforms, letting the user edit each sample at a resolution of up to $^{1}/_{50,000}$ of a second. Samples can be mixed, merged, equalized, and subjected to complex frequency analysis by FFT (Fast Fourier Transform). $349.

Digidesign, 1360 Willow Rd., Ste. 101, Menlo Park, CA 94025, (415) 327-0777.

Midimouse Music has released four new versions in its *Capture* series of patch editor/programmer/librarian programs by Sonicflight. The group in-



cludes ESQ-1/M/SQ-80, D10/110, D50, and MT-32 compatible systems. *Capture* software employs a GEM interface, providing access to all functions and special features of the supported synthesizer. All versions offer full bank and patch printout facilities and library management functions. $99.95 each.

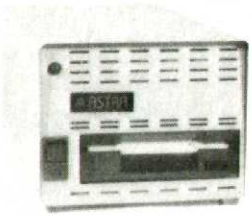
Midimouse Music, Box 877, Welches, OR 97067, (503) 622-4034.

Astra News

2500-L So. Fairview, Santa Ana, CA. 92704 (714) 549-2141

NOW THREE SERIES OF HARD DRIVES !

System HD+ Series | **Home / Office Series** | **Studio Series**



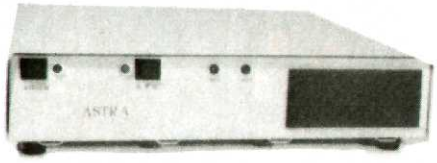
THE "TANK"

The System HD+ has been recognized as extremely tough and reliable by hundreds of Atari ST users. It is built to exacting standards and scrupulously tested. Astra Systems is so confident of the quality of this unit we offer a limited one year warranty.

Originally offered as a 20 Megabyte hard drive with built-in 3 1/2" floppy, it now is also available in 30 and 40 Megabyte units with floppy.

Supplied with formatting, partitioning software, and backup program.

The floppy used in this unit is a precision drive with direct drive motor, and can be formatted with high density format programs.



THE EXPANDER

Internally expandable hard drives come either with or without precision 3 1/2" floppy drives.

Four AC outlets with full three line surge suppression are installed at the rear of the unit. One of these controls the CPU and the others are available for monitor, printer, etc. Two push button switches on the front control the CPU independently of other peripherals. EMI and RFI filtration is included.

Twenty, thirty, and forty megabyte units expandable to 120 megs.

All necessary hardware is already installed in original unit so addition of upgrade kits is fast and easy.

RM 60/120

The RM 60 rack mount hard drive for the MIDI musician fits both permanent and portable racks.

Expandable from 60 to 120 Megabytes internally with the addition of the +60 kit. Or purchase it complete in the model RM 60/120.

Astra hard drives for the Atari MIDI musician have become the standard for the industry, and are being used by top professional groups worldwide. Our power supply is equipped for 120 and 240-volt operation by merely moving one wire. This makes performing in UK and Europe easier and safer.

MAKE YOUR ATARI SING !

Astra BBS now on-line in PC Pursuit area ! (714) 546-5956

CALL FOR NEAREST DEALER

New Products

Titus Software announces *Off Shore Warriors*, a game for the ST that puts you in command of a powerful boat and two missiles and requires you to defeat

your similarly-armed opponent in a gigantic marine arena as thousands of your countrymen look on. $39.95.

Titus Software, 20432 Corisco St., Chatsworth, CA 91311, (818) 709-3693.

Artisan Software has released *Word Quest*, a word search puzzle generator for the ST. $17.95.

Artisan Software, P.O. Box 3213, Fontana, CA 92334.

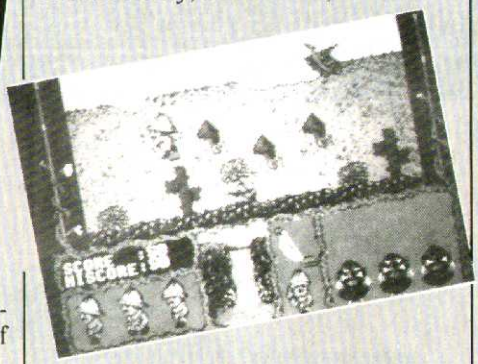
Rainbird Software has released *Starglider II* for the Atari ST. This sequel to the original *Starglider* puts you in command of a futuristic spaceship complete with a three-dimensional instrument panel and sophisticated weaponry. During your interplanetary battle, you soar through alien deserts destroying Egron patrol craft and rescuing alien colonies under Egron attack. $44.95.

Rainbird Software, 3885 Bohannon Dr., Menlo Park, CA 94025, (415) 322-0412.

The Hunt for Red October has been released for both 8-bit and ST computers by **IntelliCreations.** Based on Tom Clancy's novel of defection, intrigue, and high-stakes robbery, the game casts you in the role of Captain First Rank Marko Ramius, commander of the Red October. You must evade the Russian navy long enough to reach a rendezvous point in the Atlantic where the U.S. Navy will seize the sub. The 8-bit ver-

sion sells for $39.95, and the ST version for $49.95.

Also available for both machines is *Cosmic Relief*, a humorous, multi-level



animated action/adventure. An asteroid is headed toward Earth, and the only man who can stop it, Professor Renegade, cannot be found. Your job is to find him. The 8-bit version sells for $24.95, and the ST version for $34.95.

Napoleon in Russia—Borodino 1812 for 8-bit Ataris recreates the battle that was the turning point in Napoleon's fortunes. Game features include command over infantry, cavalry, and artillery divisions; a scrolling battle map with prominent terrain; and several options for fatigue, morale, battle speed, etc. $24.95.

IntelliCreations, 19808 Nordhoff Pl., Chatsworth, CA 91311, (818) 886-5922.

Infocom has announced three new interactive adventures for the ST—all slated for release in early 1989. *Zork Zero*, prequel to the famous *Zork* trilogy, "takes you back to before the beginning." The game, which explores the collapse of the Great Underground Empire, features more than 200 locations and Infocom's first graphic puzzles.

Shogun by Dave Lebling is an adaptation of James Clavell's novel. It casts you in the role of John Blackthorne and calls upon you to think and make decisions as he would have. Graphics are in the traditional 16th century Japanese style.

Journey, called a role-play chronicle, "is neither an interactive fiction title with multiple characters nor a role-playing game with text . . . it is a true melding of the two game types into a novel form of its own," says the publisher. The games sell for $49.95 each.

Infocom, 125 CambridgePark Dr., Cambridge, MA 02140, (617) 492-6000.

Software Exchange has introduced four programs for Atari 8-bit and ST computers. Designed to help racing enthusiasts handicap thoroughbred, harness, greyhound, and quarter horse races, the programs consider such factors as race length, post position, speed ratings and variant, times, odds, class, positions at the 1/8, 1/2, or 3/4 stretch position, and finish positions.

Advanced Thoroughbred Racing System, *Advanced Harness Racing System*, and *Enhanced Quarter Horse System* sell for $64.95 each, and *Advanced Greyhound Racing System* sells for $74.95.

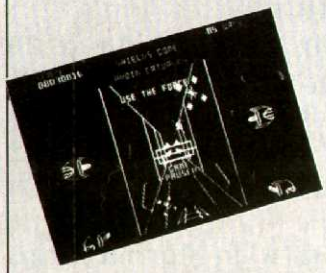
Software Exchange, 2681 Peterboro Rd., P.O. Box 5382, W. Bloomfield, MI 48033, (800) 527-9467 or (313) 626-7208.

Set in a shadowed city subway, *Metrocross* from **Epyx** challenges ST users to a wild weave through an underground obstacle course. You must avoid green slime tiles, leap out-of-control barrels and careening tires, and vault highrise hurdles and potholes. $24.95.

Also available for the ST is *Dive Bomber*, a World War II flight/combat simulation that challenges players to destroy the Bismarck. You must be prepared to attack German U-boats, E-boats, and enemy fighter aircraft and to monitor intelligence reports, pinpoint enemy locations on navigation maps and devise flight plans. $49.95.

Epyx, 600 Galveston Dr., Redwood City, CA 94063, (415) 368-3200.

New for the ST from **Broderbund** is *Star Wars*, an arcade adventure based on the George Lucas movie. In it, you take the part of Luke Skywalker, pilot-



ing an X-wing fighter in an attack on the Empire's Death Star. $39.95.

Broderbund Software, 17 Paul Dr., San Rafael, CA 94903, (415) 492-3200.

Scorpion announces *Phantasm* for the Atari ST, a new arcade game that casts you as one of society's less desirable members who has been given the opportunity to save the Earth. For each section of the planet you want to save, you must destroy eight re-constitution installations. That done, you can redock and choose another part of the world to rescue. $34.95.

Scorpion, 19 Harbor Dr., Lake Hopatcong, NJ 07849, (201)

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WHEN YOU BUY 5 RECREATION CARTRIDGES*
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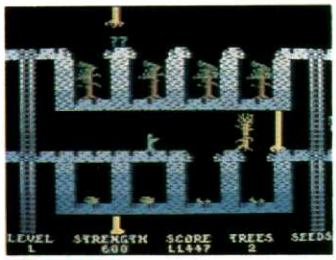
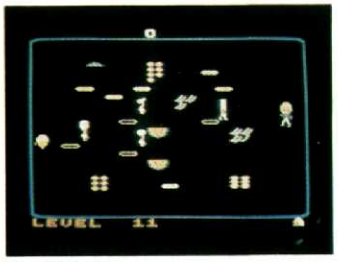
*Substitutions will be made by Atari if your choice is not available.



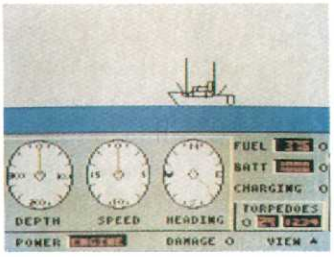
Necromancer

An army of "living" trees will aid you in your struggle against demon spiders and hammer fists as you battle your way to the evil wizard's graveyard lair and a final, spectacular confrontation.
RX8108 / Joystick / 1 Player



Food Fight

Charley Chuck just loves to eat. It's wild fun as you guide him toward his coveted ice cream cone before it melts... and before the mad chefs pelt him with their messy meals! The food flies fast and furious through more than 100 levels of high-calorie action.
RX8079 / Joystick / 1 or 2 Players



Gato

High-resolution graphics and realistic instrumentation will not only help you carry out secret missions as a WW II sub commander, they'll help you feel like you're really there. Run silent and run deep.
RX8090 / Joystick / 1 or 2 Players

One-on-One Basketball

Larry Bird and Julius "Dr. J" Erving are the greatest players in the game. Now it's your chance to become one of them and compete against your equal. Dunk it!
RX8093 / Joystick / 1 or 2 Players

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CITY STATE ZIP

Please allow six to eight weeks for delivery.

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Atari 8-Bit, Dept. F13
P.O. Box 61657
Sunnyvale, CA 94088

PART#	DESCRIPTION	PRICE	QUANTITY	TOTAL

Use blank paper for additional items.

☐ Check or money order enclosed.
☐ VISA or ☐ MasterCard

Exp. ____ / ____

☐ Please send me the complete XE/XL 8-bit cartridge list.

Signature _____

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CXL4006	Super Breakout	$ 19.95
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CXL4011	Star Raiders	$ 19.95
CXL4012	Missile Command	$ 19.95
CXL4013	Asteroids	$ 19.95
CXL4020	Centipede	$ 19.95
CXL4022	Pac-Man	$ 19.95
CXL4024	Galaxian	$ 19.95
CXL4025	Defender	$ 24.95
CXL4027	Qix	$ 19.95
DX5084	Star Raiders II (disk)	$ 19.95
KX7102	Arcade Champ Kit	$ 24.95
RX8026	Dig Dug	$ 19.95
RX8029	Football	$ 19.95
RX8030	E.T.	$ 19.95
RX8033	Robotron: 2084	$ 19.95
RX8034	Pole Position	$ 19.95
RX8039	Eastern Front	$ 19.95
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RX8042	Tennis	$ 19.95
RX8043	Ms. Pac-Man	$ 19.95
RX8044	Joust	$ 24.95
RX8045	Pengo	$ 19.95
RX8048	Millipede	$ 19.95
RX8049	Jungle Hunt	$ 24.95
RX8052	Moon Patrol	$ 24.95
RX8059	Skywriter	$ 19.95
RX8063	Rescue on Fractalus!	$ 24.95
RX8064	Ballblazer	$ 24.95
RX8067	Final Legacy	$ 19.95
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RX8078	Star Raiders II	$ 24.95
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RX8085	Fight Night	$ 24.95
RX8086	Barnyard Blaster (Light Gun)	$ 34.95
RX8090	Gato	$ 34.95
RX8092	Archon	$ 24.95
RX8093	One-on-One Basketball	$ 24.95
RX8108	Necromancer	$ 24.95

These exciting cartridges and many more can also be played on these Atari computer systems: 65XE, 130XE, 800XL, and the XE Game System.

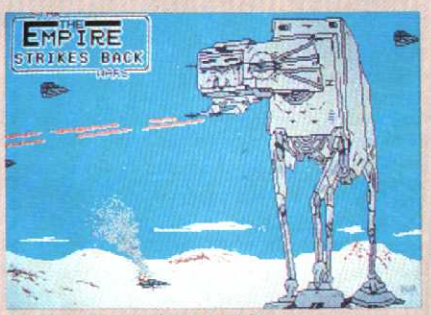
ATARI COMPUTERS AND PERIPHERALS

65XE	64K Personal Computer	$ 99.95
800XL	64K Personal Computer	$ 99.95
130XE	128K Personal Computer	$149.95
XF551	5¼" Disk Drive	$219.95
XM301	300 Baud Modem (requires 48K)	$ 39.95
SX212	300/1200 Baud Modem (requires 850 interface)	$ 99.95
850	Interface	$ 99.95
XEP80	80-Column Card	$ 79.95

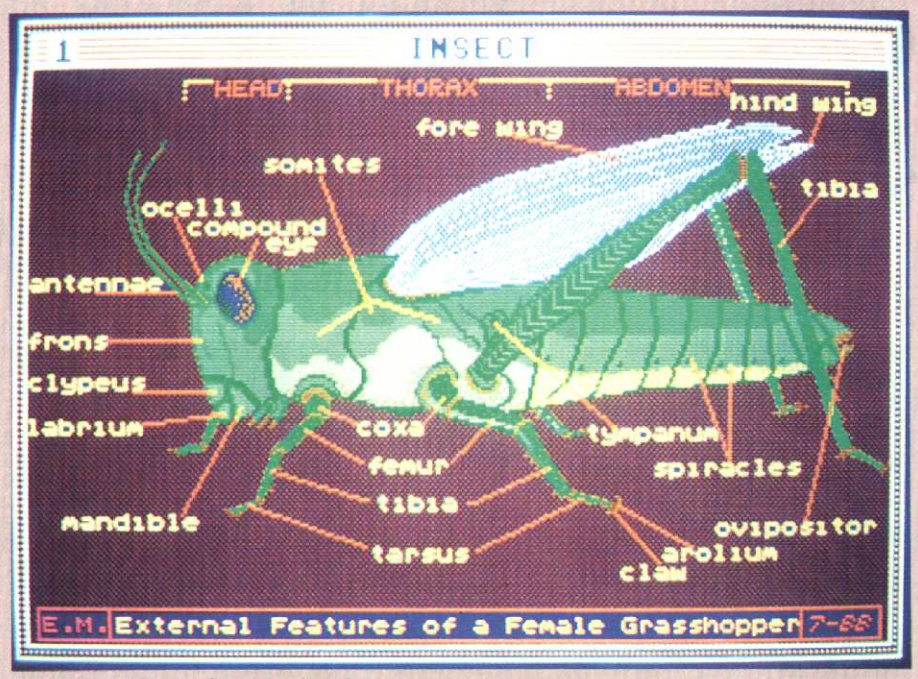
LIGHT GUN $34.95

Operates with the following cartridges:
RX8088 Crossbow (coming soon)
RX8104 Crime Busters (coming soon)
RX8086 Barnyard Blaster
Light Gun also operates with the Atari 800XL, 65XE, and 130XE systems.

Gumball Machine (Degas) by Jim Lawley.

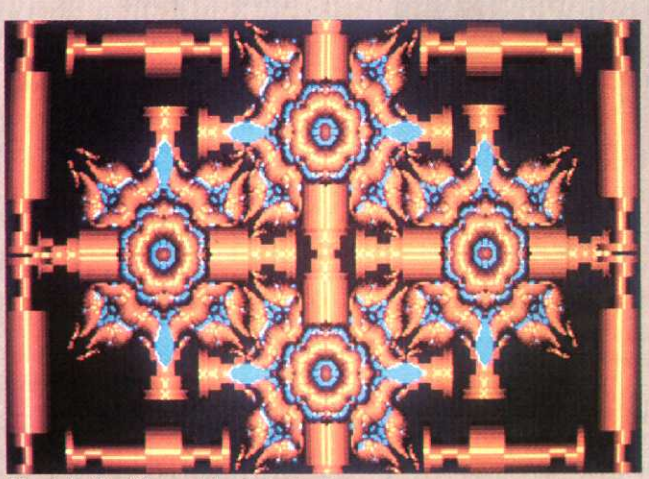


Walker (Degas) by Daniel Rose.
(Great animation!)



Grasshopper (Degas) by Efrain Morales.

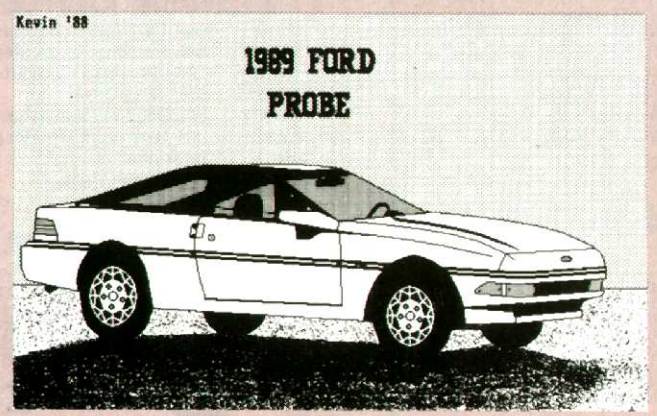
Graphics Gallery



Mandala (NeoChrome) by Gene Levine.

The Wall (Degas) by Steven Power.

Protarra GTO (NeoChrome) by Carl Prather.



Ford Probe (Degas) by Kevin Tollefson.

Rabbit (Degas) by Debbie Hume.

Autumn (NeoChrome) by Chris Esterly.

My mailbox overfloweth. Apparently my plea for more entries in the last issue has been heeded. And not only did the quantity of entries increase, the overall quality was outstanding. From more than 60 excellent images, I had a difficult time choosing the 20 you see here.

Top prize (a three-year subscription) goes to Efrain Morales of Jacksonville, FL for his series of detailed views of various insects; his grasshopper is reproduced here. Other winning entrants receive one-year subscriptions.

We invite you to enter our ongoing Graphics Gallery contest, but *please abide by the rules below.*

- Submit your image on disk in *NeoChrome*, *Degas*, or Tiny format. Print your name and address on the disk.
- Include a self-addressed, stamped envelope (preferably #10 size) with 45 cents postage for the return of your disk. We will return your disk with *ten new images*.
- Include on an 8½″×11″ sheet of paper your name and address, the file names of your images, and the following statement: "I certify that the image(s) submitted is (are) my own personal work and that no portion was copied from any image belonging to another person or organization or from copyrighted printed or video material. I give *Atari Explorer* the right to print my image(s), use it (them) in promotional material, and/or distribute it (them) via telecommunications service or BBS.
- Winners will receive a subscription to *Atari Explorer*. If you are a already a subscriber, include an address label or copy so we can extend the correct subscription if you win. ■

By DAVID H. AHL

Balanced Rocks (NeoChrome) by Lian Chang.

Shuttle (NeoChrome) by Charlie Henson.

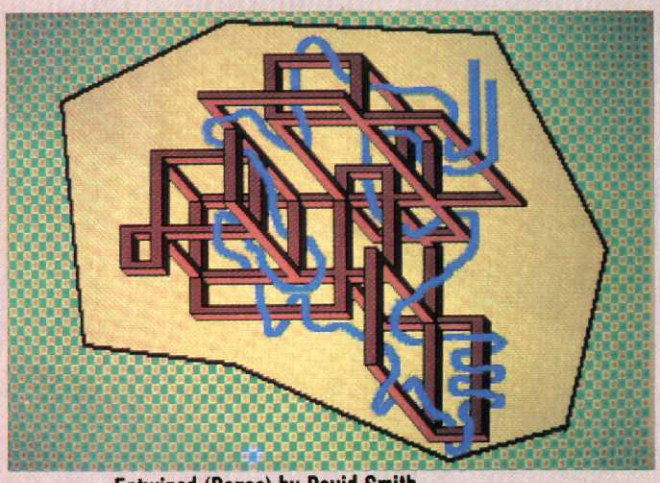
North Guard (Degas) by Wayne Napper.

Glass Piano (NeoChrome) by Allen Kaufman.

Cheetah (Degas) by Jay Smith.

Aquarium (Degas) by Gregory Banks.

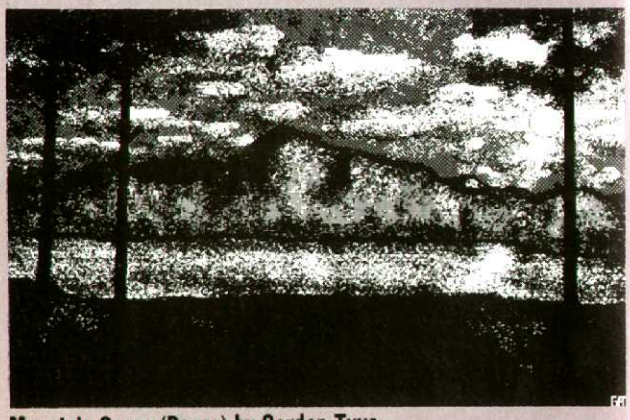
Graphics Gallery



Entwined (Degas) by David Smith.

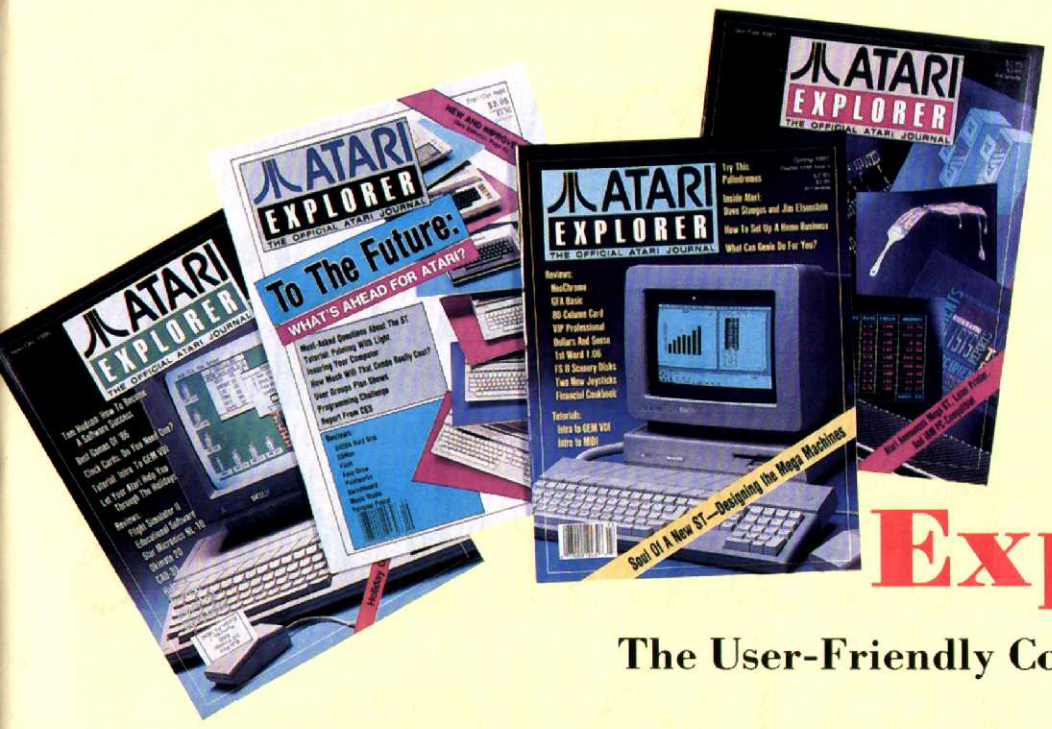
Woverine (Degas) by Edward Devenish.

Mad About Madonna (Degas) by Randy Shaw.



Mountain Scene (Degas) by Gordon Tyvs.

Palms (Degas) by Justin Patterson.



Atari Explorer

The User-Friendly Computer Magazine

Why did you originally buy an Atari computer? To do word processing? To compose music? To manage your business? To play games? Chances are, whatever your initial reason for buying an Atari, you've discovered that it has many additional capabilities and potential applications.

The flip side of the coin is that you've probably experienced some frustration as well. Maybe your word processing package won't do subscripts or underlining. Perhaps your database won't sort on as many fields as you need. Or, it could be that when you write a program, your whole system acts user-hostile.

Depending upon the balance between your satisfaction and your frustration, you may continue to use your computer or set it aside. But there is a better way: **Atari Explorer**.

As the premier magazine for Atari computer owners, it is our responsibility to make sure that you get the most out of your computer. To us, that means making sure your Atari does more than you bought it to do, more than friends' and associates' computers do, and more than you ever imagined a computer could do.

To make sure that you get the most out of your computer, **Atari Explorer** brings you objective, in-depth reviews of hardware and software; up-to-date information about new products; practical tutorials; stimulating columns; thought-provoking articles; and valuable inside information.

Hard-Hitting Evaluations

At **Atari Explorer**, we obtain new peripherals and software packages as soon as they are released. We put them through their paces in our on-site laboratory and also in the environment for which they are intended—home, office, lab, or school.

Our evaluations are unbiased and accurate. We are not afraid to call a spade a spade or a lemon a lemon. Our first obligation is to you, our readers, and editorial excellence and integrity are our highest goals.

Practical and Stimulating

We know that some of our readers are beginners and others are experts. Thus it is our responsibility to make what we publish both comprehensible to newcomers and interesting to veterans. That does not necessarily mean that the material is simple; we know you like to be challenged. What it does mean is that we provide the inexperienced user with every possible means to seize the subject matter and make it his own.

However, we don't want the experts to be bored, so although articles are accessible to beginners, they are theoretically non-trivial, cover topics in depth, and present information on more than one level.

At **Atari Explorer**, we are intensely interested in all aspects of computing. Ours is the magazine of pragmatic applications, communicative graphics, stunning animation, mind-expanding games, and realistic simulations. We take our business seriously, but we have fun too. We are convinced that you will, too, when you go exploring with the **Atari Explorer** family.

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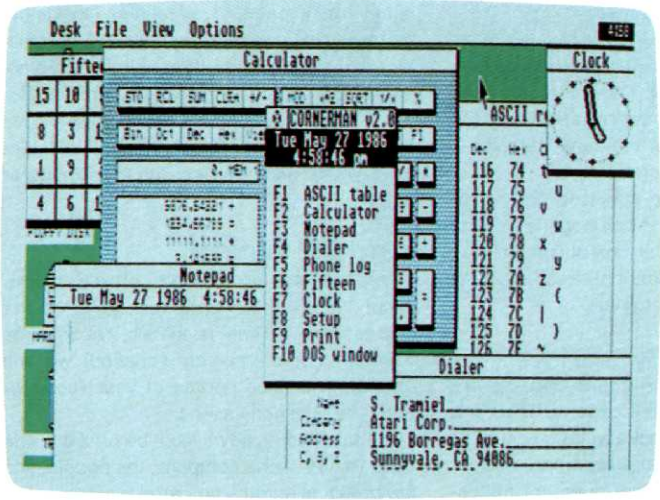

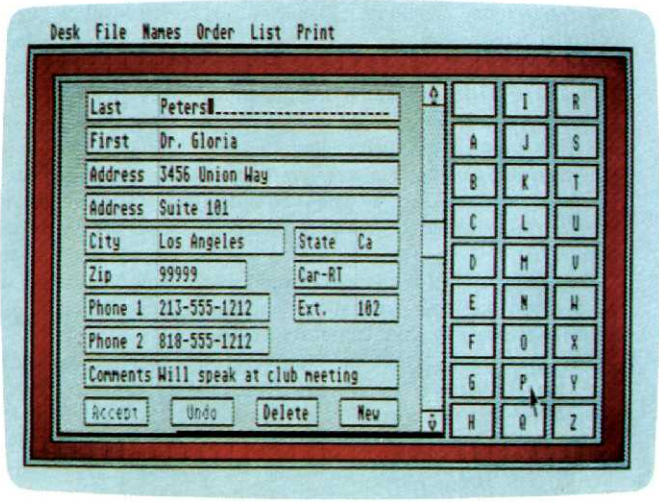

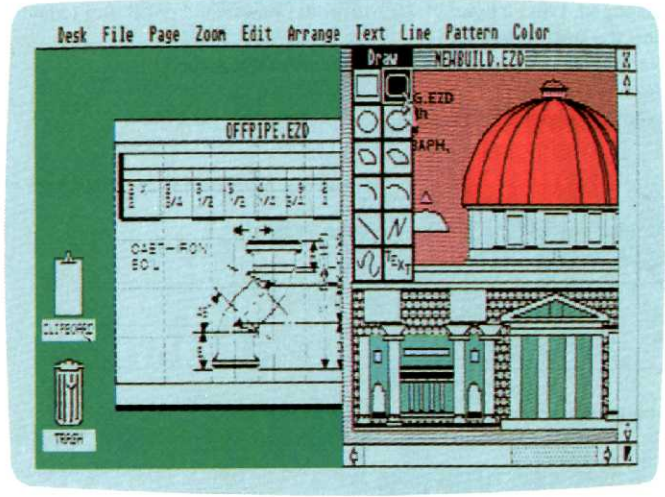

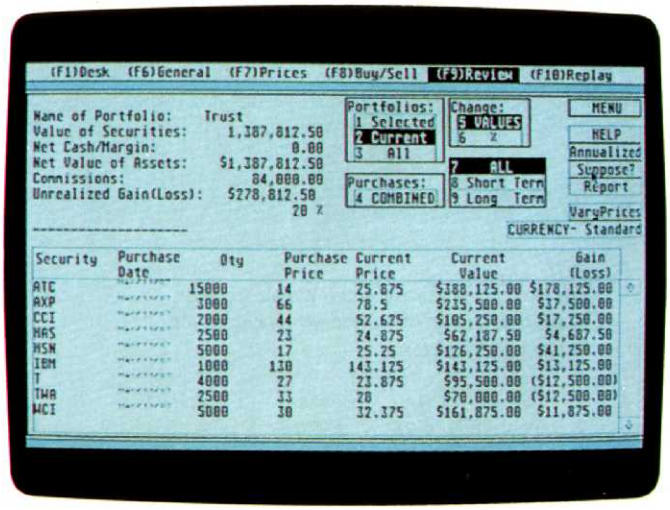

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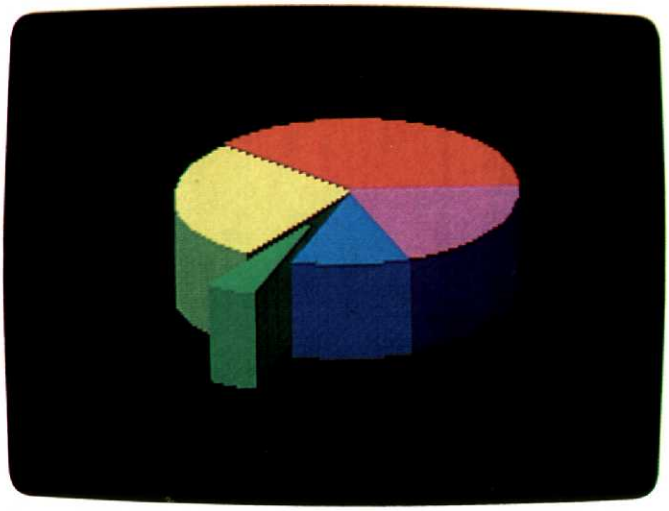

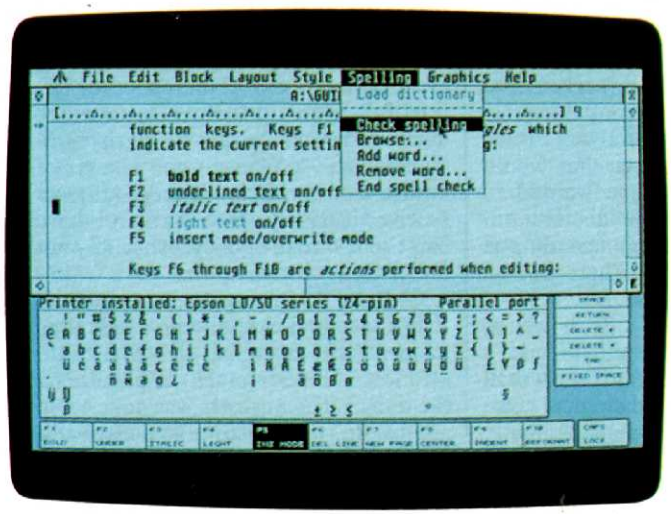

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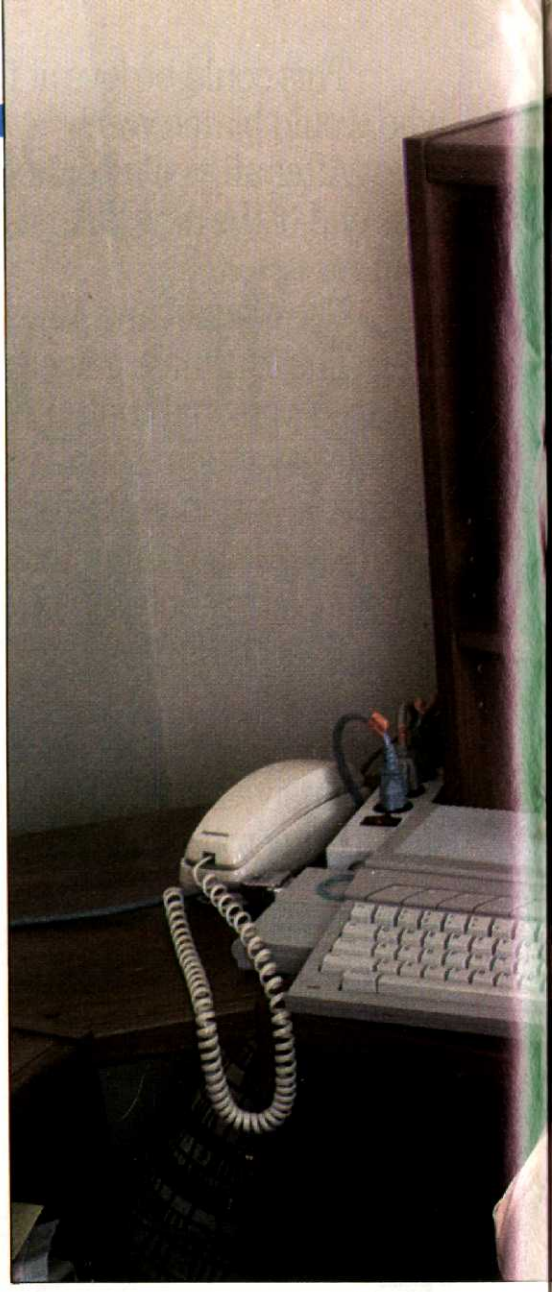


By JOHN JAINSCHIGG

Mark Waldron describes himself as a "renaissance man." Back in January of 1985, before all hell broke loose in his life and bad things came to visit, he would probably have defined the term colloquially. Mark was a Jack-of-all-trades—mechanic, electrician, welder, roofer, tilesetter, plumber. A tinkerer by predilection, he had just sunk $25,000 into a truck and tools, intending to start a "mobile repair shop" business in Elyria, OH. Elyria is Mark's home town, the county seat, and "a real nice place to raise a family."

His life was going well, and Mark would probably have described himself as a happy man. He was happy in his work, adored his wife, Diane, and was delighted with the two young sons she had given him.

No, things weren't perfect: when Mark and Diane's younger son, Erin, was six months old, they learned that he had neuroblastoma, a fairly common juvenile cancer. But he had survived two years already, and the doctors had been very reassuring. Neuroblastoma is the most tractable of cancers, they said, and remission rates for it are very high.

Through the spring and early summer, Mark built his business, returning home each night to kiss the wife, play with the kids, and dream of the happy future a man of his talents and ambitions should—in a fair world—be able to secure. Even then, Mark was banking more than dreams against the future. Curious about high technology and wanting to give his children the advantage of computer literacy, he had bought an old Atari 800 computer. His technician's mind warmed to the abstractions of computing, and he spent many pleasant nights typing away at the keyboard, perfecting his skills.

Then, one day in August of that year, things started going sour. Erin—usually a cheerful toddler—was unaccountably grouchy and was running a low temperature. The flu was a likely suspect, but Mark and Diane also noticed that he was walking with a limp—not bad, but noticeable.

They were worried. Even in their cautious optimism regarding his condition, Erin's doctors had mentioned the remote possibility that the blastoma could metastasize—spread from nerve tissue into bone—and that if it took this turn, the prognosis would be dire.

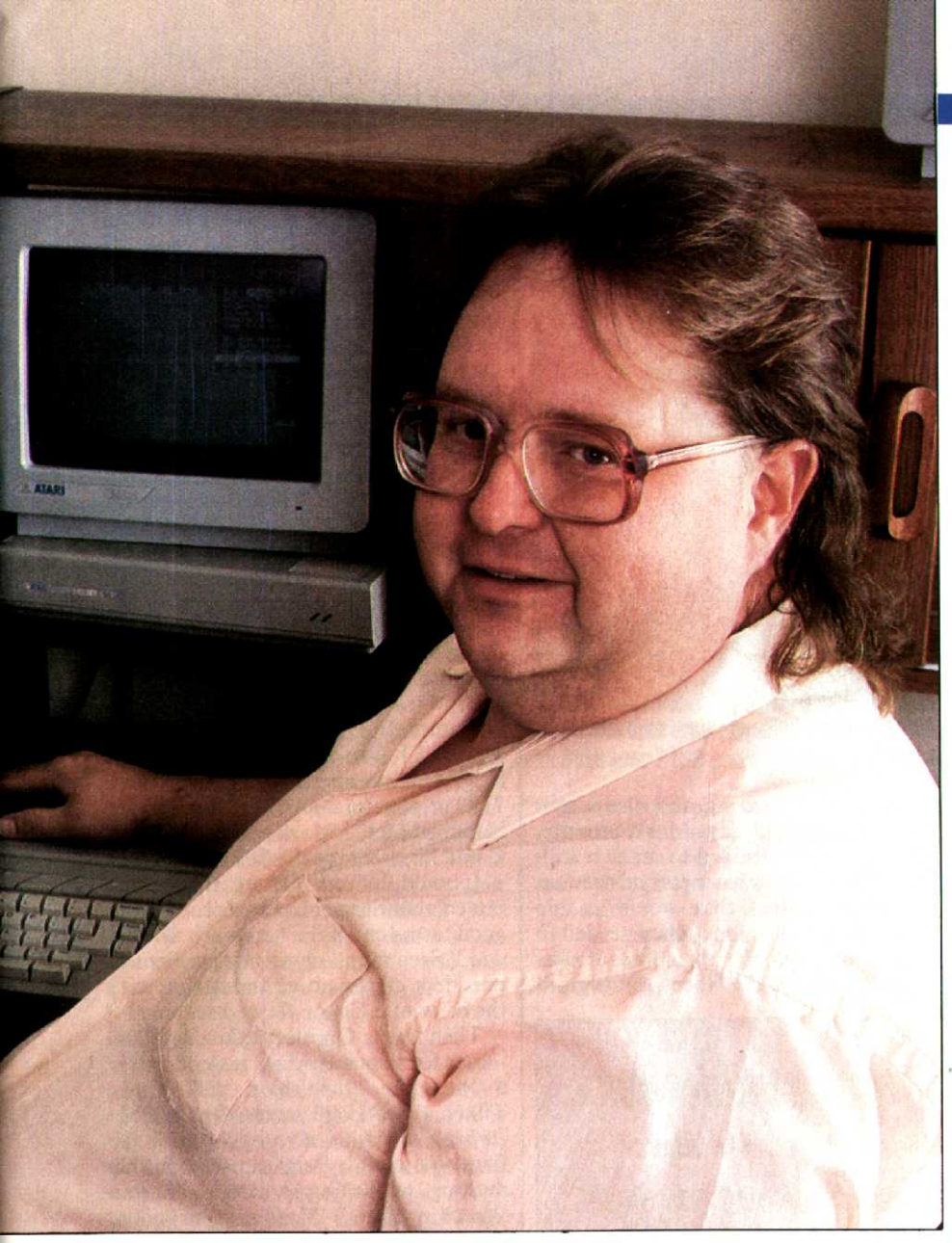
What were the chances that would happen? Mark and Diane wanted to know. Very remote, the doctors answered. Erin's cancer was responding as expected to therapy, and there was no reason to fear metastasis.

Just to be on the safe side, however, they took Erin to the hospital. There, a precautionary x-ray revealed the worst. Erin had sustained a pathological compression fracture of the pelvis. Silently and without warning, the cancer had spread to the child's skeleton, and had so perforated and weakened the bones of his pelvis that the normally strong and rigid structure had collapsed under the weight of his 30-pound body.

The child was dying. This sad fact, however, was not enough to stay the hand of fate—nor of bureaucracy, its faithful agent. Medical insurance? We're sorry, Mr. Waldron, but that policy has lapsed. We sent you a letter of notification some time ago. You never received it? Sorry about that, sir, but we can't reinstate the policy, especially not under these circumstances.

In a rush to free up capital to pay for Erin's terminal care and give him time to spend with his dying son, Mark sold off most of his equipment at pennies on the dollar. The business was gone.

How do you measure the duration of an ordeal? "I spent most of that fall in a



PHOTOGRAPHY BY GUS CHAN

One brave, Atari-owning family's struggle out of sickness and despair to self-sufficiency and success (with a little help from their friends)

daze," Mark says. "I have no clear memory of time passing. There is evidence: I marked off about ten weeks on the calendar. I put 10,000 miles on the car, driving to and from the hospital several times a day. But I have no real sense of how long things took."

Ten weeks; 10,000 miles on the odometer. On the way to the hospital, Mark would often stop twice to pick up a sandwich or a snack. Meals were almost always eaten on the run, and it was hard to keep track of when you had eaten last. How many sandwiches and sodas? How many inches on the belt? As Mark gained weight, his son faded, growing thinner by the day.

Erin died in his mother's arms on October 12th. He weighed 13 pounds, down from 30. His pain had been so severe that, by the end, he was receiving 60 mg. of methadone and Dilaudid per day. Measureless despair, measured out in tokens—pennies on the dollar, weeks, miles, meals consumed, pounds gained and lost, milligrams of synthetic opiate and hypnotic. Tears.

A New Start?

It took a while to mourn as well. But Mark and Diane were tough, and they still had three-year-old Ken to look after. In the spring of '86, Mark started picking up the pieces. The picture wasn't good, but it wasn't hopeless. He was financially ruined, of course, and had been forced to accept welfare for a time. His business, the source of much hope and strength, was gone. But he had his talents, his hard-working nature, and most important, his health to count on.

He starting looking for a job, went back to school to study computer science, went on a diet to shed the excess pounds he had gained in suffering. For a while, Mark felt his natural optimism starting to return. He still hurt sometimes, in his heart and in his body as well—twinges of grief felt as physical pain. But he was striving again. A few twinges were nothing to worry about.

But the twinges continued. Some mornings, Mark's feet hurt so much that it was difficult for him to get out of bed. Hot showers helped some, but the condition was puzzling. Some days he felt fine. Others, he was in almost constant pain.

Finally, one morning in April, he woke to find himself unable to walk, the pain in his feet was so severe. His wife took him to the hospital.

The diagnosis was rheumatoid arthritis, a crippling autoimmune disease that causes painful inflammation and erosion of joint tissue. The condition had been caught fairly early, and specialists started Mark on an aggressive regimen of anti-inflammatory drugs and gold salts, which can sometimes arrest the progress of joint destruction.

But the disease got worse. Soon, Mark was effectively crippled—his pain so great and his range of motion so limited that he had difficulty moving about and caring for himself. Diane had to stay home and care for him. Gone were thoughts of a new job . . . a new life. Social Security and Disability insurance would pay the bills, but what of dignity?

For a long time Mark tried hard not to think about dignity, concentrating instead on mastering his condition. Slowly, as the months went by, his arthritis began to respond to drugs, physical therapy, and exercise. His pain less-

ened; his mobility improved. Diane stood by him, caring for him in even the smallest ways, encouraging him when bravery seemed about to flag.

He learned to use his body all over again—learned to deal with the day-to-day and hour-to-hour variations in his unpredictable condition. Formerly a hiker, camper, and fisherman, he dealt with the emotional impact of weakness, learned not to submit to self-pity and dependency. Finally, he was ready to look outward once again and to begin rebuilding.

A New Business

Although his condition had improved and was stabilized, Mark knew that the overall prognosis wasn't hopeful. The syndrome of rheumatoid arthritis is not well understood, and current therapies concentrate more on keeping the disease at bay than on effecting a permanent cure. Even in rare cases of remission, the condition leaves pain in its wake—twisted bones and tortured connective tissue that cannot be restored.

So Mark put his mind to the test and tried to dream up a business that would set him, literally and figuratively, back on his feet. One that could be pursued at home, that would permit him to work when he felt capable of working, and that would continue to be practical if his health grew worse.

At first, only vague ideas came to mind: mail-order, consulting . . . nothing with any bite. But even as he was looking for the handle to a new life, Mark's nature forbade him to remain idle. He had purchased an Atari ST and a Gemini 10-X printer, and had taught himself how to use it, becoming facile at document preparation and layout. Soon, he was producing fliers and other printed material for the local Lions Club, of which he was a member.

His brother Lions were enthusiastic. Was there any way he could get higher-quality output? they asked. Because if he could, they would hire him to produce material on a regular basis. Mark pondered the idea: start a desktop publishing business? It had a strong appeal. He could use his computer and writing skills to good effect, work at home . . . why not?

Still, there were many stumbling blocks to getting this kind of business off the ground. How could a man on public assistance afford a laser printer, a scanner, and the other tools of the trade?

As he had at every other difficult juncture in his married life, Mark talked the problem over with his wife.

Diane Waldron helps get the new business started.

"A more loving, caring, and wise person I have never met," says Mark, proudly. Together, they decided to make a stab at starting the new business and drew up a savings budget that would enable them to raise the money they needed to buy equipment. By this time, it was Christmas of 1987. Hopes ran high in the spirit of the new year to come.

> ***How could a man a man on public assistance afford a laser printer, a scanner, and the other tools of the trade?***

By early June, however, they had managed to put away only $300. Their goal seemed to be receding in front of them, even as they strove with all of their might to reach it. Mark racked his brains for ways to speed things up.

In late May of this year, Mark found the courage-in-humility to ask for help. He drew up a list of the equipment he needed and found the addresses of the manufacturers who made it. He composed a simple letter to the following effect: Here was his story, this was his condition, and these were his goals. He was not asking for charity but would appreciate any assistance the manufacturers could offer in the way of discounts or time-payment arrangements.

Writing those letters was a hard job for a proud man. Mark sent them off with no real faith they would be answered and continued to search for ways to realize his dream.

The first week in June, Mark and Diane held a yard sale. For the first time in years, circumstance was kind: the weather was fine, and the sale lasted three days, netting more than $1000. Mark remembers it as a good omen. "We began to feel lucky again after that," he says. "We still didn't have enough to buy a laser printer, but we felt we had a right to start hoping our luck would hold."

No Charity

It did. A week after the successful sale, Mark got a call from Stephen R. Grimmer, an executive at Texas Instruments. TI would be happy to accept long-term payments on an Omnilaser 2103 printer, he said. Could they deliver it immediately? Mark was nonplussed. Could his dream really be coming true?

It could, indeed. "Thereafter, we received about one call per week, offering good terms on all the hardware we needed." Second in line was Roger Brown, president of Navarone Industries, with the offer of a Canon flatbed scanner.

Then Diana Goralczyk, head of Customer Relations at Atari, called to offer a Megafile 20Mb hard disk. Gyna Tilker, at SoftLogik, sent a copy of *Publishing Partner Professional*—the firm's powerful, Postscript-compatible desktop publishing package. Nathan Potechin of ISD Marketing called to offer a new revision of his company's desktop publishing program, *Calamus*, which was not yet available in the States.

All the manufacturers agreed to sidestep charity and respected Mark's desire to pay his way, offering long-term payment plans that wouldn't strain his budget.

The month of June went by in a whirl. "I was in a daze again," he says, "just like the daze I was in when my son was dying. I lost track of time, things were happening so fast. Only this time, it was because good things were happening."

Before a month was out, Mark's desktop publishing system was in place. The TI laser printer had given him some trouble at first, and TI had been kind enough to send a technician to do a motherboard replacement free of charge. Other than that, things were working well. Mark began a crash course in desktop publishing technology, and Diane began to call on prospective customers.

But the bounty was not yet exhausted. From all around the Elyria area, members of the Atari community came to help the Waldrons get started. Mark was a long-time customer of Futuretronics, the local computer store at which he had purchased his first 800. Wayne Pakan, owner of Futuretronics, is an Atari fan—his stock consists mainly of Atari merchandise—and was quick to offer price breaks on software, along with technical assistance.

John and Linda Lingenfelter of Kristy Computers in Elyria provided similar assistance and helped to distribute flyers advertising the Waldron's new business as well. Gary Schmitz, of B&G Electronics in nearby Lakewood, OH, helped Mark install the Postscript drivers for *Publishing Partner*.

Two local user groups, the Toledo Atari Peekers (TAP) and Cleveland Atari Computer Enthusiasts (CACE), were also quick to lend support. "Ian and Barb Carlstrom of CACE were instrumental in teaching me how to use the ST," says Mark. "I can't thank them enough." The members of TAP offered the more tangible, but no less valuable, support of hiring Mark to produce their monthly newsletter.

One Day at a Time

It is August as I write this, and once again, things are looking up for Mark and Diane Waldron. "My lovely wife is out drumming up business," Mark told me last week. "And by the next time we talk, maybe we'll have good news. She's talking to some people at the local Civic Center about the possibility of some work from them."

Later that afternoon, Mark reported that Diane had been successful. "We got the job with the Center," he said proudly, "and a local copy shop just called with what looks like $300 or $400 worth of work."

They had been in business two weeks, and already Diane was carrying a full portfolio to her appointments. "We've done posters and flyers for the local Children's Theater, business forms, resumes, brochures. We've had a leaflet printed up and have already distributed a full run of 500 cards and ordered another. I'm amazed ... I thought it would be a long time until we began to show a cash flow, but we'll exceed our three-month projections in the first month."

Mark is already planning for expansion in the business. "I've got a 1200-baud modem and Interlink software, and one of my first goals is to get an additional phone line put in and set up a BBS on it for part of the day so that customers can send ASCII text to me directly. Anything that saves typing saves time and money for me and for the customer.

The Waldrons' desktop publishing system includes an Atari ST, a 20Mb Megafile hard disk, an Omnilaser 2103 printer, and an ST Scan image scanner.

"For the time being, we're going to take everything that's offered to us in the way of work—resumes, brochures, working with copy centers. We plan to canvass the restaurants in the area to sell them on the idea of having their daily menus produced on our laser. A big local typesetter has agreed to use us for backup when his own equipment goes down, or when he has extra work. A major manufacturer of medical supplies in the area has been talking to us about some flyers. The Civic Center people have connections with the local Ford plant, and have asked for samples of our work to give to them.

> ***Although his life is sometimes painful, Mark has found a new source of strength in his work and in the use of his talents.***

"And of course, good things keep coming out of the Atari community; I've been talking with Alpha Systems about typesetting some manuals.

"As cash starts coming in, my first goal is to pay off all of this equipment; we hope to be able to do that well ahead of schedule. Then we'll do some more advertising, and see what happens."

Still, although there is cause for optimism, Mark's condition is an ever-present concern. "Some days I feel fine, and others it hurts to move. I take three or four hot showers a day to stay limber. Typing isn't always easy, and I get tired quickly. Right now, I'm about as good as I'll ever be, and I'll probably get worse as time goes on."

And although his life is sometimes painful, Mark has found a new source of strength in his work and in the use of his talents, and a new source of faith in the generosity of the community that surrounds him. "I'm incredibly grateful to all the people who have helped me regain my dignity," he says fervently. "This is the ideal business for me. I can work when I have the strength—at noon, or at 2:00 a.m., it doesn't matter. I'm happy."

These days, when Waldron describes himself as a "renaissance man," he has new-found skills to point to. "I've discovered that I'm a good writer and that I enjoy the challenges of layout and page design. I've always been good with machines, and I'm luckily the kind of person machines are nice to. I can usually get a machine to work for me when other people can't."

But though he is still, first and foremost, a Jack-of-all-trades, Mark has become another kind of renaissance man as well. "I feel reborn," he says. "I'm not a very religious person, certainly not 'born-again' in the way religious people mean, but I'm grateful. I've got my dignity. I'm working. I feel touched by Grace." ■

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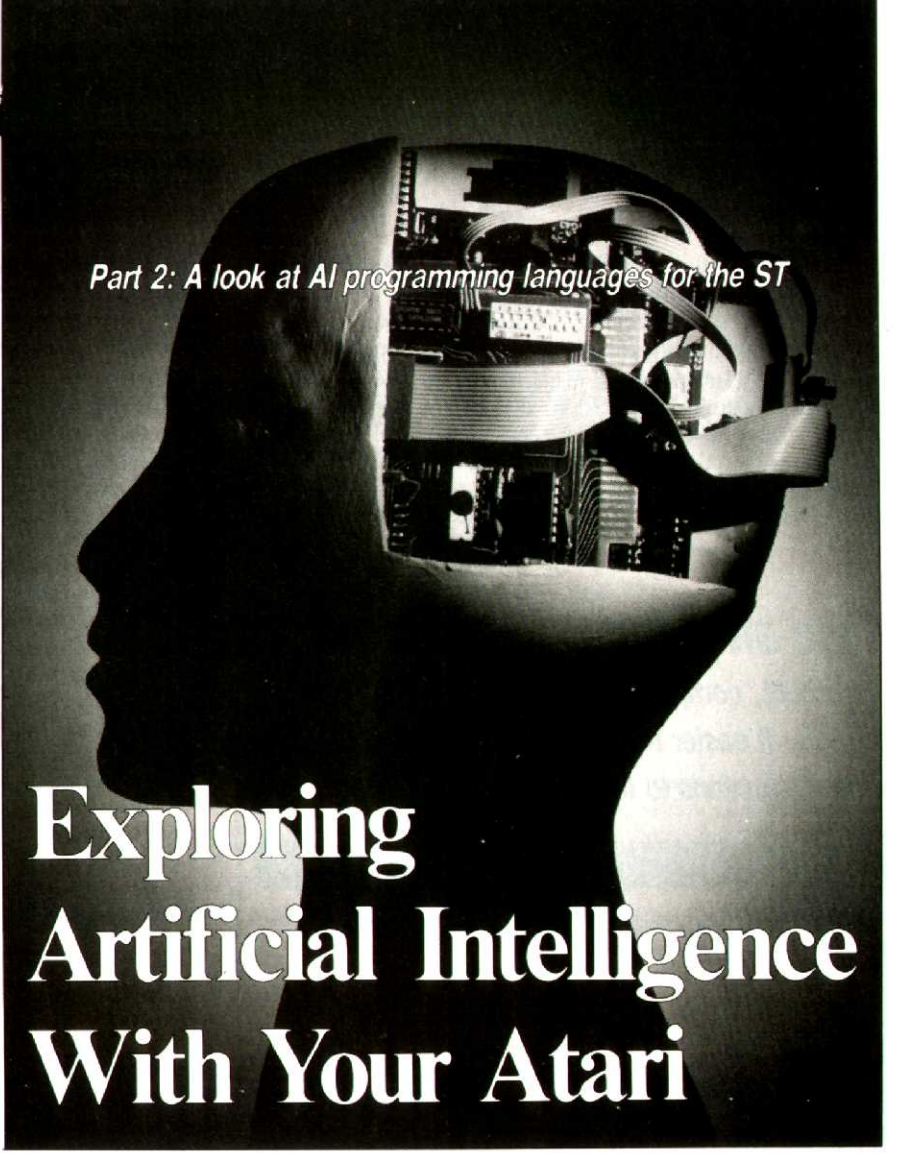

Part 2: A look at AI programming languages for the ST

Exploring Artificial Intelligence With Your Atari

In the May/June issue of *Atari Explorer*, we examined some of the history of the field of artificial intelligence and experimented with some programming concepts frequently used in AI programs. In this issue we look at the nature of the languages that are used for AI programming, review some of the available implementations of these languages, and extend our programming experiments into a simple expert system.

Why Are AI Programming Languages Different?

Behind the keyboard of your computer lies a world of bits and bytes switching at nanosecond speeds, a world so complex that the human mind can't comprehend the details, a world so simple that it can't begin to represent the complexity of the human mind.

One of our more clever ancestors realized that it isn't always necessary to deal with an object itself; sometimes a representation is just as good. Humans soon started making layers of abstraction by creating symbols about symbols. Writing is a set of symbols that represent speech sounds, which in their turn are symbols for objects in the real world.

The Greeks invented formal rules for manipulating symbols so that the results could predict the state of the real world. That done, we had only to wait a few thousand years for someone to get around to building a computer. Soon after those first computers were built, computer languages were invented to make it easier for users to communicate their instructions to the computer.

Every system of representation contains hidden within it assumptions about the nature of the world. For example, in English we can easily talk about the past, the present, and the future, yet some human languages do not include these concepts in either their vocabulary or their structure. Therefore, certain ideas, which are readily expressed in English, can not be translated into those languages.

Computer languages in their own way contain limiting assumptions about the nature of data and what operations it is desirable to perform upon it. The majority of languages are structured to deal with data at the level of numbers and characters—that is, a level at which almost no abstraction is involved. No mechanisms are built into computer languages to deal with words as we know them in a human language, where a single word might have many different meanings, the one being used in the present context, being dependent on the words and sentences around it.

In their attempts to write programs that simulate human thought, AI researchers have developed three types of languages. The first is the *list processing* language, of which Lisp is the most commonly used. The second is the *logical* or *declarative* language. Prolog, which was chosen by the Japanese for their Fifth Generation computer research project, is the leading example of this type. The last class of languages are those that are *object-oriented*. Smalltalk, which was invented by Alan Kay at Xerox PARC in the seventies, is the foremost example.

List Processing

The first list processing language was IPL (Information Processing Language), created by Herbert Simon, Allen Newell, and J. C. Shaw in the mid-fifties. Their work inspired John McCarthy to develop Lisp on the IBM 704 at the MIT Artificial Intelligence Laboratory.

The syntax of Lisp is quite simple and incorporates the basic concept of the language. A pair of parentheses encloses a list of symbols, and the leftmost symbol is expected to be a function that will be applied to the rest of the symbols in the list.

The code to add two numbers in Lisp looks like this:

```
(+ 1 1)
```

The interpreter will evaluate this and return 2 as the answer. It is the combination of this simple syntax with functions that are oriented toward manipulating lists of symbols that gives Lisp its power and flexibility. Let's create a list that we will *bind* (assign) to the variable name LIST.

```
(SETQ LIST '(A B C D))
```

The apostrophe before (A B C D) tells the interpreter that the first item of the list is not a function and should not be

By STUART DUDLEY DIMOND III

evaluated. After the variable has been bound by SETQ, evaluating LIST will return:

```
(A B C D)
```

In this case A, B, C, and D are individual symbols, which are called *atoms*, but they could just as easily be lists themselves.

The two most basic operations that can be performed on a list are CAR and CDR (pronounced "kidder"). These date back to the initial implementation of Lisp on the IBM 704. CAR meant "contents of the address register," and CDR meant "contents of the decrement register," referring to the pointers to the first symbol in the list and to the rest of the list. When these operations are applied to LIST we see:

```
(CAR LIST)
          returns:
A         the first element of the list
(CDR LIST)
          returns:
(B C D)   the rest of the list
```

Lisp has the ability to define new functions that may operate on lists, and recursion is inherent in the language; a function can be used to define itself. Our last example is a recursive factorial function similar to the examples in ST Basic and Logo given in Part 1.

```
(DEFUN FACTORIAL (N)
  (COND
    ((= N 0) 1)
    (T (* N (FACTORIAL (- N 1))))))
```

The first line tells the interpreter that we want to define the function FACTORIAL and that it will have an argument (local variable) N. The COND statement is similar to an IF, except that it can test for any number of conditions. The third line tests to see if N = 0. If it does, 1 is returned; otherwise, COND goes on to the next condition. The last line always returns T (true) and evaluates N * the factorial of N - 1.

The ability to define new functions, the power of recursion, and an interactive environment are the major attractions of Lisp. Like that other extensible language, Forth, it invites you to invent a special purpose language for the problem you are trying to solve. Because of this, Lisp has been used not only for Artificial Intelligence experimentation, but also in the development of new computer languages.

The disadvantages of Lisp reflect its strengths; the parentheses pile up endlessly, and it is possible, by omitting a pair in the typing process, to completely alter what a function does. Only recently have efforts been made to standardize the definition of the language; as a result a Lisp program will usually run only on the system on which it was written. Finally, Lisp has always appealed to people who are impatient with rigid structure, so reading a program written by another programmer can be difficult.

Logic Programming

From the time of the Greeks, formal logic has been of interest to people who want to understand the nature of human thought. With the arrival of computers, mathematicians started searching for ways to automate the process of proving theorems. In 1972 Alain Colmerauer and Phillippe

Soon after those first computers were built, computer languages were invented to make it easier for users to communicate their instructions to the computer.

AI Languages You Can Use

Artificial Intelligence need not remain the exclusive province of academicians and R&D people. Choose one or more of thelanguages described here and start your own think tank. And don't forget to send *Atari Explorer* the the results of your first successful experiment.

.....

MProlog from Logicware is one of the best language systems of any type that I have seen for the ST. Logicware is a company in the business of developing commercial AI software and expert systems, complete with any level of user education and applications support the customer may desire. MProlog applications developed on the ST may be ported easily to an impressive array of machines, including workstations from Sun, Apollo, and Tektronix, as well as super-minis from Pyramid, Hewlett-Packard, and DEC.

MProlog

System: Atari ST

Version reviewed: 2.0

Summary: A Prolog language system with capabilities and manufacturer support worthy of use in commercial expert system development

Price: $199

Manufacturer:
Logicware Inc.
5915 Airport Rd.
Ste. 200
Toronto, ON L4V 1T1
(416) 672-0300

The MProlog package contains two double-sided unprotected disks and a large ring binder reference manual. The language reference and the development system reference it contains are common to all available MProlog systems, and there are also ST-specific sections on installation, utilities, and operating system specific details. One desirable feature manifests itself when you read the installation instructions; there is a suite of validation tests to check the functionality of the software after it has been installed on a hard disk drive.

MProlog is a complete implementation of the Edinburgh syntax, and it contains an optional extension module that supplies predicates from the DEC-10 version of Prolog, which were omitted by Clocksin and Mellish. The working environment of MProlog is called the Program Development Support System. It allows you to write, edit, test, and execute Prolog modules. Modules are then combined into a stand-alone program by the Pretranslator, the Con-

Roussel in Marseille, working in collaboration with Robert Kowalski in Edinburgh, designed and implemented Prolog. In contrast to Lisp, which retains the features of conventional languages, Prolog represents a complete break with the procedural method of writing programs.

The basic statement in Prolog is the *Horn clause*, a rule in the form: conclusion :- (is true IF) condition_1 . . . condition_n are true. To demonstrate, let's enter some facts about you, the reader, and prove a simple assertion about you.

```
consult(user).
owns(reader, atari_st).
owns(reader, car).
reads(reader, explorer).
reads(reader, newspaper).
likes(reader, ai_article).
```

The goal, consult(user)., puts the Prolog system in a mode that allows interactive entry of assertions in the knowledge base. The facts are stated in the form: relationship(object, object, . . .). Thus the first fact says the reader owns an Atari ST. Next we enter the Horn clause for the goal we are trying to prove:

```
intelligent(Person) :-
   owns(reader, atari_st),
   reads(reader, explorer),
   likes(reader, ai_article).
```

The Person is intelligent is true IF: he owns an Atari ST, reads *Atari Explorer*, and likes the AI article. We exit back to the goal mode and query:

```
?-  intelligent(Person).
    Person = reader;
    No
```

We have found that the reader is probably intelligent according to the stated rules and the information in the knowledge base. The No returned after Person = reader; indicates that no other answer fulfilling the conditions was found during the search.

Note, that we included in the knowledge base facts that were not necessary for the particular conclusion we were trying to prove; it is possible that other queries of the knowledge base might require these facts. Any fact that is not asserted as true is assumed by Prolog to be false.

Like Lisp, Prolog incorporates recursion. Our familiar factorial problem looks like this:

```
consult(user).
factorial(0, 1).
factorial(N, F) :-
   N > 0, Num is N - 1,
   factorial(Num, Fact), F is N * Fact.
```

Back in the interactive mode, we assert the factorial of 4 as goal:

```
?-  factorial(4, X).
    X = 24;
    No
```

The structure of Prolog is actually much like the recursive depth-first search of a tree structure, which we used to represent and solve the maze in the last issue. Our proof that the reader is intelligent involves only a single conclusion proved by three facts being true (a logical AND operation). A full scale expert system would involve many layers of facts which prove other facts, which in their turn are used to prove other facts, until it is possible to prove some final conclusion.

The great strength of Prolog is the ease, in terms of programmer effort, with which rules can be generated to solve a problem. And extensions have been added to make it easier for Prolog to solve programming problems that require a procedural approach.

It is not always easy to formulate real-world problems in the neat, rule-oriented fashion that Prolog requires. Another problem with this language is that, with a very large knowledge base, the search time can get out of hand. The answer

solidator, and the Interpreter.

The modular approach to software development that is enforced by this system is great for serious program development but too cumbersome for someone who just wants to experiment with the language. ■

• • • • • • • • •

XPro is a very good product for its price. In fact, it is probably the Prolog to have unless you know you are going to do commercial product development. By invoking the goal: consult(user)., you can use the XPro interpreter in an interactive mode. There is also a built-in text editor that can be used to generate modules from which a complete application can be built.

The full Edinburgh standard instruction set is available, along with options and extensions such as grammar rules, constants, global variables, arrays, user I/O functions, and floating point and extended math functions.

XPro has most of the standard calls to VDI, AES, and XBIOS implemented as system primitives. As with most languages, using these functions requires more knowledge than is contained in the provided documentation. One nice item that comes with XPro is a royalty-free run-time package called XProA, which, when run, will load a knowledge base from a file called KBASE. KBASE is generated by executing a save after creating a fully developed and debugged knowledge base.

The most noticeable weakness of this package is the documentation. I hope Rational Visions will upgrade this part of their product. The distribution disk contains a variety of programming examples, but the written documentation needs examples and more elaborate descriptions of the system primitives. ■

XPro

System: Atari ST

Version reviewed: 4.1

Summary: A modestly priced package that is ideal for the person who wants to explore logic-based programming

Price: $39.95

Manufacturer:
Rational Visions
7111 West Indian School Rd .
Ste. 131
Phoenix, AZ 85033

you want may not be provable with the facts you have in hand, and it may take a lot of effort to find that out.

Object-Oriented Programming

Object-oriented programming, surprisingly enough, had its origin not in the AI lab but in the field of simulation with a language called Simula. Smalltalk, the best known language of this type, was developed under the direction of Alan Kay at the Xerox Palo Alto Research Center where the GEM operating environment used by the ST also has its roots. Smalltalk, which was originally intended to be used by children, will soon be available commercially for the ST.

The object-oriented approach to computer language is an even larger step away from procedural programming than logic programming.

The object-oriented approach to computer language is an even larger step away from procedural programming than logic programming. An object is a self-contained programming construct; it has its own internally defined data and operations. Four concepts are basic to your understanding of this type of programming: *class*, *instance*, *method*, and *message*.

An instance is a particular case of an object that is a member of a class of objects and is differentiated from other objects in its class by the data and methods (operations) that are uniquely its own. There is an object definition for the class, and the instances of that class inherit the characteristics established by that class definition.

To clarify these concepts we can apply them to vehicles used for transportation. We will simply call the class "transportation." This class has several subclasses: boats, flying machines, and land vehicles, each of which inherits from the class definition the assumption that it can be used to transport people.

Each class includes a number of subclasses, so boats can be divided into motor boats, sail boats, and row boats. The members of the subclasses inherit the features common to all boats but are differentiated from one another by the different methods of propulsion they use. All members of all the subclasses can respond to a message to move, but each responds using the method of propulsion specified in its particular instance.

While the fundamental concepts underlying Smalltalk can seem obscure and confusing to a procedural programmer, the language provides a powerful approach to software design and has spawned object-oriented versions of Lisp and Prolog.

AI Languages for the ST

We ST users are fortunate in having access to quite a few AI languages in both commercial and public domain versions. No matter what your financial means, you can experiment with AI, and if your interest is strong enough, you can find the tools with which to do serious AI development work.

The sidebars to this article provide capsule reviews of some languages with which you can experiment and learn a great deal more about artificial intelligence.

A Hands-On Experiment

The remainder of this article continues the experiment in AI programming begun in Part 1. The program in Listing 1, EXPERT.BAS, is a simplified expert system based on the

Cambridge Lisp

System: Atari ST

Version reviewed: 1.10

Summary: A good version of the older Standard Lisp; has both interpretive and compiled modes

Price: $199.95

Manufacturer:
Metacomco plc
26 Portland Square
Bristol, BS2 8RZ
England

Cambridge Lisp is an implementation of Lisp with features that place it somewhere between the Standard Lisp of the sixties and the newer Common Lisp. To make the best use of it, you should have an ST with at least a megabyte of memory. Metacomco provides an operating environment called Menu+, which is designed to speed up the program development cycle, for all of their language packages.

Cambridge Lisp has functions to handle property and association lists, circular lists, and a large variety of data types. Good support is provided for mathematical functions, and integers may grow be any size available memory allows. Two Common Lisp functions that are missing are Do and Let.

Other useful features of Cambridge Lisp include a Compiler to improve execution speed, a prettyprint function that prints function definitions in a format that improves readability, and the capacity to save and reload a working environment. The greatest weakness is the fact that this is a fairly slow Lisp when compared to implementations on other microcomputers. ■

The Icon programming language is, like XLisp, a public domain treasure. It was developed by Ralph Griswold, creator of Snobol, as part of his research at the University of Arizona.

Icon draws important ideas from its ancestor Snobol, the most significant being the existence of the string as a distinct data type. In other languages a string is an array of characters, and operations on strings must be implemented as procedures or subroutines. Because a string is an Icon data type, however, operations including string scanning and pattern matching are a part of the language.

Icon supports many different data structures, including lists, sets, and tables. The table data type can serve as an associative memory; you can not only find the value to which a symbol refers, but you can also work backward and determine the symbol associated with a

The reviews are in . . .

"'A Best Buy' I'm impressed"
David H. Ahl, Atari Explorer, Nov-Dec 1987

"If you've got an Atari, you probably need this program."
Jerry Pournell, Byte Magazine, October 1987

"pc-ditto is a winner."
Charlie Young, ST World, July 1987

"This is the product we have been looking for."
Donna Wesolowski, ST Informer, August 1987

"This truly incredible software emulator really works."
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---

pc-ditto is a software-only utility which expands the power of your Atari ST to imitate an IBM PC XT. No extra hardware is required (an optional 5.25-inch drive may be required for 5.25-inch disks). All your IBM disks will work "out-of-the-box".

pc-ditto features include:

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- o supports optional 5.25-inch 40-track drives

System requirements:

- o IBM PC-DOS or Compaq MS-DOS version 3.2 or above recommended
- o optional 5.25-inch drive is required to use 5.25-inch disks
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Yes! Please send information on pc-ditto.
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Address_____
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Listing 1.

```
100   SIZE = 100
110   DIM GOAL(SIZE)
120   DIM PARENT(SIZE)
130   DIM LEFT(SIZE)
140   DIM RIGHT(SIZE)
150   DIM INFO$(SIZE)
160   NIL = -1
170   TRUE = 1
180   FALSE = 0
190   LEVEL = 0
200   PARENTX = 1
210   ROOT = 1
220   HERE = 1
230   POINT = 1
240   GOAL(1) = FALSE
250   PARENT(1) = 1
260   LEFT(1) = NIL
270   RIGHT(1) = NIL
280   REM Enter new Knowledge Base or Enter File
290   PRINT " Enter yes to read file, no to build Knowledge Base: "
300   INPUT QUERY$
310   IF QUERY$ = "yes" THEN GOTO 320 ELSE GOTO 400
320   OPEN "I", #1, "K_BASE.DAT"
325   PRINT " READING THE FILE "
330   I = 1
340   WHILE NOT EOF(1)
350   INPUT#1, GOAL(I), PARENT(I), LEFT(I), RIGHT(I), INFO$(I)
360   I = I + 1
365   POINT = POINT + 1
370   WEND
380   CLOSE #1
390   GOTO 460
400   GOSUB 1000 'BUILD
410   OPEN "O", #1, "K_BASE.DAT"
420   FOR I = 1 TO (POINT - 1)
430   PRINT#1, GOAL(I), PARENT(I), LEFT(I), RIGHT(I), INFO$(I)
440   NEXT I
450   CLOSE #1
460   PRINT " If you wish to print the tree enter yes: "
470   INPUT QUERY$
480   IF QUERY$ = "yes" THEN GOSUB 2000 'PRINT_TREE
490   WHILE QUERY$ <> "quit"
495   PRINT " Answer yes or no to identify the instrument. "
500   GOSUB 3000 'SEARCH
510   PRINT " If you wish to stop enter quit: "
520   INPUT QUERY$
530   WEND
535   FOR I = 1 TO (POINT - 1)
545   PRINT GOAL(I), PARENT(I), LEFT(I), RIGHT(I), INFO$(I)
555   NEXT I
560   END 'The end of the main program

1000  REM This Subroutine BUILDs the Knowledge Tree
1005  PRINT " YOU HAVE JUST CALLED BUILD "
1010  POINT = POINT + 1
1020  PARENT(HERE) = PARENTX
1030  LEFT(HERE) = NIL
```

recursive tree search algorithm with which we experimented in the previous article. It consists of a main program body that calls three recursive subroutines: BUILD, PRINT_TREE, and SEARCH.

The expert system operates in a backward chaining mode; it asks a series of questions that can be answered yes or no until it arrives at an answer. The *knowledge base* I have provided with the program is set up to identify instruments of the orchestra. By studying this example, creating a new knowledge base, and changing the prompts in the program, you can use the system for other purposes.

ST Basic allows only 16 levels of subroutine calls, limiting the maximum number of questions that can be asked before reaching a conclusion to 15. Nevertheless, you can have as many as 32,768 possible conclusions—a much larger knowledge base than you would want to construct by hand.

The subroutine BUILD is used to create a tree from the questions and answers found in the knowledge base. The knowledge tree is represented by data stored in the arrays GOAL, PARENT, LEFT, RIGHT, and INFO$. If GOAL is set to equal FALSE, the INFO$ will contain a question that is asked of the user as a search is being made. If GOAL is TRUE, the string will contain the name of an instrument.

Icon

System: Atari ST

Version reviewed: 6.03

Summary: A language with a lot of unexplored potential as an AI tool

Price: Public domain

given value.

Another valuable feature of Icon is goal-directed evaluation, which can return no result, a single result, or a sequence of results. The philosophy of the designer of the language is to include many powerful features without worrying about any confusion they cause.

Icon seems to have a tremendous amount of unexplored potential as an AI language. It is already being used for linguistic analysis and should be useful for AI applications involving text. Beyond that, it can be applied to symbolic mathematics and in the fields of musical analysis and composition.

Icon is distributed with several documentation files, including an overview of the language, the features of version 6, and the specifics of the ST version. This is enough to get you started, but anyone who really wants to use the language will want to buy the text listed in the bibliography. ■

• • • • • • • • •

Toy Prolog

System: Atari ST

Summary: This is the weakest of the public domain AI offerings. It is slow but offers an opportunity to experiment with Prolog inexpensively

Price: Public domain

Toy Prolog appears to be derived from a Pascal program provided by Kluzniack and Szpakowicz in the book *Prolog for Programmers*. It provides a reasonably complete version of Prolog according to the Edinburgh standard. To make good use of Toy Prolog, you should probably buy a copy of *Programming in Prolog* (see bibliography), unless you are fluent in German, the language in which the main documentation file is written.

You can use this program to get a feel for Prolog, and if you like the language and want to do further experimentation, you can move up to XPro, which has the advantages of being much faster and documented in English. ■

• • • • • • • • •

XLisp is an implementation of Lisp written in C by David Betz to encourage learning and experimentation. I applaud him for the

```
1040  RIGHT(HERE) = NIL
1050  PRINT(" If this is a Goal enter yes: ")
1060  INPUT QUERY$
1070  IF QUERY$ = "yes" THEN GOTO 1080 ELSE GOTO 1100
1080  GOAL(HERE) = TRUE
1090  GOTO 1110
1100  GOAL(HERE) = FALSE
1110  IF GOAL(HERE) = TRUE THEN GOTO 1120 ELSE GOTO 1150
1120  PRINT " Enter the name of the instrument: "
1130  INPUT INFO$(HERE)
1140  GOTO 1250
1150  PRINT " Enter the question: "
1160  INPUT INFO$(HERE)
1170  PARENTX = HERE
1180  LEFT(HERE) = POINT
1190  HERE = LEFT(HERE)
1200  GOSUB 1000 'BUILD
1210  PARENTX = HERE
1220  RIGHT(HERE) = POINT
1230  HERE = RIGHT(HERE)
1240  GOSUB 1000 'BUILD
1250  HERE = PARENT(HERE)
1260  RETURN


2000  REM This Subroutine PRINT_TREE, prints the Knowledge Tree
2010  LEVEL = LEVEL + 1
2020  IF LEFT(HERE) <> NIL THEN GOTO 2030 ELSE GOTO 2050
2030  HERE = LEFT(HERE)
2040  GOSUB 2000 'PRINT_TREE
2050  FOR I = 1 TO LEVEL
2060  PRINT "   ";
2070  NEXT I
2080  PRINT INFO$(HERE)
2090  IF RIGHT(HERE) <> NIL THEN GOTO 2110 ELSE GOTO 2130
2110  HERE = RIGHT(HERE)
2120  GOSUB 2000 'PRINT_TREE
2130  LEVEL = LEVEL - 1
2140  HERE = PARENT(HERE)
2150  RETURN


3000  REM This Subroutine SEARCHs the Knowledge Tree
3005  PRINT " YOU HAVE JUST CALLED SEARCH "
3010  IF GOAL(HERE) = TRUE THEN GOTO 3020 ELSE GOTO 3050
3020  PRINT " The name of the Instrument is the: "
3030  PRINT INFO$(HERE)
3040  GOTO 3130
3050  PRINT INFO$(HERE)
3060  INPUT QUERY$
3070  IF QUERY$ = "yes" THEN GOTO 3080 ELSE GOTO 3110
3080  HERE = LEFT(HERE)
3090  GOSUB 3000 'SEARCH
3100  GOTO 3130
3110  HERE = RIGHT(HERE)
3120  GOSUB 3000 'SEARCH
3130  HERE = PARENT(HERE)
3140  RETURN
```

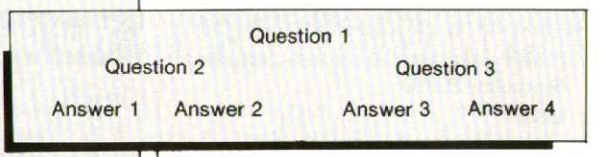


Figure 1.

The node called the ROOT is the PARENT node of the whole tree; the indexes of the two children of ROOT are stored in LEFT and RIGHT. In Figure 1, Question 1 is in the ROOT node, and the nodes containing Question 2 and Question 3 are its children. Answers 1 and 2 are the children of Question 2, and Answers 3 and 4 are the children of Question 3.

When BUILD is called, it asks whether the node is a GOAL. If it is not, you are asked to enter the question that leads to the next level. When you have entered the question, BUILD is be called again and you enter Question 2. BUILD is called again, and because the next node is a GOAL, you enter Answer 1. The next call to BUILD allows you to enter Answer 2.

Three more calls to BUILD occur to allow you to enter Question 3, Answer 3, and Answer 4. The recursive calls to the subroutine allow you to perform an operation repeatedly without knowing in advance how many times it will be performed. BUILD creates the tree by performing a pre-order traversal of the tree as it builds it. The algorithm for the

XLisp

System: Atari ST

Summary: A version of Lisp similar to Common Lisp, which includes support for object-oriented programming

Price: Public domain

time and effor he has put into developing and upgrading this language. Several different versions are available on the networks; I have copies versions 1.5, 1.7 and 2.0T5.

XLisp is compatible enough with Common Lisp that I have had no problems writing programs for my AI class at home and taking them to school to execute on a Common Lisp system. It also contains extensions to allow experimentation with object-oriented programming.

XLisp has a well-organized documentation file that describes the features of the entire language. Version 2.0 is, not surprisingly, the best version to date. It allows you to save a workspace after a session and includes an execution trace facility.

The C source code of XLisp is available, and the author makes it clear that you are welcome to customize it for your own use. This means that whether or not you are interested in AI, XLisp offers an opportunity to study C programming techniques. XLisp is a must have, even if you plan to buy a commercial AI language. ■

• • • • • • • •

I located a copy of Little Smalltalk just as I finished this article. I haven't had a chance to test it, but it looks like a valuable addition to the public domain offerings for the ST. Little Smalltalk was developed by Professor

Little Smalltalk

System: Atari ST

Summary: A well-documented subset of Smalltalk 80

Price: Public domain

Timothy Budd of the University of Arizona and ported to the ST by David Clemans. Because this version of Smalltalk was written to be ported to many different kinds of hardware, it lacks the graphic interface of Smalltalk 80.

There is a substantial documentation file, and Professor Budd has published a book on this dialect of Smalltalk (see bibliography). ■

BUILD subroutine looks like this in pseudocode:

```
Subroutine BUILD
VISIT
  Is this a GOAL?
  If this is a GOAL Then
    Enter the instrument name
  Else
    Enter the question
If NOT a GOAL Then
  BUILD using LEFT
  BUILD using RIGHT
CLIMB to PARENT node
Return
```

Several variables are used to keep track of what is happening as the tree is built. HERE is the index of the node at which the routine is found; POINT is the next available node in the tree array; and PARENTX is used to keep track of which node was last visited while the tree is being built.

Line 1005 in the BUILD subroutine is included to help you see the sequence of calls as the tree is built and may be removed once you understand how it works.

The PRINT_TREE subroutine is included to show you that you have entered all the questions and answers in the knowledge base properly. PRINT does an in-order traversal of the tree. The algorithm follows:

```
Subroutine PRINT_TREE
level = level + 1
PRINT_TREE using LEFT
VISIT
  For i = 1 to level
    Print " "
  Print INFO$
PRINT_TREE using RIGHT
level = level - 1
CLIMB to PARENT node
Return
```

The tree will be printed in the form shown in Figure 2. Each item is indented to show its level in the tree, with the leftmost node of the tree toward the top.

```
                    Answer 1
          Question 2
                    Answer 2
Question 1
                    Answer 3
          Question 3
                    Answer 4
```

Figure 2.

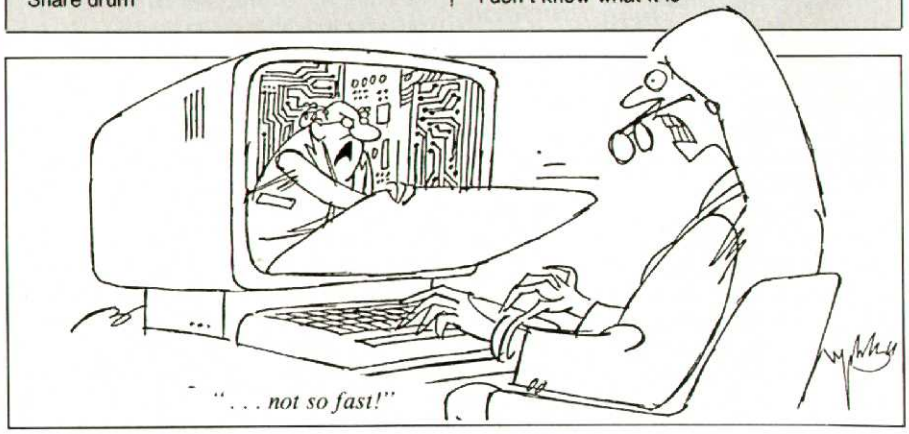
Your Own Expert System

The information given here is all you need to create an expert system to identify musical instruments. All the questions and names of the instruments are provided in the sequence in which they are needed by the BUILD subroutine as it builds the knowledge tree. When BUILD asks if this is a goal, the answer is yes for an instrument name, "I don't know what it is," or no for a query.

You can gain insight into the strengths and weaknesses of expert systems by considering the nature of the questions this system asks. There are instruments that cannot be identified by the system as it is; the user must have knowledge that a non-expert user might not have.

Once the file K_BASE.DAT is created, it can be loaded for use. If you create another knowledge base, change the file identifier in the program before you run it, or change the name of K_BASE.DAT on the disk, so that it is not overwritten.

```
Does the instrument have a keyboard?
Does the instrument have strings?
Are the strings struck by hammers?
Piano
Are the strings struck by tangents?
Clavichord
Harpsichord
Are the sounds generated electronically?
Does it have a pedal board?
Electronic organ
Synthesizer
I don't know what it is
Does the instrument have strings?
Is it usually played with a bow?
Does the player hold it under his chin?
Are the strings tuned G D A E?
Violin
Viola
Does the player stand upright beside it?
String bass
Cello
Does it have six strings?
Guitar
Bass guitar
Is it struck to produce a sound?
Is it large and bowl-shaped and sits on the floor?
Tympani
Is it mounted horizontally on a stand?
Does it have snares?
Snare drum
Bass drum
Is it made of brass?
Cymbal
I don't know what it is
Are the player's lips the sound source?
Does the player operate a slide?
Trombone
Sits on the player's lap with a large bell facing up?
Tuba
Are the valves operated left-handed?
Does it have a large flared bell?
French horn
I don't know what it is
Is the bore cylindrical?
Trumpet
Cornet
Does it have a double reed?
Does the player hold it by his right side?
Bassoon
Oboe
Does it have a single reed?
Is it black and held in front of the player?
Clarinet
I don't know what it is
Does the player hold it horizontally to the right?
Is it about a foot long?
Piccolo
Flute
I don't know what it is
```



The SEARCH subroutine works its way down the tree, asking questions, going LEFT with a YES answer and RIGHT with a NO answer until it reaches a GOAL, which it prints as the answer to the search. The algorithm follows:

```
Subroutine SEARCH
VISIT
   Ask question INFO$
If answer is YES Then
   SEARCH using LEFT
Else
   SEARCH using RIGHT
CLIMB to PARENT node
Return
```

Line 3005 is included to let you see the calling sequence as the tree is searched and should be deleted once you are familiar with the program. Lines 535, 545, and 555 are included to print the arrays that represent the tree so that you can see how the information is actually stored. Notice that the ROOT node is its own PARENT; this makes it possible to call a subroutine without initializing HERE to equal ROOT.

This is a very simple expert system. Because ST Basic places some limits on what can be conveniently achieved, you might want to translate it into a more advanced Basic or into C or Pascal. Once you understand the programming concepts that make the system work, I encourage you to experiment with extending its capabilities. Try modifying the BUILD subroutine to allow you to extend a knowledge base after it has been created.

Try creating a system with two trees—one to represent the questions asked and one to represent the possible answers, so that the answer tree is searched after each question until enough questions have been asked to reach a conclusion. Consider how you could handle answers that are expressed as probabilities instead of simple yes and no answers. (Hint: express the probabilities as decimals; 0.75 is 75% probability of being true. Give several possible answers, each with its probability of being true.) For further ideas and techniques see the book on AI programming in C, listed in the bibliography. ■

AI Languages: A Bibliography

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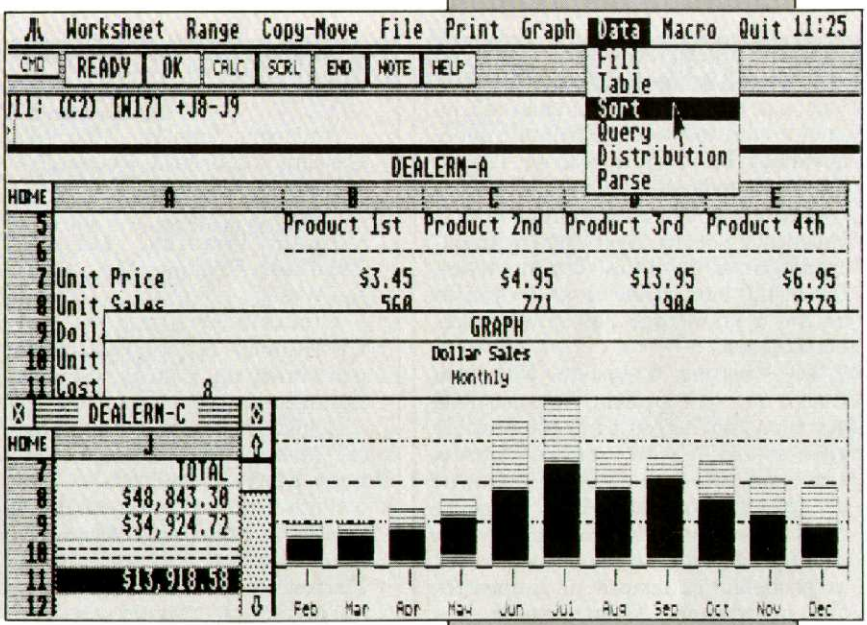
Clocksin, William F. and Christopher S. Mellish. *Programming in Prolog*. Berlin: Springer-Verlag, 1987.

Schildt, Herbert. *Artificial Intelligence Using C*. Berkeley: Osborne McGraw-Hill, 1987.

Touretzky, David. *Lisp: A Gentle Introduction to Symbolic Computation*. New York: Harper and Row, 1984.

Winston, Patrick Henry and Berthold Klaus Paul Horn. *Lisp*, second edition. Reading, MA: Addison Wesley, 1984.



LDW Power:
A versatile, full-featured spreadsheet for the ST

Bottom Line

By DAVID H. AHL

LDW Power from Logical Design Works is a versatile, full-featured spreadsheet for the ST. It is compatible with Lotus *1-2-3*, but goes far beyond *1-2-3* with its user-friendly windowing capability, mouse interface, macro tools, and additional functions.

As you know from our previous spreadsheet reviews, we like to evaluate a spreadsheet in terms of four areas common to all spreadsheets: layout and labels, formulas and functions, windows, and graphics. We then look at extra features, ease of use, performance, and documentation. However, because *LDW Power* is 100% compatible with *1-2-3*, the more-or-less de facto standard of the industry, our trip through the common areas can be brief as we head for the extras.

Layout and Labels

LDW Power allows a worksheet size of up to 256 columns by 8192 rows, which is considerably larger than the average person will ever need. Consistent with *1-2-3*, column width can be set independently for each column, and labels longer than a column width spill over into the next column if the cell to the right of the entry is empty.

Column labels can be centered or right- or left-justified. Numbers can be similarly aligned—a feature not found in *1-2-3*. A Style command, unique to *LDW Power*, allows cell entries to be underlined or displayed in boldface.

Numeric formats are the same as those found in *1-2-3* and include fixed number of decimal places, scientific, currency, percent, comma (a comma after every three digits), text (shows cell formulas), and +/- (crude horizontal bar graph). Going a step beyond *1-2-3*, *LDW Power* has five date formats (15-Oct-88, 15-Oct, Oct-88, 10/15/88, and 10/88), compared with three in *1-2-3*, and four time formats (*1-2-3* has none).

Cell addresses use the familiar letter and number notation (C5, A100) and can be either relative or absolute (by preceding the cell address with a $). You can move through the cells of the spreadsheet by using the cursor keys or the mouse. Conveniently, the mouse displays an arrow when it is pointing to menu choices or "buttons" and a crosshair when it is indicating a cell address.

Ranges of cells can be specified in three ways: by typing the cell addresses of the beginning and ending cells, by using a range name which you have previously created, and with the mouse, a method not available in *1-2-3*. If you choose to use the mouse, the entire range does not have to be visible in the window as you might expect, because the worksheet automatically scrolls Macintosh-style when the cell pointer is dragged to the edge of the screen.

Formulas and Functions

Cell formulas and functions are written exactly as they are in *1-2-3*—@SUM(B5.B17)*1.1+(C18+6)/D4, for example.

Most of the 80 some odd functions in *LDW Power* are identical to those in *1-2-3*, specifically the mathematical, logical, statistical, date and time, and financial functions. In addition, *LDW Power* boasts the group of 19 string functions found only in versions 2.0 and higher of *1-2-3*.

The only *1-2-3* functions not found in *LDW Power* are the so-called "database statistical" functions, which operate on the values in particular fields of a database. These are fairly specialized (in ten years of using spreadsheets, I have never had occasion to use them), but can be duplicated if necessary by opening a window for the portion of the database under consideration.

Windows

As might be expected, when it comes to windows, *LDW Power* excels. Unlike *1-2-3*, which permits only two windows, the handling of which is awkward and contrived, *LDW Power* allows up to four standard GEM windows, all of which use the familiar scroll bars, arrows, and sizing devices. Until you have them, you don't realize how handy multiple windows are for viewing different parts of the worksheet without having to use the GOTO command or cell pointer to move around.

Graphics

LDW Power has the same graphic capabilities as *1-2-3* plus several additional features that make it very easy to make beautiful graphs and charts. Like

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VideoKey was optimized for low resolution use since nearly all games, graphic and animation software is for low resolution. Use with 80-column text is not recommended.

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1-2-3, *LDW Power* offers five different graphic representations—line, bar, stacked bar, X-Y, and pie—and provision to display up to six data sets on a single graph. It also has many graph labeling possibilities, automatic scaling, and immediate access (*1-2-3* calls this "what-if" graphing).

Going beyond *1-2-3*, *LDW Power* allows you to print your graphs directly from the worksheet without a separate graph printing program. You can also save graphs to a special "metafile" format, which allows them to be read and used by other application programs.

Other Features

The macro language capability in *LDW Power* is compatible with *1-2-3* versions 1A and 1.1; it does not have the extended macro capabilities available in versions 2.0 and higher.

Personally, I have mixed feelings about macros, and I have never felt comfortable with the *1-2-3* /X macro language. If you want it, it is available in *LDW Power*, but Logical Design Works has provided what seems to be a much better solution to the problem—a nifty macro recorder, which records your keystrokes as you enter them, freeing you from having to deal with the complexities of macro definition syntax. This could get me hooked on macros.

Another unique feature of *LDW Power* is its Note button, which allows you to write a two-line note about a specific cell. This is a convenient way to explain where you got a piece of data or to define further the elements of a formula. If you want this feature with *1-2-3*, you must purchase one of the add-in programs such as *Noteworthy* or *Note-It-Plus*.

LDW Power has the ability to read and write Lotus *1-2-3* files directly to and from a PC compatible disk. You can either hook up a 5¼" disk drive to your ST (we used an I.B. Drive) or, if you have a 3½" drive on your PC or PS/2 system, you can use the disks directly on the ST. Very early versions of *LDW Power* could read only .WK1 files (*1-2-3* version 2.0), while later releases read both .WK1 and .WKS (*1-2-3* version 1.1) files.

LDW Power reads and converts *1-2-3* files in one operation, but be warned, it takes five times as long as reading the same file in LDW format). To produce a *1-2-3* file requires a separate conversion step using a provided utility program.

Another utility program included with *LDW Power* prints worksheets (or any ASCII file) sideways on standard 8½" × 11" paper. We found that it takes some experimentation to get the print quality, margins, and line and character spacing right. When you do, be sure to save the settings (using Save Settings) for future use.

Performance

Using our standard spreadsheet benchmark program, we were pleased to find that *LDW Power* was nearly twice as fast as Lotus *1-2-3* version 1.1 on a standard 4.77 MHz PC and considerably faster than any of the other Atari ST spreadsheets (see Table 1).

LDW Power does not load and save files quite as fast as *1-2-3* does (7.5 seconds for *LDW Power* versus 4.6 seconds for *1-2-3*), although this is partially dependent upon how full your hard disk is.

LDW Power

System: Atari ST; 1040 recommended

Copy protection: None

Summary: Fast, versatile, full-featured spreadsheet; 100% compatible with Lotus 1-2-3

Price: $149.95

Manufacturer:
Logical Design Works
780 Montague Expy, Ste. 403
San Jose, CA 95131
(408) 435-1445

Because *LDW Power* occupies more than 330K and the on-line Help file adds another 38K, we strongly recommend using it on a 1040ST or Mega if you plan to build even moderately large worksheets. A 520ST will be suitable for small to medium-size worksheets.

We had a small problem with accuracy with *LDW Power*. Unlike *1-2-3*, which will handle in software numbers both higher and lower than the hardware capabilities of the computer (10^{38}, 10^{-38}), *LDW Power* quit at these boundaries. We don't regard this as a serious limitation, however.

Spreadsheet	Time (seconds)
LDW Power	6.7
VIP Professional	26.0
EZ Calc	31.2
Lotus 1-2-3 (IBM PC)	12.9

Table 1. Spreadsheet calculate timings.

Documentation is not the strong point of *LDW Power*. While the 232-page manual is certainly better than many—perhaps most—Atari ST software packages, it is extremely short of examples and has no tutorial section.

The Utilities Disk has several example spreadsheets, including some that actually build and manipulate a worksheet as you watch. These are difficult to comprehend until you have experimented a good bit on your own, however. And without a tutorial of any kind, that is exactly what you will be doing—experimenting.

If you are unfamiliar with Lotus *1-2-3*—or any spreadsheet at all—we strongly recommend picking up one of the many excellent *1-2-3* tutorial books on the market.

Incidentally, the setup section of the manual has one blatant error. It says you need to copy only LDWPOWER.PRG and LDW.HLP onto your hard disk to run the program. If you do, you will soon find that you need the LDWS04.RSC file as well.

Logical Design Works does not have a toll-free support line. However, I called on their regular number with some questions and was immediately connected to a knowledgeable person who answered my questions completely and correctly.

Summing Up

LDW Power is a fast, comprehensive, and versatile spreadsheet that boasts 100% compatibility with Lotus *1-2-3*. It uses a well-integrated GEM interface that allows the use of up to four windows. To the delight of the user who already knows *1-2-3*, *LDW Power* responds to all the familiar keyboard "slash" commands. The GEM-oriented user, will be equally pleased to see that it also offers a full range of pulldown menus, sliders, and mouse manipulation features.

When calculating, *LDW Power* runs rings around the other ST spreadsheets, and it even beats *1-2-3* itself on a standard PC.

Documentation, while good by ST standards, is still weak on an absolute scale. Nevertheless, for a retail price of $149.95, *LDW Power* boasts outstanding performance and is, in my opinion, the best spreadsheet currently available for the ST. ■

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Megadisk is perfect for those who want the high speed of a hard disk for a lower price. Its even better for power users or software developers who may already own a hard disk and two drives but want extra speed and power. Megadisk can also emulate other cartridges for testing and back-up. In addition Megadisk can be used with Switch/Back to allow you to instantly jump between two full size one meg applications.

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Note: Those with only 512K of main memory can use Switch/Back with a Polydisk, just like those with one Meg.

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Desktop Publisher ST

The newest release from Timeworks compares favorably with the IBM standard for professional desktop publishing

By JIM WALLACE

I have good news for Atari ST users who have longed for truly powerful, yet elegant desktop publishing software: Timeworks has released *Desktop Publisher ST*, a package that offers the bells and whistles previously found only in more expensive IBM and Macintosh programs.

Publisher ST is a high quality program that endows your Atari ST with the professional typesetting and layout capabilities you've known were there all along. But before going any farther, let's see how this new entry stacks up against the established leaders in the relatively mature IBM and Macintosh desktop publishing markets.

The Competition

Publisher ST is so powerful that we need not hesitate to compare it with the best—*Ventura Publisher* for the IBM, *PageMaker* for the Macintosh, and *Publishing Partner* for the Atari ST.

PageMaker was one of the first sophisticated programs capable of true desktop publishing, and it remains the leader in the Macintosh community. But for all its features and popularity, *PageMaker* offers no more "gee whiz" features than *Publisher ST*.

Until now, most Atari ST users faced with small desktop publishing tasks have used *Easy-Draw*, while most "power users" have chosen *Publishing Partner*. But even *Publishing Partner* has some drawbacks, as regular users will attest, and when compared with *Publisher ST*, about the only thing that the current version of *Publishing Partner* can really brag about is the ability to make use of unique, proprietary, *scalable fonts*.

I have saved the best for last: *Publisher ST* can be likened to what many believe is the best and most powerful desktop publishing application of them all—*Ventura Publisher* for the IBM PC. Though not identical, *Publisher ST* can certainly be considered a lightweight version of *Ventura*, in that it functions in a similar manner. If you are familiar with the $895 *Ventura Publisher*, you should find the transition to the $130 *Publiser ST* an easy one to make.

Elizabeth Shook in Sunnyvale uses Publisher ST to produce three newsletters for Atari Corp.

The Basics

Although marketed and supported in this country by Timeworks, *Publisher ST* was created and first sold in England by GST Holdings, the company that brought you *1st Word* and *1st Word Plus*. The transatlantic crossing took a few months, but the time was well spent in assuring that the program would be virtually bug-free when it landed on our shores. In fact, I have been using the package almost constantly for three weeks, and I have yet to find a bug or glitch of any kind.

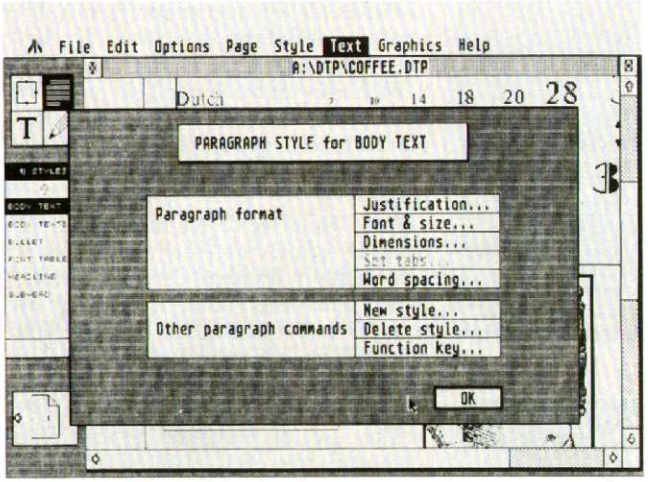
Publisher ST comes on six 360K disks, which should give you an idea of the power of the package. Although it runs on a 520ST with just one 360K drive and a color monitor, the program does its best work when installed on a 1040ST with dual 720K drives and Atari's hi-res monochrome monitor. A hard disk drive makes the system a tool of professional calibre.

An automatic installation procedure creates your work disks (three double-sided or four single-sided floppies) and a special "font width table." The selection of printer fonts available to you depends, of course, on your hardware.

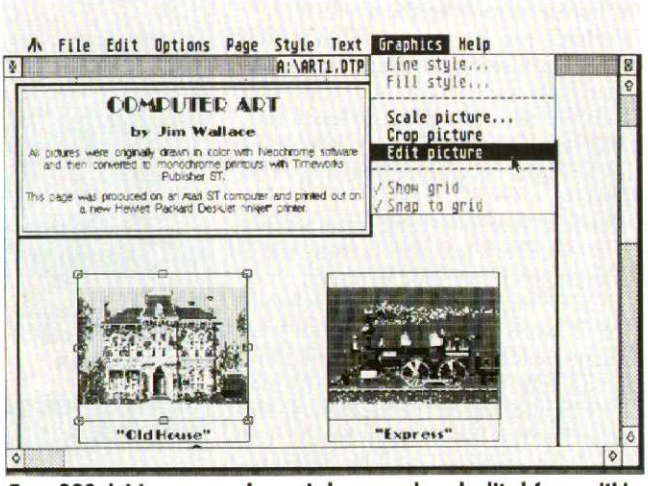
When you start up, the work screen displays the familiar GEM menu bar across the top of the screen. From this your choices include ruler specs, line types (even double lines), patterns for graphic and text frames, views (actual, size to fit, 50%, 200%, or show facing pages), and type faces, sizes (6-99 point), styles (including convenient "white text"), and alignments.

Entering Text

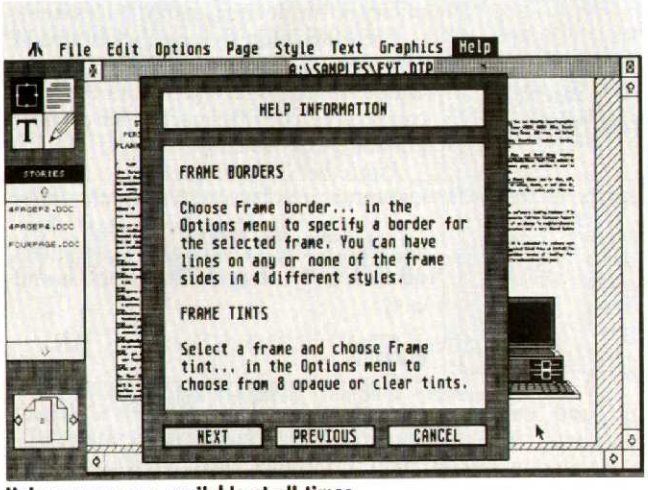
When using any publishing package, it is normally better to create most of your text and graphics outside the program. Learning to use *Publisher ST* is simplified, then, because you can probably use word processing and graphics packages with which you are already



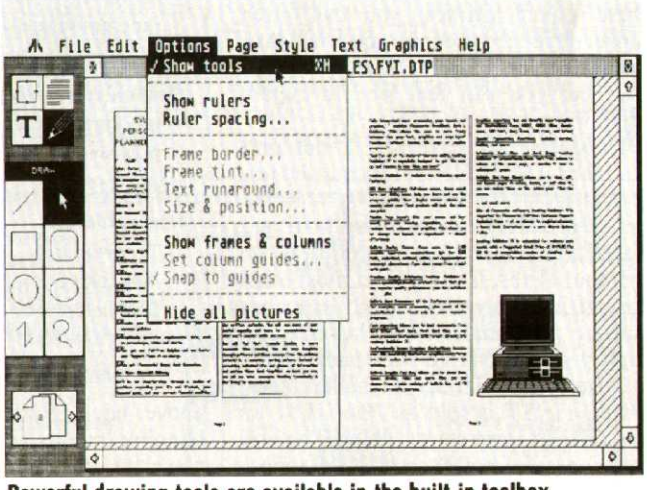
The Paragraph Style dialog box lets you customize your paragraphs individually or globally.



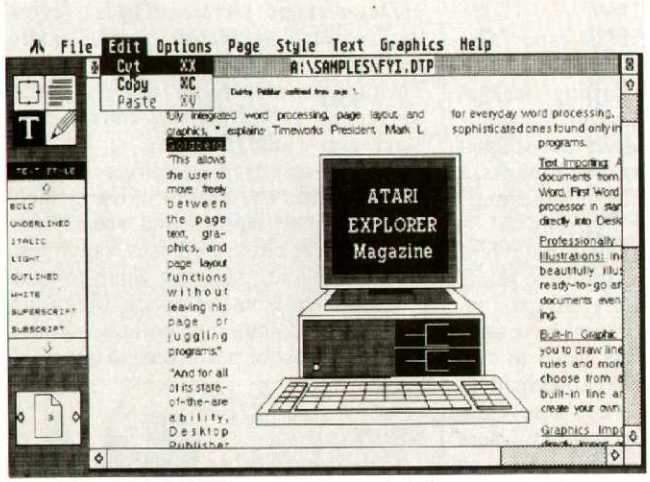
Even 300 dpi images can be scaled, cropped, and edited from within the program.



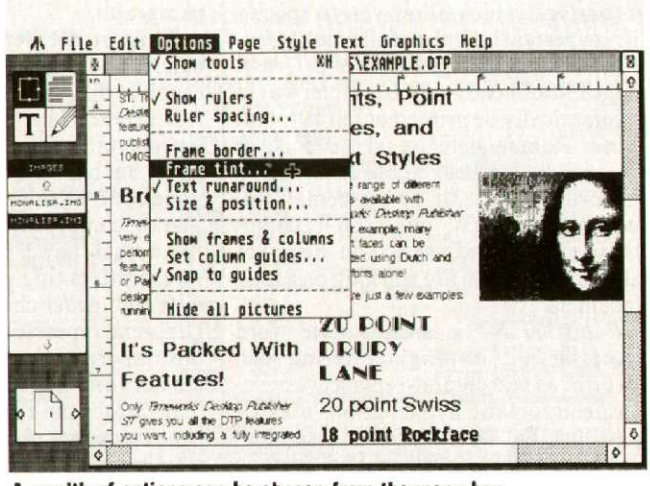
Help screens are available at all times.



Powerful drawing tools are available in the built-in toolbox.



Automatic type-fitting gives a professional look.



A wealth of options can be chosen from the menu bar.

familiar to do most of the work.

Perhaps the key criterion on which desktop publishing software should be judged is its ability to handle text. You will be pleased, therefore, to learn that *Publisher ST* offers many text-handling features heretofore unavailable to ST users.

The first step in writing or importing text is to create a text *frame* using the T tool in the tool box. You can then enter the text or import it directly from your favorite word processor. Should your file length exceed the size of your frame, you can link two or more text frames simply by clicking on the filename in the special library list located on the left side of the screen. This library metaphor is also used for importing graphic files and selecting or changing paragraph formats on the fly.

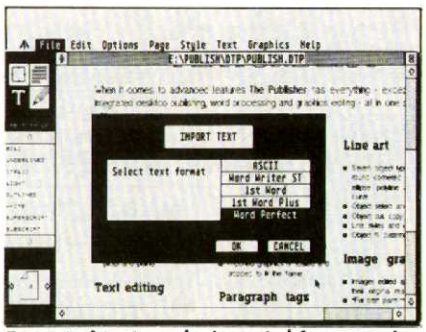
After your text has been loaded into these linked frames, you can alter, move, or re-size them as you wish. And because your original file is left untouched, you can feel free to experiment.

Publisher ST can import not only standard ASCII files but formatted text files from *Word Writer ST*, *1st Word*, and *Word Perfect*, retaining boldface, italic, and other typestyle notations for printout. Tabs, leading, and most other formatting, however, vanish in transition—a problem that exists even in the high-priced IBM and Mac packages.

Also worth noting is the fact that *Publisher ST* is sold as *Publish It* for the IBM PC and compatibles. The user interfaces for both versions are identical, and the files produced are completely compatible.

As you prepare your text with your word processor, you can insert *paragraph tags*, which allow you to specify the typestyle of the following text. When imported to *Publisher ST*, text tagged <subhead>, for example, would automatically be printed out in 10-point Times Roman bold or whatever style you choose for your subheads. This is the sort of feature that may seem inconsequential at first, but soon becomes indispensable and saves you hours of editing time if you are working on a long document.

Publisher ST is an adequate word processor in its own right, offering such features as search-and-replace; very accurate automatic hyphenation (uses algorithms, but does not offer an exception dictionary); headers and footers; powerful decimal tabs; a dialog box for specifying margins, the amount of space above each paragraph, and custom hanging indents and "outdents"; and a powerful Paragraph Style dialog box that allows you to specify justification format, whether hyphenation and letter spacing will be used, and even what sort of *bullet* symbol (if any) will begin a paragraph.



Formatted text can be imported from popular word processors.

Publisher ST

System: Atari ST

Version reviewed: 1.0

Required equipment: 1040ST with dual drives and monochrome monitor recommended.

Copy protection: None

Summary: An exceptionally capable program for professional desktop publishing.

Price: $129.95

Manufacturer:
Timeworks
444 Lake Cook Rd.
Deerfield,IL 60015
(312) 948-9200

This bullet feature is especially handy and makes this popular—and usually difficult—formatting task a real breeze. The "bullet font," including not only the standard dot-shaped bullet but ballot squares, check marks, a telephone symbol and other small shapes, comes with the program.

Another powerful typographic feature worth noting is the ability to select different *leader* characters and spacing. High-end typesetting systems have used this important feature for years to create dots and underscores called leaders that "lead" the reader's eye across the page from one column to another. Users who regularly print menus or other price lists will really appreciate this feature.

Publisher ST also supports soft hyphens, required spaces between characters, automatic conversion of the standard unisex quotation marks used by word processors to the open- and close-quotes used in typesetting, and adjustable horizontal spacing measured in *ems*.

And while we're on the subject of printing terms, *Publisher ST* measures your pages in standard ems, ens, points, picas, and other increments used by printers and typesetters. In fact, you have a choice of popular units, including inches, picas and points, and centimeters from the Ruler Spacing option.

The use of standard typographic terms not only adds credibility but affords an opportunity for the novice to learn the language of the professional. Once he understands it, for example, even the novice will appreciate the simplicity of the decimal-based pica sytem.

Creating columns is easily handled in *Publisher ST* by a special Set Column Guides dialog box. Up to nine columns can be created with your choice of margin and gutter settings.

Publisher ST also includes a feature known as *attribute recall*, which allows the program to remember the text characteristics you have chosen for a given document, making editing smooth and easy.

Graphics

One of the most important and useful features of *Publisher ST* is its ability to load .GEM files created with object-oriented programs such as *Easy-Draw*. Once the image is loaded, you can change the overall size and shape of it, but you cannot select or edit the objects of which it is composed.

Degas-type paint images—even those scanned at 300 dpi—can be modified to your heart's content, however. The program also does a fantastic job of converting low-res color images into black-and-white .IMG files.

Object-oriented graphics can be drawn within the program, using such tools as lines, square and round-cornered boxes, circles, ellipses, polylines, and "freehand." Handy Snap-to-grid and Send-to-front or -back functions are provided, but conventional object grouping must be performed in a special way.

Printing

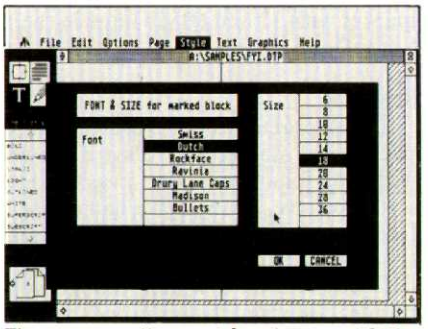
Unlike some other GDOS programs, *Publisher ST* prints directly from within the program, using supplied GDOS

drivers and fonts for popular NEC, Atari, and 9- and 24-pin Epson compatible printers. Most of the popular laser printers, including the Atari SLM804, the HP DeskJet, and the HP LaserJet and compatibles, are supported.

Best of all, *Publisher ST* supports the Postscript page description language. You cannot save a Postscript file to disk (an update that will allow it is in the works), but you can output a Postscript file directly to any Postscript printer, including 2500 dpi Linotronic typesetters. The program also takes advantage of all the fonts available in the new LaserWriter Plus, though Postscript screen fonts are generic.

Although *Publisher ST* can make use of Postscript fonts as small as 6 points and as large as 99 points and send files to a Postscript printer for superb quality output, if you do not have a Postscript-compatible printer, you are limited to the standard GDOS bit-mapped fonts.

While the overall output quality of GDOS is as good as output from Postscript, Postscript currently uses scalable fonts conveniently stored in ROM



The program offers a wide selection of GDOS fonts.

chips inside the printer. The burden of intelligence is, thus, cast upon the printer rather than the computer.

GDOS relies on memory- and disk-hogging bit-mapped fonts, which allow faster printing but exact a high price in terms of memory and storage space. A new version of GEM using Bitstream scalable fonts and "Postscript clone software" may soon eliminate this drawback for both the IBM and Atari and allow users of non-Postscript printers to enjoy the same high quality output previously available only on Postscript printers.

Conclusions

Surprisingly, with the exception of incomplete Postscript compatibility, I found no drawbacks worthy of mention.

In addition to the basics, *Publisher ST* offers an impressive array of useful professional features, including automatic text wrap around rectangular objects; a large selection of professional-looking GDOS fonts; such advanced typesetting functions as manual kerning, variable word spacing, and adjustable leading; document size limited only by your storage medium; and precision alignment of page elements to within $1/100$".

From the slick, automated installation set-up to the printout of an 85-page newsletter, *Publisher ST* is one of the best programs I have used on the Atari ST. *Publisher ST* is a first class, no-nonsense package that will be enhanced even further by the additional fonts, graphics, and ready-to-use style sheets that Timeworks has announced. ■

A deluxe, high-capacity hard disk drive with some nice features

SupraDrive 60

By JOHN JAINSCHIGG

There was a time when the 800K capacity of a double-sided ST drive seemed almost excessive. Like many of our readers, I cut my teeth on a 96K Atari 810 and for a long while figured that if I could keep a project's worth of files on the same disk as my application, I was in mass-storage heaven (no disk-swapping!).

But times have changed. With numerous magazine articles to write each month, databases to keep, and programming projects to manage, I have become accustomed to the advantages a hard disk can bestow: speed of data retrieval, enormous storage capacity, and the convenience (and attendant vulnerability) of having everything in one place.

The drives I have been using, naturally enough, have been Atari SH204s and MegaFiles—standard, 20Mb units. And to be honest, even with all the text-oriented work I have to do as *Explorer* technical editor, I have never even come close to filling one up. Granted, I have what might be called "good hard disk habits," and maintain a clean system in which old files are regularly archived and erased. Still, it's hard to believe that I would ever really need more than 20Mb on-line.

Well, maybe. Actually, if we were running a BBS on one of our systems, or if we were producing *Explorer* via Atari desktop publishing and had to store large quantities of bit-image and page-makeup files, or if we were maintaining our subscriber list on one of the office ST systems . . . hmmm, 20Mb might be consumed in no time. Indeed, in the shadow of truly massive professional applications, 20Mb starts to seem downright meager.

With more and more ultra-high-capacity applications software becoming available for the ST every day and more and more people, as a result, beginning to use their STs for work that transcends the normal limits of "personal productivity," it appears that there is a market for super-size hard disks. The innovators at Supra Corporation have elected to explore the potential of this market with 30 and 60Mb units in their SupraDrive series.

Unpacking

The SupraDrive 60 we received came packed in a standard cardboard carton with soft foam protective inserts—too soft, I believe, as the drive had slipped free of one of its moorings while in transit. This would be worrisome enough with a 20Mb unit, which, though still fragile, is marginally less prone to damage than a higher-capacity, multiplatter system. But this was a 60Mb unit—top of the line—and, ironically, Supra's documentation reminded us how vulnerable to shock damage a hard disk can be: "A sudden jar, or drop, can send the disk head skipping across the disk media, causing permanent damage."

It was not without some trepidation, therefore, that I unpacked the system, detached my SH204, and replaced it with the Supra. Happily, my fears for the integrity of the drive were unfounded. The Supra powered up without incident, and since it comes preformatted and with an autoboot utility installed, I was able to test-boot the unit immediately and (whew!) without difficulty.

The SupraDrive comes clad in a handsome, grey steel enclosure, about 14″×6¾″×3½″ in size—slightly long-

SupraDrive 60

System: Atari ST

Summary: Deluxe, high-capacity hard disk with nice features, nice software, and a bug.

Price: $1195

Manufacturer:
Supra Corporation
1133 Commercial Way
Albany, OR 97321
(503) 967-9075 (orders)
(503) 967-9081 (tech. support)

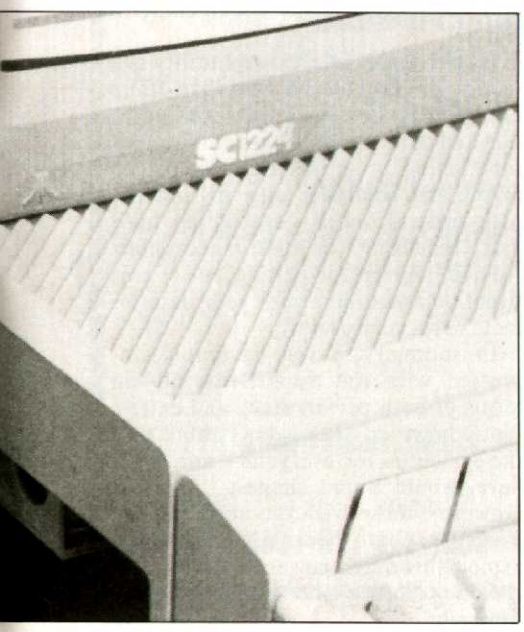
er, narrower, and higher than an SH204. The front and rear of the enclosure are slotted for ventilation.

In addition to the vents and the Supra logo, the front of the case bears a green power light—always on when the drive is powered up—and a red "busy" light that flashes intermittently when the drive is actually transferring data.

The power light is a rather nice touch, though strictly speaking, unnecessary, since the Supra makes enough noise to keep you aware of its presence. The noise itself is a high-pitched whine, caused (one imagines) partly by the cooling fan and partly by the drive motors, and may change somewhat from unit to unit, because Supra seems to integrate several brands of drive hardware in their systems (mine was a Seagate). It is ignorable, but more noticeable than the lower-pitched breathing of an SH204.

The rear of the case sports a power switch, power cord connector, 19-pin DMA (Direct Memory Access) pass-through connector for daisy-chaining additional DMA peripherals, 25-pin SCSI (Small Computer Systems Interface—"scuzzy") pass-through connector for chaining SCSI devices, and an integral DMA cable for hooking the drive to your ST.

I rather like integrated cables on peripherals, because they eliminate one jiggle-prone connector. However, were it not for the fact that ST DMA cables cannot exceed a certain length, I might have wished for a little more slack—the supplied cable is only about 22" long and would be difficult to extend.



The 19-pin DMA pass-through connector, which allows for the chaining of other DMA peripherals, is a minimum requirement on a hard disk unit of this size. I presume that anyone who would purchase a 60Mb SupraDrive would already own a smaller-capacity hard drive (and would wish to chain it with the Supra), or would intend to use the Supra to support large-scale applications requiring the ability to chain other DMA peripherals—scanners, for example.

For the purposes of this review, I was looking forward to moving the entire contents of my SH204 onto the Supra by chained connection in preparation for a long-term evaluation of the unit. I had recently engineered a full drive-to-drive copy in the process of bringing a new Atari MegaFile unit on-line and anticipated no problems.

Unfortunately, though I futzed with the connection for some time, I was unable to make it work. Puzzled, I called Supra Technical Support, who politely informed me that the problem was not with my technique but with the drive. Apparently, the PAL (Programmable Array Logic) chip incorporated to run the DMA pass-through connector is dysfunctional.

After explaining the problem, the technician offered to send me a replacement chip and installation instructions by return mail—which service they are offering to all their customers who have purchased drives with substandard chips. Fair enough, but it is inconvenient to be forced to wait for such an expensive piece of hardware to be brought up to spec and still more inconvenient to have to install chips by hand. Non-technically-inclined users may not even wish to attempt such a task, which carries with it the possibility of damaging the drive or controller circuitry.

The SupraDrive in Use

The SupraDrive 60 comes preformatted, partitioned into four 15Mb virtual drives—C, D, E, and F. Autoboot code is written into the root sector of drive C, letting you "plug 'n' play" the drive out of the package, without a separate boot floppy in drive A.

For users unfamiliar with hard disk operations, the preformatting and autoboot are particularly convenient, though not insignificant even for advanced users, since formatting a 60Mb drive can take as long as an hour.

If you prefer to reformat, repartition, and reconfigure the drive to suit your own specifications, you can do so conveniently with three utilities: SUPUTL, a general utility package; SUPFMT, a formatter; and SUPEDIT, a configuration editor.

The disk utilities that come with the SupraDrive are of exceptionally high quality.

These programs are supplied on floppy disk (along with many others) and have thoughtfully been copied onto the hard disk itself prior to shipping. This is significant, because the utilities disk included with the drive has been formatted in non-standard fashion, and—though the files on it are not copy-protected (the fact that they are designed to work with a $1195 hard disk is sufficient copy-protection)—they can be copied only one at a time.

Unable to move my normal working environment directly to the Supra, I did the next best thing by copying my main application folders to a series of floppy disks, re-attaching the Supra, and copying them back onto the new drive. That done, the only further requisite was to arrange the desktop to suit my fancy (blue background color, keyclick off, files shown as text, virtual drives arranged in column), save a new DESKTOP.INF file to the Supra, and make sure everything was in order in the \AUTO folder. Most users will not have to do much more than this to customize the out-of-package drive.

My initial subjective impression, confirmed by benchmarks run later, was that the SupraDrive was marginally faster than my SH204 in all operations except those that related directly to drive size. The difference in speed was hardly noticeable when the drives contained comparable amounts of data and diminished as the Supra filled up.

This is to be expected. The more information a drive contains, the more

performance tends to degrade—particularly as files become fragmented. Indeed, TOS itself is partly responsible for this slowdown; its FAT (File Allocation Table) search algorithm is not exceptionally efficient.

System Utilities

The disk utilities that come with the SupraDrive are of exceptionally high quality. They are correspondingly . . . not *difficult* to use . . . but somewhat intimidating. Supra makes its drive systems out of OEM components from a wide variety of manufacturers. Its utilities, therefore, contain an incredibly broad range of options pertaining to different types of hardware.

Moreover, the utilities seem to be designed to manage anything and everything up to multidrive (controllers used in Supra's 30Mb and 60Mb drives can control a second hard disk unit), SCSI-interfaced, daisy-chained systems such as you might find in a professional software development house. I imagine that they are little different from software used internally by Supra technicians.

	Time (seconds)
SupraDrive 60	34:00
Atari SH204	41:00

Figure 1. Timing benchmark. 24 files, partition-to-partition.

Nevertheless, the programs are well-designed, and even novices will find it fairly simple to use them with defaults in a non-destructive way. The exception to this rule is the program SUPEDIT, a multipurpose utility that can be used to edit disk sectors directly and "soft configure" the disk controller. In the hands of a very savvy user, SUPEDIT can be an exceptionally powerful tool. In the hands of a novice . . . well, the fact that you have to click on a button that says "I take full responsibility" before the program will permit access to its functions tells the story, short and sweet.

The SUPFMT formatting utility is probably the first thing you will employ in reconfiguring the drive. SUPFMT is capable of formatting with a wide variety of controller and disk types and permits individual editing of controller and disk specs to permit formatting of unsupported and upgraded devices. Needless to say, if you know how to use functions like this, their purposes will be apparent. If not, the manual warns, stick with the defaults!

The partition editor of SUPFMT is a fairly elegant GEM construct that permits the creation of up to 12 partitions and can be made to recalculate available space as partition sizes are assigned. The program permits zeroing and repartitioning (a fairly quick process) or formatting and repartitioning (a very slow process) in a single pass.

The other program that may occasionally be used, even by the novice, is SUPUTL—a general utility that permits zeroing of individual directories, mapping and lockout of bad sectors over the whole disk (possibly destructive) or over unused portions only, and enabling/disabling the hard disk autoboot capability. Use of the program is very straightforward.

Additional utilities provided with the drive include the standard PARK utility for landing the drive heads as a precaution against damage while moving or shipping the drive, and a pair of programs to read and set the system time from the onboard, battery-backed real-time clock. The second of these programs, SUPCLKRD, sets the system time automatically on bootup if you include the program in your \AUTO folder.

A section on Troubleshooting offers hints on how to recover from configuration and other errors.

Benchmarks

The benchmark shown in Figure 1 was set up to provide some indication of the performance of the SupraDrive in common disk operations. To establish a baseline for comparison with standard-size drives, the tests were also performed on a newly-formatted, standard SH204 bearing the same data load as the Supra—about 5Mb of files in a variety of directories.

The benchmark itself is a multifile, partition-to-partition copy operation involving 24 files and 4 folders—a total of 510,156 bytes of data. The copy was set up as a macro under the Mark Williams MicroShell. The macro also handles timing to eliminate variation due to human error.

As noted above, the Supra performs marginally more quickly than the SH204 under similar loading and fragmentation conditions. It is difficult to predict how much the performance of the Supra can be expected to degrade under much heavier loading or conditions of excessive file fragmentation.

Documentation

The documentation that comes with the SupraDrive details the entire process of system setup and use in a clear, well-organized fashion appropriate for the novice. Of particular importance are the chapters on using Supra's fairly complex utility suite—though these contain insufficient information for custom installations in the absence of documentation specific to the hardware you are using.

Notes on the DMA pass-through, device chaining, and similar topics, are fairly meager. Even were the DMA connector to function normally, it would, for example, be difficult to chain an SH204 to the Supra without further documentation on Logical Unit Numbers, etc. However, I have found Supra's Technical Support division to be both accessible and very helpful in such matters, and perhaps they are depending on direct contact to satisfy the experts and keep in-box documentation simple.

Of particular interest and utility is a section on Troubleshooting that offers hints on how to recover from configuration and other errors. For example, malfunctioning programs casually placed in the \AUTO folder may disrupt the boot process on an autobooting hard disk, rendering the disk inaccessible. Advice is given for getting out of this situation and others with your data intact. Very, very useful!

In summary, I was favorably impressed with the SupraDrive 60—in terms of both performance and extras. Note, however, that I don't think that the system is for everyone—nor, I believe, would Supra suggest that it is. However, those with the need and the expertise (not to mention the money) to exploit this much power in a hard disk should consider the SupraDrive 60 carefully. ■

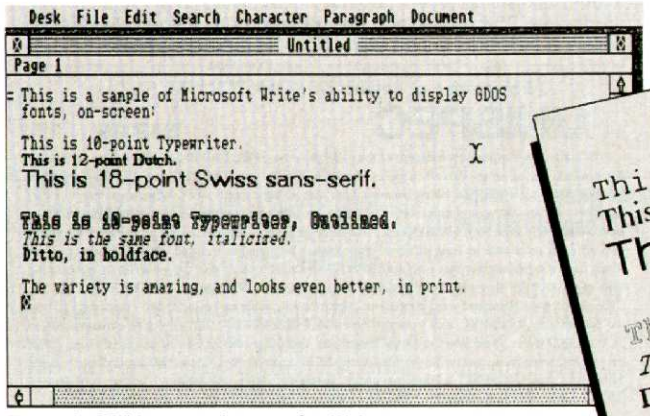


Figure 1. GDOS screen fonts under Write.

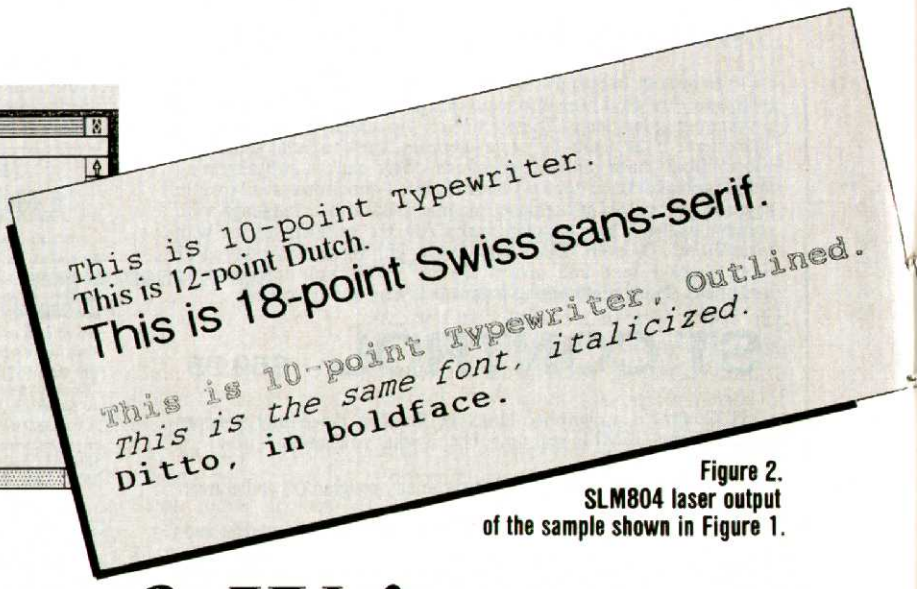


Figure 2. SLM804 laser output of the sample shown in Figure 1.

Microsoft Write

A full-featured, heavy-duty personal word processor

I can admit it, now . . . I found the name alone intimidating. Microsoft—the word reverberates with the ethos of "big-money personal computing," a virtual synonym for "productivity" in the IBM- and Apple-dominated business world. How could these guys produce a word processor, I wondered, that wasn't feature-laden, overwhelming?

That it would be a fit tool for the production of sniping memoranda, blustering business letters, oleaginous press releases, coercive reports, and slanted presentations—in short, for all manner of Babbitry—I was sure, but what of the gentler literary arts, such as writing reviews of word processors?

Heck, yes. Microsoft *Write*, the new ST word processing program from Microsoft and Atari Corp., might well call itself "Microsoft Lite." With all the taste and half the calories (read "learning curve") that appertain to most Microsoft products, *Write* can be unhesitatingly recommended as a fit tool for both "real" writers and those who view written communication as a necessary evil.

Basically, it has all the features you would expect to find in a wipeout document processor (minus spelling correction). Yes, it does multicolumn justification, decimal tabs, fonts, archived formats, and other nifty stuff. But if you don't want to deal with all that nifty stuff, *Write* hides it well enough so that you don't feel guilty. The program performs as a heavy-duty text processor without complaint or censure.

Installation

I recently spent the better part of an afternoon installing a copy of Microsoft C 5.0 on an IBM PC (for my ex-girlfriend, okay? Geez . . . you people should know me better than that, by now.) It was ludicrous—eight distribution disks, zillions of coy questions to answer (Save temporary files in C:\C5\LIB\TMP (Y/N)?), disks whirring and spinning as afternoon faded into dusk—and eventually, I, too,

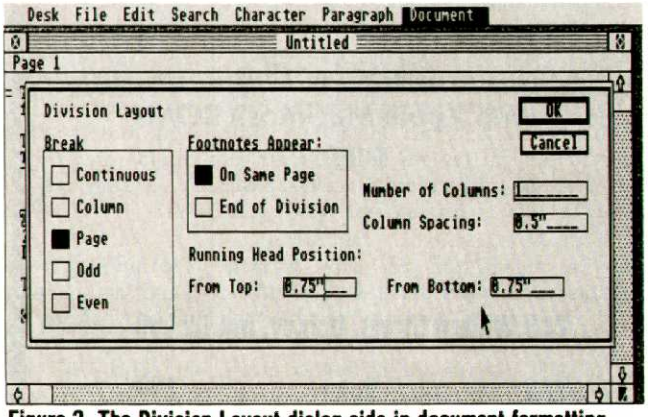


Figure 3. The Division Layout dialog aids in document formatting.

By JOHN JAINSCHIGG

faded. So, when I received a Microsoft product from Atari, I was prepared for the worst.

The fact that the *Write* package contains four distribution disks did little to allay my fears. Examination, however, revealed that the word processor itself occupies only one floppy. The other three disks contain GDOS material that empowers you and the ST to use all manner of luscious fonts for display and printing.

If you don't need fonts (many writers don't), you can use *Write* without GDOS, reducing the installation procedure to a matter of copying six files (the word processor itself, its resource file, a memorandum file, an initialization profile, a file of help screens, and the appropriate .PRD (printer description) file for your printer) to your hard disk or to a working floppy.

GDOS installation is somewhat more complex, as it involves modifications to your boot environment (i.e., adding things to your \AUTO folder); some choosing of fonts, screen resolutions, and device drivers; and other decision-making. GDOS is, after all, an entire graphic operating system that brings the already-capable ST up to trans-Macintosh specs, and one assumes that such a thing will be challenging to install.

Yet even that is not true. A utility supplied with GDOS simplifies the task of basic installation, and a separate GDOS manual supplied with the package details what you can do to customize the GDOS system to your special requirements (this involves primarily selecting only those fonts and drivers that will be used with your system configuration.

Microsoft Write

System: Atari ST

Version reviewed: 1.0

Copy protection: None

Summary: Full-featured, heavy-duty personal word processor with a variety of nice features

Price: $129.95

Manufacturer:
Atari Corp.
P.O. Box 61657
Sunnyvale, CA 94088
(408) 745-2000

Basic Text Entry

Basic text processing with *Write* could almost not be simpler. On loading the program, you are presented with a title screen, replaced swiftly by an UNTITLED document in its own window. All features of the ST window system are exploited; the window can be moved, resized, and closed in the usual manner, and its contents can be shifted with standard scroll bars.

The window status line normally identifies the current document page, but other messages (for example, a document character count following save operations), are periodically displayed there.

The end-of-text position is clearly marked with a diamond block, the current insertion point with a flashing vertical line, and the mouse cursor with either an "I-beam" (a cursor form optimized for working with text, which was popularized by the Macintosh) or an arrow, depending on whether it rests over the document window or another screen element.

The mouse cursor is visible except when you are actually typing. In fact, it pops in and out of view (unless you are typing quite quickly) and flickers unnervingly when visible. While some users may find an almost-always-visible mouse cursor reassuring, I find that it distracts my attention from the point at which text is actually being inserted in my document.

The end-of-text marker shares this slightly disconcerting tendency to pop in and out of view, but only when you are entering text at the very end of the document.

The actual business of entering text is straightforward. As with most standard word processors, you type, the text appears, the cursor advances, and wrap-around occurs automatically at the ends of lines. *Write* permits you to show or hide hard spaces and paragraph-end symbols at any time—an aid to formatting certain types of document.

A type-ahead buffer is supported, but the program is quick enough to keep up with even the fastest typists without imposing a visual lag between the moment the key is hit and the moment the character appears on the screen. This is particularly true when you are using the word processor without GDOS (i.e., in system-font-only mode); however, even with GDOS fonts onscreen (and the additional computing overhead that font-handling implies), there is no real speed problem. The only peculiar thing about text-entry is that *Write* seems to redisplay the line you are currently typing

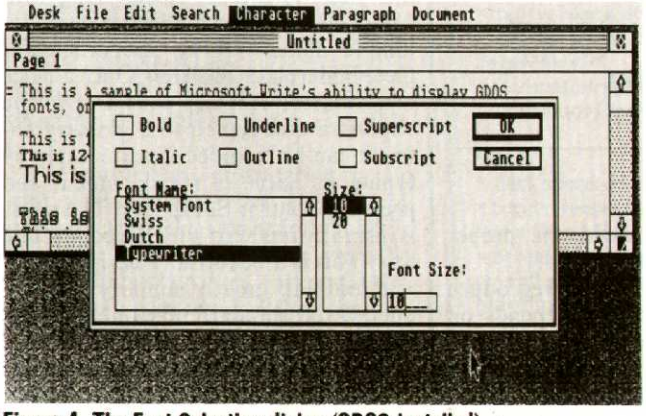


Figure 4. The Font Selection dialog (GDOS installed).

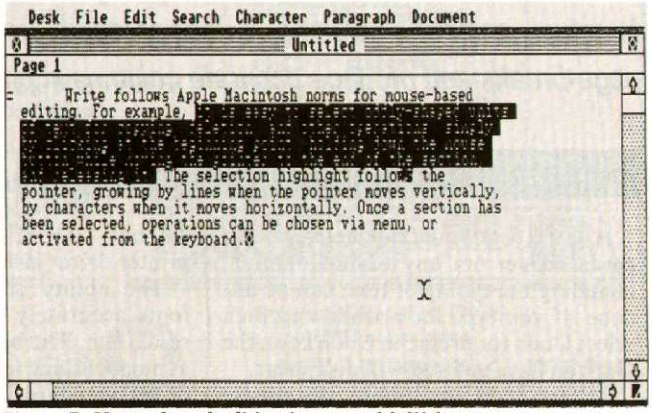


Figure 5. Mouse-based editing is easy with Write.

at odd intervals.

As with most mouse-based word processors, the mechanism for cutting and pasting text involves selecting (highlighting) text with the mouse prior to performing the desired operation. Many first-generation ST word processors, *1st Word* among them, did not efficiently support text selection in units smaller than one whole line. *Write* has eliminated that problem; text can be selected easily on even a single-character level, and a portion of text that begins and ends at mid-line (e.g., a typical sentence falling in the middle of a paragraph) can be selected with as much ease as a line or paragraph.

Actually, I lie. By moving the mouse cursor to the left edge of a line and clicking once, you can select that line in a single gesture. Two clicks, and the current paragraph is selected, regardless of where the mouse cursor rests in the margin of that paragraph.

Once you have selected text, the usual cut, copy, and paste functions can be executed, either by clicking on items in the Edit menu or by keyboard command. Most of the editing functions of *Write* can be accessed either by mouse or by keyboard. Handy shorthand routes for deleting, overstriking, and copying text have also been implemented following Macintosh norms.

For example, to delete a selected block, you need only press the Backspace key. To delete text and replace it, you simply select and start typing—the selected block disappears, and the new text is inserted in its place.

A smart Undo function helps you recover from errors; any atomic function, including the typing of text, can be undone. If you type for a while and then select Undo (or press the Undo key), the text you have entered will disappear.

Larger-scale and more systematic changes can be carried out with a brace of sophisticated search-and-replace functions whose scope and behavior are conveniently specified by mouse. A Go To function, also in this set, can be used to jump to specific pages in a document.

All this makes for a very comfortable text-entry-and-editing environment. A few criticisms, however, are in order. For one thing *Write*, in true Mac style, fails to implement the normal function of the ST Delete key, meaning that you cannot conveniently delete single characters or words to the right of the text-entry cursor without either using the mouse or moving forward in the document (using the arrow keys) and backspacing over the offending letter(s).

For another, when you shift from text-entry to mouse, things seem to take a moment or two to "engage." Repeated mouse operations, however, are not slowed in this manner.

Not-So-Basic Text Entry

Write permits font sizes and styles to be mixed freely on a character-by-character basis. This is naturally more satisfying when a full complement of GDOS fonts for your current resolution is installed, but even when *Write* is being used without GDOS, the system font can be sized to produce a variety of effects within a document (the catch: you can't print out an accurate rendition of that document until you have installed GDOS).

Font selection and sizing is straightforward—performed by mouse via sophisticated dialog box. In addition to sizing, all the normal text attributes of the ST—italic, underline, bold, superscript, etc.—are available and will reproduce correctly on a printer even without GDOS, provided the proper printer driver is available.

The ability of *Write* to reproduce fonts accurately onscreen depends on resolution. The best display is achieved at monochrome resolution, though most of the standard typewriter-style fonts, in intermediate sizes, are adequately represented even at medium res.

Document formatting is performed on the paragraph (actually, the line) level via a dialog box that allows you to specify left and right indents, outdents, spacing, justification, and ruler settings. All measurements are in inches, though centimeters and points can also be selected. There seem to be a few intermittent graphic bugs in this dialog, but nothing serious.

Larger-scale formatting is carried out by document division, a division being a group of paragraphs, columns, or pages that have the same layout. The dialog for setting this up is very straightforward. While *Write* will not display columnar text in actual, onscreen columns (it displays multicolumn text as one long, narrow document division), it does preserve proper line- and page-breaks and produce accurate columns in printing.

All format changes are instantly reflected in the document, at their proper scope, and a Display as Printed option can be engaged to give an even closer approximation of the final appearance of the document, though this slows down display operation somewhat. Naturally, this function makes a visible difference in the display only when GDOS is installed.

Write offers full facilities for controlling the appearance and position of formal document features such as page numbers, running headers and footers, and footnotes. Footnotes are treated as mini-documents tied to references in the main document and can be of any length.

Advanced Features

Write saves text removed from a document via the Cut function in a separate window called the Clipboard. In combination with the Glossary—a table that includes the patches saved along with complete formatting information under unique names—*Write* supports complete boilerplate insertion. Once a piece of formatted text has been Cut to the clipboard and copied to a glossary entry, it can be included in text simply by typing its name in the document and pressing Control-Backspace. The name is instantly replaced with the boilerplate text. This is a beautifully-designed system and will greatly simplify the production of standard documents, contracts, and forms.

Write also supports a complete facility for generating form letters. To employ this feature, you create two documents—a print document, which is essentially a generic form letter with variable and conditional expressions in-

While Write will not display columnar text in actual, onscreen columns, it does preserve proper line- and page-breaks and produce accurate columns in printing.

serted in place of things such as name, address, and other information, and a merge document, which contains the various data items you want to substitute into each form letter or document. Though not, perhaps, quite the thing for preparation of very large-scale mailings, the system is easy and convenient to use, and the variety of commands and conditional expressions that can be inserted in merge documents is extensive and powerful.

As a whole, the Print Merge functions of *Write* compare favorably with popular, first-generation database/WP systems such as DEC's WP-8 system.

Printing

As noted above, the printing of simple documents is easy when using *Write* without GDOS. *Write* comes with drivers (.PRD files, or printer descriptions) for most available printers, including the Atari SLM804 laser. Once one of these .PRD files is selected, the proper pitch, baud rate (for serial printers), and port can be named using the Printer Setup dialog from the File menu, and page size and margins can be specified.

Using *Write* for graphics printing under GDOS is somewhat more complicated. The GDOS program itself, plus the proper printer driver and appropriate fonts must be set up for automatic installation on boot-up (this is done using the INSTALL utility that comes on the GDOS distribution disk).

Also included in the *Write* package are two disks containing drivers and fonts for two popular printers, the Star Micronics NB15 and the Epson FX-80 (compatible with the Atari SMM804). Note that while the Atari SLM804 laser printer—an Atari product—comes with appropriate software (GDOS, a driver, and fonts), and can hence be used for graphic printing under *Write*, owners of other printers will have to contact Atari Customer Service for information on font and driver availability.

Beyond the basic information that to print a document under GDOS you must select Graphics Print from the File menu, the *Write* manual offers virtually no information on how to use GDOS functions in printing. Neither does the supplied GDOS manual do more than advise you to seek application-related information in the documentation of the application that interests you. If you want to use GDOS fonts with *Write*, you are left in a quandary, the only answer to which is trial and error backed by calls to Atari customer service.

Initial confusion aside, however, using *Write* with GDOS installed isn't all that difficult. As long as corresponding screen and printer fonts are available under your GDOS installation, what you see onscreen will be (with minor distortion) what you get on your printer, at least insofar as we were able to determine with various simple tests, using an Atari SLM804 laser printer as output device. Using the Display as Printed option can help you judge the appearance of output prior to actual printing.

Documentation

In general, the quality of the *Write* documentation is excellent, except for the truly sub-standard portions relating to graphics printing under GDOS. The manual, which is some 206 pages long and looseleaf-bound, contains a full tutorial and program reference, and is copiously illustrated.

All in all, Microsoft *Write* is a powerful, flexible, and genuinely easy-to-use word processor appropriate for business, professional, and academic writing. ■

***Most of the editing functions of Write** can be accessed either by mouse or keyboard. Handy shorthand routes for deleting, overstriking, and copying text have also been implemented following Macintosh norms.*

Software Survey

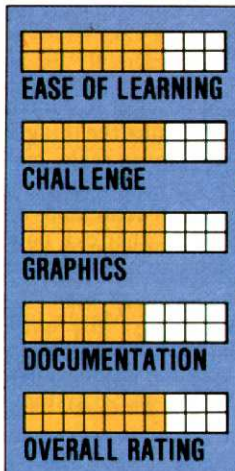
A wide variety of new games and utilities to add to your holiday gift list

Captain Blood

As you sit in a starship of your own creation, watching the psychedelic final explosion of a hostile race's planet, you wonder if the information supplied to you by the belligerent life forms will help you find your way out of this nightmare.

This is only one of many disconcerting situations in which you will find yourself when you play *Captain Blood*. Not since *Dungeon Master* have I seen a game that does such a good job of combining realtime playability and spectacular graphics in a package that will keep you glued to your ST for hours.

You assume the role of a programmer, known only by the pseudonym Captain Blood, who has been drawn into his own action adventure game. During the transition you have been split into five clones, which have drawn off most of your body's vital fluids, thereby limiting the time you have to find them and extract the juices that will allow you to remain in human form. To find the clones, you must communicate with life forms on the planets of the galaxy Hydra, which number 32,768.



System: Atari ST
Required equipment: Color monitor
Copy protection: Yes
Summary: Multi-screen action with appealing graphics adventure
Price: $44.95
Manufacturer:
Three-Sixty Pacific
2105 S. Bascom Ave.
Suite 290
Campbell, CA 95008
(408) 879-9144

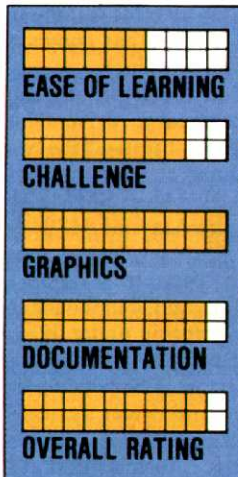
You initiate contact at the first planet, which is always inhabited, by guiding an OORXX creature to the surface of the planet. Once you locate an alien, you see and hear through the OORXX, which links the alien sounds to your on-

Dark Castle

The multi-screen action adventure is an enduring device in computer gaming, and Silicon Beach Software's *Dark Castle* brings a solid representative of this genre to the Atari ST. Bursting with cute visual touches and amusing characters, *Dark Castle* encompasses a range of running, jumping, climbing, and shooting (or, in this case, throwing) contests as you explore the vast interior of an electronic fortress.

The program opens at the options screen, which features game settings and a non-volatile scoreboard along with a drawing of the castle. You select one of three difficulty levels, then click on Play to start the action. The drawbridge on the castle lowers and the program advances to The Great Hall. Here you enter through one of four large, oaken doors.

Each portal leads to a separate series of single-screen action games in which you must collect bonus objects while either avoiding or disabling the gallery of spooks that haunts this impossibly large castle. You are armed with an unlimited supply of rocks, which can be used to slow down the army of zombies,



System: Atari ST
Required equipment: Color monitor
Copy protection: Yes
Summary: Spectacular graphics and realtime suspense embellish a programmer's nightmare
Price: $49.95
Manufacturer:
Mindscape
3444 Dundee Rd.
Northbrook, IL 60062
(312) 480-7667

vampires, and other ghouls that inhabits *Dark Castle*.

All games use a straight profile perspective, which gives the screen a flat, two-dimensional appearance. You aim the rocks by positioning your charac-

board translator, where you must decipher them.

Many of the alien races must be bribed or threatened before they will part with the information you require. A creature that is unable to provide information will probably give you the coordinates of one or more populated planets, to which you must warp to obtain more information.

Warping to a planet is as easy as consulting your galaxy map, selecting the coordinates given, and engaging the warp engines, which catapault you through space. During your warp, your senses of time and space are distorted, and the accompanying graphic display depicts this distortion spectacularly.

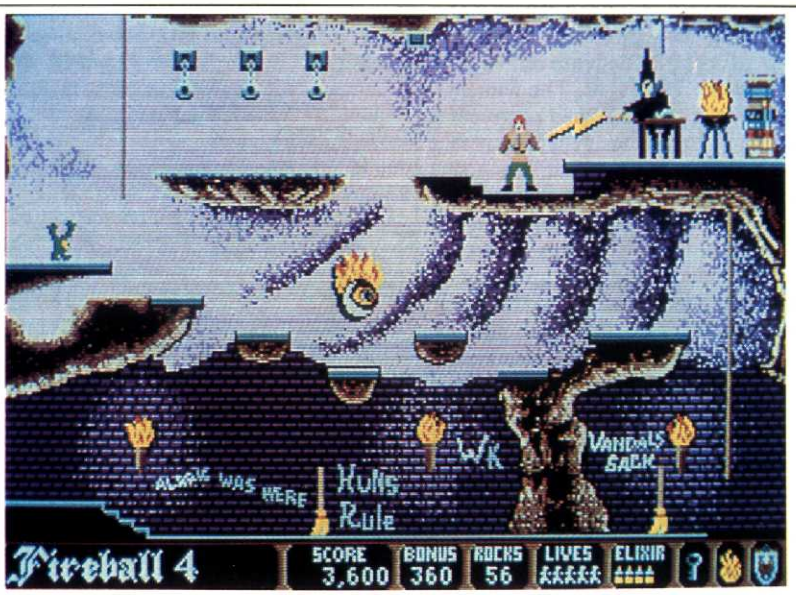
The galaxy map is only one of many aids available on the bridge of your ship. There is also a geo-photo vision device, which lets you examine the surface of the nearest planet. If the creatures on that planet are uncooperative, you can dispose of the planet by activating planet-destruct. The Fridgitorium, which transports and disintegrates things, can also be operated from the control panel.

If you manage to find all five clones, you are given the coordinates of Torka, an Ondoyante female who is looking for a hacker warrior to keep her company. After that, all that's left is to find your way out of the game.

Captain Blood, with its excellent graphics and marvelous digitized sound effects (the title song is outstanding and rivals that of *Starglider*), is a marvelous piece of programming. The detail is impressive; for example, each alien race has its own personality and communication techniques.

The intriguing storyline, dazzling graphics, and overall addictiveness of this adventure make *Captain Blood* a must-have for serious ST gamers.

— Lawrence Welch



ter's arm (using either mouse or joystick) so that the fist points directly at the target.

The main weakness of *Dark Castle* is a somewhat confusing play system. The player-character's left-right and up-down movements, ducking, jumping, and taking a running jump, along with commands for picking up objects and aiming the rocks, are all jammed into the one-button Atari joystick. A combination of keyboard and mouse would have been more desirable and easier to master. Worse, your character doesn't respond to control commands with the precision necessary for a game as difficult as this.

The visuals make *Dark Castle* worth playing, however. Different game sequences explore a variety of styles, but the most unforgettable scene is the torture chamber with its offbeat synthesis of Victorian gaslight and medieval Inquisition.

The character animations draw on sources as diverse as Stoker's *Dracula* and L. Frank Baum's *The Wizard of Oz*. Vampires bats, zombies, and winged monkeys are among the more interesting denizens of this fright-filled fortress.

The bats flutter, the zombies shamble, and the airborne apes swoop, each with its own distinctive mannerisms and movements. Your character, too, has an interesting repertoire of animations. When you direct him off a platform into thin air, for example, he doesn't immediately fall. Instead, he pauses a second in mid-air, then in a sequence taken from countless cartoons, looks down and realizes he isn't standing on anything. At this point he drops like a stone. Fortunately, short falls don't kill this hardy adventurer, though he does stumble and sway for a few seconds, as you try to regain control.

While not the blockbuster it was two years ago when it was released for the Macintosh, *Dark Castle* is still an amusing and worthwhile piece of entertainment software for the ST.

— Bill Kunkel

Scruples


EASE OF LEARNING


CHALLENGE


GRAPHICS


DOCUMENTATION


OVERALL RATING

System: Atari ST

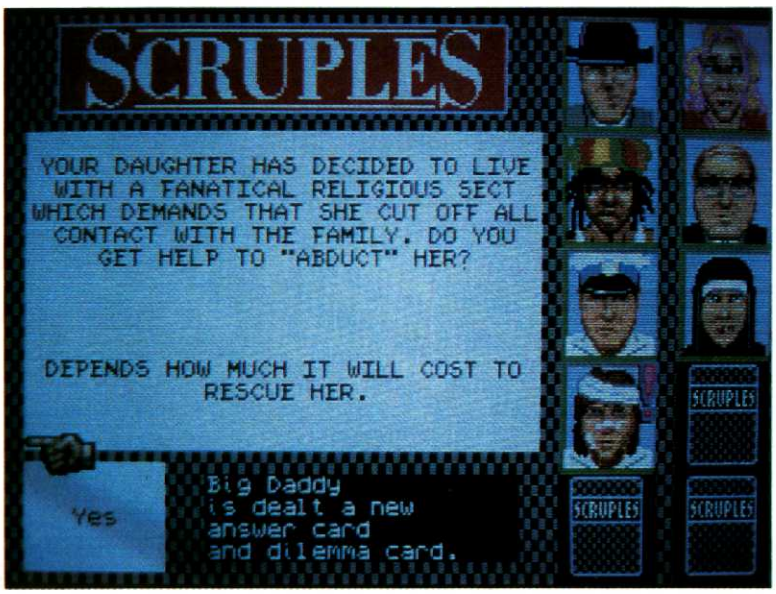
Required equipment: Color monitor recommended

Copy protection: Yes

Summary: Faithful rendition of the board game with some new twists

Price: $39.95

Distributor:
Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
(800) 245-4525



A *Question of Scruples* is a computerized version of the popular Milton Bradley board game that comes to us somewhat indirectly. The program was written by Sentient Software and sold to Leisure Games, a division of Virgin Games, and is now distributed in the U.S. by Electronic Arts.

Scruples allows you to play with up to nine other human or computer players chosen from a group of 64 characters. Each pre-programmed character has his own personality and animated face, which is displayed on the screen during game play. Each has 12 distinctive personality traits, such as personal integrity, trust, greed, and shyness, which influence his respones to the social and moral dilemmas presented.

Whether you play alone or with friends, I recommend playing with at least one computer player and with an odd number of players to eliminate the possibility of ties on challenge.

When you load the game, you must first adjust 12 sliding bars to represent your own personality traits. This is repeated for each human player. You then select computer players by pointing to faces on a stylized film strip. You are then shown—extremely briefly—the personality traits of that character. For example, the nun has all highly positive traits; the gangster displays mostly negative traits; the starlet is friendly but insincere; the businessman is honest but greedy.

When the players have been selected, each is dealt an answer card (yes, no, or depends) and several dilemma cards. The object of the game is to get rid of all the dilemma cards in your hand.

On your turn, you select a dilemma question from the cards in your hand to ask to another player whose answer you believe will match the answer card in your hand. If the actual answer and your answer card match, you get to discard both dilemma card and answer card, and you draw a new answer card.

Players are then given the opportunity to challenge the answer with one of the remaining two answers. After a challenge, all the players vote on which player (answer) they favor. The winner of a challenge is then allowed to give a dilemma card to the loser. Thus, it is risky to challenge an answer unless you are convinced the vote will go your way.

At the conclusion of the game, the original personality histogram of each player is displayed along with an updated histogram developed from the answers of that player during game play.

With its database of 230 dilemma cards, the computer version is totally faithful to the board game, right down to the deplorable grammar. Frankly, I cringe when I read a question like this one:

"Your friend has a scheme that he/she thinks will make a fortune. You think it will bomb. Are you honest about your feelings?

"Yes they can afford it.

"Yes I wouldn't want then to put their energy into something that wouldn't work.

"Yes I would tell them why."

Obviously, the writer knows that the correct third person singular pronoun is he or she. Why then did he/she resort to the incorrect plural form in the answers?

Aside from this annoyingly consistent grammatical error, the game is exceptionally well executed. The animation of the players' faces is amusing; the mouse interface works in an intuitive way; computer players are reasonably faithful to their personalities but use bluff and counterbluff just enough to keep the game intriguing and competitive; and, best of all, the game really does force you to think about your principles, integrity, and interpersonal relationships.

—David H. Ahl

"Oh, oh, looks like the computer is overloaded again."

Bubble Ghost

EASE OF LEARNING

CHALLENGE

GRAPHICS

DOCUMENTATION

OVERALL RATING

System: Atari ST

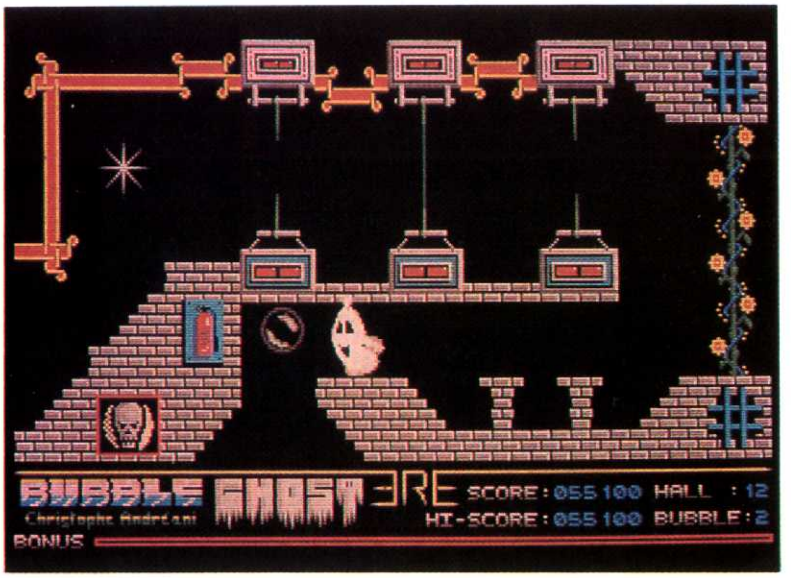
Required equipment: Color monitor

Copy protection: Yes

Summary: Multi-screen action/strategy game with cute visuals

Price: $34.95

Manufacturer:
Accolade
550 S. Winchester Blvd.
Suite 200
San Jose, CA 95128
(408) 296-8400



Bubble Ghost is certainly not the first game based on the idea of moving a sphere through an elaborate series of mazes. *Marble Madness* from Electronic Arts and *Airball* from MichTron have both explored this theme on the Atari ST within the past year. But while those games took a realistic approach to the theme, with pseudo-3D graphics and complicated control systems, Infogrames' *Bubble Ghost* eschews realism in favor of simple, two-dimensional whimsy.

For one thing, you don't control the sphere or bubble directly but, instead, guide an intermediary—an indestructible little windbag of a ghost who can go anywhere on the playfield.

The Shift key makes the little spook exhale, blowing the bubble in the desired direction. The longer Shift is depressed, the longer the pint-sized spirit blows, until he eventually runs out of breath and turns a lovely shade of blue. Similarly, the closer the ghost is to the bubble, the greater the force of the exhale.

The extremely flimsy bubble, meanwhile, bursts on contact with any onscreen object except the spook, and there are plenty of onscreen objects for it to collide with, most of them very sharp. These obstacles often involve strategic and puzzle-solving elements (the ghost must blow out a candle, for example, in two of the rooms).

The program includes a welcome practice feature, which lets you summon any of the 35 playscreens in order to work out strategies and tactics.

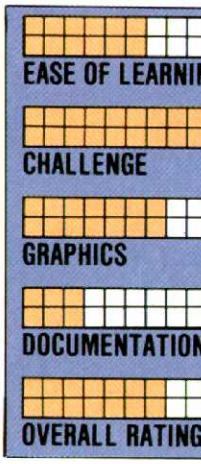
What makes *Bubble Ghost* fun, however, is not just its play mechanic or the number of screens or how easy it is to play. The game's style—its ambiance—is just as important.

Bubble Ghost was created by Infogrames, a French design and programming house which has several other titles headed toward the U.S.A. this year (including *Captain Blood*).

These French artists have brought a poetic and artistic sensibility to their creations that makes even their less original ideas seem somehow fresh and exciting. Although there is nothing particularly innovative about its concept or execution, *Bubble Ghost* is an endearing game from a major creative force.

—Bill Kunkel

Rockford



System: Atari ST

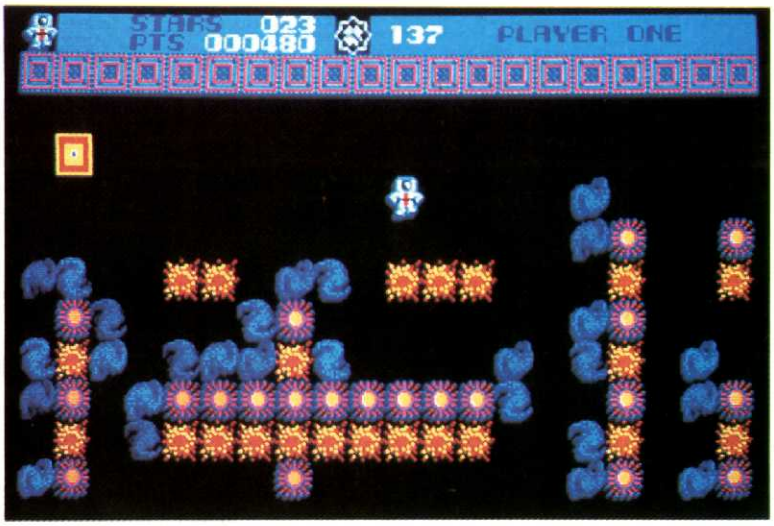
Required equipment: Color monitor

Copy protection: Yes

Summary: A new face for an old favorite

Price: $29.99

Distributor:
Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
(415) 571-7171

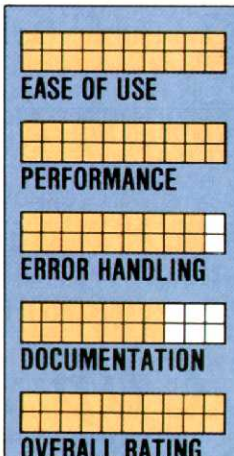


Veteran Atari owners will undoubtedly remember a game by First Star Software called *Boulder Dash*, which was later bundled with a set of new levels and sold as *Super Boulder Dash*. It was a climb-and-find race against the clock in which your character, Rockford, had to acquire a specific number of diamonds before the timer ran out or he got stomped by one of the many bad guys lurking about.

Rockford, the latest incarnation of *Boulder Dash*, offers enhanced graphics and some changes in the basic premise, all the while maintaining its original challenge.

This time around, you can cast Rockford in one of five occupations—doctor, cowboy, spaceman, cook, or hunter. As in the original, each scenario challenges you to collect a certain quantity of an

Universal Item Selector II



System: Atari ST

Version reviewed: 2.0

Copy protection: None

Summary: Replacement file selector that adds desktop functions (and more) to applications

Price: $19.95

Manufacturer:
Application & Design Software
226 NW F St.
Grants Pass, OR 97526
(503) 476-0071

Universal Item Selector v.1, which we reviewed in the May/June '88 issue, offered a wide range of desktop functions: copy, move, rename, delete, lock and unlock, status inquiry, disk formatting, etc., plus pushbutton drive selection. These OS functions could be accessed either at load/save junctures, when an application offered the modified file selector in lieu of the GEM standard, or via a desk accessory at other times. The program quickly became a hit.

Now, *Universal Item Selector II* is here and even more powerful. When installed, the *UIS* seals the vectors for the AES file selector, forcing itself to be called automatically when applications use the AES function fsel_input( ) to put a file selector on the screen. The substitution is apparently seamless, and applications don't seem to know the difference.

To permit access to the *UIS* from within GEM applications that don't employ standard file selectors, the publisher includes an accessory program, CALLFSEL.ACC, which lets you access the *UIS* from the Desk menu. There is no way to access the program from a TOS-only application.

As a replacement file selector, *UIS II* functions even better than version 1. Volume (i.e., floppy drive or hard disk partition) selection via pushbutton (instead of by pathname editing) is the centerpiece and really makes life easier.

UIS I provided a narrow scrolling display of volume selector buttons, which was a nifty effect. The new version, however, is more intelligent; it polls the system and provides a fixed pushbutton for each active drive or volume.

Four default filename masks, including *.PAS (for Pascal programs), *.DOC (for document files), *.ASM (for assembler files), and *.ASC (for ASCII files), can be appended to the pathname with a single click. An editor program, also supplied on the distribution disk, can (among many other things) be used to alter the default masks to conform to your own file-naming habits. The combination of pushbutton volume and mask selection can virtually eliminate hand-editing of fields in file selection.

Whenever *UIS* is onscreen, whether placed there by an application in the course of a file-selection procedure or brought up manually by means of the Item Selector accessory, it places a variety of desktop functions at your disposal. Most of these functions can be used (and perform differently) on volumes, folders, files, and groups of files.

These last can be assembled by "lassoing" groups of files within the active window (as on the desktop), or by using the Shift key and the mouse to select non-contiguous files in groups. Moreover, unlike the desktop and most GEM applications, the *UIS* lets you select

item, while avoiding a related adversary. The cowboy, for example, must pick up coins and faces danger from gliding six-shooters and rolling wagon trains.

Like *Dig Dug*, *Rockford*, rather than confining you to a fixed maze, allows you to carve your own path through the surroundings, being careful not to let anything drop on your head. Unfortunately, moving from one part of the maze to another precipitates an annoying jumping of the screen—not at all the sort of thing we have come to expect in today's advanced games.

The animation of the characters is amusing throughout. For example, if you let too much time elapse without moving Rockford, he starts tapping his toe impatiently. Given the demands of gameplay, you will have a hard time appreciating most of these nuances though; you will be too busy.

It is hard to classify *Rockford* as just an arcade game, because its puzzles make it something of an adventure game. In that sense, you'll be better off if you map out the best route to take, so you can improve your scores from session to session.

The learning curve is steep, because the documentation doesn't tell you all you need to know about the creatures and implements you come across. Nor did the writer of the tiny instruction book feel bound by the normal rules of English punctuation and style, as the following "sentence" demonstrates: "Among the many valleys that lie between the high peaks of the Himalayas between the oriental kingdoms of India and China, many are renown for the fabled qualities of life, however although it is perhaps more splendid than other more famous, the name of the valley of Li'tsi'pai has been forgotten."

Over the years computer gamers have lauded *Boulder Dash* for its outstanding play quality. That legacy continues, modified only slightly, in *Rockford*. If you like high-quality arcade games and adventures, this is one package you will definitely want for your software library.

—Andy Eddy

files within the current window, then scroll the window and select more files without deselecting the originals. Great stuff!

The ? button in the upper right-hand corner of the file window is for status inquiries. If clicked on directly, information on the current drive or volume is displayed in a dialog. If a single folder name is dragged to it, information about that folder is displayed in similar fashion.

Dragging a single filename to the ? button causes information about that file to be displayed in a more complex dialog that lets you rename the file, alter its protections, and even TOUCH it, à la Unix, altering its time-date stamp to match the current clock.

In similar fashion, folders and files can be selected and dragged to the Move, Copy, Rename, or Delete buttons, permitting these operations to be carried out.

Other amenities abound. By scrolling the selector window to the right, full data on files is revealed. To format floppy disks, you need only click on button A or B, and then on Format. New folders can be created with the Folder button.

The F button provides a tree-walking search function similar to the Unix Find utility, which accepts a filename or wildcard expression and searches for it starting in the current directory, down through all its child directories, their children, and so on.

The modification utility that comes with *UIS II* can be used to create custom copies of the program with different attributes. Among the modifiable attributes are: disk format (*UIS* is compatible with 9- or 10-sector-per-track, 80 - 82 track-per-side, and Twister formats), quick filename extenders, and sort options for the file window (by name, date, size, or type). *UIS* can be set to show or conceal "hidden" files, and either duplicate the original date stamps on copied files or alter them to reflect the current clock.

UIS II is fully documented in a clearly-written leaflet that accompanies the distribution disk. The disk contains several duplicates of the program and its accessories, as well as a very nifty Shareware RAMdisk/Printer buffer accessory. By the way, the RAMdisk seems to be bug-free, has loads of options, including automatic batch transfer of files during bootup, and is worth a review all by itself.

At 24,106 bytes (plus 740 bytes for the desk accessory), *UIS II* doesn't use enough RAM to justify its exclusion from even the most jam-packed system. It is the closest thing to a must-have ST accessory I have ever seen and would be cheap at twice the price. Buy it.

—John Jainschigg

Speed Buggy

EASE OF LEARNING

CHALLENGE

GRAPHICS

DOCUMENTATION

OVERALL RATING

System: Atari ST

Required equipment: Color monitor

Copy protection: Yes

Summary: An absorbing racing simulation with outstanding graphics

Price: $39.95

Manufacturer:
Data East USA
470 Needles Dr.
San Jose, CA 95112
(408) 286-7080

Speed Buggy puts you in the driver's seat of a sporty dune buggy. You must race it around, over, and through obstacles along one of five courses. As graphically impressive hazards, including fences, boulders, and walls, fly at you, *Speed Buggy* adds a new challenge to racing games for the home computer.

You start out on one of five courses—offroad, north, south, east, or west—each of which has a number of legs. You must beat the clock to finish each leg. A map at the top left shows your progress through the course.

You run over flags and drive though gates to gain points. Some gates give you extra time to finish the next leg of the course.

If you hit a log in the road, your buggy jumps into the air—a phenomenon that comes in handy when you want to sail over a boulder, fence, or tree. Do the same thing to a small rock or tree stump, and your buggy balances on its two side wheels. This is the only way to drive; it saves time and makes it easier to get around obstacles. Running over another small rock or stump flips you onto the opposite set of wheels.

Each course is cluttered with scenery and obstacles appropriate to its location. North has snow and ice, and south has palm trees along the road, for example. Other courses feature street lamps to avoid and curvy bridges and tunnels to navigate at high speed.

The graphics in *Speed Buggy* are virtually identical to those in the original coin-op arcade game. The only difference I noted was the absence of other buggies on the road.

You can drive up on some of the banked walls to avoid obstacles, and when you drive off a road or bridge into water, you disappear in a huge splash. You are returned to the road, but time keeps ticking away. If you hit an obstacle, your buggy flips over. You must then shift down to gain speed and get back into high gear again as quickly as possible.

The controls for *Speed Buggy* are straightforward. You steer your buggy with the joystick or the arrow keys. The fire button or right mouse button is used for shifting high gears. The game is easy to learn, but not so easy to master; it is definitely a challenge to finish a course and win the game.

Speed Buggy comes on a single-sided disk with a simple instruction manual. Scoring is discussed only briefly in the manual, and there is no mention of the bonus points you earn for completing each leg of the course.

Speed Buggy is a challenging and absorbing racing game that boasts graphics that really give you the feeling of being on the race track. I recommend it to arcade racing fans who long to leave the interstate and enjoy the thrill of racing over the back roads in complete safety.

—John Manor

Your assignment as you drop *Into the Eagle's Nest* is to destroy a Nazi fortress single-handedly. This state-of-the-art action game also demands that your alter ego free prisoners and reclaim as much plundered artwork as possible.

Essentially a reworking of the Silas Warner classic, *Castle Wolfenstein* from Muse, *Into the Eagle's Nest* combines arcade-quality graphics with a pulse-pounding storyline to create a cinematic shoot-em-up with strategic overtones.

You are cast as a lone commando who has been parachuted behind enemy lines to infiltrate and destroy the infamous Eagle's Nest, a Nazi stronghold housing six key divisions and a fortune in stolen art treasures. Also there are your predecessors, three commandos who were taken prisoner while unsuccessfully attempting the same mission.

Into the Eagle's Nest employs an overhead perspective with omni-directional scrolling. You can see both the room you occupy and the surrounding area. The Eagle's Nest encompasses four levels with access from one to another by hidden elevators, which you

The fate of the Road Runner is in your hands. Wile E. Coyote has chased the lovable cartoon character onto the Atari ST screen where the Mindscape home edition captures the delightful essence of the recent coin-op release.

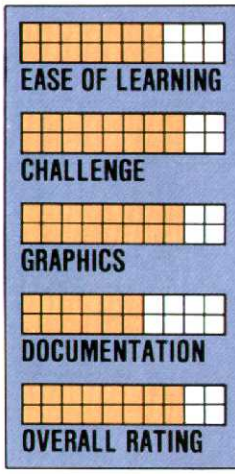
You use the joystick to steer Road Runner along a winding desert trail. As the elusive bird runs across the screen from right to left in a whirl of flying feet, Wile E. Coyote is right behind. If the pesky pursuer catches Road Runner, it costs one of the bird's five lives, and the coyote moves him a short distance back down the road.

As you move Road Runner around on the scrolling playfield, the action button makes him jump to avoid obstacles. The coyote uses a rocket, skateboard, booster jet, and pogo stick in his efforts to close the gap. Other dangers include falling rocks and speeding cars.

A Seed Meter at the top of the screen is a graphic representation of Road Runner's current energy level. As the number of seeds decreases, the bird becomes weaker. When all five are gone, Road Runner faints and becomes easy prey for his long-time antagonist.

You must help the Road Runner pick up the seeds lying on the trail to maintain his energy level. Each one missed is

Into the Eagle's Nest



System: Atari ST

Required equipment: Color monitor; joystick

Copy protection: Yes

Summary: Action/strategy game with solid arcade-style graphics

Price: $39.95

Manufacturer:
Mindscape
3444 Dundee Rd.
Northbrook, Il 60062
(312) 480-7667

must find before you can change levels.

Each level contains its own mini-objective: you must rescue one prisoner on level two, two prisoners on level three, and three prisoners on level four. You must also find and activate hidden caches of explosives on each floor to blow up the castle.

As you travel through the castle you encounter Nazi soldiers, drunken officers (if you have qualms about shooting sleeping enemies this is not the game for you), the keys to unlock metal doors (the wooden ones can be simply shot open), and chests which may contain treasure or deadly explosives. There are also first aid kits, cold food, and ammo dumps. Hit points, ammunition, and keys are displayed onscreen, and extra points are earned by collecting art treasures.

Into the Eagle's Nest offers two difficulty settings (in the difficult version it requires two shots to kill a Nazi) and two castles of varying challenge.

Eagle's Nest is a satisfying blend of all-out action and subtle strategy that should keep arcade fans, adventurers, and war buffs entertained for weeks.

— Bill Kunkel

subtracted from the Seed Meter. On the other hand, if you scoop up all the seeds on a level, you earn 10,000-points.

Any computer game about a cartoon superstar invites comparison of its graphics with the original artwork. Although there is still room for improvement, Road Runner evokes its inspiration with deft animation and excellent illustrations. The quarry and the hunter look, move, and act just as they do in the Warner Brothers cartoons.

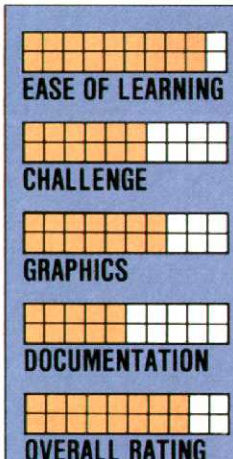
The audio is adequate, though uninspired. A digitally synthesized "beep! beep!" would have been icing on the cake.

Road Runner is not an especially difficult game to learn or to play. The experience of being the Road Runner is the focus, although there are plenty of physical challenges. Dodging Wile E. Coyote when he is riding a rocket, for example, is not a lesson most gamers will master quickly.

Road Runner will probably never be the favorite game of score-conscious action aces. Less intense players—and that means most of us—will find this amusing action game entirely enjoyable.

—Arnie Katz

Road Runner



System: Atari ST

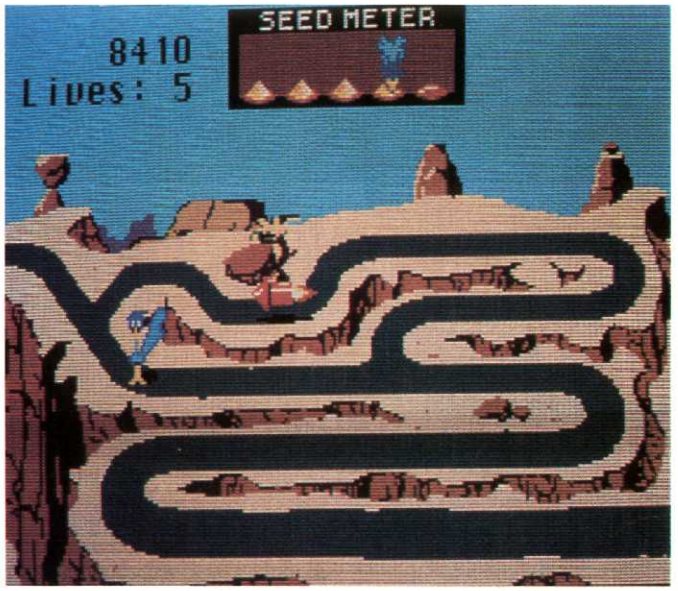
Required equipment: Color monitor; joystick

Copy protection: Yes

Summary: Colorful cartoon action game

Price: $49.95

Manufacturer:
Mindscape
3444 Dundee Rd.
Northbrook, Il 60062
(312) 480-7667



Sub Battle Simulator

EASE OF LEARNING

CHALLENGE

GRAPHICS

DOCUMENTATION

OVERALL RATING

System: Atari ST

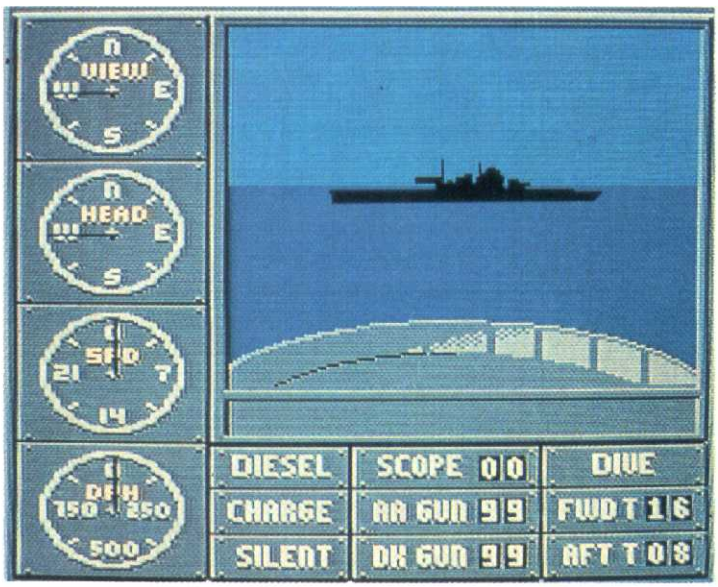
Required equipment: Color monitor

Copy protection: Yes

Summary: Simulation of WWII sub warfare; fun to play, not easy to learn

Price: $45.95

Manufacturer:
Epyx
600 Galveston Dr.
Redwood City, CA 94063
(415) 366-0606



Epyx, long noted for sports simulations and arcade games has ventured out to sea with *Sub Battle Simulator*.

The program comes on a single-sided disk with an instruction book and reference card. When you start the game, you are in practice mode, looking at a control screen for the sub and a view through the periscope. You can choose to play a regular mission or a wartime command, which is a string of missions played throughout the length of the war.

The missions begin at the start of the war and include such challenges as intercepting and destroying an invasion force, rescuing downed pilots, and putting a landing party ashore. There are four difficulty levels.

In a standard single mission you

choose either the German (Japanese in the Pacific theater) or American side and the year in which the mission will be carried out. (Different sub designs, which are described in the manual, were used in different years.)

Before you set off on a mission, it is a good idea to spend some time practicing. In practice mode, you see in your periscope an enemy convoy, including aircraft carrier and destroyer escorts and freighters and tankers. You must sneak up on them and deliver crippling blows with your torpedoes and deck gun. Your Target Data Computer tells you what type of ship is in your view.

If you choose a real mission, you must first navigate from your home port to the target area. Levels 1 and 2 provide you with a navigator to get you there, a feature that saves you from the chore of navigating by your longitude and latitude readouts. A map helps you direct the course of your sub. A time compression mode speeds up the game during long voyages to your patrol area.

As you carry out missions, you will use supplies, and your sub will undoubtedly suffer some damage. The Status Readout display shows the status of all the systems on your sub and the amount of time it will take to fix them. If the damage to your sub is severe, the crew may suggest that you abandon ship. In a wartime command game, if you performed well in the mission, you may be picked up and given another ship.

The graphics in *Sub Battle Simulator*, while they fail to take full advantage of the superior graphic capabilities of the ST, are generally good. The ships you see when in battle, for example, seem to be lacking something.

One of the best things about *Sub Battle Simulator* is the way you can control the game with your mouse. You move the cursor to one of four gauges to change the speed, direction, depth, or view of the sub. Clicking on labeled sections of the control panel causes your ship to crash dive, surface, run silent, raise or lower the periscope, zoom in on ships in your view, and fire your torpedoes (fore and aft), deck gun, or anti-aircraft guns. Commands can also be entered from the keyboard.

Though *Sub Battle Simulator* appears similar to the earlier *Silent Service*, Epyx has put a lot more detail and depth of play into this game. The manual offers 32 pages of instructions, historical background on the subs used in the game, and four appendices.

Sub Battle Simulator is not an easy game to learn, but I had a lot of fun playing it. If you have a craving to play U-boat captain or to re-live "Run Silent, Run Deep," then this is the game for you. ***—John S. Manor***

Computer Scrabble

EASE OF LEARNING

CHALLENGE

GRAPHICS

DOCUMENTATION

OVERALL RATING

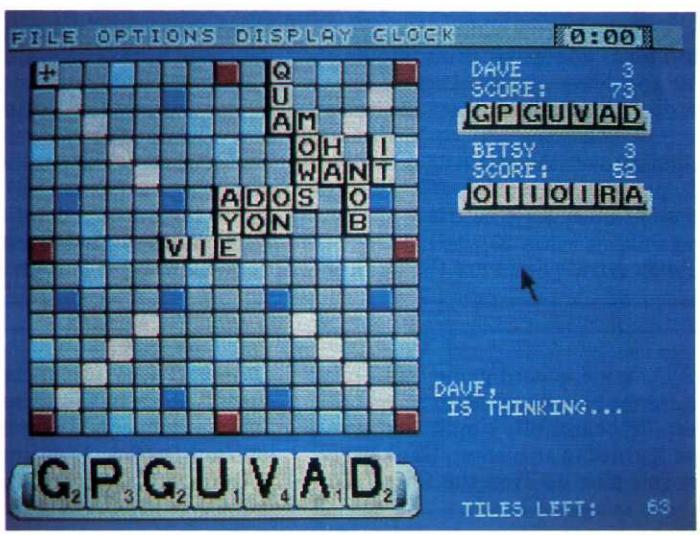
System: Atari ST

Copy protection: Yes

Summary: A high-quality conversion of the popular board game

Price: $39.95

Distributor:
Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
(415) 571-7171



As a kid, I used to play Scrabble for hours with my family and friends. Now British-based Leisure Genius has brought the popular word game to the ST, where up to four players (any of which can be controlled by the computer) can compete.

In the highly improbable event that you are unfamiliar with the game, let me explain that the Scrabble game board is a 15 × 15 playing grid, and each of 100 letter tiles is assigned a point value. Using seven letters you have chosen at random, you must spell words on the board, connecting new words to the existing words from previous plays. Your score for a given play consists of the point values of the letters you used multiplied by any special values—such as Double Word or Triple Letter—assigned to the squares on which the word was placed.

When it comes to computer vs. human, it is obvious that the software has only to scan its 23,000-word database for the highest scoring word that can be made with its seven letters. So to even things up a bit, *Computer Scrabble* allows you to select from among eight levels of play. Another way to increase the competition is to have a timer clock all moves.

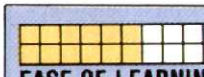
Thankfully, the computer handles the housekeeping. You simply type in the word you want to play, and the program asks where on the board you want to place it and whether it will run horizontally or vertically. If the word you use is not in the database, the computer will challenge your play, and you are on your honor to give a correct response.

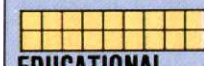
The only limitation of the computerized game is lack of space on the board in which to specify the premiums offered by the special squares. You must rely on a selection from the Options menu to convert the symbols on the board into meaningful bonuses.

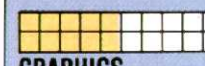
Other similar aids—even one that provides a hint when you're stuck—can be pulled down from the menu bar. The documentation yields all the information you need to play, as well as some rules of which you may not be aware.

Scrabble is a familiar and entertaining game, but it is also educational. With shoot-'em-ups and adventures in high demand, it's nice to find a game that challenges your brain power and offers you a good time. ***—Andy Eddy***

Space Math


EASE OF LEARNING


EDUCATIONAL CONTENT


GRAPHICS


DOCUMENTATION


OVERALL RATING

System: Atari ST

Required equipment: Color monitor

Copy protection: None

Age range: 8 and up

Summary: Challenging arcade game motivates arithmetic practice

Price: $14.95

Manufacturer:
Intracorp, Inc.
14160 S.W. 139th Ct.
Miami, FL 33186
(800) 468-7226

Arithmetic practice may never make anyone's list of top ten favorite activities, but *Space Math* turns unpopular drills into an almost appealing project. It provides an arcade-style challenge so engrossing that the mathematical task becomes secondary, yet the student gains valuable practice with all four arithmetic functions every time he tries to master the game.

Educational games are the weak sisters of the entertainment software business. The meat of the lessons must outweigh the game elements, so fun is often restricted by the constraints of learning. Arcade-style educational games, in particular, suffer when compared with non-educational entertainment programs. The need to fit the pace to the abilities of young learners and slow readers makes high-skill action titles rare.

There have been some notable exceptions. Most typing programs, for example, utilize elements of the entertaining invasion game to motivate kids to practice their speed drills. *Timebound* was the most artistically successful arcade-style educational game developed by Children's Television Workshop Software Group for CBS Software. Few children realized it was a history tutor, they were so busy simulating time travel.

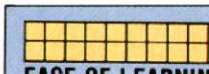
Coco Notes, also from CBS Software, let kids joystick-fish for notes to

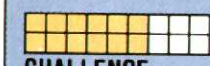
Crazy 8, a card game that everyone has played at some point, is so beautifully simple that it can be re-learned in an instant. Rank beginners can pick up even the finer points within a couple of hands.

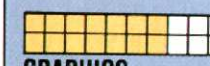
Once out of junior high, however, most card players have some difficulty finding opponents. Long-time Atari enthusiast Patrick Dell'Era and XLent Software have teamed up to solve that problem with *Cross-Town Crazy 8*, a card game program that not only provides up to three electronic opponents but also offers a telecommunications option for Crazy 8 fans who want to play by modem.

The object of Crazy 8 is to be the first

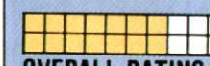
Cross-Town Crazy 8


EASE OF LEARNING


CHALLENGE


GRAPHICS


DOCUMENTATION


OVERALL RATING

System: Atari 8-bit and ST

Version reviewed: 3.00

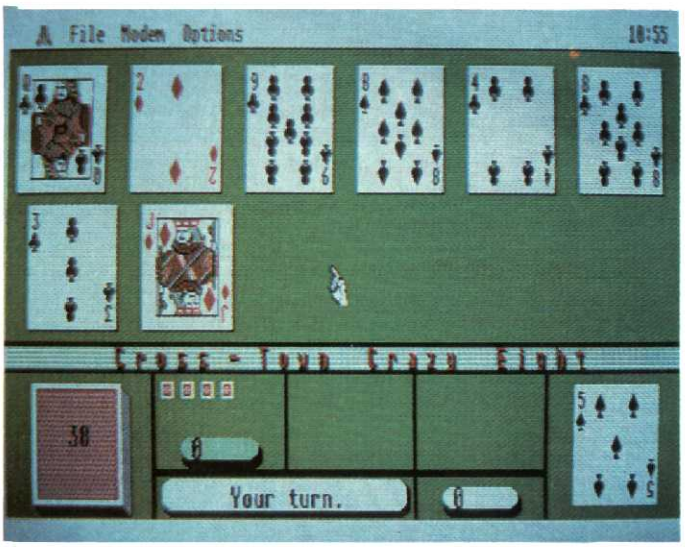
Required equipment: Joystick (8-bit systems only); modem optional

Copy protection: Limited

Summary: Computer version of the classic card game with telecommunications built in

Price: $19.95

Manufacturer:
XLent Software
P.O. Box 5228
Springfield, VA 22150
(703) 569-8881



compose tunes. The arcade game concept allowed kids to explore musical styles and rhythm patterns. Tom Snyder's award-winning program, *Agent USA*, taught geography and time management in a highly unusual program that still entertains as well as it educates.

Mathematics practice is frequently assigned to arcade-style contests. Programmers have used variations of the invasion game, jumping-and-climbing scenarios, fishing contests, and even construction-site hijinks to drill students on math. CBS Software even used a road rally simulation format in the early 1980's for *Math Mileage*.

These few exceptional programs notwithstanding, the high-speed activity associated with arcade-style gaming generally takes a backseat to the youngster's need to ponder his answers.

Space Math gives kids a chance to drill and practice the four arithmetic functions while enjoying traditional arcade-style entertainment. This game, however, doesn't even attempt to simulate high-speed thrills. Instead, *Space Math* bases the entertainment on the Lunar Lander game that was an arcade standard in the late 70's and early 80's.

Young mathematicians earn points by moving a space capsule through the sky, avoiding obstacles, and setting it down on a landing pad. The lander moves left, right, or upward in response to correct solutions to problems that appear in the Left, Right, and Thrust problem windows.

It definitely does take parental help to get young students started, primarily because the option menu is so varied. There are 27 possible difficulty levels, which can incorporate any combination of easy, medium, or hard math problems, hazards, and lander control. Additionally, users can select any of the four math functions or drill on a combination of all four problem types.

There are eight levels, each with its own landing pad design and mixture of obstacles and hazards. On the early screens, a couple of UFOs must be avoided along with terrain obstacles. Upper levels introduce more difficult pad designs and other flying hazards, such as meteors, black holes, laser beams, moving hooks, and turbulent energy spheres. These are not friendly skies, and any collision, either with other space denizens or with the terrain, causes a crash.

A row of icons across the bottom of the screen provides all the control needed. The control pad arrows choose whether answering a question correctly will move the lander left or right, apply thrust, or stockpile fuel. Thrust slows the lander's descent or causes it to rise slowly toward the top of the screen but burns up fuel supplies, so when the player isn't busy directing the movement of the lander, he must earn fuel points.

Scoring is complex. Landing the ship on a pad without crashing yields points, as does solving problems. Speedy landings earn bonus points, and extra points are granted at the end of each game for fuel on hand. Points are subtracted for crashing, for wrong answers, and for landing with part of the ship off the pad. The number of points awarded or subtracted depends on the difficulty level chosen. The gamer starts with four landers, and the game ends when all four have been destroyed.

The graphics, programmed by Richard Leinecker, are attractive without being spectacular.

Solutions to problems are entered on the keyboard, followed by a touch of the Return key. The arrow keys move a highlight across the screen to choose the problem box. This is the only really awkward part of the game; mouse control would have been more natural.

Space Math is a rarity among educational packages—a game that overcomes its good intent! Although its learning content is excellent—it provides a real workout for adults or children who need to drill on arithmetic—the challenge of landing the space module outweighs the drudgery of learning the lesson. The surprising result may be that kids will actually want to improve their math skills in order to play better.

—Joyce Worley

to get rid of your hand. The dealer distributes five cards to each player and turns up the next card. This up card must be matched by the next player either by number or suit or by playing an 8, the wild card. An 8 not only fulfills the player's obligation, but bestows the right to determine the next suit.

When the first player disposes of all his cards, his opponents must tally their remaining cards and give those points to the winner.

The playscreens on both the XE and ST versions of *Cross-Town Crazy 8* are simple but elegant. Your cards are displayed in the top two-thirds of the screen. The bottom third of the playfield features the deck (numbered 1-40), the face-down cards of the other player(s), scores, a message area, and the up card.

ST graphics are, of course, especially attractive.

The play system is simple. You pick up, then play your cards using onscreen cursors. The screen refreshes quickly, so there is no undue waiting, except for the shuffle (which can be aborted by striking any key) and during those delightful moments when an opponent doesn't have a matching card and is forced to draw . . . and draw . . . and draw.

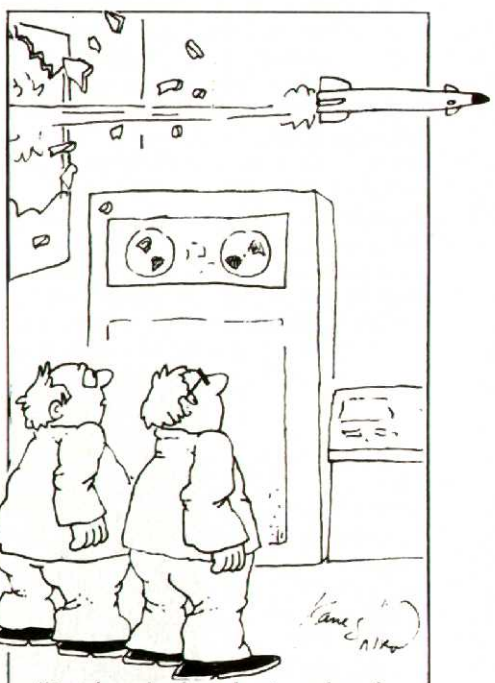
There is even a Fast Pace mode for more experienced players, which moves the game along at a much snappier clip.

The biggest attraction is the possibility of *Cross-Town Crazy 8* serving as the focal point of a world-wide computer network of Crazy 8 aficionados. The telecommunication commands are straightforward, and while we weren't able to test the game in this mode, the system obviously works.

If there is such a potential network of players out there, *Cross-Town Crazy 8* is the game they have been waiting for. It is an excellent job at an astonishingly reasonable price.

The documentation is complete, but because XLent used one booklet for both XE and ST systems, the instructions can be confusing as they jump back and forth from system to system.

—Bill Kunkel



"Lately we've been having a lot of trouble with the computer guidance system."

Topics in C-language programming:
An introduction to GEM resources

Life

By JOHN JAINSCHIGG

Last issue, we covered alert boxes and file selectors—the resources built into GEM. Now we're ready to start examining custom resources—dialogs, menu bars, icons, and windows—all the versatile screen elements that make ST applications so attractive, powerful, and easy to use.

Old-line (i.e., pre-GEM) programmers tended to assume that a user interface that was sophisticated, simple, and foolproof, would be proportionately difficult to design and manage. Under GEM, in fact, the opposite is true. The GEM AES contains numerous functions that simplify management of even the most complex resource systems, reducing the user interface programming effort to a challenging, but hardly grueling, project in design.

What Is a Resource?

The word "resource" is often used promiscuously in GEM programming circles, so let's start by defining it. Strictly speaking, a GEM resource is a data set that defines the appearance of a screen object, such as a dialog box. More generally, however, the term is used to refer to a resource file—a collection of resource data sets that define the appearance of a group of custom-built screen objects used by a program.

Resource files are (usually) created and modified with the help of a utility called a Resource Construction Set. The RCS lets a programmer design resources graphically, then converts these graphics into descriptor data in .RSC file format. The AES function rsrc_load( ) is used to allocate memory and read in an .RSC file, making the resources it contains accessible to a program.

By keeping resource data separate from a program, you avoid having to recompile mainline code each time a small adjustment is made in the user interface. This is obviously convenient during program development, but can be equally important after a program is finished.

For example, a program, the menus and other resources of which contain English text, can swiftly be revised for distribution in Germany by using an RCS to modify the external resource file. Indeed, even individual users familiar with RCS conventions can alter programs in certain ways by modifying resource files, though naturally, this must be done with extreme caution.

GEM Resource Structure

GEM resources are encoded as linked systems of data structures, defining both the visible aspects of the screen objects in question and their relations to each other. Before considering the overall organization of data structures in a resource set, it will be helpful to examine the most basic building blocks of these more complex systems.

The most basic unit of resource construction is called an *object*. GEM recognizes some 13 types of basic object: visible and invisible boxes, icons, bit-images, raw and formatted text, boxed text, editable text, buttons, and so on. Almost every graphic element that you encounter on a GEM screen is either an object or composed of objects.

For example, consider a small dialog box, or GEM *form*, such as might be displayed using a form_alert( ) call (see Figure 1). The dialog consists of a box object that in turn contains three other objects—a text-string object (the instructions), and two button-objects.

Object Structure

Each of these objects is defined by a set of one to several data structures. The centerpiece of the definition of each object is always an OBJECT structure, which defines the type, position, size, and characteristics of the object and its relation to other objects in the overall form (in this case, the dialog box). The OBJECT structure is defined in the header file obdefs.h, as shown in Figure 2.

For the moment, let's leave the first three items, ob_next, ob_head, and ob_tail, aside and look at the remainder of the OBJECT structure.

The ob_type field contains a value indicating the object type, as shown in Figure 3. Mnemonics for each object type, also shown in Figure 3, are defined in obdefs.h.

The ob_flags field contains a bitmap of options (Figure 4) used to determine how this object should be treated on-screen when GEM is called to manage the form containing it. Identifying the object as SELECTABLE, for example, will cause GEM to darken its image when it is selected by the user; a TOUCHEXIT value will cause management of the form to terminate when the object in question is selected.

Certain of these values are often combined in a single object. For example, the CANCEL button of our example dialog might bear the flags SELECTABLE, DEFAULT, and TOUCHEXIT, causing it to darken when selected (SELECTABLE) or when the Return key is pressed (DEFAULT), and terminate GEM management of the form (TOUCHEXIT).

The ob_state field is initialized with a value that determines how the object

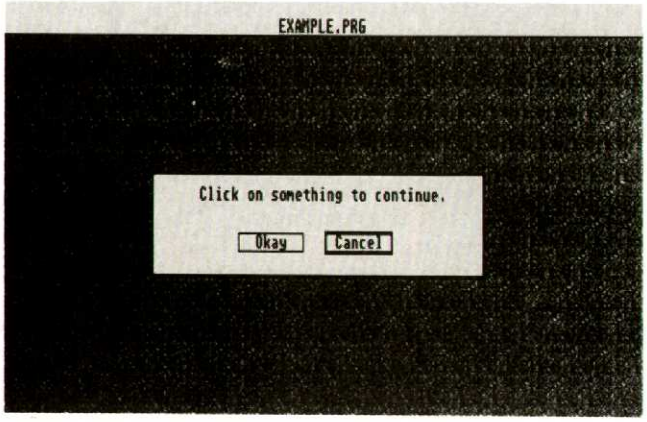


Figure 1.

```
typedef struct object
{
        int             ob_next;        /* -> object's next sibling     */
        int             ob_head;        /* -> head of object's children */
        int             ob_tail;        /* -> tail of object's children */
        unsigned int    ob_type;        /* type of object- BOX, CHAR,...*/
        unsigned int    ob_flags;       /* flags                        */
        unsigned int    ob_state;       /* state- SELECTED, OPEN, ...   */
        unsigned long   ob_spec;        /* "out"- -> anything else      */
        int             ob_x;           /* upper left corner of object  */
        int             ob_y;           /* upper left corner of object  */
        int             ob_width;       /* width of obj                 */
        int             ob_height;      /* height of obj                */
} OBJECT;
```

Figure 2. The OBJECT structure.

Mnemonic	Value	Description
G_BOX	20	Simple rectangle
G_TEXT	21	Formatted text
G_BOXTEXT	22	Boxed formatted text
G_IMAGE	23	Bit image
G_USERDEF	24	User-defined object
G_IBOX	25	Invisible box (used to group objects)
G_BUTTON	26	Labeled button
G_BOXCHAR	27	Boxed single character
G_STRING	28	Simple string (unformatted)
G_FTEXT	29	Editable text string
G_FBOXTEXT	30	Boxed editable text string
G_ICON	31	Icon
G_TITLE	32	Menu bar title

Figure 3. Object types.

Mnemonic	Value	Description
NONE	0x0	Does not respond to input
SELECTABLE	0x1	May be selected (i.e., darkened)
DEFAULT	0x2	Causes exit upon RETURN keypress
EXIT	0x4	Causes exit on double-click
EDITABLE	0x8	May be edited
RBUTTON	0x10	Radio button
LASTOB	0x20	Last object in tree
TOUCHEXIT	0x40	Causes exit on single-click
HIDETREE	0x80	Invisible to AES object-search functions
INDIRECT	0x100	References another object

Figure 4. Object flag values.

Mnemonic	Value
NORMAL	0x0
SELECTED	0x1
CROSSED	0x2
CHECKED	0x4
DISABLED	0x8
OUTLINED	0x10
SHADOWED	0x20

Figure 5. Object state values.

```
00000000   bbbbbbbb   ccccttttt   dfff1111

High byte: not used
b: border thickness (-127 to 127)
c: interior color (0 to 15)
t: text color (0 to 15)
d: transparency (0 = transparent;1 = opaque)
f: fill pattern (0 to 7)
l: border color (0 to 15)
```

Figure 6. ob_spec used as a bitmap.

```
OBJECT form[] = {
      ... form[0] (dialog outline) OBJECT structure values ...
      ... form[1] (dialog text) OBJECT structure values ...
      ... form[2] (Okay button) OBJECT structure values ...
      ... form[3] (Cancel button) OBJECT structure values ...
      };
```

Figure 7. Definition of a data structure for a dialog box (schematic).

first appears when GEM is called to display it (see Figure 5). The value may change as a form is manipulated by the user under GEM control.

For example, when the CANCEL button of our sample dialog is first defined, the ob_state field of its OBJECT structure may be given the value NORMAL, causing the button to appear with black text on a white background when GEM is first asked to display the form. However, if the CANCEL button ob_flags field marks it as SELECTABLE, and it is subsequently selected while under GEM control, GEM will change the ob_state field from NORMAL to SELECTED on termination of input to the form. Unless this state is changed, the button will appear in inverse the next time GEM displays the form.

Each object type makes unique use of the ob_spec field. For simple text-containing objects, such as G_TEXT, G_BOXCHAR, and G_BUTTON, the ob_spec field is used as a memory pointer to a single character or to a null-terminated string.

For the more complex objects, such as editable text fields (G_FTEXT) and icons (G_ICON), the ob_spec field is used to point to a secondary data structure that further defines the object and how it should be treated by GEM (some of these will be discussed in the next issue).

For box objects—G_BOX, for example—ob_spec is used as a bitmap to encode such things as border width, color, and fill pattern (see Figure 6).

The remaining items in the OBJECT structure determine where GEM will place the object on-screen (ob_x and ob_y) and help GEM determine how much space it takes up. When an object is contained by another object, its ob_x and ob_y fields represent offsets from the upper-left-hand corner of the containing object. Otherwise, they denote the absolute screen position of the upper-left-hand corner of the object.

Defining a Form in C

As noted above, a GEM *form*, such as a dialog box, consists of a related group of objects. You begin defining a form for GEM by grouping the OBJECT structures for each of its component objects together in an array. Each structure in the form can thus be referenced with a simple integer index.

Figure 7 shows how you might define an array of OBJECT structures appropriate for our sample dialog box. The main box is defined by form[0], the instruc-

tion string by form[1], the OK button by form[2], and the CANCEL button by form[3].

Unfortunately, a simple array of OBJECT structures tells GEM nothing about how the objects in a form actually relate. This is the job of the ob_next, ob_head, and ob_tail fields in each OBJECT structure.

The logical structure of a GEM form can be considered a tree of parent and child objects, in which parent objects contain children, which may contain and thus serve as parents to further children, etc. In the case of our sample dialog box, the main box is considered the parent, because it contains the other objects—the string and two buttons.

Because the main box is not itself contained, thus has no parent of its own, it is also referred to as the *root* object. Because the child objects are all contained by their parent at the same level, they may be referred to as *siblings*.

The ob_next, ob_head, and ob_tail pointers serve to represent this structure of parent/child/sibling relationships. The ob_next field of a given object points to its first sibling object, which in turn points to the next sibling object, and so on; the ob_next field of the last sibling points to the parent object of the group. The ob_head and ob_tail fields of an object point to the first and last siblings of that object's children.

Note that we use the term "point" quite loosely here. As you can see from the definition of the basic OBJECT structure, ob_next, ob_head, and ob_tail are defined as simple integers, thus cannot act as pointers to memory locations. Instead, these fields point by reference to the integer offsets of OBJECT structures in the form array.

These values have been initialized completely in Listing 1. The ob_next field of form[0], the main box object, has been set to -1. As noted above, the ob_next field normally references a sibling, but the main, or root object has no siblings.

Normally, an object that has no siblings is treated as the *last sibling* thus its ob_next field should reference its parent. Again, however, in the case of the root object, no parent exists. A null value of −1 marks this terminating condition.

The main box has three children: the string and two buttons, identified as form[1], form[2], and form[3]. The ob_head pointer of this box is set to 1 to reference form[1] (the instruction string object) as the *head* of its children;

ATARI KEY

- Any Atari ST Computer
- Mark Williams C Language Development System

```
#include <aesbind.h>
#include <obdefs.h>

/* ob_spec bitmap for a standard dialog box: 2 raster black border, white
   interior, black text, transparent fill. */

#define SPEC    0x21100L

/* Object descriptor array */

OBJECT form[] = {

/* Description of main dialog box outline */


-1,             /* Root object, no siblings */
1,              /* Object 1 is first child */
3,              /* Object 3 is last child */
G_BOX,          /* Plain box object */
0,              /* No flags set */
NORMAL,         /* Draw normally */
SPEC,           /* Specification as above */
0,              /* X-coordinate upper left corner (centered later) */
0,              /* Y-coordinate upper left corner */
328,            /* width (for medium or hi-res only) */
48,             /* height */

/* Description of text object used as main label in dialog */

2,              /* Next sibling is object 2 */
-1,             /* No children */
-1,             /* Really ... no children */
G_STRING,       /* Standard string-type object */
0,              /* No flags set */
NORMAL,         /* Draw normally */
                /* ob_spec is pointer to text string */
"Click on something to continue.",
48,             /* X-coordinate offset from parent */
8,              /* Y-coordinate offset from parent */
240,            /* width */
8,              /* height */

/* Description of "Okay" button */

3,              /* Next sibling is object 3 */
-1,             /* No children */
-1,             /* ... as above */
G_BUTTON,       /* Standard button-type object */
(SELECTABLE |   /* Flags: Object may be selected, and will ... */
TOUCHEXIT),     /* ... cause exit from dialog */
NORMAL,         /* Draw normally */
"Okay",         /* ob_spec is pointer to text string */
88,             /* X-coordinate offset from parent */
32,             /* Y-coordinate offset from parent */
64,             /* width */
8,              /* height */

/* Description of "Cancel" button */

0,              /* Points to parent object */
-1,             /* No children */
-1,             /* ... as above */
G_BUTTON,       /* Standard button-type object */
(SELECTABLE |   /* Flags: Object may be selected, and will ... */
TOUCHEXIT |     /* ... cause exit from dialog, and will be ... */
DEFAULT),       /* ... treated as default (exit on RETURN) */
NORMAL,         /* Draw normally */
"Cancel",       /* ob_spec is pointer to text string */
176,            /* X-coordinate offset from parent */
32,             /* Y-coordinate offset from parent */
64,             /* width */
8               /* height */
};

/* Main program starts here */

main()
{
int i;                  /* For return value */

appl_init();            /* Initialize AES application */

graf_mouse(0,0L);       /* Make mouse arrow pointer visible */
```

```
/* Determine center coordinates for dialog, via form_center() call */

form_center(form,&(form[0].ob_x),
                 &(form[0].ob_y),
                 &(form[0].ob_width),
                 &(form[0].ob_height));

/* Reserve space for dialog on-screen, via form_dial() call */

form_dial(0,form[0].ob_x,
            form[0].ob_y,
            form[0].ob_width,
            form[0].ob_height,
            form[0].ob_x,
            form[0].ob_y,
            form[0].ob_width,
            form[0].ob_height);

/* Draw dialog, via objc_draw() call */

objc_draw(form,0,MAX_DEPTH,form[0].ob_x,
                           form[0].ob_y,
                           form[0].ob_width,
                           form[0].ob_height);
/* Let user interact with dialog, via form_do() call */

i = form_do(form,0);

/* Get rid of dialog, via form_dial() call */

form_dial(3,form[0].ob_x,
            form[0].ob_y,
            form[0].ob_width,
            form[0].ob_height);

/* Determine object used to exit dialog */

if (i == 2) printf("OKAY selected!\n");
else
if (i == 3) printf("CANCEL selected!\n");

appl_exit();            /* Exit AES application */
}
```

form[3] (the CANCEL button object) is referenced by ob_tail, as the last of its children. This order is reflected by the children's own ob_next pointers: the pointer of form[1] references form[2], the pointer of which references form[3]. Form [3], as last sibling, references form[0]—the parent. Because none of the siblings has children of its own, their ob_head and ob_tail pointers are set to the null value, −1.

Displaying a Form

Once the data structures for a form have been completely defined, it is a simple matter to arrange for GEM to display and manage the form onscreen. The program in Listing 1 contains a complete definition for the sample dialog box referred to in this article and demonstrates the variety and power of GEM AES calls for resource display and management. In the next installment of this series, we will learn more about the structure of dialog boxes and other forms, and begin exploring the power of the Resource Construction Set. ■

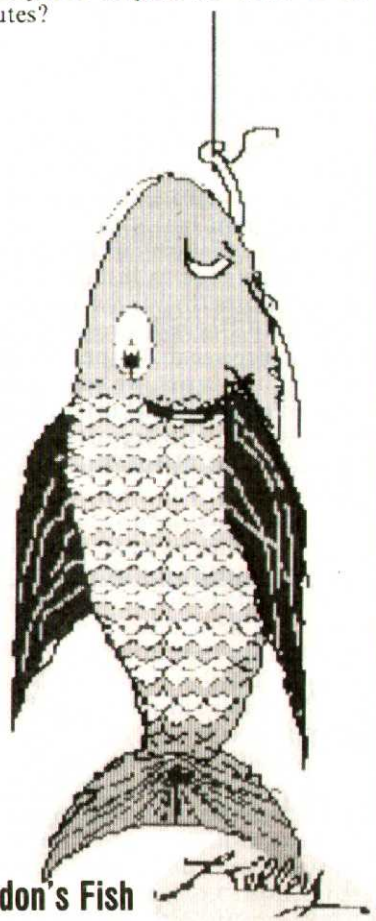
Puzzles & Problems

By DAVID H. AHL

For your enjoyment, we present here seven short puzzles. But beware, some of them are not quite as simple as they may seem. Answers are on page 80.

Valentine Flowers

If five girls can pack five boxes of flowers in five minutes, how many girls are required to pack 50 boxes in 50 minutes?



Gordon's Fish

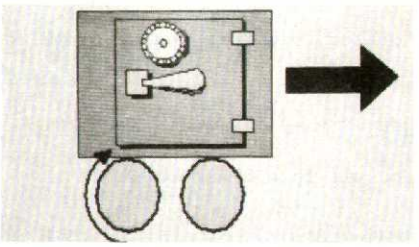
Gordon told Martha that he caught a fish with a tail as long as its head plus one quarter the length of its body. Its body was three-quarters of its total length. If the head was four inches long, how big a frying pan does Martha need to cook the fish?

No Plus Signs

Without using + signs, can you arrange six 9's in such a way that they equal 100?

Short and Powerful

The integer 844,596,301 is the 5th power of what number?

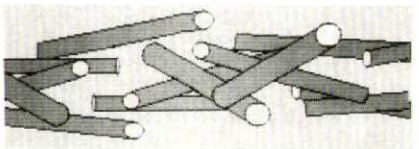


Moving A Safe

To move a safe, two cylindrical steel bars seven inches in diameter are used as rollers. How far will the safe have moved forward when the bars have made one revolution?

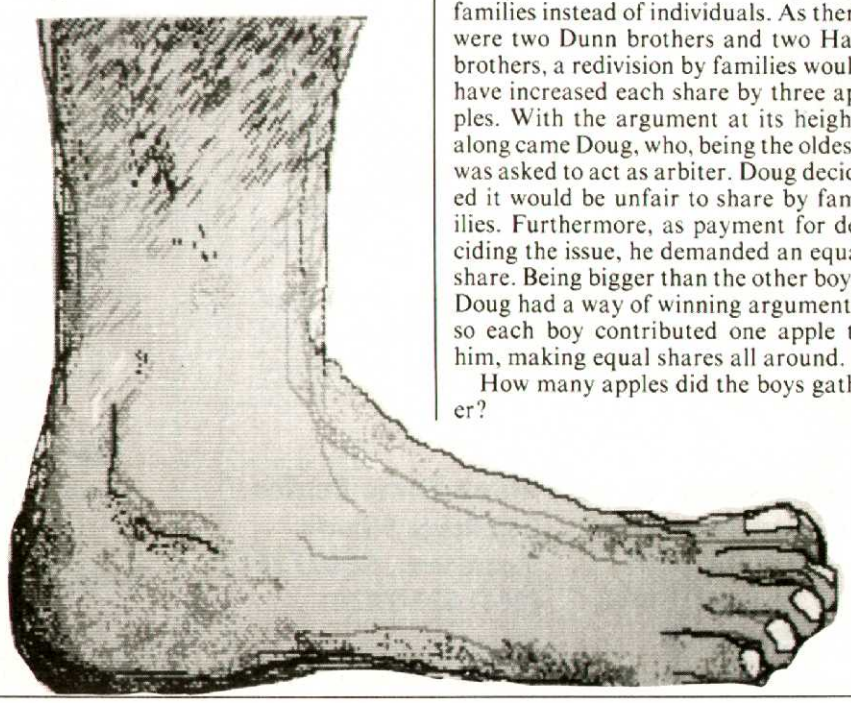
Cutting Pegs

A boy is cutting one-inch pegs from a four-foot dowel. If it takes him 10 seconds to make a cut, how long will it take him to use the entire dowel?



Goin' Barefoot

A town in Afghanistan has a population of 20,000 people. If five percent of the people have only one leg, and one-half of the others go barefoot, how many sandals are worn in the town?



Sharing Apples

A group of boys made a raid on Burke's apple orchard and came back with a basket of apples which they divided equally between them. Michael said he thought it would be fairer to share by families instead of individuals. As there were two Dunn brothers and two Hall brothers, a redivision by families would have increased each share by three apples. With the argument at its height, along came Doug, who, being the oldest, was asked to act as arbiter. Doug decided it would be unfair to share by families. Furthermore, as payment for deciding the issue, he demanded an equal share. Being bigger than the other boys, Doug had a way of winning arguments, so each boy contributed one apple to him, making equal shares all around.

How many apples did the boys gather?

Buying Data Switches And Cables

A shopper's guide to two basic accessories

I have been putting it off for weeks, but I finally resolve to answer the mound of correspondence piled up on my desk. Maybe I can compensate somewhat for my tardiness if I make the letters look pretty. So I unplug the drawing tablet and plug in my old, reliable Qume Sprint 5 letter quality workhorse. I load *1st Word Plus*, write the first letter, and click on Print. Nothing happens. What gives?

I check everything and eventually determine that what gave was one of the wires on the printer cable RS-232 plug. Bah.

As I resignedly fetch my soldering pen from the workshop to fix the connector for at least the fifth time. I resolve to put an end to this plugging and unplugging nonsense.

At this point, I have two computers that I use fairly regularly plus a portable and several older machines that see occasional use. I have the Qume serial printer, an Epson 9-pin dot matrix printer, a Toshiba 24-pin printer, and a second, older Epson that is loaded with address labels. Other peripherals include a drawing tablet, modem, image scanner, Computer Eyes, and a 5¼" disk drive.

As I set out to solve the plugging problem, I knew that I had seen lots of different data switches and cables—in catalogs and at shows—but what could I reasonably afford and justify? What I found was quite astonishing—prices that ranged from $25 to $150 for virtually the same item, cables that looked like they were made in a Kindergarten industrial arts class, and instructions apparently written by people who spoke fewer than 20 words of English. I won't bore you with the details; what follows is a summary of what I learned.

Data Switches

There are two basic types of data switch. The first type has one input and two or more outputs. Most commonly, the input is connected to the printer output of the computer, and the outputs connected to various printers. Or, the input could be connected to the RS-232 serial connector on the computer, and the outputs connected to a modem, serial printer, and/or drawing tablet.

The second type of data switch is known as an X or crossover switch. It has two inputs and two outputs and is most commonly used to connect two computers with two printers. Basically, it allows Computer A to connect to Printer A and Computer B to Printer B. Switching it connects Computer A to Printer B and Computer B to Printer A.

The Master Computer Data Switch.

Both types of switches are available with Centronics parallel connectors or 25-pin RS-232 (DB-25) connectors. Most of the Centronics switches switch all 36 leads, but some switch only 24 leads (suitable for 99% of the parallel printers on the market). RS-232 switches are available in varieties that switch 4, 12, or 25 leads. For maximum versatility with all kinds of peripherals, get a 25-lead switch.

Switches are also available for DB-9 (mouse and joystick), DB-15, DB-19 (hard disk), DB-37, DB-50, IEEE-488, and 5-pin DIN (MIDI) connectors. These switches are specialized and tend to be considerably more expensive than the more generic ones.

At this point, only a few Atari-specific manufacturers make ST monitor and floppy disk switches; reviews have appeared or will soon appear on these pages.

Let's consider a simple A-B RS-232 data switch. First of all, these typically come with all female connectors. That means if you are connecting one to the serial input on the ST (male), you will need a male-to-female cable. On the output, you'll need cables for male to the opposite of the genders of the connectors on your devices.

The DB-25 printer connector on the Atari ST is female, so if you use an RS-232 switch for your printers, you will need an RS-232 male-to-male cable plus an RS-232 male-to-Centronics cable for each printer.

Alternatively, for switching printers, you could use a Centronics data switch, in which case you would need an RS-232 male-to-Centronics cable for the link between computer and printer and a Centronics-to-Centronics cable for each printer.

Basically, a data switch is a simple device that consists of just three components—a rotary switch, three or more connectors (which are wired to the switch), and a metal box. However, prices vary considerably. For example, a 25-lead A-B RS-232 U.S.-made switch from a well known supplier such as Black Box costs $99.95; brands such as Data Doc and Data Spec are priced in the $40 to $60 range; and generic units imported from Taiwan by such vendors as CompuAdd, Advanced Computer Products (ACP), and Master Computer sell for $15 to $30.

A Centronics parallel switch with 36 switched leads will cost from 10% to 50% more than a similar RS-232 switch. A unit from Black Box sells for $149.95; Data Doc, $85; Data Spec, $65; ACP, $34; Master Computer, $29; and CompuAdd, $15.

Crossover, A-B-C, and A-B-C-D switches tend to be priced another 10% to 30% above Centronics A-B switches, but there are exceptions (see Table 1 for

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	Black Box	Quill (Data Doc)	Lyben (Data Spec)	Advanced Computer	Master Computer	CompuAdd
A-B Switch RS-232, 25-lead	$ 99.95	$ 59.97	$48.95	$29.95	$27.00	$15.00
A-B Switch Centronics	149.00	84.97	64.95	33.95	29.00	15.00
2-way X Switch RS-232, 25-lead	123.00 (12-lead)	99.97	74.95	59.95	43.00	19.00
2-way X Switch Centronics	159.00	109.97	89.95	59.95	45.00	19.00
A-B-C-D Switch RS-232, 25-lead	155.00	109.97	89.95	49.95	43.00	23.00
RS-232 Shielded 6-foot Cable	41.00	16.97	19.00	8.88	10.00	7.95
Centronics to RS-232 6-foot Cable	27.25	16.96	15.00	8.88	10.00	8.95

Table 1. Representative prices of data switches and cables.

representative prices).

Cables

Although, to some extent, it is true that a cable is a cable is a cable, more varieties exist than you might imagine. Basically, the cable itself—sans connectors—comes in three fundamental types: ribbon (flat, space-saving cable adequate for most applications), PVC (round flexible plastic-covered cable for heavy duty), and shielded (cable shielded by aluminum foil inside the plastic jacket for electrically noisy environments).

Connectors also come in many types. For light use, there is the compact but unprotected plastic device you find at each end of a ribbon cable. For medium duty, there is the familiar metal connector covered with a molded plastic hood. And for heavy duty there is a metal connector covered with a die cast metallic hood.

The most common lengths for assembled cables are six and ten feet. However, suppliers such as Black Box also offer cables in lengths of 2, 5, 15, 20, 25, 35, and 50 feet and shielded cables in even longer lengths.

A standard five- or six-foot 25-wire PVC cable with molded plastic hood connectors ranges in cost from under $10 to over $25 depending upon the supplier. Ribbon cables run slightly less, and shielded cables with metallic hoods can cost up to twice as much as standard PVC cables.

Which to Choose

So where does all this leave you, the computer user in search of a Best Buy? Unfortunately, the answer is all too obvious: Even with things as basic as cables and switches, you get what you pay for. If you want the reliability, durability, and versatility of a high-quality U.S.-made shielded cable with sturdy metal connectors, you will have to pay for them.

This is not to say, however, that there is no place for some of the less-expensive products described in Table 1. If you live in the suburbs, where the noisiest appliance in the area is likely to be your refrigerator, and don't rearrange your hardware from one year to the next, a cheap ribbon cable may well be all you need to keep the electrons flowing between your computer and its peripherals.

When choosing a data switch, you would do well to consider your own level of electronic expertise and be willing to pay for whatever skill you lack. The $99 switch from Black Box will undoubtedly work as advertised right out of the box, and if it doesn't, you will have no trouble getting the vendor to make good. Essentially, you are paying for the privilege of not having to figure out what is wrong and repair it yourself.

The less-expensive switches are also less-well-made, and you may have to do some of final fabrication youself. Our $27 Master Computer switch lost one of its plastic feet shortly after we removed it from the box. No problem, a drop of glue was all it took to restore the box to quadruped status.

What might have been a problem was the unconnected wire we found inside the case. Every one of the 75 identical wires in the device was yellow, and had more than one been loose, the task of tracing and resoldering them in the maze of yellow spaghetti would have been daunting indeed.

In summary, yes, there is a Best Buy in cables and data switches for every computerist. But it is not the same for every use or every user, and the smart shopper will invest some time in a careful analysis of his needs and limitations before he even opens one of those fascinating catalogs. ■

Atari-Specific Suppliers

Astra Systems
2500-L South Fairview
Santa Ana, CA 92704
Manufactures hard disk drives for Atari ST. Has announced a line of monitor and data switches for the ST.

Practical Solutions
1930 E. Grant Rd.
Tucson, AZ 85719
Manufactures monitor and mouse switches for the Atari ST.

General Suppliers

Black Box Corp.
P.O. Box 12800
Pittsburgh, PA 15241
Publishes a massive 144-page catalog of high-quality data switches, cables, modems, multiplexors, converters, surge protectors, tools, and test equipment. The Rolls Royce of the industry.

Lyben Computer Systems
1050 E. Maple Rd.
Troy, MI 48083
Publishes a semi-annual catalog of discount computer accessories and supplies.

Quill Corp.
100 South Schelter Rd.
Lincolnshire, IL 60069
Publishes a semi-annual 376-page catalog of office and data processing accessories, forms, and supplies. Outstanding mail order service.

Advanced Computer Products, Inc.
P.O. Box 17329
Irvine, CA 92713
Publishes periodic catalogs of IBM PC clones, printers, boards, accessories, and software—most at a fair discount. Has a retail store in Santa Ana and hosts regular weekend swapmeets.

CompuAdd
12303-G Technology Blvd.
Austin, TX 78727
Publishes periodic catalogs of Standard Brand (CompuAdd) PC clones, printers, boards, accessories, and software at discount prices. Has eight retail stores in Austin, Dallas, and San Antonio.

Master Computer
315 S. Allen St., Ste. 118
State College, PA 16801
Publishes 3-page photocopied price list of offshore PC clones, boards, drives, and accessories. Company keeps very little in stock; call before you order.

Keeping Clean

Makers of audio cleaning kits join the fight against grease and grime on disk heads, monitors, and mice

Many years ago, I had a job in a hi-fi shop. That was back in the days when records weren't packaged in shrink wrap and a customer could come in and listen to a record before buying it. Customers were also encouraged to bring in their own records to try with different cartridges, tonearms, and turntables prior to making a purchase.

Because our records and equipment got such heavy use, we paid considerable attention to keeping things clean. We tried brushes attached to the tonearm, brushes and rollers attached to a separate arm, tiny radioactive capsules on the tonearm (they were supposed to repel dust), and all sorts of record cleaning kits.

This attention to cleanliness was rewarded; our shop achieved a reputation for selling top quality components and fresh, pristine records.

Now, 30 years later, it is interesting to see many of the leading manufacturers of audio cleaning products applying their years of experience and expertise to the computer field. For example, Allsop, Discwasher, Bib, GC, and Nortronics, all big names in audio, have now moved into the computer field to compete with the big three of computer cleanliness—PerfectData, Verbatim, and 3M.

Allsop, has been making cleaning products and audio accessories since the late 60's, so we decided to take a look at the Allsop Micro Cleaning Kit. This is one of the most comprehensive kits on the market, consisting of a disk drive cleaner (3½" and 5¼" versions available), anti-static screen cleaner and three lint-free wiping cloths, daisywheel type cleaning brush, and—something I've never seen before—cleaning solution and four foam tipped wands for cleaning a mouse ball or electrical contacts.

I tried the mouse ball cleaner on a particularly dirty mouse, applying it to both ball and rollers, and was rewarded with considerably improved mouse operation.

The disk drive cleaner is simply a 3½" floppy disk with a fabric cleaning disk in place of the magnetic disk inside. You put two drops of cleaning solution on the disk, insert it into the drive, and run it as you would a regular magnetic disk. (You can direct your computer to search for a file which, of course, isn't there, and that is more than enough to clean the heads.) The disk is effective for 20 cleanings.

I thought my monitor screen was clean until I sprayed on some of the Anti-Stat Guard and Cleaner and wiped. Good grief, the wiping cloth practically turned black. But more to the point, images on the monitor are noticably crisper. And those lint-free cloths beat an undershirt or paper towel any day of the week.

I can't comment first hand about the efficacy of the type brush, as the daisywheel on my Qume is in excellent condition, but I have no reason to think that it wouldn't work well.

An additional bonus of the Allsop Micro Cleaning Kit is its storage case which doubles as a portable ten-disk file box with a convenient removable labeling system.

I'm pleased that the folks at Allsop have used their audio expertise to bring computer users a handsome and functional cleaning kit. My advice: Get one before you know you need it.

—David H. Ahl

Allsop Cleaning Kit

System: 5¼" kit for 8-bit computers; 3½" kit for STs

Summary: Kit to clean monitor, disk drive, mouse, and printer wheel

Price: 5¼" kit, $17.95; 3½" kit, $19.95

Manufacturer:
Allsop, Inc.
P.O. Box 23
Bellingham, WA 98227
(206) 734-9090

Power Supervisor

A useful gadget that untangles your cables and doubles as a monitor stand

Is the back of your computer obscured by a tangled mass of fat, gray spaghetti? Mine certainly was—with power cords running from power strip to power supply, from power supply to disk drive, from power strip to monitor, and so on.

Compounding the problem was the pile of stuff—magazines, software

packages, floppy disks, camera, calculator, pads, and dictionary—competing for space in the work area. Often I just plain couldn't reach the power switch on the back of a disk drive or printer. Consequently, turning my system on in the proper order (hard disk, floppy disk, monitor, computer) had me going bonkers.

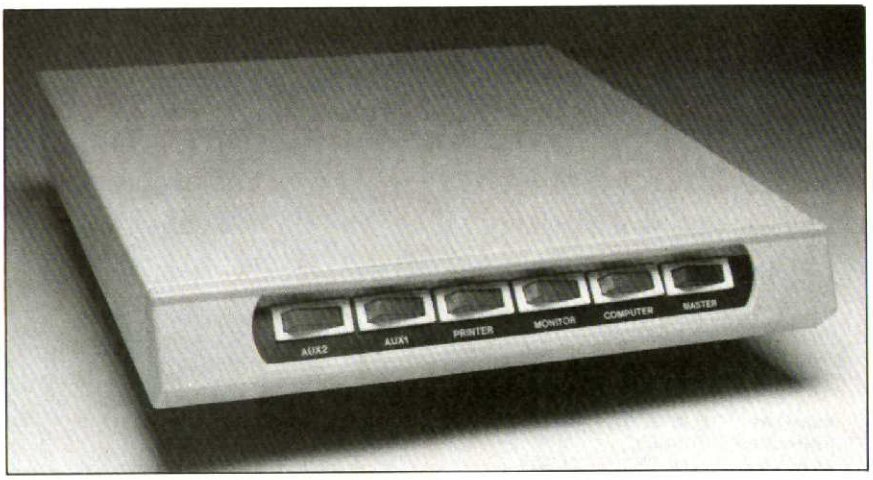
But that was before I found the Power Supervisor. This convenient device has five switched outlets on the back controlled by a master plus five lighted rocker switches on the front. The outlets are polarized and grounded, so you can plug in virtually any peripheral. The switches are labeled Computer, Monitor, Printer, Aux 1, and Aux 2. In my case, I plugged my hard disk drive into Aux 1 and second external floppy drive into Aux 2.

The Power Supervisor measures 2″×12″×13.5″, so it is perfect for an ST or 8-bit monitor stand. Moreover, the neutral light gray-beige finish of the Power Supervisor blends well with the colors of Atari computers, drives, and monitors.

This particular Power Supervisor does not have surge protection built in (other more expensive units do), so I recommend plugging the entire Power Supervisor into a surge protector and plugging that into your AC power source.

My only complaint about the Power Supervisor is that the sheet metal case is somewhat flimsy and can be dented by the ST monitor. All in all, however, the Power Supervisor provides a simple, elegant yet inexpensive solution to a messy problem.

—David H. Ahl



The Power Supervisor

System: Any computer system

Summary: Switches five AC power outlets; unit serves as a monitor stand

Price: $32.00

Importer:
Master Computer
315 S. Allen St., Ste. 118
State College, PA 16801
(814) 234-4058

Monitor Switch Box

An easy way switch between color and monochrome

Lined up beneath the rafters in the *Explorer* laboratory is a variety of Atari systems and components. Among them, our main Mega ST, Lucrezia Borgia (all of our systems have cute names) occupies a prime location, sandwiched between a color and a monochrome monitor.

Frequently, in the course of evaluating a piece of software or hardware, we are obliged to switch Lucy's monitor, a process that involves sliding under the desk, wrenching the neck around, and wrestling with cables for several minutes . . . fun city.

Enter Astra Systems and their handy monitor switch box, which eliminates the necessity for plugging and unplugging Lucy's monitor cables.

The Switch Box is about 6″×6″×4″, housed in grey aluminum with black trim. On the front are two buttons, a switch, and a pilot light. On the rear are two grounded power outlets, a pair of ST-type monitor jacks, two RCA-type nipple jacks, a power cable, and an ST-type monitor cable and plug.

In a standard setup, you plug the power cords for your color and monochrome monitors into the power connectors on the box, plug the monitor cables into the cable jacks on the box, and plug the cables from the box into the monitor jack on the back of the ST and into a power supply. The box thus provides both power and signal for both monitors.

Switching between monitors is then as simple as pressing the Color/Mono switch on the box to the appropriate position, causing the appropriate monitor to be switched on and the ST to reboot. Works great!

Owners of "FM" (TV-compatible) STs can use the composite video and audio jacks on the Astra box to hook up composite monitors, external sound amplifiers, and video recorders. The Audio switch on the box serves as a router, sending sound out the audio jack or melding it back into the composite signal.

All in all, Astra's Monitor Switch Box is an exceptional answer to a very pedestrian set of problems. Lucy likes it, and so do I.

—John Jainschigg

Monitor Switch Box

System: Atari ST; FM model required for audio and video re-routing

Summary: Simple device for controlling multiple displays

Price: $59.95

Manufacturer:
Astra Systems
2500 S. Fairview, Unit L
Santa Ana, CA 92704
(714) 549-2141

PUNYTERM

Listing 2 by Dan Clayton.

ATARI KEY

- Any ST Computer
- Alcyon (or other standard ST) C Compiler

```
#include <osbind.h>

/* Handler numbers for the I/O ports */

#define MODEM   1
#define CONSOLE 2

/* Keyboard scancode defs */

#define   FUNKEY1   0x3B
#define   FUNKEY2   0x3C
#define   FUNKEY3   0x3D
#define   HELPKEY   0x62
#define   UNDOKEY   0x61

char *baudstrs[17] = { "300\r\n","1200\r\n","2400\r\n" },
     *duplexstrs[12] = { "Full\r\n","Half\r\n" },
     *echostrs[11] = { "Off\r\n","Echo\r\n" };

int baudvalues[3] = { 9,7,4 };

main()
{
register int  local_char, baud, duplex, echo, c;
long keyscanl;

baud = 0;
duplex = 0;
echo = 0;
Cconws("\033E\033v\033p   Punyterm  \r\n\  HELP-menu  \033q\r\n\n");

do
  {
   if (Bconstat(MODEM))
     {
      Bconout(CONSOLE,c = (int)Bconin(MODEM));
      if (echo) Bconout(MODEM,c);
     }
   if (Bconstat(CONSOLE))
     {
      local_char = (0xff & (int)(keyscanl = Bconin(CONSOLE)));
      keyscanl = 0xff & (keyscanl >> 16);
      if (local_char)
        {
        Bconout(MODEM,local_char);
        if ( duplex == 1 ) Bconout(CONSOLE,local_char);
       }
      else
        switch ( (int)keyscanl )
          {
           case HELPKEY:
   Cconws("F1 - Baud\r\nF2 - Duplex\r\nF3 - Echo\r\nUNDO-exit\r\n");
           break;
           case FUNKEY1:
            if (++baud == 3) baud = 0;
            Rsconf(baudvalues[baud],-1,-1,-1,-1,-1);
            Cconws(baudstrs[baud]);
            Cconws("AT\013");
            break;
           case FUNKEY2:
            duplex = 1 - duplex;
            Cconws(duplexstrs[duplex]);
            break;
           case FUNKEY3:
            echo = 1 - echo;
            Cconws(echostrs[echo]);
          }
     }
  } while ( (int)keyscanl != UNDOKEY );
}
```

This month, the inspired winners of our 1K Contest include both ST and 8-bit entries in a variety of languages, and once again, the quality of entries was very high. Many of you are remarkably good programmers, and I would like to take this opportunity to mention that besides 1K Contest entries, *Explorer* is always interested in original, previously-unpublished 8-bit and ST programs, programming tutorials, and technical articles. We are especially eager to review practical, business- or productivity-oriented material suitable for beginning and intermediate computerists.

Function-Key Template

Now to the winners. From Orillia, ON, in the Great White North, comes Kaljo Pehtla's unusual and super-useful ST Basic program for making function-key templates (see Listing 1). When run, the program outputs a neat, filled-in template form, which can be cut out and taped to your ST or Mega keyboard. Information for labeling the template is supplied in DATA statements in the program itself.

PunyTerm

From Dan Clayton of Englewood, CO, comes (I love this name) PunyTerm, a VT/52-compatible terminal program written in Alcyon C, but which can also be compiled under Mark Williams, Megamax, or Laser C. We have combined the multiple source files of Dan's original submission into one easy-to-type-in listing. It should be compiled

By JOHN JAINSCHIGG

Useful and fanciful programs win prizes for 8-bit and ST programmers

1K Programming Contest

and renamed with a .TOS extender, indicating that it is a non-GEM application.

Press Help to call up a menu that describes the many (well, there are three) functions and features of PunyTerm. F1 controls baud rate (300, 1200, and 2400 baud are supported); F2 controls duplex; and F3 controls local echo. The program does not support changes to parity or number of stop bits, though these values can be changed with the control panel desk accessory, as required.

I Ching

While the rest of the world concerns itself with function-key templates and telecommunications, we dwellers in the hinterlands of Brooklyn, NY, have more esoteric concerns. Witness, if you will, the submission of one Frank Jersawitz (a Brooklyn boy, like myself . . . yo Frank!), which produces I Ching hexagrams on an 8-bit Atari computer.

For the uninitiated, the I Ching is a system of divination (like crystal-ball gazing, tea leaf reading, and reviewing press releases) dating back to Confucian China. I Ching divination entails the casting and interpretation of hexagrams—groups of six solid and broken lines normally created by flipping yarrow stalks or coins. The permutations of the hexagram are interpreted subject to meanings discussed in the so-called *Book of Changes*.

Frank's mini-program uses the random-number system of the computer to generate I Ching hexagrams without recourse to yarrow stalks (which are very hard to find outside of Beijing, these days) or coins (equally difficult to come by, especially if you've spent them all on computer equipment). You will need a copy of the *Book of Changes*, which can be found in most good bookstores, to interpret the results.

Contest Rules

Okay, folks, the next 1K Contest is now open. For those of you who didn't keep the last issue, here are the rules.

• Programs, including data, dimen-

Continued on page 80.

FUNCTION-KEY TEMPLATE MAKER

Listing 1 by Kaljo Pehtla.

ATARI KEY

- Any Atari ST Computer
- Printer
- ST Basic

```
10    ' * FUNCTION KEYS TEMPLATE 1*     by K. Pehtla
20    ' ST Basic Version
30    '
40    ' README:
50    ' Replace four data lines 290-320 (incl.) at the end of program
60    ' with your own function names (19 digits max) as indicated.
70    ' On line 90 RESTORE is added for access to additional sets.
80    '
90    RESTORE 290
100   LPRINT chr$(27);chr$(80);chr$(15);chr$(27);chr$(71);chr$(27);"0";
110   FOR r%=1 To 4
120   GOSUB lines
130   FOR c%=1 To 5
140   READ B$
150   LET v%=int((19-len(B$))/2)
160   LPRINT chr$(124);space$(v%);B$;space$(19-len(B$)-v%);
170   NEXT c%
180   LPRINT chr$(124)
190   NEXT r%
200   GOSUB lines
210   END
220   lines:
230   FOR s%=1 To 5
240   LPRINT chr$(124);string$(19,chr$(45));
250   NEXT s%
260   LPRINT chr$(124)
270   RETURN
280   '
290   DATA -sift f1-,-sift f2-,-sift f3-,-sift f4-,-sift f5-
300   DATA -f1-,-f2-,-f3-,-f4-,-f5-
310   DATA -sift f6-,-sift f7-,-sift f8-,-sift f9-,-sift f10-
320   DATA -f6-,-f7-,-f8-,-f9-,-f10-
```

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The following is a list of dealers who carry Atari products. Please patronize them and mention *Atari Explorer* when you do. Dealers: List your store here. Call Julie Winston at (201) 543-6007 for details.

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260 Park Ave. S. (21st St.)
New York, NY 10010
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Authorized sales and service of Mega, ST, and 8-bit Atari computers. We also carry other major brands of peripherals. Best price, best service.

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35 Middle Country Rd.
Coram, NY 11727
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Software Station
129 Rockaway Townsquare Mall
Rockaway, NJ 07866
(201) 328-8338
and
7 Headquarters Plaza Mall
Morristown, NJ 07960
(201) 455-7858
and
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Princeton, NJ 08540
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207-854-2607

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ATARI

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CC

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Charleston, WV 25332
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Near C&P Telephone off MacCorkle.

Applied Computer Associates
Gaithersburg, MD
(301) 948-0256
and
Chantilly, VA
(703) 631-5377
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McDonald's Computer Center
4921 E. Colonial Dr.
Orlando, FL 32803
(305) 894-2270
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The Home Computer Store
12008 Bustleton Ave.
Philadelphia, PA 19116
(215) 934-6999
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CompuVision Computer Centers, Inc.
Route 3, Old Mill Rd.
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Towson (Baltimore), MD 21204
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Addison, IL 60101
(312) 543-9000

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Full range of Ataris: 2600, 7800, new Atari XE game machine, 8-bit, and ST. Software and hardware.

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Full-service authorized dealer—Atari only.

Continued from page 77.

sioned arrays, etc.—must fit in 1K (1024 bytes) or less RAM.

- Programs may be written on either an Atari 8-bit or ST computer in any standard, widely-available language. Machine-language programs should, if possible, be provided with a Basic loader (the size of which will not figure in the 1K limit for contest entries) that will permit a neophyte to type in and use the program.
- The program should be submitted on a disk containing the program itself (in executable form), extra modules (e.g., a Basic loader or other ancillary code), plus source code, commentary, and full instructions for use. These last three items should be saved as standard ASCII (or ATASCII) files (we don't own a copy of every word processor in the world), or, in the case of ST disks, as *1st Word*-compatible files. If possible, also enclose printouts and sample program runs.
- Entries should be submitted to 1K Contest, Atari Explorer, 7 Hilltop Rd., Mendham, NJ 07945. Materials submitted are non-returnable. All submissions become the property of *Atari Explorer*.
- Winning programs will be chosen on the basis of usefulness, originality, and quality of programming style. Winners will be notified by mail or phone.
- One or more programs will be selected as winners every issue and will appear in *Atari Explorer*. Thereafter, certain of these programs may be disseminated by BBS or other online service at the discretion of the editors.
- The author of each winning entry will receive a 3-year subscription to *Atari Explorer*. ■

I CHING

Listing 3 by Frank Jersawitz.

ATARI KEY

- Any Atari 8-Bit Computer
- Atari Basic

```
10 GRAPHICS 3
20 SETCOLOR 0,13,10
22 COLOR 1
25 FOR N=2 TO 12 STEP 2
30 PLOT 8,N:DRAWTO 28,N
35 IF RND(0)<0.5 THEN COLOR 0:PLOT 18,N:COLOR 1
37 IF RND(0)<0.5 THEN COLOR 0:PLOT 28,N:COLOR 1
40 NEXT N
50 ? "LONGER LINES ARE CHANGING LINES"
60 END
```

INDEX TO ADVERTISERS

Puzzles & Problems

ANSWERS

Problems are on page 67.

Valentine Flowers

Five girls.

Gordon's Fish

Martha is going to have a tough time finding a pan large enough to cook Gordon's fish, which is a whopping 128″ long.

No Plus Signs

$99^{99}/_{99}$.

Short and Powerful

As most calculators and computers have only seven digits of accuracy, this problem is not as easy to solve as it might seem at first glance. But I have no doubt that you were able to employ a bit of common sense and deduce that the answer is 61.

Cutting Pegs

47 cuts are needed, and it will take 7 minutes and 50 seconds to make them.

Goin' Barefoot

It really doesn't matter what percentage of the population is one-legged, as each of them requires one sandal and one-half of the remainder require two sandals, which works out to one sandal per person for a total of 20,000.

Moving A Safe

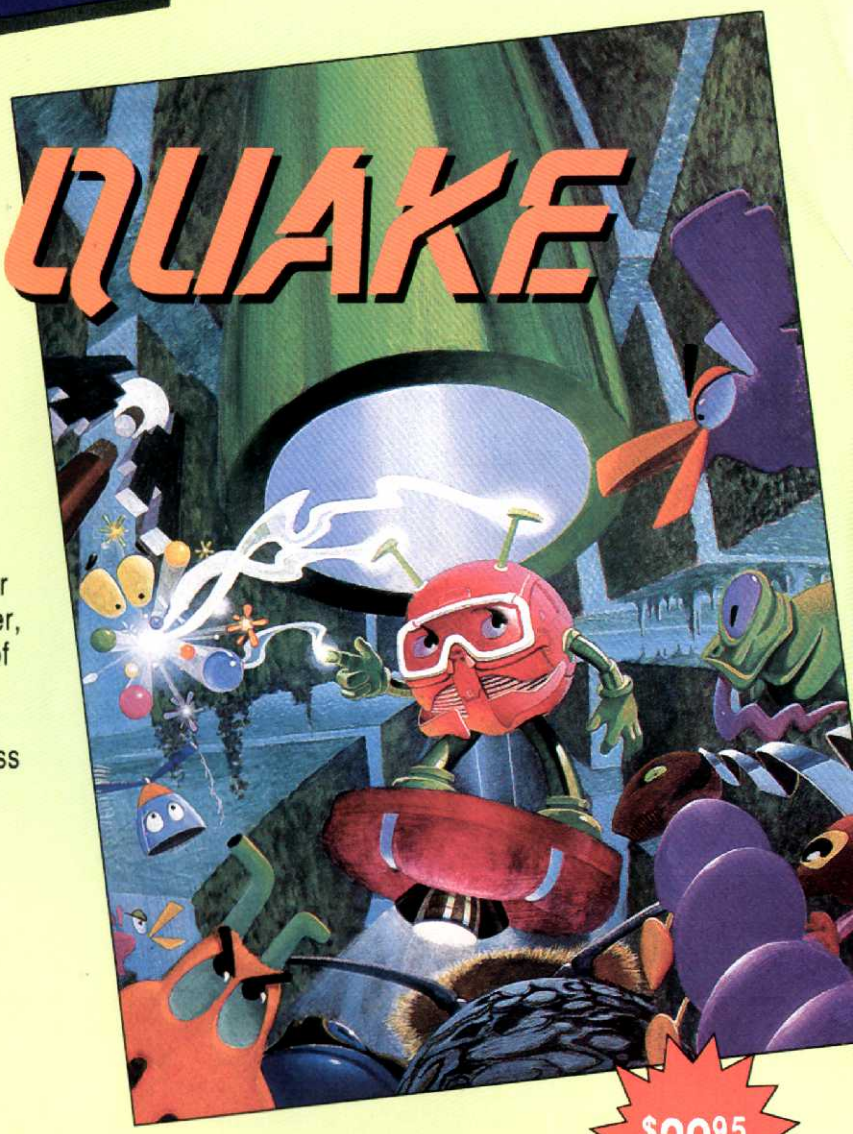
The safe will move 44″. The entire circumference of the roller ($\pi \times 7 = 22$″) will come in contact with both the ground and the safe, so the total movement of the safe is twice the circumference, or 44″.

Sharing Apples

72 apples.

NEW for the ST!

STAR QUAKE



It's a rogue planet. It's unstable. It's BIG. It's *very dangerous*— populated by strange and evil creatures whose sole purpose is to get rid of YOU! Hey, but you knew that when you volunteered. You were the best BLOB (Biologically Operated Being) controller in the Academy. If you can't do it, nobody can.

Get to it! *Every second counts.* Quick— Survey the planet. Identify the missing core elements. Fight your way through those 500 caverns filled with the most sinister, bouncing, cutting, shooting, spinning creatures this side of the Madgelein cluster. Locate and deliver those missing elements to the planet's core before it folds in on itself, dragging everything you know into the cold, timeless abyss of non-space. If you don't make it, you're *history*. But if you do, you'll be hopping stars in a gleaming Mallian cruiser, living the life you've only *dreamed* about!

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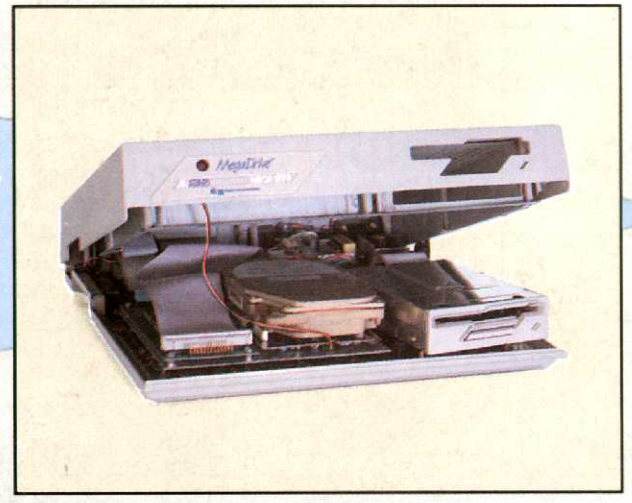

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