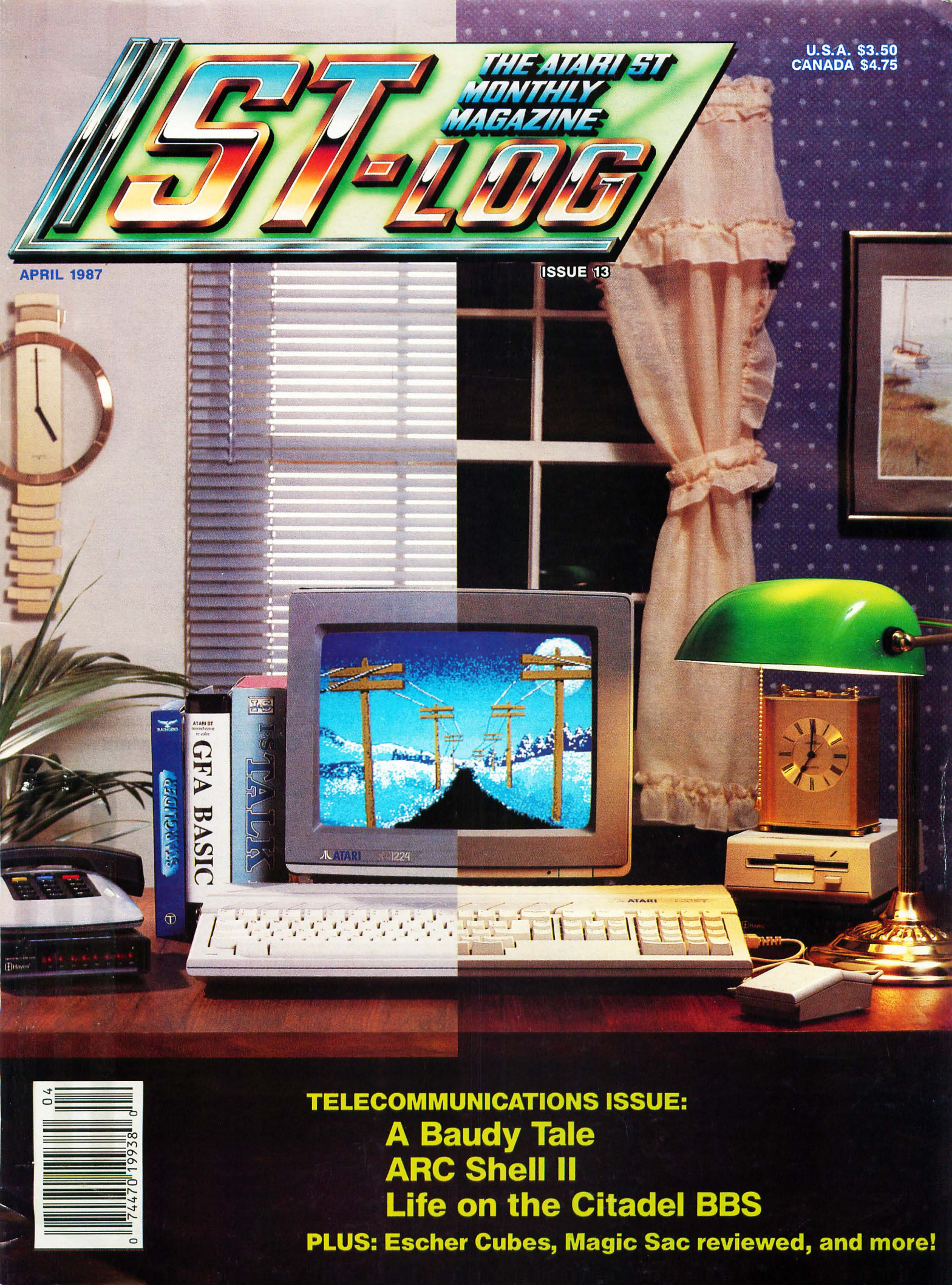
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THE ATARI ST MONTHLY MAGAZINE
U.S.A. $3.50
CANADA $4.75
APRIL 1987
ISSUE 13
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ATARI
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ARC Shell II
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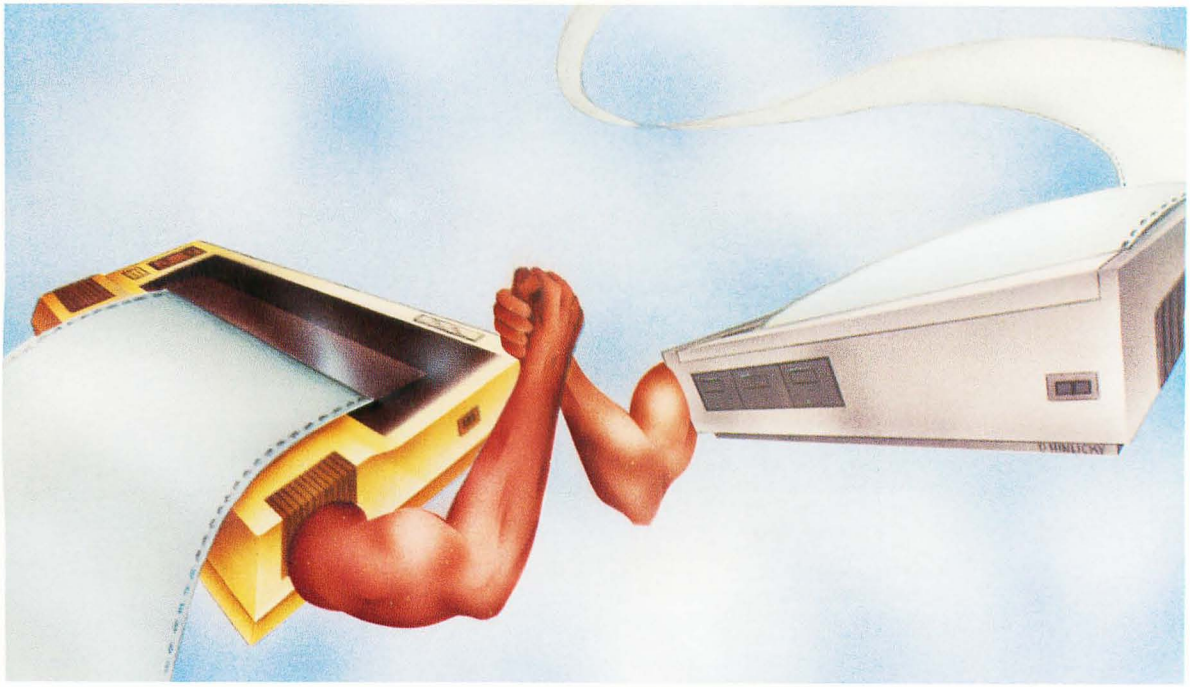
When Printers Get Down to Business



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THE ATARI ST MONTHLY MAGAZINE

ISSUE 13
APRIL 1987

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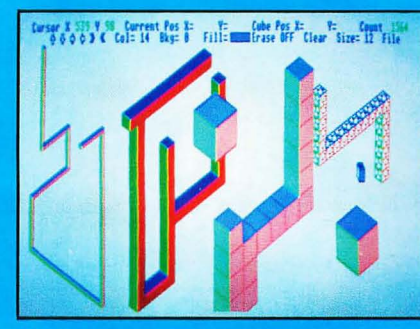

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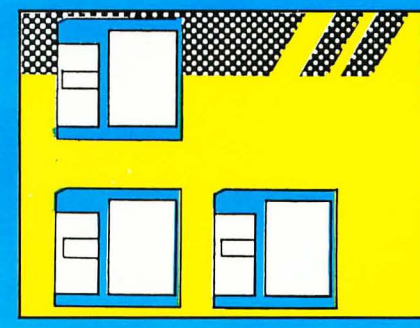

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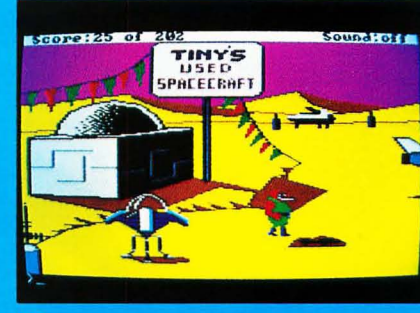

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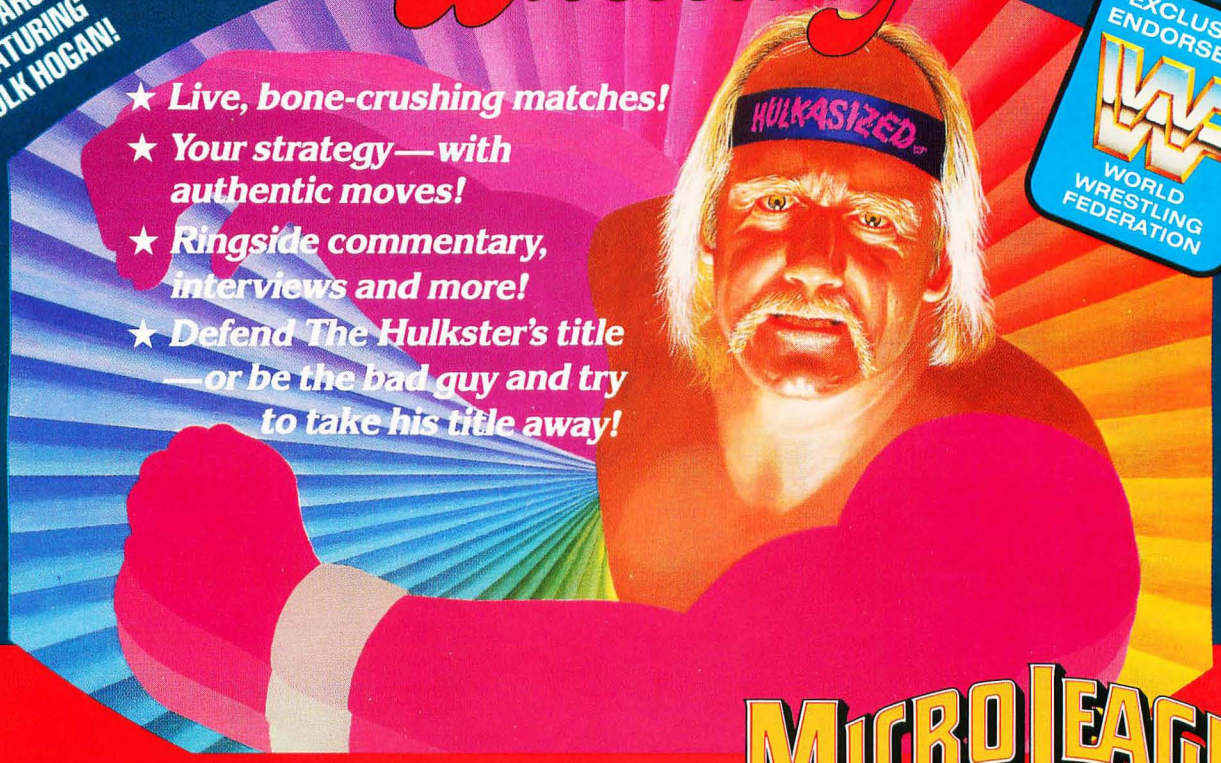

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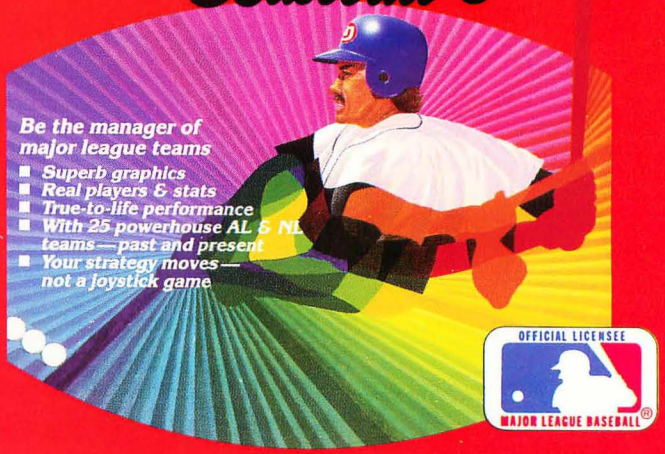

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REGULAR FEATURE

Reader comment

Toward more Logo on the ST.

I wish to contact other ST owners interested in *serious* Logo programming. I'm an attorney who was a computer programmer eleven years ago, using JOVIAL (an ALGOL derivative with string-processing features) on mainframe computers in the NORAD Cheyenne Mountain Complex. As the microcomputer revolution went on without me, I found I wanted to get back into programming as a hobby, and also have my children study computers for the same reason we made them study piano—as a skill that teaches mental discipline.

The Atari ST was obviously the best value for the money. When Logo came with the machine, I wanted to undertake a serious study of its capabilities. Alas, there are only a few books that go beyond basic turtle graphics, into an examination of the LISP-like structures of the language. I would like to point these out to the other members of the ST community, who are potentially the largest group of Logo programmers on Earth.

The best basic introduction to Logo on the ST is the *Atari ST Logo User's Guide*, by G. Sauer, from Abacus Software. Although it could use some good proofreading, its coverage of Logo's capabilities is comprehensive and, best of all, ST Logo specific.

All the other books come from MIT Press. *Turtle Geometry* by Abelson and diSessa uses turtle graphics in a sophisticated way, to examine vectors, topology and non-euclidean geometry. Brian Harvey has written two books that concentrate on the LISP-like features of Logo: *Computer Science Logo Style, Vol. 1: Intermediate Programming*, and *Vol. 2: Projects, Styles, and Techniques*.

I would like to hear from other ST Logo enthusiasts, at the address below. I also hope you will give coverage to Logo in your excellent periodical.

Sincerely,
Raymond Takashi Swenson
Major, USAF; Attorney at Law
3301 E. Dutchman Circle
Omaha, NE 68123

There's been very little demand for Logo, since other languages for the ST have come out. We receive few requests—and no recent submissions—for this language. Sorry . . . but if we do hear from a number of readers and programmers, you'll see the results in our pages. —*Ed.*

Beginner's luck.

Many, many thanks to your new magazine for carrying a plain-talking article like the one Mr. Maurice Molyneaux wrote for your February issue, **Step 1** "Hard Wares." I am a first-time computer owner, and I started with the Atari 520ST. Nowhere, in the fourteen months I have owned my ST, have I found anything written as clearly as his article.

I am retired. I owned and ran a successful GM car dealership for years. Nothing I ever did prepared me for the mysteries of the computer. I purchased my ST over 50 miles from home, and it's quite a problem getting to the dealer for all the help we beginners need.

The Atari ST manual really isn't that much help, either. Just like most articles, it's full of jargon. It seems most manufacturers and publishers think we beginners know much more than we do. Even my Panasonic printer manual wasn't very helpful. They too assumed I understood BASIC, hexadecimal, ASCII, etc. Their manual will get the beginner going, but, after a few pages, they get technical—and things become difficult.

I have purchased some software, like **ST Writer**, **DEGAS** and **Checkminder**, that I can handle quite well because they're so well documented, but there is so much more I would like explained to me.

I sincerely hope **ST-Log** will continue to have articles that will help people just getting started. It would be a shame to have any new ST owners become discouraged. Even with my meager knowledge, I enjoy my ST immensely. Please keep the help coming. Thank you.

Sincerely,
David Squires
Palm City, FL

ST-Check correction.

If you're the type of person who likes to add spaces to the end of each BASIC line when typing a listing, you've probably noticed that your ST CHECKSUM DATA has been inaccurate. To correct this problem, you should add or change the following lines in **ST-Check**'s BASIC listing.

```
240 for i=1 to linecount:c
hecksum=0:line input #2,i$
:l=len(i$)
245 if mid$(i$,l,1)=" " th
en l=l-1:goto 245
250 for z=1 to l:number=as
c(mid$(i$,z,1))
```

Accolades for Atari service.

I am writing with this story because of the people who kept telling me how sorry I would be for purchasing an Atari computer. *No service??*

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After a long search, I purchased a 1040-ST in May of 1986, from Wiser Electronics in Las Vegas. I encountered a couple of problems with the machine, which the owner took care of without any questions or hassles. That really helped a first-time computer owner like myself. But the story goes a little further.

A few months ago, my eight-year-old son came from school and found the joystick disconnected. In attempting to hook it up, he pulled the computer forward to gain access to the ports. The computer wound up on the floor, and two of the keys on the numeric keypad got broken. Since it was out of warranty, I started to try to find a repair shop with the parts for the keyboard, with no luck. Being on a tight budget, I didn't have the money to buy a new keyboard—so I figured I would have to live with it. As luck would have it, I ran into Guy, outside the CES in Las Vegas, who is a beta tester for Atari. He told me that I should write to Mr. Tramiel and explain the problem. I did so. Three weeks later, I received an answer. Ten days after that, I got a new keyboard from Atari.

I was only looking for the parts to repair the keyboard, but to have a company replace an expensive part—at their expense—was really unexpected. I believed that Atari was a good company before this, and showed off the computer to everyone. Now I just cannot say enough good things about them. Not all problems will be fixed this way, but, if you want a computer that you know is supported and backed up, then look to Atari. They really *mean* "Power Without the Price."

Richard Draude
Kingman, AZ

Having often heard the opposite side of this coin, we're glad to see some testimony that Atari's customer support is getting better.
—Ed.

The Atarian dilemma.

In 1980, when I first started looking for a personal computer, I carefully compiled a list of all the features of the machines available at the time, feature by feature. I spent a lot of time comparing Apples, Franklins and TRS-80s, and came to the conclusion that I'd spend a small fortune for even the most minimal system. I stumbled upon the Atari almost by accident, while a salesman was trying to get me to go for a Franklin Ace. When I compared my features list to the Atari's specs, and looked at the cost, there simply was no doubt in my mind as to which was the best computer.

"Best" is an interesting word to define. To an intelligent person (for instance, you and I), the "best" computer is one that offers the most features, in a reliable package, for the lowest price. Not wanting to trust my own logic, I checked with my economics text, and it assured me of two things: (1) people will spend money on a commodity if it gives them the greatest gain in satisfaction relative to its price; and (2) as the price of a good goes down, all other factors remaining the same, the demand for that product will increase.

So back in 1980 I bought an Atari, assured I was buying the best computer, and that millions would be sold because of its lower price. For the most part, both of those assumptions proved to be truthful. Of course, since then, I've taken Economics II, which explains that "satisfaction" isn't readily definable, and varies from person to person. I've also learned that all the things that are supposed to "remain the same" in number two above only do so in the textbook.

Consequently, part of being an Atari owner revolves around dealing with the frustration of owning a vastly under-rated computer. Initially, the Atari 800 demonstrated its ground-breaking technology in multi-part articles in *Byte* magazine, where various authors drooled over its graphics capabilities. Sadly, marketing mistakes turned a computer with great graphics into a great graphics machine with a computer. The Atari 800 became a "great game machine." Sigh.

John J. Anderson, Bill Wilkinson and David Small all tried their best in the early days to dispel the image of the Atari as a game machine, but their monthly articles couldn't match the millions of dollars in advertising Atari spent to make sure everyone thought the 800 was just a big VCS with a keyboard. Atarians became a thick-skinned lot, defending their machines with facts no one seemed to face. Often I would compare the Apple and the Atari:

"Okay, they've got the same microprocessor, right?" I said.

"Yes, that's true," the Apple agreed.

"And they both have 48K of memory, right?"

"They certainly do," he answered.

Relentless in my logic, I continued. "And you agree that anything written on a 6502 with 48K could be written on another 6502 system with 48K, truth?"

"Sounds reasonable to me," he replied.

Then I would administer the final blow—"So if one of those systems had three custom chips to generate graphics, sound, and handle I/O, like the Atari, it would *have* to be just as good as or better than a general purpose computer, wouldn't it?"

"No, don't you see," he would explain, as if to a child, "mine's an Apple, and everyone knows they're better."

At that point I would scream and run away, yelling things about basic economics, demand curves and marginal utility. I learned to live with it.

Time passed, and I began to lament the lack of good programming languages for the 8-bit Atari. I wanted a full C compiler, a fast Pascal like Turbo Pascal; I wanted FORTRAN; I wanted some higher resolution graphics. I wanted a lot, and the only place to get it was IBM. Ugh. Luckily, Atari Corp. under Jack Tramiel announced the 520ST; I bought one immediately. When the time came, I upgraded to a 1040ST. Surely, no one could deny the power of 1024K of RAM, high-resolution graphics and the mighty 68000 processor!

"You see, mine's a MacIntosh, and everyone knows they're better. . ." Arrggghhhh!

Arthur Leyenberger and Ian Chadwick expressed two views of the impact of the **Magic Sac** on the ST community [*in their columns in the January 1986* ***ST-Log***]. I bought a **Magic Sac** for my 1040ST as soon as I could get my hands on one. Why? For the first time, I could compare the hardware of the Atari and the Apple in a way that could finally prove that *my* computer, the Atari "game machine," could meet or beat Apple's offering. I won't deny the genius of the Apple ROMs. The Mac's toolbox routines, and the space into which they were crammed, are certainly a wondrous thing. But GEM is an effective representation of the desktop metaphor, with its own strengths—just without the religious connotations spending three grand on a Mac invokes. I think I understand the feeling though; if I spent three grand on a computer, I'd do an awful lot of praying for a way to get the money to pay for it.

Since I don't own a Mac, I enlisted the help of a local dealer to test the ST and the Mac side by side, running the same software. While I wasn't able to test every application, I did get the chance to test an everyday smattering of what a Mac user might run into. I ran an "insanely great" (their words, not mine) graphics demo on the Mac, called StarFlight. It is a starfield similar to the 1979 Atari **Star Raiders**, from the perspective of a pilot traveling through space. As in **Star Raiders**, the stars seem to slip around the "ship." The Mac version lets you accelerate, decelerate and warp. It would have been impressive on the Mac had I not seen **Star Raiders** years ago.

On the ST, this demo ran so fast that the star pattern began to resemble a square—the speed of display illustrating the non-randomness of the algorithm producing the starfield. Another cute little program called Bash Big Blue challenges you to smash an IBM logo with an Apple logo. On the Mac, the IBM logo moves quickly and is tough to get—on the ST via **Magic Sac**, it's nearly impossible.

The Mac is a fairly disk-bound machine, the result of the effort to shoehorn everything the Mac is into its original 128K environment. The ST's faster I/O allowed programs and desk accessories to load and run (launch) faster. Mac Write showed a larger screen area on the ST, allowing you to see more of a document, and the text

files could be loaded and saved with greater speed.

Need I go on? I really don't want to play "my computer's better than yours" with Apple users. I do want respect for the power my machine has. I want to be able to say "Atari ST" without someone making a face. At the next computer show, when the Apple users toss their usual, "Yeah, but it's just a game machine," I'll plug in the **Magic Sac** and show them how a game machine runs their software.

Am I worried that the **Magic Sac** will discourage ST software developers? No, not at all. The ST has its own talents. When enough are sold, the major developers will take advantage of those abilities. Do I want to pirate, purchase, or otherwise run Mac software? No, I like the GEM version of **VIP**, and I'm looking forward to trading **ST Writer** and **Word Perfect**, or something similar. ST games are unmatched anywhere. It's been tough being an Atari owner—I bought Mr. Small's **Magic Sac** to demonstrate *equality*. I don't desire anyone else's software, and I'm not suffering from "Mac envy."

In an on-line conference on CompuServe, David Small mentioned that he'd not have attempted the **Magic Sac** if he'd known how difficult it was going to be. He worked on it constantly for an entire year, and continues to refine the product. Why did he do it? Let me play amateur psychologist for a moment—perhaps the **Magic Sac** was just the expression of another *[not-so-]*thick-skinned Atari user's frustration.

Russell Haupert
Hollywood, FL

*Ignore the cheering you hear in the background. We just want to let our readers know there's a review of **Magic Sac** (although not of the newest version) on page 55 of this issue. —Ed.*

FSII takes off on RAMdisk.

I enjoyed very much your article in the February 1987 **ST-Log** about **Flight Simulator II**. It is without a doubt my favorite program for the ST.

There is a way to run the **FS II** program from the hard disk or a RAMdisk, which is even better. I run mine from a RAMdisk, and it is very fast! There is no delay at all when it updates the screen.

Here's the way to do it. Create a RAMdisk, using one of the public domain RAMdisk programs that are reset-proof; about 360 to 400K should be big enough. Copy all of the **FS II** files *except* the filename F0 to it, including the LOADER.PRG in the AUTO folder.

Leave the **FS II** disk in drive A and click on the LOADER.PRG in the RAMdisk. After just a few seconds, you will get the **FS II** screen and be all set to take off.

I have flown for hours and never once had to access the disk in the A: drive!

I am sure that this would work as well with a hard drive, but the RAMdisk is far faster. I hope this helps some of your other readers enjoy using **Flight Simulator II** even more!

Sincerely yours,
Gary Fuquay

Software survival.

I was hoping things would be different with the ST.

I was hoping that the outright theft of copyrighted software which has virtually destroyed the software market for 8-bit Ataris would not occur with the 16-bit ma-

chines. After all, the STs are probably our last chance in the foreseeable future of getting an affordable 16/32-bit machine with plenty of memory and fantastic graphics and sound capabilities. An ST owner would have to be incredibly stupid to sabotage the machine's chance of survival by illegally distributing commercially produced software.

Well, it seems there are more than a few jerks out there who will never learn. These adolescents, young and old, are jeopardizing our future, threatening to turn shiny new STs into expensive doorstops. It's up to all of us to stop these parasites before they do the same thing to the 16-bit software market that they've done to the 8-bit market. Toward that end. . . .

First, keep your eyes open for commercial ST software on BBSs. If, because of the number of copyrighted files on a board, it seems that the SYSOP must be fully aware of their presence, simply download his file directory and send a copy, along with the board's name and number (and, if possible, the SYSOP's name and number) to the software manufacturers whose wares were on the board. If, on the other hand, it appears that the SYSOP might not be aware that he has a copyrighted file on his board, simply leave a message. By doing these things, you will be making a contribution to stopping the rapid distribution of stolen software.

Second, don't accept *any* illegal copies of copyrighted software from anyone. Tell the parasites offering it that you will turn them in if they don't cease their software thefts. At the very least, let them know how they're jeopardizing the future—and how little you think of them for it.

Finally, in conversations with friends, don't refer to software thieves as pirates. Call them what they are: parasites, living off their "hosts" without giving anything in return. They can injure or even kill.

Those of us who buy our software, and thereby support a healthy software market, are the parasites' hosts. And, if we don't all do our share to eliminate them, the ST is the thing that they'll kill.

Sincerely yours,
William Blair
Keesler AFB, MS

Those are pretty much our sentiments, too, for all Atari computers. We know of BBSs and user groups who swap software in the guise of sharing discoveries. While that may be fine for public domain programs, we think it's downright destructive for products with copyrights. If your group or BBS circulates stolen software, voice your disapproval—loudly. Let's get back to the image of hackers as good guys, not pirates. —*Ed.*

What price PC?

by D.F. Scott

Last January 8 in Las Vegas, at the Winter Consumer Electronics Show, Atari managed to surprise us by announcing a new product we were not *expecting: a PC compatible. We'll discuss the issues behind this machine's introduction with Atari's Executive Vice President, Michael Katz.*

Fuji Blue.

The Atari PC runs on an 8088/2 CPU, with a slot for an optional 8087 math coprocessor. The /2 denotes the switchable processing speed, either 4.77 or 8 MHz. Programs intended to run in real-time on the original 8088 may require the slower speed.

As of the time of this writing, the Atari PC—I'll call it APC—is slated to be sold in two configurations: one with no monitor, a half-height 360K 5¼-inch double-sided drive, and an IBM-type Color Graphics Adapter included; another with a green monochrome high-resolution monitor, the same drive, and both CGA *and* IBM-type Enhanced Graphics Adapter included, to allow 640x350 graphic resolution in sixteen colors (if you have a color monitor). Prices are, tentatively, set at about $499 and $699.

The keyboard is described as "XT-style," which implies ten programmable function keys in two rows of five on the left column, and dedicated function keys over the ten-key numeric keypad in the right column. So many keyboards are called XT-style that this doesn't really tell us much.

Also included with the package is a mouse with ST-type chassis and Microsoft-type connection, presumably serial. *Not* included, contrary to some reports, is any type of GEM-in-ROM, since GEM for the PC series is an MS-DOS *supplement*, and there are other operating systems available for the PC—some still prefer CP/M. A form of GEM, most likely the infamous Version 2, may be bundled with the PC on disk, pending a licensing agreement with Digital Research.

There is no word yet about whether Microsoft will license MS-DOS to Atari for sale with the APC, but if it does, the version number may very well be 3.2. If Atari does not offer a DOS, then it will be up to the consumer to purchase one on his own, usually for around $100. And, since DOS is rarely sold separately, this might lead to a small sales snag.

The EGA-compatible monochrome monitor is described as "intelligent," producing grey-scales of intensity depending on the frequency of the color received, rather than dots of varying density but uniform intensity. There is no word as to who will manufacture this monitor. The display may very well be an improvement for those who saw the world depicted in **Flight Simulator II**, in monochrome, as a wallpaper-like montage.

The all-important degree of compatibility is, at this time, unknown. The press release claims the APC will be "virtually 100% compatible." Well, there is no such quantity as *virtually 100%*, and duplication of the IBM BIOS is illegal. Bearing this in mind . . .the three programs I've seen used for compatibility tests are **Flight Simulator II**, **PrintMaster**, and **dBase III Plus**. Together, they probably use most of the standard PC programming tricks, so if they work, there should be no trouble running any other major package.

In April of 1986, producing a PC was perhaps equal in Atari's scale of priorities to opening a burger chain. At the West Coast Computer Faire that month, Atari's Sam and Leonard Tramiel held a public forum, which was moderated by Data Pacific's David Small and transcribed by my colleague, Matthew J.W. Ratcliff. Responding to a question from Small as to why Motorola's 68000 was chosen for the ST's CPU over National Semiconductor's 32000 or Intel's 80286, Software VP Leonard Tramiel commented:

"IBM compatibility was never something that we were aiming for. The IBM PC, in my personal opinion, has always been an archaic technology that's probably held back computers more than any single thing done by any single company."

Whether or not that's still Leonard's opinion, Atari is promising to produce a clone of the "archaic" machine this year, so a pretty powerful force must have persuaded them to do so. What was it?

The rationale behind the APC, claims Michael Katz, was a deliberate competitive attack: "It was apparent that the specialty dealers and mass merchants wanted to have replacement or low-cost products that were MS-DOS compatible, because they had already started selling or experimenting with those products during 1986. Our key customers—both mass merchants and specialty stores—wanted to offer, and

were offering, the consumer a low-priced alternative to the [IBM] PC."

The Seoul of a new machine.

Enter the Korean Connection: Hyundai, known in the U.S. as an automobile company, is producing a PC/XT clone called the Blue Chip, at an eye-opening price of $699 for 512K RAM and no monitor. The company subscribes to the formerly absurd notion that PC clones can sell well in the mass market, the department stores.

I say "formerly," because the Blue Chip, in less than a year, has become one of the major-selling computers in America. Suddenly, the neighborhood store has become the place to buy computers. Hyundai's Blue Chip division president, John Rossi, seems to have systematically "targeted" what had predominantly been Commodore and Atari territory. Rossi, you see, helped Commodore establish its mass-market connections under then-President Jack Tramiel.

So both Commodore and Atari rushed to promote their own PCs. Commodore already has one being shipped overseas from Europe. Some have reported that at its American introduction at the Winter CES, the price was so high Nevadans could hear buyers laughing over the nuclear test blasts. Atari, on the other hand, borrowed the Mega ST's cabinet and external expansion box for its PC-prototype—hence the "radically new design" described by its press release.

Some loyal Atarians were dismayed by the announcement of the APC on Delphi. Mike Katz is reassuring: "We aren't throwing in the towel at all. We're recognizing there are two different markets. One is the person who has to have IBM compatibility, because the only brand name they want or know might be IBM, and they're aware of the software library. Those people will *not* buy a product with its own [proprietary] operating system, regardless. So for that audience, which definitely exists, we wanted to have a *product*.

"For those who want a faster, better graphics machine, with all sorts of specialized capabilities—like music and other things—we have the ST, with its own operating system and unique capabilities. That's the machine for the more aggressive, *knowledgeable* computer buyer."

The resentment is apparent, the wish that Atari didn't *have* to produce the PC. Marketing Communications Director Neil Harris admits his feelings openly over Delphi: "I was disappointed at first, but now feel that the Atari PC will open lots of doors for us that were previously closed."

Harris goes on to explain, "It's ideal for the kind of mass merchants we've been trying to approach with the other products in our line. The Atari PC is the first step in broader exposure for the rest of the Atari products, and that's one of the main goals."

Indeed, now that much of the general trade press has encountered yet another PC, the Megas and other STs have received some long-overdue publicity. Mike Katz feels such publicity was previously lacking, "possibly because we haven't had a PR firm for the past six months, and we didn't have much time or manpower to make much of a PR effort."

The PR effort for Atari's PC has not been without flaws. The original press release, for instance, called the CPU an 8086; this was later updated to *8088*, but the */2* is still missing. The 8088 and 8088/2 both have 8-bit data buses, and thus are really 8-bit CPUs; the 8086 has a 16-bit data bus and is therefore a true 16-bit chip. The 8086 will be considerably faster than either 8088 at the same clock speed.

One publication says Atari told it 80286- and 80386-based machines were being considered, perhaps to counter the Blue Chip ATs to come. Katz flatly denies any such plans. One Atari release claimed the PC would have standard expansion slots. Katz corrected this, saying an extra expansion box with slots will be available "at the introduction of the product."

Some press sources were apparently told by Atari to expect a March '87 release; later, when told a more reasonable date would be August, to account for the time it takes for the FCC to approve the machine for sale in the U.S., one publication was aghast. *Computer+ Software News* quoted "unnamed industry analysts" as declaring the APC potential vaporware, and that its delay would result in Atari's bankruptcy. If I were to predict that, I wouldn't name myself, either.

We can look forward to a splashy APC ad campaign. "There will be significant advertising," Katz projects, "on a national basis. Whether we'll use television, radio, print, or a combination of the three, remains to be seen, but we'll be doing major advertising starting in the fall."

The theme of this advertising will be brand-name recognition, à la Iacocca: "A lot of [clones] have unknown names in the United States," claims Katz, "whether it's Hyundai or Franklin or Victor, or whatever. Atari has a well-known brand name, which we think is becoming recognized more and more for computers, not just video games."

The public will be reassured, says Katz, that Atari "is an American company, that knows how to market and promote and support and service and stand behind its products. We see this, in the clone area, as a definite strength."

Does that mean we can expect some sort of *extended* warranty? "Not extended," answers Katz, "but we think the one that we have is pretty good. It allows for basically a 90-day, over-the-counter exchange at the retailer; and after the warranty period, there's a charge to have it serviced direct ly by Atari."

Mega / No-Mega?

How does Katz predict the ST and APC will fare in sales figures. . .against each other? "Hopefully equally, but in different markets: the PC much more in the mass-merchant electronic chain, department store, catalog showroom; and the STs in the specialty dealers and specialty chains.

"We think the computer specialty dealer —basically selling the ST—wants a low-, middle- and high-end price point, basically a 'good-better-best' type of product line. So we plan to continue letting them have the 520 as 'good', the 1040 as 'better' and the Megas as the 'best'. It's really the opportunity to have a distinct product line for the specialty dealer, and also for the dealer to sell into businesses. It's our opportunity to really compete with the IBMs of the world in businesses."

I may as well say here that "Mega ST" will probably *not* be the final name. See, if you say "Mega" three times fast, you might be naming its closest competition.

We've barely mentioned the XE. What's happening to it? "We're a little bit disappointed," understates Katz, "in the lack of strong trade support for the line, because we think that the price point—which is under $100 for the 65XE—is a wonderful value for a 64K computer. It's *much* less than the competition, and we have a wonderful software library that exists for it. We will continue to sell and market it. . .We're not abandoning it, but we're waiting for the trade to get behind the product and help us create consumer awareness that there's such a good product at such a low price point available right now."

It's these low prices, and consequently low markups, that some distributors claim are driving them away from Atari products. Recently, Texas giant Miller & Associates, once the main ST distributor for the southwestern U.S. and one of the few Apricot distributors in America, dropped Atari altogether, in favor of PC-clones.

As the sail unfurls on one or the other flagship. . .

When Intel started selling its CPU chips and Microsoft its operating system to any company they so chose, the risk small companies took in introducing new computer brands lessened. It became possible to market a pre-established computer type, with almost guaranteed customer support, as well as a major brand name to mimic.

As software companies grew, the only profitable ventures they could afford to offset increased overhead were those directed toward the larger installed user base. The countless brand names that entered the PC-clone foray brought forth a huge software library. Meanwhile, IBM—suffering a decrease in its share of the market —has reportedly been developing proprietary chips for their next '386 micro, so it can put its own *non-cloneable* stamp back on the market.

With the 68000-based machines gaining prominence, independent software producers have had to rely on the stability of the manufacturers before they could take the risk of introducing a product to a small installed user base. For Apple's Macintosh, such reliability was not much of a problem, because of the company's corporate strength. Atari took a while to re-establish itself, and now has finally entered the Realm of the Respected—though with every press correction and retraction, the corporation takes one step backward, toward exiting that realm.

The Atari PC is part of a larger attempt by Atari Corp. to prove itself, not by slaying the dragon as it tried to do before, but by throwing around a few flames of its own. If the APC and the Mega manage, through all the mishaps, to gain the support of independent hardware and software developers, then Atari will have seized that all-important beachhead, trust. If IBM branches out in search of a product it can call its own, compatibility will no longer be the key to success; trust will be.

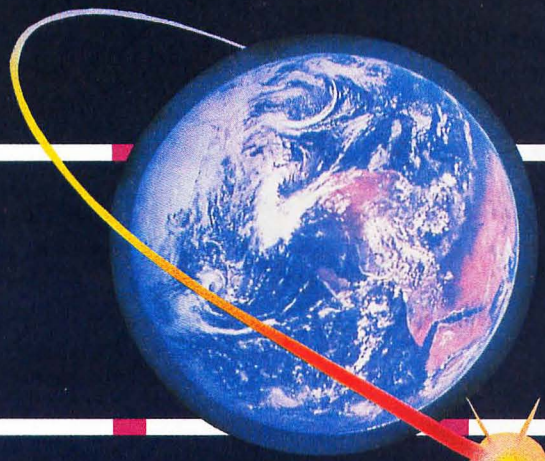
That's the **report** for this month. I'll see you on Delphi. ///

WHAT IS ST-CHECK?

Most program listings in **ST-Log** are followed by a table of numbers appearing as DATA statements, called "ST CHECKSUM DATA." These numbers are to be used in conjunction with **ST-Check** (which appeared in **ANALOG Computing/ST-Log** issue 41).

ST-Check (written by Clayton Walnum) is designed to find and correct typing errors when readers are entering programs from the magazine. For those readers who would like copies of the article, you may send for back issue 41 ($4.00).

ANALOG Computing/ST-Log
P.O. Box 625, Holmes, PA 19045



"Interlink ST is an outstanding telecommunications program for the Atari ST and my personal choice for ease of use and speed."

-Dave Groves
SYSOP Compuserve's ATARI Forums

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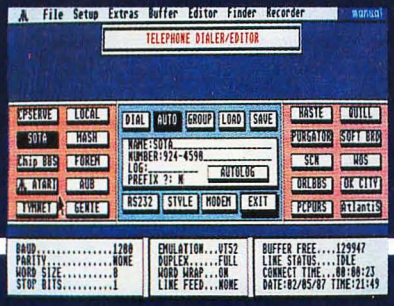

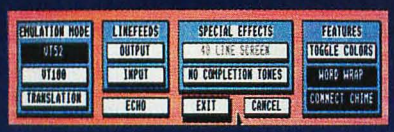

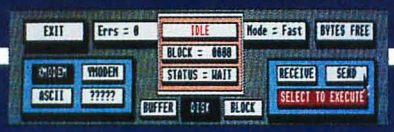

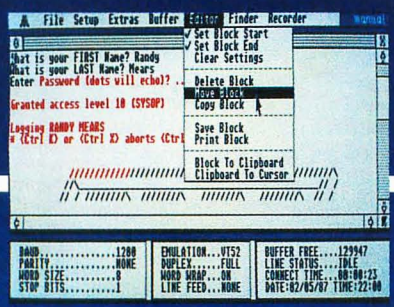

Developed by Randy Mears
Dealer Inquiries Welcome

It's time to disprove a common misconception about ATARI ST™ Terminal Packages — you don't necessarily have to have a degree in Computer Engineering to use one. Step forward into the world of INTERLINK ST, the new telecommunications system from INTERSECT Software. Step up to a host of advanced features, without having to step up to a new tax bracket to afford them. Best of all, sit back and enjoy a full GEM implementation that won't take you hours to learn (and relearn).

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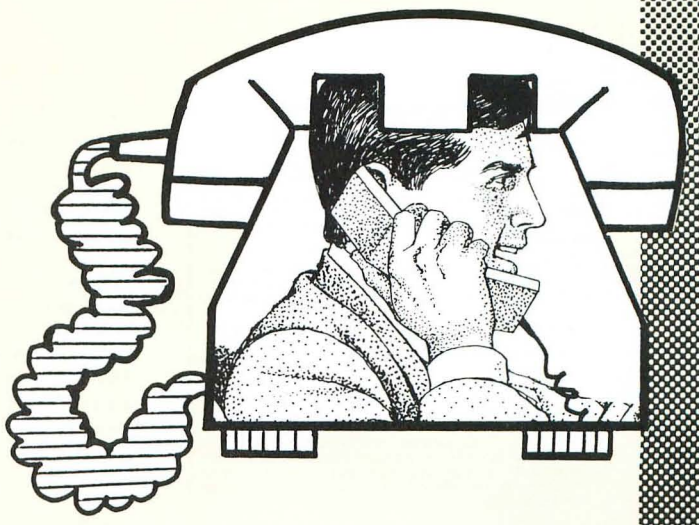
Ma Bell II

How a turn-of-the-century computer magazine editor redefined the phone system.



by D.F. Scott

When I, A.C. Wolcomb III, founded *Blit* magazine in 1992, we were only the 304th computer magazine in existence on this planet. My associates and I were then trying to decide which microcomputer brands to cover, so we made a list of all of them. By the next week, when the list was complete, we all agreed: 4,516 brands were too many, but if we picked just one we'd be forsaking the other 4,515. So we tried to find ways to compromise. Harry Ephraim, now our Logical Applications Editor, was never too original a guy, and thus suggested we cover the PC compatibles field. That narrowed our list to 4,503 brands. Joni White, our Assignment Editor for the last five years, suggested instead we cover only brands beginning with the letter *A*.

That brought us down to 4,479 brands, so we decided we'd just cover the decent brands of computers. That narrowed our list to a comfortable dozen. Ten of those do begin with *A*, and Atari is one of them. So, as a token of congratulations to everyone at **ST-Log** for helping that magazine surpass *Penthouse* and *Video Guide* in total paid circulation for 1996, I'd like to contribute some personal anecdotes to its telecommunications issue. You'll be pleased to note that I do use a souped up ST-32 for teleconferencing with my other editors worldwide.

Let me tell you a bit about my system. My home is my office, so the only traffic problem I face when getting out of bed and going to work is stepping over all of these cables. Sticking out of my ST-32's expansion bus is the famous **SlamCard**, with the 6×6″ clamp that serves as the universal connector. Any cable that can fit into the clamp is considered an automatic connection. If I owned a quaint Beverly Hills townhouse, a **SlamCard** might not be the item I'd want guests to see first when they walked in the front door—eight different sized cables rammed into a clamp-box and held together with electrical tape. I could, however, put a marble pedestal under the expansion box and call it Op Art.

Anyhow, one of those cables slammed into my **SlamCard** runs directly to my Sony Digital Video 2-way Visicom. It takes a picture of me (as I am—I don't have a makeup artist), and sends me and my multitude of words, in digital form, to a geostationary satelite—from which I may be received via a service called TeleBlit, by anyone who cares to pay the com charges.

TeleBlit, as anyone with a DV2com knows, is the world's largest satellite-based visual teleconferencing service, as well as the download service for *Blit* and several other magazines, including **ST-Log** and **ANALOG Computing**. America logs on to TeleBlit, slams a cable from her laser printer into her **SlamCard**, asks the autoteller to dump the contents of *Blit* onto 300 pages in her laser printer every week in full color, and wham! Instant hard-copy computer jargon, cut and stapled, full of ads. In this way, we were the first magazine publisher to send our copy, in typeset form, to individual homes all over America *via satellite*.

Hugh Hefner tried to get us to start a download service for his magazine, but we haven't been able to create an interrupt routine that tells the laser printer to reset the staples in a certain way. So, in his old age, he stormed off in a huff and opened a repair shop for antique pinball machines.

I admit, sometimes I miss the old RS232 method of sending ASCII text over a telephone line—and hoping it gets to the receiving end in some semblance of the same language in which it was sent. There should be one or two of those old-style services left; I think one's called OldStyleNet. About the only person who logs onto OSN is Jerry Pournelle, with "Zeke," his CompuPro CP/M machine—probably the world's oldest living micro. Last message I read, two of his computers crossed cables and tied the knot. He held a big wedding ceremony, hired a preacher who knew CP/M (flew him over from Seoul), and turned over his entire manor to them for a weekend honeymoon.

Let me tell you just how we established TeleBlit. I, among millions of others, subscribe to the belief that the two dumbest things that ever happened to America were: (1) the breakup of AT&T, and (2) the creation of the thought processor. The latter development has done more to foul up the work of our copy editors than sewage backups at the *Blit* building. Now, any old schnook can wire a computer up to his brain, and Bam! (the thought processor) supposedly reconstitutes his thoughts into hard copy. It was Bam! that reconstituted our National Anthem for us, into this:

> America is a great place,
> A happy place to be.
> Lots of good food and things to see,
> Fun for you and me.

Tell me, where's a bomb bursting in air when you really need one? Anyway, with the advent of microprocessors fast enough to handle satellite transmission *and* recep-

tion *on their own*, young entrepreneurs—who had thought Keith Ledbetter's **BBS: Express!** was the closest thing to a phone service they could ever run from their own basement—switched over to Digital Video so fast you could hear the Hayes executives crying into their pillows at night.

One such entrepreneur was JoJo Heinrich of Westbury, Connecticut, who in '93 started the first DV BBS, which he affectionately christened "Ma Bell." People with DV transmitters started using Ma Bell like the telephone—in fact, some stopped using the phone altogether. Poor JoJo was nearly drowned in lawsuits from the regional phone groups. One of the actions went all the way to the U.S. Supreme Court. Chief Justice O'Connor's vote, though, resulted in a 5-4 decision that upheld the public's right *not* to use the phone, and to use something else if they wished.

After 17-year-old JoJo's first victory, he was nearly drowned again—this time in *competition*. We at *Blit* started helping him out, by giving him copies of *Blit* to download to his users. Then we set him up with an Atari MicroVAX-oid UNIX system to handle all his calls, and a billing system based on an accounting software package called **Carnation Instant Bill$** (**CI$**, for short).

TeleBlit, in a sense, was born at that point; but then AT&T started eyeing Ma Bell, ironic as that sounds. By '94, we were feeding *Blit* and ten other mags through, and handling worldwide videoconferencing for a couple thousand folks—and making a sizeable profit, I might add. I'll always have pictures in my mind of those first cross-continental arguments, back when we didn't have split-screening. The picture switched from person to person so rapidly I could've used my monitor for a strobe light.

Anyway, we decided to go ahead and do some talking to AT&T. After all, the company was one of our qualifying brands—it built decent computers and began with *A*. They had developed for UNIX systems—like Atari's—a split-screen teleconferencing system with splashy extra graphics, like world maps which pointed out the location of each caller. We dubbed the software "Koppel-ganger" after the master TV conference moderator. We found out that AT&T, for the last several years, was secretly working on a substitute global phone-without-a-phone system—all this time, they were waiting for us to get fed up with the tinny sound of fiberoptic cables.

So on 3 September 1995, we went online as the first private organization to test the AT&T SatCom DV2com system. Our first hour on the main conference node of TeleBlit used Koppel-ganger and was moderated by Ted himself. We let Ted do it on the condition that he would *not* invite Jeane Kirkpatrick to join us. He shrugged a bit, said, "I'll think about it," thought about how archaic the telephone had become, called us back in a week, and accepted.

We went live that evening over national television—seriously, so many people logged on that there was interference in some regions. Some callers overlapped others, resulting in strange, hybrid face images; but we were apparently forgiven—after all, we were just beta-testing Koppelganger.

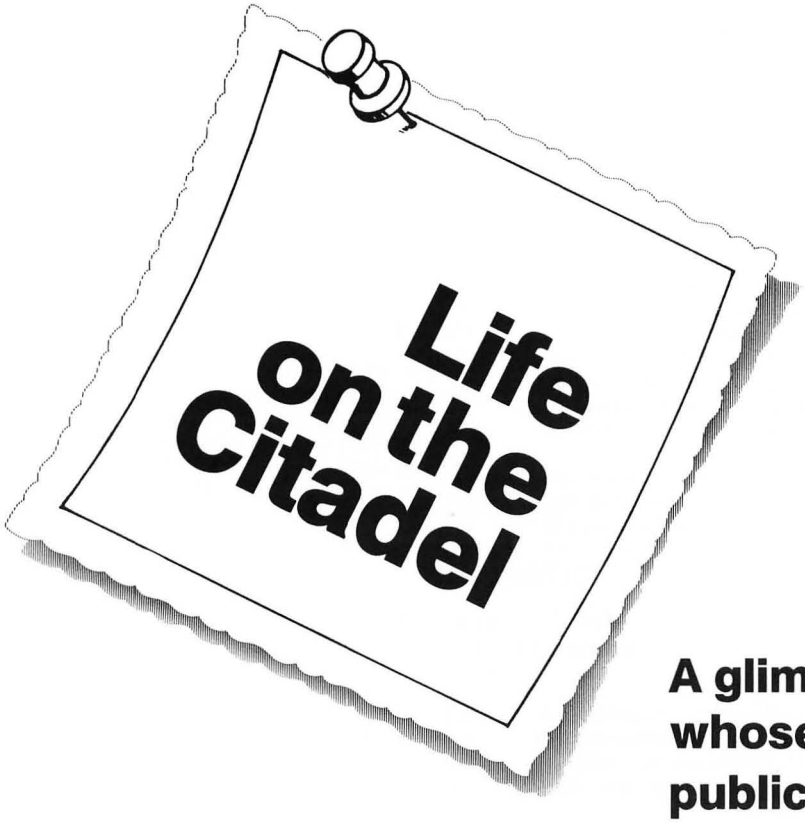
All the execs at *Blit*, including me from Washington (they call me "A.C. from D.C."), were on hand answering questions from the general public. Every time I had a really motivating, esoteric sentence about telecomputing, some corporate executive from either coast would step in and say, "Ted, let me say something, if I may. It goes without saying. . ." or some other statement which meant equally nothing.

One guy calling from Fargo thought this was just any regular day on TeleBlit and asked us, "I've got a 6-gigabyte hard drive attached to the SCSI port of my Mac 14, and I've got to swap two pins in the cable connection somewhere to get the CPU to send an exec command. Any of you guys know what two pins they are?" Poor guy, he had no idea at that moment fifteen million people hadn't the foggiest idea what he meant.

After that September day, so many dishes sprouted on American rooftops it may as well have been spring. I was in such high spirits myself, I could've kissed Jeane Kirkpatrick. We've got Ma Bell transceiving stations being built in about every major U.S. city you can name. Of course, the first companies to really pounce on this new technology were the junk mail producers; they wanted us to dump a MicroMart circular down everyone's laser printers every time they logged on the com. The home-shopping companies were next to switch over to DV2com, but they're also the people who invest the most money into DV—and there just ain't no arguing with the color green.

So that's how we started the demise of the phone system. I could go on with this spiel forever, but all good things must come to a terminal. Besides, I have to go reconstitute the National Anthem. If you have any better lyrics for me (*please* don't use Bam!), leave them in my mailbox on TeleBlit. Let's all make waves. ///

D.F. Scott is an artist, writer, educator and programmer living in Oklahoma City. He is currently engaged in the study of quantum physics, computing and other ways in which elementary particles interact with each other. Otherwise, he fills infinite pieces of paper.



A glimpse into the Citadel BBS, whose system derives from public domain software.

by Steve Yelvington

Just about every night, Nancy Anderson visits a party that never ends. The people she meets there are a strange mix. There's Al Kuhfeld, who holds a Ph.D. in nuclear physics and writes mystery stories. There's David Parsons, a programmer for a company that makes word processors. Deb Kraus is a law clerk for an appeals court judge. Kevin McLeod is a dishwasher. Curtis Hoffmann is the author of a recently published science fiction novel (*Project: Millenium*).

Most of the time, Anderson goes there through the screen of her computer, via modem.

The party takes place in Minnesota's Twin Cities on a special kind of bulletin board system called Citadel. It's simple, fast and structured to promote electronic "conversations" that can continue for months.

The software, which is in the public domain, runs on a variety of personal computers: aging CP/M machines, IBM clones, Commodore's Amiga, and now—after forty days and forty nights of Parsons' programming work—on the Atari ST.

Computer bulletin boards often specialize in technical talk, usually about a single brand of computer. Minnesota's Citadels—there are nearly twenty of them—are different. They specialize in being general.

The subjects discussed cover a broad territory: fine dining, love, euthanasia, cats, oxymorons, vitamins, legal troubles, politics and anarchy. Even computers come up—but they're a minority topic.

The Citadel users' activities have gone beyond computer communication to encompass camping trips, skating and skiing outings, a road rally, picnics, bowling and many late-night "Perkins runs" for coffee and pie at the Cake 'n' Steak.

"It's not a techie thing at all," says Mike Tarrant, SYStem OPerator (SYSOP) of a Citadel called Todos Santos. Parsons, SYSOP of Pell, agrees. "It's not so much a bulletin board as it is an extended social club."

The social nature of the Citadels is what attracted Anderson. "Where else can you meet so many intelligent people?" she asks. "Where, other than at slumber parties, do people talk so freely and give so much of themselves?"

For lawyer Deb Kraus, the Citadels have opened up a door to a broader group of friends. "It exposed me to a lot of people I don't think I could have come across otherwise," she says. As she had focused on her profession, she had found her world becoming narrow. "By the time I got out of law school," she recounts, "all of my friends were lawyers, and I found myself wondering what real people were like."

Al, her teenage son, urged her to take a look at something he had discovered through his home computer. But it sounded weird and she was skeptical. She remembers thinking, "This reminds me of the days he'd try to get me into D&D [Dungeons and Dragons™]."

Then one Christmas, she logged onto a bulletin board called Todos Santos, using the pseudonym Ambrosia, shortly after Al had logged off. "It was really awesome," she recalls. She felt overwhelmed by the messages. "I was very intimidated," she says. "I thought I was the dumbest person in the world, and had nothing meaningful to say."

But she came back, again and again. within two weeks, she says, "I was hooked. Everyone is so friendly that you get involved really quickly."

It's one thing to "know" people from their writings, and quite another to meet them face to face. The following February, Kraus took a great leap: she invited the people she had "met" only electronically to a St. Valentine's day party at her home.

"I was really apprehensive," she remembers. "I didn't know what sort of people were going to show up. I might wind up with a houseful of child molesters and ax murderers. Or, worse yet, nobody would show up." But, when party time arrived, so did the Citadel people. The house was packed; the party was a smash hit. And meeting the other users in person changed her perspective.

"Suddenly there's a face attached to the name," she says. "Getting on the bulletin boards came to life after that." The friends she met through the Citadel community became an important source of strength when she separated from her husband. "I was feeling really badly, and it took me a few months to overcome my pride and stuff," she says. "I finally screwed up the courage to put it all in a message. . .

"I got so much mail you wouldn't have believed it. People were sending me poetry, words from songs, sharing their own experiences. . .It made me feel so good, and so cared about. I really liked that." When she fixed up her St. Paul bungalow that spring, half a dozen Citadel users showed up to pitch in. They scraped and painted two sides of the house, put peak

vents in the attic and installed the front awning. "It was amazing," she reports. "It got me through a really bad time."

Paul Ahles counts Citadel users as his best friends. In a message posted on Todos Santos, he described his feelings this way: "Sure, I know a great deal of other folks and interact with them during the day, but at night for two-plus hours I read messages from you folks, that are more sharing and giving than anything I ever hear during the day.

"I have read dreams, watched as babies were being born and began to grow, I have seen discussions about sex, the government and religion. We have picked on each other, teased, joked, camped and stargazed. We have clung together in the face of death and supported each other through it.

"There is a sense of belonging [*for all*], regardless of how much grief you get, or give out. These boards would not be the same without some of you. I find that the time I spend here is the highlight of my evenings. . .

"Citadel is like an unseen friend that is there when you need company, or a shoulder to cry on. It is there when you want to be creative or clever. It remains available even if you just want to get personal with a friend of yours.

"Citadel is still there if you are angry and just want to piss and moan, or beat on something; it is a friend that is ready for you regardless of your moods and feelings, and it conforms to your attitude at the time you post without question or doubts. . .

"Two years ago, at the first picnic, when we first met, I found that there were a lot of strange faces, but I somehow felt that I knew a part of everyone who was there. In one way or another, we were a unit—a fellowship of folks who could get along together without ever having met before."

Even among Citadel "regulars," the electronic community occasionally comes in for criticism. It's been called insular, dominated by cliques and hostile to outsiders. Responding to such a criticism, Anderson wrote: "Sure, there are 'cliques' on the Citadels. Some people would more nicely call them 'groups' that have something in common and have affectionate bonding going on. It depends on how you look at it.

"I know that I have found almost all the Citadelians to be friendly and fairly accepting, from my first post on Test System. We aren't going to find perfection here, because the system runs on people and people aren't perfect (yes, I do a lot of pointing out the obvious)."

Many people first realized the strength of the bonds that had formed in the electronic community last year, when Joe Summers—a county judge, television show host and one of the most prominent Citadel users—had a heart attack.

As soon as he was able, Summers had a portable computer set up in his hospital room and resumed contact with his bulletin board friends. Shortly after he was released, he was sitting in a tent at a Citadel campout during a cloudburst, leading a song: "It ain't gonna rain no more, no more, it ain't gonna rain no more; how in the heck can I wash my neck. . ."

Not long after the campout, Summers was dead. Within hours, rooms titled "Joe Summers" had been established on the bulletin boards, tears flowed—along with electronic "hugs," eulogies and poetry. One of the poems was read at Summers' funeral Mass. ///

Steve Yelvington is an editor for the Minneapolis Star and Tribune *who has used microcomputers for more than a decade. He discovered Citadel after moving to Minneapolis and buying one of the first 520ST systems in the Twin Cities. He operates the Lake BBS.*

CITAWARE

How Citadel works and how to get on-line.

The shortest path between more than two points usually isn't a straight line. In the case of Citadel, the public-domain bulletin board system implemented by David Parsons for the Atari ST, the shortest path is a circle.

Citadel's messages are placed in "rooms" arranged in an imaginary ring. Visiting a Citadel is a lot like going to a large party and wandering from one conversation to another. . .except that you can find out what people were saying before you got there.

There is no "main menu" in Citadel. Nor is there a "message base" or a "file transfer system." When you log on, you are greeted with a brief banner, then placed directly in a "base room," often titled "Lobby." The messages begin right there.

A user is greeted on-line by a "room prompt"—essentially a command line showing the room name, such as "The Dock>." A single keystroke starts the process of reading or entering messages.

The usual pattern is to read all the new messages in a room, then type *G*, for "Goto." The user then is moved to the next room in which there are unread messages. Rooms with no new messages are skipped automatically.

Eventually, the caller comes full circle, returning to the base room, and logs off—although a call can be terminated in any room.

"Extended" commands—preceded by a period—enrich the basic command set, to cover a tremendous range of possibilities. New messages in all rooms can be read with a single command. Messages can be prepared on a word processor, then uploaded using Xmodem protocol. Program and text files can be transferred, download directories can be examined, and system statistics can be summoned by using simple variations on the same basic commands. There is voluminous on-line help, all of it contained in standard text files that the SYSOP can modify easily.

Strangely enough, Citadel's real roots are not in computer bulletin board systems, but rather in gaming. Its concept is taken from an adventure game that ran on a university mainframe computer. In the game, adventurers could "write on the walls" of rooms deep in caverns, to prove that they had discovered the rooms. That model strongly influenced the first Citadel, ODD-DATA, which ran on a small CP/M system in Seattle.

One of the adventure game characteristics that remains in the Citadel program is the implementation of "private" rooms. These rooms can be "discovered" only by typing their full names. Private rooms can be used for invitation-only discussions, or they can be the object of a "roomhunt."

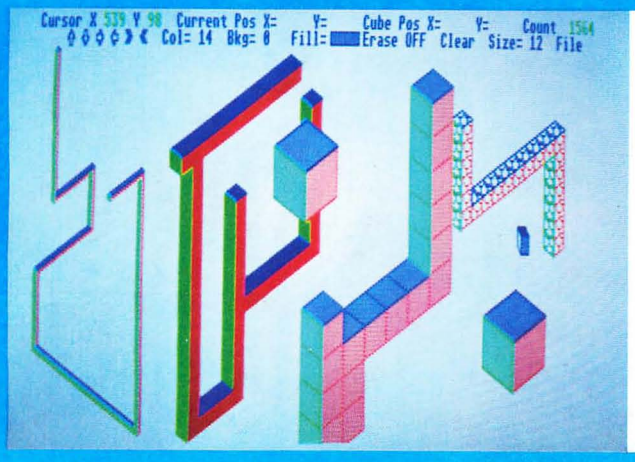
Science fiction author Curtis H. Hoffmann runs an entire private Citadel devoted to a fantasy role-playing game called Paranoia.

Citadel differs from other varieties of computer messaging software in several ways. First, it's in the public domain. Both the software and the source code can be copied, distributed or modified.

It also runs on a wide variety of machines. Written in C and intended to be transportable, Citadel began on 8-bit CP/M machines, was converted for MS-DOS, then was implemented on the Amiga and the Atari ST. Citadel "workalikes" and derivatives also exist, too; among them are Stonehenge and Minibin.

Finally, networking is part of the design. In Minnesota, many Citadels automatically call each other at 3 a.m. daily to exchange networked private mail, messages in "shared rooms," and files requested by SYSOPs—including the latest versions of Citadel. While the first release of Citadel for the ST does not support networking, it's expected to be added quickly.

Citadel software for the Atari ST is easy to obtain. It's available for downloading from ANALOG Publishing's Atari Users' Group ST files on Delphi, or by contacting Pell (612-377-9239) or the Lake (612-426-1374) in Minnesota. ///



Escher Cubes

A drawing program that will give you a whole new perspective.

by James Luczak

Escher Cubes is a complete isometric drawing system. What are isometric drawings? Well, if you've ever seen drawings by M.C. Escher, then you've seen examples of isometric drawing. Basically, it's a way of creating optical illusions.

Escher Cubes doesn't use lines to draw with; instead, it uses cubes. You read it right, *cubes!* The easiest way to picture this drawing system is to think of each cube as a three-dimensional segment of a line. Drawings you create with **Escher Cubes** will be, to say the least, out of the ordinary. Anyone can use **Escher Cubes**. You don't have to know anything about drawing to have fun with the system.

Features.

For your creative "tools," **Escher Cubes** gives you sixteen cube colors and sixteen background colors to choose from. There are thirty-six fill patterns and twelve cube sizes for use, with an "Erase" mode available.

The program works in medium (color) and high (monochrome) resolution. Drawings created in medium resolution are automatically adjusted when displayed on a high-resolution system, and vice versa. Your works are automatically recorded as you draw and can be saved to disk. The picture data can be entered from a keyboard. Saved drawings can be used in either medium or high resolution, and you can load and display multiple drawings.

Escher Cubes has a full-featured file maintenance system, plus a drawing editor. It also allows saved data or displayed drawings to be sent to a printer.

Creating drawings.

After the title page displays, the drawing screen will appear. Press the left mouse button anywhere in the drawing area, and a cube will appear. You can place as many cubes as you wish, anywhere you wish.

The control bar.

Cube direction.

The "control bar" is located across the top of your screen. It occupies the area where the word *OUTPUT* usually appears. On the left-hand side of the control bar are six arrows. These control the drawing direction. Clicking the left mouse button on one of these arrows will cause a cube to be drawn in the direction of the arrow, offset from the most recently drawn cube.

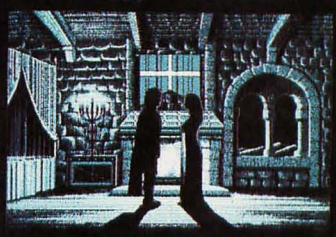
Describing the directions precisely is a bit tricky—after all, **Escher Cubes** is designed to create optical illusions. We'll use the face of a clock as an analogy. Twelve o'clock will be straight up—indicated by the up arrow (⇧). Straight down—the down arrow (⇩)—will be six o'clock. The left arrow (⇦) will draw at an angle like that from the center of the imaginary dial to a point halfway between the seven and eight. Its counterpart, the right arrow (⇨) yields an angle like the one from our dial's center to a point halfway between the one and two. The greater-than symbols (>>) will have your cubes headed toward the point halfway between the four and five. Finally, the less-than signs (<<) put down cubes angling toward the halfway mark between the ten and eleven.

TO THE VICTOR GO THE SPOILS

"What an experience! Like being in a movie!"
Computer Entertainer, Dec. 1986

Actual Atari ST screen!

Actual Apple IIGS screen!



Actual Macintosh screen!

Actual Commodore 64 screen!

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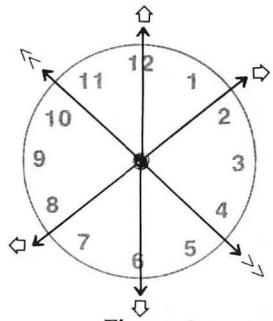


Figure 1.

It's much easier to see than to describe. Look at Figure 1 above, then experiment with the directions a bit while on-screen. You'll soon get the hang of it.

Cube Controls.

Next to the direction arrows, there are a number of controls that affect the way the cube is displayed.

The COL control changes the color of the cube. Pressing the left mouse button on the control causes the BASIC color numbers to change in ascending order. The right button causes the colors to change in descending order.

The BKG control changes the background color. Pressing the left mouse button on this control causes the background color numbers to change in ascending order; the right button, in descending order.

The FILL control changes the cube fill pattern. Pressing the left mouse button on it causes the fill pattern numbers to change in ascending order. The right button changes the pattern numbers in descending order.

Pressing the left mouse button on the ERASE control toggles the "erase" mode on and off.

Pressing the left mouse button on the CLEAR control will clear the screen.

Pressing the left mouse button on the SIZE control increases the cube size. The right button decreases size.

The CHECK MARK control switches to the "file control" mode. Pressing the left mouse button here will switch operations to file control.

Above the control bar are the current cursor position and cube position indicators. If you click the right mouse button in the drawing area, the "Current Pos" indicator will display the location of the mouse pointer. The "Cube Pos" indicator will display the location of the last drawn cube. The Current Pos and Cube Pos indicators are only updated when the right mouse button is pressed in the drawing area. If you move the mouse pointer over the Current Pos indicator and press the left button, a cube will be drawn at the current cursor position. Pressing the left mouse button over the Cube Pos indicator will draw a cube at the cube position location. The position indicators are a handy way of storing the exact location of a cube, or of finding the exact X- or Y-position where a new cube will be drawn.

To the right of the Cube Pos indicator is the "Current Recorder Count." The recorder has a maximum capacity of 5000.

User notes.

To put **Escher Cubes** all together, here are some tips on using the program's various features.

Erase Mode.

This will take a little getting used to. Cubes are properly erased, but you may find that you're erasing parts of the picture you don't *want* erased. See "Edit picture data" under *File control mode* below for another way of erasing parts of a picture.

Position indicators.

As you use the system, you'll soon find it isn't easy to place a new cube exactly over an old one. The position indicators can be used to store the exact location of a cube that you may want to come back to. You can then put a new cube in its place by pressing the left mouse button over the Cube Pos indicator.

File control mode.

To exit the program or to enter the file control mode, press the left mouse button on the CHECK MARK at the extreme right of the control bar. There are ten items on the file control menu. Each item can be accessed by clicking the mouse on the corresponding field.

Reset recorder — This erases the picture from memory and restores the recorder count to 0. The recorder has a maximum count of 5000.

Playback recorder — Plays back the contents of the recorder on the drawing display screen.

Load picture file — Loads a previously saved picture file into the recorder. If there's a picture (or other files) already in the recorder, the new file will be appended to the end of the recorded data. This feature allows multiple files to be loaded and displayed.

Save picture file — Saves the entire contents of the recorder to a disk file.

Delete picture file — Deletes a specified picture file.

Enter picture data — Allows you to enter picture data from the keyboard. If there is a picture, or other files, already in the recorder, the keyboard entries are appended to the end of the recorded data. Along the top of the screen are three lines that define the picture data information. The function will also enter data listed to a printer. You can duplicate picture segments, too, by entering new X,Y-coordinates and copying the data you want to replicate.

Edit picture data — Allows you to edit any picture data currently in the recorder. To do so, follow the prompts at the bottom of the screen. Along the top of the screen are three lines defining picture data information. Here again, you can reposition portions of a picture by changing the X,Y-coordinates. Also, the NUL (-2) is a handy way to eliminate unwanted sections of a picture. To remove data items, simply replace the particular item with a NUL (-2). When the recorder is played, a NUL is passed over with no action taken. The END (-3) code causes the recorder to stop. When the recorder is played, it will display

everything up to the END (-3) code. When the file is saved, the entire contents of the recorder are saved up to the END (-3) code.

The HI (-4) and LO (-8) codes are used to adjust the contents of the recorder to the resolution of the system being used. These codes should *not* be edited.

List data to printer — Lists the contents of the recorder to a printer.

Return to cubicle — Returns you to the drawing screen. If you've chosen any of the previous functions, you'll be returned to the drawing screen by playing back the contents of the recorder. If you've accidentally entered the file control mode, clicking the mouse here returns you immediately to the drawing screen.

Exit program — Exits the program and returns you to BASIC.

Picture Dumps.

Pictures can be dumped to a printer by pressing the ALTERNATE and HELP keys at the same time. In most cases, you must have the control panel desk accessory active for the dump to work correctly.

Now you have all the information necessary to use **Escher Cubes**, we invite you to create your own dimension. ///

Jim Luczak maintains and operates electronic telephone switching and processing equipment. He's been writing computer programs since 1979. He bought his first Atari in 1980, and has written programs in BASIC, C, LOGO, FORTH, Action!, and 6502 assembly. He enjoys writing dedicated database programs.

Please note that a compiled version of this program is on this month's *ST-Log* disk and on the Delphi Atari Users' Group.

Listing 1.
ST BASIC listing.

```
100 '****************************** ESC
HER CUBES5 ****************************
**
110 '****************************** By
Jim Luczak ****************************
**
120 '****************************** Ver 1
.4d  2/6/87 ***************************
**
130 dim mh1(26),c10(15),c11(15),c12(15
),c13(15),tx(56),titlep(10),ctx$(10)
140 max=5000:dim ps(5000),fv(10),fm(4)
:path=0:icon=3:priority=2
150 a#=gb:gintin=peek(a#+8):gintout=pe
ek(a#+12):p1#=1114
160 addrin=peek(a#+16):path$="\*.CUB":
path1$=path$+string$(24,chr$(0))
170 test$="\"+chr$(14)+chr$(15):button
$="CANCEL|DELETE":button1$=button$
180 box$="Verify DELETE Operation":box
1$=box$
190 if peek(systab)=4 then goto LOWREZ
MSG
200 if peek(systab)=2 then restore MED
REZ
210 if peek(systab)=1 then restore HIR
EZ
220 read v1,v2,v3,v4,v5,st,t1,t2,cm1,c
m2,j,j1,txty,rz,dfy,dth,ta,mkc1
230 read y7,y8,y12,y13,ta2,ta3,ta4,ta5
240 for x=1 to 4:read fm(x):next x
250 for x=1 to 10:read fv(x):next x
260 for x=0 to 15:read c10(x):next x
270 for x=0 to 15:read c11(x):next x
280 for x=0 to 15:read c12(x):next x
290 for x=0 to 15:read c13(x):next x
300 restore CBARDAT
310 for x=1 to 26:read mh1(x):next x
320 for x=0 to 56:read tx(x):next x
330 for x=0 to 10:read titlep(x):next
x
340 restore CNTDATA
350 for x=1 to 9:read ctx$(x):next x
360 ctx$(10)=chr$(14)+chr$(15)+"  Exit
 Program  "+chr$(14)+chr$(15)
370 sz=4:a=cm1*sz:b=cm2*sz:c=3*sz:sd=4
:sd1=4
380 dfx=304:lv=-1:lh=0:mkc2=3:c1=1:c2=
2:c3=3
390 ind=2:st1=st:ts=30/j:rzm=1:lc=3:lc
1=1:lc2=2:c1$=space$(50)
400 title$=chr$(32)+chr$(1)+chr$(32)+c
hr$(2)+chr$(32)+chr$(3)+chr$(32)+chr$(
4)
410 title$=title$+chr$(32)+chr$(t1)+ch
r$(32)+chr$(t2)
420 title$=title$+"  Col=  0  Bkg=  0
 Fill=     Erase OFF  Clear  "
430 title$=title$+"Size=  4  "+chr$(8)
+chr$(32)+chr$(0)
440 tlt1$=chr$(32)+chr$(14)+chr$(15)+"
 Escher Cubes File Control "
450 tlt1$=tlt1$+chr$(14)+chr$(15)+chr$
(32)+chr$(0)
460 tlt2$=" 1= "+chr$(1)+"  2= "+chr$(
2)+"  3= "+chr$(3)+"  4= "+chr$(4)
470 tlt2$=tlt2$+"  5= "+chr$(t1)+"  6=
 "+chr$(t2)
480 tlt2$=tlt2$+"      7= Col"+chr$(1)
+"  8= Bkg"+chr$(1)+"  9= Fill"
490 tlt2$=tlt2$+chr$(1)+chr$(32)+chr$(
0)
500 tlt3$=" Escher Cubes "+chr$(0)
510 eds$="  10= Erase ON/OFF  11= Clea
r  12= Size"+chr$(1)
520 eds$=eds$+"  14= Col"+chr$(2)+" 16
= Bkg"+chr$(2)+"  18= Fill"+chr$(2)
530 eds1$="  24= Size"+chr$(2)+"  -1=
Place Cube  XXX  YYY  -2= NUL"
540 eds1$=eds1$+"  -3= End  -4= Hi  -8
= Lo"
550 gosub TITLEPAGE:poke systab+24,1:g
osub SETCOLOR
560 txsz=56:txtx=161:gosub DOTEXT:gosu
b DOCONTROLS
570 restore CUBEP:gosub MOUSEFORM
580 x=dfx:y=dfy:mx1=dfx:my1=dfy:x1=dfx
:y1=dfy
590 '------------------------------ MOU
SE CONTROLLER -----------------------
-
600 gosub MOUSEON
610 mk=0:hc1=-2:while mk=0
620 poke contrl,124:poke contrl+2,0:po
ke contrl+6,0:vdisys(1)
630 mx=peek(ptsout):my=peek(ptsout+2):
mkey=peek(intout)
640 if mkey=1 or mkey=2 then gosub CHE
CKMOUSE
650 if hc1>0 and hc1<7 then gosub DOCU
BE
660 if hc1>6 and hc1<14 then gosub CON
TROLBAR
670 if hc1=14 then mx=mx1:my=my1:hc1=-
1
```

```
680 if hc1=15 then mx=x1:my=y1:hc1=-1
690 if mkey=2 then hc1=-2:gosub COORD
700 if hc1=-1 then gosub PLACECUBE
710 hc1=-2:wend
720 '--------------------------- CLEAN
-UP AND END -------------------------
-
730 CLEANUP:gosub MOUSEOFF
740 clearw 2:poke systab+24,0:tlt=1:ti
tle$=" OUTPUT "+chr$(0)
750 gosub DOCONTROLS:plt%(0)=1911:plt%
(1)=1792:plt%(2)=112:plt%(3)=0
760 poke pl#,varptr(plt%(0)):color 1,1
,1
770 restore DEFAULTP:gosub MOUSEFORM:c
lear:end
780 '------------------------ LOW RESO
LUTION MESSAGE ----------------------
790 LOWREZMSG:icon=1:priority=1:box1$=
" |":fullw 2:clearw 2
800 box$=chr$(14)+chr$(15)+"  ESCHER C
UBES  "+chr$(14)+chr$(15)+"|"
810 box$=box$+box1$+chr$(3)+" Set Pref
erence To "+chr$(4)
820 button$=chr$(175)+"   MEDIUM RESOL
UTION   "+chr$(174):gosub FORMBOX:end
830 '---------------------------- ERRO
R HANDLER ----------------------------
-
840 close #1:if dp=1 then dp=0:goto ER
D
850 open "R",#1,f$,3:field #1,3 as am$
:lset am$=a$:put #1,1:close #1:kill f$
860 ERD:?chr$(7);:resume GETAN51
870 '------------------------------- M
OUSE ON -----------------------------
-
880 MOUSEON:poke gintin,257:gemsys(78)
:return
890 '------------------------------- M
OUSE OFF ----------------------------
-
900 MOUSEOFF:poke gintin,256:gemsys(78
):return
910 '-------------------------- CHECK
MOUSE LOCATION ----------------------
-
920 CHECKMOUSE:
930 mc=0:hc=1:hc1=1:hct=26
940 if my<v1 then gosub MCC:return
950 if my>v2 then hc1=-1:return
960 while mc=0
970 if mx>=mhl(hc) and mx<=mhl(hc+1) t
hen mc=1
980 if mc=0 then hc1=hc1+1
990 hc=hc+2:if hc>hct then mc=1
1000 wend:if hc1>hct/2 then hc1=-1
1010 return
1020 MCC:if mx>162 and mx<353 then hc1
=14:return
1030 if mx>354 and mx<532 then hc1=15:
return
1040 hc1=-2:return
1050 '----------------------- CONTROL
BAR CONTROLLER ----------------------
--
1060 CONTROLBAR:
1070 on hc1-6 goto CB1,CB2,CB3,CB4,CB5
,CB6,CB7
1080 CB1:if mkey=1 then cr1=cr1+1:if c
r1>15 then cr1=0
1090 if mkey=2 then cr1=cr1-1:t=1:if c
r1<0 then cr1=15
1100 gosub DOCUCOL:goto BARDONE
1110 CB2:if mkey=1 then cr0=cr0+1:if c
r0>15 then cr0=0
1120 if mkey=2 then cr0=cr0-1:t=1:if c
r0<0 then cr0=15
1130 gosub DOBCK:goto BARDONE
1140 CB3:if mkey=1 then gosub PATUP
1150 if mkey=2 then gosub PATDN
1160 gosub DOSTYLE:goto BARDONE
1170 CB4:gosub DOERASE:goto BARDONE
1180 CB5:gosub CLEARSCR:goto BARDONE
1190 CB6:if mkey=1 then sz=sz+1:if sz>
12 then sz=1
1200 if mkey=2 then sz=sz-1:t=1:if sz<
1 then sz=12
1210 gosub DOSIZE:goto BARDONE
1220 CB7:goto CNTSCREEN
1230 CB7A:ps(h)=hc1:gosub CLEARSCR:gos
ub PLAYBACK:goto BARD
1240 BARDONE:ps(h)=hc1:if t=1 then t=0
:ps(h)=hc1*2
1250 h=h+1:if h>max then h=max:ps(h)=1
3
1260 BARD:mkey=1:return
1270 PATUP:st=st+1:if st>24 then st=1:
ind=3
1280 if st>12 and ind=3 then ind=2:st=
1
1290 return
1300 PATDN:st=st-1:t=1:if st<1 and ind
=2 then ind=3:st=12
1310 if st<1 and ind=3 then ind=2:st=2
4
1320 return
1330 '---------------------------- CUBE
 CONTROLLER --------------------------
--
1340 DOCUBE:gosub MOUSEOFF
1350 on hc1 goto UP,DOWN,RIGHT,LEFT,FO
RWARD,BACKWARD
1360 UP:y=y-b:gosub SETCUBE:gosub DOBO
X:goto CUBEDONE
1370 DOWN:y=y+b:if hc2=3 then sd=4:sd1
=3
1380 if hc2=6 then sd=3:sd1=4
1390 gosub SETCUBE:gosub FRONT:sd=sd1:
gosub SIDE:goto CUBEDONE
1400 RIGHT:x=x+c:y=y-a:gosub SETCUBE
1410 if hc2=2 then sd=4:sd1=3:gosub SE
TRTOP
1420 if hc2=6 then sd=3:sd1=4:gosub SE
TRFRONT
1430 gosub FRONT:sd=sd1:gosub TOP:goto
 CUBEDONE
1440 LEFT:x=x-c:y=y+a:gosub SETCUBE:go
sub DOBOX:goto CUBEDONE
1450 FORWARD:x=x+c:y=y+a:gosub SETCUBE
:gosub DOBOX:goto CUBEDONE
1460 BACKWARD:x=x-c:y=y-a:gosub SETCUB
E
1470 if hc2=2 then sd=3:sd1=4
1480 if hc2=3 then sd=4:sd1=3:gosub SE
TBSIDE
1490 gosub TOP:sd=sd1:gosub SIDE
1500 CUBEDONE:hc2=hc1:sd=4:sd1=4:gosub
 MOUSEON
1510 gosub DOSOUND:mkey=1:ps(h)=hc1
1520 h=h+1:if h>max then h=max:ps(h)=1
3
1530 return
1540 '------------------------------ PL
ACE CUBE ----------------------------
--
1550 PLACECUBE:x=mx:y=my*rzm:hc2=hc1
1560 if h+3>max then goto PL1
1570 ps(h)=hc1:ps(h+1)=mx:ps(h+2)=my
1580 gosub DOBOXA:gosub MOUSEON
1590 PL1:h=h+3:if h>max then h=max:ps(
h)=13
1600 return
1610 '------------------------------ C
LEAR SCREEN -------------------------
--
```

```
1620 CLEARSCR:if t3<>1 then reset:gosu
b MOUSEOFF:clearw 2:gosub MOUSEON
1630 er=1:sz=4:st=st1:cr0=0:cr1=0:ind=
2:gosub DOCUCOL
1640 x=dfx:y=dfy:mx1=dfx:my1=dfy:x1=df
x:y1=dfy
1650 gosub DOSIZE:gosub DOERASE:gosub
DOBCK
1660 restore COORDTEXT:for z=0 to 5:re
ad tx(z):next z
1670 v6=v3:v3=0:v7=v4:v4=639:gosub SET
CLIP:v3=v6:v4=v7
1680 txsz=56:txtx=161:gosub DOTEXT:gos
ub SETCLIP:return
1690 '---------------------------- DRA
W WHOLE CUBE ------------------------
--
1700 DOBOXA:gosub SETCUBE:gosub DOSOUN
D:gosub MOUSEOFF
1710 DOBOX:gosub FRONT:gosub TOP:gosub
 SIDE:return
1720 '---------------------------- DRAW
 CUBE TOP ----------------------------
--
1730 TOP:color 1,c1,1,st,ind
1740 poke contrl,9:poke contrl+2,sd:po
ke contrl+6,0
1750 poke ptsin,tx:poke ptsin+2,ty
1760 poke ptsin+4,tx1:poke ptsin+6,ty1
1770 poke ptsin+8,tx2:poke ptsin+10,ty
2
```

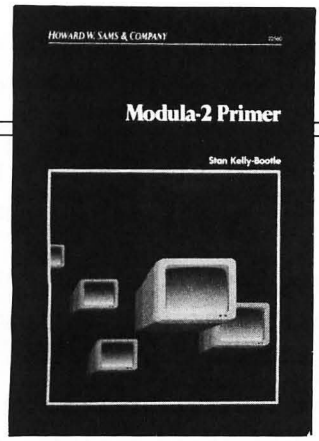


```
1780 poke ptsin+12,tx3:poke ptsin+14,t
y3
1790 vdisys(1):return
1800 '---------------------------- DRAW
 CUBE FRONT ----------------------------
--
1810 FRONT:color 1,c2,1,st,ind
1820 poke contrl,9:poke contrl+2,sd:po
ke contrl+6,0
1830 poke ptsin,fx:poke ptsin+2,fy
1840 poke ptsin+4,fx1:poke ptsin+6,fy1
1850 poke ptsin+8,fx2:poke ptsin+10,fy
2
1860 poke ptsin+12,fx3:poke ptsin+14,f
y3
1870 vdisys(1):return
1880 '---------------------------- DRA
W CUBE SIDE ---------------------------
--
1890 SIDE:color 1,c3,1,st,ind
1900 poke contrl,9:poke contrl+2,sd:po
ke contrl+6,0
1910 poke ptsin,sx:poke ptsin+2,sy
1920 poke ptsin+4,sx1:poke ptsin+6,sy1
1930 poke ptsin+8,sx2:poke ptsin+10,sy
2
1940 poke ptsin+12,sx3:poke ptsin+14,s
y3
1950 vdisys(1):return
1960 '---------------------------- SET
 CUBE PARAMETERS ----------------------
--
1970 SETCUBE:
1980 tx=x:ty=y-b:tx1=x-c:ty1=y-a:tx2=x
:ty2=y:tx3=x+c:ty3=y-a
1990 fx=x:fy=y:fx1=x:fy1=y+b:fx2=x+c:f
y2=y+a:fx3=x+c:fy3=y-a
2000 sx=x:sy=y:sx1=x:sy1=y+b:sx2=x-c:s
y2=y+a:sx3=x-c:sy3=y-a:return
2010 SETRTOP:
2020 tx=x:ty=y-b:tx1=x+c:ty1=y-a:tx2=x
:ty2=y:tx3=x-c:ty3=y-a:return
2030 SETRFRONT:
2040 fx=x:fy=y:fx1=x+c:fy1=y-a:fx2=x+c
:fy2=y+a:fx3=x:fy3=y+b:return
2050 SETBSIDE:
2060 sx=x:sy=y:sx1=x-c:sy1=y-a:sx2=x-c
:sy2=y+a:sx3=x:sy3=y+b:return
2070 '---------------------------- DIS
PLAY CONTROLS ------------------------
--
2080 DOCONTROLS:
2090 poke gintin,peek(systab+8):poke g
intin+2,2
2100 s#=gintin+4:poke s#,varptr(title$
):gemsys(105):if tlt=1 then tlt=0:retu
rn
2110 gosub STBOX:return
2120 '---------------------------- SET
CUBE COLOR ----------------------------
--
2130 DOCUCOL:gosub SETCOLOR
2140 a$=str$(cr1):if len(a$)=3 then mi
d$(title$,19,len(a$))=a$
2150 if len(a$)=2 then mid$(title$,20,
len(a$))=a$
2160 gosub DOCONTROLS:gosub DOSOUND1:r
eturn
2170 '---------------------------- SET BA
CKGROUND COLOR ------------------------
--
2180 DOBCK:gosub SETCOLOR
2190 a$=str$(cr0):if len(a$)=3 then mi
d$(title$,28,len(a$))=a$
2200 if len(a$)=2 then mid$(title$,29,
len(a$))=a$
2210 gosub DOCONTROLS:gosub DOSOUND1:r
eturn
2220 '---------------------------- SET
```

```
INTERIOR INDEX ----------------------
---
2230 DOSTYLE:gosub DOCONTROLS:gosub DO
SOUND1:return
2240 STBOX:color 1,1,1,st,ind:gosub MO
USEOFF
2250 poke contrl,129:poke contrl+2,2:p
oke contrl+6,1:poke intin,0:vdisys(1)
2260 poke contrl,11:poke contrl+2,2:po
ke contrl+6,0:poke contrl+10,1
2270 poke ptsin,327:poke ptsin+2,v1
2280 poke ptsin+4,359:poke ptsin+6,v2-
1
2290 vdisys(1):gosub MOUSEON:gosub SET
CLIP:return
2300 '--------------------------- TOGG
LE ERASE MODE ------------------------
--
2310 DOERASE:
2320 if er=0 then er=1:c1=0:c2=0:c3=0:
a$="ON "else er=0:c1=1:c2=2:c3=3:a$="O
FF"
2330 mid$(title$,49,3)=a$:gosub DOCONT
ROLS:gosub DOSOUND1
2340 if er=1 then gosub MOUSEOFF:gosub
 DOBOX
2350 if er=1 then gosub MOUSEON
2360 return
2370 '---------------------------- SET
 CUBE SIZE ---------------------------
--
2380 DOSIZE:a=cm1*sz:b=cm2*sz:c=3*sz:s
d=4:sd1=4
2390 a$=str$(sz):if len(a$)=3 then mid
$(title$,66,len(a$))=a$
2400 if len(a$)=2 then mid$(title$,67,
len(a$))=a$
2410 gosub DOCONTROLS:gosub DOSOUND1:r
eturn
2420 '------------------------------ S
ET CLIPPING --------------------------
--
2430 SETCLIP:
2440 poke contrl,129:poke contrl+2,2:p
oke contrl+6,1
2450 poke intin,1:poke ptsin,0:poke pt
sin+2,v3
2460 poke ptsin+4,v4:poke ptsin+6,v5:v
disys(1):return
2470 '-------------------------------SO
UND ROUTINE --------------------------
--
2480 DOSOUND:
2490 sound 1,0,13-sz,hc1+2,0:wave 1,1,
1,1024,0:return
2500 DOSOUND1:
2510 sound 1,0,7,5,0:wave 1,1,1,1024,0
:return
2520 DOSOUND2:
2530 sound  1,0,fc1,8,0:wave 1,1,1,102
4,0:return
2540 '---------------------------- SET
COLOR ROUTINE ------------------------
--
2550 SETCOLOR:
2560 plt%(0)=c10(cr0):plt%(1)=c11(cr1)
:plt%(2)=c12(cr1):plt%(3)=c13(cr1)
2570 SETC:poke pl#,varptr(plt%(0)):ret
urn
2580 '--------------------------- PLAYB
ACK RECORDER -------------------------
--
2590 PLAYBACK:
2600 mc1=0:h=0:t3=1:while mc1=0
2610 if h+2>max then mc1=1:goto PLAYEN
D
2620 hc1=ps(h):if hc1>13 then hc1=hc1/
2:mkey=2
2630 if hc1<-3 then rzm=abs(hc1)/rz:h=
h+1:goto PLAYEND
2640 if hc1=13 or hc1=-3 then mc1=1:go
to PLAYEND
2650 if hc1=-2 then h=h+1:goto PLAYEND
2660 if hc1>0 and hc1<7 then gosub DOC
UBE
2670 if hc1>6 and hc1<13 then gosub CO
NTROLBAR
2680 if hc1=-1 then mx=ps(h+1):my=ps(h
+2):gosub PLACECUBE
2690 if hc1>13 then h=h+1
2700 PLAYEND:if h>max then h=max:mc1=1
2710 wend:t3=0:rzm=1:if h=0 then retur
n
2720 if ps(h-1)<>(-rz) then ps(h)=-rz:
h=h+1:if h>max then h=max
2730 return
2740 '---------------------------- SHOW
 COORDINATES -------------------------
--
2750 COORD:
2760 mx$=str$(mx):my$=str$(my):x$=str$
(x):y$=str$(y):h$=str$(h)
2770 txsz=4:mx1=mx:my1=my:x1=x:y1=y:z1
=4
2780 if mx>v4 then mx$=str$(v4):mx1=v4
2790 if my<v1 then my$=str$(v1):my1=v1
2800 if my>v5 then my$=str$(v5):my1=v5
2810 v6=v3:v3=0:v7=v4:v4=639:gosub SET
CLIP:v3=v6:v4=v7
2820 xx$=mx$:txtx=270:gosub CD:gosub D
OTEXT
2830 xx$=my$:txtx=320:gosub CD:gosub D
OTEXT
2840 xx$=x$:txtx=446:gosub CD:gosub DO
TEXT
2850 xx$=y$:txtx=494:gosub CD:gosub DO
TEXT
2860 xx$=h$:txtx=579:z1=5:gosub CD:gos
ub DOTEXT
2870 gosub SETCLIP:z1=4:return
2880 CD:if len(xx$)<z1 then xx$=xx$+sp
ace$(z1)
2890 for z=0 to z1-1:a$=mid$(xx$,z+1,1
)
2900 if a$=" " then tx(z)=32 else tx(z
)=val(a$)+48
2910 next z:return
2920 '---------------------------- CONTR
OL SCREEN ---------------------------
--
2930 CNTSCREEN:gosub MOUSEOFF:gosub CS
CREEN
2940 '---------------------- FILE MOUSE
 CONTROLLER --------------------------
-
2950 poke gintin,mkc2:gemsys(78):gosub
 MOUSEON
2960 fk=0:while fk=0
2970 poke contrl,124:poke contrl+2,0:p
oke contrl+6,0:vdisys(1)
2980 fmx=peek(ptsout):fmy=peek(ptsout+
2):fkey=peek(intout)
2990 if fkey=1 then gosub CHECKFMOUSE
3000 if fc1>0 then gosub MOUSEOFF:gosu
b DOSOUND2:gosub GETANS
3010 fc1=0:wend
3020 if fk=1 then goto CLEANUP
3030 poke gintin,255:gemsys(78):restor
e CUBEP:gosub MOUSEFORM:goto CB7A
3040 '----------------------- GET FILE
BUTTON PRESS -------------------------
-
3050 GETANS:on error goto 0
3060 mkc=mkc1:gosub MARKC
3070 on fc1 goto C51,C52,C53,C54,C55,C
56,C57,C58,C52,C510
```

```
3080 C51:?chr$(7);:reset:box$="Verify
RESET Operation"
3090 button$="CANCEL|RESET":gosub GROW
BOX:gosub FORMBOX
3100 box$=box1$:button$=button1$:openw
 2:if kc<>2 then goto GETAN51
3110 for ct=0 to h:ps(ct)=0:next ct:h=
0:ps(h)=13:lh=0:lv=-1:color 2,1,3
3120 gotoxy 24/j,5:?"RESET"chr$(7):col
or 1,1,3:goto GETAN51
3130 C52:gosub GROWBOX:clearw 2:poke s
ystab+24,1
3140 gosub DOCONTROL5:gosub SETCOLOR:f
k=2:goto GETAN51
3150 C53:goto LOADPIC
3160 C54:goto SAVEPIC
3170 C55:goto DELETEPIC
3180 C56:gosub ENTERPIC:poke systab+24
,1:gosub C5CREEN:goto GETAN51
3190 C57:gosub EDITPIC:poke systab+24,
1:gosub C5CREEN:goto GETAN51
3200 C58:a$="PRINTING":gosub LISTPIC:g
oto GETAN51
3210 C510:?chr$(7);:reset:icon=2:box$=
"Leaving ESCHER CUBES ??"
3220 button$="STAY|EXIT":gosub GROWBOX
:gosub FORMBOX:box$=box1$:button$=butt
on1$
3230 icon=3:if kc<>2 then goto GETAN51
 else fk=1
3240 GETAN51:mkc=3:gosub MARKC
3250 poke gintin,mkc2:gemsys(78):mkc2=
3:gosub MOUSEON:return
3260 '----------------------- CHECK FIL
E MOUSE LOCATION ----------------------
-
3270 CHECKFMOUSE:
3280 kc=0:fc=1:fc1=1:fct=10
3290 if fmx>fm(1) and fmx<fm(2) then f
mz=0:goto CFM
3300 if fmx>fm(3) and fmx<fm(4) then f
mz=5:goto CFM
3310 fc1=0:?chr$(7);:return
3320 CFM:while kc=0
3330 if fmy>=fv(fc) and fmy<=fv(fc+1)
then kc=1
3340 if kc=0 then fc1=fc1+1
3350 fc=fc+2:if fc>fct then kc=1
3360 wend:if fc1>fct/2 then fc1=0:?chr
$(7);:return
3370 fc1=fc1+fmz:return
3380 '------------------------- LOAD P
ICTURE FILE ---------------------------
--
3390 LOADPIC:on error goto 840
3400 reset:gosub GROWBOX:gosub FILESEL
ECT:poke systab+24,0
3410 if kp=0 or len(f$)<1 then goto LO
ADEND
3420 f2=instr(f$,"."):if f2=0 then got
o LOADEND
3430 if mid$(f$,f2,len(f$)-(f2-1))<>".
CUB" then goto LOADEND
3440 if h=0 then goto LOADIT
3450 if ps(h-1)=11 then goto LOADIT
3460 ps(h)=11:h=h+1:if h>max then ps(m
ax)=13:?chr$(7);:goto LOADEND
3470 LOADIT:dp=0:f1$=f$:gosub FILELOCA
TE
3480 open "R",#1,f$,3:field #1,3 as am
$:get #1
3490 if am$<>test$ then close #1:goto
LOADEND
3500 mk1=0:while mk1=0:get #1:gdt=cvi(
am$):if gdt=-3 then mk1=1
3510 if mk1=0 then ps(h)=gdt:h=h+1:if
h>max then h=max:mk1=1
3520 wend:close #1:gotoxy ts,15:?c1$:?
chr$(7);
3530 lv=lv+1:if lv>2 then lv=0:lh=lh+2
0/j:if lh>69/j then lh=0:swap lc1,lc2
3540 swap lc,lc1:gotoxy lh,lv:color lc
,1,1:?f1$" "chr$(8):color 1,1,1
3550 LOADEND:poke systab+24,1:gotoxy 2
4/j,5:?"     ":goto GETAN51
3560 '------------------------- SAVE P
ICTURE FILE ---------------------------
--
3570 SAVEPIC:on error goto 840
3580 if h=0 then goto SE1
3590 reset:gosub GROWBOX:gosub FILESEL
ECT:poke systab+24,0
3600 if kp=0 or len(f$)<1 then goto SE
1
3610 f2=instr(f$,"."):if f2=0 then f$=
f$+".CUB"
3620 if right$(f$,4)<>".CUB" then mid$
(f$,len(f$)-3,4)=".CUB"
3630 dp=1:fh=s-1:fh1=1:gosub FILELOCAT
E
3640 open "R",#1,f$,3:field #1,3 as am
$:lset am$=test$:put #1,fh1:fh1=fh1+1
3650 if ps(0)>-3 then lset am$=mki$(-r
z):put #1,fh1:fh1=fh1+1
3660 SP1:fh=fh+1:if fh=h then goto SAV
EEND
3670 if fh>max then fh=max:goto SAVEEN
D
3680 if ps(fh)=-2 then goto SP1
3690 lset am$=mki$(ps(fh)):put #1,fh1:
fh1=fh1+1:goto SP1
3700 SAVEEND:lset am$=mki$(-3):put #1:
close #1
3710 SE1:?chr$(7);:poke systab+24,1:go
to GETAN51
3720 '------------------------- DELETE
 PICTURE FILE --------------------------
--
3730 DELETEPIC:on error goto 840
3740 reset:gosub GROWBOX:gosub FILESEL
ECT:poke systab+24,0
3750 if kp=0 or len(f$)<1 then goto DL
1
3760 ?chr$(7);:reset:box$=box$+"|Delet
e "+chr$(3)+" "+f$:gosub FORMBOX
3770 box$=box1$:openw 2:if kc<>2 then
goto DL1
3780 gosub FILELOCATE
3790 open "R",#1,f$,3:field #1,3 as am
$:lset am$=a$:put #1,1:close #1:kill f
$
3800 DL1:?chr$(7);:poke systab+24,1:go
to GETAN51
3810 '------------------------- ENTER
 PICTURE DATA ---------------------------
--
3820 ENTERPIC:gosub GROWBOX
3830 poke systab+24,0:title$=t1t2$:t1t
=1:gosub DOCONTROL5:title$=t1t$
3840 tb=10/j:tb1=tb:tb3=int(h/10):tb4=
0:i=0:ep=0:ep1=0:gosub ED1
3850 if h=0 then goto EPIC
3860 if ps(h-1)<>(-rz) then ps(h)=-rz:
h=h+1:if h>max then h=max:goto ENTEREN
D
3870 EPIC:gotoxy 8/j,8:?c1$
3880 gotoxy 8/j,8:line input"Enter Dat
a 'D' = Done ";ep$
3890 ep=val(ep$):if len(ep$)=0 then ep
=ep1
3900 if ep$="D" or ep$="d" then ps(h)=
-3:goto ENTEREND
3910 if ep=0 then ep1=ep:?chr$(7);:got
o EPIC
3920 if ep<-2 and (ep<>-4 or ep<>-8) t
hen ep1=0:?chr$(7);:goto EPIC
3930 ps(h)=ep:h=h+1:ep1=ep:if h>max th
en h=max:goto ENTEREND
```

ST news

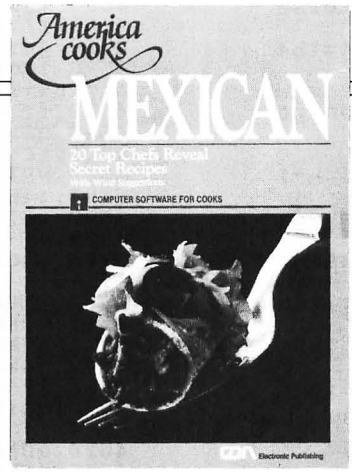


A tutorial approach to Modula-2.

Howard W. Sams & Company has recently published the ***Modula-2 Primer***, a tutorial approach to the Modula-2 language. Covered are first steps, records, simple data types, modules, arrays and advanced data types. Also discussed are program control structures, files and I/O, dynamic data structures, and regular and function procedures.

Authored by Stan Kelly-Bootle, the 472-page book sells for $19.95. Howard W. Sams & Company, 4300 West 62nd Street, Indianapolis, IN 46268 — (317) 298-5400. Reader Service #146.

What'll it be tonight?



Chinese? Italian? How about Mexican, French or American? **America Cooks** is a series of top chefs' recipes taken from some of the most famous and popular restaurants in the United States.

For instance, the Italian package features twenty-one recipes sampled from equally as many cities across America. But this isn't your everyday "recipe" software. Extensive search capabilities allow you to locate meals via a keyword—such as *pasta* or *boiled*—food group, hot or cold dishes, difficulty or even time constraint. You can combine the categories, to search for a cold pasta dish that's easy to make.

The cookbook program also organizes everything you need into three screens: Index, Ingredients and Instructions. Flip to the ingredients page and tell the computer you need servings for anywhere between 1 and 999 guests. Using the built-in editor, make your own changes for microwave use, and adjust temperatures or substitute ingredients. You can even enter in meals prepared for specific guests, so that the same menu is never repeated. Generation of shopping lists rounds out the package.

Retail is $39.95 for each package in the series. For information on these and other titles, contact CDA Electronic Publishing, 7960 Old Georgetown Road, Suite 2D, Bethesda, MD 20814 — (301) 951-0997. Reader Service #148.

Other news.

☑ Now you can perform disk functions while using your word processor, with **Saved!** This utility allows you to copy or delete files —or even format disks—without having to quit the word processor you're using. These operations can be performed within a GEM application.

In addition, this desk accessory includes UnDel, which will recover a file accidentally deleted; and it works on floppy drives, hard disks or even RAMdisks. Also included is a fully configurable RAMdisk; TrackBuf, which can double the speed of reading your floppies; and a printer spooler, which frees up your computer from waiting for your printer. And KeepTime allows your ST to remember the time and date even when RESET is pressed.

Complete with extensive documentation, **Saved!** retails for $49.95. Apex Resources, 129 Sherman Street, Cambridge, MA 02140 — (617) 876-2505.

☑ MichTron is now distributing **TechMate**, the ST chess game previously sold through Szabo Software (reviewed in the February **ST-Log**).

The company has also released **Super-Conductor**, a professional 16-track MIDI sequencer. This program can quantize, filter, edit, transpose and mix music played through a synthesizer. Block stucturing allows you to quickly set up musical arrangements. Other features include the ability for the ST to hold up to ten different songs in memory, with each song containing its own tempo and song structure information.

MichTron, 576 S. Telegraph, Pontiac, MI 48053 — (313) 334-5700. Reader Service #150.

Real CAD.

FirstCADD is a real 2-dimensional drafting and design package which can be used to create flowcharts, graphs, floor plans, elevations and alterations.

Some of the many abilities provided by this program include unlimited drawing size, extensive editing, measuring to scale, layering, color, zoom and snaps. In addition, up to 256 colors can be selected, as well as 256 line types (dashed, dotted, solid, etc.)

Price is $49.95; Generic Software, Inc., 8763 148th Avenue N.E., Redmond, WA 98052 — (800) 228-3601. Reader Service #147.

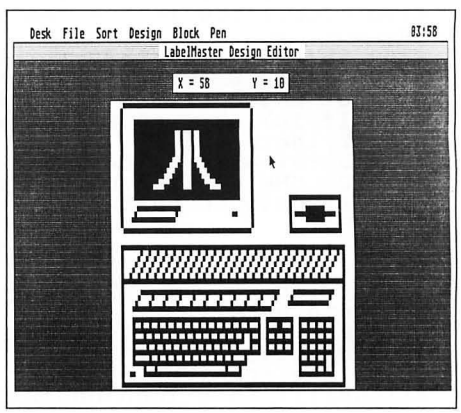
New releases from Migraph.

Fast is a complete desktop organizer containing: ST DOS, giving you the option to copy or delete files within a GEM program; ST Editor, a full-featured text editor; and Cardfile, an address and phone number organizing system. Also included are a calculator, calendar, ASCII table and clock.

Another new release, **LabelMaster**, allows the ST user to create custom labels which can be used for business or personal needs, or mailing. The labels can be set up with your own graphics, designed with the built-in graphics editor, and the mailing list manager boasts search, sort, delete, modify and the capability to flag a record for personal or business use.

Easy Draw, Migraph's premier program, is now available as version 2.0, containing all its previous features as well as adding capability for desktop publishing. Powerful commands let you design illustrations, forms, brochures, flyers, business cards, logos and more.

Prices for these three products are $49.95, $39.95 and $79.95, respectively. For more on these products, contact Migraph, Inc., 720 South 333rd Street, Suite 201, Federal Way, WA 98003 — (206) 838-4677. Reader Service #149.



```
3940 wm=2:gosub WMODE:gotoxy 0,5:?tab(
tb1)ep:tb1=tb1+5:tb4=tb4+1
3950 if tb4>9 then gosub ENT
3960 wm=1:gosub WMODE:goto EPIC
3970 ENTEREND:?chr$(7);:wm=1:gosub WMO
DE:clearw 2:return
3980 ENT:tb4=0:tb5=0:wm=1:gosub WMODE:
gotoxy j1/j,5:?cl$
3990 gotoxy 0,5:gosub ED2:return
4000 '--------------------------- EDIT
PICTURE FILE ---------------------------
--
4010 EDITPIC:if h<1 then ?chr$(7);:ret
urn
4020 gosub GROWBOX:poke systab+24,0:tb
=10/j:tb1=tb:tb2=0:tb3=0:tb4=0:tb5=0
4030 tlt=1:title$=tlt2$:gosub DOCONTRO
LS:title$=tlt$:for i=0 to h-1
4040 if ps(i)=13 then i=h-1:goto EDITD
ONE
4050 if tb5=0 then gosub ED1:if edn=1
then goto EDITDONE
4060 if ps(i)=-3 then color 2,1,1 else
 color 1,1,1
4070 ?tab(tb1)ps(i);:tb1=tb1+5:tb4=tb4
+1:if tb4>9 then tb4=0
4080 if tb4=0 then gosub ED2
4090 EDITDONE:next i:if edn<>1 then go
sub ED3
4100 clearw 2:edn=0:return
4110 ED1:gosub ED3:if edn=1 then i=h-1
:return
4120 clearw 2:?:tb1=tb:gotoxy 0,0:?eds
$:?eds1$:color 3,1,1
4130 ?:?tab(tb1)"Column->";:tb1=tb1+8:
?tab(tb1);
4140 for z=tb2 to tb2+9:tb1=tb1+5:?tab
(tb1)z;:next z:?:?:color 1,1,1
4150 ED2:tb5=tb5+1:if tb5>10 then tb5=
0:goto ED2a
4160 tb1=tb:color 3,1,1:?tab(tb)"Line
# "tb3;:tb1=tb1+13
4170 tb3=tb3+1:color 1,1,1
4180 ED2a:return
4190 ED3:?:if i=0 then return
4200 gotoxy 8/j,16:color 2,1,1
4210 ?"E";:color 1,1,1:?" - Edit   ";:
color 2,1,1
4220 ?"C";:color 1,1,1:?" - Continue L
ist   ";:color 2,1,1:?"Q";:color 1,1,1
4230 ?" - Quit
   ";
4240 GAN5:gotoxy 50/j,16:ans=inp(2):?
4250 if ans=69 or ans=101 then goto DO
EDIT
4260 if ans=67 or ans=99 then return
4270 if ans=81 or ans=113 then edn=1:r
eturn
4280 ?chr$(7);:goto GAN5
4290 DOEDIT:tb6=tb5:if tb6=0 then tb6=
10
4300 tb7=tb4-1:if tb7=-1 then tb7=9
4310 gotoxy 0,16:?cl$;:gotoxy 1,16:lin
e input"Enter LINE # ";ln$:ln=val(ln$)
4320 if ln>tb3-1 or ln<tb3-tb6 then ?c
hr$(7);:goto DOEDIT
4330 DOED1:gotoxy 18/j,16:line input"E
nter COLUMN # ";cn$:cn=val(cn$)
4340 if cn<0 or cn>9 then ?chr$(7);:go
to DOED1
4350 if cn >tb7 and ln=tb3-1 then ?chr
$(7);:goto DOED1
4360 if cn>=0 and tb7>9 and ln=tb3-1 t
hen goto DOEDIT
4370 ps1=ps((ln*10)+cn):gotoxy 35/j,16
:?"Old Value = "ps1"  ";
4380 line input"New Value = ";nn$:nn=v
al(nn$):if nn=0 then nn=-2
4390 if nn<-3 and (nn<>-4 and nn<>-8)
then nn=-2
4400 if len(nn$)=0 then nn=ps1
4410 ln1=ln:nn$=str$(nn):if len(nn$)<4
 then nn$=nn$+space$(4-len(nn$))
4420 ED4:if ln1>9 then ln1=ln1-10:goto
 ED4
4430 wm=2:gosub WMODE:gotoxy 0,ln1+5:?
tab(ta+(cn*5));:wm=1:gosub WMODE:?nn$
4440 ps((ln*10)+cn)=nn:gotoxy 0,16:?cl
$;:goto ED3
4450 '-------------------- LIST PICTURE
 DATA TO PRINTER ---------------------
--
4460 LISTPIC:if h<1 then ?chr$(7);:ret
urn
4470 gosub GROWBOX:tb=10/j:tb1=tb:tb3=
0:tb4=0:color 2,1,3:gotoxy ts,15:?a$
4480 color 1,1,3:lprint"Escher Cubes
 File --> "f$:lprint:lprint
4490 lprint:lprint tab(tb1)"Column->";
:tb1=tb1+8:?tab(tb1);
4500 for z=0 to 9:tb1=tb1+5:lprint tab
(tb1)z;:next z:lprint:lprint
4510 gosub PRT:for i=0 to h-1
4520 lprint tab(tb1)ps(i);:tb1=tb1+5:t
b4=tb4+1:if tb4>9 then tb4=0
4530 if tb4=0 then gosub PRT
4540 next i:lprint:lprint:gotoxy 20,15
:?cl$;chr$(7);:return
4550 PRT:tb1=tb:lprint tab(tb)"Line #
"tb3;:tb1=tb1+13
4560 tb3=tb3+1:return
4570 '---------------------------- W
RITE MODE ----------------------------
--
4580 WMODE:
4590 poke contrl,32:poke contrl+2,0:po
ke contrl+6,1
4600 poke intin,wm:vdisys(1):return
4610 '------------------------ DO C
OORDINATE TEXT ----------------------
--
4620 DOTEXT:
4630 poke contrl,8:poke contrl+2,1:pok
e contrl+6,txsz
4640 for z=0 to txsz:poke intin+(z*2),
tx(z):next z
4650 poke ptsin,txtx:poke ptsin+2,txty
:vdisys(1):return
4660 '--------------------------- TEXT
 EFFECTS ----------------------------
--
4670 TEFFECT:
4680 poke contrl,106:poke contrl+2,0:p
oke contrl+6,1
4690 poke intin,te:vdisys(1):return
4700 '---------------------------- TEX
T HEIGHT ----------------------------
--
4710 THEIGHT:
4720 poke contrl,107:poke contrl+2,0:p
oke contrl+6,1
4730 poke intin,th:vdisys(1):return
4740 '---------------------------- TI
TLE PAGE ----------------------------
--
4750 TITLEPAGE:
4760 tlt=1:tlt$=title$:title$=tlt3$:go
sub DOCONTROLS:title$=tlt$
4770 fullw 2:clearw 2:te=4:th=24:color
 2,1,1:c4=1:yi0=1:yi1=3
4780 plt%(0)=0:plt%(1)=1792:plt%(2)=11
2:plt%(3)=1911:gosub SETC
4790 poke contrl,11:poke contrl+2,2:po
ke contrl+6,0:poke contrl+10,8
4800 poke ptsin,1:poke ptsin+2,v2
4810 for x=v4 to 210 step -8:color 2,1
```

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```
,c4:c4=c4+1:if c4>3 then c4=1
4820 poke ptsin+4,x:poke ptsin+6,y7:y7
=y7-y8
4830 vdisys(1):sound 1,8,y10,y11,0:wav
e 1,1,4,256,0
4840 y10=y10+1:if y10>12 then y10=1:y1
1=y11+1:if y11>8 then y11=3
4850 next x:gosub TEFFECT:gosub THEIGH
T
4860 xx=ta3:for x=0 to 5:gotoxy xx/j,4
:?chr$(titlep(x));:xx=xx+4:next x
4870 color 1,1,1:te=16:th=26:gosub TEF
FECT:gosub THEIGHT
4880 xx=10:for x=6 to 10:gotoxy xx/j,1
5:?chr$(titlep(x));:xx=xx+4:next x
4890 te=0:th=dth:gosub TEFFECT:gosub T
HEIGHT
4900 color 1,1,1:gotoxy 5/j,0:?"BY ";:
te=4:gosub TEFFECT:?" J. Luczak"
4910 te=1:gosub TEFFECT:color 2,1,1:go
toxy ta4/j,6:?"Ver. ";
4920 te=0:gosub TEFFECT:color 3,1,1:?"
1.4d":color 1,1,1:x=y12:y=y13
4930 for sz=1 to 12:a=cm1*sz:b=cm2*sz:
c=3*sz
4940 gosub SETCUBE:gosub DOSOUND:gosub
 DOBOX:next sz
4950 x=dfx:y=dfy:sz=4:a=cm1*sz:b=cm2*s
z:c=3*sz
4960 for z=1 to 5000:next z:?chr$(7);
4970 te=0:th=dth:gosub TEFFECT:gosub T
HEIGHT
4980 clearw 2:color 1,1,1:return
4990 '------------------------ SET MOUS
E POINTER FORM -----------------------
--
5000 MOUSEFORM:
5010 poke contrl,111:poke contrl+2,0:p
oke contrl+6,37
5020 read hx,hy:poke intin,hx-1:poke i
ntin+2,hy-1:poke intin+4,1
5030 poke intin+6,0:poke intin+8,1
5040 for z=10 to 40 step 2:read ms
5050 poke intin+z,ms:poke intin+z+32,m
s:next z
5060 vdisys(1):return
5070 '---------------------------- FILE
 SELECTOR ----------------------------
-
5080 FILESELECT:gosub MOUSEON
5090 pt=1:pathname$=path1$:f$=""+strin
g$(12,chr$(0))
5100 n#=addrin:poke n#,varptr(pathname
$)
5110 o#=addrin+4:poke o#,varptr(f$)
5120 gemsys(90):kp=peek(gintout+2)
5130 temp$="":for z1=1 to 12
5140 if mid$(f$,z1,1)<>chr$(0) then te
mp$=temp$+mid$(f$,z1,1)
5150 next z1:f$="":f$=temp$:path1$=pat
hname$:gosub MOUSEOFF
5160 clearw 2:openw 2:return
5170 '------------------------- FORM
ALERT BOX ----------------------------
5180 FORMBOX:
5190 poke gintin,priority
5200 box2$=str$(icon)+"][|"+box$+"|][
"+button$+"]"
5210 n#=addrin:poke n#,varptr(box2$)
5220 gemsys(52):kc=peek(gintout):retur
n
5230 '------------------------ ROUNDE
D RECTANGLE --------------------------
-
5240 BUTTON:
5250 poke ptsin,bx:poke ptsin+2,by:pok
e ptsin+4,bx1:poke ptsin+6,by1
5260 vdisys(1):return
5270 '--------------------------DRAW C
ONTROL SCREEN ------------------------
-
5280 CSCREEN:
5290 clearw 2:plt%(0)=0:plt%(1)=1792:p
lt%(2)=112:plt%(3)=1911
5300 poke pl#,varptr(plt%(0)):tlt=1:lh
=0:lv=-1:tt=5:color 1,1,3
5310 tlt$=title$:title$=tlt1$:gosub DO
CONTROLS:title$=tlt$
5320 for dox=1 to 10 step 2:gotoxy 10/
j,tt:?ctx$(dox)
5330 if dox+1=10 then color 2,1,3
5340 gotoxy ta2/j,tt:?ctx$(dox+1):tt=t
t+2:next dox
5350 poke contrl,11:poke contrl+2,2:po
ke contrl+6,0:poke contrl+10,8
5360 bx=fm(1):bx1=fm(2):for dox1=1 to
2:for dox=1 to 10 step 2
5370 by=fv(dox):by1=fv(dox+1):gosub BU
TTON:next dox
5380 bx=fm(3):bx1=fm(4):next dox1:colo
r 1,1,1:return
5390 '---------------------------- MAR
K CHOICE -----------------------------
-
5400 MARKC:color 1,1,mkc:mkd=fc1
5410 poke contrl,11:poke contrl+2,2:po
ke contrl+6,0:poke contrl+10,8
5420 if fc1<=5 then bx=fm(1):bx1=fm(2)
 else bx=fm(3):bx1=fm(4):mkd=fc1-5
5430 mke=mkd-1:by=fv(mkd+mke):by1=fv((
mkd+mke)+1):gosub BUTTON
5440 isx=bx:isy=by:isw=200:ish=11*cm1:
gosub GSCNT:return
5450 '---------------------------- FIL
E LOCATOR ----------------------------
-
5460 FILELOCATE:f2=1:f3=1:f4=0
5470 while f2<>0:f2=instr(f3,path1$,"\
"):if f3>f4 and f3<24 then f4=f3
5480 f3=f2+1:wend:f$=left$(path1$,f4-1
)+f$:return
5490 '------------------------- GROW/S
HRINK CONTROL ------------------------
-
5500 GSCNT:on fc1 goto GFO,GFU,GSEL,GS
EL,GSEL,GFU,GFU,GPRINT,GFU,GFO
5510 GFO:iex=200:iey=75*cm1:iew=200:ie
h=75*cm1:return
5520 GFU:iex=0:iey=0:iew=639:ieh=199*c
m1:return
5530 GSEL:iex=200:iey=25*cm1:iew=280:i
eh=150*cm1:return
5540 GPRINT: iex=200:iey=175*cm1:iew=2
00:ieh=11*cm1:return
5550 '---------------------------- G
ROW BOX ------------------------------
-
5560 GROWBOX:
5570 poke gintin!,isx:poke gintin!+2,i
sy:poke gintin!+4,isw
5580 poke gintin!+6,ish:poke gintin!+8
,iex:poke gintin!+10,iey
5590 poke gintin!+12,iew:poke gintin!+
14,ieh:gemsys(73):return
5600 '---------------------------- PRO
GRAM DATA ----------------------------
--
5610 MEDREZ:
5620 data 12,21,22,608,188,4,175,174,1
,2,1,19,7,8,83,9,23,2,188,2,100,60
5630 data 40,36,15,56,65,265,335,535,6
7,78,85,96,103,114,121,132,139,150
5640 data 1911,546,1792,112,7,5,1312,8
0,1365,599,119,85,1799,1285,1904,1360
5650 data 7,1792,112,1365,1904,119,179
9,80,1360,1285,85,1911,1360
```

```
5660 data 119,1792,1312
5670 data 5,1280,80,546,1360,85,1285,4
8,816,771,51,1365,1185,1904,112,80
5680 data 3,768,48,0,816,51,771,16,272
,257,17,819,1312,112,7,5
5690 HIREZ:
5700 data 20,36,38,616,382,4,242,243,2
,4,2,16,14,4,172,12,18,0,382,4,100,110
5710 data 44,38,16,58,60,260,350,550,1
23,145,157,179,191,213,225,247,257,281
5720 data 1911,0,1911,0,1911,0,1911,0,
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5730 data 0,1911,0,1911,0,1911,0,1911,
0,1911,0,1911,0,1911,0,1911
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0,0
5750 data 0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0
5760 CBARDAT:
5770 data 29,47,48,63,64,79,80,96,97,1
12,113,129
5780 data 130,199,200,270,271,350,351,
438,439,493,494,576,577,599
5790 COORDTEXT:
5800 data 67,117,114,114,101,110,116,3
2,80,111,115,32,88,61,32,32,32,32
5810 data 89,61,32,32,32,32,32,67,117,
98,101,32,80,111,115,32,88,61,32,32,32
5820 data 32,89,61,32,32,32
5830 data 32,32,67,111,117,110,116,32,
32,32,32,32
5840 TITLEDATA:
5850 data 69,83,67,72,69,82,67,85,66,6
9,83
5860 DEFAULTP:
5870 data 1,1,32768,49152,57344,61440,
63488,64512,65024,65280,64384
5880 data 55296,35840,3072,1536,1536,7
68,0
5890 CUBEP:
5900 data 1,1,65472,65504,49136,40952,
36860,35500,36180,35500,36180
5910 data 35500,19796,10924,7508,4092,
0,0
5920 CNTDATA:
5930 data Reset Recorder,Enter [-CUBE-
] Data,Play-Back Recorder
5940 data Edit [-CUBE-] Data,Load [-CU
BE-] File,List Data To Printer
5950 data Save [-CUBE-] File,Return To
 CUBICLE,Delete [-CUBE-] File
```

ST CHECKSUM DATA.

(see page 11)

```
 100 data  279, 211, 905, 291, 661, 99
4, 462, 275, 761, 658, 5497
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2, 292, 298, 304, 374, 4374
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2, 79, 750, 309, 758, 4963
 400 data  638, 40, 676, 341, 947, 644
, 94, 225, 803, 503, 4911
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 170, 815, 208, 794, 4501
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1, 549, 758, 584, 643, 6267
 700 data  251, 779, 676, 671, 625, 31
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 800 data  242, 662, 262, 657, 866, 69
8, 68, 391, 92, 426, 4364
 900 data  308, 797, 970, 146, 650, 74
, 792, 697, 89, 909, 5432
 1000 data  30, 438, 856, 344, 147, 19
3, 33, 163, 518, 516, 3238
 1100 data  78, 510, 505, 791, 648, 80
8, 159, 660, 787, 387, 5333
 1200 data  261, 961, 8, 753, 128, 678
, 119, 506, 655, 452, 4521
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78, 296, 996, 353, 516, 6280
 1400 data  769, 373, 659, 436, 360, 8
52, 155, 347, 524, 308, 4783
 1500 data  45, 531, 684, 455, 487, 69
3, 510, 238, 174, 259, 4076
 1600 data  455, 543, 563, 25, 144, 77
9, 70, 77, 621, 681, 3958
 1700 data  533, 952, 650, 447, 657, 5
55, 50, 186, 80, 731, 4841
 1800 data  725, 767, 658, 500, 9, 131
, 997, 796, 566, 516, 5665
 1900 data  659, 553, 49, 184, 76, 733
, 931, 609, 193, 975, 4962
 2000 data  236, 641, 250, 973, 951, 7
93, 141, 832, 73, 54, 4944
 2100 data  230, 112, 597, 645, 276, 5
61, 980, 943, 270, 278, 4892
 2200 data  577, 978, 948, 269, 736, 6
97, 711, 437, 837, 763, 6953
 2300 data  679, 573, 309, 353, 984, 1
0, 454, 591, 190, 118, 4261
 2400 data  583, 984, 635, 606, 647, 9
26, 43, 782, 646, 242, 6094
 2500 data  797, 49, 801, 479, 842, 84
7, 318, 473, 4, 742, 5352
 2600 data  516, 815, 664, 658, 846, 6
98, 939, 781, 16, 774, 6707
```

Escher Cubes *continued*

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 2700 data  966, 118, 501, 463, 989, 3
64, 866, 329, 666, 648, 5910
 2800 data  672, 79, 760, 751, 601, 60
8, 126, 17, 640, 489, 4743
 2900 data  685, 417, 795, 57, 144, 11
5, 475, 32, 965, 698, 4383
 3000 data  44, 696, 740, 547, 70, 571
, 152, 781, 726, 732, 5059
 3100 data  642, 899, 370, 298, 373, 5
98, 645, 968, 933, 852, 6578
 3200 data  412, 437, 214, 987, 977, 8
6, 53, 229, 119, 276, 3790
 3300 data  281, 186, 355, 593, 105, 8
19, 271, 986, 780, 823, 5199
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50, 130, 101, 995, 669, 5131
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6, 827, 870, 933, 827, 5639
 3600 data  546, 221, 680, 958, 819, 2
35, 313, 51, 613, 731, 5167
 3700 data  657, 984, 906, 220, 828, 5
45, 792, 772, 726, 989, 7419
 3800 data  985, 943, 650, 232, 857, 1
57, 624, 370, 470, 267, 5555
 3900 data  418, 545, 934, 792, 151, 3
44, 150, 448, 270, 301, 4353
 4000 data  787, 174, 438, 810, 11, 93
5, 764, 88, 225, 883, 5115
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31, 619, 363, 796, 871, 5390
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40, 615, 755, 232, 468, 5789
 4400 data  737, 463, 175, 601, 7, 267
, 238, 423, 14, 850, 3775
 4500 data  862, 491, 30, 350, 893, 91
3, 596, 572, 369, 447, 5523
 4600 data  762, 923, 541, 95, 499, 66
9, 674, 554, 646, 754, 6117
 4700 data  523, 576, 646, 754, 506, 9
22, 643, 281, 275, 754, 5880
 4800 data  195, 783, 747, 891, 800, 2
71, 254, 213, 146, 965, 5265
 4900 data  937, 681, 260, 451, 194, 9
80, 410, 966, 92, 206, 5177
 5000 data  943, 779, 281, 167, 907, 9
9, 715, 667, 32, 131, 4721
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, 657, 475, 625, 340, 3902
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37, 721, 924, 559, 980, 5862
 5300 data  731, 803, 734, 733, 668, 7
40, 234, 840, 476, 406, 6365
 5400 data  996, 739, 469, 57, 563, 58
2, 662, 141, 976, 956, 6141
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, 643, 769, 998, 49, 4971
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99, 524, 912, 687, 7, 6281
 5800 data  145, 537, 847, 865, 904, 3
77, 817, 790, 350, 361, 5993
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, 2097
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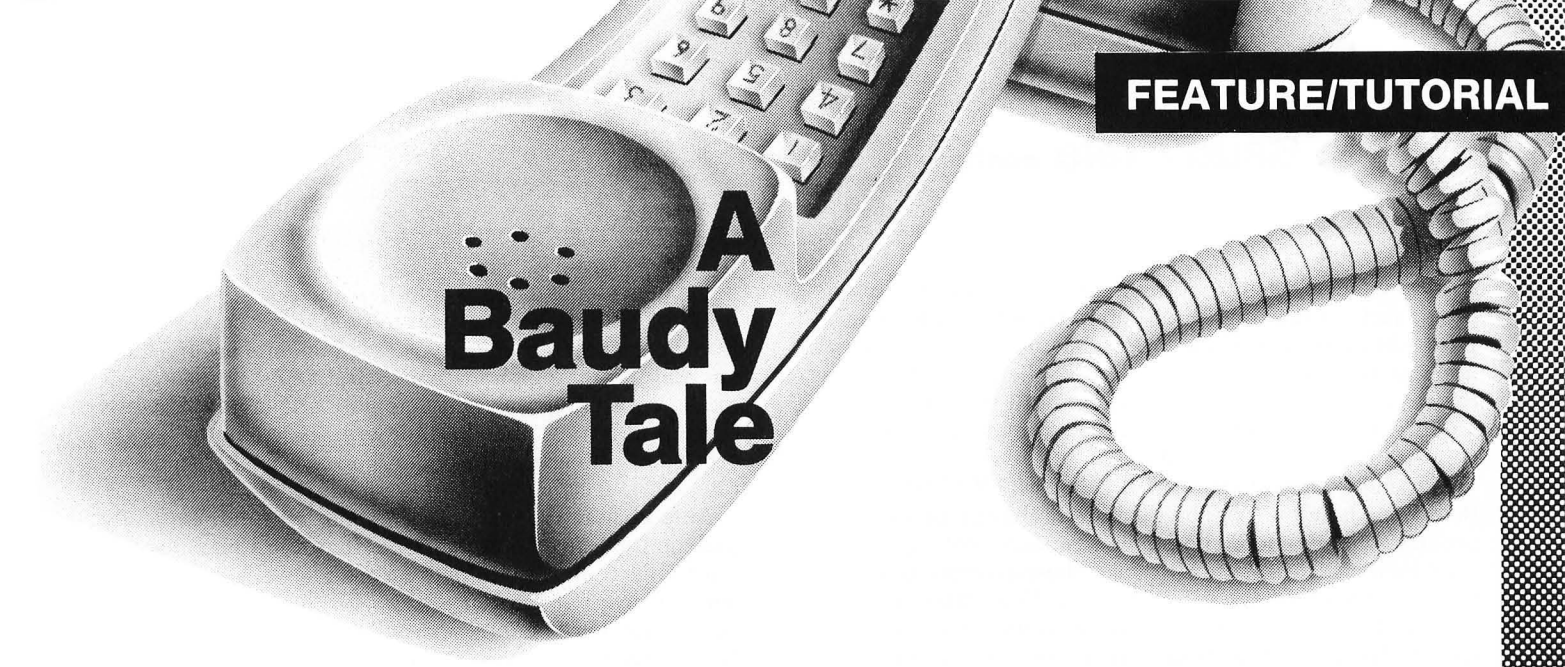

A Baudy Tale

OR
A beginner's guide to telecommunications.

by Maurice Molyneaux

As a "beginner's guide," you may want to consider this article something of a companion piece to the **Step 1** series in these pages, the third section of which appears this month. I imagine it would fit between parts 4 and 5, so you can just call it **Step 1** part 4½. . . but only when the editors aren't listening.

Good evening modem.

In the first **Step 1** ("Hard Wares") I briefly touched upon what a modem is. For those who missed the article—or who want to learn more on the subject—I will reiterate and elucidate: a modem is a peripheral (add-on) device for your computer, which allows it to communicate with other computers by transmitting and receiving data over conventional telephone lines. The word *modem* is actually a sort of acronym for "modulator-demodulator." When two computers communicate via modem, the sending (or originating) modem receives data from its computer, MODulates the data into audio carrier frequencies, and transmits them through the telephone line at a predetermined rate. The receiving modem receives the audio carrier from the telephone line, DEModulates the signal—thus converting it back to computer form—and passes this data on to the computer to which it's attached. Hence, the term *modem*.

Generally, modems are divided into two distinct types: *acoustic* and *direct connect*. Acoustic modems are less common today than a few years back, but you've probably seen one before. In most movies and TV series, when someone uses a modem, it's generally an acoustic one (probably because producers feel the general public won't realize what's going on if they see a little gray box with winky lights on it—the telephone proper tells us, "he's using the computer *with* the phone").

In case you haven't caught on yet, most acoustic modems are boxes with rubber cups designed to fit the microphone and speaker ends of a standard telephone handset. Acoustic modems actually convert data to sound and transmit it to a telephone's microphone via a speaker. Conversely, they receive data from the telephone's speaker, and must convert the sound back to computer-understandable code. Because the modem must depend on the quality of a given telephone's sound—both sending and receiving—and because it must listen to and output sound (rather than transmitting data pulses directly), errors tend to crop up more commonly with acoustic modems. Thus, they have fallen into disfavor with users and the industry.

Theoretically, if you use your computer on the go (not likely, considering the ST is a bit large to lug about), an acoustic modem will allow you to send and receive data wherever there's a telephone. However, theory and fact aren't always the same. Often, the new designer phones (shaped like anything from Coke bottles to guns) simply won't fit an acoustic modem. Even more unfortunate, every one of this type I've run into has been of the slow 300-bps variety (more on *bps* later). To use an acoustic modem, you get the computer up and running the telecommunications software, put on the phone's handset, and go from there. To call, you have to dial with the telephone proper. Yuck, yuck and triple yuck.

The second type of modem—and by far the more common and more desirable—is the direct-connect variety (*yeah*). As the name implies, these hook directly to a telephone cable, eliminating the need for microphones and speakers in sending and receiving data, and also eliminating the added potential for error which such audio interfaces are prone to. Most direct-connect modems look like bland little boxes, with occasional lights or other indicators along one side. They usually have a prominent, industry-standard modular telephone jack on the back. You

must connect a cable from the modem to a modular telephone jack on the wall. You'll often have to unplug your phone from the jack to do this, unless you buy a splitter, to allow you to have modem and telephone attached on the same jack. Sometimes, a modem will have a second modular jack on its back, so you can connect a phone to it (as with my Avatex 1200hc).

Modems connect to the ST's RS232C/MODEM interface (telephone handset icon) on the back of the computer. Appropriate cables should come with modems sold specifically for the ST. However, if you purchased a more generic modem (not system specific), the supplied cable (if any) may not be the right one. Most modems that aren't system specific have RS232 interfaces, so the supplied cable might be perfectly fine—except that the end won't plug into your ST. For example, the end of the cord might be a male RS232 jack, just like the one on the back of your computer. You can't very well plug two male jacks together, so you'll need a gender changer. No, you don't have to go to Denmark for surgery. What you need is simply a short connecter with two female jacks, to interface the two male jacks.

You should be cautious about modems which don't have an RS232 connector or don't use standard IBM pinouts (pin arrangements) in the interfaces, because even if you get a cable which fits from the modem to the computer, the wrong pins may be connected and *zap!*—sizzled hardware. If you have any doubts as to the proper interfacing of a particular modem (or any other peripheral, for that matter) with your ST, contact your local dealer. Better safe than sorry.

In fact, if you can't find appropriate cables for sale, many computer shops will make one for you at nominal cost. At most, all you may have to do is supply pinout diagrams for your ST's modem port (shown at the back of the ST manual) and the modem's interface port (which should appear in the modem's manual).

Most modems—like the Hayes Smartmodems, Atari SX212, etc.—have their own power supply and do not draw electricity from the computer proper (as do internal "card" modems for IBM compatibles and Apple IIs). This is because Atari chose to use the IBM standard pinouts for the ST modem port, and power pinouts weren't supported by that standard. To confuse matters: if you look at the back of the Commodore Amiga, you'll see what appears to be an RS232 port (female). Yes, an RS232 plug will fit there, but the pinouts Commodore chose are different from those Atari selected for the ST.

The Amiga's modem port is designed to supply power to the modem. So, if you tried to plug your trusty ST modem into a friend's Amiga with the standard cable (and probably some sort of gender changer), your modem might very well find itself receiving 5 volts where it wasn't designed to. Once again, *zap!* I imagine you could take this as a parable about the compatibilities of the ST and Amiga, but it's not quite so black and white. With appropriate custom cables and software, the modem you purchased for your ST could indeed work on the Amiga (though why you'd wish to soil it with such contact is beyond *moi*).

Next, there are features. Almost all direct-connect modems made today feature *auto-dial* and *auto-answer* capabilities. Auto-dial allows you to type in a phone number from your telecommunications program and have the modem dial it—no telephone necessary! Once connection is made, your computer will automatically signal that it is there, and will establish a link with the computer on the other end of the line (provided both are at the same bps rate, etc.), if it has an auto-answer modem.

Auto-answer means that a modem will automatically pick up the line when the phone rings. On some modems (particularly Hayes compatibles) you can select the number of rings, but most are preset for one or two rings. If your modem is a "smart" one, and on the same line as your telephone, auto-answer can be a minor pain. For example, if your forget to turn the modem off, it will answer when the phone rings, even if the computer isn't running a telecommunications program! In fact, with some modems the computer doesn't even have to be on. This wouldn't be so bad, except that the person who's calling will probably get an unpleasant earful of electronic beeps and whistles. And, if you don't grab the phone fast enough after the modem picks up, it will hang up—because it couldn't detect a "carrier signal" from the caller. It was, after all, expecting a call from one of its computer buddies.

Another feature worth having is a modem with its own speaker. No, not a speaker as used by an acoustic modem, but a speaker for your listening pleasure. This allows you to hear the ring of the phone you're calling, busy signals and those famous "the number you have reached is no longer in service" messages.

Baud English.

As mentioned earlier, modems are designed to send and receive data at very specific speeds. The transmission rates for such communications are measured in *bits per second*, or *bps*. These terms are often used interchangably with the word *baud*, even though they're not quite the same thing. (In case you're unfamiliar with the terminology, a *bit* is simply the computer equivalent of a binary digit, similar to a switch, either off or on, as represented by the numbers *0* and *1*. It's the arrangement of these bits that forms the data your computer uses.)

Let me take a minor detour here, to explain the difference between *bits per second* and *baud*. You see, bps is a measurement of the number of bits transferred over an interface in a given second, while baud measures the number of *signal events* in one second on a serial interface. A signal event occurs whenever the value of a bit changes from *0* to *1*, or back. Thus, the binary number *00100101* contains five signal events (the changes from *0* to *1* to *0* back to *1*, again to *0* and finally to *1*). The binary number *01000000* only contains two signal events (the change from *0* to *1*, then back to *0* again), and thus would take less time to transmit than the one with five events.

Furthermore, we must then take into account parity bits, stop and start bits, and the like. Therefore, the amount of information transferred in each second is variable, dependent on the number of signal events in given data and the various bits required by whatever protocol you're using. Such hair-splitting, of course, won't have any effect on you

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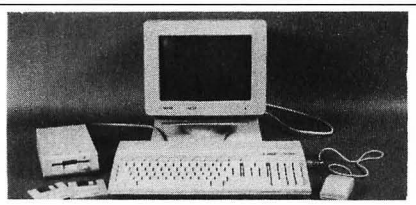

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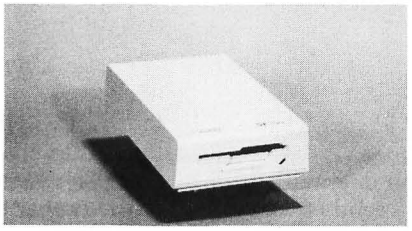

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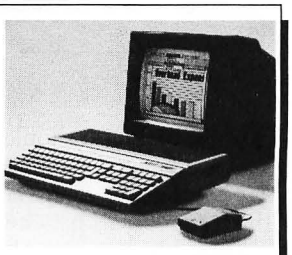

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as a user, but you should at least have a small idea of what the bps/baud difference is.

The more bits per second your modem can deal with, the faster it will be, and the less time you'll spend transmitting and receiving data. The 300-bps modems are very slow—particularly bad for use on a computer like the ST, where a "small" program might be over 25K, and a "big" one over 350K. At 300 bps, a 25K program can take as long as 15 minutes to transfer (if your modem software utilizes some form of error-checking during transmission).

The 1200-bps modem is more standard now, and has the advantage of being four times as fast as its 300-bps sibling—3½ minutes instead of 15. The 2400-bps modem is becoming more common, but it isn't always as fast as the number would indicate: many telephone systems are prone to enough background "noise" to cause errors, thus slowing the transfer.

All I really want to say here is: steer clear of 300-bps modems completely. The minimum transfer rate you want to accept is 1200 bps. Many 1200-baud modems are available in the $90 to $200 price range, and most are pretty reliable. A 2400-bps modem is going to cost you still more, but the price is coming down (mostly because people in the industry are toying with ever-higher bps/baud rates for future modems). The 2400-baud standard is spreading, so if you can find a good deal on a modem capable of this rate, you might consider it. Still, 1200 bps will do in most cases.

I need to make a point here. A modem's listed bps (baud) rate is almost always its maximum. So you might assume your 1200-bps modem can only communicate with modems of the same rate. Wrong! Almost universally, a higher speed modem can switch to a lower-speed mode. Most 1200-bps modems can also run at 300 bps. Every 2400-bps modem I've seen can also run at 1200 and 300 bps. However, no modem I've run across can deal with data transfer at a rate *greater* than the number advertised.

Now, if you're new to all this, I suggest you dig out your ST manual and flip it open to the pages on "The Opening Menu," particularly the "Desk" section under "Set RS232 Configuration." This accessory (DESK2.ACC or EMULATOR.ACC) allows you to set the system's modem port configuration, though a telecommunications program may alter these settings when run. Let's briefly run through the most important options and what they mean.

Baud rate — As above, this is used interchangeably with bps. Four options here; there's no 2400-baud option on this menu. The 9600-baud option is often used when directly connecting two computers together via a special communications cable (*null-modem cable*).

Parity — This sets what's known as a "parity bit," an error checking function used to insure that transmitted and received data is correct. Usually, it's set to *NONE*, because most good file transfer systems employ their own error-checking system (as with Xmodem).

Duplex — This sets the manner in which data is to be transmitted. For example, FULL duplex allows data to be sent and received in both directions simultaneously, so it "echoes" back to your computer. When set to HALF duplex, the data only goes one way. If you find you can't see what you're typing when communicating with another computer (it's not echoing what you type), check your duplex setting. If it's on HALF, toggle it to FULL. If you're on FULL duplex and are getting repeating characters (like: *HHEELLOO*), try switching to HALF and see if that kills the echo.

The rest of the controls are for more advanced situations. Most users will probably never deal with them, which puts them beyond the scope of this article.

Ask who?

ASCII (pronounced *as-key*) is an acronym for "American Standard Code for Information Interchange" and is used by nearly all microcomputers—in the U.S., anyway. This code represents printable—and some control—characters. It is because of ASCII that your printer and computer both have the same value for the letter *A*, and so on. Atari 8-bit computers, like the 130XE, use a customized version of ASCII called ATASCII (ATari-ASCII), which features nonstandard characters. If you're communicating with an Atari 8-bit, particularly one running a Bulletin Board System (BBS), it should ask you if you can receive ATASCII. Some telecommunications programs feature a translation mode which allows your ST to understand ATASCII special characters, but it's often best to specify ASCII. If you have trouble with an ATASCII board and don't have a translation feature, you'd better leave a message with the board's SYStem OPerator (SYSOP) detailing your problems, before looking for another BBS.

Since we're talking about communication with computers of various makes, the question of file compatibility may rear its ugly head. With a modem, you can indeed download programs and data designed for computers other than the ST. But be warned: having them on an ST disk and being able to *use* them are two completely different things. Trying to run a program designed for another machine will probably cause your ST to bomb or to report back the old TOS ERROR #35. You can, however, pass the program on to a friend with the appropriate computer. I once downloaded to my ST a binary (machine code) game for the XE and sent it on to my brother (who has a 130XE).

There are a couple of instances when you may be able to use a file created on another make of computer. First, if it's a data file (such as spreadsheet data, word processor text, or a picture file), you may be able to utilize it, if one or more of your programs is designed to understand the arrangement and significance of the data. **DEGAS Elite** can utilize Atari 8-bit **MicroIllustrator** and Amiga .IFF picture files; **VIP Professional** can read data from Lotus 1-2-3 files from the IBM-compatible world.

The second instance is when you have an appropriate emulator, which makes your ST "pretend" it's a different computer. For example, with the **Magic Sac** cartridge (reviewed on page 53) you could download and use (some) Mac software on your ST (monochrome). With the public domain CP/M emulator, you could run Wordstar from a Kaypro, etc. Not all programs work on such emulators, so don't be too crushed if a given application fails.

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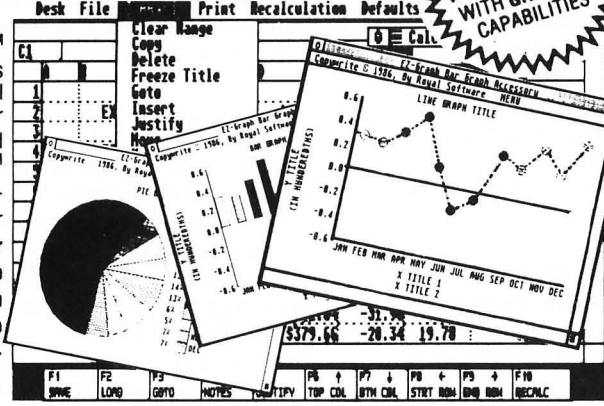

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Check it out!

File transmission can be (broadly) split into two categories: *blind-send* and *error-checked*. Blind-send is just what the name implies: the source computer sends the data out, and the computer it's speaking to collects it. No form of error-checking is employed, so neither machine knows if an error has occurred in transmission. Generally speaking, most ASCII files are sent blind, as when you read messages or instructions off of a BBS. It is not recommended that you send sensitive data blind, particularly programs, as I'll explain.

Error-checking is an important part of telecommunications. If you were downloading a program, no matter how large or small, 1 crucial bit or byte received incorrectly could cause the program to be crippled, useless. Not a pleasant thought. You've spent time downloading, and money on long-distance or pay-service charges.

So, to prevent this from occurring with frightening regularity, most telecommunications systems employ a form of error-checking. One of the most common of these is the Xmodem protocol. When sending a file via Xmodem, the source computer transmits data in small blocks (usually 128 bytes at a time), then waits for the destination computer to receive the data and echo it back (while transferring files, your telecommunications program may display a counter showing which block it's waiting to receive or send).

The source computer then compares what it originally sent to what was echoed back. If they match, it proceeds to send the next block. If the transmitted and received blocks don't match exactly, the source computer retransmits the garbled block, letting the destination computer know it didn't receive the material correctly on the last attempt. If, after a number of repeated tries, the source computer can't get a specific block to transmit properly, it will signal an error and abort the attempt. There are other methods of error-checking, but the most common ones work in a way similar to the method I've described.

To Hayes or not to Hayes.

I don't want to hear any arguments. It's a given that the Hayes modem command set (used in Hayes Microcomputer Products modems) is the *de facto* industry standard in personal computer telecommunications. If you intend to use your modem for serious applications, particularly business, some form of Hayes compatibility is a must. There are modems which feature partial Hayes command sets, but they're not always safe buys because they may deal differently with—or lack—functions that a true Hayes compatible would have. This may not seem to be much of a problem; for the casual user it probably wouldn't be. But a lot of telecommunications software uses the Hayes standards, and deviation from them by your modem can result in quirky communications.

The Bell 212 standard is something of a subset of the Hayes command set. It's used by Atari's SX212 modem. This is a workable compromise, but beware of modems bearing their own custom command sets and protocols. They may work fine in their own right, but they could fail when dealing with the Hayes-compatible world around us.

Terminal program.

This isn't as serious as it sounds, but it *is* something you should think about when purchasing a modem... What software should you use with it?

Most modems are packaged with a *terminal program*. (Terminal software is not a program that will soon self-destruct, but one that makes your computer act like it's a data terminal.) The one included with your modem, though, may not be ideal for you. Terminal—like most other—software varies in quality and ease of use. Generally, the more powerful the program, the more complex it is. I've used quite a few terminal packages, and I'll venture my personal opinion (not necessarily **ST-Log**'s) on two you may be interested in.

The first is a simple, easy-to-use program, containing the features most users need—but with no extraneous "bells and whistles." It's **ST-Talk** from QMI. This program can be purchased for well under $20, features simple single-key commands, stores a list of phone numbers you can dial with the touch of a button, supports Xmodem and ASCII transmission modes, and features a *capture buffer* (which saves to disk whatever appears on the screen during a session, for future reference) option. It doesn't use the GEM interface or mouse; it isn't programmable, doesn't offer a session editor, etc. But it does do the job—cleanly, efficiently, with no fuss and no muss.

(By the time this sees print, the new **ST-Talk Professional** 2.0 should be out. It will utilize GEM and have a lot of new features. The price will go up, but will still be under $30 retail.)

On the other end is **Flash** from The Catalog. It has more bells and whistles (though not necessarily extraneous) than most sane users would ever need. **Flash** can not only save lists of phone numbers, but allows extensive customizing of communications protocols, features the ability to automatically redial a busy number upwards of 99 times, and has a capture buffer with full-range editing capabilities. **Flash** can also utilize predefined files containing lists of commands. With this feature, you could, for example, use one of those "DO" files which automatically calls another computer, logs on, gives the other computer your name and password, leaves a message, then hangs up. **Flash** has a lot of power, but is more complex (and, boy, does their manual need rewriting!) and more expensive than **ST-Talk**.

In the public domain, there are terminal programs like the VT52 emulator which comes with the ST (sorry, no file uploads or downloads, or 2400 bps with this one), VT100 emulators, and bare-bones terminals which sometimes feature Xmodem file-transfer capability. A lot of these can be found in users' group disk libraries and on various bulletin boards. (Of course, if you don't have software for your modem, you can't very well call up a BBS to get some, can you? Catch-22.)

There are a lot of other terminal programs, to be sure. I don't mean to snub them by mentioning the programs I have. But this is an intro to modems, not a comparative software review, so inclusion of more than a teaspoonful is impossible.

Why should you have a modem?

For a lot of reasons. First of all, if you live in a metropolitan area, there are likely to be a number of electronic bulletin boards or BBSs locally, one or more of which probably supports your computer. A BBS can be an excellent place to find useful software of all kinds. A good BBS will have a file section of program and data storage, where you can send (upload) or receive (download) files.

For example, if you needed a program to strip all the special control characters out of **ST Writer** files, you might very well find one on a local BBS. The same can be said for **NEO-Chrome** and **DEGAS** pictures, slideshows, demos of upcoming programs, BASIC programs, games, etc. Even better, in some ways: you have access to a lot of other users through the BBS's message system. If you have a problem or a question, leave a message for other users, or with the BBS's SYSOP. Call back in a day or two, and chances are good that someone will have responded to your query. In this regard, the BBS is more interactive than its "bulletin board" reference would imply. It's more like a community, whose inhabitants have time-delayed conversations.

Consequently, if you live far from cities—or from the nearest ST dealer or users' group—a modem can be even more useful. Getting help when you're in the middle of nowhere (where I am now; I understand better than you know) can be difficult, so contact with a BBS could be your one reliable source of information and help (aside from **ST-Log**, of course). You may end up paying long-distance rates, but that's a small inconvenience compared to being lost, with no one to turn to when something goes wrong.

Now, have you ever called a computer or software company's technical support number and found it impossible to get through? If so, communicating with the company's own BBS (quite a few have them) may be an alternative—another reason for owning a modem. Here, you can get on-line, leave a technical question for the SYSOP and/or in the message base, call back a few working days later, and you should have your answer.

More reasons: even without a BBS as middleman, you can transfer files from your computer to a friend's (we're assuming he/she/it has a modem). You can, in some address-book-type programs, use the modem to dial the phone—just call up the listing of the name or organization you want and hit the "dial phone" option. If you work for a company that has centralized computers with telecommunications capabilities, you can send work to the main office from the field—and perhaps even access a mainframe or two. (Ever deal with a Sperry Univac? I have.)

Still not convinced? Okay, time for the big guns. You can use a modem to access a variety of on-line services and telecommunications networks like Delphi, GEnie, CompuServe, MCI Mail, *et al.* You can enter forums wherein you can interact with tremendous cross-sections of fellow users and developers, have access to electronic mail, on-line multi-player games, vast download libraries, and much, *much* more. *Now* how much would you pay. . .?

Sorry, I got carried away there. As I was saying, most on-line networks require you to pay a membership fee, and most charge you for the time spent on-line. As for justifying the cost of all this, that's something only you—and your checkbook—can answer.

Log off.

Well, I fully expected this to be the shortest article of my career, but I was mistaken. There are more basics to telecommunications than I expected. And I still wasn't able to explain *everything* (serial interfaces, handshaking and a bunch of other topics got slighted). As in **Step 1**, the idea here is to give you a general knowledge of the terms and workings of the subject, not to provide in-depth analysis on every facet of the topic.

Still, I hope those of you new to—or thinking about entering—the realm of telecommunications have found some of what I've covered here useful. I know I have. In researching this article, I learned a few things, too. But that's why I like writing this kind of thing; in helping you, I help myself. That can lead to my being of more use to you. Interesting cycle, and not a bad deal, eh? //

Allergic to all things Commodore and never bitten by Apples, Maurice Molyneaux first purchased an Atari 800-XL for animation work, but upgraded to an ST as soon as they became available. Currently slaving to complete the fifteenth draft of a science-fiction novel, he also masochistically churns out free-lance articles, artwork and animation on his ST, and hopes to dig out of a mountain of pending projects by the year 2000.

The third in our series for the first-time computer user.

by Maurice Molyneaux

One of the most attractive points of the Atari ST, particularly to the new user, is its interface, as opposed to the complex, difficult to learn series of type-in commands most other computers require. The ST owner's manual covers general operations well enough, but there are a number of topics it fails to cover adequately or at all. This time out, I'm going to discuss working with GEM. As always, I'm aiming this primarily at the new user, but even you long-time ST owners may learn a thing or two, so read on.

What a GEM!

Your Atari ST computer has what is essentially a two-tier operating system or OS. The main operating system is TOS, which handles the majority of the actual work your computer carries out. TOS is rarely seen by the average ST user, because it's hidden "under" the ST's built-in software, GEM. GEM stands for "Graphics Environment Manager," and it consists of a series of machine-resident programs and routines designed to simplify the task of running the computer. GEM is responsible for all the windows, menu bars, icons, and dialog and alert boxes you see when using your ST. GEM provides a graphics oriented workstation, wherein, for the most part, you only have to point and click to do a job. GEM translates what you have done to a form understood by TOS, which then carries it out. For example, if you drag SAMPLE.PRG from the DEMOS folder on the disk in drive A, throw it in the trash can, and OK its deletion, GEM tells TOS to delete from the specified drive and directory the file SAMPLE.PRG. If you had to tell TOS this directly, you'd probably have to type something like this:

```
>ERA A:\DEMOS\SAMPLE.PRG
```

As you can see, throwing the file icon into the trash can is much easier to remember.

Terms used.

On the GEM desktop, the mouse's left button is generally the only one used. Whenever I refer to clicking or double-clicking on something, I'm referring to the left button. If the right button is required, I'll say so. Check your ST manual if you're at all confused about clicking, double-clicking or dragging.

In the following examples, all keys to be pressed appear in capital letters, for example: "hold down ALTERNATE and press HELP." The same goes for the dialog box selection/exit buttons: "click on CANCEL."

Desk accessories.

A desk accessory is an application program which is loaded when you boot your ST and remains in memory until you turn off or reset the computer. Accessories can be used while other programs are running (provided the program supports the GEM menu bar), or from the desktop. In most cases, any program that offers the menu bar will leave the system's DESK menu intact, so you can use any loaded accessories. Accessories are always displayed on the DESK menu, nowhere else.

There are a couple of rules of thumb to keep in mind when choosing which accessories to include on your boot disk, the most important of which is how much RAM they will consume. Some accessories are quite large, and using several of them (particularly on a 520ST) may limit the available memory for other applications. The second pressing concern is that GEM allows you to have only six active accessories (this may change with future revisions), so be careful in choosing which ones to boot with.

Directories and windows.

When you swap a disk, you don't have to close its win-

Step 1
CRACKING GEM

dow, then reopen it to get the directory of the new disk. The ST manual does mention how to do this, but it's easy to miss. Simply put, make sure the active window is the one for the drive in which you have just swapped disks, then merely press the ESC (ESCape) key. This will force the ST to read the directory of the selected drive and update the contents of its window.

When handling files and folders, particularly in copying or deleting them, it can sometimes be difficult to deal with multiple items. The ST manual shows you how to drag a ghost box around a cluster of items to select them all, or, if the items are not in sequence, how to hold down the SHIFT key while clicking in order to select them. If you have a lot of items to copy and only want to leave a few behind, there's an alternate method. Position your mouse pointer just off the upper left corner of the upper leftmost item you wish to copy, then hold down the left button and drag a ghost window until it selects everything you want. Let go of the button. There are probably some items now highlighted that you don't wish to be selected. To de-select them, hold down SHIFT and click on them. They will no longer be highlighted. When only the files and folders you wish to work with remain selected, proceed with whatever you were doing.

When copying and deleting files, it can be a pain to have to constantly click on one window or another to activate it, before working with its contents. If you'd like to select items in an inactive window, hold down the right mouse button (while clicking with the left button) in the window in question. Items will be selected, but the window will not become active!

Dialog and alert boxes.

When GEM has you make a decision or give it some information to perform a task, it will usually open a dialog box, inside which will be a message, one or more selection/exit buttons, and perhaps a field or two in which you will be asked to type in or edit information. Of the buttons, one will usually have an enlarged border, which means that striking the RETURN key will result in the same action as clicking on that particular button. Clicking on CANCEL will usually abort the current operation. OK verifies that you are ready to proceed. Other buttons with different labels may appear, but they're self-ex-planatory. A typical dialog box might look like the following:

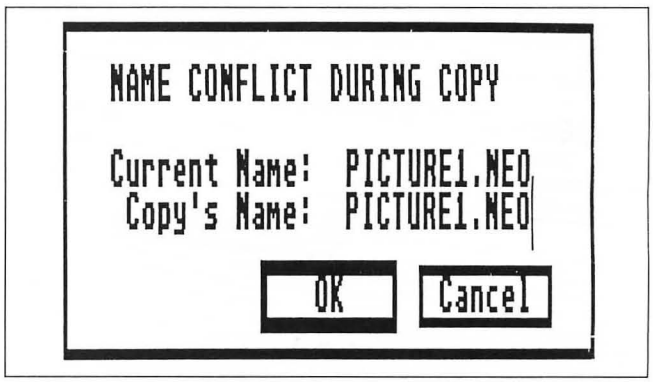


Figure 1.

If you are asked to enter information, a line will appear, sometimes with text already in it (as above with "Copy's Name:"), in which you type the required response. If the text already in a data line (such as a filename) is already correct, you simply select the appropriate exit button in order to continue. If you wish to edit or change the line, and no cursor (a slim vertical line) appears on the line you wish to edit, click the mouse on that line. If there's data already on the line, you can hold down BACKSPACE until it is erased, or simply strike ESC once to clear the entire field (don't try ESC with **NEO-Chrome**'s SAVE PIC-

TURE option, as it often fouls things up badly). Type in the information, edit any other lines you want, and click on one of the buttons.

Alert boxes usually only appear when you try to do something the system won't allow. Generally, an alert box gives you only one selection button and no choices.

When a dialog or alert box is present, you will find you can't do anything else until you make a selection and the box disappears.

Show, print and cancel.

If you double-click on or open a file that is neither a program nor the data file for an installed application, you will probably see the following dialog box:

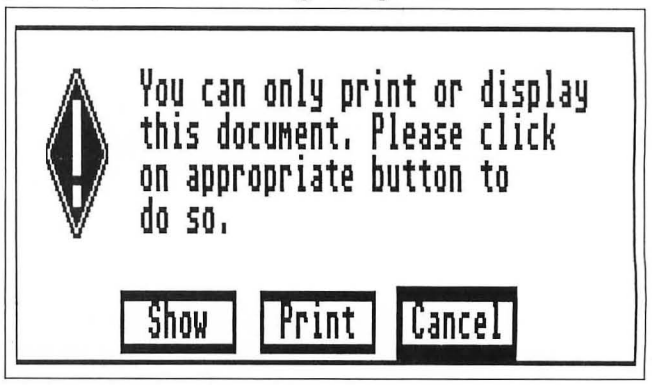


Figure 2.

Clicking on CANCEL will simply abort the operation and return you to the desktop. SHOW will list the contents of the file in question to the screen in text form, and PRINT does the same except that it outputs the file to your printer (if you have one).

If this dialog box appears, try clicking on SHOW. GEM will vanish and a blank TOS screen (usually white) will take its place. If you see a few random-looking characters, blank lines, hear bell sounds, and see the words *END OF FILE*, then you've selected a file containing data which is not in standard text (ASCII) form. When END OF FILE appears, strike the SPACE BAR to return to the desktop. If you see a screenful of readable text, then you have selected an ASCII format text file. If the file is longer than one screen can hold, *—MORE—* will appear at the bottom of the screen. Tap the SPACE BAR to make the next screenful of text appear.

Generally, SHOW is used for reading on-disk instructions or notes, which are often designated with an obvious name, like READ__ME.DOC. Files with .TXT or .DOC extensions (unless they are **1st Word** files in word processor format) can generally be viewed using SHOW. If you wish to abort reading such a file, simply press the Q key.

If an instruction or info file you have examined with SHOW is worth printing out, double-click on the file again, make sure your printer is connected and turned on, then click on PRINT. PRINT can also be aborted by striking Q.

Renaming files.

If you choose to rename a file from the GEM desktop, highlight it (single click) in a window, then click on SHOW

INFO on the FILE menu. A dialog box will appear displaying information about the file, including its name, as in Figure 3, at left.

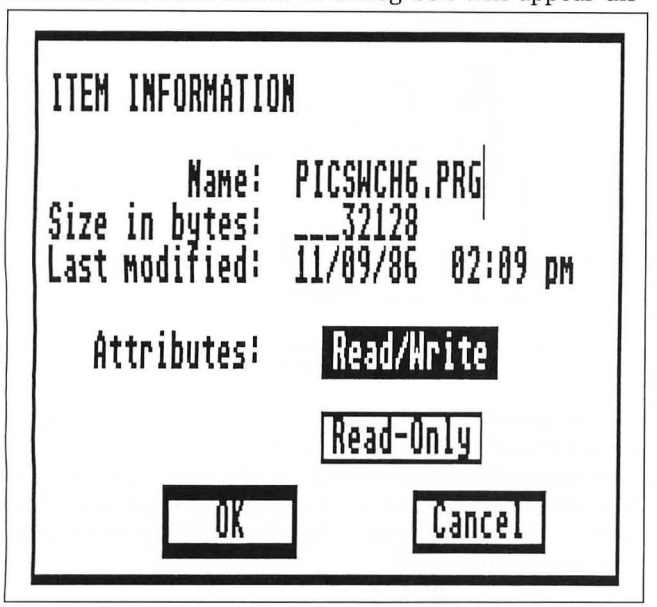


Figure 3.

Edit the "Name:" as you would any other user-definable field in a dialog box (see the previous "Dialog and alert boxes" section), and make sure the new name you type is not used by another file in the same directory.

When renaming it's best not to change the extension of a file, as sometimes the system looks for it when performing certain functions. If you change SAMPLE.PRG to SAMPLE.FOO, double clicking on it will result in the appearance of the "print or display" dialog box, and not the demo program running as you would expect. In default mode, the ST will only run programs if they have one of the following four extensions: *PRG, TOS, TTP* or *APP.* If you change a program's extension to something other than these, it won't run. Also, don't think that changing the extension of a nonprogram data file to one of the above will make it behave as a program. You're liable to have a system crash if you try to run it!

Copy conflicts.

File copy. . .If you copy a file or folder to a directory which contains a file or folder with the same name as the item to be copied, the dialog box in Figure 4 will appear.

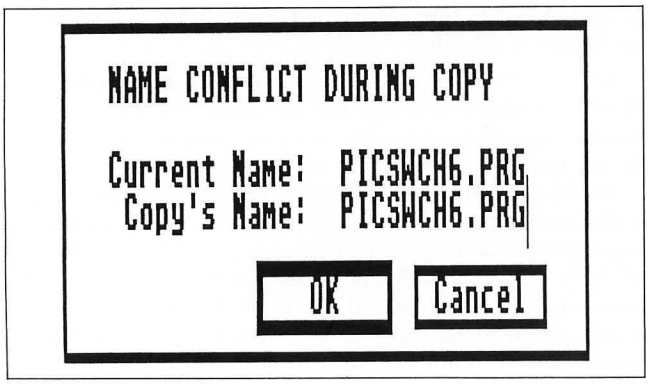


Figure 4.

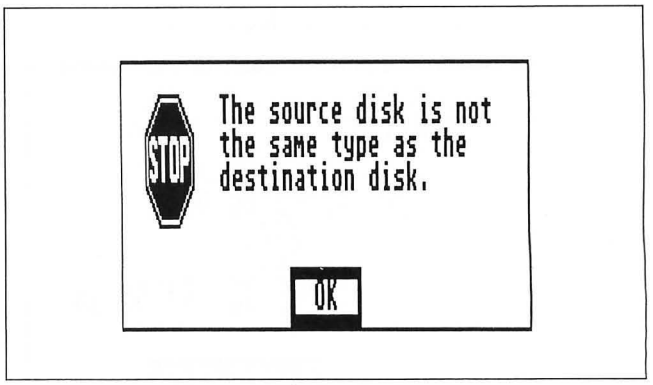


Figure 5.

Here, you are given essentially three choices: you can CANCEL the operation; you can edit the copy's name so that it is different from the file it would otherwise overwrite and *then* click on OK; or you can simply click OK and overwrite the existing file.

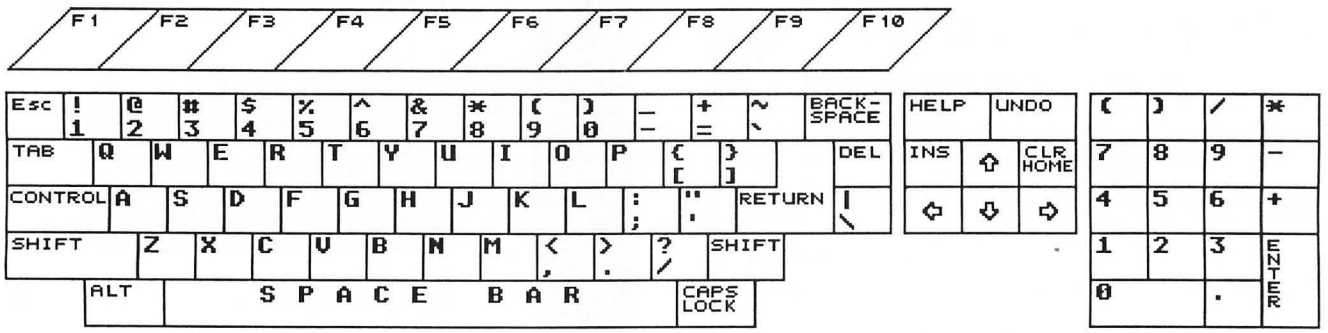
Disk copy. . . If you attempt to copy a double-sided disk to a disk that is formatted single-sided, or vice-versa, the alert box shown in Figure 5 will appear.

Your only choice is to exit the copy function. If you wish to copy the source disk as is, you'll have to use a disk of the same format for the destination. If you need to put the contents of one disk on another of a different format, then you'll have to copy the files themselves from one disk to the other and not use disk copy.

GEM item selectors.

This is one of the most important items the ST manu-

Common Key Functions
on the GEM desktop and in demo programs or displaying files.



SPACE BAR Quits many demos. Freezes some slide shows.

1—This is the same as clicking the mouse on the highlighted button in a dialog/alert box.
2—Quits some demos.

Esc 1—Updates current active directory window.
2—Clears a selected field in a dialog/alert box.
3—Halts some demos.

ENTER 1—Acts the same as RETURN in most, but not all, cases.
2—Used for = in some calculator programs.

Q Aborts SHOW and PRINT from the SHOW, PRINT and CANCEL dialog box.

CONTROL + **C** General purpose ABORT command. Stops some programs cold.

CONTROL + **X** Secondary ABORT command (works only in select cases).

CONTROL + **S** Stops/freezes text scroll/freezes NEO slide show.

CONTROL + **Q** Restarts text scroll/NEO slide show.

UNDO Will abort some applications and utilities.

ALT + **HELP** Toggles screen dump on/off. Aborts Print Screen function.

↑ ← ↓ → Moves text cursor in selected direction in dialog boxes, etc.

ALT + ↑ ← ↓ → Moves mouse pointer 8 pixels in direction of arrow.

ALT + **SHIFT** + ↑ ← ↓ → Moves mouse pointer 1 pixel in direction of arrow.

ALT + **INS** **CLR HOME** Functions the same as left and right mouse buttons.

\+ − * / Add, subtract, multiply and divide; can be keyboarded on math programs and accessories allowing key input.

CAPS LOCK Serves the same function as a SHIFT-LOCK key, but *only* acts to shift *letter* keys, and does not affect numbers and other symbols.

CLR HOME In some programs (usually TOS), this clears all text from the screen and returns the cursor to the upper left corner of the screen.

als omit. When you're loading, merging, saving or deleting a file from within a GEM program, you'll probably see the following dialog box:

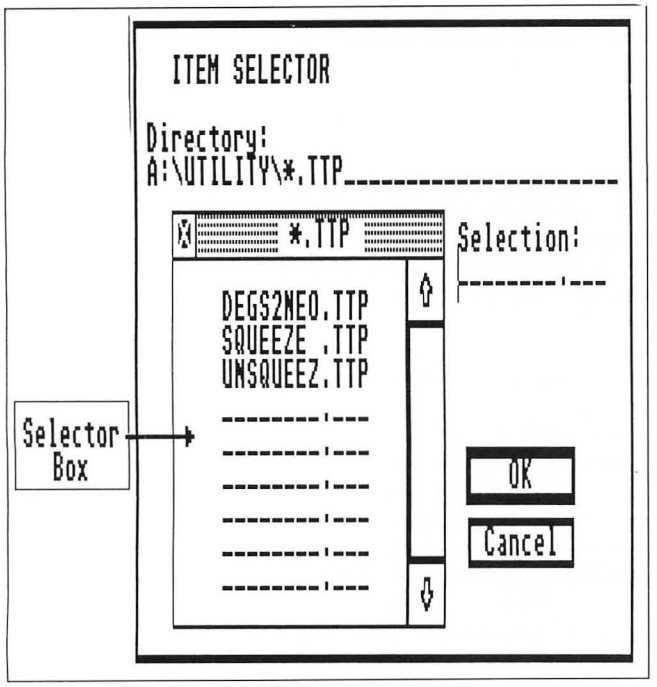


Figure 6.

The trouble here is that GEM doesn't tell you *what* the item selector box is for! You could have accidentally clicked on DELETE instead of SAVE, and the file you think you're saving is in fact being erased! Be careful in GEM programs to make sure you clicked on the right item. If you have the *slightest* doubt, CANCEL the operation and do it again, to make sure you got it right.

Let's analyze the item selector dialog box in Figure 6. First is the "Directory:" line. In this case, the selected directory (or pathname) is of drive A, inside the folder UTILITY, and all files with a .TTP extension are listed. The *A:* designates which drive is active, a backslash separates it from the folder name (if any), and a backslash separates the folder name from the file type to search for. Look carefully at that file type. Notice that it's represented by **.TTP*. The asterisk is a "wildcard" (discussed last time), which represents any number of characters in the filename (from 0 to 8) or extension (0 to 3). In this example, the system is displaying all the files in the selected directory with the extension TTP. If you wish to change some aspect of the pathname, click on the "Directory:" line, then edit it as you would any other dialog box field. You could BACKSPACE or hit ESCAPE to delete the current directory pathname and then retype it from scratch, or you could use the left- and right-arrow cursor keys to move the cursor to the part you want to edit, type in your changes, and use DELETE or BACKSPACE to remove the unwanted info.

For example, to look at the main directory of drive B for all files, you would change the pathname from *A:\UTILITY*.TTP* to *B:*.** (the asterisks indicate any filename with any extension). When you've made your changes *do not* click on OK, as that will close the dialog box. Instead, move your mouse pointer into the selector box where the filenames are displayed and single-click on the title bar. The directory will be updated in accordance with your new pathname.

When you see in the selector box a file you want to select, you may either click once on it and then click on OK, or just double-click on it. To open a folder listed in the selector box, just click once on it, and the subdirectory will be displayed (be warned that a few programs won't let you use folders in this case). Click on the close window button in the upper left corner of the selector box to close a folder. Like other windows, if there are too many items to be displayed in the box, you may move the scroll bar on the right to see the other files.

If you're saving a file, the "Selection:" line just above the exit buttons should be edited. You'll have to type in a name for the file to save, then click on OK. If you wish to save a file under a name already listed in the selector box, just double-click on it.

Program types and TTP. TOS Takes Parameters.

Your ST recognizes programs of three specific types: GEM, TOS and TOS Takes Parameters (TTP). Each type executes differently when run, so it's important to know the difference.

GEM programs usually have the extension PRG (as in BOINK.PRG), although PRG can be used interchangeably with APP (as in BOINK.APP), which stands for APPlication. Programs with these extensions usually (but not always) use some or all of the GEM features (windows, dialog boxes, etc.), and always start up with a GEM screen, with the name of the program displayed in the menu bar. Most GEM programs are exited by clicking on a QUIT option under a FILE menu or by pressing a key (like Q) which is usually listed on some sort of menu screen.

(*Note:* Many GEM programs—and some accessories—use a resource file, designated with the extension RSC. The RSC file usually contains the text and data for menus, dialog boxes, etc., and any program that uses one will fail if the file isn't present on the same disk. Try running BASIC.PRG without the BASIC.RSC file and watch it bomb! So it's important when copying public domain software to make certain that you obtain any RSC files a given program requires, if any.)

As a rule, TOS programs don't use GEM functions. They tend to be keyboard-driven programs. When you run a TOS file, the first thing that happens is that the screen goes blank and a flashing cursor appears at the upper left corner of the screen. To exit a TOS program, usually all that's required is to follow the on-screen prompts when the program has finished. If you wish to abort a TOS program, the usual way is to hold down the CONTROL key and press C (CTRL-C).

TOS Takes Parameters (TTP) programs are a different animal entirely. When you run an application of this type, a dialog box will open for you to input the necessary information (parameters) the program needs in order to operate, as in Figure 7.

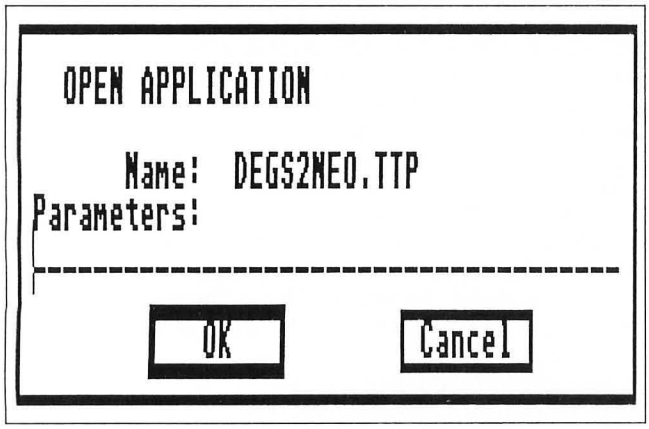


Figure 7.

For example, if you have a TTP program for converting **DEGAS** picture files to **NEO-Chrome** format—say, DEGS 2NEO.TTP—the required parameters consist solely of the name of the file to convert. So you would type in the name of the **DEGAS** picture file, then click on OK, and the program would do its job.

Installing applications.

With the INSTALL APPLICATION selection under the desktop's OPTIONS menu, you can alter the manner in which a program is run. For example, you could install STWRITER.PRG to run as a TTP application, where you will be prompted to enter the name of a file to be edited before **ST Writer** actually runs. This kind of function shuffling isn't advisable, and can be downright dangerous!

The second aspect of this function is more useful. You can designate a type of data file that will, when such a file is double-clicked on, automatically run the program which uses it.

An example: **NEO-Chrome**'s (version 0.5) instructions

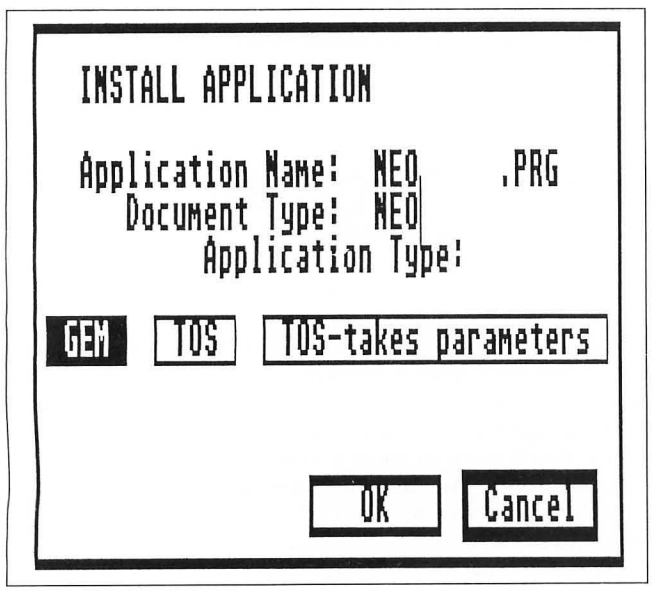


Figure 8.

suggest that you install the program to run whenever a file with the extension NEO is double-clicked on. To do this, you open a window for a disk with NEO.PRG on it, single click on the program itself, then select INSTALL APPLICATION (OPTIONS menu). The dialog box looks like the one in Figure 8.

Note that the name of the program appears on the "Application Name:" line. Below that is a field labeled "Document Type:", on which you click the mouse pointer, and then type in the extension for the selected program. Here, you can see the extension NEO was entered for NEO.PRG. Below that line are the selection boxes for "Application Type:" to designate how a given program will run. As mentioned above, it's not advisable to play with this, so just click on OK.

Now, with that done, all you have to do is double-click on any **NEO-Chrome** picture file (like PICTURE.NEO), and NEO.PRG will be run *and* the picture file will be loaded along with it. You can do this with programs like **ST Writer** (mine is installed to run if a file with the extension STW is double-clicked on), and it's the recommended method for using common TTP programs. Example: If you have a .TTP program for converting low-resolution **DEGAS** screens to **NEO-Chrome** format, install the program and tell it that PI1 is the document type. Once that's done, all you have to do is double-click on a PI1 file, and the conversion program will run, making a NEO file for you!

Caution! The system looks for the installed application in the same directory as the selected data file. If the data file you select is in a subdirectory of a directory which contains the installed application, GEM is usually smart enough to locate it (e.g., the **ST Writer** file TEXT.STW is in a folder called LETTERS and STWRITER.PRG is in the

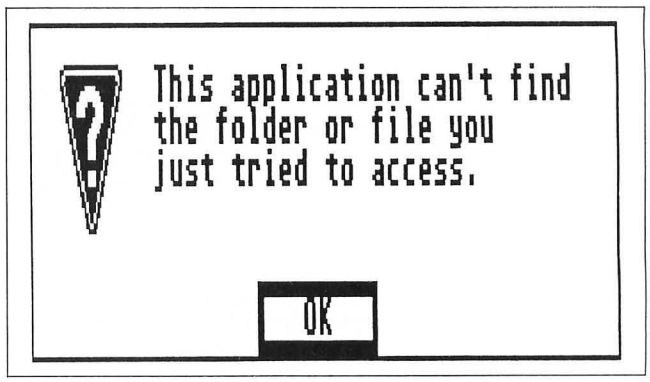


Figure 9.

main directory). But this doesn't work the other way, as GEM won't look for an installed application in a subdirectory of the current one.

If GEM can't find the installed application in question, the dialog box shown in Figure 9 above will be displayed.

Interestingly, if your data file is on drive B and the installed application is in the window to drive A, the system will usually find it. This doesn't work if the data file is on A and the program on B, however.

Printing the screen.

If you have a dot-matrix or other graphics capable printer (it must have an Epson-compatible graphics mode or you'll need a printer driver program) you can "dump" or output the image on your ST's screen to it. (If your printer has a 10-inch [80-character Pica] carriage, make sure the "Pixels/Line:" selection of INSTALL PRINTER under the DESK menu is set at 960. Otherwise, the ST will try to print a picture for a 15-inch carriage.)

There are two ways to print the screen. From the desktop proper, you can click on PRINT SCREEN under the OPTIONS menu. This suspends all operations and begins a screen dump. When the screen is finished printing, control will be returned to you.

The second and preferred method (it works in almost all programs) is to hold down ALTERNATE and simultaneously press HELP. This acts the same as PRINT SCREEN. In either case, the dump can be aborted with the ALTERNATE-HELP keystroke.

Using the mouse pointer without the mouse.

If for some reason you don't want to—or can't—use the mouse at a particular point (say, you have a joystick plugged into the mouse port), you can move the mouse pointer and click, using the keyboard. To do this, hold down ALTERNATE while pressing one of the cursor (arrow) keys. This will cause the on-screen pointer to move 8 pixels (dots) in the indicated direction. To move the pointer only 1 pixel at a time in a given direction, hold down both ALTERNATE and SHIFT while pressing a cursor key. (This sort of precise directional control is also great for painting and drawing programs, when you want to go in a straight line vertically or horizontally from a given point, which is difficult to do with a mouse.)

Clicking is done by holding down ALTERNATE and pressing INSERT or CLR HOME, which respectively act as the left and right mouse buttons. To drag something is a bit tougher. Hold down ALTERNATE, then hold down INSERT too, and *then* press down a cursor key at the same time.

Pause, Continue and ABORT commands.

There are a lot of file management and conversion programs, applications and demos that come with no instructions, and leave new users frustrated beyond reason when they can't pause what's happening on-screen or quit back to the desktop. There are a number of commonly used pause, continue and quit/abort commands, and they are as follows:

PAUSE — Holding down CTRL and pressing S will usually stop text scrolling, and will pause most **NEOChrome** slideshow programs, and even some demos. The SPACE BAR does this in some other cases (notably the **DEGAS** slideshows), but is more commonly used as an abort key for demos.

CONTINUE — If you used CTRL-S to freeze a program, CTRL-Q usually gets it going again. If you used the SPACE BAR to pause, striking it a second time usually continues.

ABORT — The most common aborts from demos are either the SPACE BAR, the RETURN or ESC keys. The most common abort commands for TOS and TTP applications are CTRL-C and, occasionally, CTRL-X. The UNDO key is also used on occasion for the same purpose. If you have a program that you don't know how to quit, try all of the above. If the program can be quit without resetting, one or another should work.

Saving the desktop.

Whenever you reset or turn on your ST, the GEM desktop goes to its default modes, *unless* a special file called DESKTOP.INF exists on the boot disk. If you'd like your system to come to life in a particular way, then read on.

Arrange the desktop to your liking. If you have a color monitor, select a resolution (low or medium), put the icons where you want, windows where and what size you'd like upon booting, adjust the control panel settings (particularly the mouse response speed, if you're having trouble double-clicking), and install any applications you want. Put your boot disk in drive A and click on SAVE DESKTOP under the OPTIONS menu. A DESKTOP.INF file will be created there. Make sure the control panel accessory file is on the disk, then reset your computer. Everything should come back the way you set it up when the ST reads the DESKTOP.INF file. If this works to your liking, single click on DESKTOP.INF, then click on SHOW INFO under the FILE menu. Click the READ-ONLY box so that it's highlighted, then click on OK. This will prevent your current desktop settings from being overwritten if you ever accidentally click on SAVE DESKTOP. (A far more detailed rundown on using the DESKTOP.INF file, installing applications and adjusting the desktop will be printed in the next installment of **Step 1**.)

Graphic example.

As a bonus, I've provided a reference sheet listing the most common command keys used on the GEM desktop, and in some applications and demos (see page 44). You may want to post this on the wall above your ST for quick reference.

Finally, while this issue is devoted to telecommunications, it was decided that a **Step 1** article on the subject would be inappropriate at this moment, because we're right in the middle of covering basic and important material. Such a diversion at this point would probably be of no use to you new users. However, as a beginner's article on the subject *is* planned for the near future, you should hang onto this issue (particularly **A Baudy Tale** on page 31), so the more detailed telecommunications articles in it can be referred to later. //

Allergic to all things Commodore and never bitten by Apples, Maurice Molyneaux first purchased an Atari 800XL for animation work, but upgraded to an ST as soon as they became available. Currently slaving to complete the fifteenth draft of a science-fiction novel, he also masochistically churns out free-lance articles, artwork and animation on his ST, and hopes to dig out of a mountain of pending projects by the year 2000.

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ST-Base BBS

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by Blake Arnold

The **ST-Base BBS** is a relative newcomer to the ST bulletin board system market, but don't let that fool you. The program is chock full of innovative features, and is also easy to set up and maintain.

The documentation that comes with the BBS is relatively easy to follow, provided you go over it once or twice before trying to set up the board. Although I received documentation for an earlier version, I had few problems after referring to the included addendum. (I've been told that a revised manual is in the works and should be done by the time you read this.) All menu options are thoroughly explained in the manual, as are access levels to the file sections and message bases, and other SYStem OPerator (SYSOP) level functions.

Setting up the BBS is a simple operation. The message base file is created with an initialization program that prompts you for the total number of messages allowed (10-500), the size of the messages (400-4000 bytes), and the filename to be used for the message bases. All messages from the separate boards are then saved into this one large message file.

There are a few other required files that should be on the drive the BBS is to boot from. These need to be customized to your specific system setup; I'll explain the editing procedure for them a little later. Once the initial setup is complete, you're ready to load the actual **ST-Base BBS** program. Time and date should be set correctly before you load the program, as the BBS will use this information for certain functions.

The text files to be customized include bulletins, editorials, help files and a special setup file. The latter contains all parameters the system uses to locate the files and folders it accesses; it also contains modem codes and other miscellaneous system information.

Normally, if you wanted to edit a text file, you'd have to load up a text editor—but not with the **ST-Base BBS**! The BBS's message editor is used from a special SYSOP menu to load and edit the BBS text files. In case you don't think a message editor is powerful enough to be used as a full text editor, let me reassure you: this one is. The editor is absolutely the most powerful message base editor I've yet seen for an ST BBS. From the SYSOP menu, you can load a text file, edit it, then save it back to disk—all without having to load a text editor or take the BBS down. The editor can also be used to create bulletins and editorials for the BBS.

Once your BBS is customized, it's ready to go on-line (the fun part). From the user's point of view, the **ST-Base BBS** does take a little getting used to, but, once you have a look around and post a few messages, everything falls into place. It becomes a simple matter to move around the board.

The BBS created also has several interesting features. It contains a "never-ending story," to which users may contribute (similar to the Storyboard on Delphi). One of the nice features about this never-ending story is that the BBS checks the user's contribution against a dirty-word dictionary (which the SYSOP creates); if it finds a match in the user's contribution, the contribution is refused.

An on-line game section is available, that can contain more than one game. A questionnaire can also be set up for the users' feedback. A command to graphically display the BBS's statistics is especially interesting. It shows you at a glance how much activity the BBS has had (although the graph only works properly in 80-column mode). **ST-Base** allows the use of "handles" or aliases, but it also includes a "who-is" command so users can find out someone's real name.

The file transfer section of the **ST-Base BBS** really shines, in terms of innovation. From a SYSOP's standpoint, it's easy to set up. Two folders are used for each file section (up to sixteen sections): one for the actual files and brief descriptions, another for full descriptions of the files (up to sixteen file areas may be defined). From the user's side, this combines into a unique file system. Files can be listed in several ways. A "browse" command shows the filename, length, who uploaded the file, how many times it has been accessed, and a full description, complete with a submenu of download protocols (very similar to the way Delphi lists files from the "read" command). Files can also be listed with a "read" option, to show filenames, lengths and brief descriptions of each file.

Through the "locate file" menu, a user may automatically display all new files uploaded since his last log-on. The locate function is also used to do searches by date, who uploaded the file, or by filename, plus a couple of other options. Files can be transferred with ASCII, raw or standard Xmodem protocol. Text files can also be "typed" (displayed) to the screen, to see if they're worth downloading. To monitor the users' upload/download ratios, the BBS keeps track of the amount of kilobytes each

user transfers. Security and upload/download privileges for each file section are separate, and the SYSOP can edit a user's upload/download kilobyte ratio, if the need arises. All this gives the SYSOP more than adequate control.

A BBS wouldn't be complete without a good message base system, and this one won't let you down. The message base has sections for user E-Mail, private messages to the SYSOP, an area for user application information, and other SYSOP-defined boards (up to sixteen boards). Security for each base is separate, so the SYSOP can select exactly which message bases a user is able to access. It's also possible to give a user "read" access without "write" access, or vice versa.

A couple of the more unusual commands in the message base are the "bring back message" command and the "thread" command. The former command can be used by a user to retrieve a message he accidentally deleted (assuming he also posted it), or the SYSOP can use it to retrieve any deleted message. The thread command is used to find the original message in a series of replies—handy if you jump into the middle of a conversation and wonder, "What are they talking about?"

As I said before, the message editor itself is extremely powerful. It's almost unfair to call it an editor, as it nearly qualifies for word processor status (I've been told VT-100 emulation will be included in the next revision, allowing full support of VT-100 cursor movements for text editing). The SYSOP's menu also has commands for full message-base maintenance options.

The **ST-Base BBS** has several miscellaneous features that make the SYSOP's life easy. There's a built-in terminal for calling out, and the SYSOP can define a time period during which only a SYSOP-level user may log on. If a user doesn't have the proper access, the BBS apologizes for the inconvenience and instructs him or her to call back later.

Full editing of the userlog is done through the BBS itself (from the private SYSOP menus). Although there's no "print userlog" function, pressing F3 brings the printer on-line, and the SYSOP can then list the userlog (which will be echoed to the printer). Users can fully edit their terminal setups and change their passwords. A "switch applications" command is available, to let the SYSOP load and execute other TOS applications. The most interesting feature about the switch applications command is that it allows you to load GEM applications. I successfully used it to run **1st Word**, **Flash** and even the "Tiny" picture viewer! With the switch applications function, it's possible to do *all* BBS maintenance from within the actual BBS program. I did find myself abusing it, though; I wouldn't exactly call "Colossal Cave" (the text adventure) useful for system maintenance (a SYSOP has to have *some* fun).

As an added note here, the BBS's "game" function appears to be the users' version of the switch applications command. In other words, it should be possible to have some very powerful on-line games available. The "Colossal Cave" adventure works from the game command, but since it isn't built to echo characters to the modem, it can't be played by users. However, I've been told that an effort will be made to turn "Colossal Cave" into an on-line game.

Another nice **ST-Base BBS** feature is the screen blanking the program does after about 5 minutes if no one's using the board. If you accidentally leave your monitor on, it's nice to know that it's protected from screen burn.

This is one BBS program that looks quite promising. With the on-line games and the never-ending story, it should be able to keep users from becoming bored. As if the message editor weren't already powerful enough, the upcoming VT-100 emulation (probably this summer) will really top it off.

As I said, the documentation is well written and covers all the menu options, and the program itself is full of innovation. As with any BBS program, I recommend that you call up a system to see if you like **ST-Base** before you buy it. If you'd like to try out this program, call 1ST Base's BBS at (613) 231-3411. //

Blake Arnold has lived in Dover, Delaware for the past nine years and is currently a college senior. His interests besides computers) include flying (he's been a licensed pilot for five years), water-skiing and playing guitar.

GFA BASIC

by Frank Ostrowski
GFA SYSTEMTECHNIK
Distributed by MICHTRON, INC.
576 S. Telegraph
Pontiac, MI 48053
(313) 334-5700
All resolutions $79.95

by D.F. Scott

BASIC is a language which deserves its own etymology. Perhaps a respectable one will be written before ABC makes a miniseries of it. Whether or not it's worthy of a sixteen-part melodrama, **GFA BASIC** is worthy of applause, and author Frank Ostrowski deserves every curtain call. He has proven that a top-rate production cannot be written by committee.

GFA BASIC borrows, respectfully, from several microcomputer BASIC implementations—using Applesoft's memory reservation techniques, graphics commands from both Applesoft and Atari 8-bit BASIC, variable-manipulation functions from TRS-80 Level II BASIC, unnumerated lines and nest *indentations* from True BASIC, and alternate arithmetic functions from *machine-language* (SUB A,1).

GFA BASIC has unique features: internal GEM-control statements that are a breeze to use, like MENU to address drop-down menus and ON MENU IBOX to create custom input boxes; a graphic sprite system, through which the user can translate numeric to string data with MKI$, then address and position it with SPRITE x$; and screen buffering, to address the entire contents of the screen *as a string variable*, via the potatolike SPUT command.

Before I start making pronouncements—"**GFA BASIC** is two million times more accurate than ST BASIC" (it is)—let me point out that the original GFA package was not all thrills and excitement. In the numerous years I've been computing, I have never read a worse manual. To find out if MichTron was really satisfied with it, I called the company and read part of it to two employees, who admitted to *not being able to understand it, either.* One can't blame them, since a data record opened with OPEN was referred to as a "canal," the screen coordinate system as an "analogy," and a branch statement as a "deviation." You won't learn BASIC from this manual; and it's liable to leave you speaking a pretty deviant brand of English. But MichTron has hired **ANALOG Computing** contributor David Plotkin to write a new English edition that's bound to be better.

Back to the interpreter: line numbers are gone entirely, replaced with arbitrary section labels. Statements may *not* be separated by colons or share the same line; in fact, the IF-THEN statement has become a multiple-line construct, as in Pascal or C.

GFA BASIC promotes the subroutine to the rank of "procedure." Say a procedure is called "ethel"; it plots a sprite at location *x,y*. On some line will be the opening declaration *PROCEDURE ethel* (or *Procedure Ethel*, if the list format is set to DEFLIST 1). Now, *x* and *y* can be passed on as parameters to Procedure Ethel via the GOSUB command—or through its uglier **GFA** counterpart, @—like so: *GOSUB ethel(x,y)*, where *x* and *y* may be integers. Should *x* and *y* be POKEd into reserved RAM, they can be addressed by pointer variables like **p*, as in C.

Should Procedure Ethel require variables separated from the rest of the program, they may be declared with the LOCAL statement, as in *LOCAL a,b*. Now if the names *a* and *b* are used anywhere outside Procedure Ethel, they won't affect, or be affected by, Ethel's "own" *a* or *b*. The real advantage of this is that you can load your own **GFA** procedure library from disk, saved in ASCII with the extender *.LST*, then merge the main program with your procedures, while retaining the right to select variable names arbitrarily.

There are *four* types of loops in **GFA**: besides FOR-NEXT, there's a REPEAT-UNTIL, WHILE WEND and DO-LOOP. As for maximum variable length, I seriously can't determine it myself.

The arrival of the microcomputer (enter Bill Gates and Paul Allen) is the historical equivalent of the Americanization of English. Altair BASIC (Middle BASIC) spread into the more advanced Microsoft "Modern" BASIC, with each 8-bit micro acquiring its own regional dialect.

The differences between the variety and complexity of BASIC and the structural modularity of Pascal and C are similar to the differences between the *same qualities* of Germanic and Romance languages. Here's where Kemeny and Kurtz re-enter the picture, introducing what they call True BASIC (the Queen's English). Keep the "basics," they said, but take out the line numbers, regroup, and reform the structure toward simplicity and exactitude.

In so doing, the forefathers of BASIC left their language wide open to an across-the-channel invasion. Should **GFA BASIC** leave its users with a taste of some foreign form of modularity, it's because the tides are high and the C has washed in. In fact, a **GFA** program can branch directly to compiled C subroutines in memory. As the Romance languages invaded Old English, C has invaded BASIC, and we're beginning to program with its accent.

The **GFA BASIC Compiler** is now available, and it promises a compiled run-speed that approaches C's. I've seen a compiled-**GFA** Xevious-type game, which, although it required a 1040 to run and was perhaps a bit too slow for the arcades, was impressive for **BASIC**.

Speaking of speed, here are the benchmark test results. Our first category is Ahl's Simple Benchmark, developed by *Atari Explorer* publisher David Ahl to test the speed, accuracy and randomness of the BASIC random number generator, in ten lines.

What it does is loop variable *N* from *1* to *100*; at each step *A* squares *N* ten times and square roots it ten times, adding the result to *S*. At each step, the random number generator RND(1) is enacted and added to *R*. The difference between *N* and the result it should be is tallied; after 2000 generations, the closer *R* is to 1000, the more equally-distributive the RND generator is, so the difference between *R* and 1000 is tallied. Figure 1 is a table of comparative results.

Figure 1.	Time	Accuracy	Random
GFA BASIC	0:02.35	.0000000417234096	(approx.) 9.58
Softworks BASIC (ST)	0:18	.000003	12.3808
Atari ST BASIC	0:09.87	.094731	19.6852
Atari 800 MBASIC	1:35	.150879	2.1
Atari 4/800 BASIC	6:48	.012959	22.8
Cray 1	0:00.01	.0000000014	6.1
TI SR-50 Calculator	12.7 days	.193704289	16.4

Final four entries from Creative Computing, *July 1984, page 8.*

I wasn't kidding when I said that **GFA BASIC** is two million times more accurate than ST BASIC. Next is the dreaded Sieve of Eratosthenes, a universal time trial that weeds out the prime numbers from 8191 consecutive integers. When working correctly, it should extract 1900 primes.

Figure 2.	Time	Primes
GFA BASIC	3:06	1900
Softworks BASIC (ST)	6:53	1900
Atari ST BASIC	4:09	564
(est. revised time)	16:20	1900
Lattice C, compiled	0:06	1900

ST BASIC is so liberal with memory usage that you can't DIMension an array variable for 8191 units—564 primes is the maximum obtainable. We're told that problem, among others, will be corrected by MetaComCo in the update. Still it's obvious why third-party manufacturers endeavored to achieve something greater.

The **GFA BASIC** package features a rather nice editor—plain, no frills, medium resolution. You probably already know how to use it. The nonstandard menu bar lists control commands to call with the mouse or the function keys. The editor creates proprietary tokenized source code, though it can accept ASCII listings saved under the .LST extension.

I like this editor because it checks for syntax errors after every carriage return and reformats the line if necessary. Indentations are automatic; and if you only type in the first part of a keyword, the editor will insert the rest. A question mark (?) is automatically changed to *PRINT*.

The package also includes an interpreter without the editor, to simply display a file selector menu and then run the selected program. This run-only interpreter *can be freely distributed*, so GFA programs can be passed around.

Page one of the original manual, describing **GFA BASIC**'s goals states, "Structured programming should be possible in its entirety." It claims Pascal has been widely preferred over BASIC (maybe in West Germany), since it "enables the user to program in a structural manner."

"Structured programming," in my opinion, is a term for George Carlin, to be listed alongside "occasional irregularity." *All* programming is structured; the debate is usually whether those structures are legible, not only to the interpreter but to another user as well. Frankly, I'm astounded at how my old Atari 800 Microsoft BASIC interpreted my admittedly obtuse code. Nevertheless, a good programmer, like a good public speaker, should be allowed his right of self-expression. If we were to structure our English as some would have us structure our programming, *The Atlantic Monthly* would read like a second-grade primer.

GFA BASIC may be too "structured" for some, but it's fast *and* compilable. If you're ingenious enough to determine how to use it without the manual, it could become your ST's best friend.

As one story has it, following the Nordic Invasion, English was kept within the monasteries, spoken only amongst the monks until it crept back into the common language of the Brits. In a programming world often colored off-white by a bland sort of uniformity, the ST could be one of the monasteries within which BASIC may dwell. If this be the case, long live **GFA BASIC**. Endif. ///

ATARI USERS' GROUPS

Mid-Florida Atari Computer Club (MFACC)
887 Benchwood Dr., Winter Springs, FL 32708-5114
Meetings; newsletter; on-line library.
President: Craig Kapian.

The Central Illinois Atari User Group (CIAUG)
1920 East Croxton Ave., Bloomington, IL 61701-5702
Meetings; newsletter: *The CIA ROM*.
President: Robert Handley.

Lake County Atari Computer Enthusiasts (LCACE)
P.O. Box 8788, Waukegan, IL 60079-8788
Meetings; BBS; newsletter.
President. Richard Bollmeier.

Wells Atari Computer Owners (WACO)
505 Meadow Ln., Bluffton, IN 46714
Meetings; BBS; newsletter. President: James Davis.

Central Indiana Atari Computer Enthusiasts (CI-ACE)
1800 S. Buckeye St., Kokomo, IN 46902
Meetings. President: Kenneth Thompson.

Western Massachusetts Atari Users Group (WMAUG)
107 Fallston St., Springfield, MA 01119
Meetings. President: Arthur Boudreau.

Battle Creek Atari User Group (BCAUG)
22554 Pine Lake Rd., Battle Creek, MI 49017
Meetings; newsletter. President: Chuck Steele.

Rattlesnake Atari Computer Enthusiasts (RACE)
2110 Strand, Missoula, MT 59801
Meetings, BBS.

Lincoln Atari Users Groups of Nebraska (LAUGON)
P.O. Box 5734, Lincoln, NE 68505
Meetings; newsletter. President: Garry Kump.

Long Island Computer Association (LICA)
14 Kristi Dr., Muttontown, NY 11753
Meetings; newsletter. President: Bruce Zihal.

Red Rose Atari Members (RAM)
P.O. Box 7532, Lancaster, PA 17604
Meetings; BBS; newsletter: *Rambank*.
President: Rick Maynard.

Northeast Atari Team (NEAT)
822 Barlow St., Philidelphia, PA 19116
Meetings; BBS; newsletter: *Atarian*.
President: Don De Rosa.

North Texas Atari Computer Team (NTACT)
Box 1754, Fort Worth, TX 76101-1754
Meetings; BBS; newsletter: *Iceberg*.
President: Paul Smith.

Ports Atari Computer Enthusiasts (PACE)
P.O. Box 813, Superior, WI 54880
Meetings; BBS; newsletter: *PACE Dispatch*.
President: Tracy Hendershot.

ATTENTION USERS' GROUPS

If you would like your organization to be listed here, send information (and newsletter, if appropriate) to **ST-Log** Group Listing, P.O. Box 23, Worcester, MA 01603. **ST-Log** is not responsible for errors.

Magic Sac 1

DATA PACIFIC, INC.
609 East Speer Blvd.
Denver, CO 80203
(303) 733-8158
520ST (1-meg upgrade recommended), 1040ST
High resolution, plus Apple Macintosh ROMs
Cartridge $99.95

by David Plotkin

Magic Sac 1 (**MS1**) is the long-awaited cartridge that will "turn your Atari into a Mac." **MS1** comes with a plug-in ROM cartridge, two disks of software necessary to make the cartridge work, and instructions. You will have to purchase the Apple ROMs—necessary to make the cartridge functional—separately. This package will run some, but by no means all, software available for the Macintosh.

Magic Sac was in the works for some time; the first hints of its existence came well over a year ago. It was shown at the West Coast Computer Faire in San Francisco in April 1986 and created quite a stir. Finalizing the software and resolving the legal questions involved with using Apple's copyrighted ROMs delayed its introduction for general sale until the Atari Expo in September 1986. The most recent version (released last October, just after this review was written) of the software is 3.0. Make sure that you get this version, as 1.0 has significant bugs that cause transfer problems and make some software lock up, while 2.0 lacks the updates available in the latest revision.

MS1 contains several parts. The first is the cartridge itself, which plugs into the port on the left side of your ST. A 1-meg machine is recommended, and a monochrome monitor is required. If you don't own a system configured this way, read this review to determine if it's worthwhile to you to purchase the enhancements. You can run with 512K of memory, but operations will be limited to programs that will run on a 128K Mac.

To make the cartridge functional, you'll need to buy the original Mac ROMs from an authorized Apple dealer. New ROMs for the Mac-Plus *will not work*. The ROMs can usually be purchased for about $30, but prices have recently gone up to as much as $50, as Atari owners attempt to get the ROMs. Installing them is very easy; they just plug in.

Getting going with **MS1** is also quite simple. You boot up with the "Magic Sac 1 Atari Boot Disk" in drive 1, choose your configuration (more on this), and insert a disk containing a version of the Macintosh "Finder" when prompted. It's quite a shock to see the smiling Macintosh face and the *Welcome to the Macintosh* icon on your Atari ST screen! From there, the desktop operates just like a regular Mac, which *is* a little different from the ST, although not hard to figure out.

The proof of the pudding, of course, is whether or not your "STMac" will run Mac software. Before moving on, I'll address this most important of questions.

The answer is that it will run some software. Anyone expecting to purchase the cartridge and be able to run *anything* that runs on the Mac will be in for a nasty disappointment. My own experience shows that about half the software I have available will run. This is not as bad as it sounds for me, since the percentages run less than half for things like graphics demos and games, and significantly greater than half for applications.

The deciding factor, according to Dave Small, author of the **MS1**'s software, is whether the software is "well behaved." This means just what you'd expect. Apple published a set of guidelines for programming the Mac. Some programmers followed these guidelines; many did not, instead choosing to use a faster or more direct method. Owners of the 8-bit Atari have seen this phenomenon before: programs for the 400/800 would not run on the newer machines. Apple itself is just as guilty as anyone else: MacPaint is quite badly behaved, and the Finder notepad doesn't work at all.

In the documentation accompanying version 2.0 of **Magic Sac**, Dave indicates the standard gaffs made by Mac programmers, which will keep their programs from running on your STMac. The two most common errors are: attempting to address memory location 0; and addressing the Mac hardware directly, instead of using the built-in device drivers. Neither of these problems are fixable via software. For example, memory location 0 for an ST is ROM, not RAM, and no software trickery will convince the ST otherwise.

What it all boils down to, then, is whether the software you want will run on an STMac. A partial list can be obtained from Data Pacific, and more testing is going on all the time. The list is quite extensive, including such notable applications as MacDraw, MacPaint, MacProject, HabaWord, Ready-Set-Go (a very impressive desktop-publishing package), Megamax C and BASIC. The software which *does* run is about 20 percent faster on the ST than on the Mac, which makes arcade games rather comical and very short.

Two disks are included with **MS1**. The first is for your ST, and includes everything you need to get going *except* Apple's Finder. Disks for **MS1** are not in standard ST format, so a program is included to format disks to 400K. Also included are copy programs for duplicating disks in this special format on both single- and double-drive systems. There's also a special TOS program, to receive programs sent from a Mac via a cable. This cable is not included, but can be purchased from Data Pacific—or built from the simple instructions provided with **MS1**. Finally, of course, there's the program which tells the ST to become a Mac, appropriately named "Magic".

The Magic program is very well done. Not only does it do what I would have been willing to bet was impossible, but when a program does crash, it often (though not always) presents you with an error screen, which allows you to recover without completely rebooting your ST. Valuable information is provided on this error screen, as to *why* the program crashed. Communicating this back to Data Pacific will allow them to produce ever-improved versions of the Magic program.

Magic allows you to configure your STMac in a number of ways. If you have a 512K ST, then you must choose a 128K Mac. If you have the 1-meg upgrade or a 1040ST, you can choose a 512K Mac, with or without the "motivator." The motivator is essentially a RAMdisk—the contents of the Finder disk are loaded completely into RAM. This tremendously speeds up returning to the Finder, which you must do each time you quit an application. I highly recommend using the motivator. There are other configurations as well, although Data Pacific doesn't recommend using them.

The second disk is for a Mac. When run, it allows the Mac to output the contents of a disk to the cable, and thence to the ST. This enables you to port software from the Mac to the ST. Porting is a lengthy process, but is currently the only way to get software for your STMac.

The disk format used by your ST is different from the Mac; you can't simply put a piece of Mac software in the drive and run it. All software for your STMac will need to be ported to the new disk format, at present. Data Pacific is promising a drive which will read Mac disks and hook up to your ST sometime soon, but that's not yet available.

So where do you get software? If you have access to a Mac, you can port over software—assuming it is unprotected and the license allows you to do so (some licenses are for use on only one machine). Public domain software, available from the Mac users' groups, presents no problem in this regard, but be warned: most public domain disks tend to be heavy on the graphics demos and games—just the sort of things which often don't work on the ST-Mac. The four-disk starter set of Mac software, which I purchased at the Atari Expo when I got my **MS1**, turned out to be largely worthless, with only about 25 percent of the programs running. Now *that* was a waste of $50.

Another thing you'll need to consider is that you probably won't be able to use your parallel printer to print out graphics and fancy text from Mac packages. You can purchase an Apple Imagewriter (they cost about $500); the instructions for making a cable to hook up your ST are given in the **MS1** documentation. The Imagewriter is completely compatible with the Mac and is a very fine printer. You probably *can* use your parallel printer for such things as text.

There's an old story that tells us a camel is a horse designed by committee. The documentation for **MS1** is an example of text designed by a lawyer. The instructions talk about such things as removing the ROMs from your Mac; in fact, the whole package is billed as an "upgrade" for your Mac. I assume this is to avoid any legal problems with Apple. If you read the instructions, you would assume that you must have a Mac to use this package. No mention is ever made of just going to your local Apple dealer to get the ROMs.

Further, instructions are repeated over and over again, which makes for a certain amount of confusion. An example: the very first thing you'll need to do is install the Mac ROMs in your cartridge—yet the instructions don't get around to telling you which of the two ROMs goes into which socket in the cartridge until page 19! At that point, since the instructions had already told you numerous times to insert the chips in the cartridge, a novice might very well assume that order didn't matter.

There is also a certain amount of confusion as to which disk should be inserted when the system asks for the "startup" disk. The disk containing a copy of the Finder is the right one, but that's not at all clear. Finally, no instructions on how to use the Apple Mac desktop are included. It is similar—but not identical—to the ST desktop. I guess the author assumed that, since we obviously own a Mac, we would *know* how the desktop worked. I recommend that you *carefully* read the instructions clear through, resisting the temptation to jump in and try out your new toy. This should keep you out of trouble.

Magic Sac 1 has the potential to be a very powerful tool, opening a whole new world of software to the impatient Atari ST owner. You *are* taking a certain amount of risk, because a lot of Mac software won't run. Further, new ST software (much of it superior to that available on the Mac) is rapidly being produced. It really depends on whether or not **Magic Sac 1** will serve *your* needs. I will say this: **Magic Sac** represents an impressive technical and programming achievement by David Small and company, and it is a lot of fun to experiment with. ///

David Plotkin has his Masters in Chemical Engineering and works as a Design Engineer for Chevron U.S.A. He owns a 130XE and a 520ST, and is currently a heavy Pascal user on the ST. His interests (on computers) lie in programming, games and tutorials.

Interlink ST

INTERSECT SOFTWARE CORP.
P.O. Box 49346
Sarasota, FL 33578
(800) 826-0130
All resolutions $39.95

by Charles Bachand

"It's a floor wax *and* a desert topping!" No, I can't start a software review like that. How's about "It's two, two—two mints in . . ." Argh, that's even worse! I'm really getting off on the wrong foot here. Steady now, give it one more try—"It's a terminal program and a mini-BBS rolled into one!"

Now that's more like it—a terminal program for the Atari ST that can do double duty and be used 24 hours a day. But I'm getting ahead of myself; let's look at the main reasons for buying **Interlink ST** from Intersect Software.

I've been using **Interlink ST** for the last few months although—as of this writing—the product has not been officially released (April 2nd is the planned date.) I've been having fun with their beta test version and will be getting a copy of the finished product any day now.

Let me digress for a moment, to make a plea to software companies. Computer magazines find it very difficult to review products they don't have copies of! It is *in your interest* to see that magazines are supplied with at least one copy of your new and wonderful product, so we can tell our readers about it. Okay, that's my spiel for today—now, back to the review.

Interlink ST was written by Randy Mears, author of the **Intersect RAM Disk**. He also worked on implementing Xmodem file transfer protocol in an early terminal program for the Atari ST, which later appeared as the public domain program X-MOTERM. These and other projects gave him the experience in both telecommunications and the use of the GEM interface that was needed to tackle a project as vast as **Interlink ST**.

(We now pause for a few minutes, to solemnly remember three paragraphs that never made it into this review due to a power failure about ten minutes ago. Some would say it is best to forget, but I prefer to remember: "Come on, think! How did that thing start? Ah yes, 'Most good terminal programs today. . .' ")

Most good terminal programs today are loaded to the gills with bells and whistles, and **Interlink ST** is no exception. The built-in phone dialer can call several numbers in rotation until one answers. The screen buffer's size is "setable" by the user, and you can specify a special "unfiltered" mode that will make certain codes—like carriage returns, line feeds, bells and form feeds—visible. **Interlink ST** can even emulate DEC standard terminals like the VT-52 and VT-100. Some of these features have been seen in other telecommunications packages, so I won't go into them here. What I'd like to delve into is the strange and wonderful—the one-of-a-kind things that **Interlink ST** offers.

File transfers can be accomplished using: (1) Xmodem; (2) Ymodem (a variation on Xmodem that uses 1024 byte blocks); or (3) direct ASCII transfer. But there is a fourth box, marked simply as ????, that opens up interesting possibilities. Clicking on the four question marks brings up a file select box. This allows you to select external file transfer drivers from disk, in the same way a program like **DEGAS** or **Publishing Partner** loads up printer drivers. A Kermit driver is already under development that will be loadable in this manner, and others will follow. **Interlink ST** will thus never be outdated.

You can run another program from within **Interlink ST**. A good example of this would be: to uncompress ARCed data files using the program ARC.TTP (it can be found in most large ST databases). Normally, you would have to exit your terminal program first, but this isn't necessary with **Interlink ST**.

You don't have to exit **Interlink ST** to execute common disk commands, either. They're all built in! Everything from copying to deleting or renaming a file can be done from *within* **Interlink ST**'s disk command menu. You can even format disks if you need to. (How many times have you searched for an empty formatted disk, only to have to open a new box?)

A method, endorsed by Atari, for transferring data from one program to another is Clipboard. Designed by Russ Wetmore, this standard has been incorporated into **Interlink ST**, to allow other compatible software access to the terminal program's text buffer. This is the first commercial product I've seen to implement the Clipboard standard.

Another of **Interlink ST**'s many interesting features is the "recorder" mode, which requires a bit of history to explain. Some other terminal programs allow you to access a telecommunication service with little or no interaction from the user—that is, little or no interaction once the macros have been written! These macros are usually in the form of control codes and responses that the software should give while on-line. You practically need to learn a completely new language to implement a macro-oriented system. **Interlink ST**'s recorder is different. When turned on, the recorder is remembering every prompt received and your responses to them. When the recorder is played back, it will issue the same responses you did the first time through. The recorder will even save in the file any mouse-controlled options that you've changed, like switching to a different baud rate or enabling the phone dialer. And it's all automatic; you hardly even realize that it's there.

The recorder doesn't even need you present to be put into operation. There's a timer to set, so that **Interlink ST** can, for example: (1) log on to a computer system; (2) read the new messages; (3) print them out; and (4) log you off. All this can happen at 2 o'clock in the morning, while you're in the upstairs bedroom catching a few Zs.

Now comes the freebie that I wasn't expecting—**Interlink ST** is also a mini-BBS. This is great for would-be SYSOPs who'd like to get their feet wet for a zero-dollar investment. (After all, you did buy **Interlink ST** as a terminal program.)

The mini-BBS part of **Interlink ST** is not all that tiny, either. Users can read as well as leave messages, upload and download files using either X- or Ymodem, and even chat with the SYSOP if he happens to be available. It doesn't give you, as SYSOP, the ability to present custom menus, nor will it allow the users to vote in a poll. These two are advanced features you usually have to pay extra for. If you need them, you'll have to shell out a few bucks and get something like **Nite Lite** or **BB/ST**. Or maybe Randy has already started on a new product called—drum roll please—"Interlink BBS." (Or maybe not, but one does, after all, have to keep one's hopes high where software is concerned.)

Interlink ST has been my terminal program of choice for several months now, and I don't even have the final version yet. I'm constantly learning new things about it. (See what happens when you don't read the manual first?) I anxiously await the availability of new file transfer protocol drivers. (Please send a Kermit driver with the final version. Oh, pretty please!)

ANSIGRAF
GEM-based. Features individual text and graphics screens simultaneously, and includes Xmodem upload and download. ANSI x3.64 and Tektronix 4014 emulations are supported, as well as VT102 mode. Text and graphics to printer or disk, and keyboard macros are also standard. $79.95
Grafikon, Ltd., P.O. Box 446 College Park, MD 20740
(301) 937-3394

ANSITERM
A professional terminal emulator using ANSI x3.64 protocol with auto file transfer and printing, supporting Xmodem, Kermit, ASCII and CompuServe-B protocols. $24.95
Beckemeyer Development Tools
478 Santa Clara Avenue, Oakland, CA 94610
(415) 452-1129

CHAT
Supports: ASCII file transfers, Xmodem upload and download, capture buffer, Hayes Smartmodem compatibility, auto-dial directory. $19.95.
SST Systems, P.O. Box 2315, Titusville, FL 32781
(305) 269-0063

CONNECT
Has real VT52 emulation, phone number directory, macros, Xmodem transfer, printer spooler, built-in Micro DOS, and more. $29.95
SST Systems, P.O. Box 2315, Titusville, FL 32781
(305) 269-0063

FLASH
GEM-based. With dial directory, mini word processor, macros, text buffer, file transfer, auto log-on, type-ahead line, on-screen help. $39.95
Antic Software, 524 Second Street, San Francisco, CA 94107
(415) 957-0886

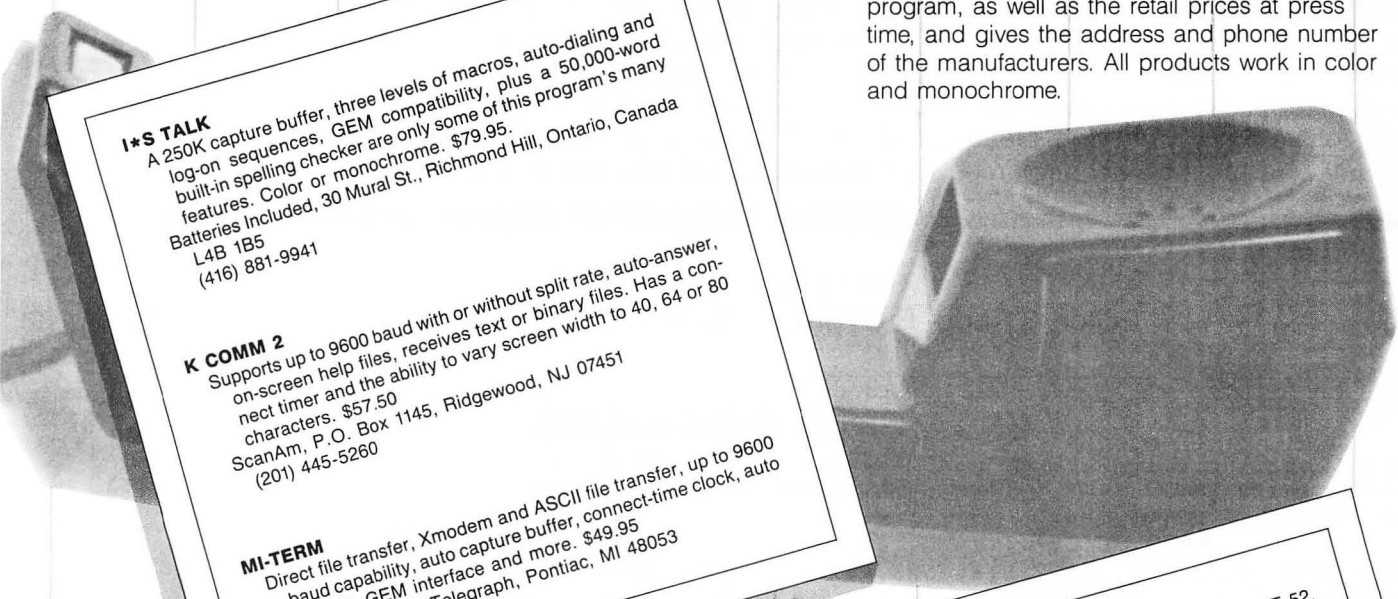
HABACOM
Some of the many built-in abilities consist of: screen buffer, optional small font, macros, text buffer, text-to-printer while telecommunicating, and GEM interfacing. $49.95.
Haba Systems, Inc., 6711 Valjean Avenue, Van Nuys, CA 91406-5889

INTELLICOM
Emulates eight terminals, including the VT 51 and VT 100, the ADM 3 and 5, and the Televideo 910 and 925. Also provides Xmodem, Kermit, ASCII and CompuServe-A file transfer, operates up to 9600 baud, and includes an auto-dial directory, auto-log-on, printing while on-line and a 16K buffer. $69.95.
Computer Toolbox, Inc., 1325 East Main Street, Waterbury, CT 06770
(203) 597-0273

INTERLINK ST
Many features round out this program, including Xmodem, Ymodem and ASCII file transfer, activating common disk functions from within the program, implementation of Clipboard —a universal standard for text—and the use of macros. $39.95.
Intersect Software Corporation, P.O. Box 49346, Sarasota, FL 33578
(813) 953-8865

Telecommunications ROUNDUP

Telecommunication software for the ST line is abundant! This list of currently available products covers some of the features for each program, as well as the retail prices at press time, and gives the address and phone number of the manufacturers. All products work in color and monochrome.



I*S TALK
A 250K capture buffer, three levels of macros, auto-dialing and log-on sequences, GEM compatibility, plus a 50,000-word built-in spelling checker are only some of this program's many features. Color or monochrome. $79.95.
Batteries Included, 30 Mural St., Richmond Hill, Ontario, Canada L4B 1B5
(416) 881-9941

K COMM 2
Supports up to 9600 baud with or without split rate, auto-answer, on-screen help files, receives text or binary files. Has a connect timer and the ability to vary screen width to 40, 64 or 80 characters. $57.50
ScanAm, P.O. Box 1145, Ridgewood, NJ 07451
(201) 445-5260

MI-TERM
Direct file transfer, Xmodem and ASCII file transfer, up to 9600 baud capability, auto capture buffer, connect-time clock, auto log-ons, GEM interface and more. $49.95
MichTron, 576 S. Telegraph, Pontiac, MI 48053
(313) 334-5700

OMEGATERM
A sophisticated but easy-to-use program, with auto log-on, auto-dial, multiple protocols, macros, selective capture buffer, up-load and download capability, and GEM interface. $29.95.
Supra Corporation, 1133 Commercial Way, Albany, OR 97321
(503) 967-9075

PC INTERCOM
VT102 emulation, with the ability to communicate with DEC mainframes such as the VAX and PDP-11 series. Complete telecommunications package with many professional features. $125.00.
Mark of the Unicorn, 222 Third Street, Cambridge, MA 02142
(617) 576-2760

ST105-SUPER TERMINAL PROGRAM
Permits communication with large telecommunication services (CompuServe, etc.), as well as BBSs. Easy to use, with upload and download capabilities. $8.95
Computer Solutions N.W., P.O. Box 192, Benzonia, MI 49616
(616) 325-2540

ST TALK (version 1.1)
Works with GEM, custom fonts, supports VT 100 and VT 52, Xmodem, DOS functions, help screens, auto log-on, auto-answer, keyboard macros, full ATASCII and VIDTEV graphics. $17.95
Quantum Microsystems, Inc., P.O. Box 179, Liverpool, NY 13088
(315) 451-7747

ST TALK PROFESSIONAL (version 2.0)
Intended as the replacement to version 1.1; GEM-based with 80x24 display, true VT 52, 100 and 200 emulation, batch-Ymodem transfer, smart macros and up to 9600 baud. $29.95.
Quantum Microsystems, Inc., P.O. Box 179, Liverpool, NY 13088
(315) 451-7747

ST-TERM (version 3.0)
File transfers supporting Amodem, Xmodem, Kermit and ASCII, VT 52 and VT 100 emulation, auto-dialer with built-in editor, macros, CompuServe-B protocol, Ymodem batch, scan dialing and 4K block batch protocol. $29.95.
Commnet Systems, 24 Randy Road, Framingham, MA 01701
(617) 626-1388

Attention Programmers!

ST-Log is interested in programs, articles, and software review submissions dealing with the Atari home computers. If you feel that you can write as well as you can program, then submit those articles and reviews that have been floating around in your head, awaiting publication. This is your opportunity to share your knowledge with the growing family of Atari computer owners.

All submissions for publication, both program listings and text, should be provided in printed and magnetic form. Typed or printed copy of text is mandatory and should be in upper and lower case with double spacing. By submitting articles to **ST-Log**, authors acknowledge that such materials, upon acceptance for publication, become the exclusive property of **ST-Log**. If not accepted for publication, the articles and/or programs will remain the property of the author. If submissions are to be returned, please supply a self-addressed, stamped envelope. All submissions of any kind must be accompanied by the author's full address and telephone number.

Send programs to:
Editor, **ST-Log**, P.O. Box 23, Worcester, MA 01603.

UPDATED ST CHECKSUMS

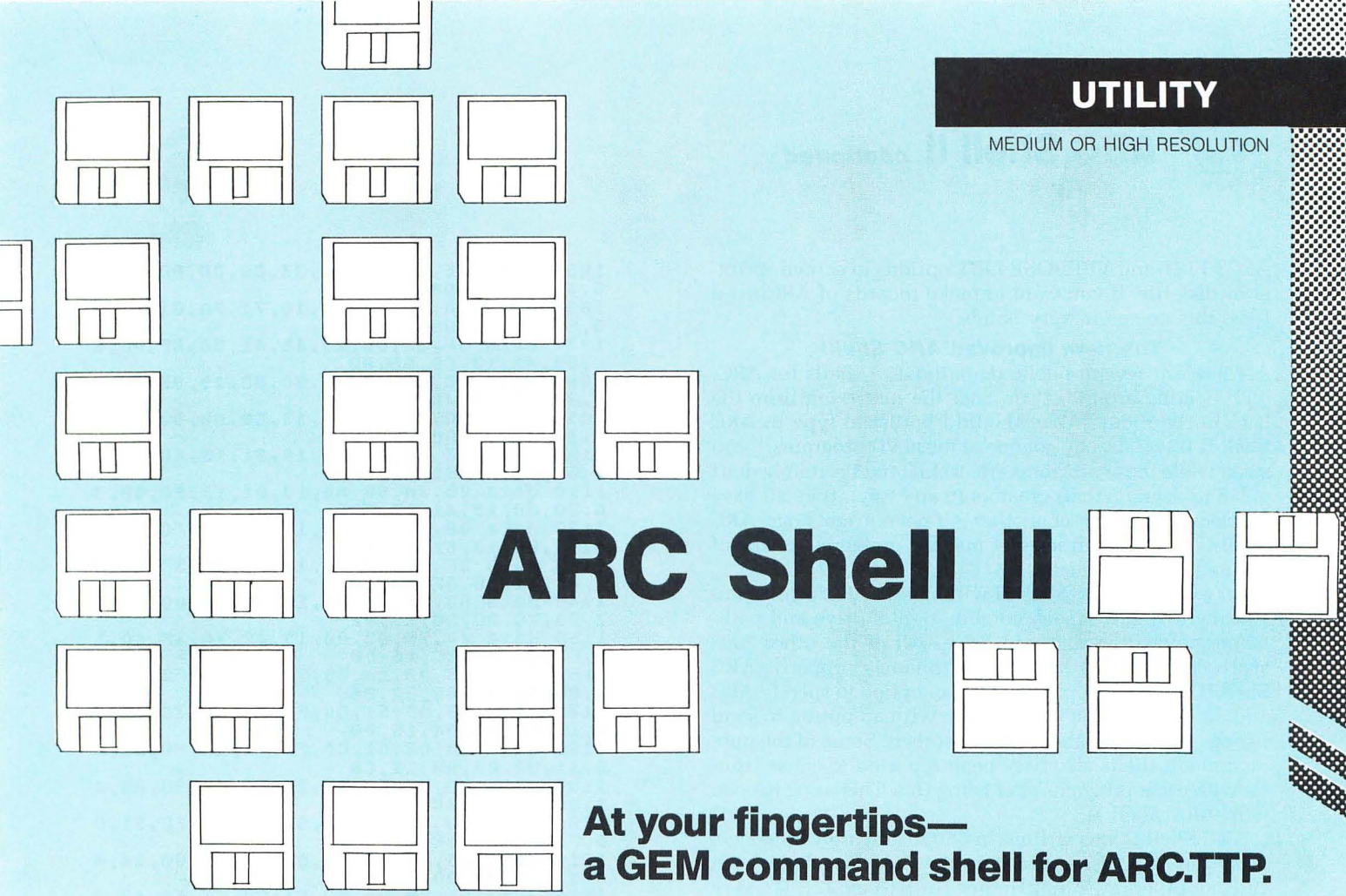
We've included a listing change for the original **ST-Check** (issue 11) in this month's **Reader comment**. But for those of you who couldn't get issue 10's **Font Tricks** and **Spellbinder** listings to check, here are the corrected ST CHECKSUMs. The programs themselves were correct as printed.

SPELLBINDER

```
 100 data  644, 948, 117, 614, 503, 22
1, 410, 427, 14, 109, 4007
 190 data  653, 357, 538, 572, 831, 68
0, 774, 690, 782, 740, 6617
 1080 data  154, 844, 856, 760, 760, 7
80, 703, 752, 781, 716, 7106
 1180 data  871, 836, 849, 797, 972, 8
31, 894, 762, 790, 785, 8387
 1280 data  765, 967, 695, 847, 767, 7
28, 922, 777, 866, 708, 8042
 1380 data  666, 673, 716, 880, 784, 8
12, 898, 594, 733, 769, 7525
 1480 data  854, 778, 882, 870, 909, 6
36, 726, 794, 911, 843, 8203
 1580 data  863, 799, 773, 840, 811, 8
18, 612, 619, 766, 898, 7799
 1680 data  831, 846, 785, 857, 618, 8
47, 787, 843, 832, 990, 8236
 1780 data  675, 819, 778, 835, 847, 8
61, 768, 776, 854, 816, 8029
 1880 data  802, 980, 831, 846, 738, 7
51, 878, 950, 950, 904, 8630
 1980 data  783, 671, 714, 655, 597, 5
88, 585, 612, 635, 632, 6472
 2080 data  850, 629, 588, 585, 612, 7
12, 626, 698, 653, 663, 6616
 2180 data  700, 656, 709, 651, 660, 7
02, 656, 699, 656, 656, 6745
 2280 data  691, 681, 690, 704, 747, 8
52, 851, 805, 860, 834, 7715
 2380 data  760, 813, 782, 902, 833, 8
09, 873, 832, 824, 833, 8261
 2480 data  853, 891, 818, 863, 867, 8
03, 817, 855, 781, 873, 8421
 2580 data  820, 849, 850, 796, 854, 8
42, 782, 813, 848, 799, 8253
 2680 data  889, 861, 797, 855, 478, 4
79, 480, 481, 680, 483, 6483
 2780 data  484, 485, 479, 480, 481, 4
82, 483, 613, 658, 688, 5333
 2880 data  732, 705, 726, 595, 218, 2
976
```

FONT TRICKS

```
 100 data  868, 948, 117, 614, 503, 22
5, 410, 427, 14, 109, 4235
 190 data  657, 357, 567, 521, 836, 88
8, 789, 687, 817, 702, 6821
 1080 data  751, 844, 689, 680, 674, 9
80, 778, 16, 886, 634, 6932
 1180 data  699, 972, 931, 753, 799, 2
8, 63, 935, 702, 756, 6638
 1280 data  795, 698, 736, 704, 713, 7
71, 828, 739, 829, 718, 7531
 1380 data  615, 640, 619, 672, 760, 8
39, 841, 779, 701, 753, 7219
 1480 data  789, 715, 759, 841, 744, 6
71, 868, 201, 885, 236, 6709
 1580 data  848, 717, 693, 864, 774, 8
62, 803, 769, 900, 830, 8060
 1680 data  50, 925, 98, 11, 942, 755,
 816, 53, 817, 850, 5317
 1780 data  796, 907, 806, 926, 293, 0
, 893, 808, 700, 784, 6913
 1880 data  828, 972, 916, 885, 818, 7
98, 796, 845, 805, 711, 8374
 1980 data  805, 854, 727, 774, 844, 6
80, 824, 817, 804, 764, 7893
 2080 data  831, 784, 693, 843, 755, 7
90, 753, 774, 835, 796, 7854
 2180 data  773, 711, 755, 827, 856, 8
07, 851, 952, 821, 812, 8165
 2280 data  775, 756, 817, 868, 858, 7
26, 729, 761, 777, 550, 7617
 2380 data  489, 517, 487, 503, 516, 5
16, 713, 581, 969, 66, 5357
 2480 data  344, 358, 909, 612, 771, 7
34, 721, 248, 939, 193, 5829
 2580 data  495, 640, 601, 705, 586, 5
27, 638, 727, 574, 797, 6290
 2680 data  808, 493, 862, 849, 519, 8
83, 870, 623, 908, 871, 7686
 2780 data  523, 885, 881, 548, 891, 6
97, 711, 484, 485, 486, 6591
 2880 data  678, 488, 482, 483, 543, 6
41, 633, 670, 676, 704, 5998
 2980 data  705, 620, 567, 564, 590, 5
42, 610, 657, 783, 784, 6422
 3080 data  199, 199
```



ARC Shell II

At your fingertips— a GEM command shell for ARC.TTP.

by Charles F. Johnson

A public domain program called ARC (shortened from ARChive) has provided a standard way for ST users to exchange files and programs. ARC is a port from the IBM world to the ST—and the ST version, written by Harvey Johnson, is capable of working with files created by the IBM and Amiga versions of ARC, as well. ARC takes several files and squeezes them into one large archive, compressing each individual file in the process so that the resulting file is as much as 60 percent smaller. It's an extremely useful utility for the ST owner, since ST disk files can be quite large. It is now the *de facto* file compression standard for Delphi, CompuServe and GEnie, and most local ST BBSs around the country.

As Harvey Johnson wrote it, ARC is a .TTP (TOS Takes Parameters) program. This means, when you double-click on its name in a directory window, you see a box called "Open Application" and you have to enter a command line from the keyboard. Here's where the small hitch comes: ARC has lots of commands, and if you don't have a copy of the docs handy, it can be quite difficult to remember them all. Also, you'll have to enter file- and pathnames, and all that stuff by hand.

I don't know about you, but one of the main reasons I bought an ST was to get away from all that filename typing! GEM has lots of nice, easy-to-use functions (some of them actually even *work* most of the time) for entering filenames and choices from a list of items. So, here's my solution to the ARC dilemma. . . **ARC Shell II**, a GEM command shell for ARC.TTP.

Using *ARC Shell II.*

To use the program, first boot up good (?) old ST BASIC and type in Listing 1. Check your typing carefully with **ST-Check** (issue 11); the BASIC program will create a file on drive A called ARCSHEL2.PRG. If you want to change the drive the program is written to, change the assignment to *filename$* in the first line of the BASIC program. Make sure you have space on your disk for a 4945-byte file.

Once you've typed it in, all the hard work is finished. Just make sure that ARC.TTP is in the same directory that you run ARCSHEL2.PRG from, and you're on your way. Double-click on ARCSHEL2.PRG.

You'll see a dialog box that takes up most of the screen. If you see a file selector asking *Where is ARC.TTP?*, it means that you don't have ARC.TTP in the same directory. Simply locate it with the file selector, click on its name and click OK. If you don't see the dialog box now, something is seriously wrong somewhere. Go back and check your typing again.

The **ARC Shell II** dialog box presents you with all of the ARC options as buttons you can point at and click on with the mouse. Simply set up the options you wish, click on the button labeled *ARC!*, and **ARC Shell II** will call ARC.TTP with the proper command line, according to the options you've chosen.

There are text entry boxes in the dialog that allow you to enter drive specifiers for both ARC and data files, and also let you enter an encryption keyword. (**ARC Shell II** will ignore the encryption keyword if the button marked *Encrypt/Decrypt* is not selected.)

ARC Shell II also allows you to redirect the output from

ARC's LIST and VERBOSE LIST options to screen, printer or disk file. If you want to make records of ARChived files, this comes in very handy.

The new, improved *ARC Shell!*

There are several public domain GEM shells for ARC. TTP floating around. I can hear the muttering from the back of the room: "Why should I bother to type in **ARC Shell II** if I've already got one of these PD programs?" Answer: while these programs are useful (and I certainly don't mean to degrade their creators in *any* way), they all have problems of one sort or another—if not outright bugs. **ARC Shell II** has capabilities that make it preferable to any of the existing ARC shells.

For example, **ARC Shell II** will handle ARCing and unARCing to and from any combination of drive and pathnames, including the hard drive. *All* of the other ARC shells have trouble handling pathnames properly. **ARC Shell II** is the only program with an option to specify ARC and data drives, and the only one with an option to send listings to devices other than the screen. Some of the public domain shells also have been reported to cause trouble with other programs after being run. This *won't* happen with **ARC Shell II**.

ARC Shell II was written in 68000 assembly language, using the AS68 assembler from the Atari Developer's Kit and my program, **AS68 Helper** (in **ST-Log** 12). It's very compact (less than 5K), and even includes its dialog box object trees in the program itself. No need for an external .RSC file; so there's less loading time and one less file to worry about. I think you'll find that **ARC Shell II** will make using Harvey Johnson's excellent ARC.TTP program much easier. //

Charles F. Johnson is a professional musician and, now a semi-professional computer programmer/reviewer/author. He lives in Los Angeles with his wife Patty and Spike, the world's most intelligent cat. Charles is a SYSOP on the ANALOG Publishing Atari SIG on Delphi; his user name is CFJ.

Listing 1.
ST BASIC listing.

```
100 filename$="a:\arcshel2.prg"
110 fullw 2:clearw 2:gotoxy 0,0:print
"creating file..."
120 option base 0
125 dim a%(16000):def seg=1:v$=""
130 p=varptr(a%(0)):bptr=p+1
140 for i%=1 to 4911
150 read v$:code%=val("&H"+v$)
160 poke p, code%:print ".";
170 p=p+1
180 next
190 bsave filename$,bptr,4911
200 print "file written":end
1000 data 60,1A,00,00,0A,36,00,00,07,A
A,00,00,0D,54,00,00
1010 data 00,00,00,00,00,00,00,00,00,0
0,00,00,2A,4F,2E,7C
1020 data 00,00,1F,1C,2A,6D,00,04,20,2
D,00,0C,D0,AD,00,14
1030 data D0,AD,00,1C,D0,BC,00,00,01,0
0,2F,00,2F,0D,42,67
1040 data 3F,3C,00,4A,4E,41,DF,FC,00,0
0,00,0C,3F,3C,00,04
1050 data 4E,4E,54,8F,33,C0,00,00,11,F
6,4A,40,66,00,00,12
1060 data 2A,7C,00,00,10,71,7A,01,61,0
0,07,84,60,00,07,00
1070 data 3F,3C,00,19,4E,41,54,8F,D0,3
C,00,41,13,C0,00,00
1080 data 18,80,13,C0,00,00,19,00,13,C
0,00,00,19,40,13,C0
1090 data 00,00,18,C0,13,C0,00,00,19,8
0,13,C0,00,00,0F,F0
1100 data 13,C0,00,00,10,01,13,FC,00,3
A,00,00,18,81,13,FC
1110 data 00,3A,00,00,19,01,13,FC,00,3
A,00,00,19,41,13,FC
1120 data 00,3A,00,00,18,C1,13,FC,00,3
A,00,00,19,81,42,67
1130 data 2F,3C,00,00,19,C0,3F,3C,00,4
7,4E,41,50,8F,20,7C
1140 data 00,00,19,C0,26,7C,00,00,19,8
2,28,7C,00,00,19,02
1150 data 2A,7C,00,00,19,42,7A,3F,4A,1
0,67,00,00,0C,16,D0
1160 data 18,D0,1A,D8,51,CD,FF,F2,20,7
C,00,00,11,62,7A,06
1170 data 18,D8,51,CD,FF,FC,20,7C,00,0
0,11,69,7A,04,16,D0
1180 data 1A,D8,51,CD,FF,FA,23,FC,00,0
0,11,82,00,00,11,C8
1190 data 3A,3C,00,1E,23,FC,00,00,0A,C
2,00,00,14,40,33,C5
1200 data 00,00,12,22,61,00,08,FC,51,C
D,FF,F4,3A,3C,00,07
1210 data 23,FC,00,00,0D,AE,00,00,14,4
0,33,C5,00,00,12,22
1220 data 61,00,08,E0,51,CD,FF,F4,42,3
9,00,00,10,13,0C,79
1230 data 00,02,00,00,11,F6,66,00,00,0
C,58,79,00,00,0D,8C
1240 data 60,00,00,08,52,79,00,00,0D,8
C,2A,7C,00,00,A0,00
1250 data 28,7C,00,00,10,D1,7A,0C,10,1
5,B0,14,67,00,00,06
1260 data 52,8D,60,F4,20,4D,B9,0D,66,E
6,51,CD,FF,FA,20,08
1270 data 23,C8,00,00,11,E8,22,08,C2,B
C,FF,FF,FF,FE,20,41
1280 data 55,88,22,10,B0,81,66,F8,23,C
8,00,00,11,E4,33,E8
1290 data 00,08,00,00,11,F4,61,00,06,3
0,61,00,05,96,6A,00
1300 data 00,7A,28,7C,00,00,11,69,2A,7
C,00,00,18,C2,3A,3C
1310 data 00,04,1A,DC,51,CD,FF,FC,28,7
C,00,00,11,2B,3A,3C
1320 data 00,98,23,FC,00,00,18,C0,00,0
0,11,EC,23,FC,00,00
1330 data 16,40,00,00,11,F0,61,00,06,0
6,0C,79,00,01,00,00
1340 data 13,24,66,00,05,4A,4A,39,00,0
0,16,40,67,00,05,40
1350 data 2A,7C,00,00,18,80,28,7C,00,0
0,18,C0,61,00,05,8A
1360 data 28,7C,00,00,16,40,3A,3C,00,0
B,1A,D4,4A,1C,67,00
1370 data 00,38,51,CD,FF,F6,60,00,00,3
0,2A,7C,00,00,18,82
1380 data 28,7C,00,00,19,C0,3A,3C,00,3
F,4A,14,67,00,00,08
1390 data 1A,DC,51,CD,FF,F6,1A,FC,00,5
C,28,7C,00,00,11,5A
1400 data 7A,07,1A,DC,51,CD,FF,FC,61,0
0,05,24,23,FC,00,00
1410 data 0A,C2,00,00,11,E0,61,00,05,D
E,42,79,00,00,12,00
1420 data 61,00,07,40,0C,79,00,1A,00,0
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1470 data 00,75,60,00,00,B2,08,39,00,0
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1480 data 00,0A,1A,FC,00,66,60,00,00,9
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1490 data 0B,D5,67,00,00,0A,1A,FC,00,6
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D,67,00,00,0A,1A,FC
1520 data 00,72,60,00,00,62,08,39,00,0
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1650 data 28,7C,00,00,10,13,3A,3C,00,0
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1660 data 1A,DC,51,CD,FF,F6,1A,FC,00,2
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1670 data C0,7C,00,DF,B0,39,00,00,19,0
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1680 data 00,00,19,00,10,C0,10,FC,00,3
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1690 data 7A,06,10,D9,51,CD,FF,FC,28,7
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1720 data 13,24,66,00,FE,04,4A,39,00,0
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1730 data 28,7C,00,00,19,00,61,00,03,3
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1760 data 00,00,0B,ED,66,00,00,12,08,3
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1770 data 66,00,01,7C,60,00,00,BA,61,0
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1790 data 61,00,04,F0,0C,79,00,06,00,0
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1820 data 1A,FC,00,50,1A,FC,00,52,1A,F
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1830 data 60,00,01,1C,28,7C,00,00,11,3
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1840 data 00,00,19,80,00,00,11,EC,23,F
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1850 data 11,F0,61,00,02,CA,0C,79,00,0
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1860 data FD,28,4A,39,00,00,16,70,67,0
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1890 data 1A,FC,00,20,42,79,00,00,11,F
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1900 data C0,7C,00,DF,B0,39,00,00,19,4
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1910 data 00,00,19,40,10,C0,10,FC,00,3
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1920 data 7A,04,10,D9,51,CD,FF,FC,28,7
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1930 data 00,D0,23,FC,00,00,19,40,00,0
0,11,EC,23,FC,00,00
1940 data 16,60,00,00,11,F0,61,00,02,3
6,0C,79,00,01,00,00
1950 data 13,24,66,00,FC,94,4A,39,00,0
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1960 data 33,FC,00,01,00,00,11,FA,08,3
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1970 data 66,00,00,26,28,7C,00,00,19,4
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1980 data 67,00,00,08,1A,DC,51,CD,FF,F
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C,00,00,16,60,3A,3C
2000 data 00,0B,4A,14,67,00,00,08,1A,D
C,51,CD,FF,F6,42,15
2010 data 2A,7C,00,00,16,81,42,85,4A,1
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2020 data 60,F6,13,C5,00,00,16,80,08,3
9,00,00,00,00,0B,5D
2030 data 66,00,00,04,A0,0A,61,00,01,4
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2040 data 3F,3C,00,09,4E,41,5C,8F,48,7
9,00,00,11,55,3F,3C
2050 data 00,09,4E,41,5C,8F,48,79,00,0
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2060 data 4E,41,5C,8F,42,79,00,00,11,F
C,08,39,00,00,00,00
2070 data 0B,BD,66,00,00,0E,08,39,00,0
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2080 data 00,66,08,39,00,00,00,00,0E,3
1,66,00,00,5A,20,7C
2090 data 00,00,16,50,22,7C,00,00,10,E
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2120 data 00,00,33,FC,00,01,00,00,11,F
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C,00,00,11,6E,00,00
2290 data 11,C8,33,FC,00,03,00,00,12,2
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2320 data 00,00,11,EC,00,00,14,40,23,F
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2340 data 28,B9,00,00,11,E8,02,6C,00,F
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2360 data 23,F9,00,00,11,E0,00,00,14,4
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2370 data 00,00,13,24,00,00,12,02,33,F
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2410 data 12,06,58,79,00,00,12,06,33,F
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2450 data 00,00,12,26,33,F9,00,00,12,0
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2460 data 00,00,12,06,00,00,12,2A,33,F
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2660 data 00,06,00,02,11,80,00,00,FF,F
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3190 data FF,FF,FF,FF,00,15,00,20,00,0
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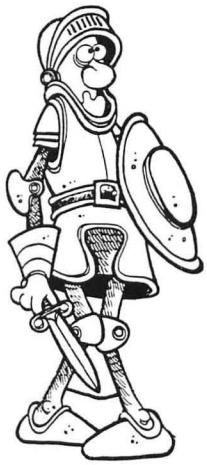
Ian's Quest



ST news, information and opinion.

by Ian Chadwick

I think of myself as a "professional writer." Since I spend a minimum of ten hours a day writing—documentation, articles, fiction, reviews—I don't think this is a vanity; it's merely a job description. I also edit manuals and promotional copy produced by others. The most important tool in my work is a word processor, so this month I'm going to write about writing and word processors.

Obviously, I need more elaborate tools than do those of you who spend only a few minutes, maybe an hour or two at the keyboard—writing a letter to Aunt Martha thanking her for the tie, pounding out the "what I did on my summer vacation" essay, or whatever—but I think many of you will benefit from what I have to say. My job also requires me to work on several different computers, so I often have to write or edit on one machine, then port the results over to another where it's reformatted, re-edited and spell-checked. This tends to color my image of the ideal writing tool somewhat differently than would be the case if, like most people, I used only one machine.

I'm often asked "Which word processor do you use?" It's a question rather different from "Which word processor do you recommend?" My answer to the former is always **Perfect Writer**; it's an amazing and wonderful program I use under CP/M on my Kaypro 4. That, however, isn't the answer an ST user wants to hear. Nor can I recommend that people replace their STs with MS-DOS machines just so they can use **Word Perfect**. These are, however, the two programs I consider the models of excellence in their respective environments.

My answer in regard to the ST is **ST Writer** (version 1.70, the latest at the time of this writing), and that generates a certain amount of surprise. **ST Writer** is perceived by those unfamiliar with either the program or the finer points of word processing as a holdover from the 8-bit world—a dinosaur, so to speak. They ask me about GEM-based programs, astounded that I don't use a WYSIWYG (What You See Is What You Get) processor that reproduces on-screen exactly what will come out of the printer. I'm seen as eccentric (or archaic) in my tastes. But I have my reasons, all of them carefully conceived and based on years of experience.

First, WYSIWG isn't all that it's cracked up to be. I don't need my word processor to exactly portray the final printed output, except as a minor convenience. Publishers usually ask for articles or manuscripts in ASCII format, unless they're using your particular word processor—and I know of no publisher outside the Atari world who uses an ST professionally for writing or editing.

Thus the "Print-to-screen" feature in **ST Writer** provides an adequate display for my purposes. As for style changes (such as bold, underline or italics), I can see where my command marks are in **ST Writer**, so I know what will be affected in the printout, and I don't need to see the style displayed to know how it will appear in print. Font changes, it's true, are another story, but I use only the system font anyway, for ASCII compatibility. Besides, a non-system font printout is really a graphics dump, and that takes a long time, longer than I find worth waiting for. Maybe when I go into desktop publishing (and I will, shortly...), my requirements will change.

GEM is a nice and easy interface, but it's not always suited to the application at hand. When I first started working on a Macintosh, back when it was the new toy, I wasn't all that impressed. Everything was pictures; Mister Folder and Mister Disk. I felt like a grown-up playing in Mr. Rogers' universe. To do something simple like delete a file, I had to open Mister Disk, then open Mister Folder and drag Mister File (kicking and screaming) into Mister Trashcan, who ate him all up (after I pulled down Mister Menu and clicked Mister Mouse on *empty trashcan*). I was afraid they'd bring out a Mac with Cabbage Patch icons next.

Still, eventually, I did learn to like at least certain aspects of the icon interface. Choosing files and programs is easy and doesn't require a lot of typing. Point click, double click; hardly a mental strain to learn. Compare this to UNIX, whose command structure can make hex dumps seem lucid. Even MS-DOS and CP/M have a fair number of arcane command conventions not designed for the casual user. Personally, I've always felt this was an attempt by programmers to make the accomplished computer user appear wizard-like to his or her peers. After all, the same trick serves witch doctors and faith healers well.

GEM-based programs generally offer a more intuitive and simpler means to perform tasks which in TOS-based programs are driven by arbitrary commands. However, this simplicity does entail expensive trade-offs. First, most GEM-based programs have limitations on the number of characters that can be displayed on a line (seventy-six is about the most one can get if one vertical scroll bar is used). They are slow when displaying text and performing screen redraws. I'm not a touch typist, but years of keyboarding have made me pretty fast, and I've encountered several GEM programs that can't keep up with me. Worse, it took **1st Word** 18 seconds to go from the top to the bottom of a very large text file in a recent test I performed—but it took **ST Writer** only about a second to do the same thing.

A particular—and perhaps the only—GEM advantage here lies in being able to access resident desk accessories, and to do such things as file I/O with a simple mouse click and (often) no typing. The flip side of this coin is that you have to depend on the mouse as an integral device for achieving these and most other ends. I find the mouse a distraction when I'm involved in the creative aspects of a task—in this case, writing. When I have to pause in midsentence to go find the mouse, my train of thought is derailed (easy to do at the best of times). Of course, a suitable alternative would be to provide keyboard substitutes for mouse-driven commands, but many programmers overlook this simple solution and don't bother to encode keyboard options along with the mouse commands.

Lest you think this is merely a personal quirk: in the capacity of book editor, I've spoken to many writers over the past few years who've had similar experiences with mouse-driven systems. Most expressed the same criticism: mouse-driven programs are too distracting when the grey matter is trying to work.

A minor annoyance is the lack of file sizes in the GEM file selector box. I need that information; I'm often asked to write within a word or character size restriction, and the file size gives me a handy measurement. To get this in GEM-based programs, I must leave the program, examine the file in the desktop, then reload the program—a major nuisance and certainly not acceptable in a serious writing tool.

Looking broadly at the word processors available for the ST, what is most striking is the lack of real power in these programs, particularly those with a GEM interface. This of course has nothing to do with GEM *per se*, but it has a lot to do with the design of the programs to date.

Many writers need footnotes, indexes, appendices, multiple types of sections and headings, tables of contents, multiple-line headers and footers, and the like. These, like chapter, section and heading numbering, must be automated processes that require a minimum of manual input from the writer. For example, to index a word on a page, you might insert the command @index (computer) in the document beside the actual occurrence of the word *computer*. The word *computer*, as written in the parentheses, appears in the index (which is printed right after the document, as part of the process), along with the page number on which the command and the word appear. Numbering systems must automatically generate the correct next number in the sequence. In a four-tier system you can easily get *4.1.3.2* or *7.3.3.1* if you number your paragraphs.

Another necessity is variable page formatting. Separate paragraphs may need to be indented or outdented, margins may need to be changed for charts or tables, and TABs may have to be set differently in several places. The formatting of a document must be completely flexible.

Some of these features *are* available in various programs—Abacus's **Textpro** has indexing; **Haba Writer II** gives you variable headers and a glossary; **Regent Word II** has two-line headers and footers, a sort routine and word count. But, at least at the time of this writing, no single program for the ST offers *all* these features (mind you, they *are* all available in both **Word Perfect** and **Perfect Writer** on those other systems). So any choice of ST word processor is bound to have its limitations at present. Given that, **ST Writer** (which has all of the basic features and is free) is to my mind still the best buy around. Compared to **1st Word**, Atari's other free word processor, **ST Writer** is considerably more powerful and faster.

My final concern has to do with the disk itself. If a program is copy protected, then I can't use it, regardless of whatever else it has going for it. I have to boot my word processor a dozen or more times a day. That's hard on any disk. There ought to be some method of installing software on a hard drive and still protecting it from the numerous pirates. I don't mind the protection of casual programs—entertainment and games—but I need to put my most frequently-used applications on my hard drive.

As a postscript to my last column, I've written to Bruce Artwick at subLOGIC again about users' building their own databases for **Flight Simulator 2**, but he hasn't responded to either letter. This is very disappointing and speaks poorly for subLOGIC's public relations. //

Ian Chadwick is a free-lance writer. He is editor of the Murder and Mayhem society newsletter, and a member of the Romance Writers Association. After writing this column, he packed his bags for a long overdue vacation in Mexico with his wife Susan.

A Quest for Excellence

Sierra's "Quest" series thrives on the ST.

by Bill Kunkel, Arnie Katz and Joyce Worley

At a recent electronics industry seminar, Ken Williams, founder and president of Sierra On-Line, announced that the company would, henceforth, develop programs *exclusively* for 16-bit computers. The rest of the industry gaped in astonishment when he declared that 8-bit technology was the past, and he was interested in the future. Was it possible? Could a major publisher survive without the considerable C64 audience to fill out sales totals?

At the time this decision was made, neither the ST nor the Amiga were well established systems. True, Sierra continued to support the IBM PC and its clones, a hefty slice of the software market, as well as producing occasional translations for the Apple IIc, IIe. But this was nonetheless a major gamble, and if it was to pay off, the ST looked to be the lynchpin computer.

Sierra was among the first publishers to support the ST, with a group of releases that helped set the standards for excellence in game design for this computer system. These games, comprising the "Quest" series are: **King's Quest; King's Quest II: Romancing the Throne; King's Quest III: To Heir is Human; Space Quest**; and **The Black Cauldron**.

King's Quest was the groundbreaker. Designed by Roberta Williams, the game originally appeared under IBM's *imprimatur* as one of its early releases for the PCjr. **King's Quest** is an adventure, a recognizable descendant of Sierra's popular "Hi-Res" series of illustrated adventures. In this new format, however, the user is not visually restricted to a series of inanimate drawings, but moves an animated on-screen character over a fully directional landscape bristling with fascinating people, places and objects. The game "feels" like an action game, in that the player maneuvers the focal character with a joystick, yet hand-eye speed is not a factor in the play. Commands and interactions are entered in traditional fashion, by typing the input message on the keyboard.

The most remarkable thing about the first Quest game was its startlingly original presentation and stunning graphics. **King's Quest** possesses a gentle sensibility (attempts to gratuitously hack and slash are greeted with reprimands and even explusion from the game!) and a refreshing look. On the downside, the quest takes place in a rather cramped universe, and its parser, the system by which the program responds to player input, is no great improvement over the version in the Hi-Res games.

With **King's Quest II: Romancing the Throne**, Roberta Williams really hit her stride and, free from IBM's corporate constraints, produced one of the wittiest and most whimsical of adventures.

In **King's Quest**, the player is cast as Sir Graham, a humble squire sent on a dangerous mission by the aged King of Daventry. By the end of the first adventure, Sir Graham has himself been elevated to the monarchy.

Romancing the Throne begins several years later, at a time when King Graham is beloved by his people, but in need of a Queen and heir. He sets off on a second great quest, over the poisoned river and through the dark woods to a world of enchanted mirrors, magical keys and a cast of characters who comprise a virtual database of fairy-tale archetypes.

The quest takes the user through a wonderland that stretches from under the sea to a clifftop doorway into another dimension. The graphics are spectacular, with some scenes that are outright showstoppers. The program also features several elaborate structures, including a marvelous underground "tree house"; granny's place in the woods (but what a long *snout* grandma has!), and a vampire's castle (which players enter to the accompaniment of a few notes from Michael Jackson's "Thriller").

By the end of the game, King Graham has rescued and married the beautiful Valanice. Both return to Daventry, with the Magic Mirror, in hopes of settling down and raising a family.

King's Quest and **King's Quest II** were both translated to the ST with dispatch, but with very little added in terms of upgrades. Moreover, the games' colors, which seemed so subtle in the IBM version, looked harsh and garish on the ST. Subsequent entries in the series instituted major improvements. **The Black Cauldron, King's Quest III** and **Space Quest** are among the most beautiful programs available for the Atari 16-bit computer.

The Black Cauldron—based on the full-length Walt Disney Studios animated film about a magical pig and the boy who must protect it from a villainous sorceror—was a departure for authors Roberta Williams and Al Lowe (with the Disney PC Software staff). Unlike the previous games in the series, **Black Cauldron** was not an original story, but was based on Lloyd Alexander's fantasy cycle **The Chronicles of Prydain**, as was the Disney movie.

Moreover, Sierra opted to slant the program toward younger players by altering the Quest series interface. Rather than typing in commands through the keyboard, **The Black Cauldron** is broken down into its essential commands ("explore," "look,"

"pick up," "use," "talk"), with each of these assigned to one function key.

The user guides young Taran and his porcine charge, the enchanted Hen Wen, in an attempt to elude the minions of the evil Horned King, using only the joystick and function keys. **Cauldron** is a visually appealing, streamlined work that succeeds in spite of the intrinsic weaknesses of adventures adapted from existing works (i.e., anyone who has seen the film will find the game holds few surprises).

The fourth Quest series entry provides an even more significant departure from the earlier games. **Space Quest (Chapter One: The Sarien Encounter)** is the first Sierra adventure not written, at least in part, by Roberta Williams. The program is the work of a design group known as Two Guys From Andromeda (a.k.a. Scott Murphy and Mark Crowe).

Cast as a lowly apprentice sanitation engineer named Roger Wilco (or any name the user prefers), the player's **Space Quest** begins on board the spacelab Arcada, on the outskirts of the Earnon system. Earnon's sun is dying and the Arcada has been working on the process of converting one of the system's dead planets into a neo-sun, courtesy an invention dubbed the "Star Generator." As play begins, a message declaring the Star Generator a success has been intercepted by the outlaw Sariens, who immediately stormed and boarded the Arcada, slaughtering everyone on board—with the exception of the focal character, who was apparently goldbricking in a closet when the assault occurred.

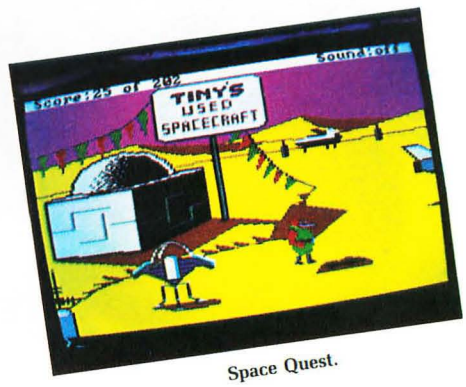
The user has several objectives. He should, primarily, attempt to flee the captured vessel without being discovered by the Sarien shock troops. It would also be nice if he could disable the Star Generator, the obvious target of this Sarien attack.

Unlike the previous Quest games, which take place almost exclusively in the great outdoors, the entire opening of **Space Quest** takes place on the Arcada, in dual-level perspective. The player can move from upper to lower levels, and back again, via a series of elevators located throughout the circular craft.

The scope of **Space Quest** is magnificent. The Arcada alone is impressive with its labs, bridge and vast shuttle bay, but the ship is only part of this game's setting, a "launching pad" for further adventures, both in space and planetside.

The most recent ST release in the series is **King's Quest III: To Heir is Human**. The focus shifts from Sir/ King Graham to a downtrodden sorceror's apprentice named Gwydion. Gwydion is indentured to a surly old wizard who gets his jollies by turning the poor lad into a bug or banishing him to his room in a puff of smoke. The player, as Gwydion, must cast off his servitude to embark on a quest which, if successful, will see him crowned king.

King's Quest III.



Space Quest.

The connection between Gwydion and King Graham is not nearly as tenuous as it seems at first. Apparently, Graham and Valanice *had* heirs, twins, one boy (Prince Alexander) and one girl (Princess Stephanie). On the twins' first birthday, the Prince was snatched from his cradle, and not even the Magic Mirror can determine his whereabouts.

The game begins with the focal character Gwydion a young man of 17—and totally under the evil wizard's thumb. Life is an endless procession of boring chores for Gwydion, but, in between, it *is* possible to slip off into the town of Llewdor and find useful objects. Eventually, Gwydion can acquire enough information and magical objects to free himself from the old sorceror's dominion and fulfill his majestic destiny.

King's Quest III is the first of the **King's Quest** games to use a full 256K of memory, and the extra power shows. The graphics are even better (if possible) than in previous entries, and the system now includes spells which the player can learn and use when appropriate.

The Quest series doesn't exactly rank up there with Infocom's toughest, in terms of player challenge. Nonetheless, these games are hardly "gimmees," and Sierra has responded to the many cries for help from frustrated Questers by publishing "Hint Books" for each game in the series. The books are packaged with a "magic" marker, which, when rubbed across the appropriate "window," makes previously-invisible text appear.

The Hint Books begin with a section dealing with general questions, ranging from "I just started and already I'm lost!" to "How do I drop objects?" and "Where does my character put all the stuff he's carrying?" Next, there are general questions dealing with specific sections of the game (The Kingdom of Daventry, for example, in **King's Quest**) and, finally, a group of hints for players who have gone all the way through the adventure. Hint Books are available for $7.95 from Sierra On-Line, Coarsegold, CA 93614 — (209) 683-6858.

The Quest games have proven one of the most enduring and endearing series in computer game history. The system has constantly been upgraded and made more sophisticated, to the point where many users see it as the ideal format for this type of game. Though many publishers have talked about their products as being "cinematic," no series has ever so successfully created the illusion of being "in a movie" as this one has.

The next game in the Quest series will be yet another change of pace. **Police Quest** promises to be an innovative use of the Quest interface. The game, written by a former policeman, is billed as a "realistic" adventure, in which the player is cast as a minion of the law chasing around after the bad guys.

The folks at Sierra continue to explore time, space and the realms of imagination in their quest for software excellence. ///

C-manship

A first look at object trees and dialog boxes.

by Clayton Walnum

Now that we know how to handle the two simplest of GEM's forms, the alert box and the file selector box, it's time to move on to the granddaddy of them all: the *dialog box*. Because the dialog box is so versatile, we could discuss its uses endlessly and still not exhaust its possibilities. For that reason, this month's discussion should not be considered as a complete guide to dialog boxes, but only as an introduction. Once you understand the way dialogs work, the only limit will be your own imagination.

The definitions.

But before we get into a detailed discussion of dialog boxes, we must first define a couple of terms: *objects* and *trees*.

Objects are used to visually represent each item that makes up a dialog box. You've seen them all hundreds of times by now: boxes and buttons and text strings. Each object has its own set of attributes that tailor it to the programmer's (and eventually, the user's) needs.

From a programming point of view, an object is a data structure, the members of which describe the object, storing all the necessary information to bring that object up on the screen.

The objects of a dialog box are connected in an object tree. A tree is a way to link items in a hierarchical manner. That is, there's one main item (the tree's *root*), which has connected to it other items (which, relative to the tree's root are called *children*, and relative to each other are called *siblings*). The children may also have children of their own (and thus become *parents*), and so on down the line, each new group of siblings subordinate to the ones that have gone before.

An object tree is an array of objects, the attributes of which are stored in the previously mentioned data structure. Three elements of an object's data structure determine the way the object fits in with the rest of the tree. Specifically, each object contains, among other things, a pointer to the next sibling, a pointer to the first child (the *head*) and a pointer to the last child (the *tail*).

Figure 1, as seen on the following page, illustrates the principles of this type of tree structure, using a simple dialog box as an example.

As you can see, even a simple dialog box has quite a maze of connections. Because of this complexity, few programmers bother to try and design dialog boxes from scratch. They instead use the resource construction program that came with their compiler.

RCP: A mini tutorial.

Currently, the two most popular resource construction programs are the ones included with the Atari Developer's Kit and the Megamax C compiler. Since the programs in this column are developed with Megamax, we'll use the Megamax Resource Construction Program (RCP) to build our dialog box. If you're using the Atari Developer's Kit, don't fret; the Resource Construction Set (RCS) that came with your kit will work equally well for our purposes. The only difference is in the details of operation of the programs.

So, everybody load up their resource construction programs, and let's get busy. Figure 2 is the dialog box we'll be building. You should refer to this illustration as you construct your version.

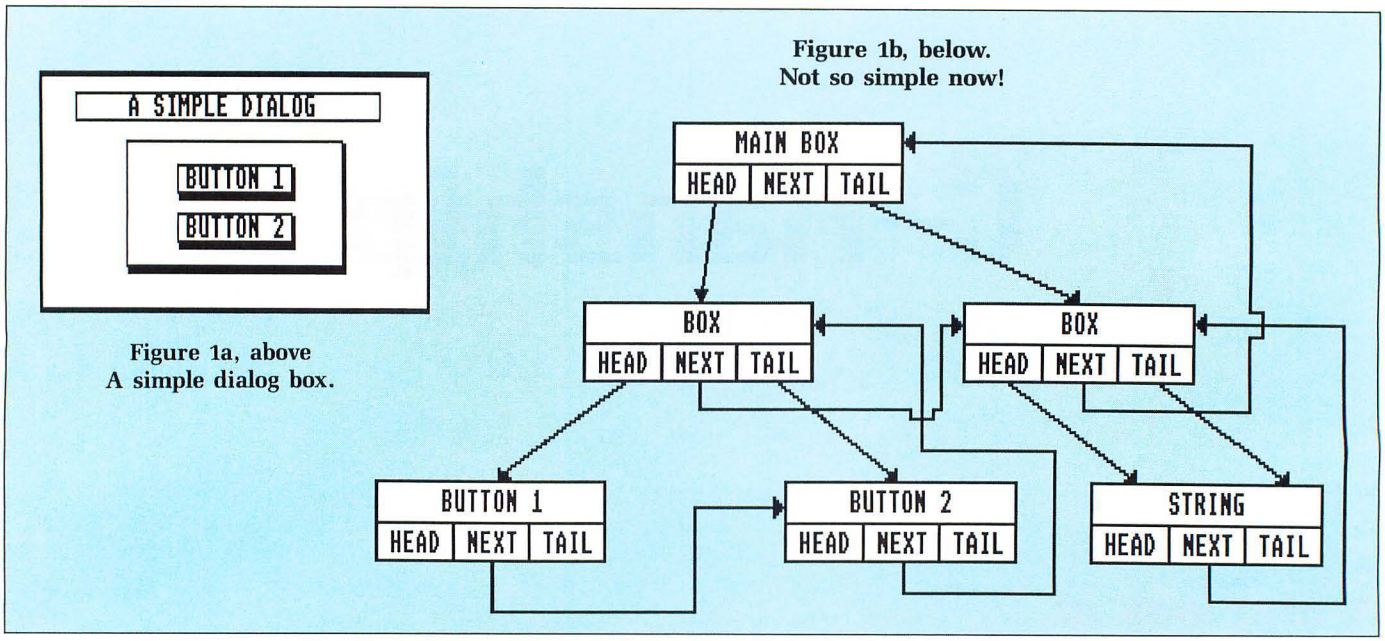


Figure 1a, above
A simple dialog box.

Figure 1b, below.
Not so simple now!

Once you have your resource construction program loaded, go to the FILE option of the menu bar and select NEW. A window titled NONAME will appear. To the left of this window are the types of resources we can build, represented in icon form. Place the mouse pointer over the dialog icon, press and hold down the left button, and drag the icon into the window. Release the button, and a dialog box will appear, asking you for the name of the new tree. Clear the NAME field by pressing ESCAPE, then type *SAMPLE* and press RETURN.

Now double click the new dialog icon (the one you dragged to the window). This will open the dialog, presenting you with a "blank slate." The icons to the left will change to a dialog box "parts kit." The parts shown are icon representations of the types of objects you can use to build your dialog box. The types are as follows:

Button	A box containing centered text
String	A line of text
FText	Formatted text
FBoxText	A box containing formatted text
IBox	An invisible graphic box
Box	A graphic box
Text	Graphic text
BoxChar	A graphic box enclosing a single character
BoxText	A graphic box enclosing text
Icon	Description of an icon

Now let's start filling out our dialog box with objects.

Crankin' with the RCP.

Step 1: Drag the STRING object onto your dialog box, then double-click it. A dialog box containing a number of attributes will appear. At the bottom will be a line labeled *TEXT*. Clear the line by pressing the ESCAPE key, then enter *THIS IS A SAMPLE DIALOG BOX*, and press RETURN. Drag your new string to the top of the dialog box and center it, as shown in Figure 2.

Step 2: Drag an ICON object onto your dialog box, and double-click it. Click the EDIT ICON button from the dialog box that appears, and draw the ANALOG icon (or any icon you like) with your mouse. When complete, click the OK button. Drag the icon to the left of the text created in Step 1 and position it as shown in Figure 2.

Step 3: If the icon is not shown in inverse (selected), give it a single mouse click. When the icon is selected, type *CTRL-C* (copy), point the mouse to the right-hand side of your dialog box, and type *CTRL-V* (paste) twice (the first keystroke deselected the original icon). You should now have a duplicate of the first icon. Drag it into position, to the right of the string, as shown in Figure 2.

Step 4: Drag the BOX object (the empty rectangle) onto your dialog box. Place the mouse cursor on the lower right corner of the box and, holding down the left button, stretch the box until it's about the same size as the box labeled *RADIO BUTTONS* in Figure 2. Position the box, then double-click it. An attribute dialog box will appear. Use the mouse to select the SHADOWED attribute, then click the OK button.

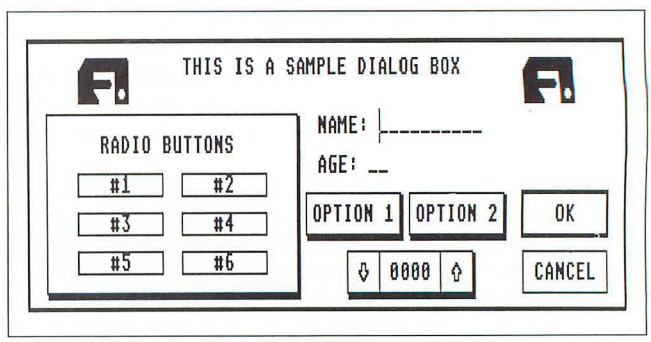


Figure 2.

Step 5: Using the same method as in Step 1, create a string that reads *RADIO BUTTONS*, and position it at the top of the box created in Step 4.

Step 6: Drag a BUTTON object into the box created in Step 4, and double-click it. When the attribute dialog appears, select the following options: SELECTABLE, RADIO BUTN and TOUCHEXIT. (Note that sometimes an attribute—in this case, SELECTABLE—has already been activated for you.) Modify the text field to read *#1*, then click the OK button. While the radio button is still highlighted (shown in inverse), type *CTRL-N*, and name the object RADIO1. Position this button in the upper left of the "Radio Button" box, beneath the string, as shown in Figure 2.

Step 7: Use the copy and paste functions (as in Step 2) to place another radio button to the right of the one created in Step 6. Change the button's text to read *#2* and change the object's name to RADIO2.

Step 8: Using the method in Step 7, create four buttons labeled *#3*, *#4*, *#5* and *#6*, and name them RADIO3, RADIO4, RADIO5 and RADIO6, respectively. See Figure 2 for placement.

Step 9: Drag the EDIT:_ _ _ _ _ _ (not the one surrounded by a box) object into your dialog box, and double-click it. If it isn't already selected, turn on the EDITABLE option. Clear the PTMPLT field with the ESCAPE key, then type *NAME:* followed by one space and ten underline characters.

Use the down arrow on your keyboard to move the text cursor to the PVALID field, then press ESCAPE to clear the field. Type *aaaaaaaaaa*.

Use the down arrow key to move the text cursor to the PTEXT field, then backspace till you reach a tilde (~ character. Now type @ followed by nine spaces.

Click the OK button, then name the object NAME. Position the object as shown in Figure 2.

Step 10: Drag a second EDIT:_ _ _ _ _ _ object into your dialog box, and double-click it. Make sure the EDITABLE option is set. Change the PTMPLT field to *AGE:* followed by one space and two underlines. Change the PVALID field to *99*. Move to the PTEXT field and backspace until you reach a tilde character, then type @ followed by one space.

Click the OK button, name the object *AGE*, then position it as shown in Figure 2.

Step 11: Drag another BUTTON object into your dialog box, and double-click it. Select the attributes SELECTABLE, SHADOWED and TOUCHEXIT. Change the button's text to *OPTION 1*. Click the OK button, name the object OPTION1, and position it as shown in Figure 2.

Step 12: Use the copy and paste functions to create a duplicate of the button created in Step 11. Change the button's text to *OPTION 2*, name the object OPTION2, and position it as shown in Figure 2.

Step 13: Drag the BOXTEXT object into your dialog box, and double-click it. Select the SHADOWED attribute. Clear the PTMPLT and PVALID fields (if necessary), then change the PTEXT field to four SPACES followed by four *0*s and four more SPACES. Using the method shown in Step 4, stretch the box one segment higher (as you pull down on the mouse, the box will automatically "snap" to the next size). Name the object NUMBERS, and position it as shown in Figure 2.

Step 14: Drag another BOXTEXT icon onto your dialog box, and double-click it. Set the TOUCHEXIT option. Make sure the PTMPLT, PVALID and PTEXT fields are clear, then, when positioned on the PTEXT field, hit SPACE, CTRL-A, SPACE (the keys, not the words). Resize the object as in Step 13, and name it UPARROW. Position it on top of the box created in Step 13 as shown in Figure 2.

Step 15: Use the copy and paste functions to create a duplicate of the UPARROW object, then clear the PTEXT field and press SPACE, CTRL-B, SPACE. Name the object DWNARROW, then position it on top of the NUMBERS object as shown in Figure 2.

Step 16: Drag another BUTTON object into your dialog box, and double-click it. Set the SELECTABLE, DEFAULT and TOUCHEXIT options. Change the text field to *OK*. Resize and position the object as shown in Figure 2, then name it OK.

Step 17: Drag yet another button into your dialog box, and double-click it. Set the SELECTABLE and TOUCHEXIT options, then change the TEXT field to *CANCEL*. Resize and position the object as shown in Figure 2, then name it CANCEL.

And that's it. You've just created your first dialog box. Now, to save all your hard work, close the dialog box by clicking on the upper left corner of the window, then select the SAVE AS option from the FILE menu. Name the file SAMPLE, and you're on your way. To leave the RCP, select the QUIT option from the FILE menu.

You should now have three files on your disk: SAMPLE.H, SAMPLE.DEF and SAMPLE.RSC. These are the files that the RCP created. SAMPLE.H contains all your object and tree names as a series of #defines. If you want to refer to the objects by name in your program, you must #include this file in your source code.

The SAMPLE.DEF file contains information the RCP uses for its own purposes, and the SAMPLE.RSC file is the tree data for our dialog box. We'll load this data into memory when we run our program.

So how about some details?

That was a pretty fast course in the use of a resource construction program. You've probably got a lot of unanswered questions. For example, what do all those attributes you set do for you?

SELECTABLE simply means that the user can select the object. When the object is selected, it will be displayed in inverse video. If you set the DEFAULT option when editing an object, the object will be selectable with the RETURN key, as well as with a mouse click. Obviously, only one object at a time can be set as a default.

The EXIT and TOUCHEXIT attributes are similar: they both cause the dialog box to be exited when selected. The difference is that, with TOUCHEXIT, the mouse button need not be released to exit the dialog box.

What did you think about the RADIO BUTN option? Radio buttons are handy devices, allowing the programmer to set up a series of related buttons, only one of which may be selected at a time. As soon as a button is selected, the previously selected button is turned off. They get their name from those old car radio tuners with the push buttons to select the channel. An important note: in order for radio buttons to operate properly, they must have the same parent object.

The CHECKED, SHADOWED, OUTLINED, CROSSED and DISABLED options affect the way the objects will be graphically represented on the screen. You can easily see their effect by using your RCP to set them for various objects. The options' names describe their effect fairly accurately.

An EDITABLE object may be modified in some manner by the user.

Editable text.

Now, what's the story behind those strange text fields PTMPLT, PVALID and PTEXT? These three strings combine in such a way as to tell GEM which part of the text is editable and what characters the user is allowed to input.

PTMPLT is used as an input mask. Any text entered here will be displayed on the screen and will be unchangeable (except underline characters) by the user. PTMPLT also tells GEM where the user *can* edit the text. We indicate this with underline characters. In Step 9 above, the unalterable text is *NAME:* and the editable area, where the user will enter his or her name, is represented by the ten underlines.

The PVALID field tells GEM what type of characters we want the input restricted to. Each underline character in the PTMPLT field must have an entry in the PVALID field as follows:

```
Code  Characters allowed
----------------------
 9     0 to 9
 A     A to Z, space
 a     A to Z, a to z, space
 N     0 to 9, A to Z, space
 n     0 to 9, A to Z, a to z, space
 F     DOS filename characters,
       plus ? * :
 P     DOS filename characters,
       plus \ : ? *
 p     DOS filename characters,
       plus \ :
 X     Any character
```

In Step 9, we entered ten lowercase *A*s in the PVALID field, limiting the user's input to upper- and lowercase letters. A logical choice for a person's name.

Finally, the PTEXT string will be combined with PTMPLT when the latter is printed. Unlike the text in PTMPLT, the string stored in PTEXT *is* editable. This is handy when you want an editable text field displayed with a default setting. For example, in Step 9, if we had made the PTEXT string *FRED*, when the dialog box appeared on the screen, the text cursor would appear to the right of the string FRED. We could then just leave the string as it is, and thus select FRED as our name, or we could BACKSPACE over it (or use the ESCAPE key to clear it) and type in something new. When the user exits the dialog box, the new information will be found in PTEXT, replacing what we had stored there previously.

When we set up our editable text objects in Steps 9 and 10, however, we wanted to end up with the text cursor to the left of a blank field, ready for the user's input. To do this, you must either enter an @ or a null as the first character of the PTEXT string. To reserve space for any text the user may enter, we must fill the rest of the PTEXT string with blanks (actually, any character will work; once GEM sees the @ or null, it'll ignore the rest of the string and go on its merry way).

Your first dialog box.

Listing 1 is this month's sample listing. Type it in (you can skip the comments if you wish) and compile it. If you're using a compiler other than Megamax C, you may need to make some changes.

When you run the program (make sure the SAMPLE.RSC file is on the disk!), you'll be presented with the dialog box you created with the RCP. Clicking on the OK or CANCEL buttons will exit you from the dialog. Clicking on the up or down arrows will cause the value displayed in the NUMBERS object to change. Clicking any of the other buttons will cause the name of the object selected to be printed at the top of the screen. Notice that, with the radio buttons, only one may be selected at a time, while the OPTION 1 and OPTION 2 buttons can be on or off in any combination.

You may enter your name and age (lie if you want to)

in the text fields. Use the arrow keys on your keyboard to move between the two fields (or click on them with the mouse), since, due to the OK button being set up as a default, pressing RETURN will exit the dialog box. Try to enter something other than upper- or lowercase letters in the name field, or something other than a number in the age field. No dice, right?

When you exit the dialog box, the name and age fields —as well as the final value of the NUMBERS object— will be printed to the screen. Notice that whatever is in the PTEXT field is what gets printed. If you left the name and age fields blank, you'll see exactly what we put there to start off with, a line of spaces preceded by the @ character.

After exiting the dialog box, click the left mouse button to return to the desktop.

Taking it apart.

Now that we've created our dialog box and played with it a little, it's time to dig into the program a bit. Although we're not going to have room this issue to finish our discussion of the program, we can at least make a start.

The first things we should look at are the two structures, object and text_edinfo found near the top of the listing. I said earlier that an object, from the program's point of view, was a data structure containing the object's description. The data is organized within a C structure as follows:

```
typedef struct object
{
    int             ob_next;
    int             ob_head;
    int             ob_tail;
    unsigned int    ob_type;
    unsigned int    ob_flags;
    unsigned int    ob_state;
    char            *ob_spec;
    int             ob_x;
    int             ob_y;
    int             ob_w;
    int             ob_h;
} OBJECT;
```

Here, ob_next is the index of the object's next sibling; ob_head is the index of the object's first child; and ob_tail is the index of the object's last child. (Remember that the objects are stored in an array of structures. The indices mentioned above are the location of the object within the array.)

The member ob_type is the object type and will contain one of the following values:

Object Type	Value
Box	20
Text	21
BoxText	22
Image	23
ProgDef	24
IBox	25
Button	26

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BoxChar	27
String	28
FText	29
FBoxText	30
Icon	31
Title	32

The member ob_flags contains the object flags and will be one of the values shown below:

NONE	0x0000
SELECTABLE	0x0001
DEFAULT	0x0002
EXIT	0x0004
EDITABLE	0x0008
RBUTTON	0x0010
LASTOB	0x0020
TOUCHEXIT	0x0040
HIDETREE	0x0080
INDIRECT	0x0100

You should recognize most of these from your work with the RCP.

The member ob_state holds the current state of the object as follows:

NORMAL	0x0000
SELECTED	0x0001
CROSSED	0x0002
CHECKED	0x0004
DISABLED	0x0008
OUTLINED	0x0010
SHADOWED	0x0020

You've seen most of these before, right?

The member ob_spec contains object specific information and changes depending on the type of object that's being described. The possible values of this field are as below:

Object Type	Contents of ob_spec
Box	Object's color and thickness
Text	Pointer to TEDINFO structure
BoxText	Pointer to TEDINFO structure
Image	Pointer to BITBLK structure
ProgDef	Pointer to APPLBLK structure
IBox	Border's color and thickness
Button	Pointer to text string
BoxChar	Object's color and thickness, and the character to display
String	Pointer to text string
FText	Pointer to TEDINFO structure
FBoxText	Pointer to TEDINFO structure
Icon	Pointer to ICONBLK structure
Title	Pointer to text string

Notice that the value stored in ob_spec can be a pointer to another structure containing additional information on the object. We'll take a look at one of the structures, TEDINFO, this month.

Finally, ob_x, ob_y, ob_w and ob_h contain the object's coordinates, width and height.

The mysterious TEDINFO.

The second structure type in the sample program, text_edinfo, is the declaration for the previously mentioned TEDINFO. Whenever our object has an editable text field, we need to store information about it in a TEDINFO structure (actually, when using an RCP, we don't have to worry about storing information in the structure; it's done for us) as follows:

```
typedef struct text_edinfo
{
   char *te_ptext;
   char *te_ptmplt;
   char *te_pvalid;
   int  te_font;
   int  te_junk1;
   int  te_just;
   int  te_color;
   int  te_junk2;
   int  te_thickness;
   int  te_txtlen;
   int  te_tmplen;
} TEDINFO;
```

Here, te_ptext is a pointer to the PTEXT string; te_ptmplt is a pointer to the PTMPLT string; te_pvalid is a pointer to the PVALID string; te_font is the text font (*3*=system font; *5*=small font); te_just is the justification (*0*=left; *1*=right; *2*=centered); te_color is the color and pattern type; te_thickness is the thickness in pixels of the border (*0*=no border; *1* to *128*=thickness inward from the edge; *-1* to *-127*=thickness outward from the edge); te_txtlen contains the length of the string pointed to by te_ptext; and te_tmplen contains the length of the string pointed to by te_ptmplt.

As the fear sets in.

Relax. In most cases, when using the RCP to put together your dialog box, you won't have to worry about the contents of the above structures. But, in case you want to do something more sophisticated, you *do* need to understand where to find information about your dialog box. An example of this is the NUMBERS object in the sample dialog. In order to get the up and down arrows to change the value shown, we have to be able to get at the displayed strings. This is just one example of the creative ways you can use a dialog box.

Out of space.

I guess we're going to have to leave the explanation of the sample program's inner workings until next month, and save some room in this issue for somebody else. Until then, spend some time with your resource construction program, experimenting with different attribute settings on different objects. As you continue with your career as a GEM programmer, the RCP is going to become one of your most valued tools. ///

Listing 1.
C listing.

```
/*************************************************/
/*            C-manship, Listing 1               */
/*                 ST-Log #13                    */
/*          Developed with Megamax C             */
/*************************************************/

#include "SAMPLE.H"
```

```
#include <OSBIND.H>

#define FMD_START  0
#define FMD_GROW   1
#define FMD_SHRINK 2
#define FMD_FINISH 3
#define R_TREE     0
#define FINGER     3

/* The usual required GEM global arrays */
int work_in[11],
    work_out[57],
    pxyarray[10],
    contrl[12],
    intin[128],
    ptsin[128],
    intout[128],
    ptsout[128];

/* Global variables */
int handle, dum;

int dial_x,  /* Dialog x coordinate.    */
    dial_y,  /* Dialog y coordinate.    */
    dial_w,  /* Dilaog width.           */
    dial_h,  /* Dialog height.          */
    num,     /* Value of number option. */
    n_x,     /* NUMBERS object x coord. */
    n_y;     /* NUMBERS object y coord. */

char number_str[13] = "    0000    ";  /* NUMBERS string. */

char *find_str();  /* Function declaration. */

   /* Structure to hold an object's description. */
typedef struct object
{
   int           ob_next;  /* Next sibling of object.                */
   int           ob_head;  /* Head of object's children.             */
   int           ob_tail;  /* Tail of object's children.             */
   unsigned int  ob_type;  /* Type of object.                        */
   unsigned int  ob_flags; /* Flags.                                 */
   unsigned int  ob_state; /* State of object.                       */
   char          *ob_spec; /* Miscellaneous information.             */
   int           ob_x;     /* x coord of object upper left corner.   */
   int           ob_y;     /* y coord of object upper left corner.   */
   int           ob_w;     /* Width of object.                       */
   int           ob_h;     /* Height of object.                      */
} OBJECT;

OBJECT *tree_addr;  /* Pointer to our object structure. */

   /* Structure to hold object text information. */
typedef struct text_edinfo
{
   char *te_ptext;    /* Pointer to text.              */
   char *te_ptmplt;   /* Pointer to template.          */
   char *te_pvalid;   /* Pointer to validation chars.  */
   int  te_font;      /* Font.                         */
   int  te_junk1;     /* Unused.                       */
   int  te_just;      /* Justification.                */
   int  te_color;     /* Color information.            */
   int  te_junk2;     /* Unused.                       */
   int  te_thickness; /* Border thickness.             */
   int  te_txtlen;    /* length of text string.        */
   int  te_tmplen;    /* length of template string.    */
} TEDINFO;

main ()
{
   appl_init ();              /* Initialize application.        */
   open_vwork ();             /* Set up workstation.            */
   do_dialog();               /* Go do the dialog box.          */
   print_results(tree_addr);  /* Print user's choices.          */
   button_wait();             /* Wait for mouse button.         */
   v_clsvwk (handle);         /* Close virtual workstation.     */
   appl_exit ();              /* Back to the desktop.           */
}
```

```
open_vwork ()
{
   int i;

   /* Get graphics handle, initialize the GEM arrays and open  */
   /* a virtual workstation.                                   */

   handle = graf_handle (&dum,&dum,&dum,&dum);
   for (i=0; i<10; work_in[i++] = 1);
   work_in[10] = 2;
   v_opnvwk (work_in, &handle, work_out);
}

do_dialog ()
{
   int choice; /* Button choice from dialog. */

   /* Here we load the resource file.  If the file is missing,  */
   /* we warn the user with an alert box then terminate the     */
   /* program by skipping the code following the else.          */

   if (! rsrc_load ("\SAMPLE.RSC"))
      form_alert (1, "[1][SAMPLE.RSC missing!][I'll do better!]");

   /* If the resource file loads OK, we get the address of the  */
   /* tree, get the coords for centering the dialog, save the   */
   /* portion of the screen that'll be covered by the dialog,   */
   /* and draw the dialog.  The mouse pointer is changed to     */
   /* pointing finger.                                          */

   else {
      rsrc_gaddr (R_TREE, SAMPLE, &tree_addr);
      form_center (tree_addr, &dial_x, &dial_y, &dial_w, &dial_h);
      objc_offset (tree_addr, NUMBERS, &n_x, &n_y);
      form_dial (FMD_START, 0, 0, 10, 10, dial_x, dial_y, dial_w, dial_h);
      form_dial (FMD_GROW, 0, 0, 10, 10, dial_x, dial_y, dial_w, dial_h);
      objc_draw (tree_addr, 0, 2, dial_x, dial_y, dial_w, dial_h);
      graf_mouse (FINGER,&dum);

   /* Here we allow the user to interact with the dialog then,  */
   /* based on the chosen button, perform the necessary action. */
   /* The form_do function is repeated until the user chooses   */
   /* either the OK button or the CANCEL button.                */

      num = 0;
      do {
         choice = form_do (tree_addr, NAME);
         if (choice == RADIO1) v_gtext (handle,160,20,"Radio 1   ");
         if (choice == RADIO2) v_gtext (handle,160,20,"Radio 2   ");
         if (choice == RADIO3) v_gtext (handle,160,20,"Radio 3   ");
         if (choice == RADIO4) v_gtext (handle,160,20,"Radio 4   ");
         if (choice == RADIO5) v_gtext (handle,160,20,"Radio 5   ");
         if (choice == RADIO6) v_gtext (handle,160,20,"Radio 6   ");
         if (choice == OPTION1) v_gtext (handle,160,20,"Option 1  ");
         if (choice == OPTION2) v_gtext (handle,160,20,"Option 2  ");
         if (choice == UPARROW) do_up();
         if (choice == DWNARROW) do_down();
      }
      while (choice != CANCEL && choice != OK);

   /* Once the CANCEL or OK buttons have been pressed, we clean  */
   /* up after ourselves by performing the "shrinking box" and   */
   /* then redrawing the screen.                                 */

      form_dial (FMD_SHRINK, 0, 0, 10, 10, dial_x, dial_y, dial_w, dial_h);
      form_dial (FMD_FINISH, 0, 0, 10, 10, dial_x, dial_y, dial_w, dial_h);
   }
}

do_up ()
{

   /* First we increment our value and make sure it stays in    */
   /* range.  If the value has become larger than 9999, we must */
   /* also reinitialize display string for the object NUMBERS.  */
   /* We then call our function to update the NUMBERS object.   */

   num += 1;
   if (num > 9999) {
```

```
      num = 0;
      strcpy (number_str,"    0000    ");
   }
   edit_object ();
}

do_down ()
{

   /* Here we decrement the value and check for its range, after */
   /* which we update the NUMBER5 object.                        */

   num -= 1;
   if (num < 0) num = 9999;
   edit_object ();
}

edit_object ()
{
   TEDINFO *ob_tedinfo;
   char temp_str[10];

   /* Here we edit the string we're using for the text display  */
   /* in the object NUMBER5 so that it reflects the new value.  */

   sprintf (temp_str,"%d",num);
   strcpy (&number_str[8 - strlen (temp_str)],temp_str);
   strcpy (&number_str[8],"    ");

   /* Then we find the object NUMBER5' TEDINFO and point the    */
   /* te_ptext member to our updated string, after which we     */
   /* redraw the object NUMBER5.                                */

   ob_tedinfo = (TEDINFO *) tree_addr[NUMBER5].ob_spec;
   ob_tedinfo -> te_ptext = number_str;
   objc_draw (tree_addr, NUMBER5, 1, n_x, n_y, 96, 16);
}

print_results (tree_addr)
OBJECT tree_addr[];
{
   char *string;

   /* Here we call the function that locates the string, then  */
   /* print the user's input to the screen.                    */

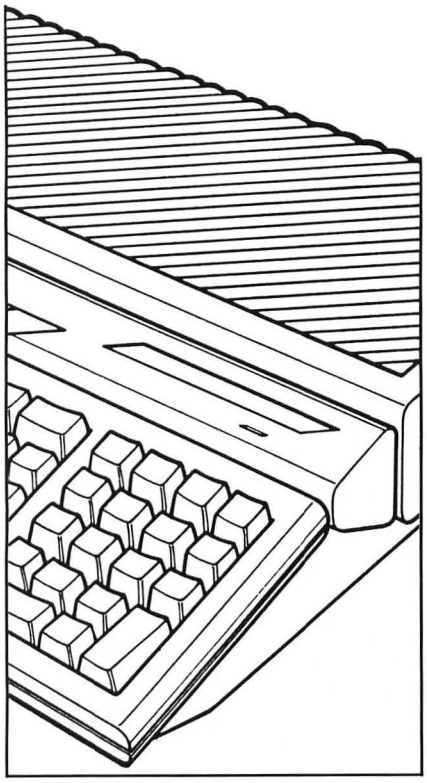
   string = find_str (NAME, string);
   v_gtext (handle, 160, 20, "Your name is ");
   v_gtext (handle,264,20,string);
   string = find_str (AGE, string);
   v_gtext (handle, 160, 28, "Your age is ");
   v_gtext (handle, 264, 28, string);
   string = find_str (NUMBER5, string);
   v_gtext (handle, 160, 36, "Final number value: ");
   v_gtext (handle,320,36,&string[4]);
}

char *find_str (object, string)
int object;
char *string;
{
   TEDINFO *ob_tedinfo;

   /* In this function, we locate the object's TEDINFO structure */
   /* then set our string pointer to the pointer found in the    */
   /* te_ptext member.                                           */

   ob_tedinfo = (TEDINFO *) tree_addr[object].ob_spec;
   string = ob_tedinfo -> te_ptext;
   return (string);
}

/* Waits for left button to be pressed and released. */
button_wait()
{
    evnt_button (1,1,1,&dum,&dum,&dum,&dum);
    evnt_button (1,1,0,&dum,&dum,&dum,&dum);
}
```



ST user

THIS MONTH:
April flights of fancy.

Arthur Leyenberger is a human factors psychologist and free-lance writer living in New Jersey. He's been writing about computers for four years and continues to be an Atari enthusiast. When not computing, he enjoys playing with robotic toys.

CompuServe — 71266,46
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by Arthur Leyenberger

Once upon a time, before computers (B.C.), dot-matrix printers were not the commonplace, noisy and ubiquitous devices they are today. During that time, when junk mail arrived at our home, there was a certain magic associated with a "computerized" letter. You remember the type, the sweepstake offer that went something like: "The LEYENBERGER family, of FLANDERS, NEW JERSEY could win 1 Million Dollars. Just think what the neighbors would say if you, MR. LEYENBERGER, drove home in a new car, every year. . ."

Of course, your name and home town would stand out like a fox in a chicken coop, because of the large, poorly formed dot-matrix letters. But those letters did have a dash of personalization.

That was a long time ago. Dot-matrix printers, of the unaffordable-to-the-the-average-guy type, made letters like this possible (read: cost effective). Of course, we always entered the sweepstakes and bought at least one subscription to *Elevator Maintenance Monthly* or *Popular Rowboating*.

During this pre-personal-computer era, before the dawn of word processors and spelling checkers, a letter from a friend was handwritten, personal and much appreciated. Sure, it might contain an occasional spelling error, smudged letter or other imperfection, but that wasn't looked down upon. Even if you received a typewritten letter, it was still personal.

Fast Forward twenty years—1987, yuppies and dot-matrix printers for the masses. We still get junk mail offering fantastic prizes to the Leyenbergers, printed on dot matrix printers that no longer seem special. We still order a subscription or two: some things never change. But now, more often than not, letters from friends seem neither as personal nor as special as they used to.

Letters used to be handwritten, personal communications between people. Over the years, though, people did become accustomed to writing and receiving typewritten letters. These were still personal messages between people. In some cases, the extra time taken on a neat typewritten letter showed that you cared.

Unfortunately, in the last several years, people have been using computers and word processors to write letters. When you get a "computerized" letter, even if output to a letter-quality printer, you never know how many others have received the same letter. For example, I have a relative who writes a "here's the latest news" kind of letter at the Christmas holidays, and then prints dozens of them on a letter-quality printer. She believes family recipients are fooled into thinking she has sent a personalized typed letter. Of course, the lack of spelling errors, typos, smudges, and so on reveal her method.

While attending the Consumer Electronics Show in Las Vegas I was lamenting this condition, when I happened on a product that seemed very appropriate. Called the **Personal Letter Writer** (**PLW**), this $29.95 item is the first in the Montyware software series from LeitchCO Enterprises. This program is ideal for creating personal letters with a computer, letters that will mean something special to the recipient.

One of the best things about the **PLW** is that it will work with any word processor on the ST. Once you've created your letter or document, you run **PLW** and answer

a series of questions. After that, the letter is printed on your letter-quality printer with a "personalized" look. Here are just a few of the things it can do.

So people won't suspect your letter was written on a computer, the **PLW** inserts random spelling mistakes. The program asks you to specify the number of mistakes to suit your own writing style. The levels given are: Occasional Misspeller, Frequent Misspeller, Perpetual Misspeller and Illiterate.

Another **PLW** feature is the ability to use some words inappropriately, such as *their* for *there*, or *two* instead of *too*. For a highly personalized look, the program will misuse *that* and *who*, *have* and *got*, and *at* and *by*. In addition to these word misuses, the **PLW** will often overtype a letter (with or without a smudge) as if a correction had been made.

There are some other features available to give you a hand-typewritten look, as well. Some letters will be filled to simulate a typewriter with a dirty letter key. The letter *o* can be typed extra hard in order to punch through the paper. A capital letter can be randomly inserted in the wrong place and the entire page can be printed a little crooked on the paper.

The Montyware **Personal Letter Writer** looks like a product that has a specific market. In this day of impersonal communication between people, any product that can add a personal touch is welcome. The **Personal Letter Writer** will probably not be available buy *(sic)* the time you read tHis *(sic)*.

Religious computer.

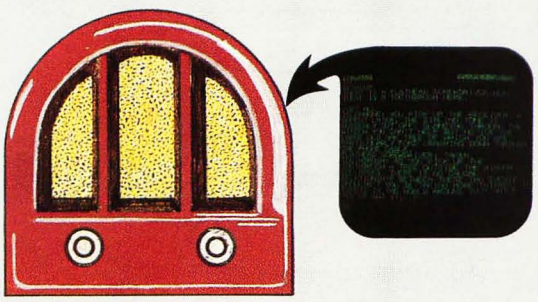
Another product I saw at the CES was an ST-compatible religious computer. Although all I saw was a prototype, the clean-cut young man standing next to it explained some of the features. In a somewhat evangelical way, this young man told me that the Word O' God is its operating system. Memory is broken into two parts, Old and New, but there is no upper limit on the size, since it has Infinite Memory.

The computer has a tablet-driven operating system that uses commandments instead of commands. When finished using the machine, you type *AMEN*. When I asked him how much the machine would cost, he told me the price would be reasonable, given the benefits of ownership. However, there was one problem that the gentleman said could affect productivity and therefore slow sales—the computer rests every seventh day.

Unfortunately, I didn't get the name of the computer or the young man. Oh, one more thing: that guy told me the computer had an unlimited warranty, in this life or the next. Sounds impressive to me.

Next month, we'll get back to more serious topics. See you then.

EVERYBODY LOVED RADIO UNTIL..



A scene from the popular "The Hitchhiker's Guide to the Galaxy."

A scene from the hilarious sci-fi parody "Space Quest."

...television came along!

It wasn't just a coincidence that "the Golden Age of Radio" ended just a few years after TV was introduced. It was *evolution* in progress.

Television's ability to deliver visual action, rather than descriptive prose, created a more entertaining, more educational and a much more fun and compelling format.

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Introducing 3-D Animated Adventure Games from Sierra. Software that adds outstanding graphics and amazing animation to text adventures. In fact, it's more like being part of a movie than a computer game. Each adventure comes complete with a roving cast of talented characters, a great plot, dazzling special effects--even elaborate soundtracks!

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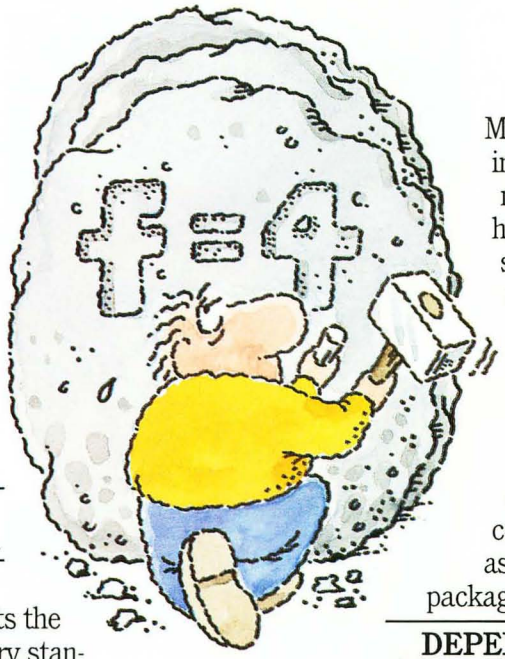

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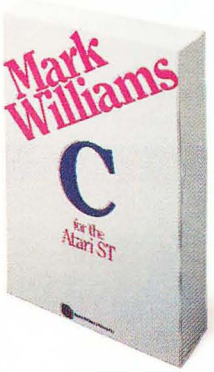

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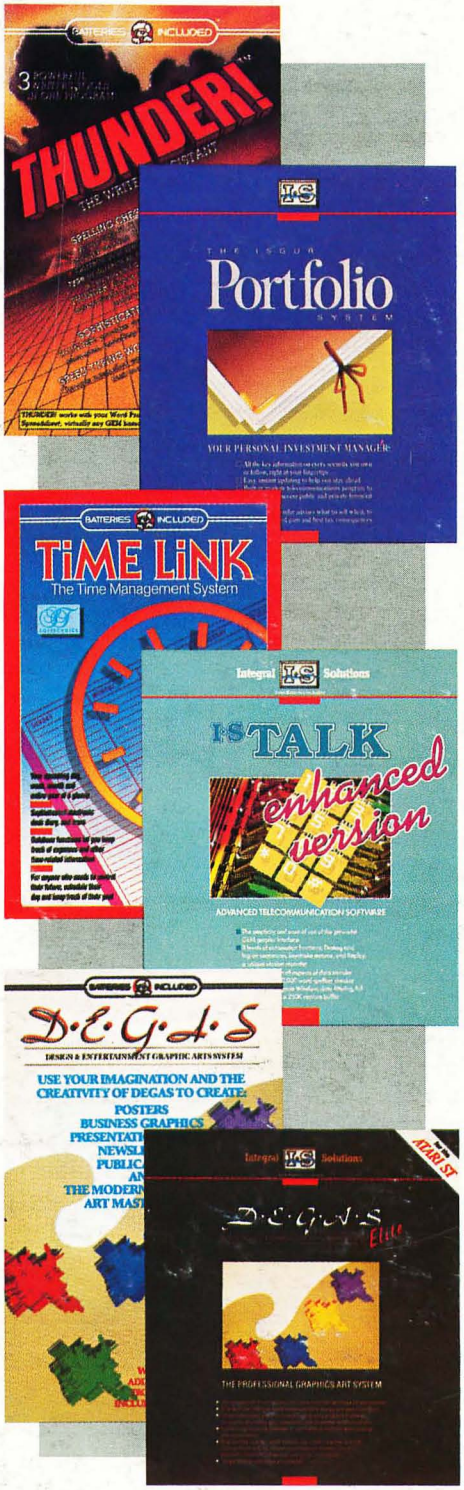

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