

START ^{#1 Guide To Atari ST}

Double
START Disk
Inside

Volume 4, Number 8

March 1990

USA \$14.95 • Canada \$19.95

SIERRA ON-LINE'S ROBERTA WILLIAMS

Dave Small's
Unix Tour, Part IV

ON DISK:

Tom Hudson's CAD-3D v. 1.0

GFA Wipes & Dissolves

Mountain Solitaire

Spinwheel

REVIEWED:

BeckerCAD

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Can your word processor do all this?

Dear Atari Owner,

This page was printed using a 24-pin printer and WordUp 3.0; 9-pin output is almost as good. Use the reader service card to request sample output.

This page was printed using WordUp's multi-font capabilities which have been completely revamped with better printer drivers and the new fonts: Corporate, *Dialtone*, Serif, Book Serif, Sans, Book Sans, and the math fonts (which were used with Easy-Draw to create the expressions to the left).

$$\left(\int_0^{\infty} \frac{\beta x dx}{\alpha \sqrt{0 + \pi x^2}} \sum_{i=1}^k f_i x_i' \right)$$

⌘ √ ∫ ∑ ∞ ∩ ± Δ

For much faster printing, we have added a character based mode which uses your printer's built in 10, 12, or 17 cpi font. Unlike competing products, all of WordUp's unique capabilities¹ are still active in this mode, including pictures, auto-reformatting, microspace justification & tabbing, variable line spacing in 1/72", lengthy headers/footers, and variable page size.

We included the Spell Checker, Thesaurus, and Auto-Hyphenation from Proximity®/Merriam-Webster®, the masters of the linguistics field. The Spell Checker includes a unique technology called Correlex™ which intelligently suggests correct spellings by considering phonetics as well as possible typos. The Thesaurus helps you narrow down your search by allowing you to chose a sub-heading which implies the meaning of the word you're after.

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We added 1st Word Plus and Word Writer compatibility not only to share documents between these word

processors, but also so that WordUp files can be imported into DTPs. We added Word Count, Delete Word, Free memory indicator, and more speed.

This is a screenshot of Page Preview. ->

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WordUp 3.0 will be available in February. Buy WordUp 2.0 after 12/31/89 and get WordUp 3.0 for free! WordUp 3.0 has a MSRP of \$99.95, which is \$20.00 more than WordUp 2.0, so act quickly before WordUp 2.0 is sold out. Registered users of WordUp will receive an upgrade notice.

¹ Multiple columns & boxes/rules only in multi-font mode.

² Words are checked against the 140,713 word Proximity/Merriam-Webster Linguibase. American English Thesaurus is provided by Proximity/Merriam-Webster.

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PUBLISHER
James Copparril

ASSOCIATE PUBLISHER
John Toppert

EDITORIAL
Tom Byron, Editor

Amy H. Johnson, Programs Editor

Marta DeBo, Junior Editor

Andrew Reese, Graphics Editor

Jim Pierson-Perry, Music/VIDEO Editor

Contributing Editors: Tom Hudson, Jim Kasst, Alex
Lecaros, Stephen MacIntyre, Maril Nenas, David
Pfluhis, David Rosenfeld, David Small

Contributors: Dave Edwards, Pete Ewing, Daniel
Frasney, Michael G. Gilbert, Christoph Herd, Ian
Lepore, John S. Mamer, Fresh Win. Napp, Carlos
Tredo, Doug Wheeler

CREATIVE SERVICES

Julesanne Duesbe, Director of Creative Services
Jim Worsaw, Art Director
Daniel C. Goodwin, Associate Art Director
Wesley Johnson, Advertising Production Cost Director

ADVERTISING SALES

Denny Riley
Western Region, (415) 957-0886
Michael Evans
Eastern Region, (415) 957-0886

CIRCULATION

Ivo Epstein, Circulation Consultant
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Charlie Sullivan, Distribution Coordinator

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ADMINISTRATION

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CH-CH-CH-CHANGES

To the computer industry, change is endemic. New technology replaces old practically overnight, and it's hard to say if a product is ever truly finished. To some, this is a sign of unsettledness; to me it's a sign of the dynamic nature of the computer, one that constantly improves upon itself.

If you've been following START magazine for the past five years, you know of the tremendous changes it has gone through in that time. The most recent of those changes comes with the departure of Andrew Reese as editor. Throughout his two-year tenure, Andy maintained START's high standard of success. As the new editor, I plan to continue that standard.



Since joining START as assistant editor in 1988, I have had the opportunity to become more closely involved with the ST community. I hope to bring the knowledge I've gained to my new position.

What the future holds for the ST is up to Atari. As to what the future holds for START, that's up to me and you. Let me know what you like or don't like about START, it's *your* magazine, *you* make it happen. Of course, one thing definitely won't change: START is and will continue to be your number one guide to the Atari ST.

This Month

What a way to debut! This is START's annual graphics issue and we've cooked up a special treat for you: Tom Hudson's CAD 3-D v. 1.0. This powerful graphics program is probably one of the most popular software packages ever to appear on the ST and shows you what your computer can really do. I'm glad we could put it on the START disk, and I think you'll be glad we did, too.

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TOM BYRON,
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Dialog Box

If It Ain't Broke ...

After several years of successful operation, you come out with something called a Heidi disk. Is the START disk single-sided or double-sided? Where is side two and how do I access it? There has been such a high standard of quality emanating from your organization in the past, it is a surprise to have this difficulty. Why can we not continue to use Twister formatting and ARCX-TTP — I saw no problems. Why change something that is working? If it ain't broke, why fix it?

Hollis Hunt
Aurora, Colorado

We introduced the Heidi format because we felt our readers would appreciate the extra programs. The response to it has been mixed, with complaints stemming mostly from confusion about what, exactly, it is.

The new format is double-sided, however, Side 2 is transparent from the desktop. The only way to access it is by running the START.PRG program and following its backup instructions. The double-sided to double-sided backup routine is buggy, and so is greyed out. As soon as it is solid, we will publish it. Until then, double-sided drive owners must back up each side separately.

The Side 2 "invisibility" was deliberately built into the Heidi format to allow single-sided drive owners to access all of the major programs, which we will place on Side 1. We admit that this is a compromise, but one we felt necessary in order that none of our readers be left out. — START Editor.

Small-Business Accounting

First I'd like to say that I didn't truly realize the power and versatility of my 1040ST until I subscribed to START. Your articles, reviews and program disks have provided me with hours of great computing.

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Atari 1040ST

business expenses and dates. I won't have an inventory to keep track of or invoices to worry about. Do I need an accounting package, or will my database/spreadsheet be sufficient?

Robert Jamerson
San Diego, California

Any personal accounting program such as Amic Software's PHASAR v. 4.0 or ISD's STAccounts will sufficiently fill your needs. Each of these programs will track your income, costs and tax schedules — things a simple database or spreadsheet can't necessarily do. Both products were reviewed in the April 1989 issue of START (Note: we plan to run an early version of PHASAR in a future issue of START). — START Editor.

Composite Video for the ST

In order to get into video work, I need a device to convert an RGB computer signal into a composite video signal. Could you tell me where I could get a converter, as I have had no luck in Australia. If I get one, will I need a color monitor or will I be able to route the signal through a VCR and into a color television?

PW Bunn
Tumburumba, Australia

There are two products that you might want to check out. The first is VideoKey from Practical Solutions (\$119.95, 1930 East Grant Road, Tucson, AZ 85179, 602-884-9612). It's an external hardware unit that lets you have high-quality composite video output for recording animations — or just to play a computer game on your television. It works on all STs and Megs.

The second product sounds more like what you're looking for. The Genlock System from John Russell Innovations (\$650, P.O. Box 5277, Pittsburg, CA 94565, 415-458-9577) is designed specifically for the Mega, and combines any low or medium resolution drawing or animation program with an external video source, such as a VCR. It's great for combining computer graphics to any video production. — START Editor.

ReziRender Kudos

Richard Parker and Phillip Burgess (authors of ReziRender in the November 1988 issue of START) are to be commended for producing such a valuable program for ST graphic ▶

Dialog Box

artists or anybody who wants to explore the ST's graphic capabilities. I immediately produced a stunning animation with my own CAD-3D2 files. This program doesn't stand out just because of its graphic power, but because of the ease in which it takes to operate as well. Could somebody explain why this program was offered on the START disk instead of being sold commercially? I think it's that good.

I just found out this week that LFP has dropped Analog magazine due to low profits. Any chance that START could absorb some of these writers who will need another outlet for ST reporting?

Rick Keene
West Roxbury, MA

RezRender was very well received by our readers — its quality was obviously appreciated. We applaud the efforts of Richard Parker and Phillip Burgess for a job well done.

Believe it or not, we were also saddened by the passing of ST Log and Analog. Both publications have been respected institutions in the Atari community for many years.

SUBMISSION INFORMATION

START welcomes submissions. Please include both hard copy printouts of articles and program listings as well as disk files on ST compatible disks. Media will be returned if self-addressed, stamped mailer is supplied. START assumes no responsibility for unsolicited editorial materials.

And yes, we have been approached by some of those authors to do work for START, but as to exactly which ones, well, we'll leave that as a surprise — START Editor

Do you have questions about using your ST? Is there something you're not clear about? Every issue, START's editors listen to your comments and answer your questions in Dialog Box. Let us hear from you! Our address is:

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News, Notes & Quotes

BY STEPHEN MORTIMER, START CONTRIBUTING EDITOR

Atari Posts \$5 Million Loss

For the third quarter of 1989, Atari posted a loss of \$5.4 million on sales of \$81.4 million. This is in comparison the same quarter of a year earlier when Atari posted sales of \$98.8 million with a profit of \$.9 million. Through the first nine months of 1989, sales have totalled \$253 million with a net loss of \$1.8 million. Due to dramatically lower prices of semiconductors and disk-drive mechanisms, Atari took a special \$10 million charge with respect to inventory during the third quarter to reflect this drop.

Atari President and CEO Sam Tramiel, remains optimistic about the future and cites the healthy sales figures for the new products released during the third quarter. These included the Portfolio, Megaflo 44 and STE (the STE and Megaflo 44 in Europe only). These products have been selling in line with Atari's expectations. Over 150,000 Portfolios were reported to have been sold by the time of Fall COMDEX.

Tramiel also said that Atari has high hopes for its portable game system, Lynx, that was expected to go on sale in late November or early December. Lynx has been reviewed extremely favorably in comparison to Nintendo's GameBoy. Great interest has been generated as a result of selling Lynx through Sears and the BN Genius specialty catalog.

Super ST Color Video

Image Systems has designed a high-resolution color monitor board for the Mega. The ATR-4PC board connects to the Mega's internal bus and allows a 1024x768 resolution with 16 colors out of a palette of 4,096. According to Jay Craswell of Image Systems, this is the highest performance that could be obtained from the ST without seriously slowing down the system's screen display. A 68881 math coprocessor socket is available on the board. A black-and-white screen mode is available to speed up text display.

Many high-resolution color monitors are compatible with the board but Image Systems highly recommends the Nanao 970 because of its excellent price/performance ratio. At the Fall COMDEX, PageStream 1.8 was displayed on a system using the ATR-4PC board and comments on the display were extremely positive.

The ATR-4PC carries a retail price of \$800. For more information, contact Image Systems at 11543 K-Tel Drive, Hopkins, MN 55343, (612) 935-1171.



Atari President and CEO Sam Tramiel

Atari Plans for the 520ST

Despite to the contrary, the 520ST is far from dead. Considering the fact that 8-bit computers are still being sold and that the 16-bit 520ST is much more capable than those machines, it is unlikely that it will come to a sudden end. Sam Tramiel spoke at a recent software convention, reminiscing of the days when the Commodore 64 was selling like hotcakes. He said Atari will go back to what they know best: selling power

without the price. This translates to mass marketing the 520ST for under \$300.

Insiders at Atari indicate that an aggressive promotion will begin around April. The machine may be repackaged, possibly with a glitzy name and include a software bundle consisting of a word processor, database, spreadsheet and various games. The 520ST package will be aimed directly at the home market, competing with the Apple IIe, Commodore's low-end machines and the budget PC compatibles.

Fat Bits

- For those Atari enthusiasts who are patiently (or impatiently) waiting for the TT to be released, here are a few tidbits of information. PageStream, Calamus, DynaCADD, LDW Power, Cyber Studio, START's Rezrender, DeskSet II and Word Up have been verified to be TT compatible at COMDEX by vendors and attendees. Quick ST, a benchmarking program, has recorded some

continued on page 16

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Amo Systema XXXVII	12.95	Comical of Carat XXXVI	24.95	Fractal USA 36	24.95	Landscape USA 36	24.95	Rip Drogue 37	22.95	Temple of Doom XXXVI	24.95
Amo Systema XXXVIII	12.95	Comical of Carat XXXVII	24.95	Fractal USA 37	24.95	Landscape USA 37	24.95	Rip Drogue 38	22.95	Temple of Doom XXXVII	24.95
Amo Systema XXXIX	12.95	Comical of Carat XXXVIII	24.95	Fractal USA 38	24.95	Landscape USA 38	24.95	Rip Drogue 39	22.95	Temple of Doom XXXVIII	24.95
Amo Systema XL	12.95	Comical of Carat XXXIX	24.95	Fractal USA 39	24.95	Landscape USA 39	24.95	Rip Drogue 40	22.95	Temple of Doom XXXIX	24.95
Amo Systema XLI	12.95	Comical of Carat XL	24.95	Fractal USA 40	24.95	Landscape USA 40	24.95	Rip Drogue 41	22.95	Temple of Doom XL	24.95
Amo Systema XLII	12.95	Comical of Carat XLI	24.95	Fractal USA 41	24.95	Landscape USA 41	24.95	Rip Drogue 42	22.95	Temple of Doom XLI	24.95
Amo Systema XLIII	12.95	Comical of Carat XLII	24.95	Fractal USA 42	24.95	Landscape USA 42	24.95	Rip Drogue 43	22.95	Temple of Doom XLII	24.95
Amo Systema XLIV	12.95	Comical of Carat XLIII	24.95	Fractal USA 43	24.95	Landscape USA 43	24.95	Rip Drogue 44	22.95	Temple of Doom XLIII	24.95
Amo Systema XLV	12.95	Comical of Carat XLIV	24.95	Fractal USA 44	24.95	Landscape USA 44	24.95	Rip Drogue 45	22.95	Temple of Doom XLIV	24.95
Amo Systema XLVI	12.95	Comical of Carat XLV	24.95	Fractal USA 45	24.95	Landscape USA 45	24.95	Rip Drogue 46	22.95	Temple of Doom XLV	24.95
Amo Systema XLVII	12.95	Comical of Carat XLVI	24.95	Fractal USA 46	24.95	Landscape USA 46	24.95	Rip Drogue 47	22.95	Temple of Doom XLVI	24.95
Amo Systema XLVIII	12.95	Comical of Carat XLVII	24.95	Fractal USA 47	24.95	Landscape USA 47	24.95	Rip Drogue 48	22.95	Temple of Doom XLVII	24.95
Amo Systema XLIX	12.95	Comical of Carat XLVIII	24.95	Fractal USA 48	24.95	Landscape USA 48	24.95	Rip Drogue 49	22.95	Temple of Doom XLVIII	24.95
Amo Systema L	12.95	Comical of Carat XLIX	24.95	Fractal USA 49	24.95	Landscape USA 49	24.95	Rip Drogue 50	22.95	Temple of Doom XLIX	24.95
Amo Systema LI	12.95	Comical of Carat L	24.95	Fractal USA 50	24.95	Landscape USA 50	24.95	Rip Drogue 51	22.95	Temple of Doom L	24.95
Amo Systema LII	12.95	Comical of Carat LI	24.95	Fractal USA 51	24.95	Landscape USA 51	24.95	Rip Drogue 52	22.95	Temple of Doom LI	24.95
Amo Systema LIII	12.95	Comical of Carat LII	24.95	Fractal USA 52	24.95	Landscape USA 52	24.95	Rip Drogue 53	22.95	Temple of Doom LII	24.95
Amo Systema LIV	12.95	Comical of Carat LIII	24.95	Fractal USA 53	24.95	Landscape USA 53	24.95	Rip Drogue 54	22.95	Temple of Doom LIII	24.95
Amo Systema LV	12.95	Comical of Carat LIV	24.95	Fractal USA 54	24.95	Landscape USA 54	24.95	Rip Drogue 55	22.95	Temple of Doom LIV	24.95
Amo Systema LVI	12.95	Comical of Carat LV	24.95	Fractal USA 55	24.95	Landscape USA 55	24.95	Rip Drogue 56	22.95	Temple of Doom LV	24.95
Amo Systema LVII	12.95	Comical of Carat LVI	24.95	Fractal USA 56	24.95	Landscape USA 56	24.95	Rip Drogue 57	22.95	Temple of Doom LVI	24.95
Amo Systema LVIII	12.95	Comical of Carat LVII	24.95	Fractal USA 57	24.95	Landscape USA 57	24.95	Rip Drogue 58	22.95	Temple of Doom LVII	24.95
Amo Systema LVIX	12.95	Comical of Carat LVIII	24.95	Fractal USA 58	24.95	Landscape USA 58	24.95	Rip Drogue 59	22.95	Temple of Doom LVIII	24.95
Amo Systema LX	12.95	Comical of Carat LVIX	24.95	Fractal USA 59	24.95	Landscape USA 59	24.95	Rip Drogue 60	22.95	Temple of Doom LVIX	24.95
Amo Systema LXI	12.95	Comical of Carat LX	24.95	Fractal USA 60	24.95	Landscape USA 60	24.95	Rip Drogue 61	22.95	Temple of Doom LX	24.95
Amo Systema LXII	12.95	Comical of Carat LXI	24.95	Fractal USA 61	24.95	Landscape USA 61	24.95	Rip Drogue 62	22.95	Temple of Doom LXI	24.95
Amo Systema LXIII	12.95	Comical of Carat LXII	24.95	Fractal USA 62	24.95	Landscape USA 62	24.95	Rip Drogue 63	22.95	Temple of Doom LXII	24.95
Amo Systema LXIV	12.95	Comical of Carat LXIII	24.95	Fractal USA 63	24.95	Landscape USA 63	24.95	Rip Drogue 64	22.95	Temple of Doom LXIII	24.95
Amo Systema LXV	12.95	Comical of Carat LXIV	24.95	Fractal USA 64	24.95	Landscape USA 64	24.95	Rip Drogue 65	22.95	Temple of Doom LXIV	24.95
Amo Systema LXVI	12.95	Comical of Carat LXV	24.95	Fractal USA 65	24.95	Landscape USA 65	24.95	Rip Drogue 66	22.95	Temple of Doom LXV	24.95
Amo Systema LXVII	12.95	Comical of Carat LXVI	24.95	Fractal USA 66	24.95	Landscape USA 66	24.95	Rip Drogue 67	22.95	Temple of Doom LXVI	24.95
Amo Systema LXVIII	12.95	Comical of Carat LXVII	24.95	Fractal USA 67	24.95	Landscape USA 67	24.95	Rip Drogue 68	22.95	Temple of Doom LXVII	24.95
Amo Systema LXIX	12.95	Comical of Carat LXVIII	24.95	Fractal USA 68	24.95	Landscape USA 68	24.95	Rip Drogue 69	22.95	Temple of Doom LXVIII	24.95
Amo Systema LXX	12.95	Comical of Carat LXIX	24.95	Fractal USA 69	24.95	Landscape USA 69	24.95	Rip			

continued from page 13

amazing results on the TT. Most screen functions are about twice as fast as a normal ST, excluding scrolling that is three times the speed. CPU benchmarks range from 3.6 times for memory operations to the astronomical 17 times for a CPU shift operation. DMA operations are about twice as fast according to the benchmark. Of course, this benchmark may not accurately reflect the true speed of the TT because it was written for ST computers.

- Creative Microsystems, makers of the ST-PA accelerator board have been hard to reach lately. Their last known phone number has been disconnected. If you are considering the purchase of their product, please be aware that they may be out of business.

- Guess who called Practical Solutions about their cordless mouse? Give up? How about Steve Jobs at NeXT. That's right, Jobs is interested in having a version of The Cordless Mouse developed for his NeXT workstation. Congratulations, Practical Solutions!

- The 68030-upgrade project that Jim Allen at Fast Technology has been working on is now a joint effort between his company and Gadgets by Small. Look for a 68030 upgrade board in the future with a price tag of under \$1,000.

- Atari has developed a system called the "Cookie Jar" for managing terminate-and-stay-resident (TSR) programs in TOS. With the Cookie Jar, programs know what TSRs are installed and can react accordingly. This system should make applications and TSR programs more compatible with each other, and help the problem of conflicting programs that cause crashes. Also, with the advent of high-resolution boards and other accessories, programs will need to know what is installed in the system in order to configure themselves properly ■

Fall 1990 COMDEX

Atari Shows the TT, STE, Stacy and Portfolio and Unveils a New Developers Program

BY TOM BYRON, START EDITOR



The Atari booth at Fall 1990 COMDEX; cramped but well traveled.



The new 68030-based TT was on hand at some of the Atari stations, impressing everyone with its incredible speed and enhanced graphics. Here it is shown running ISO's DynaCAD 1.7.

Over 100,000 computer dealers and developers descended upon the Las Vegas Convention Center from November 11-17 for the semi-annual Computer Dealer's Exposition (COMDEX). Atari rallied around its battle cry of "A Computer for Everyone" in a booth that was impressive in its design, if a little cramped. It was also extremely well traveled due mainly to the presence of Atari's Portfolio hand-held PC, and some of the new machines they have scheduled for release.

Even Jerry Pournelle, author of *BYTE* magazine's "Computing in Chaos Manor" among other things, made an appearance.

Twenty-one third-party developers were on hand to show off the latest in ST software and hardware.

(Note: I should put Atari's presence at COMDEX in the proper perspective. First of all, COMDEX is huge — as big as the Convention Center is, there still wasn't enough room for every exhibitor, so the show

overflowed to hotels throughout Las Vegas. Secondly, COMDEX is a predominantly IBM show, which accounts for the keen interest in the Portfolio. Nonetheless, when compared to the non-PC computer companies in attendance, like Apple and Commodore, Atari looked pretty good.)

Developer's Party

At the Atari get-together on Wednesday night, developers were treated to some interesting news that only hints at some of the changes going on at Atari.

Antonio Salerno, Vice President of Applications, and Charles Cherry, the new TOS Development Manager, outlined a developers program that includes the following:

- A list of registered ST owners in the United States, said to include more than 60,000 names, will be made available to all developers.
- Atari will set up a database called Softsource on one of the online services which will include demos and disabled versions of a developer's software. Each developer will be responsible for maintaining their own information. Once Softsource is complete, the information will be downloaded to the CD-ROM and distributed to dealers.
- Each TOS (ST, STE, TT and Stacy) will be shipped with a coupon that entitles the purchaser to a free trial subscription to one of the magazines available to ST users.

On a side note: the mood of the crowd that attended the developers party was noticeably upbeat, due in part to the hiring of Charles Cherry. Cherry arrives at Atari from Antic Software, and has been active in the Atari market since 1980. As a former ST developer who's "been there," Cherry adds credibility to any plan Atari comes up with.

Atari Hardware and Software

For ST users, the big news at the Atari booth were the TTs and STes on display and in use. (I brought along the November 1989 START

disk to check its compatibility on the TT. Every program I tried ran fine but with one significant difference — they all ran much, much faster. The most impressive speed difference I noticed was in running RezRender. I took my chances and tried out a 14-frame tweening sequence. What took over an hour on my ST at home, took less than 10 minutes on the TT. That's fast, very fast.)

Atari also showed the Stacy ST laptop; the STE, their enhanced ST that includes a palette of 4,096 colors among other things. On hand were stacks of Portfolios, Atari's palm-top PC. Software offerings from Atari were slight, the standout being Deskset II, their professional desktop publishing package for the ST. It is now shipping at a suggested retail price of \$499. Atari Corp., 1196 Boregas Ave., Sunnyvale, CA 94088, (408) 745-2000.

Third-Party Hardware Highlights

One of the most popular stations in the Atari booth was the one commandeered by Gadgets by Small where they showed their Spectre GCR Macintosh Emulator. The GCR is hardware based and slips right into the cartridge port on your ST. It is 100 percent Mac compatible, though you must provide the Mac ROMs, which, Dave Small reports, you can find in any issue of *Computer Shopper*. Mac software reportedly runs 20 percent faster through the GCR than on the Mac. Note that you also get a 30 percent larger screen. (Compatibility is 68000-based.) The Spectre GCR does not support AppleTalk or Mac MIDI applications. \$299.95 without the ROMs and available now. Gadgets by Small, 40 W. Littleton Blvd., #210-211, Littleton, CO 80120, (303) 791-6098.

Many of the stations at the Atari booth — particularly the ones showing CAD and DTP applications — ran on Monterm's Viking 2, 19-inch monochrome monitor. Mike Evangelist, manager for Atari products, reported that the Viking 2 is selling extremely well (over 2,000 units have been sold). Monterm, 5740 Green Circle Drive, Minnetonka, MN 55343 (612) 935-4151.

MichTron showed off PC Speed, its new PC emulator for the ST. Watch for a review in the April issue of START. \$399.95. MichTron, 576 S. Telegraph, Pontiac, MI 48053, (313) 334-5700

John Russell Innovations demonstrated a new Genlock system for the STE. It's an external hardware that connects via the STE's monitor (RGB) port. It supports super VHS and no software is required (genlocking is done entirely through the hardware). Price will depend on release of the STE. JRI also showed the J.A.T.O. II accelerator board for the ST and Mega which includes expansion capability for a 16 MHz 68881 math coprocessor; and the STFM RAM Plus Series Boards featuring SIMM-type RAM modules for expanding your ST to up to 4MB. All prices to be announced. John Russell Innovations, P.O. Box 5277, Pittsburg, CA 94565, (415) 458-9577.

POS Computers was on hand to show their Viewtouch, a business product that requires a special monitor that senses touch. One of ViewTouch's main applications is as a cash register. To "ring up" a customer purchase, the user simply touches the desired item on the screen and the program automatically makes all the necessary calculations. POS Computers, 4001 Potter, Suite 66, Eugene OR 97405 (503) ▶

344-7334.

The Asia Commercial Company (not at the Atari booth) is releasing an external 3.5-inch floppy drive for the ST in January, called the FD-288. Price has not been set. (482 Sunrise Highway, Rockville Centre, NY 11570, (516) 763-0907.)

Gravis (not at the Atari booth) showed its MouseStick for the ST. The MouseStick is a programmable mouse/joystick combination. Watch for a review in a future issue of START. (Gravis Computer Technology, 1602 Carolina Street #D12, Bellingham, WA 98226, (604) 434-7274.)

Past Technology demonstrated its Turbo 16 accelerator board for the ST and Mega. See the review in the December 1989 issue of START. \$299.99. (Past Technology, P.O. Box 578, Andover MA 01810, (508) 475-3810.)

Third-Party Software Highlights

Version 1.8 of PageStream is available from Soft-Logik Publishing Corp. and is reported to be bug-free with some handy new features. Its color-separation ability has been perfected. \$199.95. Soft-Logik also announced release of new font disks (\$39.95 each). Soft-Logik, 11131 S. Towne Square, Suite F, St. Louis, MO 63123, (314) 894-8608.

MichTron showed Fleet Street Publisher 3.0 which is now completely Postscript compatible and includes UltraScript, the postscript emulator for the ST. MichTron also announced the release of Devpac Developer, an extension of Devpac for the ST. MichTron, 576 S. Telegraph, Pontiac, MI 48053, (313) 334-5700.

Blue Chip International has severed ties with Atari and is now marketing WordFlair on their own. WordFlair is a document processor for the ST that combines word processing, graphic, calculation, graphing, data management and page-layout tools—in the same integrated program. \$79.95. Blue Chip International, Inc., 501 Second Street, Suite 414, San Francisco, CA 94107, (415) 243-0188.

Soft-Aware showed Version 2.0 of Informer II, its powerful and versatile database for the ST and Mega. \$50. (Soft-Aware, 334 'B' North Euclid Ave., Upland, CA 91786, (714) 982-8409.)

Encouraged by a recent package deal with Atari Germany, WordPerfect said it would bring its popular word processor up to at least 4.2 standards, but a 5.0 version for the ST is not considered out of the question. WordPerfect Corp., 1555 N. Technology Way, Orem, UT 84057, (801) 225-5000.

ISD Marketing was on hand to show off Calamus Outline and DynaCADD 1.7. ISD Marketing, 2651 John Street, Unit 3, Markham, ON L3R 2W5, (416) 479-1882. ■

If you have a hot Atari news item, let us know at News, Notes & Quotes, START Magazine, 544 Second Street, San Francisco, CA 94107

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Back Trak allows access to backside of single-sided disks, doubling your storage capacity. Use newfound space for files, saved games, even boot (self-loading) programs. Back Trak lets you boot off front or backside of disk. And, allows booting from drive A or B (booting from drive B proves invaluable if your internal drive ever breaks down).

Fully compatible with copy protection programs like ST Copy, Copy II ST and Pro Copy. Back Trak even lets you get protected programs on the backside of your disk. For example, save games on backside of *DragonMaster* — then switch back and forth instantly without swapping disks. Or, save a two-disk set on a single disk.

Every time you use Back Trak, you save time and money. And, you'll see less wear and tear on drive heads as you utilize your double-sided drive's full potential.

With this pure software program, there are no special concerns to deal with. No cables to cut.

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You'll wonder how you ever got along without it!

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Getting leaves let you save almost any game, then continue playing. If you get into trouble, just switch back so where you were, as many times as you like! Instant reply!

What's more, Switch/Back lets you save many protected programs on standard TOS files — to be stored together on disk compacted, or even run off a hard disk.



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Judith Chang
ST World, August 1988

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Lefroy Valley
ST Informer, August 1988

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- Supports looping and decay
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Jim Farnsworth
ST Informer, July 1989

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LeRoy Valley
ST Informer, June 1988

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LeRoy Valley
ST Informer, August 1988

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ST Action, December 1989

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ST World, June 1989

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Products Update

COMPILED BY MARTA DEIKE, START JUNIOR EDITOR

Networking on the ST

Paradise Computer Systems and SGS Software have teamed up to develop the first complete networking system for the ST. **SGSnet** lets you share data stored on other hard drives. Up to 32 STs can be connected and tied together through one file server. This non-dedicated file server lets you run other programs and access files during networking operations with minimal reduction in speed. SGSnet utilizes the ST's MIDI ports, transferring data at 31,500 baud and is GEM and TOS compatible. Hardware installation is as simple as plugging MIDI cables into your system. Up to 500 feet of coax cabling may be used to connect the network.

The SGSnet Starter Kit — to network two STs — includes server software with manual, node software with manual, two SGSnet connector boxes and six feet of coax cable. There are add-on kits for additional systems that include add-on node software with manual, a connector box and six more feet of cable. SGSnet (Starter Kit), \$159.95. **Paradise Computer Systems, 3485 B Sacramento Street, San Luis Obispo, CA 93401, (805) 544-7130**



SGSnet Starter kit

Elements Reference Display

Now chemists and science aficionados everywhere can save time. Instead of tediously referencing the periodic chart time after time, **Elemental? Software** offers you the **Elements Reference Display (E.R.D.)**. E.R.D. is a database for information pertaining to the chemical elements. With the click of your mouse, your elemental selection and all its mystery is instantaneously revealed on you ST.

The E.R.D. package contains two programs: the main E.R.D. program and an editor that lets you create or modify the existing elements' data files, a large assortment of data files and the

user's manual. It requires at least 512K of memory and a color monitor in medium resolution. **Elements Reference Display, \$30. Elemental? Software, 10 Gaslight Court, Willowdale, Ontario, Canada M2M 4G1, (416) 224-5288**

BBS Bible

The 1990 BBS directory, **The BBS Bible**, is now available through Bubeck Publishing. The directory includes more than 5,600 BBS phone numbers listed by area code and by subject interest. It also features an informational guide to BBSs — what computer types and noncomputer interests they cater to — as well as how to access BBSs and low-cost telecommunications service for BBSing. **The BBS Bible, \$26.95. Bubeck Publishing, P.O. Box 104, Collegeville, PA 19426, (215) 287-6356**

New Heights for DTP

The Mega has just reached a new resolution with the Agfa/Compugraphic's 8000 series typesetters. **TDO: Deskset II Typesetter Driver Option** from G.O. Graphics is a professional desktop publisher with a high-resolution output — 2400 DPI high. TDO employs a proprietary software/hardware interface which lets you push aside the primitive Agfa/Compugraphic front-end system and go on-line directly to the typesetter with the Mega and a compatible font family.

What once took hours or perhaps could never be done on traditional typesetter front-end systems, is now a simple task. The TDO package includes integrated software designed to specifically work in conjunction with Mega computers and Agfa/Compugraphic's 8000 series, I/O controller for Mega internal bus slot and a 20-foot typesetter interface cable. TDO, call for price. **G.O. Graphics, Inc., 18 Ray Avenue, Burlington, MA 01803-4721, (617) 229-8900**

New Games for the ST

Marvel Comics returns to the ST! **X-Men: Madness in Murderworld** is the latest release from Medalist International. You're the leader of the X-Men, six heroic mutant superhumans, the world's elite crime-fighters. Your telepathic mentor, Professor Xavier, has been captured by the twisted Magneto and his psychopathic cohort, Arcade, and is being held in their amusement park of terror, Murderworld. Your goal is to rescue him. X-Men, call for price.

Medalist International, 180 Lakefront Dr., Hunt Valley, MD 21030 (301) 771-1151



Can you save Professor X from the hands of the evil Magneto? You can at least give it a try in Medalist International's **X-Men: Madness in Murderworld** based on the famous Marvel Comics superhero team.



New from Electronic Arts is **Pro Tennis Tour**, a tennis simulation that has you playing with some of the best from Wimbledon to the U.S. Open.

Tennis anyone? The ultimate simulation, **Pro Tennis Tour**, is now available for the ST. Ranked 64th in the world, you enter such championships as the Australian Open, French Open, U.S. Open and Wimbledon. There are six training programs and a 3D instant-replay feature to help improve your strokes. On-screen scoring display, realistic sound effects and a two-player option promise to give Pro Tennis Tour the look and feel of an actual game. But remember, it's a ruthless racket; "in tennis, love means nothing." **Pro Tennis Tour**, \$39.95. **Electronic Arts, 1810 Gateway Drive, San Mateo, CA 94404, (415) 571-7171**

Devpac Goes Professional

DevpacST, the popular assembly-language development system from MichTron, has just been expanded to appeal to professional programmers and their need for more extraordinary features. **Devpac Developer** includes all the features of ordinary Devpac, but also offers advanced flexibility, sophisticated assembler features and speed. The program is fully source-code compatible with DevpacST. **Devpac Developer**, call MichTron for price. **MichTron, 576 S Telegraph, Pontiac, MI 48053 (313) 334-5700 ■**

*If you have a new product for the ST, we'd like to hear from you. Please send press releases and product photos to **Products Update**, START Magazine, 564 Second Street, San Francisco, CA 94107*

Alert Box

And Mono Makes Two

In the November 1989 issue, **Products Update** included new games by Sierra On-Line and indicated that they require a color monitor. They don't; Sierra's games run in high resolution on a monochrome monitor as well.

Blame It on the Earthquake

We were so rattled when preparing the January issue that we let a big one get by us: the **Mystic Realm** source code was not included with the game as the article claimed. We're sorry for any inconvenience this might have caused and are trying hard to place the fault somewhere else. The source is being published in this issue.

ROBERTA'S BEQUEST

An Interview with Sierra On-Line's Roberta Williams

BY TOM BYRON, START EDITOR

King Graham, Roger Wilco, Larry Laughler — these are just few of the characters that have made Sierra On-Line one of the most successful software houses ever. And if these names are familiar, chances are you've heard the name Roberta Williams, too. She and her husband Ken started the whole graphic-adventure, role-playing phenomenon that made Sierra an overnight hit. In the following interview, Roberta talks about Sierra On-Line's past, present and future.

Within the computer-game world, Roberta Williams is somewhat of a legend — she almost single-handedly started the graphic adventure genre. And along with her husband Ken, she founded Sierra On-Line, one of the most successful and fastest growing software companies in the entertainment industry.

Listening to Roberta is like reading a book on the history of personal computers because she's been there from the very beginning. Every game Roberta has written — and she's written quite a few — has turned into a classic. And some, like her King's Quest series, have attained permanent cult status.

Roberta was in San Francisco recently to promote her new game Colonel's Bequest, which is now available for the ST. I took this opportunity to learn more about Sierra On-Line — its beginnings and its present and future directions.

Beginnings

What were the events that led up to the birth of Sierra On-Line?

It all started back in 1979. I was a housewife with two kids and my husband Ken was a programmer at a company where he worked on huge IBM mainframe machines. It was around that time that the Apple computer was hitting the homes and Ken immediately saw a lot of possibilities with the machine. He was fascinated by the idea that you could have a computer in your home because he was so used to working with computers that filled entire rooms.

The first thing I did with the computer was to play a text adventure called Original Adventure — it was also known as Colossal Cave. I immediately became addicted to it and I didn't stop playing until I made it all the way through.

After I finished Adventure, I wanted to play more of the same type of games. I shopped around and couldn't find anything other than some Scott Adams games from Adventure International. That was it. I had looked everywhere and if this was all there was, then there was a need here and maybe I could fill it. So I wrote and designed a murder mystery called Mystery House.

The real birth of Sierra On-Line and the graphic adventure game was around February of 1980 at a restaurant in Simi Valley [Calif.]. During

dinner I told Ken about my new game but he didn't want to listen — he thought it was silly. I insisted and he finally heard me out.

As we talked, Ken realized I had something here and we talked about it and we thought 'why don't we add pictures to ours?' All the others were text-based.

But there was a problem — there

device with an electronic eye at the tip. The idea was that you put a piece of paper on the board and then you moved the arm around to draw onto the computer. Of course there was no software available for our computer to read the Versawriter, so Ken wrote the necessary program.

I figured out what these graphics would look like. I decided that the players would always be facing north, east or west, never behind them. Ken figured out how to access the Versawriter and we put Mystery House together. It was an instant hit and the rest is history.

So what came after Mystery House?

Wizard and the Princess, Mission Asteroid, Time Zone, then Dark Crystal with Jim Henson, then Black Cauldron and Mickey's Space Adventure with Disney — the list goes on.

So you've written or conceived most of the Sierra On-Line graphic adventures?

To this day that's probably true. I've done about 15 games in 10 years.

Had you had any writing experience before Mystery House?

No, but I had always been a reader and I had always been a story teller. Of course, I didn't realize how good I was until I started doing these games.

You've actually covered some of this already, but it's worth going over again: what are the steps you take in putting a game together?



Sierra On-Line's Roberta Williams is somewhat of a legend within the computer-game world. In the past 10 years, she's written 15 games and is responsible for such classics as the King's Quest and Space Quest series.

were no graphics programs available at the time. We figured we'd need at least 60 pictures in this game.

So, we shopped around and found a little store in Thousand Oaks [Calif.] that sold something called a Versawriter. It was a board of thick plexiglass that had an arm-like



This is a screen shot from Roberta Williams' *Mystery House*, the first graphic adventure ever made for a personal computer and the launch pad for Sierra On-Line's phenomenal success.



Graphic adventures have come a long way since the days of *Mystery House*. This is the opening scene from Roberta's latest creation, *Colonel's Bequest*. You play Laura Bow and on a weekend trip to a friend's uncle's estate, you've got to find out who's murdering everyone.



Colonel's Bequest is set in New Orleans, circa 1925. Sierra went to great pains to make sure the fashions and music fit the times.

The first thing you do — which is what I'm going to be doing real soon with *King's Quest V* — is to figure out what the story is, what it is you're doing, who you are, what your quest

or your goal is, where you are and why you're there, etc. That's probably one of the hardest parts, that's where the actual writing comes in.

*You said that in *Mystery House* you drew about 60 separate pictures — what is that up to now on an average game?*

Well it used to be that each place was one picture. The average was between 80 and 100 pictures. But now we're going away from the one-picture, one-place format. Now there are less places but more scenes. For instance, you might have a room but you'd have varied perspectives. *Colonel's Bequest* has something like 75 actual places you can be which in the old days would translate into 75 pictures. But now, the pictures plus the scenes are probably up to 150.

Has Sierra On-Line ever been approached by any movie studios for film rights to your games?

We have been approached to make *King's Quest* into a Saturday-morning cartoon but we don't think we'll do that because we think Saturday-morning cartoons look cheap. We want to maintain a quality image.

We have also been approached by two movie studios to do *Leisure Suit Larry*. We're currently in negotiations to see if we want to do anything there. Of course, we don't want to rush into anything. All of our characters are very precious to us and we don't want someone else to have the rights to them and do a bad job. We've also been approached to do board games and books for *King's Quest*.

Colonel's Bequest

*Tell me about your new game *Colonel's Bequest**

It's the first in a line of games we're calling 'The Laura Bow Mysteries.' In other words, if this game does well, you won't be seeing a *Colonel's Bequest II*. It'll be another, completely different story within the series.

Colonel's Bequest itself is some-

what difficult to explain because it's so different from anything we've ever done at Sierra and from anything anyone else has ever done, for that matter. It's a murder mystery so it takes us back to our roots.

The main character is a woman, a Nancy Drew type. You're a young college student in 1925 New Orleans and your father is a detective on the New Orleans police force. It's very dated—we went to great pains to copy the costumes and the overall atmosphere of the times.

As the story goes, you've been invited by a college friend to her rich uncle's isolated estate for a weekend family reunion. It's important that you're not a member of the family because your character needs to be able to stand apart from the main action.

The prologue—I'm pretty famous for these opening cartoons—establishes the story line and goes

something like this:

You and your friend get to her uncle's and in front of you is this old bayou estate with lots of trees and Spanish moss. On the porch of the house is this crotchety Colonel in a wheelchair and the various family members who he's gathered there for the weekend. That night he announces the intentions for his will in which he plans to divide his estate equally. If one of them should die before he does, then that part of the inheritance will go into the pot and be redistributed. As soon as he finishes his announcement, he goes to bed and that's where the game really begins.

Soon, one by one, the family members begin to die and you discover they're being murdered.

So part of the quest is to find out why these people are being killed?

This is where it gets confusing

because there is no 'quest' *per se*. Colonel's Bequest is very much an interactive story. One of the directions Ken and I see Sierra going is in interactive entertainment—stories. Of course it can't just be a story, it also has to be a game, you have to feel like you're playing it but you also want to be interested in the story.

I see—it's kind of like reading a novel except you're taking a more active role because you're always unraveling the story.

Right. Most adventure games are very puzzle oriented—you solve this puzzle and then go on to the next puzzle until you get to the end of the game to accomplish your goal or quest.

Colonel's Bequest isn't like that. There is no real goal—you're an innocent thrust into a situation where suddenly all these people are dying ▶

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and things are happening and you can talk to them, spy on them, tell them things, figure out who's having affairs with whom and you're just going along with the events of the story. There are puzzles in the game, but it's not puzzle oriented.

You do have to find out who's doing the killing and why. But, you're not a detective, it's not like *DejaVu*, for instance, where you actually are a detective.

One question that came up with *Colonel's Bequest* was 'can you scare someone with a computer game?' I didn't believe it could, but we found that it did scare some of our beta testers. It's very suspenseful.

I noticed that the main character is a woman. You've done this in quite a few of your other games.

If a woman fits the story then the main character will be a woman, if a man fits it then it'll be a man. I'm not going to be constrained by the idea that it has to be a man because this is a man's industry. Or that it has to be a woman because I'm a woman in a man's industry and I'm a feminist. Nothing like that.

Are many of Sierra's fans women?

We probably have a higher market share of women than any other

computer game maker. Interestingly enough, when a woman is the main character, we don't lose any of our male audience, but we gain more women.

Roberta Williams on the ST Market and Future Directions for Sierra On-Line

What's the general feeling about the ST at Sierra?

A year or so ago we were in a situation where Sierra was perceived as an IBM company. But we don't want this, we never wanted this. We want to be seen as a computer entertainment company — not tied to any one machine.

A lot of people mistakenly think that our games are just IBM conversions. But when Ken first sat down to write the code for *Mystery House*, he wanted to write a special language that just did graphic adventure games, one that we could use over and over. The result was the Sierra Creative Interpreter. SCI is a virtual machine language which means that it will work on any machine. SCI takes advantages of the special things the ST can do that, say, the IBMs can't, like fading. Each machine format has its own version of SCI. It's true that our games appear on the IBMs first but that's because of its

higher user base, not because they're better machines. Our games are never IBM conversions.

What about games in general? With new technology like CD-ROM and optical read/write drives you're getting a lot more information on a single disk. Where do you see all that going?

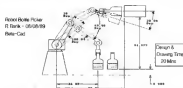
At Sierra we want to do so much that we have to push ourselves back. Our games are pushing 10 disks now and to have 10 disks is holding ourselves back. You'd be amazed at how much we have to cut out of a game to make it fit on 10 disks. So optical and CD-ROM obviously make sense for Sierra. It's an area we are seriously looking into.

How about a hint at some new games coming from Sierra?

Nineteen Ninety is our year of sequels: *King's Quest V* will be out — I think I'm going to bring back *King Graham* as the hero; *Space Quest IV*, etc. And of course *Leisure Suit Larry III* — we can't forget *Larry* — was just released. ■

PRODUCTS MENTIONED

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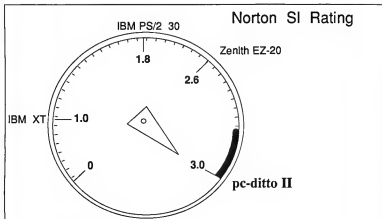
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3D modeling on your ST in the file CAD_3D.ARC on Side 1 of your START disk.

PROGRAM BY TOM HUDSON
ARTICLE BY ANDREW REESE,
START GRAPHICS EDITOR

When Antic Publishing first brought out CAD-3D 1.0 in 1986, few people realized what Tom Hudson had created. It was a major breakthrough in ST graphics. Later on, Tom revised the interface and added a number of features in Version 2.0 and added Cyber Control to the 3D modelers arsenal. But it all started here. If you've ever been tempted to try 3D, here's your chance. CAD-3D 1.0 runs in color or monochrome on any ST.

TOM



CAD-

HUDSON'S



-3D 1.0

Three Sopwith Comets, drawn by Wolf Griffey as part of Amic Software's Vintage Design Disk, were created in CAD-3D v. 2.0 then converted to v. 1.0 format.

If you have an ST, you've heard of CAD-3D. Over nearly four years, Tom Hudson's four-decade 3D modeling program has been one of the programs that "made" the ST. It was a pioneering program — everyone said that you just couldn't do 3D modeling on a microcomputer. Tom proved them wrong and the results of his efforts are on your START disk this issue.

Getting Started

To run CAD-3D 1.0, boot this month's START disk; the START Menu runs automatically. At the main screen, click on Prepare, then select "CAD-3D version 1.0." The program and its accompanying resource file will un-ARC directly onto the destination disk you specify. Four sample files are included.

A companion program, which animates 3D objects, is available. At the main screen, click on Prepare, then select "CAD-3D Animator." The program, ANIMATE.PRG, its resource file and two sample animations will un-ARC directly onto the destination disk you specify.

CAD-3D 1.0 will run on any ST, from a 520ST on up, and on either a color or monochrome system. If you have a 520ST, be careful about using Accessories or terminate-and-stay-resident (TSR) programs with CAD-3D 1.0; they may take up too much memory for CAD-3D 1.0 to run. CAD3D.PRG and CAD3D.RSC must be in the same directory. Double-click on CAD3D.PRG to run the program. You must be in medium resolution on a color monitor. It also runs on a monochrome monitor.

The CAD-3D World

The CAD-3D 1.0 Universe is an invisible cube into which you can look from any direction. Three of the windows show views from the Top or Bottom, Left or Right and Front or Back of this Universe. The fourth window, in the upper-left ▶



One of the sample files included on your START disk is this familiar logo (START.3D). Load it up and experiment with different perspectives and camera angles, click on Solid under the Modes menu, then click on Super View to see the image in colorful 3D.



This faucet assembly (FAUCET.3D on your START disk) was composed of over a dozen individual objects, many of which were joined into single objects. The parts were created with both the Spin and Extrude tools.

corner of the screen, is the Camera window. You can move this viewpoint around the Universe and create different perspectives of your objects.

Each of the windows has slider bars along the right and bottom edges, a status line at the top, a full-screen button in the top-right corner and a toggle button in the top left where you normally find the close window button. Like all true GEM applications, only one window can be active at a time; the active window is the one with the sliders and buttons. Each time you make a change with a slider, click within the active window to update the display to reflect your change.

CAD-3D 1.0 uses drop-down menus for its functions and dialog and alert boxes for further input or

information. These menus are the heart of CAD-3D 1.0. From the left, they are the Desk, File, Modes, Views, Light, Generate, Join and Objects menus. We'll go through each of them; as we do, you'll get a good idea not only of how to use CAD-3D 1.0, but also how they interact.

The Desk Menu

From the Desk Menu, you can select **About CAD-3D** to see the copyright and credits notice or access any desk accessories you may have installed. CAD-3D is a very robust application and exhibits few conflicts with well-behaved desk accessories or TSRs.

The File Menu

At the top of the File Menu is **New**. Click on New to delete all objects

from the CAD-3D Universe and reset all settings. Because this is a fairly drastic operation, you will be warned with an alert box and given a chance to change your mind.

Next down on the File Menu is **Load...** Click on Load... to load in a new CAD-3D object file. Note that this performs a New first, so any objects you have in the Universe will be removed. CAD-3D 1.0 loads objects saved with the filename extender .3D, but can't load objects saved from CAD-3D 2.0 (or any other program) in the .3D2 format.

If you have any objects in the CAD-3D Universe, you can save them to a disk with **Save All**. This will save all objects in the Universe, whether they are Selected (visible) or not. If you only want to save some of your objects, but not all of them, create a Group by choosing which you want using **Select** from the Objects Menu, then use **Save Group**. CAD-3D will automatically append the filename extender .3D, so that you don't have to do so.

Merge... adds the objects in a file to the objects already in the CAD-3D Universe without erasing any already there. If there is a conflict between the names of objects already in memory and those in the file, CAD-3D 1.0 will alert you and give you a chance to change the name of the conflicting incoming object.

Printout will produce a hard copy listing on your printer of all objects in the CAD-3D Universe. Your printer must be connected and on line.

Save pic saves any picture you have generated using Super view from the View Menu. A Super view is a full-screen low resolution image of your object. It will be generated in whatever mode you have selected in the Modes Menu: Wireframe, Hidden, Solid or Outlined and All Lines or Edges. You may save a Super view picture in DEGAS (.PI1 in color or .PI3 in monochrome), NEOchrome (.NEO) or C.O.L.R.

Object Editor format, selected by those entries on the File Menu.

Start ANI starts an animation file on disk that you can play back later with the ANIMATE PRG program. When the file selector box appears, enter a filename and click on OK. An animation can have any filename and extender, but color animations can't be played on monochrome systems, nor vice versa. Be sure you have selected the proper color palette and object groups before you start an animation; you can't change them in the middle, although you can change lighting and camera and object positions.

Record turns your current camera view into a Super view and records it to disk as a part of your animation. After you have started your animation, make whatever changes you want in object position or camera position for the next frame and click on Record. Continue to make changes for each frame, clicking on Record each time, then when you've finished, click on Stop ANI. CAD-3D 1.0 will close the disk file and your animation will be complete.

ANIMATE.PRG is a special animation player program written for CAD-3D animations.

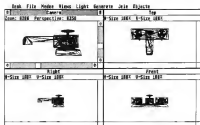
The next three entries on the File menu are the choices for a saved Super view: DEGAS, C.O.L.R. or NEO. The active selection will have a checkmark beside it.

Quit will exit from CAD-3D 1.0. All objects and settings will be lost and you will be warned before this happens.

This is CAD-3D's Camera box with the START image in Outline mode. For dramatic effects increase the Perspective value to 1000 then rotate left 30 degrees and down 10 degrees.



This is the CAD-3D 1.0 work screen, displaying the CAD-3D "universe" with the faucet assembly in the four different windows. For a drain's-eye view, add a little light from the bottom center, and rotate down 60 degrees and left 90 degrees.



The Modes Menu

At the top of the Modes Menu are the four choices for display of your objects, both in the four windows and in the Super view. **Wireframe** shows just the edges of the object and not the surfaces. (If you have also chosen **All lines** at the bottom of the Modes Menu, the construction lines CAD-3D 1.0 uses to construct faces will also be visible). **Hidden** shows the object as a Wireframe, but removes all of the lines that would not be visible because they're hidden by the front of the object. **Solid** generates the faces of the objects and shades them according to the colors and lights set. **Outlined** is just like Solid, except that it adds the wireframe outlines to the faces.

On a color monitor, **Set Color** lets you change the color of an object. If you have chosen **7 shades**, you can choose among Red, Green, Blue, Yellow, Violet, Cyan or White for either of two different object colors.

If you choose **14 shades**, CAD-3D will have more shades to assign to an object's faces, but only one color of object can be in memory.

If you are on a monochrome system, you can't change the color of objects, but you can change the color of the background. **White BK.** selects a white background, while **Black BK.** selects a black background.

All lines was discussed above; **Edges only** will display only the lines that form the edges of objects, not the construction lines.

The Views Menu

The top six entries on the Views Menu choose which three of the six possible views will be shown in the Auxiliary windows. Those selected will have checkmarks beside them.

Updates lets you choose which windows will be automatically updated every time you make a change to the object. The fewer windows that update, the faster will be ▶

CAD-3D uses keyboard shortcuts to make your 3D-modeling easy. Here is a list of them:

On the Main Screen

W	Wireframe
H	Hidden
S	Solid
D	Defined
C	Set Colors
T	Top View
B	Bottom View
R	Right View
L	Left View
F	Front View
K	Back View
I	Info
?	About CAD-3D
Alt-N	New
Alt-L	Load
Alt-S	Save
Alt-M	Merge
Alt-Q	Quit
Alt-P	Spin
Alt-X	Extrude
Alt-E	Select
Alt-D	Delete
Alt-H	Home
Alt-O	Rotate
Alt-R	Record animation frame
Alt-C	Redo
Alt-Z	Redefine color
Arrows	Alter slider settings by one unit
Shift-Arrows	Alter slider settings by ten units
Esc	Like close toggle button in active window
Backspace	Full screen
1,2,3,4	Activates Camera, Top-Bottom, Left-Right or Front-Back window, respectively

On the Spin and Extrude Tool Screens

Alt-C	Connect toggle (in Spin)
Alt-B	rubberband toggle
Alt-D	Do Function
Alt-G	Grid toggle
Alt-S	Snap toggle
Alt-A	Abort
Alt-R	Reset
Undo	Remove active point
?	About...
Esc	Abort

the overall operation. Windows that aren't set to automatic update will be grayed out. To select which windows are automatically updated, click on Updates, then select the windows from the dialog box.

Windows that will update are shown in inverse.

Superview generates a Super view image of your objects. To exit

The Generate Menu

On the Generate Menu are the tools you use to generate objects. At the top are **Spin** and **Extrude**, which take you into the Spin Tool and the Extrude Tool, respectively. Below that are the primitives, **Sphere 1**, **Sphere 2**, **Sphere 3**, **Torus**, **Cube** and **Wedge**. Click on any of these to generate that object. You will be

The CAD-3D Universe is an invisible cube into which you can look from any direction.

from Super view, click a mouse button. If you have generated a Super view during a session in CAD-3D, you can look at it with **Look**.

The Light Menu

There are three possible lights, **Light A**, **Light B** and **Light C** in CAD-3D 1.0 plus **Ambient**, or overall, light. On the Light Menu, you can turn these lights on or off and set their locations and brightness. To turn a light on or off, hold down the [Shift] key and click on the Light Menu entry for the light you want to switch. Lights that are on will have a checkmark by their menu entries. Ambient light can not be turned off with a [Shift]-click; you have to set its brightness to 0.

When you click on a Light Menu entry, it brings up the Light-source definition box. Across the top are eight light levels from 0 through 7. To set a light's brightness, click in the numbered box representing the brightness you want. To set the location of the light, click on any combination of the location boxes in the middle. When you're satisfied, click on OK or click on Cancel if you want to leave the light the way it was. CAD-3D lights are omni-directional lights, not spotlights, and shine uniformly in all directions.

given a chance to set the color, shade and name of the object before it's generated. The spheres differ only in their complexity with Sphere 3 being the most complex — and smoothest.

The Spheres and the Torus (a doughnut-shaped object) are generated with the Spin Tool. After you've generated one of these objects, enter the Spin Tool and you'll see the template used to generate the object. Similarly, the Cube and Wedge are generated by the Extrude Tool; take a look in the Extrude Tool after generating one to see the template.

The Spin Tool and Extrude Tool use similar screen lay-outs, but there the similarities end. The Spin Tool is like a lathe that creates a circular "spun" object from a pattern. The extrude tool is similar to the shape of the end of a toothpaste tube. When you squeeze the tube, the toothpaste takes the shape of the end of the tube. In the Extrude Tool, you set the shape of the "toothpaste nozzle."

Two rules in the Spin and Extrude Tools: always place points in a clockwise direction and in the Spin Tool, place points only in the right side of the screen — CAD-3D will mirror your points on the left side.

On their Options Menus, both tools have a Grid to help you align

continued on page 36

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Ralph Turner's new book, *Intermediate & Advanced Atari ST Subjects*, covers hard drive management & optimization, IBM emulators, disk structure and file recovery, connecting a 5 1/4"-inch floppy drive, assembling a hard drive system from inexpensive components, SCSI ID numbers and LUN IDs, sector and file editing, binary, hexadecimal and decimal codes, ASCII file problems, escape codes, miscellaneous tips, and much more. His *Atari ST Book* covers RAM disks, the AUTO folder, Desktop tricks, installing an Application, adjusting the Control Panel's Palette Settings, Public Domain Software, Copying, Printers, Desk Accessories, Telecommunications, the Item Selector, and much more. Neither book requires a knowledge of programming. \$16.95 each, plus \$2.00 shipping each (\$2.50 each to Canada). Check, Money Order, VISA or MasterCard. Index Legalis, Post Office Box 1822-49, Fairfield, IA 52556. Phone: (315) 472-2295

continued from page 34

points and a Snap that only lets you place points at the Grid points. Also, both tools have an Abort that lets you exit the tool without creating any objects. Both tools have an Edit Menu with options to Reset (clear all points), Remove (to delete the current point) and Rubberband — stretchy lines that show you where lines would be as you move the mouse.

Connect in the Spin Tool lets you connect up the first and last points to create a closed object.

The current point is shown with a crosshair. You can move the crosshair to different points for editing by clicking in the vertical slider bar at the right of the screen. The sliders along the bottom of the tools control the number of segments generated in the object. Try different settings to see the effects.

The Join Menu

On the Join Menu are just two options: **Do Join** and **Info**. Do Join is used to combine two separate objects in several different ways. You can Join objects that are not touching, just to combine them under a single object name or you can join overlapping objects. If objects do overlap, you can Add them together, removing the parts where they overlap or Subtract one from the other, removing not only the second object, but also those portions of the first where they overlapped. A third alternative is to Stamp the shape of the second object on the surface of the first. Finally, you can use the **And** function, which will create a third object that consists of *only* the parts of the two objects that overlap.

When you click on Do Join, you'll be taken to the Object Join Control panel. Across the top are the names of the objects in the universe. Below that is an "equation" and below that is a set of buttons. Click on the names of the objects you want to join and they will appear in the equation.

Click on the button for the operation you want and the appropriate symbol will appear in the equation. Enter a name for the resulting object and click on OK. CAD-3D will then perform the Join if it can. Some Joins are impossible for it to handle and Joins of complex objects can be time-consuming.

The most important thing to remember about Joins is that the two original objects are *deleted* from the universe; make sure you have duplicates saved to disk if you want to keep them.

The Info option lets you see statistics on the objects in the universe and their totals. At the top are the object number and its name. Below them are the statistics for that particular object. Below that are the statistics for

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all the objects in the universe, showing the maximum number you can have for your memory and the number you have available for additional objects. cycle through your objects by clicking on Next.

The Objects Menu

At the top of the Objects Menu are the **Select** and **Delete** options. When you click on one of these you will bring up a selection box to choose the objects that will be visible (Select) or removed from the universe (Delete). Click on the names of the objects you want to affect and then on OK; any Delete operation will bring up an alert box to caution you that once an object's removed, it's gone for good.

Select is good to use when you want to work on just a part of your scene and get the other objects out of the way, or when you want to scale or move

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some of your objects, but not all.

Next down are **Drag one** and **Drag all**. These are alternatives — only one can be active, indicated by a checkmark. They affect whether a Drag operation operates on a single object or all of the Selected objects in the universe. To Drag an object or group in one of the Auxiliary windows, place the mouse cursor on the object and press and hold down the left mouse button. A surround box will appear. While still holding down the mouse button, Drag the box where you want the object(s).

Omni Drag, Vertical and **Horizontal** are also alternatives. If you want to Drag an object or group, you can limit how you drag it by selecting one of these options. **Omni Drag** lets you Drag objects in any direction, while **Horizontal** limits movement to the horizontal direction and **Vertical** to the vertical direction. This may be important if you're looking to align objects precisely.

Home moves all selected objects in the center of the universe in all three directions.

Universe and **Group** are two more alternatives. When you want to Scale or Rotate an object or objects, you have two choices — use the center of the group (Group) or the center of the universe (Universe) as the point around which the action takes place.

Rotate calls the Object Group Rotate box. It lets you rotate the selected objects in the active Auxiliary view window around one axis. The Object Group Rotate box uses a pie chart to show the angle of rota-

tion. To set the rotation, use the slider; clicking in the gray area will change the rotation ten degrees, while each arrow button at the ends of the slider changes the rotation by one degree.

You can Rotate an object up to 180 degrees in either direction in a single operation. When the angle of rotation is what you want, click on OK.

Scale calls the Object Group Size box that lets you Scale objects or groups up or down in all three dimensions at once. Like the Object Group Rotate box, it uses a slider. You can halve (50%) or double (100%) the object size in a single operation.

You can also Rotate or Scale an object in one or two directions in another way. Along the edges of the active Auxiliary are two sliders and in the upper left corner is what appears to be a close window button. This button toggles between Rotation and Scaling. Whichever function is active will be shown in the status bar. Use the slider bars to adjust the function, then click in the window to activate it. You can adjust both sliders and then do the operation with a single click in the window. The changes you make in the sliders will be reflected in the status bar so that you can set the operation accurately.

Reshade lets you redefine an object's color and/or shade at any time. Just click on Next to find the object you want to change and select the color and shade you want. The shade you set from 0 to 7 will be the *brightest* shade on the object; the lower the shade, the darker will be the object.

The CAD-3D Animator

ANIMATE.PRG is a special animation player program written for CAD-3D animations. Its functions are all menu-selected and quite straight-forward. You must start Animator on a color system in medium resolution, even though the animations are in low resolution. ANIMATE.RSC must be in the same folder as ANIMATE.PRG.

On the File Menu, **Load** lets you load animations you've created in CAD-3D; remember that monochrome animations can't be loaded into a color system, and vice versa. **Quit** exits Animator and returns you to the desktop.

On the Option Menu, **White BK.** and **Black BK.** are alternatives for monochrome users only and let you set whether you want a white or black background for your animations.

The Animate Menu lets you start your animation playing (Animate!), set it to play continuously (Loop) or play through only once (Stop). To stop an animation while its playing, press any key. ■

Tom Hudson has long been thought of as the ST Guru of Graphics. His credits include DEGAS, DEGAS Elite, CAD-3D, Cyber Control, Cyber VCR and Creation! Tom lives in Kansas and is an independent software developer. Andrew Reese was formerly Editor of START and is now START's Graphics Editor and a product manager for a San Francisco Bay Area graphics software company.

CAD-3D 2.0 Upgrade Information

The best got better! To upgrade CAD-3D v. 1.0 to v. 2.0, send your original March 1990 START disk (not a copy), your name, address and daytime phone number along with a check or money order for \$65 (plus \$3.50 S/H) to **CAD-3D Upgrade**, Antic Software, 544 Second Street, San Francisco, CA 94107.



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HYPERCARD

BY DAVID PLOTKIN START CONTRIBUTING EDITOR

There's news of still another PC emulator, this time marketed by MichTron. PC Speed, designed and built in Holland, uses a NEC V30 (like the SuperCharger mentioned last month) and has a Norton SI of 4.0. It's somewhat faster than pc ditto II, which has an SI of 3.0. Like pc ditto II, PC Speed mounts inside the ST and thus requires opening the machine to gain access to the 68000. While START has yet to see one, installation is purportedly solder-free. The list price is around \$400 and we'll give you more information as we receive it. (Editor's Note: Watch for a review of PC Speed in the April issue of START.)

I continue to have problems with Talon's Supercharger PC emulator featured in last month's review (START, January 1990). I've been unable to make it work reliably with a hard drive attached, using both an Astra drive and a Berkeley Microsystems (BMS) drive. But, I'm still experimenting and will let you know how it turns out.

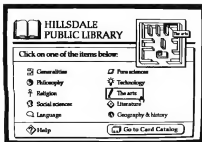
Hyping Hypercard

One of the more remarkable pieces of software available today is packaged with every Macintosh and has gained widespread acceptance and use. The software I'm talking about is, of course, Hypercard, written by Bill Atkinson of MacPaint fame. With

the release of Spectre 1.7, Hypercard now runs on your ST. Since Hypercard requires 128K ROMs, however, you can't use the Magic Sac, and you must have 128K ROMs in Spectre. (I suspect the reason Dave Small gets Hypercard working so fast — it had problems with early versions of Spectre — is that he keeps his own database in the product.) But just what is Hypercard?

I've seen quite a few attempts at an explanation. It isn't easy to describe because it's really more than a single product. It's designed with (at least) three distinct levels and each is different — and more powerful — than the last.

Hypercard is the first commercial product to utilize a powerful new concept called Hypermedia. In broad terms, Hypermedia is a "disorganized" method of storing and retrieving information. Instead of following a long, linear path, you can branch instantly over to any related piece of information, even if it's in another database. All the information is cross-linked. You can start out investigating the automobile, then decide to check on the life history of Henry Ford or the work-



Apple's Hypercard is a powerful relational database that's also relatively easy to use.

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ings of the internal combustion engine. Hypercard is the relational database.

Hypercard Applications

The applications of Hypercard (called stacks) present you with cards on which you can create or change information. Buttons on each card let you jump to other cards or even other stacks to explore the database. These buttons can look like anything. For example, one card displays a

(English-like) language called Hypertalk that lets you program your own applications, using the entire Mac environment. Since programming the Mac using windows, menus, icons and the like is a difficult job requiring a lot of knowledge and experience, Hypertalk is a revolutionary product because it makes the task relatively straightforward. This lets you concentrate on applying your ideas rather than on technical issues. It is, as author Bill Atkinson says, "programming for the rest of us."

Whatever it is, Hypercard is fun and useful. You can use it at whatever level you feel comfortable with, tailoring it to your own needs. In the coming months, we'll spend some time with Hypercard and look at it from all three levels. We'll also look at some of the good books about Hypercard, which provide far more information than the manual. One weakness of Hypercard is that it really is designed for browsing, for gathering information, rather than for writing reports. Other products are available for writing reports in Hypercard, and we'll look at some of these as well.

How to Get It

Where can you get Hypercard? There are a number of ways, the cheapest is to get it from a local Mac users' group. Apple lets users' groups distribute it and some will sell you all three disks for \$10; make sure you get the latest version 1.2. Some books on the subject also include the program, but they don't typically come with all three disks. Hypercard is inexpensive and exciting, so if you're interested, get your copy and follow me in coming issues through the hyper world. ■

**Contributing Editor David
Plotkin is a chemical engineer
for Chevron U.S.A.**

**Hypertalk has been
characterized as
"programming for
the rest of us."**

picture of a fish, and the fin is the button. Click on the fin and a description of that part of the fish comes up. Hypercard stacks can include text, graphics and even digitized sound, making for some pretty fancy applications. But, as mentioned earlier, your access to information is not limited to relations within the given database (or stack). You can go anywhere as long as the programmer has provided a link. Hypercard stacks are related through a Home card. A well-designed stack always has a button that takes you immediately Home, providing a consistent exit method.

The next level of Hypercard, called authoring, lets you build or modify applications by using various tools. A full set of paint tools are available and you can set up buttons and text fields on a card at this level. These tools encourage you to customize your form. You can even create computerized versions of real-life objects. Finally, the most complex level uses a full programming

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by David Ramsden

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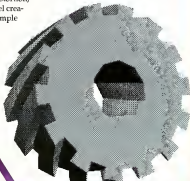
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Two frames of CYBER STUDIO animation without CYBER PAINT enhancement. The same two frames are shown below them, after a CYBER PAINT touch-up

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BEST SELLER

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GFA BASIC

Wipes & Dissolves

BY CARLOS TIRADO



Now you see it, now you don't in the file *WIPES.ARC* on Side 1 of your *START* disk.

This month we'll look at some interesting subroutines you can use in your own GFA BASIC programs. My GFA Wipes & Dissolves will add flash to your screens; these include such classics as the "opening iris" effect, scrolling and several others. A GFA BASIC program that makes excellent use of the routines is also included to give you a full working demonstration.

A Little Background

A *wipe* is a transition in which an image is gradually replaced with another image, either from side to

side or from top to bottom or bottom to top. A *dissolve* is a transition in which one image is replaced, a piece at a time, with corresponding portions of another image. You see these kinds of special effects in movies and television all the time.

To achieve all this beauty you can use two handy GFA BASIC commands that let you put and move blocks of pictures around to get the effect you want. These commands are *BMOVE* and *BITBLIT*. *BMOVE* works faster and is better suited for wipes; *BITBLIT* is more flexible in that you can move memory blocks that are not contiguous in a single operation and is more convenient for dissolves. *BMOVE* is very simple to use—you need only specify two memory locations and the amount of

The opening and closing "iris" is just one of the many effects you can add to your GFA BASIC programs with Carlos Tirado's special wipes and dissolves subroutines.

information to be moved. *BITBLIT* requires many more parameters and preparation, but you'll soon find it's worth the pain when you see the results.

The Program

Included on disk is the program *SUSLSHOW.PRG* ("Super Slide Show"), a demo of the GFA Wipes & Dissolves. This program will read *DEGAS Elite* uncompressed low or high resolution pictures from disk and perform a slide show using the special effects of the subroutines. The program runs on any color or monochrome system.

To run the demo, first boot this month's *START* disk; the *START Menu* runs automatically. At the main screen, click on Prepare, then select "GFA BASIC Wipes & Dissolves." The program will un-ARC directly onto the destination disk you specify. To run Super Slide Show, double click on *SUSLSHOW.PRG*; press any key to exit. The Super Slide Show program uses up to four pictures which must be in the same directory as *SUSLSHOW.PRG*. Sample high resolution picture *PICT_1.PI3* was downloaded from the *ATARIARTS* forum on CompuServe; *PICT_4.PI3* is from Antic Software's ▶

WANT THE MANUAL FOR CAD-3D VERSION 1.0?

Whether you're a professional designer or an interested amateur you'll want to know more about CAD-3D version 1.0, START's feature program for March 1990.

Antic Software is offering the original manuscript that accompanied Tom Hudson's modeling system. Written by Ian Chadwick, the manual includes a tutorial and a reference guide.

To get this manual, call:

1-800-234-7001

and ask for CAD-3D

(version 1.0)

product# TH0005

The manual is just \$9.95, plus \$3.50 for shipping and handling.

(Sorry, only Visa, MasterCard and American Express orders can be accepted for phone orders.)

To order by mail, send a check or money order for \$13.45 to:

CAD-3D Version 1.0
#TH0005

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Maps and Legends Data Disk.

You can use Super Slide Show to display up to four of your own low or high resolution pictures simply by renaming them PIC_1 through PIC_4, with the appropriate extension. Medium resolution pictures can be run by modifying the source. SUSLSHOW.LST, in addition to being the source for the demo, is an example of how to call the wipe and dissolve routines. All source is written in GFA BASIC 2.0.

**The quest to make
your programs ever
better and more
pleasant never ends.**

Using the Routines

On your START disk you'll find the file WIPES.LST, containing wipe and dissolve routines that you can merge into your own GFA-BASIC projects. They require that you provide an area of 32K to hold the image that will replace the current display on your computer's monitor, and that the variable "scn1" be a pointer to this memory location. The variable "screen" should also be equated to the actual screen address memory. All this is easily accomplished with three lines of code:

```
s1=SPACES(32000) or SGET s1
scn1=VARPTR(s1)
screen=XBIOS(2)
```

However, to make full use of these routines you'll want to spend a few more bytes (256 to be exact):

```
s1=SPACES(32756)
scn1=(INT(VARPTR(s1)/256)+1)*256
screen=XBIOS(2)
```

Why? Because the Set_screen

function of your computer (XBIOS routine No. 5) requires that any alternate screen fall on a 256-byte boundary, and GFA BASIC does not automatically align the string memory for your image to this rule. Using this XBIOS routine you can have an alternate "logical" screen in which you may print text, draw a graphic, etc. out of the sight of the user and then bring it to the "physical" screen when it's ready using one of the wipes or dissolves presented here. The format of the command is:

```
VOID XBIOS(5, L, hbase, L, hbase, W, w)
```

Use -1 when you don't want to change an XBIOS input. If you set "rez," even to the same resolution, the screen will be cleared, so use -1 instead if you don't want this to happen. In your own programs you would use:

```
* Activate alternate screen for drawing
VOID XBIOS(5, L, scnl, L-1, W, -1)
```

```
* Here goes your program code to draw the screen
```

```
* Restore logical screen
VOID XBIOS(5, L, screen, L-1, W, -1)
```

```
* Jump to the Wipe or Dissolve procedure
GOSUB wipe
```

Conclusion

We all learned from the beginning that the ST is a powerful computer with great graphics; now you can put that power to work for you with this welcome addition to your GFA BASIC subroutine library. There's room for improvement, of course. You can, with a little imagination, make all kinds of special effects and use them in a variety of applications. The quest to make your programs ever better and more pleasant never ends. ■

Carlos Tirado lives in Sonora, Mexico. This is his first program for START.

WINTER WONDERLAND

Ah, winter! These long nights are perfect for some serious jamming or sound crafting. Just set that mug of hot chocolate down — not too near the console, thank you — and take the wraps off some new tools...

New Releases

A somewhat ominous trend with newer synthesizers is minimal front-panel controls, particularly on rackmount versions. Gone are the glorious knob-twisting and switch-flipping days of yesteryear. More and more of these beauties seem designed in expectation of third-party software being developed to support them. Fortunately, that's a safe bet as there are usually at least four patch editor/librarian programs per synth, each with its own interpretation of the ideal user interface.

Another trend is that the newer software is making much more sophisticated use of graphics and screen-based operations. This is particularly evident in a set of new patch editors released by Interval Music: Protezoa, for the Emu Proteus, and an editor/librarian for the Kawai K4. These share a number of good design features such as mixer emulation

(complete with faders, pans, mutes, etc.), an on-screen velocity-sensitive keyboard to audition sounds, an intelligent automatic patch generation and a deskaccessory patch file loader. An external edit mode lets you vary patch parameters from your master keyboard using any MIDI continuous controller (foot controller, mod wheel, etc.), instead of being locked behind the computer keyboard.

A similar joy comes from the "land down under" with EZE, a sample editor for the Ensoniq EPS from Gelva Software of Sydney, Australia. This program is a visual delight. It's unusual in that all operations occur within the EPS; the program just gives a better view and management of the proceedings. This makes for extremely quick editing as there is no need for tedious sample-data transfer between instrument and computer.

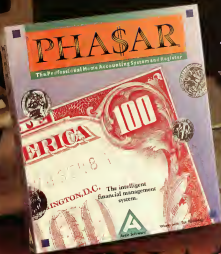
MIDI Drummer II is out from MusicSoft. This completely rewritten version (originally reviewed in the June 1989 issue of *START*) has expanded the number of assignable drum voices from 16 to 32 and now allows for MIDI input of drum hits (note and velocity). Pattern-editing tools now include humanizing (adding small random timing vari-

ations) and echoing.

Hybrid Arts offers the next generation of their pro level MIDI Track sequencer family: Edit Track II and SMPTE Track II. The two are basically identical except that SMPTE Track II includes the external SMPTE synch box and software to support it. The earlier Synch Track, which supported FSK and other non-SMPTE synch modes, appears to have been dropped from the ranks. Some of the many new features include cycle (drum machine style) recording, an on-screen assignable fader control to vary volume or other controllers in real-time, chase controllers and the ability to send the metronome signal over MIDI and loop between markers during playback.

In addition to these upgrades, Hybrid Arts's long-awaited GenEdit master patch editor/librarian program is now available. The program lets you access any number of individual pieces of MIDI equipment through software templates (simulations of the instrument's hardware controls) and configurations (sysex communication protocols). You can modify these to suit your needs or create new ones from scratch. A "studio snapshot" lets you save and restore all MIDI data and settings for all ▶

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PHASAR 4.0 gives you the tool you need to plan and track your finances to ensure that you get the most benefit from your hard-earned income.

PHASAR 4.0 helps with your taxes too; shows your tax liability at any time and takes the hassle out of preparing your tax return of your own.

PHASAR 4.0 even has a built-in date/time organizer to help you keep track of optional events and dates.

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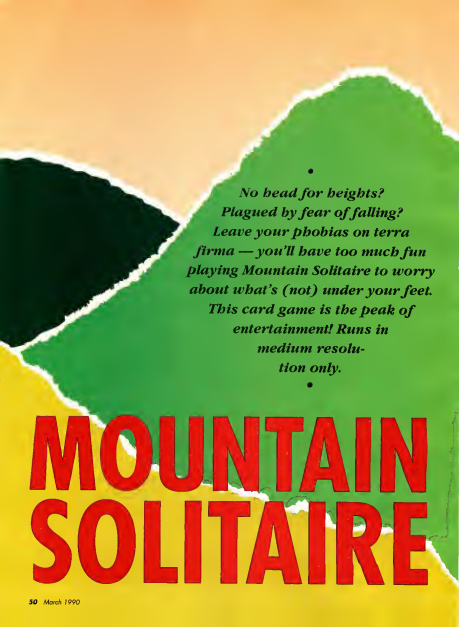
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•
*No head for heights?
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Leave your phobias on terra
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playing Mountain Solitaire to worry
about what's (not) under your feet.
This card game is the peak of
entertainment! Runs in
medium resolu-
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•

MOUNTAIN SOLITAIRE

Climb to New Heights of Fun

PROGRAM BY MICHAEL C. GILBERT

ARTICLE BY AMY H. JOHNSON, START PROGRAMS EDITOR

Scale a mountain in 52 cards or less! All your climbing equipment is in MOUNTAIN.ARC on Side 1 of your START Disk.

This climb looks easy: no finger jams, no ropes or harnesses, no sweaty palms, no sticky shoes. No sun-soaked granite, no snowy peaks, no tree-twisting winds, no frosted breath. It looks easy, all right. But it isn't.

Getting Started

To play Mountain Solitaire, boot this month's START disk; the START menu program runs automatically. At the main screen, click on Prepare, then select "Mountain Solitaire." The program will un-ARC directly onto the destination disk you specify.

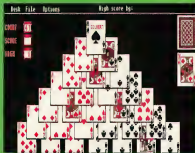
Mountain Solitaire was written in Laser C version 1.0. The source is included on Side 2 of your START Disk in the file MTN_SRC.ARC. Click on Prepare, then select "Mountain Soli-

taire Source Code" to un-ARC it.

To run Mountain Solitaire, double-click on MOUNTAIN.PRG at the Desktop. MOUNTAIN.RSC, CARD1.PI2 and CARD2.PI2 must be in the same directory as

MOUNTAIN.PRG. The game runs in medium resolution.

In the upper right hand corner is the deck, containing undealt cards. In the upper left hand corner are three statistics: Count, the number of ▶



It's difficult to climb to the summit in Mountain Solitaire. START editors managed to make it to the peak, but fell far short of the maximum score.

No finger jams, no ropes or harnesses, no sweaty palms, no sticky shoes.

cards that have been dealt (subtract count from 52 to find the number of cards remaining in the deck); Score, the points for the current game; and High, the high score. On the right side of the menu bar is the name of the high scorer.

Climbing Rules

The computer shuffles the deck, then deals a line of seven cards. This is the base of the mountain. Your task is to place a card between each two adjacent cards, cresting seven levels, each one card less than the level below it. You need 28 cards to reach the top.

Cards are dealt face up, one at a time, by clicking the right mouse button. If you want to play the face-up card, whether it was just dealt or uncovered by the previous play, point the mouse between two adjacent cards and press the left button. The card will appear there.

The computer will only place cards that meet the following rules:

- 1) the card matches the suit of the two below it. For example, a seven of clubs placed on top of a two of clubs and a jack of clubs;
- 2) the card matches the value of the two below it. For example, a seven of clubs placed on a seven of spades and a seven of diamonds;
- 3) the three cards form a run. For example, a seven of clubs placed upon a six of hearts and a five of spades.
- 4) the card matches the suit of one of the cards below it and the value of the other card below it. For example, a seven of clubs placed on a seven of diamonds and a ten of clubs.
- 5) the card is an ace. Aces are wild in Mountain Solitaire. They can be placed upon any two cards.

Climbing Strategy

There are two ways to win in Mountain Solitaire: reach the top of the mountain, or beat the high score.

Scoring peaks at 80 points. You receive one point for each card left in the deck at the end of the game (24 points maximum), one point for each card played on the second level (six cards = six points maximum), two points for each card played on the third level (five cards = 10 points maximum), three points for each card played on the fourth level (four cards = 12 points maximum), four points for each card played on the fifth level (three cards = 12 points maximum), five points for each card played on the sixth level (two cards = 10 points maximum) and seven points for placing a card at the peak of the mountain. If you reach the top using the minimum of 28 cards, you earn the maximum 80 points.

Think carefully when placing cards on the mountain. Once played, a card can't be removed, and each one you place affects your choices on the level above. For example, you put the seven of spades next to the queen of hearts. The only cards you can play upon those two are the seven of hearts, the queen of spades, or an ace. And if those cards have already been played or discarded, you're out of luck! You can see the mountain as it builds; to check the discard pile, move the mouse cursor to it and left-click.

The Menu Bar

FILE

Reset Score: Choose this option to make the high score 0 and erase the name of the champion from the menu bar.

Quit: Exits Mountain Solitaire. You can quit at any point during the game.

OPTIONS

New Game: Starts another game. Clears the previous game, shuffles the deck and deals seven cards for the base of the mountain.

Replay Game: You now have a chance to try your hand at the game you just played. Clears the previous game, then deals the same seven cards as before.

Demo: The computer plays the game. Demo will take over at any point on the current game and finish it for you. It cannot be stopped once it's started.

Timer: Deals for you at the selected speed, limiting the time you have to place a card. Timer has three speeds, slow, medium and fast, which are grey when Timer is off. When Timer is chosen a checkmark will appear next to it and next to the current speed. Click on a speed to select it; click on Timer to turn the option on and off.

Summ(ing) It Up

Mountain Solitaire is no simple solitaire. You must play your cards in a precise pattern, building a mountain. One pass through the deck is all you get — 52 cards to reach the summit. ■

Michael C. Gilbert is a professional programmer for a small firm that develops supervisory control and data acquisition systems. He has been writing commercial software for the ST since its inception, including Peggammon, a backgammon variation published by Artworx. Gilbert wrote Cinko for the September 1989 issue of START.

continued from page 48

TX81Z MIDIEX patches archived in file TX81ZMDX.ARC (#829). That's almost 900 patches for the cost of a download.

TIGERDEMO.ARC (#858): demo of the new TIGER graphical editor from Dr. T's. Works with RCS and standard MIDI format sequence files.

MIDIMAX.ARC (#822): demo of the MIDIMAX real-time MIDI data processor from Codehead.

D50DEMO.ARC (#865): two sampler patch files with a sysex autoloader program for the Roland D50 highlighting the D-SPECTRUM patch collection offered by Patch/Works. A neat way to market synth patches.

XPATDX4.ARC (#807): This is my patch file format conversion program for the Yamaha DX7/TX7. It automatically recognizes every patch file format I have ever run across on a BBS (ST, Mac, C64, IBM or 8-bit Atari) and converts it into any one of five formats commonly used with the ST.

A Musical Headstart

While learning to read music, nine times out of 10 it's the rhythm, not the pitch, that causes the most problems. A good aid is to see the notation and hear it played at the same time — a simple and useful exercise with many sequencers. Dietrich Gewissler has taken this concept one step further with his Headstart rhythm database. This is a huge compendium of one-measure rhythm patterns, logically organized according to the number of notes played per measure (one through 16) and timings. Beyond educational, these are a good rhythm source for building drum machine patterns.

Headstart is offered in standard MIDI file and Pro 24 III formats (as well as for other computers), making it accessible to virtually every Atari sequencer on the market. It is particularly good with sequencers/

scoring programs that show notation along with playback, such as Cubase, Notator, EZ-Score Plus and Tiger Cub. More than half of the 2000-plus patterns are in standard 4/4 meter with both duplet and triplet timing; others are in 5/4, 9/8 and other meters. Headstart comes with detailed instructions, a printed score for the patterns and suggestions on best patterns to use with drum machines for building specific styles (e.g., disco, hard rock, reggae, polka, etc.).

Staccato Notes

Wrapping up this month with a few odds and ends, we have received several calls wondering what has happened to the Sonus Corporation. Don Taylor, former president of Sonus, has closed that company and started up a new one named SoftPac. SoftPac will distribute and provide technical support for former Sonus products, as well as introduce upgrades and new products.

In my review of the Midisoft Studio: Advanced Edition sequencer (START, October 1989), I mentioned standard MIDI files would be supported in a future version. The future is now, with current version 3.03.

Those interested in doing musical desktop publishing can now get extremely professional results using the combination of The Copyist DTP, Touch-Up and either PageStream version 1.8 (not earlier versions) or Calamus. Scores created in The Copyist can be saved as TIFF files, then converted with Touch-Up into standard .IMG files which either publishing program can import. While The Copyist can save scores into EPS files, these are too big for PageStream to handle at present and Calamus cannot import EPS files at all. The files can, however, be printed directly through UltraScript using Imagen's Crescendo font (similar to the Adobe Sonata font) with stunning results.

The long-rumored/hyped Hotz MIDI controller box from Atari will go commercial sometime in early 1990. The initial version is targeted for professional musicians, will include STACEY along with the main controller and two wing units, and runs about \$10,000. ■

MUSIC/MIDI Editor Jim Pierson-Perry is a chemical engineer who lives in Elkton, Maryland.

PRODUCTS MENTIONED

MIDIMAX, \$49.95
Codehead Software, P.O.
Box 74090, Los Angeles, CA
90004, (213) 386-5735.

Copyist DTP \$399.
Hiran, \$99, Tiger Cub,
\$99. Dr. T's Music Soft-
ware, 220 Boylston Street,
Suite 306, Chestnut Hill, MA
02167, (617) 244-6954

K4 Editor/Librarian
\$139, Profzoo, \$139
Interval Music Systems 12077
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478-3956

Headstart version 1.1,
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Crescendo Font, Call for
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EZE, \$249 Gaela Software,
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NSW, 2028, Sydney,
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Midisoft Studio Advanced
Edition version 3.03, \$149
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It's revolutionary! SPINWHEEL.ARC is on Side 1 of your START Disk.

After running across an article in Scientific American a few years ago on the mathematics of cycloids, we decided to create a drawing program that would generate attractive geometric drawings by making a few simple adjustments. "What the world needs," we thought, "is a method of drawing these pictures that doesn't rely on manual dexterity." (Ian has none, you see.) The result is SpinWheel.

The SpinWheel concept is simple and is roughly based on the old Ohio Arts game called Spirograph. You have a fixed gear that is stationary

and a rolling gear that moves. All you do is adjust the gears to generate the patterns you want and the program does the rest.

Using SpinWheel

To use SpinWheel, boot this month's START disk; the START menu program runs automatically. At the main screen, click on Prepare, then select "SpinWheel." The program will un-ARC directly onto the destination disk you specify. To run SpinWheel, double-click on SPINWHEEL.PRG at the Desktop. SPINWHEEL.RSC must be in the same directory. SpinWheel runs in all resolutions.

If you have your ST's color palette set for a white background, the

program will reverse the colors to provide a black background for drawing. (The colors will be restored to your settings when you exit.) The program begins in Menu mode, with a standard menu bar visible. The menu contains three selections: Desk, File and Options.

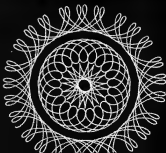
The File Menu

Draw: Starts or continues a drawing using the current gears and options. When you select this command, the program changes from Menu to Draw mode. The GEM menu bar will disappear and the drawing begins. While in Draw mode, holding down the left mouse button pops up a speed control. When the control appears, move the mouse pointer to

Remember Spirograph, the game that let you generate geometric shapes through a few simple adjustments? Ian Lepore and Pete Ewing bring this fascinating concept to the ST with their program SpinWheel. Even if your talents don't include drawing, you'll still find this program easy to use and addictive. And you can save the images you generate in SpinWheel into your favorite graphics program. SpinWheel was written in C and runs in all three resolutions.



BY IAN LEPORE AND PETE EWING



the slider box and set the desired drawing speed. To stop drawing and return to Menu mode, click the right mouse button. (You may need to hold down the right button momentarily). A slow drawing speed helps you to stop drawing at precisely the place you desire.

New Shape: This selection starts the New Shape dialog, letting you select new gear sizes and pen position. When in New Shape mode the menu bar disappears and a group of four buttons appears in the upper left corner of the screen. The first three are radio buttons which select which piece to manipulate (the fixed gear, rolling gear, or pen.) The Done button returns you to Menu mode.

The New Shape dialog is described in detail below.

Clear Screen: Clears the screen to let you draw another pattern.

Save Image: Saves the current drawing as a DEGAS or NEO file.

Load Image: Loads a DEGAS or NEO picture.

Quit Exits SpinWheel

The Options Menu

Smoothness Sets the spacing between dots when the image is drawn. Small numbers (less than 2) result in a very smooth image, but the drawing proceeds rather slowly. Large numbers can produce interest-

ing results as the drawing gradually solidifies with a strobe-like effect.

Set File Format: With this option you choose whether a DEGAS or NEO file is saved.

Set Screen Access The program, by default, uses a custom pixel plotting routine to draw the images as quickly as possible. Unfortunately, this isn't compatible with extended-resolution monitors. Set Screen Access allows you to change to VDI graphics methods, providing compatibility with non-standard display hardware.

Reverse BG Color The best looking drawings are those done on a black background. However, a dump of

continued on page 62

SPINWHEEL



This is just one of the many attractive patterns you can generate with SpinWheel

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On Disk: The aSTronomer; Text Compression and Huffman Coding with Personal Pascal; Flicker Animation Program, MEDGAVIL
Reviewed: Word Writer ST; Data Manager ST; Swiftcalc ST; Five BASICs compared.
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Reviewed: Personal Finance Program; Desk Accessories Compared.



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ARCADE ADVENTURING

In which David Plotkin develops ennui, John Manor discovers the efficacy of prayer, and Frank Nagy embraces a clone.

HILLSFAR

Reviewed by David Plotkin

Hillsfar is an adventure role-playing game from the master of such creations, Strategic Simulations. It sports pretty good graphics, but is somewhat short on plot and long on frustrating "arcade" sequences.

Choosing a Character

The game begins by you selecting a character. Hillsfar is part ofSSI's Dungeons & Dragons series of RPGs and lets you either import a character from other games in that line, such as Pool of Radiance, or create a new character altogether.

To create a new character, the game gives you a number of different races to choose from. These include dwarves, elves, gnomes, half-elves, halflings and humans. Your character's race affects his (or her — you can have a female character) abilities, and also what type of character they can be. Each character type has certain special traits — fighters, for example, can use any form of armor or weapon, but magic is beyond them.

Once you've decided on a race and character type, the game gives you ratings in areas that define your



Hillsfar is an episode in Strategic Simulations' popular Advanced Dungeons & Dragons series. It's a role-playing game peppered with arcade action.

character: strength, intelligence, wisdom, dexterity, constitution, etc. Each of these characteristics determine how your alter-ego will fare in Hillsfar. Dexterity, for example, is a thief's most important attribute, while strength and constitution are very important for a fighter. The game will tell you what the ratings are for the various areas, from 3 (low) to 19 (high). You can accept the character or try again. Additionally, each character has Hit points and Experience points. The hit points decrease as your character takes damage.

When they reach zero, your character is dead and the game is over. Experi-

ence points go up as your character wanders around doing battle and finding treasure.

Goal and Gameplay

The actual reason for you being in Hillsfar is never made clear. There's a vague reference to a despot and a merchant named Maalthair, but nothing definite: no princess to rescue, no dragon to slay. The biggest challenge is trying to figure out what buildings are safe to enter and which ones put you into a mad race to escape the guards.

Hillsfar is a walled city, which your character must enter without

weapons or magic. Anything you use must be acquired in the city itself. While in the city, there are two views on your screen. The left window contains a view down the street where you are, including buildings, doors and other characters. The right window is a map of the city, with a tiny arrow that indicates where you are and what direction you're facing. As you wander the city, time passes, and if you don't find places to eat and rest, your character's constitution will suffer. There are many buildings in Hillsfar, and many can be entered. If you do enter a building, the view switches to an overhead view of the inside of the building and the fun begins.

Most of the buildings in Hillsfar seem to have been laid out by a maniac and resemble labyrinths. The moment you enter, the door is sealed behind you, and you must wander the building looking for the way out. You have a limited amount of time to find the way out, which is indicated by a time bar at the top of the screen. In the meanwhile, guards are hunting for you and if they catch you in the building after your time runs out, it's off to the arena for you (more on this in a bit). There are other surprises in the buildings as well, but I'll let you find them for yourself.

Within Hillsfar, you can recruit assistants (with whom you must split any gold you find), try to coax or buy information from inhabitants (including the eternally gabby bartenders), practice your archery (and other weapons) at the range (and possibly even win some money) and generally try to figure out why you are spending so much time playing this game.

Arcade Sequences

If you fail to find the exit in time, you'll be captured by one of the dreaded Red Plume Mercenaries. At this point, you go to the arena to fight an opponent. Some of these matches can be to the death, effec-

tively ending the game if you lose.

Unfortunately, as with many other games of this type, the "arcade" sequence of your arena battle leaves a lot to be desired. You have only four basic moves—block left and right, and hit left and right. Your character cannot move. Since my preferred method of combat is run and jab (flow like a butterfly, sting like a bee...) I don't do well in the arena. Further, all the moves look pretty much the same, and the characters are not very responsive. The combat is interlaced with witty comments about the fight, which generally go by too fast to read.

Another arcade sequence which was little better is the ride into Hillsfar. You must guide your trusty steed as he runs along an obstacle-strewn road, gauging his speed and jumping the worst of the obstacles. If you miss a jump, you get dumped, with a resultant decrease in hit points. Get dumped too many times and your horse deserts you, leaving you to walk to Hillsfar, a rather tedious alternative. To get to the Trading Post, you must ride back and forth, so you must go through the riding sequence quite often. Fortunately, it doesn't take very long before you get good at it. It would be nice if this sequence could be skipped altogether.

Recommendation

All in all, Hillsfar left me unfulfilled. The arcade sequences were short and very limited, and the game would probably be better if they were left out. The wild chase through all the buildings got old rather quickly, reminding me too much of my everyday life. I would have much preferred a reasoned exploration of the buildings. The game, however, is not copy protected, and can be installed on a hard drive. You might like the aspects of the game better than I did, but check it out before you buy.

TARGHAN

REVIEWED BY JOHN S. MANOR

As a boy in the village of Edengarfin, you often heard the old wizard Athna-An tell frightening tales of the Evil One who lives in a distant castle. You are Targhan, and you have grown to be a fearless warrior-chief. It is time now for you to face the Evil One and defeat him. With sword in hand you venture off into the perilous wilderness to the east of Edengarfin.

So goes the scenario of Targhan, the latest role-playing adventure from Star Games. It's a game that deftly combines slick arcade-style gameplay with a challenging story line. Targhan runs on color and monochrome systems.

Gameplay

The graphics and sound in Targhan are outstanding. The Targhan-character is big and animated in a very lifelike fashion. The backgrounds are often stunningly beautiful with little animated extras such as a browsing deer or a squirrel climbing up a tree. You walk left or right, climb ropes into trees and climb or jump down into wells or caverns. The sound is full of digitized grunts and battle cries. The digitized music is good too.

You control Targhan through your joystick and you can jump, turn, walk, crouch and pickup or drop objects. You can move him left or right or make him climb ropes. You have a number of fighting moves such as the fore thrust, reverse thrust, fore or reverse kick, the turn and thrust and the crouching thrust. Ninja-type stars are scattered in some of the locations in the game. Pick them up and you can use them against your various adversaries. When you pick something up it appears in one of five icon windows below the play screen. Press the corresponding function keys to access the item you wish to use.

continued on page 64

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SPINWHEEL

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the screen to the printer (using ALT/HELP), looks best if the background color is white. This option reverses the foreground and background colors for this purpose.

Set Color Palette: A mini control panel pops up which allows you to set the colors in the ST palette.

Set Pen Color: Chooses a new pen color to use when drawing.

Creating A New Shape

Drawing a new shape takes several steps. Note that it is not necessary to change each of the pieces every time the New Shape command is selected. The following description assumes that all three pieces are to be changed.

Start with the Fixed Gear button selected, and hold down the left mouse button. The mouse pointer changes, and a rubber box appears which tracks the movement of the mouse. (You'll notice that this is not a standard rubber box, it is centered on the screen, rather than fixed at one corner).

When you release the mouse button, a circle is drawn to indicate the new size of the fixed gear. The size of the fixed gear always corresponds to the horizontal length of the rubber box when the mouse button was released. For example, if you drag out the rubber box to look like a tall narrow rectangle, you get a gear with



a small radius. Try it, you'll see.

Select the Rolling Gear button, and once again hold down the left mouse button and drag the mouse. This time, the rubber box remains attached to the right side of the fixed gear. If you drag the rubber box to the right of the fixed gear, you define a rolling gear that travels around the outside of the fixed gear. If you drag the rubber box to the left, you define a gear that rolls inside the fixed gear. Again, when you let go of the mouse button, the diameter of the rolling gear is equal to the horizontal length of the rubber box.

The fixed gear in SpinWheel is always a "ring" type gear and the rolling gear a "wheel." You can place the rolling gear inside or outside the fixed gear. You can even place a very large rolling gear inside a small fixed gear.

Next, select the Pen Pos (Pen Position) button. When you hold down the left mouse button and drag, you will stretch a rubber-band line which connects the rolling gear to the mouse pointer. When you release the mouse button outside the rolling gear, you might think of the pen as being attached to the end of a stick which is glued to the rolling gear.

When you have set the gears and pen the way you want them, click on Done to return to Menu mode, then select the Draw command to begin the new drawing.

Tips and Techniques

It is important to remember that the Draw command starts or continues a drawing. You can mark out a shape, draw several revolutions of the gears, then suspend the drawing, return to Menu mode, change the pen color (or any other option), then resume drawing from where you left off.

If you start drawing a new shape then realize you meant to change the pen color before you started the drawing, the following sequence will straighten things out:

- 1) Stop drawing and return to Menu mode.
- 2) Select the new pen color.
- 3) Select New Shape, and click on Done in the New Shape dialog without changing anything.
- 4) Select Draw to restart with the new pen color.

By going into the New Shape dialog, you force the draw routine to plot over the points that were originally done in the wrong color. If you don't go into New Shape first, the drawing would resume from where it left off.

The Save Image and Load Image options can be used to generate interesting clip art which you can include in other programs that accept DEGAS or NEO pictures. (The speed control in Draw mode is intended to help with this; it allows precision stops while drawing.)

About The Program

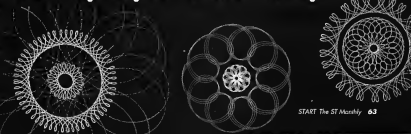
You'll find the source code for SpinWheel on Side 2 of your START disk (to access programs on Side 2, see disk instructions elsewhere in this issue). SpinWheel was written in C (and a little bit of assembler), and compiled using the Sozobon C public-domain compiler and Ian's GEMFAST public-domain GEM bindings. It should compile correctly using any other compiler and bindings, such as Laser C or Alcyon C. In the source-code file main.c are some hints about compiling with other compilers.

If you program in C you'll find useful subroutines within SpinWheel's source code. Of particular interest is fastplot.c, which provides assembler code for quickly plotting pixels of any color in any resolution. The code is commented extensively and written modularly, so the subroutines can be ported to your own projects.

Pete gets credit for the math wizardry. ■

Ian Lepore is a Senior Operations Analyst (read: Company Technical Guru) for AMSOC, a Denver firm providing computer facilities management services. Pete Ewing specializes in mathematical programming and is learning to fly. This is their first program for START.

The best looking drawings are those done on a black background



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Getting There

Your journey to the castle of the Evil One won't be easy. Bloodthirsty bats fly at you, wild dogs lunge at you and turn into leaping gouts of flame, tree-dwelling dwarves try to cut you down to size and an ogre-monster will try to make a lasting impression on you with his massive club.

A bar at the bottom of the screen shows how much life you have left. Every time you're hit it goes down. When it's gone, the game is over. Bottles of potion can be found in some locations. They'll restore all your life when you use them. Not every creature you meet is Targhan's enemy. It's safe to kill lizard men, but some of the other beings are needed to finish the game. Figuring out which ones is part of the challenge. I started out killing everything in sight (or trying to) and soon found I was stuck in the game

and could get no further.

As in any adventure you must explore the different locations in Targhan and collect certain necessary objects.

When I first played Targhan I usually got killed pretty quickly. With some practice I found I could defeat the lizard men and other sword-fighting enemies by keeping my distance and slashing at them when they walked toward me. In caverns and forests, I backed enemies up until they were at the edge of the screen (they back away when hit), then just kept slashing at them until they died.

The Targhan manual is insufficient — basically all it tells you is the scenario and joystick movement. It is possible to save a game in progress, an important point the manual fails to mention. To save a game, kneel and pray at any one of the many statues you come across. (It would have been nice to have had the

option to restart a game at any point, rather than just letting Targhan get killed and then starting over.)

Conclusions and Recommendations

I found Targhan to be a pleasing balance of adventurous exploring and arcade action, something that is not all that easy to find in computer games. And because of this balance, Targhan can be enjoyed on two levels: either as hack-and-slash arcade slaughter or as a role-playing quest. And the fact that it runs in monochrome as well as color will only heighten its appeal. I enjoyed Targhan and I think most ST owners will like it too.

STARRAY

REVIEWED BY FRANK WM. NAGY

StarRay (distributed by Spinnaker) is an arcade shoot-em-up in the fighting tradition of Defender. It offers seven missions for galactic

Zephyr and STPlus

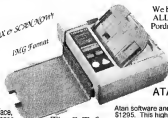
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In the latest release from Star Games, you are Targhan and you must save the world by defeating the Evil One. Don't be fooled: Targhan isn't just another Barbarian clone, it's a full-blown adventure that's sure to keep you on your toes.



At first, Spinnaker's StarRay may remind you of the arcade classic Defender, but you'll soon find that it offers a unique brand of shoot-em-up action.

pilots waiting to get behind their computer controls. Intense gameplay has you take on Landers, Silicon Worms and other interstellar headaches that only the battle-ready warrior will want to challenge. Be on special alert for Krellian ships that release several heat seeking UFO's bent on destroying you.

Hard and Fast Gameplay

Some of alien Landers in StarRay leave a legacy. Be quick to collect these ephemeral, floating "bonus balls" with your fighter. They'll evaporate worthlessly if fired upon. Bonuses can either improve acceleration, increase maximum speed, give your laser greater penetration or more rapid or continuous firing, grant invulnerability for 10 seconds

or confer points. Gameplay is controlled through a joystick.

It's not as easy to scoop up shield power from exploded Air Buses, but that's one skill you'll want to develop fast. Should your shield energy run out, your mission will fail.

Installations are all tactically important. Some are valuable repositories of priceless and dangerous energy cells. Others are forest exterminator robots, pruning otherwise rampant jungle growth. Anti-gravity generators pump out the required BTU's to keep their satellites airborne. If all the installations on a level are destroyed, the world you were supposed to be protecting grows dark and stays dark to end the game. Beware of those installations subverted by the enemy.

On the ST, StarRay fighters are equipped with lasers that destroy anything in sight. (It appears Amiga owners have the added option of less lethal vaporizers for use in those tight dogfights near friendly installations.) Your shield power is reduced every time you ram an enemy ship or get hit by their fire.

Game Control and Some Advice

There are seven levels to get through in StarRay and you can restart the game within any of the first four levels. Turn the sound off to make StarRay faster and more difficult.

Though both the mouse and arrow keys are available for game control, I'd stick with the joystick. The more seasoned player may want to try using the joystick for movement and laser fire and the left mouse button or [CapsLock] key to shower an area with your vaporizers.

Spinnaker's press release on StarRay admits its game is a personal computer version of the coin-op Defender. Yet, StarRay adds all the ST-powered frills of smooth two-way horizontal scrolling, fantastic graphics and sound to the shoot-em-up classic. ■

David Plotkin is a Contributing Editor for START. John Manor has written extensively for Antic magazine. He wrote the review of Gold of the Realm in the July 1989 issue of START. John Nagy is a freelance writer who lives in Lansing, Michigan.

PRODUCTS MENTIONED

Hillsfar \$39.95 Strategic Simulations, Inc., 675 Almonor Ave., Sunnyvale, CA 94086, (408) 737-6800

Targhan, \$39.95 Star Games, 708 W. Bullock Ave., Suite 200, Tempe, FL 33603, (813) 222-0006

StarRay \$29.95 Spinnaker Software, One Kendall Square, Cambridge, MA 02139, (800) 826-0706

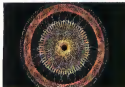
Disk Contents

Programs on Side 1 of Your START Disk

PICTURE THIS!



CAD-3D VERSION 1.0 PAGE 30



SPINWHEEL PAGE 56



MOUNTAIN SOLITAIRE PAGE 50



COLLEGE SPREADSHEET . . . PAGE 89

CAD-3D version 1.0 headlines our annual graphics issue. This is the original version of Tom Hudson's sophisticated modeler for the ST, found in CAD_3D.ARC. It features multiple light sources, solid or wire frame option and four perspectives of the object. See your creations zoom, spin and travel with **CAD-3D Animator**, the companion to CAD-3D version 1.0. The file ANIM_3D.ARC contains the program and a high and low resolution example.

GFA BASIC 2.0 is anything but basic, thanks to graphics programmer Carlos Tirado. His code for **GFA BASIC Wipes & Dissolves** offers a way for anyone to create sophisticated special effects when switching pictures. The new image can unroll, be filled in like a jigsaw puzzle, appear in sections as if painted on venetian blinds or slide in from the sides of the screen. The file WIPES.ARC contains source code to include in your programs, and a demo of the wipes and dissolves.

Two gears, one pencil. Combine that simple concept with superb C programming, and you get **SpinWheel**. Ian Lepore and Pete Ewing wrote this classy drawing program, found in SPINWHEEL.ARC.

This month's game is **Mountain Solitaire**, by Michael C. Gilbert. Try to reach the summit before your deck of cards runs out. To play, you'll need sticky-soled shoes, a rope, a harness, chalk for your sweaty hands ... oh, all right, everything you need is in MOUNTAIN.ARC.

In the Business Applications column, Christoph Herd discusses investing for your children's college education. This **College Spreadsheet**, which runs under LDW Power, is found in COLLEGE.ARC.

NOTE: We have a new, easy way to replace damaged START Disks for subscribers only. Call our distributor at (619) 485-7754. They will verify that you're a subscriber and ship a replacement to you within a day. No need to mail back the bad disk. Newsstand readers still must send the damaged disk to 544 Second St., San Francisco, CA 94107.



GFA BASIC PAGE 45

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CAD-3D Animator	ANIM_3D.ARC	1				competition to CAD-3D v. 1.0
College Spreadsheet	COLLEGE.ARC	1				runs under LDW Power
GFA BASIC Wipes & Dissolves	WIPES.ARC	1				
Mountain Solitaire	MOUNTAIN.ARC	1				
SpinWheel	SPINWHEEL.ARC	1				
Clip-Art Sampler	CLIPART.ARC	2				see DTP Solutions
Mountain Solitaire Source Code	MTN_SRC.ARC	2				written in Laser C v. 1.0
Mystic Realm Source Code	MYSTSRC.ARC	2				written in GFA BASIC 2.0 Mystic Realm published January 1990
Spinwith Camel Demo	SCAMEL.ARC	2				
SpinWheel Source Code	SPIN_SRC.ARC	2				written in Scrobon C
X-10 Controller Update	X10_MED.ARC	2				first published February 1990



CLIP-ART SAMPLER PAGE 75

Programs on Side 2 of Your START Disk

START FROM START

We're proud to present a small, but comprehensive, **Clip-Art Sampler** to accompany Dan Fruchey's review on page 75. In the old days (the years between Gutenberg and Postscript), art directors bought these pictures in big books and cut out what they wanted to use. "Hard copy!" gasp horrified desktop publishers. Have no fear! For your digitized delight — CLIPART.ARC.

As we mentioned in the Alert Box, the forgotten code to Mystic Realm, **START's** game for the January 1990 issue, is being published this month. John Lance's **Mystic Realm Source Code** was written in GFA BASIC 2.0. You'll find the ASCII version in MYSTIC.ARC.

If you like this month's feature, CAD-3D version 1.0, check out the **Spinwith Camel Demo**, in the file SCAMEL.ARC. Designed with Antic Software's Cyber Paint, the demo show off the remarkable detail and 360 degree imaging for which both CAD products are praised.

And for you hard-core code hounds Side 2 contains **Mountain Solitaire Source Code**, in MTN_SRC.ARC, the Laser C version 1.0 source to Michael C. Gilbert's great card game. SpinWheel also was written in C, Scrobon C, to be exact, a public domain compiler written by SpinWheel's author, Ian Lepore. **SpinWheel Source Code** is compatible with the Laser and Aleyon C compilers. You'll find it in SPIN_SRC.ARC.

Last month we published Howard MacOdrum's automation software for the X-10 Controller. This month we have an **X-10 Controller Update**. It's the same great software, except now it also runs in medium, as well as high, resolution. Just replace your current files with the ones in X10_MED.ARC.

DISK
INSTRUCTIONS
PAGE 68

Disk Instructions

Now Using Your START Disk is as easy as 1, 2, 3!

Running the START Menu Program

From a Floppy Disk: Put your START disk in drive A and turn on your computer. The START menu program will come up automatically.

From a Hard Disk: Boot your computer as you normally would. If you're using a color system, set the computer to medium resolution. Put your START disk into either drive A or B, and double-click on the drive's icon. After the disk's directory appears, double-click on START.PRG. Note: Do not run the menu program from your hard drive! Each issue's disk has its own START.INF file which must be in the same directory as START.PRG.

When the menu program first runs, it will ask you to describe your floppy disk drive configuration. It is very important that you enter this information correctly, as the program will use the information later to correctly back up and prepare your program disk. Click on Single or Double sided for both drives A and B, if you only have one drive, the Drive B buttons will be greyed out. If you are unsure whether your drives are single- or double-sided, click on Help.

What Then?

This is where accessing your START programs gets easy. Just follow these three steps:

Format Disk

1. Here, you can format a single- or a double-sided disk in either drive A or B. Click on the drive containing the disk to format, select Single or Double sided and then click on Format. Formatting a disk will delete that disk's contents. Do not format your START disk.

Backup START Disk

2. We recommend that you make an archive copy of your START disk, which is in the special Heidi format. If you have a single-sided drive you can back up Side 1 of your disk onto one single-sided disk. We also recommend that you borrow a friend's drive to back up Side 2 of the disk onto another single-sided disk. If you have a double-sided drive, you can back up the disk onto one double-sided, Heidi-format disk. The computer will rely on the system configuration information you entered earlier to tell you which disk needs to go in which drive.

Prepare Disk

3. This is the heart of the START menu program. The Prepare a Disk option brings up a window that lists the names of the programs, source files and demos on this issue's disk. The names of the programs will be given in full; you don't have to worry about the specific names of the archive files. If a program has accompanying source code on the back side of the disk, the entry will be listed separately. For example, one entry may be "Avecta I: Elhora" and an entry further down would be "Source Code for Avecta I: Elhora."

Next, a dialog box will ask for the destination directory, and whether you wish to send the program files to a folder. The destination directory may be a floppy, hard drive or RAM disk. If you wish to put the files in a folder, the program will offer you a default folder name. Press (Return) to use this name or edit the path directly. If the folder does not already exist, the program will create it. If you select drive A or B as your destination drive, the program will ask

you if you want to format the destination disk. The menu program will then un-ARC the files directly to the destination drive, and will minimize disk swapping by analyzing the drive configuration you specified earlier.

Bonus Options

Each month, your START disk menu program will include special bonus information ranging from the issue's disk contents and coming attractions to special subscription offers and the latest-breaking Atari news. Click on the various menu buttons and scroll through the main menu window to read this information.

And There You Have It

For more detailed instructions, click on the Help button. Click on Exit to return to the Desktop. And that's all there is to it — un-ARcing START programs was never easier!

Credits

Your START disk format and interface were developed by some of the most talented programmers in the ST world. Contributing Editor **David Ramsden** wrote the interface for the menu program and the custom unARcing routines that are as much as 40 percent faster than ARCX.TTP. Contributing Editor **Dave Small** and **Dan Moore** wrote the Heidi formatter that made the back side of the START disk accessible for the first time. **Charles Johnson** of Codehead software wrote a custom version of the STARTGEM program that lets the menu program run at boot time even though it's GEM-based.

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BY DAVID SMALL STAFF CONTRIBUTING EDITOR



A SMALL TOUR OF

UNIX

PART

4

X-WINDOWS

In the December 1989 issue, in anticipation of the UNIX-capable TT's release, we asked ST-guru Dave Small to take our readers on a tour through the complex world of UNIX. Part I covered the basics of UNIX file structure and several important UNIX concepts. Part II discussed such UNIX niceties as the Root and oddly-named commands. Part III covered the concept of pipes in UNIX and its wonderful ability to easily redirect output. In this, the fourth and final installment, Dave takes a look at USENET and X-Windows.

One rather eerie aspect of UNIX in terms of UUCP and USENET is phone dialing. Typically, you want to dial other UNIX computers in the middle of the night, since phone rates are lowest then and the other computers are least likely to be busy. Yes, this means most UNIX systems stay up all the time, until they either crash or

It should be an exciting new decade for Atari users.

(better) are taken down for preventive maintenance.

A program called "cron" worries about dialing times and any other regularly scheduled tasks. Cron looks at a table, called a crontab, which tells it when to do what. And typically, sometime early in the morning, cron calls up UUCICO (you don't want to know what it stands for), a program that calls the other UNIX machines in your area and exchanges USENET and mail with them.

It's kind of strange to be working in the wee hours of the morning and listen to the UNIX machine dialing other computers all by itself, its hard disk muttering not-so-quietly after each call, as though digesting the information. It makes one think that soon, a conspiracy of UNIX machines will arise.

Cron also does stuff like end-of-week cleanups, system scheduling, and anything else you can dream up to make it do. It can even remind you to send in your taxes on April 15 if you'd like. No kidding.

As an example of a truly useful cron application using UNIX tools, I managed to whip up a utility that scans my USENET feed each night for the word "Spectre," and mails me each note that contains it—sort of weeding them out of the megabytes of USENET data. Otherwise, I'd miss them, I'm low on time to be scanning even the comp.sys.atari area for news on Spectre. This scanning is done for me automatically at 5:15 each morning, following the morning's phone calls—all while I'm sleeping.

X-Windows

Something you may have heard a lot about in relation to UNIX is X-Windows. Atari's new TT is listed as having X-Windows.

First of all, X-Windows is not a windowing system, like GEM on the ST. X-Windows is simply a standardized way for a program to communicate with a screen (the ST has a close analogy in VDI). X-Windows doesn't say if you have drop-down menus, pull-down menus or even menus at all—it just says "draw a line from here to there," "draw some characters" and so forth.

The neat thing about X (as it's often abbreviated), is that any screen running it can talk to any program running X and put something meaningful on-screen. It's a good attempt at being device independent—color or monochrome monitors of different resolutions work pretty much equally. X also typically supports a three-button mouse, which takes some getting used to.

The interface that's piled on top of X-Windows can be anything. You could put the Mac interface on top of it (careful on the legalities), GEM, Windows from the IBM world or whatever.

X-Windows is the moral equivalent of the cable to the monitor. It just gets whatever you want displayed to the screen. It's up to the system designers to design that "whatever" operating system and up to the programmer to use that system in their program—say, a "file-sector call" such as the one STs use.

Atari has made no announcement about what it's putting on top of X-Windows. I have a

small bet they'll use GEM, but no one knows.

Hope this puts the X-Windows announcement in perspective. And by the way, I've worked with two separate X-Windows-based setups in the last year and I wouldn't inflict either of them on any beginner computer user. GEM is far more friendly.

What's There To Do Under UNIX?

If you're looking for applications programs like word processors and spreadsheets and games in UNIX, you'd better forget it for a while. UNIX is only now getting super-popular in places other than high-brow engineering labs and ultra-computer centers. It was very big news fairly recently when WordPerfect announced it was coming out with a UNIX version!

UNIX is loaded with high-priced engineering stuff, developed for all those Sun and Apollo and HP workstations that run UNIX in a



START Contributing Editor David Small



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Amn 41.0	24	F4U Corsair	27	Mail Merge	38	Spelling 48	33
Amn 42.0	24	F4U Corsair	27	Mail Merge	38	Spelling 49	33
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Amn 52.0	24	F4U Corsair	27	Mail Merge	38	Spelling 59	33
Amn 53.0	24	F4U Corsair	27	Mail Merge	38	Spelling 60	33
Amn 54.0	24	F4U Corsair	27	Mail Merge	38	Spelling 61	33
Amn 55.0	24	F4U Corsair	27	Mail Merge	38	Spelling 62	33
Amn 56.0	24	F4U Corsair	27	Mail Merge	38	Spelling 63	33
Amn 57.0	24	F4U Corsair	27	Mail Merge	38	Spelling 64	33
Amn 58.0	24	F4U Corsair	27	Mail Merge	38	Spelling 65	33
Amn 59.0	24	F4U Corsair	27	Mail Merge	38	Spelling 66	33
Amn 60.0	24	F4U Corsair	27	Mail Merge	38	Spelling 67	33
Amn 61.0	24	F4U Corsair	27	Mail Merge	38	Spelling 68	33
Amn 62.0	24	F4U Corsair	27	Mail Merge	38	Spelling 69	33
Amn 63.0	24	F4U Corsair	27	Mail Merge	38	Spelling 70	33
Amn 64.0	24	F4U Corsair	27	Mail Merge	38	Spelling 71	33
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Amn 84.0	24	F4U Corsair	27	Mail Merge	38	Spelling 91	33
Amn 85.0	24	F4U Corsair	27	Mail Merge	38	Spelling 92	33
Amn 86.0	24	F4U Corsair	27	Mail Merge	38	Spelling 93	33
Amn 87.0	24	F4U Corsair	27	Mail Merge	38	Spelling 94	33
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Amn 89.0	24	F4U Corsair	27	Mail Merge	38	Spelling 96	33
Amn 90.0	24	F4U Corsair	27	Mail Merge	38	Spelling 97	33
Amn 91.0	24	F4U Corsair	27	Mail Merge	38	Spelling 98	33
Amn 92.0	24	F4U Corsair	27	Mail Merge	38	Spelling 99	33
Amn 93.0	24	F4U Corsair	27	Mail Merge	38	Spelling 100	33

professional environment. So, if you need to figure strain on a crossbeam so many feet wide supported with #9 bolts, have I got a deal for you!

On the other hand, just playing with the present UNIX utilities is a lot of fun and very "educational." This means, keep lots of backups and on tape or floppy, too — not on another part of the hard disk, which you will, sure as daylight, blow away a few times while learning.

If you're new to the UNIX environment, it'll take you a while to get

UNIX is a software developers dream.

your feet under you will be comfortable with it. One very valuable resource is any book on UNIX, you'll find countless examples of things you wouldn't think to do yourself and can use in the future.

You'll not find much "classic personal computer stuff" on a UNIX machine. There just isn't that much. It's going to be 1985 and the ST all over again — but with the advantage that software from other UNIX machines can be ported to the Atari very quickly, because the port is so easy under UNIX. (Often, it just requires you to move the source code to the Atari machine and recompile it — and you're done. It's that easy.)

A Developer's Dream

UNIX is a developer's environment. It's loaded for bear in terms of C-language development, there are utilities on top of utilities in the re, often found nowhere else. There's a superb editor, called EMACS (which has found its way to the Atari world), there are excellent fast compilers, debuggers, decompilers, tracers, etc. Many, many companies develop on

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UNIX machines, then do their testing on the final-destination machines, because the UNIX development tools are so good.

Also, UNIX is cross-breeding into other systems, because C, the language of UNIX, is going so many places. Hence, the "standard C I/O Package" (stdio) is on many non-UNIX computers, supporting C there (on the ST, too). Many UNIX ideas, like the MAKE utility, are on the ST and other machines.

And let's be fair. Things like subdirectories — well, UNIX predates IBM/MS-DOS, and it's a pretty easy thing to figure out where MS-DOS got pipes and redirection. UNIX is the root of many things in the industry. The old saying says, "steal from the best"; that's why a lot

**It's strange to hear
your UNIX machine
dialing other com-
puters all by itself.**

of the computer industry uses UNIX one way or another.

Conclusion

I hope you've enjoyed this overview and I hope it's given you some idea of the overall picture. Still, there's so much I haven't covered. But I don't want to overwhelm you; I want to give you a taste of UNIX, not enough to give you indigestion. Believe me, UNIX is overwhelming to a beginner; there are so many commands and so few overviews of what they're all for, which is one of the things that prompted my tour in the first place.

The official System Five manuals are atrocious, so run, don't walk, to your local bookstore, shop the UNIX books and find a couple that agree ▶

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From START the ST Monthly



DTP SOLUTIONS

START's Clip-Art Overview

BY DANIEL FRUCHEY

Samples from clip art collections mentioned here can be found in the file CLIPART.ARC on Side 2 of your START disk

Almost every desktop publishing project demands some form of art. Flyers, newsletters and brochures all cry out for a graphic form of expression. Whether it's a border, diagram or some other form of art, you'll find that graphics are an invaluable tool that attracts attention to the text because

they break up long stretches of text, aid comprehension of the written word and help direct a reader's eye.

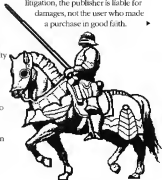
There is a wide variety of clip-art collections available for the ST. The question is, which ones will work for you? In this article we'll explore some of the problems encountered in choosing and using clip art, and then review some of the clip art currently available to help you find the collections best suited to your needs.

Why Commercial Clip Art?

Commercial clip art can be expensive. Average costs range from 25 cents to 90 cents per graphic. However, its presentation and quality could wind up saving you your sanity, as well as time and money. Commercial graphics are packaged with a catalog that lets you locate pictures with ease. (It's frustrating to know that you have a graphic and then not be able to find it. After spending an hour loading pictures in search of a specific graphic you'll probably never go back to public domain again.)

Commercial collections of clip art

have been cleaned up and optimized for the various DTP software you'll be using. Graphics are grouped according to subject and greater selection is offered for a wider range of applications. For the commercial user, protection from copyright violation is built into the purchase: the graphics are original works owned by the publisher, the proper permissions have already been obtained, and, if there is a danger of litigation, the publisher is liable for damages, not the user who made a purchase in good faith. ▶



Choosing Graphics

Clip art comes in many different formats, and there's nothing worse than to purchase a collection and find out that you can't use it. I longingly look forward to the day when there is a truly universal picture format. In the meantime, we have several good formats to choose from.

Unfortunately, not every program can use every format, especially with systems that use 1MB or less of RAM. This is because desktop publishing programs and document processors are notorious memory hogs. By the time you've loaded the program, resource files, fonts, macros, help

files and printer drivers there may be no room left for graphics. Unless you own a Megat or upgraded ST it's essential to pick your graphics carefully.

Image files work best when memory is scarce, as they only use the exact amount of RAM necessary for the graphic. A 32K DEGAS screen may only contain 8K of actual useable pictures; the rest is wasted space.

Metafiles also use minimal amounts of memory but not every program uses them. Listed below are descriptions of metafiles and bit images to help you decide which graphics are best for you.

Bit-Mapped Images

Bit-mapped images, also referred to as raster graphics, are the most common types of computer art. They're relatively easy to create, simple to edit and they transfer readily among computer systems and file formats.

Each pixel in a bit-mapped image is precisely "mapped" to a specific location. The resulting pictures are extremely detailed with excellent definition. Unfortunately, they're created with a fixed size in mind. When a bit-mapped picture is enlarged beyond its original size it begins to look awkward. Jagged lines and imperfections are revealed,



Clip Art Disks 1-7 (Magnetic Images)

Each disk contains over 100 high-resolution graphics saved in Degas (PI3) format. Each screen of data averaged about ten graphics, resulting in fairly small pictures. As a result, they were unuseable with a system using a laser printer but print out nicely on 9- and 24-pin printers. Virtually every subject matter is covered in these collections, including computers, medicine, religion, animals, food, holidays, etc. This is by far the nicest collection of pictures I have seen to date with the widest variety.

Clip Art Disks 1-7, \$19.95 per disk. Magnetic Images, P.O. Box 17422, Phoenix, AZ 85011, (602) 265-7849



Draw Art, Scan Art (Migraph)

These packages were reviewed in the June 1989 issue of START. Both collections are of the highest quality with a nice selection of subject matter. Draw Art is an original collection of 117 .GEM metafiles created by graphic artist Tom Ethan. The files are precise, clean and easy to work with. Scan Art is a collection of 114 bit-mapped graphics saved in .IMG format. The pictures were scanned from leading clip-art source books and cleaned up before being saved individually.

Draw Art, \$69.95, **Scan Art**, \$49.95. Migraph, Inc., 200 S. 333rd, Suite #220, Federal Way, WA 98003, (206) 838-4677.



GEMart #1, GEMart #2 (Softworks West)

Both collections are in .GEM metafile format. GEMart #1 is comprised of 114 images created by Sam Atkinson, who formerly created two collections of clip art for Migraph. It includes a wide variety of subjects, focusing especially on computers and advertising applications. GEMart #2 is comprised of 155 images that are primarily designed for desktop publishing applications, featuring borders, corners and other basic layout components.

GEMart #1, \$39.95, **GEMart #2**, \$39.95. Softworks West, P.O. Box 28465, Laguna Hills, CA 92654-2846

background patterns become distorted and graphics may become unusable in larger sizes. Regardless of the its shortcomings, bit-mapped images are widely available and are used by every DTP program.

The versatility of a bit-mapped graphic is determined by the number of dots per inch (dpi) at which it was created. The greater the dpi, the greater the quality and versatility of a graphic. Graphics created at 75 dpi use RAM sparingly but are of limited use to the desktop publisher. Glaring imperfections tend to show up with little resizing. If you use a 9-pin dot-matrix printer, the problem might be negligible. If you use a laser

printer you can forget quality and only hope readers don't burn your publication.

As the dpi rating of a graphic increases so does the amount of memory consumed. If you own a collection of graphics created at 300 dpi the quality of the images will be outstanding. The only drawback is that you may not be able to use any of these graphics due to memory limitations. Some companies, such as Migraph, state on their packaging that the collection requires at least 1MB of memory to use. They're not kidding.

For best results, clip art saved at 7,590 dpi should be used with a 9-pin,

Epson-compatible printer. On a 24-pin or laser printer these graphics would have to be extremely small to be worthwhile. You're better off using graphics saved at 150,300 dpi if you own anything but a 9-pin printer.

Metafiles

Metafiles, also referred to as vector graphics, are generated by joining predefined lines, shapes and patterns to make a design. It's almost like building a jigsaw puzzle. Once the pieces have been arranged they can be grouped, sized and manipulated in relation to each other without losing their distinctive characteristics. When a metafile is changed, the computer simply recalculates the relationship between each component and rebuilds the object based on the new instructions. Lines, curves and patterns will look their best no matter how you manipulate or size them.

When a metafile is saved, you're actually saving the basic shapes, angles and relationships between objects, not the individual pixels that go into making a metafile. As a result, the saved files are extremely compact. A full-page-sized border may only consume 2K of memory as a metafile. Bit-mapped, that same image would consume over 50K of memory.

Metafiles sound great, but there's a catch: when a metafile graphic is built you can't map individual pixels. As a result, the graphics are less detailed than bit-mapped images and much harder to create. Also, metafiles aren't as widely accepted. Currently, only about half of the programs available will load metafiles and only two programs can edit or manipulate them. If you can use them, they are an extremely worthwhile addition to your clip-art library.

Clip-Art Collections

In preparing for this review I examined 18 commercial clip-art collec-



People, Places & Things; Education Graphics; Signs & Slogans (Timeworks)

Each collection is comprised of bit-mapped image graphics saved in .IMG format. The pictures were saved in medium resolution and as a result they require some manipulation to print properly. Images are saved in groups so you need to cut and paste individual graphic components. The graphics are fairly simple in design; they lack the detail and finesse of some of the other collections but are still quite useable.

People, Places, & Things \$39.95,
Education Graphics, \$39.95,
Symbols & Slogans, \$39.95
Timeworks, Inc., 444 Cook Lake Road,
Deerfield, IL 60015, (312) 948-9202



Old Fashioned Variety, Things You See Every Day (Unlimited Software)

These were both versatile collections but their quality put them dead last in my estimation. Pages were scanned directly from clip art books at 75 dpi with little or no cleanup. The result is a sometimes confusing mass of pictures that are unusable because of blurred detail, distorted patterns, etc. I found only about 25 percent of the pictures worthwhile. Subject matters include alphabets, office equipment, architecture and transportation.

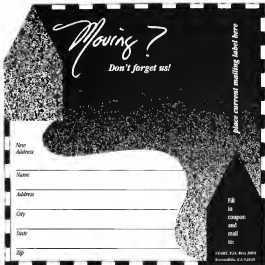
Old-Fashioned Variety (over 700 images), \$49.95, **Things You See Every Day** (over 1,600), \$79.95
Unlimited Software, 2947 East Holland,
Fresno, CA 93726 (209) 456-2995

tions. Listed in the sidebar are some brief notes on the collections, followed by a chart that summarizes important factors about each: compatibility, price, etc. As a bonus, you'll find sample clip-art on Side 2 of your START disk. See the Side 2 contents elsewhere in this issue for instructions on how to access them.

Final Notes

Whatever you use clip-art for, the collections available for the ST are sure to add versatility and color to your publications. Each of the companies has gone a long way to present you with a product that will expand your desktop publishing capabilities. ■

Don Frucbey works as a paramedic in Santa Rosa, California and runs a small clip-art business on the side.



A further development

Prospero Pascal and Fortran for GEM have long been established as standard programming environments for professional developers using the ST. Prospero C is also gaining wide acceptance as the first ANSI conforming C compiler for the ST.

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THE SYQUEST REVOLUTION

The Megafile 44, Toadfile 44, and SQ44-ST Removable Hard Disks

BY DAVID SMALL AND DOUG WHEELER

We have seen the future of hard disks and it is removable. In fact, we're using removable hard disks so much now at Gadgets by Small that our considerable "other" hard-disk collection is pining away from loneliness.

It's a rare thing indeed when you get to use a product you like, have no problems with, put through extended use (and abuse) and never have it hiccup even once. In the months we've had them, our Syquest drives have thoroughly hooked us; we've ordered four more. In fact, we think the major problem with this review will be to convince you that it's not a whitewash, that we've been as thorough as we possibly could be. Of course, every product has its downside, right? Well, I'm still trying to find one here...

All three removable hard disks reviewed here — the Toadfile 44, Carter Graphic's SQ-44 and Atari's Megafile 44 — are very much alike.

They each use the same basic hard disk (Syquest 44), the same media and they use it the same way so that you can interchange the hard disks between them.

Choosing one of the three is mainly a matter of picking what case and label you want.

So What Are They?

Each of the three drives we looked at is a 44MB removable hard disk for the ST. Each one

connects through the ST's DMA port, and can be "daisy-chained" with other DMA equipment, such as the SLM-804 laser printer, other hard disks, CD-ROM players, etc.

The drives' technology is based on the Syquest 44MB removable car-

tridge. In other words, the actual "platter," the place on the hard disk where data is stored, is portable between Syquest drives. The platter itself is protected by a very tough clear-plastic case.

Thus, unlike hard disks, where the platter is hermetically sealed inside metal, the Syquest drive lets you change platters. The immediate things that come to mind are that you can access another 44MB of data as fast as you can change platters, and that the disk packs are very portable, so it's easy to carry around a lot of data. And all that data can be accessed very quickly; I have no problem recommending the Syquest



Carter Graphics & Computers' SQ-44.

as your primary hard disk.

Changing to another 44MB disk pack is about a one-minute operation, very much like changing a compact disk. Push a button, wait until the disk spins down, flip the



The ToadFile 44 from Toad Computers.

EJECT/LOAD lever to remove it, plug in a new disk, flip the EJECT/LOAD lever back, and let it spin up. Wait a few seconds, it's ready.

Hence, you can have as much storage as you want just by purchasing more 44MB disk packs (which cost around \$100 apiece). If you've priced 40MB hard disks—especially, *fast* 40MB hard disks (ST 251-1 type stuff), you can guess that a Syquest drive would be the economical choice.

The Syquest drives are also unbelievably fast. I do a lot of work on the ST, and have spent quite some effort to get the fastest possible hard-disk mechanisms because I can't afford to wait on slow ones. Well, the Syquest keeps up with the fastest I've got (Mitsubishi 60MB RLL drive/OMIT 3527 controller at 1:1) with no effort at all.

Gadgets by Small now does all of its development work for Spectre GCR, HyperWeb (tm), etc. on the Syquest drives. Sandy uses the Syquest on her Mac II. Doug carries his back and forth between his house computer and work computer. You see, 44MB is enough space to store several major projects on; you can literally carry around your whole computing work with you. We're

hooked!

And we're not alone. If you ever get to Atari's R&D lab, you'll see the employees carry around Syquests. At COMDEX this year, a minor fix was needed for a demo, and Atari asked to borrow the Megafile 44 (which they'd loaned me) to fix a file on a Syquest. We were very happy to demonstrate Spectre at COMDEX on a Syquest because of its impressive speed.

All I can say is, *why didn't someone tell me about these drives earlier?* I had no idea what I was missing.

The Three Drives

The Carter Graphics SQ-44 and Toadfile 44 units are essentially the same component brew: box, power supply (off-the-shelf stuff), ICD interface (excellent), which translates Atari's "ACSI" DMA to industry-standard SCSI and the Syquest 44MB SCSI drive. That's it. The ICD interface

happens to give you a battery-backed-up clock as well, so your ST doesn't forget what time it is when you turn the system off. One note: using two ICD interfaces chained together, then an SLM-804, makes for intermittent glitching of the SLM-804. The easy solution is to use one ICD interface and a common SCSI cable. (This is almost certainly not ICD's fault, the Atari bus is not really driven adequately. Atari

has fixed this on the STE machine with tough driver chips. ICD also makes up for this by checking for hard-disk errors and displaying a message if they see one; this has saved me from bad hardware several times.)

The Toadfile case is pretty big; it has room for another drive internally, which could be just the ticket if you plan to expand later. (Adding the drive would be a matter of extending the SCSI cable inside—a few hours' easy work at most.) The Carter Graphics case we saw is light, compact and very portable, about the size of a half-height hard disk and power supply; if you need to lug around a disk drive, this is ideal. It would easily fit in a briefcase. Carter Graphics also offers other cases, such as one much like the Toadfile case. I like them both; it just depends on what your particular needs are. The prices are exactly the same.

I've not opened up Atari's Megafile-44, so I don't know its internals. (The unit I used at COMDEX had serial #40, so they're pretty new!) The case is much like a Megafile-30 case, with a hole cut in it for the hard disk to go through. I



The Megafile 44 from Atari.

would guess Atari is using their standard ACSI-SCSI interface boards and power supplies. I have no idea why Atari, which can build things ▶

less expensively than anyone else, is charging more than its competition for this drive.

Carter Graphics and Toad Computers supply ICD's formatting software, which I have nothing but good things to say about. ICD (and Supra) are some of the unsung heroes in the world of Atari machines and the formatter is no exception. It couldn't be easier to use. Atari, as usual, supplies their HDX software, you'll want HDX 3.01 (or later) to handle these drives, as special software is needed to handle changing hard disks in mid-session. Personally, I used ICD's software, as it's necessary for use with ICD's tape backup unit, which I also use.

Setting Up: Easy!

I would be amazed if you have to read the manual to plug these units in because it's so easy. (However, it's a good idea to read it to learn

about handling the disk packs and about media change). If you don't have something plugged into your DMA port, like a hard disk or SIM-804, plug the supplied cable between your ST and the drive. If you do, still plug the cable between the ST and the drive, and plug whatever else you have into the second connector of the unit. Next, plug in the power cable. Essentially, if you've ever connected a hard disk to an ST, you know how to set up the Syquest units.

If you're a power user with lots of hard disks, you'll have to make sure the Syquest drive doesn't conflict with another drive (you can't have both drives saying they're the same SCSI drive number, a bit like having two A: floppies). I had to do this and it took me easily under five minutes, screwdriver and all.

Next, start up using the supplied ICD software disk. Run the ICDPMT

formatter program. It will "poll" and find the Syquest hard disk. Select it; ask the program to format it. (This is a matter of a few clicks and pressing [RETURN] a few times). In ten minutes you're finished. Your major problem is going to be deciding how you want to divvy up 44MB of storage; it must be "partitioned" into pieces smaller than 16MB (for machines without TOS 1.4, the majority of STs) or smaller than 32MB (TOS 1.4 — and I'd still stick with under 16MB, even if you have TOS 1.4, for compatibility with older machines. Remember, this is a portable cartridge; don't lock yourself into porting to only TOS 1.4 machines.)

Well, you're set. Start using it as you would any other hard disk. Set it to AUTOBOOT, put around 60 double-sided floppy disks of data on it and have fun.

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Changing Disks: Easy, Too!

The front panel controls on the Syquest drive are a button and an EJECT/LOAD lever plus some indicator lights.

To put a disk pack into the Syquest, just slide it in and flip the lever all the way to the left (LOAD). A light will flash as the Syquest spins up to operating speed (3200 RPM). When it's spun up, which takes just a few seconds, the light will show green and you're ready.

To remove a disk, press the EJECT/LOAD button. The disk will spin down, again with a flashing light to warn you it's not ready yet. When the light stops flashing, push the lever far to the right (EJECT); the disk will eject, and if you're not careful, shoot into your lap. Whoever makes these drives uses good springs!

Now, if the ST is turned off, or you press RESET after changing disks, no problem. However, if you're in the

middle of an ST session, you must be just a tad careful. You see, hard disks by their (past) nature are *not* removable, so no one designed the ST's operating system to handle them being changed while the ST is on. I've tried to deal with this, found how many problems there were and my solution was to force the ST to cold-reset when the hard disk fundamentally changed (by, for instance, restoring a backup from Meg-a-Minute).

Of course, a challenge like this is like waving a red flag at ICD, who promptly taught the ST's operating system about "media change." What it boils down to is when the drive's disk pack is changed, the next time the ST accesses the drive, the very first access returns a special code indicating the change. The ICD hard disk software then tells the ST that the hard disk has changed. I have no idea how. I've dug into the ST's op-

erating system at length, and this is no trivial thing to do; yet ICD makes it look easy. A message flashes in the upper right-hand corner of the screen, saying "DISK CHANGE" — and you're on your way.

You should make sure you see that DISK CHANGE message, lest your ST not "see" the change. (It's never failed for me yet.)

Really, it's very much like changing a floppy. For instance, if you're at the desktop, you must press [Esc] to get the desktop to show the new floppy's contents. The amazing thing is that ICD covered such difficult changes to the ST's operating system with such an easy, foolproof interface. A few of our 4-a.m. programming sessions will test the idiot proofing of any system, and we have yet to screw up a Syquest.

I should briefly mention that Magic Sac, Spectre and pc-ditto are fully compatible with this unit. ▶

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However, as yet Spectre software does not support changing disks in the middle of a Mac session, unless the partition layout is *identical* between disks. Also, Syquest disks formatted on a Mac can be plugged straight into a Spectre/Syquest setup and used, when formatted correctly.

Handling Disk Packs

Speaking as someone who's destroyed a remarkable number of hard disks, I have to admit I was reasonably paranoid about these drives. Most hard-disk manufacturers go to extremes to seal dust out of their platters. This is because the "read/write head", which spot-magnetizes the ferric oxide (rust) on the hard-disk surface, flies very close to the surface of the hard disk — a height of about 1/20th the size of a human hair. If you get a dust particle in between the head and the platter, you've got big problems; any scratch-

ing at all of the hard disk or head spells disaster. (You can imagine how small the data is on that hard disk if you realize that 132 million individual bits are on *one* platter the size of a 5-1/4-inch floppy disk.)

The Syquest people have battled the problem of removable hard-disk media for a long time and appear to have won, judging from what I've seen. They can't just seal up the platter and head like other manufacturers do; the nature of their unit means that the drive is going to be exposed to a lot of gunk and the heads can't spend their life in a clean-room environment. As I understand it, the Syquest people's solution was to purge the hard-disk area with a blast of high pressure air and clean all the dust off the platter, in addition to lots of technology in the hard disk head to not be damaged by any residual dust.

The manuals do recommend that

you store the hard-disk packs in a snap-in plastic case, very much like a snap-in coin collector's case, rather than leaving them out and spilling pizza and Pepsi on them (typical programming office conditions).

After a few months, I was casually tossing the Syquest disks on the shelf, treating them like I do floppies. I never once experienced an error the entire time.

You may wonder if the drive-to-drive alignment is good — can a disk made on one drive really go into another? Given the extremely close tolerances of hard disks, this is a good question. We have four active Syquest systems in our office — two on STs, one on a Mac II, plus one on Doug's ST at home — and freely interchange them. In months of use, we have never had a disk error. This speaks well of the Syquest internal mechanism's long-term toughness; it doesn't fall out of alignment easily. It



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
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is really refreshing to use something as trouble-free as the Syquest.

To this day, Syquest is fighting the old legends of how fragile hard disks are, and how "unreliable" removable media is, because it's "contaminated by outside air". Well, floppies used to be pretty unreliable, too, back in 1979 — but that's all changed. Such is the case with removable hard disks.

Partcopy: Move Data Fast

All three drives are compatible with Partcopy from the April 1989 issue of START. This program is a very high-speed hard-disk sector mover; it can be used to very rapidly copy a hard-disk partition anywhere. It runs at around 8-10MB per minute. Rather than bothering with copying files one at a time, it simply copies an entire block of sectors at a time, doing an "image" transfer.

Partcopy is among the nicest ways to do a backup of a hard disk,

because it's very fast; even the largest of hard disks will be finished very quickly at 8MB/minute. Even though I wrote it, I have to recommend it to you for backups or for moving around large partitions, as GEM takes all day to do the same thing. Carter Graphics supplies Partcopy, according to their ad, with the system.

You'll notice that the Syquest keeps up with very fast drives (20 millisecond RLL drives) during Partcopy. The drive is said to have a 25-millisecond seek time, and a 600K per second transfer rate; I can well believe it. We now use the Syquests as the primary development drives and we simply wouldn't if other, "fixed" hard disks we have were any faster.

Note that the common RATEHD hard disk benchmark program does not return results consistent with reality on the Syquest. I know from Partcopy that the Syquest is even or

ahead of the Mitsubishi RLL setup, yet RATEHD returns a 20-millisecond seek rate on the Mitsubishi and a 45-millisecond seek rate on the Syquest. Don't believe it; something in the benchmarker is wrong.

Problems & Suggestions

I really wish I could come up with something bad to say about these units, because then it would make this review look more balanced. The price is a bit higher than other 40MB units, if you really do your shopping, but that rapidly turns around when you start buying a few 44MB disk packs at around \$100 apiece. The drives are rugged past the point of belief. I encountered no incompatibilities, no bugs, no problems, just fast and reliable performance.

You shouldn't have problems with the disk packs. As the manual says, don't drop it, put it in your oven or in a bathtub. Neither should you dunk ▶

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it in nitric acid nor shoot at it. Just treat it like a \$100 floppy and you're set.

Note: don't write on the disk labels with a pencil. The graphite powder from the pencil is bad news for the drive.

I would also recommend not shipping it in a box full of packing pellets without putting it in a protective cover first.

Support

The staff at both Carter Graphics and Toad Computers are friendly people who take the time to answer dumb questions. I know, because I called and asked some. Carter Graphics also offers a Syquest disk pack crammed full of Atari ST public-domain programs, pictures and so forth, for \$15 over the cost of blank media. That's around 60 double-sided floppies worth of material! This shows concern for the customer.

When I identified myself and asked some fairly technical questions, they had no trouble answering them.

Conclusion

If I were buying a hard disk now (and I recently did), a Syquest removable disk is what I would get. It's extremely fast, it's portable and it's cost effective; you'd be surprised how fast you can use up the 44MB cartridges. And it provides a means to backup your present hard disks at speeds that mean you'll actually get around to doing it.

At \$100 for 44MB, this is probably the least expensive media you can store ST files on while still being able to access the data at warp-drive speed. It's as if you suddenly changed to 44MB floppy disks, not 3/4MB floppy disks. ■

START Contributing Editor Dave Small is the sire of Spectre 128

and GCR Doug Wheeler works with Dave at Gadgets by Small. He is also a Genie Sysop and is widely known for his GDOS expertise.

PRODUCTS MENTIONED

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ITERATION

And a Bit of History

BY CHRISTOPH HERD

Can You Afford College? File COLLEGE.ARC on Side 1 of your START disk.

Welcome to our third installment of this spreadsheet column. While spreadsheets are used primarily in businesses, their power can also be applied to solve financial questions in personal finance. After all, managing your own money effectively should always be your first order of business!

This time I'd like to discuss some of the things spreadsheets do well — and some they don't do well at all. In order to understand the limitations of spreadsheets, it's helpful to look at their design philosophy. The granddaddy of spreadsheets, Visicalc, was designed to solve a series of financial problems. These financial problems — therefore solvable only with an electronic calculator — called for a super calculator, one with 50 or even 100 displays.

The designers of the first spreadsheet called it Visible Calculator or Visicalc. It was composed of an

array of calculator displays, each containing its own mini set of programming steps, but even more revolutionary was that each display (cell) could refer to the calculation result in any other display. It was truly a "visible calculator." This design philosophy has withstood the test of time. Most spreadsheets today

Spreadsheets are essentially an array of programmable calculators, each with the ability to look at and use the contents of any of the other thousands of similar calculators in the spreadsheet.

adhere closely to this design philosophy and thus still have the same limitations, LDW Power included.

The Limitations of Spreadsheets

It is useful to think about spreadsheets this way, because it gives you a good idea of what you can and

can't do with one. One thing that spreadsheets do not perform gracefully is *iteration*, the repeated recalculation of a formula where the results of the previous calculation are a part of the next. Early on, the term circular reference described an error condition. (Circular reference is where a series of cells point in a

COLLEGE.ARC			
1	COLLEGE FUND WORKSHEET		
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circle or where every cell depends on every other cell.

Later on, more sophisticated spreadsheets began to do this condition — an indicator informed you of the circular condition and the spreadsheet was forced into manual recalculation ▶

mode. Pressing the recalculation key repeatedly would produce successive results of all circular references involved. LDW Power can be set to recalculate a set number of times from one to 50 with the /WGRI command. This performs the set number of recalculations for each press of the RECALC button, (F9). It's still a rather crude way to approach the problem.

There are some functions in the Lotus 1-2-3 command language (Recalc and a For-Next statement) that take the problem of iteration one step closer to a satisfactory conclusion. Unfortunately, these commands don't yet exist in LDW Power. (I have already approached Logical Design Works on this matter, and their answer was simple: if their spreadsheet sells, they'll upgrade it.)

Several commands should be included in spreadsheets to handle iteration. The For-Next loop is one

One of the most innovative iteration machines is the human brain.

that's necessary. There should also be a simple iteration command such as @ITER(expression,number,limit), in which you could specify something like @ITER(A2=A2+1/A2,100,0.001) to calculate the expression 100 times or until the difference between successive values is less than 0.001.

What You Can Do in the Meantime . . .

You have several options. One of the most innovative and easiest to use iteration machines is the human

brain. Your brain, when used with a computer to take the drudgery out of performing intermediate calculations, can solve a wide variety of problems.

The spreadsheet on this month's START disk illustrates another solution. It solves a problem that does not have a simple, one-formula answer, but relies on iteration values supplied by you. But don't worry—it'll be easy enough.

The spreadsheet itself approaches a modern problem: the rising cost of college education and how much you should save if you have children or are contemplating starting a family.

Getting Started

To get started, boot this month's START disk; the START Menu program runs automatically. After following the instructions to backup your START disk, click on Prepare Disk and select "College Spread-

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561 BSTAT 2.05 Statistics (DBL/IME/G)	Box, Tetris (COLOR).	
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578 DCozy 3.2 and DCozy Shell. . .	(Simon) (COLOR).	
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The spreadsheet approaches a modern problem: the rising cost of college education.

sheet," the file COLLEGE.ARC will automatically un-ARC onto the disk you choose. In the file COLLEGE.ARC is an LDW Power spreadsheet file called COLLEGE.LDW. (Editor's Note: We have decided to standardize on the LDW file format, since it has become the spreadsheet of choice for ST users; we strongly recommend that if you need a spreadsheet for your ST, buy LDW Power for its speed and, well, power.)

Let's begin our examination of the spreadsheet. Boot LDW Power and load the file COLLEGE.LDW. You can either use the mouse and drop-down menus to select Retrieve from the File menu or use the keystroke sequence [F] (to bring up the Lotus-like menus, [F] to select the File menu) and [R] (to Retrieve a file). Whichever method you use, you'll be presented with the file-selector box from which you can load COLLEGE.LDW. After the file is loaded, it should appear like the illustration. (We've shown the worksheet in compressed view mode in order to fit it all in the illustration; the keystrokes to toggle the compressed and normal views are: [V], [W] (Worksheet), [W] (Window) and [V] (View).)

Here is what the spreadsheet tells you. Rows 6 through 12 are your work area where you can consider the choice of college. The figures given are undoubtedly out-of-date, but typical for a public college when I went to school. You might check Money or U.S. News & World Report for college costs, both magazines have run annual issues on that topic. Whatever you put into cells D7 to D10 is summed up in cell D12 and

used by the rest of the spreadsheet. This is the amount the spreadsheet assumes is needed now. Then, you specify the number of years until the money is needed; the spreadsheet applies your assumed rate of inflation over this period.

Meanwhile, you'll be investing monthly at some rate of investment to obtain the amount you'll need in the future. If seven percent seems a bit high, try six percent — or if you have access to high-interest investments, try a higher rate. The spreadsheet then takes the monthly investment amount and converts it into a future value after 17 years (or however many you specified). It then subtracts the yearly inflation-adjusted college costs and adds year-end interest to the account, four times.

But wait: the monthly level of investment was precisely what you didn't know! Just insert any number that's halfway reasonable and let the spreadsheet go its merry way. After the fourth year of withdrawal, you'll want the net value to be positive, but barely so to insure that your investment will just exceed all of the withdrawals. This last year-end value is calculated in cell E28 and repeated in cell F5.

Brainial Iteration

With cell A1 in the upper left corner of the screen, page down until the line containing the monthly investment appears on the screen. Notice that the final balance is still visible at the upper right corner of the screen. Now place the cell pointer in the cell containing the monthly investment and modify it until the final balance is barely positive. If it winds up too large, reduce your monthly payment;

if the result is negative, increase your monthly investment — or find a higher rate of return and change the assumed rate accordingly.

This is how you iterate the spreadsheet manually ("brainially"). You will find that only three or four guesses will get you into the general ballpark you want to use for investment considerations.

Try this modification: erase all the dashes in cells A4 to F4, but leave the blank line for visual effect. Now place the cursor in cell A3 and notice the label in it. It has a label prefix of ". Replace this label prefix with a vertical dash (!) and press Return. Nothing happens. Now try printing the spreadsheet again. Make sure the print range is A1 to F29. This is how you hide lines containing comments to the spreadsheet user. The cell containing the "hiding vertical bar prefix" must be in the very first column of the print range, however.

There's another way to arbitrarily exclude information on the spreadsheet from being printed — which I'll save for an upcoming installment so that you can see it in action with a useful sample spreadsheet.

Coming Attractions

Next column, I'll present another "one-pager," which will analyze the feasibility of refinancing an investment, be it your house, car or anything else financed at a fixed interest rate. ■

Christoph Herd (previously misidentified as Christopher) lives and works in Colorado Springs, Colorado. This is the third installment of his introductory column on spreadsheets.

PRODUCTS MENTIONED

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BEKERCAD FROM ABACUS

BY DAVE EDWARDS

The latest offering in computer-aided design for the ST comes in the form of BeckerCAD from Abacus (originally developed in West Germany by DataBecker). BeckerCAD requires at least 1MB of memory, and a hard disk is suggested.

Overall BeckerCAD has a unique user interface with some very advanced features. However, I found many portions of the program deviate greatly from accepted CAD conventions.

For Starters

BeckerCAD's opening screen uses a very straightforward, icon-based system (Figure 1). The row of icons along the bottom control most of the major CAD elements. The program uses standard GEM menus along the top for file functions and other options that are required less often. Objects are placed into the drawing simply by selecting one of these icons and clicking on points on the screen.

When starting a new drawing in BeckerCAD you're first asked for the page format. This is where you tell the system what size sheet you're working on. (I personally do not like



Figure 1: BeckerCAD is an icon-based CAD package.

this selection because it forces a designer to choose a sheet-size early on and that may not be known at the very beginning.) After selecting the page format you must select a scale. Here again it would be better to simply work in real units and ignore the scale factor until it was time to plot out the drawing. After the scale you then set the units you wish to work in the decimal precision.

You then start to work on your drawing by assigning the spacing of your grid. All of these parameters then can be stored and used in other drawings.

When you start placing objects is when you discover one of the best features of BeckerCAD. After you select the first point of a line, for example, the cursor then displays an

"information box" (Figure 2). This box contains the X, Y coordinate, length and angle the cursor is in relation to the first point. When placing other objects, such as a circle, the box would display things like the radius. Instead of having to input this information you simply move the cursor until the values are correct and then place the second point. I found this method fun to use but constantly updating these values did cause the cursor to move erratically.

Complete Options

The element options in BeckerCAD include: circles, ellipses, circular arcs, elliptical arcs, rectangle, squares, parallel lines, single lines, poly (connected) lines, concentric circles, concentric ellipses, circle segments, ▶

ellipse segments, triangles, parallelograms, polygons, rays, freehand lines and symbols. This has to be one of the most complete sets of objects I've ever seen. I don't know if I will ever use all of them but they would be nice to have around if needed.

I especially liked the squares, parallel lines and freehand-lines options. Using these elements and the information box is very simple and I had objects all over the screen in no time. Erasing them was done by using the UNDO arrows found on the lower left part of the screen. Any object that is erased can be restored by using the opposite set of arrows.

Once objects are placed they can be easily changed by selecting the Arrow Icon on the lower right. You then can select an object on the screen, move it or change it in any manner. This one option can be used for any of the elements on the screen. This is a very powerful feature, letting you perform many different manipulations by just selecting the points on the screen. This makes much more sense than having to choose a different operation for every element you want to change — it really puts the power of point and click where it should be.

There are many construction options such as plumb (perpendicu-

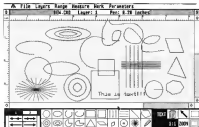


Figure 2: After you select the first point of a line, the cursor then displays this "information box." This box contains the X, Y coordinate, length and angle the cursor is in relation to the first point.

lar) lines, trim lines, break lines, fillets and chamfers. These items are accessed by selecting Icon Bar 2. However it would have been nice if the element placement choices such as 3-point circle were placed on the same icon bar. Some of the terms such as plumb would be confusing to some users but overall it is a good set of construction options.

For Ranging

Other than options already mentioned, BeckerCAD will also let you select a range of objects using a "fence" to do manipulations on. Once a range of objects is created the objects can be saved as a symbol, clipped to a buffer, pasted from a buffer, copied, moved, scaled in size, rotated, rotate copied, mirrored or fixed. Fixing a range prohibits any

further manipulations on that range; naturally you can unfix a range.

Objects can be on any of 300 layers, however before a layer can be used it must be "added." Layers can also be removed or deactivated. Deactivating a layer makes that layer invisible, helping to clean up the screen and speed redraws. But I didn't like having to add all these layers whenever I needed them. Layers should be available at any time and they should not have to be added to be used.

Objects then can be "measured" which is the same as dimensioning. Options include manual dimensioning, Auto (x-y locked), diametric, radial or angular. Text can also be placed into a drawing. You can select the size and font you wish to use.

Your drawing then can be plotted

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using a great many different output devices. These include Epson printers, NEC printers, Atari Laser, Apple Laser Writer (PostScript) and Hewlett Packard plotters. Not very many CAD programs output directly into PostScript and I really wonder why DataBecker chose the include that option. I think it would have been better to output to an Encapsulated PostScript file so your CAD files could be included in a desktop

BeckerCAD has a unique user interface with some very advanced features.

publishing file. However, many printers cannot be used directly from inside BeckerCAD and must use a separate output program. This output program has a great set of options for page layout and other parameters. I liked the options here but it would have been much better if it was included in the main program.

Some Nice Touches

Another program included in the BeckerCAD package is a font editor, whereby you can create your own text styles. But the fonts you can create with it are of such low resolution (14x17 points) that I don't know why you would want to create others than you already have. The fonts in BeckerCAD need to have a higher resolution — at least 64x48. Still, including a font editor is a nice touch.

And speaking of nice touches, I've saved the best for last. BeckerCAD is one of the only Atari CAD programs to include a macro language. With this language, objects can be placed under program control. The language is very simple and has about

the math functions you'll need. It is very easy to write a program for what the industry calls "parametric programming." This is used to draw objects that are very similar based on numeric data input from the user. This can really automate the drawing process. Unfortunately, that's about all BeckerCAD's programming language can be used for. It lacks the ability to select an object and have that object's parameters returned to variables. Objects can only be created, not deleted or changed.

Mixed Feelings

I really have mixed feelings about BeckerCAD. Even though it has such nice options I still don't think it supplies enough for the price you pay. Options such as output to PostScript, the font editor and symbol libraries are great. But I would like to have seen all these options taken to another level — they just seem to stop too short.

I feel a couple of things need to change in order for BeckerCAD to be a top product. For one thing, if you're going to sell a CAD program in the United States, it must work in feet and inches — not decimal feet or decimal inches. Also in order to find out how to snap to the endpoints of lines I had to go through the tutorial. This needs to be spelled out elsewhere.

Overall BeckerCAD is a good start, but if I needed a professional CAD program to use now, I would probably look elsewhere. ■

Dave Edwards runs a CAD consulting service in Montgomery, Alabama and has written several CAD-Related articles for START.

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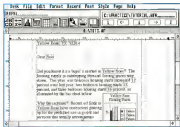
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ATARI ST



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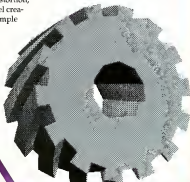
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