

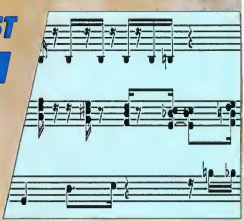
**DISK
INSIDE!**

#1 GUIDE TO THE ATARI ST **START**®

Volume 3, Number 4

November 1988

USA \$14.95 • Canada \$19.95



Make Your Musical Mark!

The Professional ST

ST—The Ultimate MIDI Machine

On Disk:
Add Sound to
Your Animations!

Desk Accessory
Calendar
Scientific Plotter

Reviewed:
LDW Power
Superbase
Professional
Masterscore
Publishing Partner
Professional



The Birth of



A Partial List of Features

Fully interactive 2 dimensional & TRUE 3 dimensional capabilities
Multiple 3D views can be opened and modified at any time
A user can work in any combination of views with all views instantly updating at all times
Automatic generation of ANY orthographic view including user defined auxiliary views
Entities can be selectively hidden in any view allowing easy generation of true orthographically sound views
Extremely user friendly
Full GEM interface, pull down menus, mouse or keyboard commands, dialog boxes and more.
256 Layers can be activated individually or in groups
9 zoom modes allow magnification's of up to 1,000,000 times
The ability to overlay other programmes from within
DynaCADD

Dimensioning

Auto Dimensioning includes;
Mechanical and Architectural formats
Full 2D and 3D dimensioning is supported
Baseline, chaining, angular and linear dimensioning is supported
Automatic tolerancing in any of three different styles
Text orientation using any one of the three different systems (uni-directional, angled or aligned)

Commands

Sophisticated command nesting allows the following partial list of commands to be accessed at any time:
Zoom in or out
Zoom a window
Scroll or "Pan" the page
Center the page on a point
Multiple 3 Dimensional dynamic rotations at any angular increment
Rotate any 3 Dimensional view to a predefined co-ordinate plane
Zoom a 3 Dimensional view in or out...

Fonts

Full featured Vector Font Editor
Automatic proportional spacing can be activated or deactivated with the click of a mouse
Up to 16 extremely high resolution fonts can be active in any drawing with no need for repeated disk access

Insertion

Insert POINTS, LINES, CIRCLES, ARCS, FILLETS, ELLIPSES, ELLIPTICAL ARCS, TEXT, BOX, POLYGON, POLYFIGURE and SUBFIGURES using a wide variety of modifiers

a New Breed

Introducing DynaCADD... a Professional CADD Solution at a Fraction of the Cost

DynaCADD is a 2D and true 3D Computer Aided Design and Drafting software solution that will turn your personal computer into a sophisticated and powerful CADD work station. With electrical, mechanical, architectural or civil applications DynaCADD provides a total design and drafting solution. DynaCADD revises, designs and details drawings in 2D or true 3D, reads and writes the industry standard

DXF file formats and provides compatibility with the new Desktop Publishing solution, Calamus. DynaCADD proves itself invaluable from conception to output by offering an alternative solution to expensive, difficult to use 2D and 3D CADD systems. DynaCADD brings mainframe CADD capabilities to the CADD Professional at a fraction of the cost.

DynaCADD

Computer Aided Design and Drafting

SPECIAL OFFER!!

For a limited time only
Save up to \$150.00 off our introductory price of \$695.00.
Trade in your existing Atari ST CAD package and
receive up to \$150.00 in credit against the purchase
of DynaCADD

Call us for details

Information Commands

DynaCADD gives you the ability to:
Measure distances, angles and perimeters
Verify location and style
List database extents, drawing parameters...

A definable plotting window

The database extents
Plotter and printer output can be directed through the
serial port, parallel port or to a disk file (ie; i/o
redirection)

Entity Transformation

Translation between 2D or 3D positions, circular
arrays, mirror, linear arrays, stretch, sweep, rescale,
project, revolve, trim and divide
3 Dimensional entity transformation of any view into 2
Dimensional entities
Select entities for transformation & editing using;
Digitize, Windows, Windows Out, View Windows
or Last...
By entity color
By entity layer
By chaining with direction and much more

Printer Output

Laser Printers, draft and final mode
Epson and compatible printers are supported, both 8
and 24 pin
All drivers allow:
Quickplots, Final drafts utilizing the printers highest
graphics mode, multi sheet prints, scaled and constant
ratio prints

Plotter Output

Both HPGL and DM/PL and compatible plotters are
supported
Plots can be generated at a constant 1:1 ratio or a
drawing can be automatically scaled to any degree
Plotting extents can be defined using:
The drawing page
The current extents

Data Transfer

DynaCADD reads and writes both DXF Entity and
DXF Drawing Files
DEF File Format is included to insure upward
compatibility to all versions on all micro computers
DynaCADD allows compatibility with the new
Desktop Publishing solution, Calamus

System Requirements:

Atari 1040ST or Mega series, minimum 1 MByte of memory,
1 MByte disk drive and a Monochrome Monitor

Commitment to the Future

A modular design structure provides the basis for continued upward growth of the DynaCADD solution. A strong commitment to research and development and a world wide support mechanism combined with a young experienced dynamic programming team, are your insurance that the DynaCADD package will remain on the leading edge of CADD technology. Upgrade modules currently under development include surface design and image design, both with the same easy to use graphic interface of the DynaCADD base module.

To order and for more information please contact:

ISD Marketing, Inc. 2651 John Street, Unit #3, Markham, Ontario, Canada L3R 2W5

Tel: (416) 479-1880 Fax: (416) 479-1882

Mark Williams Raises C Programming To A New Level.

New source level debugger, *csd*, cuts development time in half!

Now, on top of the world's best C compiler, Mark Williams brings you *csd*, the world's only source level debugger for the Atari ST!

With *csd*, you actually debug in C. Forget about trying to find bugs in clunky assembler and struggling with long dumps. *csd* gives you the interactive advantages of an interpreter plus the speed of a compiler. An indispensable companion for Mark Williams C.

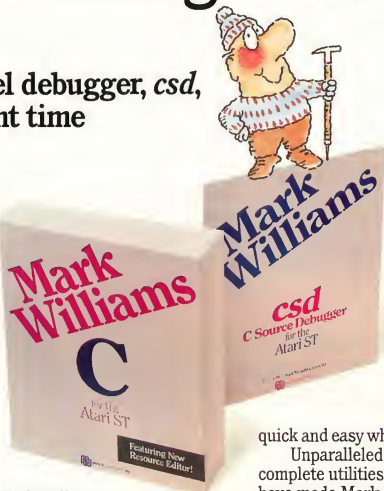
Reviewers have been raving about the IBM version of *csd* for years:

"csd is close to the ideal debugging environment... a definite aid to learning C and an indispensable tool for program development."

—William G. Wong, *BYTE*

"This is a powerful and sophisticated debugger built on a well-designed, 'serious' compiler."

—Jonathan Sachs, *Micro/Systems Journal*



WE'VE UPPED COMPILER PERFORMANCE, TOO!

Our new **Resource Editor** makes creating window driven interfaces with icons, alerts, pull down menus and dialogue boxes a snap. And its exclusive compiler/decompiler lets you directly access resources, making changes

quick and easy while simplifying project management.

Unparalleled compiler speed, fast, compact code, complete utilities and outstanding documentation have made Mark Williams C the preferred compiler for the Atari ST. Reviewers enthusiastically agree:

"Mark Williams C may be the best implementation of C on the Atari ST to date... not only for the experienced, professional developer, but also for the weekend programmer."

—George Miller, *COMPUTE!'S Atari ST Disk and Magazine*

"... the all-around best choice for serious software development on the ST."

—Douglas Weir, *Analog Computing*

COUNT ON AN UPSTANDING REPUTATION.

Mark Williams has been producing and improving quality programming tools since 1976. A good reason why the Mark Williams C compiler is the one chosen by Atari. And just one more reason you should choose Mark Williams, too.

SPECIAL UPDATE OFFER AVAILABLE NOW!

If you already own Mark Williams C, a special update offer is available for version 3.0 and *csd* by calling Mark Williams. If not, there's never been a better time to ask your Atari dealer about Mark Williams C and *csd*. Or you can order by calling 1-800-MWC-1700.

(In Illinois, 1-312-472-6659)

FEATURES

Mark Williams C for the Atari ST

- ★ New! Resource Editor includes compiler/decompiler for direct access to resource text
- ★ New! Peephole optimization—faster compile times and faster code
 - Full access to AES/VDI libraries with complete documentation and examples
 - Source and object code for RAM disk cuts compile time in half
- Integrated edit/compile cycle: editor automatically points to errors.
- MicroEMACS full-screen editor with commented source code
- Full K & R plus ANSI extensions
- Microshell Command Processor, a powerful UNIX style shell
- Complete symbolic debugger and assembler

- Powerful utilities: make, linker, archiver, egrep, sort, diff and more
- Over 600 pages of documentation with more than 100 sample programs

New! *csd* C SOURCE DEBUGGER:

- Cuts development time in half!
- Debug in C source code not assembler
- Provides separate source, evaluation, program and history windows
- Ability to set trace points and monitor variables
- Can interactively evaluate any C expression
- Can execute any C function in your program
- Trace back function
- On-line help screens

MARK WILLIAMS C FOR THE ATARI ST: \$179.95
csd C SOURCE DEBUGGER: \$69.95
60 DAY MONEY BACK GUARANTEE

 Mark
Williams
Company

1430 W. Wrightwood, Chicago, IL 60614
© 1988 Mark Williams Company

START

#1 GUIDE TO THE ATARI ST

NOVEMBER 1988

VOLUME 3, NUMBER 4

FEATURES

- 20 The Professional MIDI Machine** by Jim Pierson-Perry
And How It Grew
- 28 Talkies!** by Jim Kent
Add Sound and Music to your Video Animations!
- 56 ST SciPlot** by David P. Heddle
A Professional-level Scientific Plotter
- 99 Pro Calendar** by Anthony Barbieri
An Appointment Calendar Desk Accessory

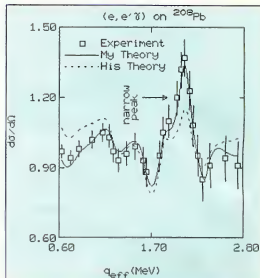


SBT for the ST

Page 41

REVIEWS

- 33 LDW Power** by Kevin V. Ergil
A Fast, Powerful Lotus-Compatible Spreadsheet
- 41 The SBT Database Accounting Library** by Jeffrey Daniels
A Preview of a High-end Accounting Package
- 63 Steinberg/Jones MIDI Power** by Jan Paul Moorhead
The Pro-24 Sequencer and Masterscore
- 69 Publishing Partner Professional** by Frank Kliewer
A START Preview
- 75 Superbase Professional** by Heidi Brumbaugh
A Full-powered, Programmable Relational Database Manager




Super Plotting Program

Page 56

DEPARTMENTS

- Editorial** 4
- Dialog Box** 7
- Products Update** 13
Jon A. Bell
- News, Notes & Quotes** 17
Steve Mortimer
and the START Staff
- Mac and PC on the ST** 37
David Plotkin
- Small Tools** 45
David Small and Dan Moore
- Disk Instructions** 49
- Getting Started** 51
Andrew Reese
- Clipboard** 55
Heidi Brumbaugh
- Programming in BASIC** 71
A. L. Hubbard

- Online With START** 91
Gregg Pearlman
- For The Fun of It** 93
Scot Tumlin, George Miller
and Louise Lanahan
- Index To Advertisers** 104

 Indicates programs included on START Disk.

#1 GUIDE TO THE ATARI ST START

PUBLISHER

James Capparell

ASSOCIATE PUBLISHER

John Taggart

EDITORIAL

Andrew Reese, Editor

Jan A. Bell, Associate Editor

Heidi Brumbaugh, Programs Editor

Gregg Pearlman, Assistant Editor

Tom Byron, Assistant Editor

Carolyn Cushman, Editorial Assistant

Contributing Editors: Christopher Chabris, Tom Hudson,
David Small, David Plotkin, Jim Pierson-Perry

Contributors: Anthony Barbieri, Jeffrey Daniels, Kevin V. Ergil,
David P. Heddle, A. L. Hubbard, Jim Kent, Frank Klierew,
Louise Lonahan, George Miller, Don Moore, Jan Paul Moor-
head, Stephen Mortimer, Scot Turmin

CREATIVE SERVICES

Linda Tapscott, Director of Creative Services

Rick Binger, Art Director

Dwight Been, Associate Art Director

Georgina Salkov, Photo Editor

Katherine Murphy, Ad Production Coordinator

Julianne Ososke, Collateral Printing Coordinator

Cover Photography: Fred Stimson

Cover Models: Erin Allison/Grimme; Linda Dixon

Guitar Provided by: Haight-Ashbury Music Center

ADVERTISING SALES

For advertising information, call (415) 957-0886

CIRCULATION

Manny Sawit, Director

Amber Lewis, Subscription Coordinator

Dennis Swan, Distribution Coordinator

Denny Riley, Telemarketing

ANTIC PUBLISHING, INC.

James Capparell, President; Donald F. Richard and Richard
D. Capparella, Board of Directors; Lee S. Isgur, Advisory Board;
John Cody, Controller; John Taggart, Associate Publisher

ADMINISTRATION

Maggie Birch, Credit Manager

Brenda Oliver-Owens, Accounts Receivables Manager

Fidez Bituin, Accounts Receivables Supervisor

General Offices, Catalog Customer Service, (415) 957-0886, 8 a.m.
to 4 p.m. Pacific, START, 544 Second Street, San Francisco, CA
94107. Credit Card Subscriptions and Catalog Orders: (800)
234-7001. START Subscription Customer Service: For subscription
changes of address and inquiries, include subscription label and
write to START Subscriptions, P.O. Box 1569, Martinez, CA 94553
or call (415) 372-6002 9 a.m. to 4:30 p.m. PT/MT.

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 mail is supplied. START assumes no
responsibility for unsolicited editorial materials.

No part of this publication may be reproduced, stored in a retrieval system,
or transmitted, in any form or by any means, electronic, mechanical, photo-
copying, recording, or otherwise, without the prior written permission of the
publisher. START is an independent publication not affiliated in any way with
Atari Corp. Atari is a trademark of the Atari Corp. All references to Atari products
are trademarked and should be so noted. START is a trademark of Antic Pub-
lishing, Inc. An Information Technology Company. Copyright © 1988 by Antic
Publishing. All Rights Reserved. Printed in U.S.A.

November 1988, Volume 3 Number 4, START Magazine (ISSN
#0889-6216), is published monthly by Antic Publishing, Inc., 544
Second St., San Francisco, CA 94107. Third Class postage paid at
Waseca, Minnesota. Subscriptions: U.S. \$79.95 (12 issues with
disk), Canada and Mexico \$87.95 (12 issues with disk), Other For-
eign \$91.95 (12 issues with disk). POSTMASTER: Please send
address changes to START Magazine, P.O. Box 1569,
Martinez, CA 94553.

Editorial

Any ST owner knows that their machine is a *professional* computer—easily able to handle almost any computing task. But the ST hasn't had the general acceptance of the "blue" or "fruit" computer, except in one area: music. In our feature this month, Jim Pierson-Perry traces the parallel growth of MIDI and the ST as they've grown up together. You'll learn why the ST now stands head-and-shoulders above those other two on stage and in music studios.

This issue is all about new *professional* software on the ST. You'll find reviews of LDW Power, a new Lotus-compatible spreadsheet that outclasses 1-2-3, and Super-base Professional, a relational database manager that outstrips dBase. You'll also find previews of SBT, a superb business accounting software series, and Publishing Partner Professional, a major upgrade of a familiar DTP program.

We've also focused on professional programs on the START disk. In a first for START, we're publishing a program that runs *only* on monochrome monitors: ST SciPlot, written by University of Illinois physics professor David Heddle. When you boot it up, you'll know why immediately; it's a truly professional scientific graphing program that *demand*s the high resolution of the ST monochrome monitor. And it's *only* on your START disk.

There's another first on this issue's START disk: finally, ST animators can add sound and music to your animations easily with the START Audio-Video Sequencer, a professional-quality "dubbing" program written by Jim Kent, the father of ST Animator and Cyber Paint. This one runs in *color* only, because what's animation without color?

If your business needs demand that you keep to a schedule (and whose don't?), you'll appreciate our Professional Calendar. It's a Desk Accessory appointment calendar, complete with notes, alarms and reminders (but no other extraneous accessories to clutter up your computer's memory).

There's lots more in this issue and on your START disk. If a "blue" or "fruit" computer owner tells you that your ST just isn't *professional*, shove this issue of START in his hands and tell him to be quiet and read it. But don't be surprised if he asks you afterwards where to find the nearest Atari dealer!

Andrew Reese

Editor

START, The #1 Guide to the Atari ST

CHRONO-QUEST



A CLASSIC ADVENTURE GAME FROM PSYGNOSIS

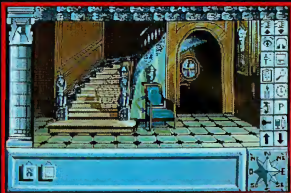
- * FULL ICON CONTROL
- * BRILLIANT GRAPHICS
- * FIENDISH PLOTS
- * A RACE AGAINST TIME
- * 4 DISKS ATARI. 3 DISKS - AMIGA
- * IBM VERSION - COMING SOON

CHRONO-QUEST

This is the first of a new generation of adventure games from Psygnosis. An adventure game in the classic sense.

Your quest begins in your fathers chateau circa 1920, there you find (or should find) your fathers latest invention; a fantastic time machine. Your father is dead, murdered, you are the prime suspect. A letter left by your father leads you to think the real culprit was Richard, his not so faithful servant. But he has escaped to the future using the time machine... who will believe your fantastic story... do you believe it?

You will be presented with many objectives; ultimately you will have to travel through time to collect the fragments of magnetic card to drive the Time Machine into the future. There you will have to... Meanwhile, the immediate objective is to find the time machine... Sorry, a more immediate objective is to find the room with the time machine in it... But its dark... Very sorry, an even more immediate objective is to be able to see where you are going... 3 hours and 250 minutes and even more immediate objectives later, you are standing in the hallway and going more... hellpppp!!!!!!



Computer Software Service
2150 Executive Drive
Addison Illinois 60101
Toll Free: 1-800-422-4912
In Illinois: 1-800-331-SOFT

ATARI ST/AMIGA/IBM - \$49.95

Screen Shots are from the ST. version.



Practical Solutions presents



VIDEOKEY™

RGB to Color Composite Converter
for the Atari ST®

602-884-9612

1930 E. Grant Rd., Tucson AZ 85719

 Practical
Solutions®

Dialog Box

Letters From Our Readers

Public Domain Or Not?

I am the public domain disk librarian for the Owen Sound Atari ST club, and I also belong to the Toronto Atari Federation (TAF). I would like to know your magazine's thoughts on some items.

As I understand, you have back issues of some issues of START, but do not promote the sale of them, and some are out of print. Some magazines (I don't know if yours is one) put their articles and programs on CompuServe and GENie.

I would like to know if/when programs published by START and placed on their disks become public domain, if at all.

Ross Cooling
Kimberly, Ontario
Canada

We do put back issue programs and documentation from START and Antic on Antic Online, our electronic magazine on CompuServe. Log onto CompuServe and type GO ANTIC to check the current listings. At this time, START programs do not go into the public domain.

Even if an issue is sold out, you can still order its disk from us. Just call (800) 234-7001 and specify the disk from the issue you want. To get a particular article from an out-of-print issue, send us a self-addressed, stamped legal size envelope and \$1 and we will send you a photocopy of the article.

Under New Management

In the Special Business Issue of START, you reviewed some business programs, including The Inventory Manager. Please be advised that Regent Software is no

longer distributing the program, and I am now marketing Inventory Manager myself. It now sells for \$39.95.

For a free brochure, please write me at this address:

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

Start Selector Questions

The START Selector program from the Special Business issue of START is one of the most useful pieces of software I've been able to acquire at any price for my ST. (I believe I've seen a review of a product that performs a similar function

priced at \$15 or more.)

Alas, I have some bad news—it appears I've encountered a bug. However, it's a situation where I have to do something to make it happen, and can be avoided.

I have a Supra 20-megabyte hard drive running driver version 2.62. (This bug doesn't show up with the hard drive off.) I have DEGAS Elite in a folder named DEGAS (I have encountered the bug with other programs under the same conditions) on logical drive "E." If I run DEGAS and select Drive B from the DEGAS menu, then attempt to load without a disk in the drive, I get the ▶

ORDER NOW
and receive a
FREE
MOUSE ACCELERATOR!


ST VIDEO DIGITIZER

Digitize from any standard video source, (VCR, Video Camera, etc.). Save digitized pictures into NEO or DEGAS™ file formats. This is the fastest digitizer available for the ST™ or MEGA™. Capture single frames in less than a second.


To order, use coupon below or call toll free **1-800-624-6545** or in California **408-378-8177**.

Please send me () Video digitizer(s) at \$79.95 each (plus \$2.50 shipping). California residents add 7% sales tax.

Name _____
Address _____
City _____ State _____ Zip _____
VISA MC# _____

 Navarone Industries
454 Kenneth Ave.
Campbell, CA 95008

DEGAS is a trademark of Batteries Included, Inc.
Atari ST and MEGA are trademarks of Atari Corporation.



Starglider II

Dare to Continue the Ultimate Space Fight



The time is the distant future, in a remote corner of the universe. A hostile horde of creatures from the planet Egron is back to capture your home planet, Novenia. You climb into the cockpit to destroy—once and for all—this alien race. Are you ready for the ultimate space fight? Starglider II, the eagerly awaited sequel to Starglider, streaks onto the screen with more astonishing graphics than ever imagined! With a 3D instrument panel and fast, furious, futuristic weapon system... it's the most extraordinary cross between flight simulator and shoot 'em up arcade game created!

LANDMARK TECHNOLOGY—ONE STEP FURTHER! Superfast solid 3D graphics give you an incredibly realistic feeling of flight.

SPECTACULAR SOUND EFFECTS add to the game's startling effects.

MULTIPLE CONTROLS, FAST-PACED ACTION with an amazing array of flying creatures and crafts—all aimed at you! **LONG AWAITED SEQUEL** to the highly acclaimed Starglider. Now, Starglider II brings you even more technological breakthroughs.

P.O. Box 2227, Menlo Park,
CA 94026, 415/322-0900



RAINBIRD

HOW TO ORDER: Visit your software dealer, or call (800) 937-6900 from U.S. or Canada for Visa, Amex, MasterCard, or C.O.D. To order by mail, send check/money order. Rainbird, P.O. Box 8113, San Francisco, CA 94118. CA add 6% sales tax and TX add 7.1%. Shipping/handling is \$4.50. 9-3 weeks for delivery.

AVAILABLE ON: IBM PS/2K, CGA/EGA, 16 Color \$39.95. Commodore Amiga and Atari ST 512K \$44.95. Rainbird and Rainbird logo are trademarks of British Telecommunications plc. IBM, Commodore and Atari are registered trademarks of International Business Machines Corp., Commodore Electronics Ltd., and Atari Corp., respectively.

Dialog Box

standard alert "The drive doesn't respond, etc." I then choose Retry or Abort from the GEM alert. Then, if I click Cancel on the START Selector, I get four bombs and have to reboot.

I don't have any problems as long as I don't attempt to load from a drive that doesn't have a disk in it and this doesn't show up with the hard drive off.

In my opinion this does not detract from the excellence of your program. I just thought you might want to know that I had come across this.

Gregory Katz
Spring, TX

We were able to duplicate this problem once running DEGAS in a folder on an ICD hard drive. However, following Murphy's Law, when we called programmer Charles Johnson to tell him about it we were unable to duplicate it. Because of this, he's not sure whether the problem is a bug in START Selector or something else; however, be aware that this situation can occur, and it's best not to try to read from a drive that doesn't have a disk in it under these circumstances. It's nearly impossible to track down a bug that can't be reliably duplicated; however, we'll keep you informed if we're able to pinpoint the problem.

More On The Start Selector

Here is an idea about the START Selector (Special Issue #3). I would like to use the chosen function, as "save" or "delete" to appear in the START Selector menu to confirm my actual choice, especially when I am in a hurry and things can go wrong. But is it possible?

A Swedish subscriber
Stockholm, Sweden

No. This must be written into the program that is calling the Item Selector.

Truth In Advertising?

The World's Greatest Solitaire Program (START Summer 1988)? Not by a long shot.

First, you're guilty of boldly proclaiming the benefits of a bug. Picking up and moving less than an entire column of cards is illegal. Therefore, a program which allows you to do so is allowing you to cheat, and that is a bug.

Second, I think that it's ergonomically improper to put the "GAME" and "EXIT" boxes between two areas of high activity (the "Aces Spaces"). Too much time is spent dragging cards across those boxes. When I play a game, I do it to relax; and if sometimes I am a little less than careful in my handling of the mouse that is excusable—except by this game. Too many times I have accidentally started a new game in the middle of an "old" one because of careless dragging.

Third, another bug popped up during one of my games—I noticed two of the same cards (two deuces of clubs).

I don't mean to disparage what is otherwise an excellent program; it clearly took a lot of talent to write it. But to me, David Addison's Klondike Solitaire, written in GFA BASIC, is still the best.

David B. Rogers
St. Maries, ID

Because of the wide variation in rules for Solitaire/Klondike/Canfield (or whatever you want to call it), we decided it would be more flexible to let you move less than an entire column of cards than to forbid it completely. If you consider this cheating, don't do it! We tested the program extensively and never encountered the bug you described with the deuce of clubs. Klondike programmer Rob Lech is looking into the problem.

ST SOUND DIGITIZER

ORDER NOW
and receive a
FREE
MOUSE ACCELERATOR!

Digitize real-world sounds from microphones, record player, tape recorders, etc., then play back with your MIDI keyboard. The ST Sound digitizer can be used to create music, edit short commercials, or use for voice mail. Very easy to use software with powerful editing and mixing features.

To order, use coupon below or call toll free 1-800-624-6545 or in California 408-378-8177.

Please send me () Sound digitizer(s) at \$99.95 each (plus \$2.50 shipping). California residents add 7% sales tax.

Name _____
Address _____
City _____ State _____ Zip _____
VISA MC# _____

 **Nayarone Industries**

Nayarone Industries
454 Kenneth Ave.
Campbell, CA 95008



FOUR WAYS TO MAKE YOUR ST SCREAM



Now you can take the world's number one arcade game home! All the action-packed arcade thrills of this awesome hostage rescue are ready for home video play.



Now you can blast into one of the hottest arcade space games right in your own home. It's the ultimate inter-planetary combat. You've never seen action like this on your home computer!

If you want to make your Atari ST explode with action you've got to give it dynamite games. These are the world famous original arcade screamers. Operation Wolf™ Alcon™ Bubble Bobble™ and Arkanoid™ will make your ST do things you didn't think were possible.

Everyone knows that arcade games are the benchmark for all other video games and Taito



Don't settle for imitations. Add this arcade classic to your video collection. Arkanoid has been voted "one of the best home video games ever" by Electronic Game Player Magazine.



The #1 game in Europe for over 3 months. Scramble through 100 screens of laughs as your brontosaurus buddies, Bub and Bob, drive you crazy with non-stop action.

has been an arcade leader since 1953. Since then we've made over 1,000 classics for arcade and home play. Count on Taito to bring the heat of the arcade to your home computer.

Buy Taito products at leading stores everywhere. Visa/Mastercard holders can order direct anywhere in the United States by calling toll free 1-800-663-8067.

Taito® Operation Wolf™ Alcon™ Bubble Bobble™ and Arkanoid™ are trademarks of Taito America Inc. Copyright © 1988

THE ONLY GAME IN TOWN™



All rights reserved. Atari and Atari ST are trademarks of Atari Corporation. Advertisement by: Qually & Company, Inc. (Chicago).

COMING SOON, THE CLASSIC MIND GAME, QIX.

Dialog Box

Star Trek In Basic?

I am writing to you from a Federal Penitentiary, where I am currently an inmate. I got your address from a book entitled "The Essential Atari," by Jerry Willis.

The reason I am writing is because I'm in a slump over ST information. I work with a 1040 for six hours daily in the education department here. Learning BASIC, and I'm doing video game-type programming.

I know BASIC isn't exactly a good language to program graphics but it's all I have, and considering everything, I think I'm doing pretty well with it. Right now I'm writing a "Star Trek" video game that's rather elaborate and needs some fast graphics to make it look good. I would also like to get a full screen of graphics, instead of having to stay inside a window. I know that the ST has built-in routines that will enable me to do this, however I don't have the information necessary to tell me how to go about it.

It would really be a help if you could tell me how to use the VDISYS command to call the subroutines, and where to PEEK and POKE.

If any ST owners out there would be so kind as to send me something for my ST I will be greatly appreciative, and you may well be partially responsible for making an otherwise unproductive existence very productive.

You can write to me or send information to the address below:

Reginald Still
No. 02595-097
United States Penitentiary
3901 Klien Blvd.
Lompoc, CA 93436

Atari ST Pecks and Pokes (Abacus Software, \$16.95, P.O. Box 7211, Grand Rapids, MI 49510, (616) 241-5510) has a good discussion of VDISYS routines. This book was

published when the ST first came out, and as such is one of the few sources that give specific examples for use with ST BASIC.

Cheers For Charts

Three cheers for START Charts! I have seen this approach used in so many IBM magazines, and I was glad to see START incorporate this procedure.

Here are some START Charts that I would like to see:

- C compilers (Megamax, Mark Williams)
- Laser printers (Postscript, downloadable fonts?)
- Scanners (Navarone; any others?)

I'm really glad to see Atari back in the market and I'm so excited about my new ST.

Brian LaChance
Wolcott, CT

Getting Back To The Basics

Your column "Programming In BASIC" is exactly what I've been waiting for since START began publishing. I'm a casual ST user, and your kind of informative articles make my day.

At last! Now this magazine has something for me at my level. I look forward to discovering more about the ST and GFA BASIC from articles like yours.

Mark K. Brown
Ashland, OR

Dialog Box

START
544 Second Street
San Francisco, CA 94107

Or leave us a message on CompuServe using the Antic Online Mailbox—just log on and type **GO ANTIC**.

TIME-KEEPER

ORDER NOW
and receive a
FREE
MOUSE ACCELERATOR!

This is our popular clock calendar plug-in cartridge. The timekeeper comes complete with removable long life lithium battery and flow-through cartridge port, ready to use. Just plug it into the cartridge slot and set up either an Auto folder or Accessory program to automatically set Time and Date each time you turn on your ST*. To order, use coupon below or call toll free 1-800-624-6545 or in California 408-378-8177.

Please send me () Timekeeper(s) at \$29.95 each (plus \$2.50 shipping). California residents add 7% sales tax.

Name _____
Address _____
City _____ State _____ Zip _____
VISA, MC# _____

 **Nayarone Industries**

Nayarone Industries
454 Kenneth Ave.
Campbell, CA 95008



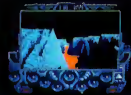
Atari ST is a trademark of Atari Corporation.

Extra sensory perfection!

BLOOD CAPTAIN



EXPERIENCE A NEW UNIVERSE OF SIGHT AND SOUND



Powerful graphics and visual effects, together with superb music and sound, make Captain Blood a sensory feast. But for Captain Blood such pleasures may

be fleeting — his life force is being drained by 5 unfriendly clones.

As Captain Blood, you must locate all 5 of these Blood brothers among 32,768 planets and assimilate them before the ship's auto-bionic functions take over and render you completely inhuman. You're already 50% machine!



So get moving. Pilot your way through Hyperspace and fly through treacherous terrains of strange worlds. And encounter even stranger inhabitants. Use a unique icon language to pry clues from 12 fully-developed alien races.

Go for it! Travel space. Talk with aliens.



Find the clones. Destroy planets. And feast your eyes on your prize, the lady Torka.

If you're still man enough.

M I N D S C A P E

Visit your retailer or call 1-800-221-9884 for VISA and MasterCard orders. To purchase by mail, send your card number and expiration date, check or money order for \$34.95 (C&A & C128), \$39.95 (5.25" IBM & compatibles), and \$49.95 (Amiga and Atari ST) for each title plus \$2.00 handling to Mindscape, Inc., P.O. Box 1187, Northbrook, IL 60062. Allow 3-5 weeks for delivery, longer times this part. © 1988 Mindscape, Inc. Mindscape is a trademark of Mindscape, Inc. Software program, sound and graphics copyright © 1988 Infogrammes and ERE Informatique, Commodore, IBM, Amiga and Atari ST are registered trademarks of Commodore Electronics, Ltd., International Business Machines, Commodore Amiga, Inc. and Atari, Inc. respectively.

Products Update

New ST Software and Hardware

New Fantasy From SSI

From Strategic Simulations, Inc. comes *Heroes of the Lance*, first in a series of the official TSR Hobbies *Dungeons & Dragons* computer games. In this single-player game, set in the *Dragon-Lance* game world, you can control up to eight characters. The game uses both text and graphics and is similar to other ST fantasy games. Pick your characters, decide on their strengths and weaknesses and set them out on a quest! *Heroes of the Lance*, \$39.95. Strategic Simulations, Inc., 1046 Rengstorff Ave., Mountain View, CA 94043, (415) 964-1353.

CIRCLE 277 ON READER SERVICE CARD

Supra's Megadrive

Supra Corporation has released their *MegaDrive ST*, a 40-megabyte hard disk drive that mounts inside the Atari Mega computer case. The drive connects to the internal DMA port (on the Mega's motherboard) and leaves the external DMA port available for the Atari laser printer or other peripherals. There is no external power supply; power comes directly from the Mega. Supra also furnishes formatting software that lets you partition the *MegaDrive ST* into as many as 12 drives. *MegaDrive ST*, \$995. Supra Corporation, 1133 Commercial Way, Albany, OR 97321, (503) 967-9075.

CIRCLE 283 ON READER SERVICE CARD

Captain Blood

Captain Blood is a stunning new space arcade game from Mindscape. In it you play the title character, a cyborg looking for six clones who are draining your energy. Your mission? Hunt them down and ice them! You can choose to explore up to 32,768 planets; picking your choices through the colorful screen icons. Incredible landscapes (both real fractal and simulated vector graphic), digitized sound, music and fast-moving flight sequences add to the fun. Could this be the next *Dungeon Master*? *Captain Blood*, \$49.95. Mindscape, Inc., 3444 Dundee Rd., Northbrook, IL 60062, (312) 480-7667; (800) 221-9884.

CIRCLE 281 ON READER SERVICE CARD



Captain Blood, Mindscape's stunning new space arcade game with real fractal imagery and simulated vector graphics.

A Question Of Scruples

One of the most provocative board games today is *Scruples*, a game that demands its players make difficult decisions on moral dilemmas. A *Question of Scruples* is the computer version of this game—a game that asks tough ques-

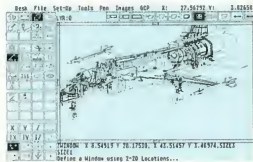
tions and reveals the personalities, honesty and ethics of its players. In *Scruples* you can play with up to nine other human players, or against computer players chosen from 64 different personality types. A *Question of Scruples*, \$39.95. Virgin Games, distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404, (415) 571-7171.

CIRCLE 282 ON READER SERVICE CARD

Products Update

DynaCADD

ISD, Inc., has just released DynaCADD, a professional-level CADD program that's compatible with their high-end desktop publishing program Calamus. DynaCADD lets you create both 2D drawings and 3D objects for electrical, mechanical, architectural or civil applications. DynaCADD features an amazing variety and number of features, all available through multiple levels of icon menus. The program offers considerable power: automatic dimensioning (both European and North American standards) and the ability to alter any part of a 3D object, with the program automatically updating the orthographic views of the object. DynaCADD can



send its output to a wide assortment of printers (laser, dot-matrix) and pen plotters and supports the Postscript page description language. Requires a minimum of one megabyte of RAM, a one megabyte disk drive and a monochrome monitor. DynaCADD, \$695. ISD Marketing, Inc., 2651 St. John Street, Unit #3, Markham, Ontario, Canada, L3R 2W5, (416) 479-1880.

CIRCLE 276 ON READER SERVICE CARD

Off Shore Warrior

Titus Software has released *Off Shore Warrior*, a fantasy arcade action game in which you compete in speedboat battles. In the future, an alien race has imposed peace on planet earth and has banned all warfare and armed conflict. As one of the boating warriors, you satisfy human desires for aggression as you jump waves, avoid rocks, fire at your opponents or force them onto rocks. *Off Shore Warrior*, \$39.95. Titus, 20432 Corisco Street, Chatsworth, CA 91311, (818) 709-3693.

Only
\$49.95



P.O. Box 5257
Winter Park, FL 32793
Phone: (407) 657-4611

The program you've all heard about ... Now better than ever!

- ★ Make your 520/1040 ST™ outrun a Mega ST™!
- ★ Speeds up the computer's response; saves time, reduces fatigue.
- ★ Low Cost; Less than half the cost of Atari's hardware blitter.
- ★ Not Copy Protected; Install on all your favorite program disks.
- ★ Works on any 520, 1040 or Mega ST™ with TOS™ in ROM.

Improved! Featuring Auto-install, more speed enhancements, and compatibility with more application programs than ever!

Turbo ST vs The Blitter (% speed increase)

	Monochrome		Color	
	Blitter	Turbo ST	Blitter	Turbo ST
dBMAN	10%	62%	8%	64%
Data Manager	83	81	85	80
1ST Word	37	29	34	34
GFA BASIC	22	69	13	62
Interlink	53	61	46	63
ST BASIC	221	400	219	425
Word Writer	34	29	35	32

To order, see your local dealer or send \$49.95 plus \$2 for shipping and handling to SofTek. Visa/Mastercard accepted. Florida residents add 6% sales tax. Version 1.0 owners may upgrade for \$1 by sending in your original disk before Nov. 1.

Benchmarks performed by paging through an appropriate data file using Turbo ST™ on a 1040 ST and the blitter on a Mega ST. TOS, ST BASIC, 520 ST, 1040 ST, and Mega ST are trademarks or registered trademarks of Atari Corp.

Turbocharge Your ST Computer Today!

PROBLEMS? SOLUTIONS!

VIDEOKEY™

You say your computer doesn't have an RF modulator? There's no support for composite video? Not to worry! With VideoKey, now you can record your graphics creations or simply hook up a composite monitor or television! It is designed to provide the highest quality color composite video and RF output possible for any Atari ST computer,

including the Mega. Color representation is great - the reds really are red and the blues are blue!

Along with composite video and a built-in RF modulator, VideoKey offers separate audio output for use with your stereo or amplified speaker. A monitor feed-through port is also provided so you can still use your RGB or monochrome monitor. (It's also compatible with Monitor Master, our monitor switchbox.)

VideoKey has some other nice features. It automatically powers on when your computer is on and in color mode - meaning no power switch for you to turn on and off! It boasts our exclusive Colorloc circuitry that prevents colors from "fluttering" or "floating" across the screen.

All these features are contained in one external hardware unit with a



ONLY
\$119.95

custom molded non-detachable cable and a low-profile injected molded case (approx. 4 x 5 x 1.5 inches) designed to compliment the ST.

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



ONLY
\$49.99

MONITOR MASTER

If you have both the RGB and monochrome monitors and hate cable-swapping then this device is for you! Plug both monitors in at once and a single push-button easily and safely switches between your monitors. Also offers a separate audio jack for use with your stereo or amplified speaker for a big, bold sound. And, if your computer is RF-equipped it allows hookup to your VCR or composite monitor. Non-detachable cable is included. The first and still the best!

COMING SOON!!
Stereo/3-channel sound output for the ST! Call or write for details.

The Master Series

MOUSE MASTER

An innovative switchbox that allows you to instantly switch between your mouse and joystick (or other controller)! It offers a third joystick port so you can plug in your mouse and both joysticks with no more frustrating cable swapping. Its compact case is attractively styled in a neutral gray color and a 2 ft. double-cable is included for comfortable use by either right- or left-handers.



ONLY \$39.95

DRIVE MASTER

A handy device, especially if you use pc-ditto from Avant-Garde Systems. With just a touch of a button, you can switch between your 5.25" and 3.5" floppy disk drives! It also works well as a switcher for two 3.5" drives. Custom styled case matches the Atari ST and comes with a 3 ft. detachable cable.



ONLY
\$49.95

 Practical Solutions®

602-884-9612



1930 E. Grant Rd., Tucson, AZ 85719

ST is a registered trademark of Atari Corp.

Shop Talk

Shopping for holiday gifts?

Make your holiday shopping EASY. Give your friends a subscription to *START*. They'll be able to use their ST in ways they've never dreamed.

Talking ST with your friends?

START gives you complete coverage of the ST scene. News and reviews of the latest and best ST products. Information and programs on MIDI, desktop publishing, business applications, animation, graphics, games, utilities, and more. With the disk programs, you get top-quality software at an outrageously low price!

Mail in the order card now!

CALL TOLL-FREE
(800) 234-7001
VISA/MASTERCARD
ONLY
(7 am-6 pm PST)



THE #1 AUTHORITY ON HOBBY
STARTTM

GIFT LIST
Jim - *START* Subscription + 1
Dwight - *START* Subscription
Lydia - *START* Subscription
Lisa - *START* Subscription
Greg - *START* Subscription

UPDATE

News, Notes & Quotes

What's Happening in the Atari World

by Stephen Mortimer
and the START Staff

GDOS Replacement

G+PLUS is a GDOS replacement by CodeHead Software. GDOS is an extension of the operating system that allows programs such as MicroSoft Write and Easy Draw to display and output device-independent fonts and graphics at the highest resolution possible. Currently, GDOS causes speed degradation in some systems and some programs do not work properly with GDOS installed. G+PLUS takes the place of GDOS in the boot disk AUTO folder, offering speed and compatibility improvements over GDOS.

According to Charles F. Johnson, one of the program's authors, G+PLUS has shown no compatibility problems and will work with software previously incompatible with GDOS. Significantly, there is no speed degradation using G+PLUS. A special line drawing option allows the ST to operate 25% faster than normal on the Desktop.

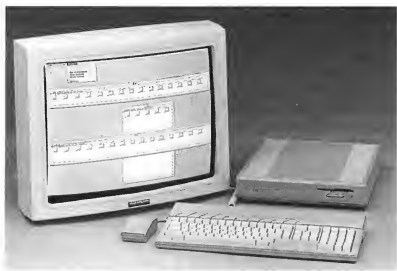
A companion accessory included with G+PLUS allows different ASSIGN.SYS files to be installed without rebooting the system. The ASSIGN.SYS file tells the system what fonts are installed and where to find them. Normally, the computer must be reset for a new ASSIGN.SYS to be recognized.

Under G+PLUS, the execution of a GDOS-based program will cause a specific ASSIGN.SYS file to be automatically loaded and installed. G+PLUS is available for \$34.95 from CodeHead Software, P.O. Box 1250, Pacific Palisades, CA 90272.

High Resolution Monitor

Moniterm, a giant in the monitor industry, has completed a high-resolution interface board for the Atari Mega and the Moniterm Viking 1 and Viking 2400 monitor. The board connects to the Mega's internal bus connector and provides a monochrome screen resolution of 1280 by 960, more than twice the size of the current ST monochrome monitor.

The board will also have a socket for the Motorola 68881 math coprocessor that may be installed at a later time. The Viking 1 19-inch monitor and board will sell for a maximum of \$1,995, according to Ward Johnson, President of Moniterm. The Viking 2400 24-inch monitor will sell for \$2,595. Both monitors have an option for a non-glare screen. Properly written software should work immediately with the Moniterm monitor. For more information, contact **Moniterm** at 5740 Green Circle Drive, Minnetonka, MN 55343. (612)935-4151.



The Moniterm Viking 2400 high resolution monochrome monitor dwarfs the Mega 4 beside it. Including the interface board that plugs into the Mega bus, the Viking 2400 lists for \$2595, while its smaller 19" cousin lists for \$1995.

Precision Comes To The U.S.

Precision Incorporated, the English publishers of Superbase Personal and Professional and LOGiStiK, has opened its doors in the U.S. Distribution and support of these products had formerly been handled by Progressive Peripherals & Software of Denver, Colorado. Precision Incorporated will now provide full support for all of its products from its offices at 8404 Sterling Street, Suite A, Irving, TX 75063. Their voice telephone number is (214) 929-4888 and their Fax number is (214) 929-1655.

News, Notes & Quotes

Atari Hard Disk Fix

Berkeley MicroSystems, creators of the BMS-100 hard disk interface board, has designed a replacement PAL chip for the Atari SH-204 20 megabyte hard disk. As shipped by Atari, the SH-204 does not report errors to the computer in media formatting, reading or writing. With the Atari Drive Enhancement, all errors are reported, curing erratic disk operations and problems of phantom partitions that can occur when using Supra or ICD hard disk software.

The ADE chip simply plugs into a socket on the SH-204's host adaptor board. The retail price of the ADE is \$20 and it's recommended as a dealer-installed option. For more information, contact Berkeley MicroSystems, 360 Oakland Avenue, Suite 5, Oakland, California 94611, (415) 465-6956.

Dot, Dot, Dot. . .

Have you been wondering what David Small is up to these days? First of all, he's finished Version 6 of the Data Pacific Magic Sac Mac emulator that offers much faster disk access speeds. More recently, since leaving Data Pacific David has been developing a 128K version of the Magic Sac. Currently the Magic Sac uses Apple 64K ROMs that are incompatible with software such as HyperCard and Adobe Illustrator. The 128K emulator, popularly dubbed the "Super Sac," will not be marketed by Data Pacific but by a company run by David Small himself. Small expects the Super Sac to retail for about \$200 without the Apple ROMs. . . Early this summer at the NAMM show held in Atlanta, Atari created a MIDI developers council. The council is made up of several well-known ST MIDI companies, including Hybrid Arts, Sonus and Dr. Ts, and will try to further MIDI on the Atari ST line of computers. . .

If you've got a hot tip or an interesting product for the ST, we'd like to hear from you. Let us know at News, Notes & Quotes, START, 544 Second Street, San Francisco, CA 94107.

 **Public Domain Software**
Over 575 Disks Available for the ST
\$4.00 Each 

Christmas Special
Buy 6 Disks get 1 FREE
Buy 10 Disks get 2 FREE
Buy 20 Disks get 5 FREE

Utilities, Games, Magic Sac, MIDI,
Music, Applications, Clip Art,
Educational, Graphics
24 Hour Shipping Telephone Support
Free Catalog Updates

Call or Write for FREE Catalog
(800) 622-7942

Clip Master



10 Screens per disk
\$19.95 per disk
FREE Bonus Disk with Purchase
Dealer Inquiries Welcome

Disk 1 : Animals, Christian, Folks, Food, Home, Music, Plants
Disk 2 : Americana, Patriotic, US Map, Outlines of all 50 States
Disk 3 : Arrows, Designs, Kid Stuff, Signs, Symbols, Christmas
Disk 4 : Animals, School, Thanksgivng, Transportation & more

Clip Art for Desktop Publishing Programs

Dungeon Master	\$26.95	Ominres	\$25.95	Spectrum 512	\$49.95
DM Hint Book	\$9.95	Turbo ST	\$37.95	Labelmaster Elite	\$29.95
Oids	\$22.95	Procopy	\$24.95	Tune Up	\$32.95
Typhoon Thompson	\$24.95	Needdesk	\$9.95	Mouse Master	\$32.95
GFA Basic	\$39.95	Flash	\$9.95	Monitor Master	\$39.95
GFA Basic Book	\$29.95	Shadow	\$22.95	Helpful Hints (Book)	\$16.95
GFA Reboot Camp	\$17.95	Interlink ST	\$29.95	Supra 2400 Modem	\$149.95
Publisher ST	\$89.95	Degas Elite	\$45.95		

Call for More



BRE Software
352 W. Bedford, Suite 104
Fresno, CA 93711
(209) 432-2159 IN CA



ST SPRITE MIGHT



At last a sprite editor that can do everything in one program!

ST SPRITE MIGHT is the first professional sprite editor that works in low & medium resolution; has 6 different sprite sizes; and allows you to save the images as C source code.

- Creates 6 different sprite sizes: 16 x 16, 16 x 32, 16 x 48, 32 x 16, 32 x 32, and 32 x 48.
- Compatible with both Degas and Neochrome file formats. Files can be loaded in any of 3 screen locations.
- Sprite sequence may be saved to disk as C source (easily edited into Assembly or Basic).
- Animator allows for up to 2000 frames of frame flipping and/or motion.
- Drawing functions are: copy, undo, fill, clear, mirror, circle, line, frame, box, and 6 types of brushes.

\$39.95

EURIPIDES Exciting Full Screen Action.

Destroy enemy ships with your missiles while you pilot your ship through screen after screen of scrolling action. Use your bombs to gain points and lives, but watch out for those surface missiles.

- Nearly full screen scrolling with animated air, surface, and space targets.

\$29.95

Both programs require an Atari ST with color monitor.

Send check or money order including \$3.00 shipping & handling to:

J & V Software
P.O. Box 186
Ellettsville, IN
47429-0186

LASER C

Zero to Sieve in 5 seconds!

Because LaserC is fast. Really fast. Infact, so fast it can compile and link the popular sieve benchmark in 5 seconds! Spend more time programming and less time waiting on the compiler.

Whether you're an amateur or a professional, LaserC is the right C language development system for you. LaserC has everything you need to develop commercial grade applications or desk accessories for the ST.

LaserC is the *only* integrated C environment available for the ST. Program entry is a snap with the multi-window mouse and keyboard editor. Compile and execute your programs directly from the editor with a single keystroke!

Perform disk operations such as file copy, or run any program with just a few clicks of the

mouse—there's no need to leave the editor.

In addition to the large compliment of UNIX™ compatible library routines, LaserC allows complete access to the ST ROM routines—all documented in the 650 page manual.



Introducing LaserDB—the powerful *source level debugger!* Now you can view your source code while it runs. Monitor C variables, set breakpoints with the mouse, and evaluate C expressions interactively. Multiple windows and easy command structure make debugging fast and efficient.

Get LaserC and LaserDB—the ultimate C development system for your ST.

"We converted Dungeon Master to Laser C and doubled or tripled our productivity. We now use Laser C exclusively for our ST Development."

—Wayne Holder,
President, FTL Games

	Laser C			Mark Williams C v3.0		
	Compile/Link	Run	Error	Compile/Link	Run	Error
Hello.c	2.43	—	—	15.98	—	—
Apskel.c	8.88	—	—	26.5	—	—
Sieve.c	4.59	2.45	—	23.9	2.77	—
AES	*35.6	—	—	103	—	—
Savage	6.31	36.4	1.73×10^{-10}	30.82	83.0	1.18×10^{-7}

All times in seconds.
AES consists of nine source files totaling 1142 lines of code.
AES is built using Make.
Mark Williams C using RAM disk.

Megamax, Inc.
DEVELOPMENT SYSTEMS

Box 851521, Richardson, Texas 75085-1521
(214) 987-4931

© Megamax, Inc. 1988. LaserC and LaserDB sold separately. If you currently own Megamax C for the ST, update to Laser C for \$20. Call for details. (214) 987-4931. Now available through distributors. UNIX™ is a trademark of AT&T.

COMPILER:

One-pass generating relocatable code. Absolute addressing of globals allows program's code and data to be as large as memory allows. Ultrafast linker accepts both Laser C and DRI format object files.

EDITOR/SHELL:

Integrated editor and development shell. Cut, copy, and paste between files. Pull-down menus and dialog boxes to control editor and run compiler. Fast scrolling and text entry—supports large files. Special window can be used as a command line interpreter. Built-in dynamic disk cache and facilities for RAM resident compiler and other Laser utilities.

UTILITIES:

Resource Construction Program, full-featured Make utility, linker, disassembler, archiver/librarian accept Laser C and DRI objects files.

LASER DB:

Source and assembly level debugger. Evaluate any C expression to print or set variables. Source and assembly mode allows interaction with compiler output. Disassemble or dump memory. Set breakpoints with the mouse on C lines or machine instructions. Watch C variables or machine registers. Multi-window user interface. Simple command structure.





The PROFESSIONAL MIDI MACHINE



And How It Grew

by Jim Pierson-Perry
START Contributing Editor

In 1984, Jack Tramiel and associates formed Tramiel Technology, Ltd. to build and market an advanced home computer—the ST. Among their plans for the new machine was that it support the budding MIDI technology. Little could they have realized then just how important that feature would become. From little seeds do niche markets grow!

The ST and MIDI partnership has been one success story after another. Capitalizing on the computer wave sweeping the music industry, the ST has quickly risen to a leadership role for musical applications. Along the way, MIDI acceptance and uses have grown far beyond the original scope—and the ST has been there every step of the way.

Why MIDI?

MIDI was a child of necessity. It was conceived initially as a way to cope with the explosion of new electronic instruments in the late 1970s, as synthesizers became a major part of the music scene. One problem was that a single synth by itself sounded weak compared to acoustic instruments. A way around that was to play several synths together and get a fuller "layered" sound. Since most musicians have only two hands apiece, this approach was of limited use for live performances. Even with a tape deck in the studio, it was hard to play multiple keyboard tracks in perfect synchronization. Keyboard players needed a way to connect multiple synths as slaves to play under the control of a single master keyboard.

Some manufacturers began to build computer interfaces into their synths, but each, unfortunately had his own interface scheme. As long as you used all Oberheim equipment, for example, you were fine. But the player who wanted to link gear from different sources together? Forget it.

Birthing Pains

In 1981 Japanese and American synthesizer manufacturers began discussing ways to develop a single standard for communicating musical performance data between instruments, regardless of company brand. This standard would describe both the interface hardware and the communications software to drive it. By June of 1982, enough work had been done on the standard so that some companies began to build new

synthesizers incorporating it. During this time, the standard was officially named as the Musical Instrument Digital Interface standard: MIDI.

The first public display of MIDI came at the National Association of Music Manufacturers meeting in January, 1983. With baited breath and crossed fingers, a Sequential Circuits Prophet 600 was connected with a Roland JP-6—and it worked the first time! It was finally possible to play a single keyboard and have the other track it perfectly.

In the first generation of MIDI synthesizers, some differences in interpretation of the standard arose that had to be resolved. Watchdog organizations were formed to control and nurture MIDI: the Japanese MIDI Standard Committee (JMISC) and the MIDI Manufacturers Association (MMA). A user group, the International MIDI Association (IMA), took over distributing the standard and educating musicians, retailers and developers on using it. MIDI standard specification 1.0 was officially released in October 1983 by the JMISC and MMA, then published in English with a detailed description by the IMA in September 1985. ▶



From the start, MIDI was anticipated to be a dynamic standard that would grow with need. The first major amendment came in 1986 with a standard for handling sampler data dumps. A second addition came in 1987 when the MIDI Time Code (MTC) was accepted. MTC provides a connection between MIDI and SMPTE, an absolute timing reference standard used throughout the professional audio and video world.

The most recent change has been acceptance of a MIDI data file standard by the MMA. Discussions on a universal file standard had been ongoing since sequencer programs first emerged in 1984. Anticipating its acceptance, several companies have already released programs that can read and save files in this format. Because of the continuing changes to the original document, the IMA has just completed and released version 4.0 a total rewrite of the MIDI detailed specification.

The Atari Angle: Pre-ST

Atari was a force in the MIDI market even before the ST was designed. In April 1983 a small Los Angeles company named Hybrid Arts was formed that set out to bring MIDI to the Atari 8-bit computer line. Founder Bob Moore stated that they chose the Atari because it was the sturdiest of the lightweight personal computers and stood the best chance of surviving a professional road tour. Any questions about basing their work on a "game machine" were quickly quashed when Hybrid Arts demonstrated the very first MIDI sequencer program at the January 1984 NAMM show.

This led to the MIDItrack II sequencer program for 48K Atari computers in mid-1984, followed by the even more powerful MIDItrack III for the 130XE in 1985. Both were extremely well received. A series of patch editors, librarians and a sample editor for the Mirage filled out the product line, which continues to do well today.

A MIDI Computer

Computer support for MIDI was just starting in 1984. Although designed for communication between synthesizers, software developers quickly realized that MIDI could easily be extended to the computer front. A report on a MIDI software conference in 1984 carried the understatement that "everyone agreed MIDI could quite possibly become the focus of a revolution in the music industry." Quite true, but the revolution spilled over into the computer market as well. Once users discovered how computers could aid their musical pursuits, new applications appeared like wildfire. By the end of 1984 there were about 40 programs available for all makes of personal computers. This grew to greater than 165 programs by mid-1986 and shows no sign of tapering off even today.

Musicians in early 1985 had three choices for a computer. If you had a lot of money, you bought a Macintosh or an IBM PC; if not, you bought a Commodore 64. Suddenly that summer, a brand-new option appeared: the Atari 520 ST. This was the first personal computer with MIDI as an integrated part of its hardware and operating system design—and the raw computing muscle to back it up.

From the very beginning, the ST was appealing to musicians. Other computers required an external MIDI interface and there was no standardization among them. Software for a particular computer would also require a particular interface; pick the wrong one and you were locked out of other programs (a situation persisting today, particularly for the PC). With its built-in MIDI ports, the ST never had this problem.

The ST had its initial big break in Europe. As it competed easily with the Mac and PC on features, its significantly lower price led to quick acceptance. In the music market the ST took a commanding position that has never faltered. A report from the 1988 Euro-

Atari Firsts In The MIDI Market

Having been a part of the MIDI market from the beginning, Atari has racked up a number of "firsts" to its credit. Some of the more significant ones are:

- 1 The first MIDI sequencer was demonstrated by Hybrid Arts at the Winter 1983 NAMM show. An 8-bit Atari computer was used to control a Prophet 600 synthesizer (one of the first instruments to contain the MIDI interface).
- 2 The ST was the first, and still only, personal computer to contain the MIDI interface as an integrated part of its design.
- 3 DX-Droid by Hybrid Arts was the first patch editor program for any computer to provide automated intelligent patch creation.
- 4 Hybrid Arts scored again with SMPTE Track for the ST, the first sequencer to include an integrated SMPTE interface module.
- 5 Atari was the first computer company to exhibit at the NAMM show (Summer 1987). Since then, Apple and others have followed in its footsteps.
- 6 The first commercial non-music MIDI application was MIDI-Maze for the ST from Hybrid Arts.
- 7 The ST was the first computer with software (from Steinberg) to drive the new Yamaha DMP7 digital mixer.
- 8 Hybrid Arts' ADAP II is the first hardware/software product designed to edit DAT (Digital Audio Tape).

pean music trade show concluded that the industry "... is now totally dominated by the Atari ST." In the U.S., a poll taken by Keyboard Magazine showed the ST to be the first choice for a new computer purchase.

The ST's combined power and low price also made it the first personal computer to be used as a basis for a music equipment component. Hybrid Arts, in collaboration with Nilford Labs, showed the first of these in 1986 with ADAP, a 16-bit stereo sampler built around a dedicated ST. Another use for the ST has been as the controller for automated mixing consoles.

The Early Days

The release of the ST could not have been timed better for the MIDI market. While musicians were discovering the computer, instrument manufacturers were just starting to learn new ways to use MIDI. MIDI was settling down and ambiguities were being ironed out while the JMSC and MMA fought the language barrier. The first software programs were aimed at duplicating common tasks done by hand or studio equipment. These were primarily sequencer and patch editor/librarian programs.

A major advantage of sequencer software over tape recorders was that music could be captured and edited without losing fidelity. As the program was just recording the MIDI commands then literally replaying the instruments, you could play with the music to your heart's content before actually committing to tape. This also encouraged the spread of home studios. Musicians could do the basic recording at home, then bring their disks into the studio for the final polish and take. This saved a lot of money for the artists and made it easy to experiment and try new ideas. Also, anyone who had ever created sounds directly through a synthesizer front panel quickly appreciated the speed and efficiency of using the computer as a patch editor.



Predictably, the first MIDI program for the ST was released by Hybrid Arts. DX-Droid, a DX7 patch editor/librarian, came out in 1986 and introduced a new concept—applying artificial intelligence to create new patches. Following close behind was MIDI Magic, a program that turned the ST into a MIDI player piano. Supporting it was a library of piano rolls (including ones originally cut by Scott Joplin, Liberace and George Gershwin) converted into MIDI data disks. Tom Jeffries, MIDI Magic's author, also wrote the first MIDI articles published in *Antic* and *START* magazines.

Another early ST convert was Emile Tobenfeld, better known as Dr. T, who has become of the major forces in the MIDI software arena. Previously known for his Commodore 64 programs, he foresaw the ST becoming the preferred personal computer for music applications. His first releases for the ST were a patch editor for the CZ-101 family and the Keyboard Construction Set (KCS), a professional-level sequencer ported and substantially upgraded from the Commodore 64.

Other MIDI software houses joining the ST in 1986 were Sonus, Steinberg and Electronic Music Publishing House. A surprise hit came from Activision, better known as a game house, when they brought out *Music Studio*. This was a player program that let you type in music, then play it back through the internal speaker or via MIDI. It caught on quickly and soon BBS's were filled with

Music Studio data files.

A popular feature of *Music Studio* was its ability to change the sounds of the internal speaker voices, very much like using a software synthesizer. This idea was taken further by Lee Actor and Gary Levenburg with "Hot Sounds: Noise Doodling on your ST" in the Winter 1986 *START* that led to the utility program G.I.S.T. G.I.S.T. uses a software synthesizer metaphor to create new sounds for the internal speaker voices that can be played via MIDI. The sounds can be saved and used with other programs such as GFA BASIC, Personal Pascal and even the sequencer program, MIDI Recording Studio.

Growth Spurts

Having proven its utility for control of musical instruments, MIDI manufacturers next turned their sights to control devices such as effects boxes and mixing consoles. One of the first was the PCM-70 by Lexicon, an all-purpose effects box (reverb, echo, etc) that could be controlled in real-time via MIDI. The PCM-70 today remains a choice piece of processing gear and even has its own patch editor program. Once the gate opened, a number of MIDI-equipped effects boxes followed as well as digital equalizers and mixers. "Incest" was fair game as new devices appeared that translated (mapped) MIDI commands from one form to another (e.g. mod wheel to pitch bend).

Drums were popular targets for MIDI ▶

control. No longer did a drummer have to be buried behind a drum kit. With a sensing pad to trigger hits and drum sounds coming from a sampler or synth, the drummer was free to go out in front with the rest of the band. Mick Fleetwood revealed one of the wilder cases of this in a recent START interview (Summer 1988) in describing a drum controller he built into a cod-piece! Thanks to MIDI we can now hear the sound of one hand clapping.

In 1987 MIDI software was coming fast and furious, particularly for the ST, which by then was asserting itself as the musicians's computer. Professional-level sequencers were available from Dr. T, Hybrid Arts, Sonus, Steinberg and C-Lab. Passport, one of the original MIDI software developers, became a new player for the ST by porting their Master Tracks sequencer from the Mac (reviewed in the Spring 1988 issue of START). This was significant, since just one year before they had stated that "...as Atari's survival is questionable we are not investing in software for it." Apparently, the enthusiastic acceptance of the ST in music circles did not escape them. Currently there are more professional level sequencers for the ST than for either the Mac or the PC—there's nothing like freedom of choice.

Sample Editing

While it seemed that new patch editors were arriving each week for every synthesizer in existence, the new center of attention in 1987 became sample editing. Samplers were last year's darlings. Unlike synthesizers, however, getting quality sounds and effects was difficult and subject to outside interferences. Recording a sample was only half the battle—musicians also needed to be

able to trim out noise, set loop points, do digital processing (volume and equalization) as well as to do special tricks like playing a sample backwards, cut/paste, merging multiple samples, etc. These were clearly jobs for software.

Sample editing software is more sophisticated than a standard patch editor or librarian. It requires substantially more graphic-oriented programming and editing tools. Each sampler had its own way of assigning which samples would map to particular MIDI notes, what MIDI commands would be recognized and the sample data dump format. For the ST, sample editors came from Steinberg, Drumware, Sonus and Compu-Mates. More recently, Sound Designer has been ported from the Mac by Digidesign. This is the state-of-the-art sample editor for any computer and an excellent addition to the ST lineup.

Softsynth is another ST conversion from Digidesign and represents a new trend in sample software: creating a sound from first principles. The program uses additive and FM synthesis to build up a sound from a series of individually tailored harmonics. Another new release, Sample Maker from Dr. T, continues the trend and incorporates a

host of different algorithms for sample synthesis. Digidesign is also notable as the US distributor of ST software from C-Lab of Germany. One of their recent imports, C-Lab Creator, is a current favorite for the "king of the sequencers" title.

Transcription

A Holy Grail for music software has been to play a song into the computer and have it produce a sheet music tran-

scription. Transcription is a very complex task, much more an art form than a textbook procedure and the software for it is just now coming out with acceptable quality. Early programs simply had you type in the music and use graphical editing tools to place the notes, ornaments, and so forth on the score. While easier than doing it by hand, this approach fell short of the ideal.

Several ST software developers now offer transcription programs designed to work with their associated sequencer programs. Among these are The Copyist by Dr. T, EZ-Score by Hybrid Arts, Masterscore by Steinberg, Super Score by Sonus and The Notator by C-Lab. A bonus is that many of them can recognize music files from other sequencers through implementation of the MIDI file standard.

Childhood's End

MIDI is now five years old and has passed well beyond the original expectations of its creators. Almost every piece of electronic musical equipment has fallen under its influence from synthesizers to reverb units to light controllers. Even non-keyboard instruments

have benefited—we now have "MIDIified" drums, wind instruments and guitars. One of the more spectacular recent products is the Yamaha DMP7 digital mixer. You can send MIDI messages to it and watch the faders move automatically in response.

MIDI has also spread beyond the realm of music. One of the best examples is the multi-player arcade game MIDI Maze from Hybrid Arts (reviewed in the October 1988 START). Up to 16 players can be connected via the ST MIDI ports and attempt mutual annihi-



lation in real-time. Similar software for the Mac and PC has yet to appear. Another idea now fermenting in designers' minds is to use the ST MIDI ports as the basis for a local area network. More uses are sure to follow.

The growth of MIDI software applications has even surpassed that of MIDI hardware applications. Today's programs far surpass the simple sequencers and patch editors of just a couple years ago and let us redefine what we call music and how we make it. One of the current hot areas is the explosion of self- or guided-composing programs for the ST. These work with music fragments you supply or rules you define for generating notes; the programs produce music of startling complexity and interest. Some can interact with you in real-time while you play. These include M and MIDI Draw by Intelligent Music, Tunesmith and Fingers by Dr. T. Ludwig by Hybrid Arts and Mouseterpiece by MIDImouse.

Another leading-edge topic is multi-tasking. Dr. T was the first here with his Multi-Program Environment, which lets you run several patch editor, scoring or composing programs from within his KCS sequencer. Hybrid Arts followed suit with their Hybriswitch which runs under GEM and can juggle among up to 10 programs (memory permitting).

Back in 1986, there were seven MIDI programs available for the ST. At last count there were more than 170 programs released by more than 40 developers. These cover the gamut from simple home jukeboxes to professional-level composing and scoring to film. The ST has proven itself more than capable as the preferred platform for MIDI applications. I can't wait to see what comes of their next five years together! ■

Jim Pierson-Perry is a research chemist and semiprofessional musician. He lives in Elkton, Maryland.

Products Mentioned

EZ-Track Plus, \$65; **EZ-Score Plus**, \$149.95; **Hybriswitch**, \$29; **Ludwig**, \$149.95; **MIDI Maze**, \$39; **ADAP I**, \$1,995; **ADAP II**, base price \$3,495; with the AES EVU digital bus, add \$300; with SMPTE-Mate option, add \$250; **MIDItrack II**, \$174 with interface; **MIDItrack III**, \$189 with interface; **DX-Android**, \$199.95. Hybrid Arts, 11920 W. Olympic Blvd., Los Angeles, CA 90064, (213) 826-3777.

CIRCLE 175 ON READER SERVICE CARD

Keyboard Controlled Sequencer (contains the Multi-Program Environment), \$249; **Fingers**, \$79; **Tunesmith**, \$149; **DX Heaven**, \$129; **The Copyist Level I**, \$99; **Level II**, \$249; **Level III**, \$399; **Matrix 6 Tricks**, \$129; **Sample Maker**, \$299. Dr. T's Music Software, 220 Boylston Street, Suite 306, Chestnut Hill, MA 02167, (617) 244-6954.

CIRCLE 176 ON READER SERVICE CARD

Super Score, \$299. Sonus Software, 21430 Strathern Street, Suite H, Canoga Park, CA 91304, (818) 702-0992.

Masterscore, \$350; **Pro 24 III**, \$295; **Beam Team Transform X-Note and X-Track**, prices not available; **Time-lock interface**, \$375. Steinberg/Jones, 17700 Raymer Street, Suite 1001, Northridge, CA 91325, (818) 993-4091.

CIRCLE 178 ON READER SERVICE CARD

MIDIplay, \$49.95. Electronic Music Publishing House, Inc., 2210 Wilshire Blvd., Suite 448, Santa Monica, CA 90403, (213) 455-2025.

CIRCLE 179 ON READER SERVICE CARD

Sound Designer, \$349; **Softsynth**, \$295; **C-Lab Creator**, \$349; **The Notator**, \$595. Digidesign, 1360 Willow Road, Suite 101, Menlo Park, CA 94025, (415) 327-8811.

CIRCLE 180 ON READER SERVICE CARD

Genwave/12, \$299; **Soundfiler S900**, \$299; **Soundfiler X7000/S700**, \$249; **Soundfiler S612**, \$199; **KI Editor/Librarian**, \$119. Drumware, 12077 Wilshire Blvd., #515, Los Angeles, CA 90025, (213) 478-3956.

CIRCLE 181 ON READER SERVICE CARD

K3PO+ Synth-droid, \$99.95; **Casio Synth-droid**, \$74.95; **DW-8000 Synth-droid**, **Final Track**, \$79.95; **DSS-1 Synth-droid**, \$129.95. Compu-Mates, 8621 Wilshire Blvd., #177, Beverly Hills, CA 90211, (213) 271-7410.

CIRCLE 182 ON READER SERVICE CARD

Music Studio, \$49.95. Activision, a division of Mediagenic, 388 Bohannon Drive, Menlo Park, CA 94025, (415) 329-0500.

CIRCLE 183 ON READER SERVICE CARD

G.I.S.T., \$34.95. The Catalog, 544 Second Street, San Francisco, CA 94107, (800) 234-7001.

CIRCLE 184 ON READER SERVICE CARD

Master Tracks Pro ST 2.1, \$349.95. Passport Designs, 625 Miramonte Street, Half Moon Bay, CA 94019, (415) 726-0280.

CIRCLE 185 ON READER SERVICE CARD

M, \$200; **MIDI Draw**, \$95. Intelligent Music, P.O. Box 8748, Albany, NY 12208, (518) 434-4110.

CIRCLE 186 ON READER SERVICE CARD

Sonicflight patch editor/librarians for the Ensoniq ESQ-1/M/SQ-80 and Roland D-10/110, \$99.95 each; **Mouseterpiece**, \$229.95. MIDImouse Music, P.O. Box 877, Welches, OR 97067, (503) 622-4034.

CIRCLE 187 ON READER SERVICE CARD

MIDIsoft Studio Advanced Edition, \$149. MIDIsoft Corporation, P.O. Box 1000, Bellevue, WA 98009, (206) 827-0750.

CIRCLE 188 ON READER SERVICE CARD



AUTHORIZED SERVICE
CENTER FOR ALL
ATARI PRODUCTS

MICROTYPE

A DIVISION OF MICRO PERIPHERALS, INC.

P.O. BOX 369 • KETTERING, OHIO 45409



HARDWARE		MODEMS	
ST'S... IN STOCK!!!		ST-212 300/1200 bps	CALL
Color Monitors	CALL	Avantek 1200E	69
Mon Monitors	CALL	Supra 1200	149
SP 354 Drive	CALL		
ST 314 Drive	CALL		
1B 5-W Drive	209		

WE ALSO CARRY
A LARGE AMOUNT
OF ATARI 8-BIT
HARDWARE/
SOFTWARE

WOW!!!
HAYES
COMPATIBLE
2400 BAUD
MODEM
\$129.00
SAVE \$ S S

ST SOUND DIGITIZERS

Digitally sample, edit and playback speech, music, and other sounds. Hardware and Software included. . .

only \$79.00

HARD DISK DRIVES FOR ST'S

SUPRA 20 MB HARD DISK	
\$569.00	
SUPRA 30 MB HARD DISK	
\$689.00	
SUPRA 60 MB	CALL
ATARI SH 204	CALL

LARGEST SELECTION IN THE U.S.

★ ST SOFTWARE ★

10th Frame Bowling	26	Copyist (OR T)	165
221 B Baker Street	28	Cosmic Relief	26
30 Breakthru	26	Cracked	21
30 Helicopter Simulator	34	Crazy Cars	25
All About	19	Cross Town Crazy B	13
Advanced OCP Art Studio	31	Cyber Control	45
Air Ball	26	Cyber Paint	58
Air Ball Construction Set	17	Cyber VCR	49
Algebra 1, 2, 3	ea 14	Qark Castle	27
Albans	19	Data Manager ST	49
All About America	41	Outbreak	31
All	21	OB Man	159
Alternate Reality-The City	32	Death Sword	13
Alternate Reality-The Dungeon	32	Deep Space	31
America Docks Series	ea 24	Defender of the Crown	39
Architectural Design	25	Oegas Elite	26
Artic Fox	26	Desk Cart	69
Art Gallery 1, 2, 3	ea 19	Diamond Mike	13
Assassn	39	Dip Drum	27
Backgammon	23	Dr. Doom	26
Award Maker	27	Dr. Drums (OR T)	41
Balance of Power	34	Dr. Keys (DT T)	19
Bally Ho	27	Orafix	129
Barbarian	26	Oxygen Master	26
Bards Tale 1 or 2	ea 34	One Bomber	449
Base Two	45	Easy Draw (Regular)	68
Basketball (Two on Two)	26	Easy Draw W/ Supercharger	99
Battle Ground	25	Easy Tools	33
Battlezone	19	Easy Tools	36
Beyond Zork	34	Expert Opinion	72
Biology 1, 2, 3 or 4	ea 14	EZ Score Plus	99
Bismark	28	EZ Track Plus	43
Black Lamp	17	F15 Strike Eagle	26
Blockbuster	27	Fast Basic	67
Boulderdash Construction Kit	17	Fast Basic M. Compiler	39
Brattacass	15	Fire and Forget	26
Breach	27	First Cad	33
Bridge 5.0	24	First Letters & Words	34
Club Commander	23	First Man	24
Bureaucracy	11	First Shapes	29
Business Tools	26	First Word Plus	63
Cad 30	65	Flash	54
Captain Blood	33	Flash Cache	54
Cartoon	33	Fight Simulator 2	26
Certificate Maker	33	Scenery Disks	ea 10
Championship Baseball	27	Font Disks (Pub Part)	ea 10
Championship Wrestling	26	Fonts and Borders	24
Charlat	34	Fontz ST	23
Chess (Preston)	28	Foundations Waste	36
Chessmaster 2000	29	Fraction Action	26
Circuit Maker	54	Frostbyte	17
Clip Art 1, 2, 3, 4, 5, 6	ea 13	Gateway	31
Club Commander	23	Go	34
Colonial Conquest	27	Gunault	33
Color Computer Eyes	179	Genesis (Molecular Modeler)	59
Colorburst 3000	25	GFA Basic	39
Compubridge	20	GFA Basic Book	27

PRINTERS ACCESSORIES

PANASONIC	call for latest	ST Disk Covers	from B
10800	180 cps	Mouse Mice	9
10911	180 cps	Power Strip w/Surge	15
KX-P110 Ribbon (Blk)	9	Delux Power Strip w/Surge	24
KX-P Color Ribbons	11	TERMINATOR Joystick	WOW! 19
		EPY 500 & Joystick	17
		WICO Bar Handle Joystick	14
STAR	Call for latest	Printer Stand-Heavy Duty	13
NX-1000	NEW! CALL	Mail Labels 3x5x15/16-50 pk	4
1000 Ribbon (Blk)	6	CALL 1000 pk	3
1000 Ribbon (Color)	6	PAPER-1000 Shis-Microport	24
		Compuserve Starter Kit	24
		On-Line Encyclopedia Kit	36
		Printer Cable 5'	19
OLYMPIA	simply, the best!	Supra 64K Printer Buffer	69
NLD modes use 1B x 24 matrix		Modern Cable	17
NP-30	130 CPS	219	
NP-80	240 CPS	changeable font cards	399
NP-135	15 inch	529	

★ ST SOFTWARE ★

Ninja	14	ST Gem Programmers Ref Man	15
Orbiter	27	ST Internals Book	15
Ogre	27	ST Intro to MIDI Book	15
Olds	24	ST Machine Language Book	15
Planetarium	26	ST Music & Pipes Book	21
Orbiter	26	ST Pool	21
Pain! Pro	33	ST Talk	5
Paintworks	14	Star Fleet 1	37
Paperboy	26	Star Raiders	19
Partner	21	Starship 2	21
Partner ST	46	Stellar Crusade	36
Pawn, The	29	Stock Market - The Game	18
PK Olio	65	Strip Poker 2	27
Perfect Match	27	Sub Battle Simulator	26
Personal Pascal	66	27	
Planetarium	26	Super Base Professional	99
Planetarium 1, 2 or 3	ea 26	Super Cycle	19
Phasar	59	Super Star	14
Pinball Wizard	24	Super Star Ice Hockey	33
12 Pirates of the Barbary Coast	12	Szink Calc ST	49
Planetarium	26	Tanglewood	27
Plutos	21	Tau Cell: Lost Star Colony	11
Police Quest	53	Temple of Asphal Trilogy	13
Power Plan	27	Terror Pods	27
Prime Time	27	Test Drive	27
Print Master Plus	26	Three Stages	34
Pro Copy	28	Thunder	19
Public Shelter ST	26	Tune Bandit	24
15 Publishing Partner Pro	CALL	Top Gun	11
Q Ball	21	Trailblazer	33
25 Quatum Paint Box	25	True Basic	52
115 Quink	11	Tune Up	36
CALL Red & Rhyne	27	Turbo ST	23
26 Renegade	14	Typhoon Thompson	35
47 Road Runner	47	Ultima 2, 3 or 4	ea 39
27 Roadwars	22	Uninvited	34
124 Rockford	22	Universal Item Selector	14
34 Sans Paravia	19	Universal Military Sim.	31
52 Scan Art	33	Universe 2	46
25 Scroopis	29	Vampire's Empire	39
28 SOI	34	Vegas Craps	24
119 Shadow	22	Vegas Gambler	23
27 Shadowgate	24	Video Tiling	22
16 Shard of Spring	27	Vid Professional	49
26 Shuffledeard	19	Warp Ship	28
39 Silent Service	27	Wargame Construction Set	24
26 Midi Maze	36	Winnie The Pooh	16
36 Midi Recording Studio (OR T)	27	Win! Challenge	11
27 Missile Command	19	Wizard	11
19 Mixed Up Mother Goose	21	Wizards Crown	26
34 Modula 2 (Developer's Kit)	99	Word Perfect	239
41 Spectrum 512	49	Word Up	19
27 Snake Buggy	29	Word Writer ST	49
35 Space Construction Set	35	Wrestling	26
14 Spiderman	14	World Karate Championship	19
29 Spy Factory	26	WWF Microleague Wrestling	33
20 Spy vs Spy 3 (Arctic Antics)	19	Xanadu	19
15 ST Disk Drives Inside & Out	18	Zork Trilogy	46

HOURS: M-F 9 a.m.-9 p.m. EST
SAT 9 a.m.-5 p.m.

TO ORDER, CALL TOLL FREE
1-800-255-5835

Ohio Residents, Order Status or
Tech. Info, Call (513) 294-6236

TERMS AND CONDITIONS

• NO EXTRA CHARGES FOR CREDIT CARDS! • We do not bill until we ship • Minimum order \$15 • C.O.D. \$3.50 • SHIPPING: Hardware, minimum \$4. Software and most accessories, minimum \$3 • Next day shipment available at extra charge • We ship to Alaska, Hawaii, Puerto Rico (UPS Blue Label Only), APO and FPO • Canadian orders, actual shipping plus 5%, minimum \$5 • Ohio residents add 6% sales tax • Please allow 3 weeks for personal or company checks to clear • All defective products require a return authorization number to be accepted for repair or replacement • No free trials or credits • Returns subject to 15% re-stocking charge • Due to changing market conditions, call toll free for latest price and availability of product. FOR YOUR PROTECTION, WE CHECK ALL CREDIT CARD ORDERS FOR FRAUD.

**ENCOUNTER HIGH
SPEED ACTION IN
AN INTELLIGENT
GAME OF TACTICAL
WARFARE.**

THE TIME: The 22nd Century.
THE PLACE: 64 islands in the
Southern Ocean.

THE PROBLEM: A worldwide en-
ergy crisis.

THE MISSION: Gain control of
the islands, set up centers to mine,
recycle and produce materials to
form a large network of power
plants.

JUST ONE MORE PROBLEM:
Enemy terrorists are destroying
the islands. . . one by one.

**FAST-PACED ARCADE AC-
TION:** You are in control of up to
4 aircraft and 4 amphibious vehi-
cles simultaneously. Capture en-
emy islands and destroy its
forces.

**STRATEGIC TACTICAL WAR-
FARE:** Conduct war maneuvers in
a huge territory that includes over
60 islands. Protect your ship with
defense drones and 360-degree
turret mounted laser cannon with
telephoto tracking.

SENSATIONAL GRAPHICS:
Three-dimensional solid filled
graphics, smooth scrolling, fabu-
lous sound and special effects.

ADDICTIVE, HOURS OF PLAY:
Your choice of action game or
strategy game, plus save-game op-
tion provides hours and hours of ex-
traordinary adventure!



CARRIER COMMAND



RAINBIRD

P.O. Box 2227,
Menlo Park, CA 94026,
415/322-0900

HOW TO ORDER: Visit your software dealer today, or call (800) 227-6900 from U.S. or Canada for Visa, MasterCard, Amex or C.O.D. To order by mail, send check/money order. Rainbird, P.O. Box 8193, San Francisco, CA 94118. CA add 6% sales tax and TX add 7.5%. Shipping/handling is \$4.50. 2-3 weeks for delivery.

AVAILABLE: IBM CDA/EGA/VGA \$39.95. Amiga and Atari 512K \$44.95. Macintosh 512K \$49.95. Commodore 64/128 coming soon. Rainbird and Rainbird logo are trademarks of British Telecommunications plc. Macintosh is a trademark licensed to Apple Computer, Inc. IBM, Commodore and Atari are registered trademarks of International Business Machines Corp. Commo-

TALKIES!

by Jim Kent

Turn your ST into a mixing studio with AVS.ARC on your START disk!

Many people enjoy creating their own computer animations with Cyber Paint, sold by The Catalog. (I wrote Cyber Paint as an extension of the "Flicker" program, published in the Summer 1987 START.) With Cyber Paint you can create your own ST cartoons or do post-production touch-ups on CAD-3D animations.

But even Cyber Paint needs more bells and whistles. For instance, what would cartoons be without crashes and bangs as coyotes fall off cliffs and refrigerators fall on rabbits' heads? What would science fiction films be without the pulse of laser beams and the roar of rockets as spaceships swoop over alien planets?

Yep—what Cyber Paint needs is sound. You need the ability to add music and sound effects to your animations.

Well, now you have it.

Enter AVS!

With the Audio-Video Sequencer (AVS) you can add digitized sound tracks to your Cyber animated sequences. Not only can you have bells and whistles, you can have music, voices and even things-that-go-bump-in-the-night. Anything you can record on tape can be played back with a Cyber Paint animation file. Your only constraint is the memory available in your ST—and you'll find that sound tracks generally take up considerably less RAM than video tracks.

There is a catch: AVS is just an editing program. It won't create video or sound; it just organizes tracks and mixes them together. You can find many video (.SEQ) and sound (.SPL) files on CompuServe, GENie, at users groups and elsewhere, but to create your own you'll need Cyber Paint for video and MichTron's ST Replay for sound. There are also a number of .SND files available on the same online services; these are

.SPL files with a minor modification. If you change their filename extenders to .SPL, AVS will have no trouble loading and playing them. You can also play Aegis Animator ST .STR files, but they must first be converted to .SEQ files with Cyber Paint.

Getting Started

Copy the files AVS.ARC and ARCXTTP onto a blank, formatted disk and un-ARC the file following the Disk Instructions elsewhere in this issue. Because Audio-Video Sequencer works with low resolution animation sequences only, it requires a color monitor. Double-click on AVS.PRG in either low or medium resolution. A medium-resolution screen will appear with a menu bar at the top and fourteen track lines below. This is AVS's Edit Decision List screen.

To get some idea of the power of AVS, load the demo that came on your START disk (in AVSDemo.ARC) by clicking on Load under the AVS Menu

START presents a full-blown editing suite for your Cyber Paint animated masterpieces!

The Audio-Video Sequencer by graphics guru Jim Kent is more than just a dubbing program—it's a full-fledged editing system that lets you control the speed and timing of up to 256 tracks of low-res color video and sound information files.



and selecting DEMO.AVS. Be sure that the three files, LASER.SPL, ENGINE.SPL and LASER.SEQ are on the disk in your A: drive with AVS.PRG. After it's finished loading, you'll see that there are entries in the first three tracks. In the Filename space on the left, you'll see the names of all three component files. The sound tracks, LASER.SPL and ENGINE.SPL, are shown in red and the video track, LASER.SEQ, in green. The three associated tracks together are called a *scene*. Two or more scenes make a *movie*. (even though it's video). Press the P key to play (or select Play Once from the AVS Menu).

The animated LASER demo was created by Associate Editor Jon A. Bell and began as DEGAS artwork. The ship is the "Narcissus" shuttlecraft from the movies *ALIEN* and *ALIENS*; the deep-space background was created with Tom Hudson's Anti-aliased desk accessory. (Editor's Note: Watch *Cyber Corner* in upcoming issues of *START* for Jon Bell's

tips on creating the effects in the LASER demo. Also, more demos are available on Antic/START Online in CompuServe; log onto CompuServe and type GO ANTIC.)

Putting It Together

Let's take a look at DEMO.AVS; it should still be loaded into AVS. On the left side of each track are the filenames for all tracks. The next columns show the StartTime and StopTime points for each track in ticks (a tick is one-sixtieth of a second). The Track Bars next to the StopTime column represent visually where each track occurs in your scene. You can rearrange audio and video tracks by pointing and left-clicking on a Track Bar and dragging it left or right, or by left-clicking once where you want the track to start. You'll see the Start-Time and StopTime numbers change as you move a track.

Although there are only 14 tracks visible on a single page of the Edit Decision List, there are actually 256 tracks

available on twelve pages. To change to a different page or to scroll the Edit Decision List window up or down, use the movement options on the Window Menu.

You may find that the sound tracks in DEMO.AVS play too fast or too slowly. (Unfortunately, SPL files don't save any speed information.) You can adjust their speed from the Examine Track screen. To access the Examine Track screen, right-click in the Track Bar area for that track. (Don't worry if you don't remember all the places to right- and left-click; these are shortcuts which you'll come to appreciate later. All of the functions are available on the drop-down menus and most also have mnemonic keyboard equivalents as well. The Examine Track screen, for example, is accessed by clicking on Examine on the Tracks Menu or by pressing the X key—eXamine— while the mouse cursor is over the Track Bar area.)

The Examine Track screen has two ▶

AVS MENU COMMANDS

(Note: Keyboard equivalents are in brackets.)

AVS Menu

About AVS—Shows the copyright notice.

Load (L)—Loads a movie from an AVS file.

Play (P)—Plays a movie once.

Play Loop (R)—Plays movie forever. To abort, press Escape; the movie will abort at the end of a loop.

Save (S)—Saves movie.

Memory (M)—Displays memory usage and other status information.

Clear All (C)—Clears the movie from memory; does not affect a disk file.

Quit—Exits AVS.

Tracks Menu

Play Track (T)—Plays a single track.

Load Cyber (C)—Loads a track with a video (.SEQ) file

Load Replay (R)—Loads a track with a sound (.SPL) file.

Examine (X)—Goes to the Examine Track screen to set playback speed and looping (repeating) for an individual track. (Click on the Examine Track heading bar to hear/view a track.)

Kill Track (K)—Deletes single track from Edit Decision List.

Block Menu

Capture (*)—Places a block of tracks in a buffer. You define a block of tracks by clicking on the beginning and end tracks of the block.

Cut (I)—Like Capture but deletes block from screen. It remains in the buffer for pasting until you do another Capture or Cut operation.

Paste (I +)—Copies block buffer onto tracks on screen. This will overwrite existing tracks.

Insert (Ins)—Inserts empty tracks and adds time in the middle of your movie. Click once to define the start track (by the vertical position of the mouse) and start time (by the horizontal position of the mouse inside the Track Bar). Click again to define the end track and end time. Empty tracks will appear between the two clicks, and all of the tracks after the start time of the insert will moved down on the Edit Decision List and later in time. (If you don't want to insert time make the second click to the left of the first click).

Delete (Del)—Deletes all tracks between two mouse clicks and moves up and earlier everything after the second click. Works the opposite of Insert. This will permanently remove these tracks from your Edit Decision List, but will not affect any disk files.

Free Block (F)—Empties the block buffer and the memory it's using.

Load Block (B)—Loads an AVS file into the block buffer.

Time Menu

Duration (D)—Lets you view/set the length of a movie.

Pack Video—Rearranges timing of the video tracks so that one starts right after another without any gaps or overlap. This command also adjusts the duration of the movie to fit the total length of the video tracks.

Pack Sound—Does the same thing to sound tracks.

Pack Both—Packs video and sound.

Sort Tracks—Displays all tracks in their StartTime order.

Separate Tracks—Separates video and sound tracks and displays all video tracks together first followed by all sound tracks.

Window Menu

Line Down (Down Arrow)—Scrolls the Edit Decision List down one track.

Line Up (Up Arrow)—Scrolls the Edit Decision List up one track.

Page Down (Right Arrow)—Scrolls the Edit Decision List down 14 tracks (one screen).

Page Up (Left Arrow)—Scrolls the Edit Decision List up 14 tracks (one screen).

The Edit Decision List Screen

NAME—Displays filename of video or sound track. Left-click to load with a Cyber Sequence video track or right-click to load an ST Replay sound track.

START—StartTime (beginning) of track in ticks (1/60 second). Left-click to move 1 tick earlier and right-click to move 10 ticks earlier.

STOP—StopTime (end) of track. Left-click for 1 tick later and right-click for 10 ticks later.

TIME POSITION—Time Bars which display the relative positions and lengths of tracks. Press and hold the left mouse button to drag a Track Bar to its position. Right-click to go to the Examine Track screen.

(Keyboard shortcut: the spacebar will play whichever track the mouse cursor is over.) ■

Play Once again. Do this until you have it to your satisfaction.

Now select capture from the Block menu, click on the WHOOSH.SPL track and then on the CLANK.SPL track to set the range of the block to capture. AVS will store a copy of this block in its capture buffer. Select Paste from the Block Menu and left-click on the first empty track below CLANK.SPL—about where the second loop of SHIPSEQ starts (about halfway down the Track Bar). *Voilà!* Your first scene is completed.

Now you need to see the alien ship firing its lasers; load the Demo we were working on earlier, by selecting Load Block from the Block Menu and choosing ALIENZAP.AVS (or whatever you called it). Then paste it into the first open track by selecting Paste from the Block Menu (or by pressing the + key) and left-clicking in the Track Bar area of the next open track. Check how it fits with your earlier scene by pressing P for Play Once.

A quick cut back to the wobble ship followed by a few explosions should tell the tale nicely. Capture the first three tracks (SHIPSEQ, WHOOSH.SPL and CLANK.SPL) into the Block buffer and then Paste them into the first open track. Once again, check out the overall effect and adjust the track positions and timing where necessary. For example, you may not want to loop the second ship scene twice; once may be enough.

Ah, it's time for some explosions! Just as you did with the other tracks, left-click in the Filename area to load video tracks and right-click in the same area to load sound tracks. A couple of loops of the spinning globe in the silence of space should be good for another few seconds of animation and make a strong contrast to the explosions. Then perhaps make a quick cut to the cackling alien and then cut back to the spinning earth with your alien ultimatum .SPL as a voiceover. If you position the second globe track to begin before the end of the cackling alien

Anything you can record on tape you can play back over a Cyber Paint animation file.

scene, AVS will cut to the globe before the alien is quite finished cackling. This technique is called an *audio bridge*, since it bridges between the scenes.

I leave the conclusion of your space epic—and the mush sound—to you, but I think you'll find the Audio-Video Sequencer to be a flexible editing tool for the job.

How It's Done

I used the sound playback assembly language source code that comes with MichIron's ST Replay as a starting point. It sets a timer to interrupt the processor at the sampling rate. The interrupt routine simply takes the next byte of the sample and uses it as an index into a table to drive the volume registers of the Yamaha sound chip. The 68000 is free to do other tasks when not processing the interrupt.

To keep the interrupt routine as fast as possible I devote half of the 68000 registers to the interrupt and use the other half to play back the animation. With a little massaging of the sound samples and the video updates to get them to take less real-time processing, I've managed to get 30Khz sound playing over 60Hz video. Large video updates are slower, but even in the worst case 20Khz sound over 20Hz video is possible.

The hardest part of this was synchronizing the video to the monitor. The sound shuts off the vertical blank

interrupt, but palette changes need to be done during that time. Fortunately the ST has a video beam position register. The code to check this (in LISTEN.ASM) while doing video delta updates is twisted, but it works (though it'd be nice if it processed keyboard events too). There's a "pseudo-vblank" routine that is called whenever the beam position register points off-screen that keeps a clock, updates the palette and decides when to start and stop sound or video tracks.

Well, that's about it. Have fun with your talkies! (And we'd like to see—and hear—your best work, so send it in!) ■

Jim Kent studied mathematics and art at UC Santa Cruz before he joined Island Graphics in 1983. There he worked on a Micro-Illustrator on the Tandy Color Computer and parts of several paint systems including TARGA Tips and Aegis Images. While at Island, he authored Aegis Animator on the Amiga. In 1986 Jim left Island to form Dancing Flame, which has produced Animator ST for Aegis, Flicker for START and Cyber Paint for the Catalog.

Products Mentioned

The Anti-aliaser, \$199.5 plus \$2 shipping. Tom Hudson, P.O. Box 3374, Shawnee-Mission, KS 66203.
CIRCLE 260 ON READER SERVICE CARD

Cyber Paint Ver. 2.0, \$79.95. Antic Software, 544 Second St., San Francisco, CA 94107, (415) 957-0886.

DEGAS Elite, \$49.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404, (415) 571-7171.
CIRCLE 261 ON READER SERVICE CARD

ST Replay Ver. 3.0, \$99.95. 2 Bits Software, distributed by MichIron, 576 S. Telegraph, Pontiac, MI 48053, (313) 334-5700.

CIRCLE 262 ON READER SERVICE CARD

LDW Power

A Fast, Powerful Lotus-Compatible Spreadsheet

by Kevin Ergil

Bad or buggy software gives itself away early in the game. I have only to think about such clunkers as TextPro with its magically disappearing information bar or the fun I had endlessly reinstalling early versions of WordPerfect to be reminded of this fact. LDW Power (LDWP), Logical Design Works' new full-powered spreadsheet, didn't give off any of these bad news signals. Installation is simply a matter of double-clicking and you're up and running.

And "running" is the word—this spreadsheet is speedy. Scrolling or moving with the sliders, move and copy operations, recalculations, executing macros and redrawing graphs are all very fast. LDWP will scroll data at a rate of 100 cells in 20 seconds and copy 1,000 values in under 2 seconds. Compare this to the 89 seconds VIP Professional takes to scroll that distance or the 4 seconds it takes to copy 1,000 cells (see "Figure It" in Special Issue #3 of START). Along with the speed comes the power of a program that provides all the resources offered by Lotus 1-2-3 in a GEM environment.

Working Environment

When you run the program the first thing you'll see is an empty worksheet.

Above it is a control panel with a menu bar, a row of buttons and indicators, the status line and an input line.

You can open up to four worksheet windows at once and each worksheet is 256 columns wide by 8,192 rows deep—large enough for any projects I can envision. Getting around the worksheet is fast and easy: you have the

many digits for a number cell by inserting a string of asterisks. Changing the cell size to accommodate a larger entry is accomplished easily with a quick trip to the Worksheet menu. If you enter a formula or function incorrectly or fail to indicate that a label contains numbers, the program catches your mistake and makes you fix it. LDWP also catches

DEALER-B											
	A	B	C	D	E						
		Product 1st	Product 2nd	Product 3rd	Product 4th						
Unit Price		13.00		14.95		13.95		14.95		14.95	
Unit Sales		80		80		80		80		80	
Dealer Sales		\$1,118.00		\$1,196.00		\$1,152.00		\$1,196.00		\$1,196.00	
Cost of Goods Sold		\$1,040.00		\$1,196.00		\$1,118.00		\$1,196.00		\$1,196.00	
Gross Margin		78.00		0.00		34.00		0.00		0.00	

DEALER-C											
	J	K	L	M							
	TOTAL	Jan 85	Feb 85	Mar 85	Apr 85						
7											
8	\$1,618.05	18	87	34	22	55					
9	\$1,788.37	19	300.15	\$117.30	\$75.90	\$189.75				50.00	
10	=====	20	237.51	\$92.82	\$68.06	\$158.15				50.00	
11	\$337.68	21	\$62.64	\$24.48	\$15.84	\$35.68				50.00	
12		22									

This is one of the example spreadsheets that come with LDW Power. The power of this program is immediately evident.

choice of mouse or cursor controls plus Home and End buttons.

The worksheet cells are very easy to work with and any cell can contain a label, a number or a formula. Error-catching on cell entries is also good. The program alerts you if you have too

cursor references and displays an indicator until the problem is solved.

Judging by its presentation, LDW Power is not aimed at the absolute spreadsheet beginner; there is no tutorial. This is a far cry from Lotus, which reminds you to spell "install" ▶

correctly. LDWP's 232-page manual is relatively brief by IBM standards, but is reasonably well-written and intelligently organized and has an index, glossary and quick-reference. There are also on-screen help messages.

There are also four totally undocumented sample worksheets in a folder named EXAM on the Utility Disk.

Format	Style	Layout	Erase	Name	Justifc	Prot	Unprot	Input	Value	Transpose	
1	CODE	TEST	CBC	L	TUBE	ENT	HL	0	HZN	TYPE	MAY
2	00065-0	ELECTROVELEC	SST	1						SERUM	20
3	04009-5	ELECTROVELEC	SST	1						SERUM	26
4	00006-6	GLUCOSE GLUC	GREY	1	0.5					SERUM	22
5	00002-2	URINALYSTOR	UN	10	5	URINE				SERUM	20
6	00021-1	POTASSIUM*	SST	2	1	SERUM				SERUM	17
7	03315-4	SHR 6 SHR6	RT	1	0.5	SERUM				SERUM	17
8	04001-0	SHR6 25 SHR25	SST	2	3.5	SERUM				SERUM	15
9	00541-4	SODIUM (NA*)	SST	2	1	SERUM				SERUM	12
10	00000-0	PRO-TIME	BLUE	2		PLASHA				PLASHA	12
11	00042-9	CREATININE	SST	2	1	SERUM				SERUM	10
12		HEMOGLOBIN & HEMATL		7		BL000				BL000	7
13	00019-8	BUN	SST	2	1	SERUM				SERUM	5
14	04007-9	SHR 12	SST	1	0.5	SERUM				SERUM	4
15	04701-4	GLYCEMEH00L00IN	L	7		BL000				BL000	0

LDW offers a choice between a Lotus-style or GEM interface. This is the Lotus interface—the choice takes one keystroke.

One of these samples, DEALERN.LDW is driven by several extensive macros which graphically demonstrate the LDWP's power.

There are 85 functions, including the math, statistical, financial and logical functions that you expect in powerful spreadsheets, plus 19 string functions for manipulating and evaluating strings. You can use the 12 date and time functions to insert information from the clock anywhere in the spreadsheet.

Finally, there are 12 special functions, including horizontal and vertical lookup. These extremely powerful functions let you specify a value, either numeric or string, and search the first row or column of a range for it. When the value is found, another value in an adjacent, previously specified row or column is reported back to the cell occupied by the function call. Using these functions you can search your spreadsheet and report values back automatically.

LDW Power offers substantial data-

base capabilities, including two sort levels and data query operations used to search for and output specific records.

An excellent feature of LDW Power is its macro recorder that lets you record keystrokes as they are executed and store them as a macro in a cell. Even better, the macro language used by LDW Power is Lotus-compatible.

File Handling And Lotus Compatibility

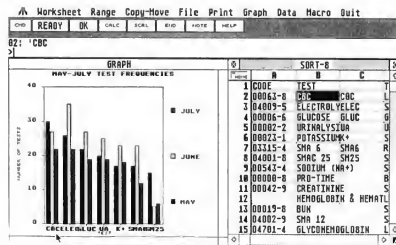
LDW Power is designed to behave pretty much like Lotus while still taking full advantage of the GEM environment on the Atari. Unlike previous Lotus clones for the Atari, I think LDWP has accomplished this well: the GEM interface is tight and the Lotus likeness is very credible. There are some minor differences, but most of them spring from a well-engineered linking of the

Lotus commands with the GEM shell. As in Lotus itself, the Lotus command mode is activated by pressing the slash key. Immediately, the Lotus command menu is displayed above the worksheet.

Converting Lotus files to LDWP format is extremely easy. I tested this by asking a friend to prepare a few Lotus .WK1 files on 3½-inch IBM disks. I loaded these spreadsheets into LDW Power using the same Retrieve command that LDWP uses to load its own files. The worksheets loaded without a hitch. Creating .WK1 files using LDWP power is a little more complex: you first have to save the file and exit LDWP to use a conversion program supplied on the Utility Disk. LDWP also reads Lotus .WKS files directly, broadening the range of worksheets available from third-party sources. (Editor's Note: See *Online with START* this month for sources of free 1-2-3 templates.)

LDWP power can also read ASCII files, line by line, into a spreadsheet. These files are imported as either straight numbers or as text and numbers. Each line of text is stored as a long label in one column of the worksheet while lines containing text and numbers are split up into separate cells. This means that figures and data can be imported into a spreadsheet easily from other sources.

My own experiment involved some ASCII files containing the Pin Yin (transliterated Chinese) and Latin



LDW Power has a built-in graphing package that is the equivalent of Lotus—or better. This is the view from the screen.

Setting Up pc-ditto, Part II

by David Plotkin

Hello! Starting this issue, I'm taking over the Mac/PC column for START. I want to thank Jim Pierson-Perry not only for his nice introduction last month, but also for getting this column off to a strong start. I hope to keep the quality of this column up to his high standards.

Last issue, Jim discussed setting up pc-ditto on your ST; this issue, I'll expand on that theme and talk about two pieces of hardware that'll make your life with pc-ditto a little easier.

Continuing On

Last time, Jim talked about how to set up and use a hard drive with pc-ditto, including how to set up a CONFIG.SYS which tells your ST how your various devices are configured. (By the way, when I mention DOS in this column I will be referring to MS-DOS, published by Microsoft, and PC-DOS, published by IBM. I do not recommend using a DOS tailored for a PC clone.)

But what about floppy drives? The section in the pc-ditto manual that deals with configuring floppies is a little hazy, because limitations of DOS make this subject more complicated than it really should have been. With DOS 3.2, you had the ability to modify the drive parameter table, so if you had, say, a



The Drive Master is a must-have for those users of pc-ditto who have a 5¼-inch drive and an external 3½-inch drive. It's a small box that lets you switch easily between the two dissimilar disk drives.

single-sided 3½-inch drive as drive B, you could simply add the lines detailed in the manual (such as "DRIVPARM=/D:1/T:80/S:9/H:1") to your CONFIG.SYS file. From then on, whenever you accessed your B drive, either to run a program or to format a disk, you'd be all set. This worked whether you had a hard drive or not.

With DOS 3.3, things became more complicated. No longer can you modify the drive parameter table. As detailed in the manual, you must declare new devices and add these lines to the CONFIG.SYS file (such as "DEVICE=

DRIVER.SYS /D:0/T:80/S:9/H:1"). When you do this, however, DOS creates a "new" disk drive with a new drive letter. Thus, if you have two floppies (A and B) and no hard drive, then placing two lines in your CONFIG.SYS file to set up your disk drives creates two new logical drives, C: and D:. To run programs from your drives, you access them as A: or B:, but to format them to their full capacity (360K single-sided and 720K double-sided), you must access them as drives C: and D:. Failing to do this will cause your double-sided drives to format as 40- ▶

track drives holding about 360K, regardless of their actual capacity!

Things become even more interesting with a hard drive. If it's installed properly (as Jim described), the new drives that are created by CONFIG.SYS must start where the hard drive leaves off. For example, my 50-megabyte hard drive is partitioned as drives C:, D:, E: and F:. My two floppies are a 5¼-inch external I.B. Drive (more on this) set up as my A drive, and the internal 3½-inch double-sided drive configured as the B drive. However, after I install my system under DOS 3.3, I must refer to the B drive as drive G to format it properly!

CONFIG.SYS and AUTOEXEC.BAT

The CONFIG.SYS file contains instructions and configuration information about the system. We've already discussed the HD driver and the device definitions that need to be in this file. My own file looks like this:

```
DEVICE=PC_DHD.SYS HD driver
DEVICE=DRIVER.SYS
/D:1/F:2           3½-inch
                   double-sided
                   disk
BUFFERS=16        16 buffers
                   allocated
FILES=25          allow 25
                   open files at
                   once
```

The last two lines will improve performance by holding disk-based information in memory. Line 2 establishes the characteristics of my B drive. Because my A drive is a standard IBM-style, 40-track, 5¼-inch drive, no special device definition. However, you would need a device definition line for each non-IBM-style (ST 3½-inch) drive. Remember: the .SYS files specified by the CONFIG.SYS file, such as PC_DHD.SYS and DRIVER.SYS, must be present on your DOS boot disk. DRIVER.SYS is distributed with DOS, but PC_DHD.SYS comes with pc-ditto.

The AUTOEXEC.BAT file works similarly to the AUTO folder in GEM. It's quite versatile and allows you to execute a sequence of commands on startup which perform a series of tasks. My file looks like this:

```
PROMPT=$P$G      change the prompt
                  style
PC_DMOUSE        set up serial mouse
                  driver
PCDSETTD         get time and date
                  from GEM
```

The first line sets up the prompt. As you probably know by now, the normal prompt in DOS is a rather uninforma-

and-stay-resident programs, etc. (We'll go into Batch files in a future installment, since they're a programming language all in themselves.) The two programs in the above Batch file—PC_DMOUS.COM and PCSETTD.COM—must also be present on your DOS boot disk. You'll need to copy them from the pc-ditto disk.

Plenty Of Drive

If you want the ultimate in convenience with pc-ditto, you'll want a 5¼-inch drive. There are several reasons for this. First, many PC programs are available only on 5¼-inch disks and if the software is copy-protected, you can't copy it to 3½-inch disks. Some PC programs



The I.B. 5¼-inch drive has a storage capacity of 360K and is invaluable when using pc-ditto.

tive drive letter. The first line of this file tells the prompt to become the drive letter and current directory (folder in GEM talk). This way, you always know where you are. The prompt can be a message, the time and date or quite a few other things. The other two lines actually execute two small programs, whose purposes are indicated in the comments above.

Almost any program (that typically ends in .EXE, .PRG or .COM) can be executed just by typing its name at the prompt. There are all sorts of possibilities: custom startup screens, terminate

are available on 3½-inch disks, but more and more these are the 1.44-megabyte quad-density disks used by IBM PS/2 machines rather than the regular 720K PC disks our STs can use. Also, while the ST can read disks formatted on a PC, pc-ditto cannot read disks formatted under GEM on the ST.

Enter the I.B. Drive, from I.B. Computers. It's a 5¼-inch drive with a capacity of 360K. A standard drive cable is attached to the back and the drive plugs into your ST's external drive port. Installation is simply a matter of plugging the cable in.

To use the drive, you must add a program called RES.PRG to your AUTO folder to slow down the stepping rate of the drive head. Unfortunately, the instructions (a single 8½ by 11 sheet of paper) don't mention that a 5¼-inch disk must be in the drive with the door closed or your ST will refuse to boot. RES.PRG must also be the first program placed in your AUTO folder, which means you must empty the folder and rebuild it. (The documentation doesn't tell you this, either.)

You can use another program called FMTPRG to format a 5¼-inch disk (or you can use the FORMAT command under DOS from pc-ditto). The FMT.PRG cannot make a DOS system disk, so it's of limited use to users of pc-ditto. It runs under TOS and many of the parameters are not explained; fortunately, the default parameters work.

Once you have formatted a 5¼-inch disk, you can work with it pretty much as you would your 3½-inch drive. You can open a window to get a directory, run programs by double-clicking on them and copy or delete files.

Mastering Your Drives

Another of the practical solutions from the folks at—you guessed it: Practical Solutions—is the Drive Master. This incredibly useful little device is a must-have for those users of pc-ditto who have a 5¼-inch drive and an external 3½-inch drive. The Drive Master is a small box into which you can connect two drives. You then plug the Drive Master into your ST external drive port. A button on the front lets you switch between the two drives attached.

In my own configuration, my I.B. 5¼-inch and my double-sided 3½-inch drives are connected to the Drive Master. Switching between them is just a pushbutton away.

Now, why would you need to switch between drives? Well, envision the following scenario: pc-ditto has allowed you to set up your external I.B. Drive as

drive A, so that copy-protected software that must run from drive A will be usable. Unfortunately, DOS must also be started from drive A. But DOS won't fit on one 5¼-inch disk—it's distributed on two. It will fit on one 3½-inch double sided disk.

Here's what you do. Set the Drive Master to access your 3½-inch double-sided drive. When pc-ditto requests you put the DOS disk in drive A, put the 3½-inch disk in and press Return. After DOS loads, you can use Drive Master to switch over to the 5¼-inch drive.

Need DOS again? No sweat. Just switch back to the 3½-inch drive. MS-DOS will happily access either drive as A with no problems. The only thing to remember is that to format a double-sided 3½-inch disk, you must use another drive. I use the internal drive on my Mega, which I must address as drive G (see above). The one complaint I have about Drive Master is that it's difficult to discern between the two button positions, so I frequently access the wrong drive. I would have preferred a slide switch rather than a pushbutton. But Drive Master makes using pc-ditto with a 5¼-inch drive much easier, and I highly recommend it for all ST users who have similar drive configurations.

Next month, we'll look at some tried-and-true PC utilities and other programs. ■

David Plotkin is a chemical engineer for Chevron U.S.A. and a long-time contributor to START and Antic.

Products Mentioned

IB Drive. \$24995. IB Computers, 1519 SW Marlow Ave., Portland, OR 97225, (503) 297-8425.
CIRCLE 201 ON READER SERVICE CARD

Drive Master. \$3995. Practical Solutions, 1930 E. Grant Rd., Tucson, AZ 85716, (602) 884-9612.
CIRCLE 202 ON READER SERVICE CARD

ATARI ST PUBLIC DOMAIN

\$3.25/Disk!

Every one of our hundreds of quality Public Domain and Shareware disks for the Atari ST are just \$3.25 each - and this amazing low price includes FREE SHIPPING in the U.S. and Canada! You can assume all disks are single sided (average over 250K per disk) and work with both color and mono 520 or 1040 ST's unless noted. (Mega compatibility not guaranteed).

Join more than 1000 satisfied ST owners who have turned to AccuSoft. In just the last six months alone! Now you too can experience

Software Power Without the Price!

CAT Catalog disk (Just \$3). NEW INTERACTIVE VERSION! Have fun browsing all our PD disks, including many for PC Ditto and the Magic Sac. Mention START magazine and we'll include a \$2 credit coupon along with your catalog disk good toward your next order. (Catalog available only on disk.)

- 108 Ramdicks and Print Spoolers (many of each).
- 113 Desk Accessories #3 - Clocks, command line interpreter, calculator, many more...
- 134 ST Writer Elite 2.3 - Great word processor - has optional GEMMouse interface...
- 135 A great clone of the game Monopoly - you'll love the graphics. (COLOR).
- 136 Misc. Games #1 - Nightcrawlers (fun for 1-4), Twix, more... (COLOR).
- 138 Wheel-of-Fortune 2.0 Game - A favorite! Can make your own puzzles (COLOR).
- 139 Spacwar 3.0 - Exciting arcade game for 2.
- 144 Great Chess game from Germany.
- 155 DGBB - "The Great German Videogame" - excellent game (JOYSTICK/COLOR).
- 162 Stoneage Deluxe - A fantastic arcade game. Make your own games. (JOYSTICK/COLOR).
- 192 Picture Utilities #2 - Many great programs. Convert pictures between resolutions, more...
- 214 Kids #3 - Several great kids programs, incl. a Concentration game (COLOR).
- 223 Speech #1 - The ST will speak (read aloud) your own text files! And more speech examples...
- 237 C Compiler - Fantastic - even has source code to compile a sample spreadsheet...
- 255 Business. Visualc Spreadsheet clone w/dice. Also 100 business form letters.
- 294 DeskPac Plus - Powerful all-in-one desk accessory: notebook, phonebook, alarm, calc,...
- 300 Monochrome Programs - Qix game, amazing demo, plus mono emulator for color monitors.
- 301 Uniform 2.0 - The best ST modem program! Tons of features incl. a GEM interface.
- 315 Two flexible database programs, a nice working PD spreadsheet, more...
- 334 JILCAD 2D - Fully working CAD program! Powerful... (DBL/MEG/best in MONO).
- 336 AIM 2.3 - Digital Image Processor - let's you do amazing things with pictures! (MGK).
- 337 Cyberpace Animation - The BEST ST graphics and sound demo (DBL/MEG/COLOR).
- 359 Music Studio #6 - Many songs plus several PD song player programs.
- 362 Amazing digitized song! (MEG/DBL).
- P01 Valuable hints, tips, and programs for PC Ditto (ST format disk).
- M02 Rod Ryder 7.0 - Excellent communications program for the Magic Sac. Magic MFS disk.

Pay by Check or Money Order.
U.S. funds only. Ohio add 5.6% tax.
Fast FREE shipping!

AccuSoft Public Domain
P.O. Box 02214
Columbus, OH 43202

The SBT Database Accounting Library

A Preview of a High-end Accounting Package

by Jeffrey Daniels

The Atari ST, even with the advent of the Mega line, has thus far failed to appear in more than negligible numbers on the desktops of America's corporate movers and shakers. Yet as every ST user is aware, the machine's absence in the business world cannot be blamed on hardware: as a pure computing engine, the ST can certainly hold its own against comparisons with most mainstream personal computers.

Then why hasn't the ST won the hearts, minds and purchase orders of corporate managers? Allowing for the prevalence of IBM-itis in the corporate mindset doesn't explain enough. Heretofore the missing component has been high-quality, well-entrenched, well-supported business and financial software.

For this reason we at START were quite excited when we heard that the SBT Database Accounting Library—a powerful, sophisticated, high-end accounting package—was in development and in limited release for the ST. Though as of this writing (July 1988) it's still a beta product, prospects for an imminent SBT release are promising.

The SBT Database Accounting Library is real software for real businesses, not some dressed-up home



The SBT Database Accounting Library: a powerful, sophisticated, high-end accounting package for the ST.

package. This is the kind of software that helps run multi-million dollar corporations; the kind of software that makes slick, red-suspended corporate CPAs look good. In short, the kind of systems accounting software that runs on serious machines in serious environments, outputting serious reports about serious sums of money.

What follows is a preview of the SBT package; in the sidebar accompanying this article is an interview with SBT Software's President, Robert H. Davies. Although I'm familiar with SBT on the IBM PC, I feel it's fair only to preview the product now. A full review will appear in START as soon as SBT is available on the ST. ▶

Interview with Robert H. Davies, President of SBT Software

by Jeffrey Daniels

Robert H. Davies began developing and installing computerized accounting packages at IBM in 1963. He founded SBT in 1980. His company has gone on to become one of the leaders in financial accounting software for microcomputers, with over 50,000 users worldwide.

START: *How did you begin your involvement with the Atari ST?*

Davies: We have been very excited about the Atari market from the very beginning. Atari contacted us—at this point it's probably three years ago—because they saw an opportunity and we saw an opportunity. We went on to invest a lot of money in developing the Atari product. From a cash flow standpoint, it hasn't been a great success. But I'm still very excited about the potential market. We have learned a lot.

START: *What's been holding you up?*

Davies: The biggest problem has been convincing Versasoft (the developers of dBMAN) that while it's wonderful to have a product that's better (than dBASE), it would also be really nice if we didn't have to rewrite all of our programs. Versasoft agrees with that, but there have been a few things that have taken them longer than we ever thought they would, that seem trivial to them, but that cause us monumental problems because we have to go through about every fourth line and make a little syntax change and that in turn

means that we have a whole different version of our program just for the Atari.

Believe me, when you show me a population of machines where I can be virtually the only complete integrated source code accounting package—that's exciting! The prob-



lem is I'm not a C programmer and I can't write in that language. I can't afford to maintain a product that's totally different than our other products because it's not compatible. I'm a little frustrated.

START: *Your frustration notwithstanding and, given your excitement about the Atari opportunity, do you think you can soon iron out the incompatibilities with Versasoft?*

Davies: We believe we're coming together on this. Versasoft is a very

small company. They do the best they can with the manpower they have. In fact, they're really terrific, brilliant people. It's just taken them much, much longer than we thought to get compatibility [with dBASE].

START: *When do you think, all things considered, the SBT package will be available for the Atari ST and Mega Computers?*

Davies: We're optimistic about the new version [6.2] for the Atari, though we aren't at this point actively marketing it. We're basically waiting for Versasoft to finish. However, we have run the new version in-house and we think we're pretty close. It's really fairly minor at this point. dBMAN has almost achieved the level of compatibility that will allow the SBT product to run without changes.

START: *For the user contemplating the purchase of SBT, do you recommend SBT's compiled or source version?*

Davies: As a practical matter, if you're running the source code version and you have a syntax error and you call us, we can tell you how to fix it. We can walk you through it—even if you're a naive end user. We do it all the time in the IBM environment. Sometimes, of course, it's too complex for the end user and we have to suggest he get help from a professional dBASE programmer, or we have to suggest he wait and we'll mail him an update. But, believe me, you can be the most sophisticated user in the world and if you've got a problem in the compiled version and you don't have the source, there's nothing you can do except wait for an update. You have no alternative. There has to be a physical exchange of a diskette.

You can see, therefore, that having

the source version available is to be highly preferred. Moreover, when you suddenly find, let us say, that you need some additional code in your inventory field or your part number has to be bigger, you don't have to throw away your entire accounting package and start over. For all intents and purposes, you cannot outgrow SBT.

START: *What you give up with source is speed?*

Davies: Well, what we recommend is that people have the source and then compile it. And then when they want to change something, they change the source and recompile. With dBMAN, you get the compiler. You therefore give up nothing. It's not a problem. It doesn't cost any more.

START: *There are many dBASE programmers/consultants out there nowadays making very decent livings maintaining dBASE-based systems. What kind of opportunities might come to the dBMAN programmer in conjunction with SBT?*

Davies: If I were starting a new company and I wanted to choose the Atari environment, I would buy SBT software and compile it, then sell it to customers. I think it would be dynamite. I could easily fix bugs if they come up. The way I would look at it is that I just got somebody—us, SBT—to write \$100,000 for \$395 [the cost of an SBT module]. I could turn around and take responsibility and maintain it because it's in dBMAN—and dBMAN, my frustrations about compatibility aside, is truly a great product.

START: *You're talking about customizing SBT for a particular business?*

Davies: Well, just keeping it running,

number one. And secondly, customizing it because every customer needs a little something different. If I were a reasonably adept systems computer person, I would not hesitate to sell SBT software for the Atari right now [in beta]. But I would not recommend the package—it's not ready and not released compiled—for the unsophisticated end user.

START: *How does that work? Let's say I open up shop as a dBMAN systems programmer and I buy your whole package. Am I then free to sell customized, compiled versions without paying SBT something?*

Davies: No. If you sell a compiled version, you must distribute the source code along with your compiled version, whether or not it's customized. And you buy a replacement copy from us.

START: *I see. But what if I have written a substantial amount of new code for a particular customer? Or what if I've used only a portion of your code?*

Davies: We have a number of programs in this area. But basically it comes down to this: You send us your code. We review it and we agree, let us say, that you've only used half of our code in your application. You then pay us a reduced royalty on compiled copies, whatever the proportion. But you can turn around and sell it for whatever price you want. These programs have been very successful in the Xenix and MS-DOS environments and they're catching on in the Macintosh environment. It's a tremendous business opportunity for the Atari systems person.

START: *Sure sounds like it. Thanks for your time. Good luck.*

Davies: Thank you. ■

What Is The SBT Database Accounting Library?

Originally written for the IBM PC, the SBT Database Accounting Library is a dBASE-based application (on the ST, of course, it runs under dBMAN). Its fully integrated, modular design provides unparalleled power and flexibility. And because it's written in dBASE, the package is easily customized to a particular business's requirements.

Forming the heart of the SBT accounting solution are four SBT main modules: dLedger, dInvoice/dStatements, dPayables and dPayroll. However, you can run any of the modules separately and add modules as the need arises. The software provides accounting for up to 99 separate companies with up to 999 departments. Pre-printed forms (invoices, credit memos, statements, checks, etc.) tailored specifically to the various SBT programs are widely available from various third-party distributors.

dLedger

dLedger provides complete general ledger and financial reporting with user-defined ledger accounts, consolidated and departmental income statements, comparative balance sheets and automatic distribution entries based on user-defined percentages. The module maintains period-to-date and year-to-date balances for two full fiscal years and offers automatic budget generation and maintenance. In addition, dLedger allows a user-specified printing sequence for income statements and balance sheets. It also supports non-profit accounting.

dInvoice/dStatements

dInvoice/dStatements performs billing, inventory control and accounts receivable. The module provides high-speed look-up of customer and inventory code numbers. It reports aged receivables, cash receipts, deposits, inventory orders and back orders, as well as sales ▶

and gross margin by item, customer and salesperson. dInvoice/dStatements allows multiple ship-to addresses, extensive free-form invoice and credit-memo comments and point-of-sale billing. It will print inventory reorder, aged inventory and dead-stock reports. It prints or displays customer ledger accounts on demand and prints or reprints invoices and customer statements on request. Customer and inventory labels are printed at the touch of a few keys.

dPayables

dPayables tracks accounts payables and writes checks. The module allows selection and payment of invoices by discount, due date, or invoice number. It provides detailed distribution reports by expense and cash accounts and allows automatic entry of recurring expenses. Checks are printed by pay priority, in user-defined order and the module allows for manual and voided checks, as well as partial payments of payables. dPayables displays total balance and total approved-to-pay status; it also automatically maintains records of handwritten and cancelled checks.

dPayroll

dPayroll calculates and maintains payroll and labor distribution. The program automatically maintains employees' federal, state and local taxes and other payroll deductions. It calculates gross earnings for regular and overtime hours, salary and piece work. It will print vacation, supplemental and termination checks in user-defined formats. dPayroll supports pretax deductions for pension plans, IRAs, Keoghs and 401(k)s. Finally, the program automatically accrues and charges vacation and sick pay.

Additional Modules

The other SBT modules are: dOrders (creates, schedules and maintains sales orders and backlogs), dPurchase (writes purchase orders and handles receiving), dMaterials (provides bill of materials

The SBT Database Accounting Library is real software for real businesses.

maintenance with up to 100 levels of subassemblies and extension to gross requirements based on orders entered), dProfessional (provides complete time and billing accounting with balance-forward accounts receivable), dProperty (provides accounts receivable for up to 999 properties with a maximum of 999,999 units for each property), dAssets (maintains records for each asset and calculates depreciation), dProject (offers fast and flexible budgeting and cost accounting for project and job cost management) and finally, dMenu/dBackup (provides a central menu for all SBT program modules and any other dBASE (i.e., dBMANI) applications, as well as a comprehensive backup utility for all database data files).

Access To Source Code

When you buy an uncompiled SBT module, you can buy the program's source code: with it in your hands, customization of the program becomes only a matter of some dBASE programming. You can then compile your customized version and thereby attain the speed of a compiled program yet retain the flexibility to make changes when needed.

Compiled versions of SBT modules are also available at lower cost than for the source code versions. While the compiled modules provide high execution speed without the necessity for compilation, they cannot be customized by you.

Customer Support And Documentation

SBT's customer support program is impressive and I was consistently pleased by the support group's knowledge and response time. Technical support is free to all registered users and the company offers the only five-year warranty in the industry. SBT training seminars are held throughout the country.

The SBT documentation is clear and concise. The technical reference manuals are wonderfully detailed and provide full disclosure of file structures and the relations between files. You can also purchase machine-readable versions of the SBT documentation from the company for a nominal fee.

In Sum. . .

I can say without hesitation or fear of exaggeration: there is no financial package for the ST or Mega computers—neither one extant, promised, nor otherwise dreamed of—that comes close to the SBT Database Accounting Library's completeness, power and flexibility. ■

Jeffrey Daniels is a freelance writer who specializes in stories about the computer industry. His last article for START was "3 Years With The ST," which appeared in the Summer 1988 issue.

Products Mentioned

The SBT Database Accounting Library, \$295 per main module (compiled), \$395 per main module (source). Requires Atari ST (TOS in ROM) or Mega, hard disk, floppy drive and printer. SBT Corporation, One Harbor Drive, Suite 300, Sausalito, CA 94965, (415) 331-9900.

CIRCLE 150 ON READER SERVICE CARD

dBMAN 5.0, \$249.95. Versasoft, 4340 Almaden Expressway #250, San Jose, CA 95118, (408) 723-9044.

CIRCLE 151 ON READER SERVICE CARD

Meg-A-Minute Elite

by Dave Small and Dan Moore

Hard drive back-ups faster than lightning! File MEGAMIN.ARC on your START disk.

In the Spring 1987 issue of START we introduced a hard disk back-up program called Meg-A-Minute. Meg-A-Minute was an immediate success because of speed. It lives up to its name—a 20-megabyte drive takes just 20 minutes to back up. And our experience has been that the quicker it takes to back up a hard disk, the more likely it is that you will back it up.

Meg-A-Minute was fine in its day, but time has passed it by. Supra created a 12-partition scheme for dividing up hard disks and Meg-a-Minute could only handle four, the Atari standard. Then Atari installed new ROMs in the Megs with their own twisted format, which was incompatible with the Twister formatting function in Meg-A-Minute. (A twisted disk format is one with the sector numbering arranged to increase read and write speed.) And many people installed multiple hard drive systems, which Meg-A-Minute just couldn't handle.

All of these things combined to make Meg-A-Minute less and less useful. The need for an incredibly high-speed im-

age back-up was still there, but Meg-A-Minute was gradually losing compatibility with the newer technology. So Dan and I sat down to write a new version of Meg-A-Minute. We ended up ad-

know what they are). Also, you can now use Supra's partitioning scheme and access any 12 partitions on a hard disk.

We've reworked the code internally; there're now many more support files

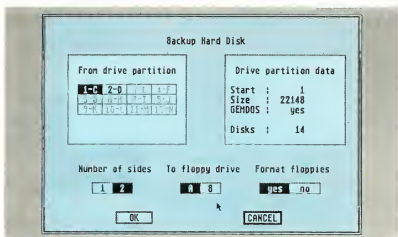


Figure 1. Meg-a-Minute Elite gives you the layout of your drive, tells you how large each partition is and how many disks it will take to back up each partition.

ding so much to it that we called it Meg-A-Minute Elite and it's on your START disk this issue. (You may not be aware of the slight inside joke here: Dan was working on a program called PaperClip Elite for Batteries Included when the company folded. PaperClip Elite is a dead issue nowadays.)

You may now use Meg-A-Minute Elite with your Megs with no trouble. Any SCSI device or unit is supported (if you

than the previous Meg-A-Minute. (Editor's note: We couldn't fit the source code to Meg-A-Minute Elite on this issue's START disk; if you are interested in examining it, you can find it on Antic and START Online on CompuServe. Just type Go Antic at the prompt.)

Again, we'd like to thank Supra Corp, Mark White and Willie Brown for making available the low-level HD drivers that make programs like ours possible. ▶

How It Works

The original article in which Meg-A-Minute appeared was full of details and theory about the ST's I/O system and disk drives; if you're interested in the "partition sector," for instance, and the overall HD layout, be sure to find that issue. Check with your user's group. (Editor's Note: Unfortunately, that back issue is sold out. If you're unable to locate a copy, send \$1 and a stamped, self-addressed business-size envelope to Meg-A-Minute Article, *START Magazine*, 544 2nd St., San Francisco, CA 94107 and we'll send you a photocopy.)

The documentation that follows is brief and to the point, but will get you up and running with Meg-A-Minute Elite.

Meg-A-Minute Elite "images," or makes an exact bit-for-bit copy of each 512-byte hard disk sector on a 512-byte floppy disk sector. While it is not as "intelligent" in some ways as those programs that can perform a dated or file-selective back-up, for example, it is faster. You can probably back-up an entire hard drive in the same time it would take to back-up a partition with one of those other programs.

We do it this way: There are approximately 40,000 sectors on a 20-megabyte drive. We grab 800 sectors off the hard disk, write them to the first floppy, grab the next 800, write them to the second floppy and so on. Eventually we're done. This is called an "image" back-up, because these floppies are literally an image of the disk partition. Meg-a-Minute Elite can also be used to back up non-GEMDOS partitions, such as Macintosh format partitions.

Getting Started

To run Meg-A-Minute Elite, copy the files ARCX.TTP and MEGAMIN.ARC onto a blank, formatted disk and un-ARC the file following the Disk Instructions elsewhere in this issue. Then simply double-click on MEGAMIN.PRG from the Desktop.

Backing Up Your Hard Drive

The back-up program's first menu asks you which SCSI device and LUN number you wish to back up. (SCSI—pronounced "scuzzy"—is the standard data storage format used by most small hard disks; LUN stands for Logical Unit.) If you have an Atari or Supra drive, leave it at 0-0; they are hardwired (physically wired) to be SCSI device and logical unit number 0. ICD and BMS drives may require the SCSI number to be 1; check your manual. If you don't understand this, leave them at 0-0, and

**You
may now use
Meg-A-Minute Elite
with your Megas
with no trouble.**

continue. This is one of our upgrades; many ST users now run multiple drives, since it's so cheap to add an additional 20 megabytes of storage.

The next menu offers the choices "Floppy -> HD" and "HD -> Floppy". Pick HD-> Floppy (Back-up to Floppy).

Now you'll be presented with several menus. First, you'll see the layout of your drive, i.e. how many partitions it has, as shown in *Figure 1*. We've labeled them 1-12 and also shown the Drive Identifiers C: through N: for your convenience. (Note that on systems with more than one SCSI device, the drive letters are off, but the partitions numbers are okay.) Partitions that do not exist are unselectable (greyed out). Both Atari and Supra format partition tables are supported here.

Select which partition you want to

back up. Meg-A-Minute Elite will give you some information about this partition, such as what part of the overall hard disk it occupies, how large it is in sectors (20,000 sectors, for instance, is approximately 10 megabytes) and how many floppies will be required to do the back-up. If you select double-sided floppy disks, the number of disks you'll need will be cut in half. It will require approximately 14 double-sided or 28 single-sided floppy disks to back-up a 10-megabyte partition.

If you select "format floppies," your floppies will be formatted for you. This will slow the Meg-A-Minute Elite back-up process, but make life a little easier if you haven't got a stack of pre-formatted disks. Since Meg-A-Minute disks are inaccessible to GEMDOS, we made them an incompatible disk format; this means you *must* choose "format floppies" the first time you back up a partition. The Format routine in Meg-a-Minute also failed on Megas; we've fixed that in Meg-A-Minute Elite.

If you run into a non-standard GEMDOS partition, you'll be told so. Again, a typical one would be a Macintosh-format partition. This doesn't matter; the information is just for your convenience. Meg-A-Minute Elite will clone *anything*.

Okay, have the number of disks required ready to go. Meg-A-Minute will prompt you and ring a bell each time you should insert a different floppy disk. Just follow the prompts. If you run into a bad floppy disk, toss it and keep going. Soon you'll be done! *Label the disks* with the date, time, what's on them and which number it is in the back-up order.

Suggestion: You may want to use a program such as The Director from Special Issue #3 of *START* to make a file or hardcopy of the partition's directory and keep it with your backup floppy disks. This makes it really easy to find out what the backup was if you look at it much later.

Restoring from a Backup

When you want to restore your files to a newly re-formatted partition, just re-run Meg-a-Minute Elite in the same way you ran it to do the backup. (You did keep a copy of Meg-a-Minute on a floppy, didn't you? There's nothing so aggravating as having your only copy of Meg-a-Minute Elite somewhere in the middle of your back-up floppy disks.) This time choose Floppy --> HD. You're requested to insert the first disk, which has information about the system it came from. If you insert the wrong one, you'll be asked again. You're then asked for the destination partition.

Warning: You cannot restore a partition into one smaller than the original! There isn't room—ten megabytes just won't fit in five! The program won't let you, because you'd damage the next partition's directory (oh, fun).

If you store into a partition bigger than the one you came from originally, the space at the end of the partition will be lost. . . say you restored a 5-megabyte partition floppy back-up onto a 10-megabyte drive partition. That partition afterwards would think it only had five megabytes. This is because the partition data is separate from the GEMDOS directory disk size info and the two don't talk.

You're also asked if you'd like to restore the partition sector. Caution, caution, caution! This will change the fundamental table that tells your hard disk

how it's laid out back to whatever it was at your last back-up. Unless your partition sector is clearly damaged, don't do this. This could help you restore a totally new hard disk, especially if your partition sector gets overwritten; you may want to back up your partition sector for just this reason. Restore will then get rolling; shovel disks into it as asked. Meg-A-Minute Elite is smart enough to know if the disks are in order.

When done, the program will ask you to reboot the machine. We're not lazy; GEMDOS will not let us update certain structures (like the new directories on your hard disks) without a reboot.

After the reboot, you're back! It's like a time machine—those are your directory and files exactly as they were "way back when."

Again, if you look at Meg-A-Minute Elite disks with the ST by requesting Disk Information from the Desktop, for example, they will appear blank. Our old Meg-a-Minute backup disks would crash your ST; we now use nonstandard sector numbers to avoid this problem.

Disk Errors and Side Notes

Meg-A-Minute Elite is not all that friendly about disk errors. It does everything in big blocks for speed. If one little part of the block fails, it then does the block one sector at a time, very slowly, and reports the error to you, so you know you don't have a perfect

back-up/recovery.

There is no reason why you can't use Meg-a-Minute Elite to move lots of data (Mac, 8-bit or ST data) around — and get a back-up as an added bonus.

There's no easy way to extract individual files from Meg-A-Minute Elite. The best bet is to restore onto a spare partition with Meg-A-Minute. (If you don't have a "spare" partition—who does?—you may have to create one by making a back-up of an equal-sized partition to floppy disks using Meg-A-Minute and then "restoring" it from the floppies that contain the file(s) you want. Once you've recovered that file, you can restore the partition with the floppies that contain the data you moved off the partition to create space. Got that?)

Conclusion

Right now, the only way that many Magic Sac users have to back up their Mac hard disk partitions is with Meg-A-Minute Elite. It's still a choice and still the fastest; it's the hotrod of back-up programs. Others offer more conveniences (individual file restore, etc.), but we offer pure speed!

See you next time with more! . ■

Dave Small is the father (and mother) of the Magic Sac Macintosh emulator. Dan Moore is the author of Paper Clip for the 8-bit Atari and the never-released Paper Clip Elite for the ST.

NO START DISK?

Every issue, START features great programs on disk. If you bought this issue of START without the disk, you're missing out!

START is available with the disk for \$14.95, but for those of you who want to read START first, it's available without the disk for \$4.

If you want the full version of START, you can order the companion disk by calling the Disk Desk toll-free at (800) 234-7001. Our Customer Service specialists are on duty from 6:00 a.m. to 6:00 p.m. Pacific time. Or you can order your disk by mail using the order form inserted into this issue. Each disk is \$10.95 plus \$2.00 shipping and handling.

CALL (800) 234-7001!

Disk Instructions

How to Get Our Programs Up and Running

Each article in this issue with a disk icon on its first page (or next to its title on the Table of Contents) has a companion file on your START disk. These files are *archive* files—they've been compressed with the Archive Utilities Set, or ARC, a public domain program available for many personal computers. We use the ARC utility to squeeze the many files that may go with a particular article into *one* compressed file, which may be only 40% of the total size of the original files.

In addition to the archive files, you'll find the program ARCX.TTP, which stands for ARChive eXtract, on your START disk. You'll use this program to decompress, or extract, the disk files we've shrunk down with ARC.

Getting Started

To use the files and programs on your START disk, please follow these simple instructions. You'll need two blank, formatted single- or double-sided disks to properly extract the files.

Your START disk is not copy-protected and you should make a copy of it *immediately* to the first blank disk. Make sure the write-protect window is open on the START disk at all times to insure that you don't accidentally erase the disk.

Note: If you are unsure how to format a disk, copy a disk or copy individual files, please refer to your original Atari ST or Mega manual and study these procedures carefully before going on.

After you've copied your original START disk, store it in a safe place and label the copy disk "START Backup."

Now, put your START Backup disk in Drive A of your computer and double-click on the Drive A icon to see the disk's contents.

Un-ARCing the Files

To use START's compressed disk files, please follow these steps:

1. Copy the ARCEd file you wish to use and the program ARCX.TTP from your START Backup disk onto your second blank formatted disk. When you're finished, label it *Un-ARC* disk.

2. Now you'll extract the compressed files from the ARC file you just copied. Insert your Un-ARC disk into Drive A and press the Escape key on your ST to see the disk directory. Double-click on ARCX.TTP. The following dialog box will appear:



3. Type in the name of the ARC file you just copied over to your Un-ARC disk as shown in the example below and press Return. You do *not* have to type in the extender .ARC.



(Note: If ARCX.TTP can't find a file, it may be because you have misspelled

the name of the ARC file. You must type the filename *exactly* as it appears in the directory.)

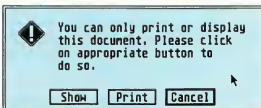
4. As the program runs, it will display the names of the individual files as it extracts them, similar to the example below.

```
Archive: SAMPLE.ARC
Extracting file: EXAMPLE.PRG
Extracting file: FILE.TXT
Extracting file: SAMPLE.PIC
Extracting file: README
```

When ARC has successfully extracted all the files, it will return to the Desktop and you will see the original files within the directory window, along with the archive file and the ARCX.TTP program. You may now use any of the START files as you wish; just follow the instructions in the appropriate article in this issue.

To use any other archive files on your START disk, simply repeat the above procedures.

In addition to the runnable programs, some ARC files may also contain source code listings or an ASCII text file (called BREAKDWN.TXT, for example) which describes the program's structure. You can examine this file from the ST Desktop by double-clicking on its icon and then clicking on Show (to see it on the monitor) or Print (to print it out) as shown in the example below.





Aztec C's NEW Source Debugger Takes The Work Out Of Debugging!

Stop entering print statements and re-compiling over and over. Stop spending your time looking at assembly language and hex dumps. Stop agonizing over features you need but can't find...Start using Aztec C's NEW Source Debugger (SDB). It has all the features you expect and more!

SDB FEATURES

- Debug your code at the Source Level
- Set Breakpoints and Single Step by Source Line
- Access all Global and Local Variables by Name
- Evaluate and Print the Value of Any C Expression
- Displays all Structure Element Names and Values
- Assembly Language Debugger for intermixed routines
- Supports Atari debugger
- Supports the GEM, EDS and VDI resident libraries
- User Control of Color — background and text
- Separate Color Windows for Source, Data and Commands
- Supports 68010, 68020 and 68881 processors
- Re-usable command macros and procedures enables you to customize the debugging environment
- Debug desk accessories

And with Aztec C you get an optimized C compiler with selectable 68020 and 68881 support, the Gulam shell Command Processor including pipes, I/O redirection and more, an overlay linker, librarian, important UNIX utilities, and the clean, fast, compact code you need. Aztec C...the most advanced development system for the Atari ST!

SDB Special through December 31, 1988 60 Day Satisfaction Guaranteed

Source Debugger (Reg \$150)	ONLY \$ 75.
Aztec C68k/At-p Prof Sys (Reg \$199)	ONLY \$ 99.
<small>(Compiler, Assembler, Overlay Linker with Librarian, Unix and other libraries, utilities)</small>	
Aztec C68k/At-d Dev Sys (Reg \$299)	ONLY \$150.
<small>(Prof Sys plus Unix utilities make, diff, grep)</small>	
Library Source	ONLY \$300.
<small>Developer System with Source Debugger and</small>	
Library Source (Reg \$749)	ONLY \$399.

COD, VISA, MC, Wire (domestic & intl.) & terms

Take Advantage of the Introductory Special / Call Today

1-800-221-0440 (outside NJ)

201/542-2121
(NJ and Outside U.S.)

Telex: 49955812MANX
Fax: 201/542-8386

Aztec by **MANX**

1 Industrial Way, Eatontown, New Jersey 07724

Take Care of Your ST

by Andrew Reese
START Editor

For a number of years, I was responsible for maintenance and repair of some rather sophisticated electronic equipment owned by Uncle Sam. Every day, we performed "PMIs," or Preventive Maintenance Instructions. The sole purpose was to keep the equipment operating at peak efficiency. Well, your ST or Mega is more sophisticated than anything we had and it deserves some care, too.

There are three simple rules to follow to keep your ST functioning properly: keep it cool, keep it dry and keep it clean. Other than production flaws or physical abuse, most equipment failures can be traced to a violation of one of these rules. Let's take them one at a time.

Keep It Cool

Heat can harm any electronic equipment—even ask the owners of early Macs or Apple IIs loaded with cards. Heat-induced component breakdowns can affect any part of your computer and a failure in one component can trigger a chain-reaction that will destroy your computer.

The heat generated by any electronic equipment—even a low-power system like your ST—might be termed "elec-

tronic friction" and is unavoidable. Electronics manufacturers—Atari included—use one of two basic methods to eliminate this heat. The simplest is to let it radiate from the internal components and simply waft up through the cooling slots. When there's too much heat for this method to handle, fans become necessary.

Your ST is cooled by the gentle movement of air through the slots under the front edge of the keyboard, over the metal shield and electronic components and out through the slots at the top rear. If you use the rear of your computer as a monitor stand, *be sure to leave clearance for the cooling air to exit.* And don't leave hint books, command cards or other papers on top of your ST, blocking the slots.

If your ST has a memory upgrade, you must be especially careful with cooling; those additional RAM chips produce significant heat and adding 16 more under the RF shield increases the risk of heat-induced failures. Granted, the risk is not excessive, but it's there.

Let's not forget those external power supplies for external disk drives, early 520 STs and the PS3000 Monitor/Disk Drive. These supplies are usually stuck on the floor under the desk in a loca-

tion chosen mostly for its convenience and inaccessibility to your feet. Make sure that these units are sitting upright, that the air vents are clear and that air can reach them.

If you have a Mega or hard disk drive, the cooling stakes are even higher. The fans in those units are there for a reason: more electronics are packed in less space. Obstructing the inlet or exhaust vents could destroy your Mega, your drive and your pocketbook. Don't, for instance, place a pile of books or magazines on top of the Mega to raise your monitor to a better eye level. Just place it directly on top of the Mega (leaving space for the vents on the sides) or put it on a monitor stand.

Finally, keep your computer away from the sun. Although some hard drive manufacturers torture-test their prototype units by running them outside under direct sun, don't tempt the fates by putting your computer desk under a sunny window.

Keep It Dry

If heat is dangerous to a computer, it's nothing compared to the risk of getting it wet. There's nothing like an unexpected splash of a soft drink or coffee to disrupt the orderly, controlled flow of ▶

electrical signals and create all sorts of new, destructive paths for the signals to follow. The result is 99-44/100 percent disaster!

At home (and at START), we have a rule: No drinks on the same table as the computer. Just one slip, one drip, one spill and you'll be taking your ST in for service. Keep all moisture away! Don't spray monitor cleaner directly on the screen; it may run down the face into the cabinet. Keep your ST away from open windows where rain could blow in. And don't let the kids play Road Runner with a Pepsi nearby.

If you do have a spill near your computer, turn it off immediately! If it was off at the time of the spill, don't turn it on! Unplug all power to the system and check carefully for the extent of the spill. If any liquid appears to have spilled on the keyboard, in any of the connecting jacks or into the cooling vents, unplug everything and take or send your computer to an authorized Atari service center. Don't take chances!

Keep It Clean

A dirty computer isn't bad because it's unattractive; it's bad because dirt and dust can gang up to block the cooling ducts or drift inside and cause erratic short circuits. At least once a month, dust and vacuum your system, including power supplies. Stay away from using anything like Pledge or Endust. You don't need waxed beauty; you need a dry, clean computer.

If you must use a liquid to remove fingerprints, grime or jelly, dampen a clean, soft cloth with plain water. Turn off your computer and clean the surfaces. Be sure that the water is completely gone before turning your ST back on.

The best kind of vacuum cleaner are those designed specifically for cleaning electronic equipment. They are small, powerful enough (after all, you aren't trying to pull *thasa apso* hair from a shag carpet) and have small, soft

To keep your ST functioning properly, keep it cool, dry and clean.

brushes to loosen dust from otherwise inaccessible places. If you must use a canister-style vacuum cleaner, keep the motor unit well away from your ST and disks; electric motors can generate some fairly powerful magnetic fields and wreak havoc on your system and your disk library.

If you have a printer, particularly one with tractor-feed, vacuum its interior regularly. You don't have to remove the case every time, just the cover over the printhead. Vacuum up the paper dust that accumulates and lubricate the mechanism, following the instructions in your owner's manual. Don't over-oil anything with electronic components—that excess oil just runs down off the bearing surfaces and into places it doesn't belong, there to collect dust and cause short circuits.

Head Cleaning

If you use your computer under normal conditions—an hour or two a day without continuous disk access—you'll need to clean your disk drive's head once a year, if that. The causes of dirty drive heads have been largely eliminated in the ST. First, the diskettes themselves are contained in protective covers which keep much of the dirt, dust and fingerprints off the diskette media itself. Second, media technology has advanced to the point that the oxide particles are bonded to the diskettes much more tightly than on early 5¼-inch floppies.

If you're having floppy drive problems, such as being unable to format, read or write to disks, first check out the obvious possibilities. Make sure that the cables are tightly plugged in, reboot your ST to take care of any wandering glitches in your program and check the drive's speed. If your drive problems persist, you may need to clean its head(s).

Never try to clean your drive heads by poking a cotton swab through the drive slot. Locate a reputable source for a wet 3½-inch floppy disk head cleaner; never use a dry head cleaner—it can seriously damage your heads. You aren't limited to Atari dealers for head cleaners. IBM and Mac both use 3½-inch disks and office supply stores often carry head cleaners for business users of these computers. The head cleaners may cost more there than at a computer swap meet, for example, but at least with an "establishment" store you have someone to complain to if necessary.

Follow the instructions that come with the head cleaner precisely and don't overuse it. Most head cleaners only allow a limited number of cleanings per disk, and with good reason: a head cleaner soaks up dirt and gunk into its absorbent material. There's only so much absorbency available.

Leave That Hard Disk Alone!

Finally, never, ever open up your hard disk to clean its heads. Hard drives are hermetically sealed and need no head cleaning—the heads float over the media without touching it. I once heard a tale from a repair shop about a customer who complained that his hard drive was acting up. Upon further questioning, the customer boasted that he knew the drive was clean—he opened it up and cleaned it every week with WD-40! Scratch one hard disk!

Follow these rules and you should keep your ST healthy and happy. ■

REVOLUTIONARY NEW PRODUCT

SWITCH BACK

**REQUIRES at
least 1 meg. of RAM**
(or a MEGARAM or Polydisk Cartridge)

- Imagine Saving almost any game at any point, then being able to return there as many times as you like.
 - Imagine the Ultimate Back-up Utility that actually UNPROTECTS programs so it copies them. Lets protected programs be stored as files, run from a hard disk or even be transmitted over a modem.
 - Imagine saving three or more protected single sided disks on just one double sided disk.
 - Imagine instantly switching back and forth between two different programs, games, utilities or business applications.
- Now Stop Imagining and Get Switch/Back.
It can do all this and more.**

Switch/Back is a revolutionary new hardware and software package that lets you get more from your ST MUCH MORE. Switch/Back's gaming features lets you instantly save most games then continue playing. If you get in trouble you can switch back to where you were as many times as you like.

BACK-UPS—Switch/Back can work with your favorite back-up program and allow you to save whole protected disks to files for archival purposes. It can also automatically unprotect a program and save it as standard file. This method works on hundreds of ST programs and it allows you to run the files directly. It's perfect for running protected programs off a hard disk. It creates standard TOS files, that can be stored together on disks or even transferred by modem.

SWAP—Switch back lets you load just about any two programs into your ST and switch instantly between them. It works with games, business programs, utilities, compilers, etc. Although only one program is running at a time, the other is available instantly right where you left off.

The Switch/Back hardware plugs into your printer port for easy use (It has a pass through connection for your printer too.)

Switch/Back requires of least One Meg of memory (Or a Polydisk or Megadisk) **Only \$69.95**

ST Protection Techniques



Finally ST Copy protection techniques are revealed. This complete book and disk package details the state of the art in ST Protection methods and much, much more.

The Software included with the book provides many powerful features like the AUTOMATIC PROGRAM PROTECTOR. This easy to use Utility allows you to protect just about any ST program. You can choose a combination of protection methods like encryption, checking custom disk formats, password protection or a limited use option that makes the program self-destruct after running a preset number of times.

The book includes topics such as Phreaking, Logic Bombs, Hardware data keys, the legal aspects of piracy and software protection, Custom disk formats, Pirote Bulletin boards and much more.

In addition it contains reviews of the popular ST back-up programs and detailed explanations of ST disks and drives.

ST Protection Techniques (Book and disk package) **Only \$39.95**

.....
The world's most inexpensive clock cartridge. Finally its affordable to keep your time and date accurate. 3 year battery included. **Only \$24.95**



MEGADISK Ultra high speed solid state disk drive • 500% Faster than a Hard Disk • Provides almost instant booting • Like a RAM disk that's always loaded with your favorite programs and ready to use • One megabyte of Solid State storage • Built in battery back-up in case of power failures

MEGADISK is actually one megabyte of RAM that simply plugs into your cartridge port. It acts as an added disk drive that's ultra fast and always ready for use. Like a Hard disk, MEGADISK won't lose its memory when your computer is turned off. It comes with its own power supply and battery back-up system so its independent of your computer.

Megadisk can be configured according to your needs. • Set it up as one large disk • An 800k double sided disk and a 200k hardware print buffer • Or as two 400k single sided disks and a print buffer

Megadisk will work fine with your current system whether you have a hard disk or two and/or you're just getting started.

Megadisk is perfect for those who want the high speed of a hard disk for a lower price. Its even better for power users or software developers who may already own a hard disk and two drives but want extra speed and power. Megadisk can also emulate other cartridges for testing and back-up. In addition Megadisk can be used with Switch/Back to allow you to instantly jump between two full size one meg applications. **\$299.95**

Megadisk Clock Option - Adds a Clock/calendar card to your Megadisk cartridge. Contains replaceable Three Year battery 29.95

Polydisk Polydisk is a 512k version of a Megadisk. Polydisk gives you the same top boot features, the high speed access, and the print spooler. Polydisk has a power supply (like Megadisk) but does not contain a battery back-up.

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

Polydisk (512k Solid state drive) **Only \$199.95**
(Clock option card is also available for Polydisk \$29.95)

COLOR COMPUTEREYES™

Incredible COLOR video digitizer • The first and only full color digitizer for the ST uses standard video inputs like video camera, VCR, or video disk • Works in ST resolutions. Low res provides to shade black and white or full color pictures. • Pictures can be used with Degas, Neochrome, Powerprint and others. • Automatic calibration of contrast, brightness and white balance. • Plugs into cartridge port for easy set-up. • Capture your picture or that of your favorite star **Only \$199.95**
SPECIAL OFFER—Buy both Computereyes and Powerprint and SAVE 20.00 from the total.

PowerPrint ST BLOW YOURSELF UP

Imagine your picture on a 6 foot poster. Create a business graph that can cover a wall. Quality output for posters, T-shirts, news letters, and more.

POWERPRINT—Whether it's a photo digitized with Computereyes, a masterpiece created with Degas, or the winning screen from your favorite game, PowerPrint can print it with unequaled clarity and resolution. PowerPrint supports ALL ST resolutions. It prints multiple sizes up to **GIANT WALL SIZE POSTERS**. Print 16 shades for incredible detail. Print the whole screen or **ZOOM** in on just the part you want. POWERPRINT offers unique effects, including rotate, mirror and inverse options. Selective shading option allows you to print multi-color pictures on any printer by printing one color at a time (using color ribbons). Powerprint lets you capture and print almost any ST screen. Works with STC, NEC, Citih, Gemini, EPSON, XMB048 and compatible printers. **Only \$39.95**

DIGISOUND ST High Quality sound digitizer for the ST this powerful hardware and software package lets you sample real world sounds and print them back on any Atari ST. Add special effects like Echo, Reverse, looping, pitch manipulation, mixing and envelope control. Turns your Atari keyboard into a musical instrument to play songs with your digitized sounds (also works with any MIDI keyboard). Digisound makes it simple to add sound to your own program, tomp! Unleash the incredible sounds in your ST with DIGISOUND. Supports sampling from 5 to 40kHz. DIGISOUND is the choice of the professionals. DIGISOUND was used to create the voice in Chessmaster 2000, and other commercial products. **DIGISOUND ONLY \$89.95**

DIGISOUND PROFESSIONAL

All the excellent features of DIGISOUND plus these great extras
LOGARITHMIC SAMPLING—Special hardware extends the sound quality far above the other ST sound digitizers. Logarithmic sampling and playback (external amplifiers only) greatly extends the dynamic range while reducing distortion and noise.

Internal Real Time Mixing—Input from a stereo and a microphone so you can sing over a tape. **\$149.95**

DIGIPLAYER The High powered digisound software can now be obtained by those who already own a digitizer for the ST Compatible all cartridge based digitizers. Extend the power of your digitizer with Digiplayer. **Only \$49.95**

24 HOUR HOTLINE—VISA & MasterCard Welcome

216-374-7469

Customer Service line (216) 467-5665. Call or write for free catalog.

Order by phone or send check or money order to:
ALPHA SYSTEMS 1012 Skyline, Macedonia, OH 44056
Include \$3.00 shipping & handling (US & Canada). Ohio residents add 5 1/2% sales tax. Foreign orders add \$8.00



The reviews are in . . .

"A Best Buy' I'm impressed"

David H. Ahl, Atari Explorer, Nov-Dec 1987

"If you've got an Atari, you probably need this program."

Jerry Pournell, Byte Magazine, October 1987

"pc-ditto is a winner."

Charlie Young, ST World, July 1987

"This is the product we have been looking for."

Donna Wesolowski, ST Informer, August 1987

"This truly incredible software emulator really works."

Mike Gibbons, Current Notes, September 1987

NOW! RUN THESE IBM PROGRAMS ON YOUR ATARI ST.

Lotus 1-2-3	Flight Simulator	Framework	Symphony
Enable	Ability	DESQview	Q&A
Sidekick	Superkey	Norton Utilities	dBase II,III,III+
Crosstalk IV	Carbon Copy	Chart-Master	Print Shop
EasyCAD	DAC Easy Accounting	BPI Accounting	Turbo Pascal
GW Basic	Managing Your Money	Silvia Porter's	pf:Professional File

And Hundreds More!

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

pc-ditto features include:

- o both the 520ST and the 1040ST supported
- o up to 703K usable memory (1040ST)
- o not copy-protected -- installable on hard disk
- o imitates IBM monochrome and IBM color graphics adapters
- o access to hard disk, if hard disk used
- o optionally boots DOS from hard disk
- o parallel and serial ports fully supported
- o supports 3.5-inch 720K format and 360K single-sided formats
- o supports optional 5.25-inch 40-track drives

System requirements:

- o IBM PC-DOS or Compaq MS-DOS version 3.2 or above recommended
- o optional 5.25-inch drive is required to use 5.25-inch disks
- o 3.5-inch 720K DOS disks require a double-sided drive (Atari SF314 or equivalent)

*See pc-ditto today at an Atari dealer near you,
or write for free information!*

\$89.95

pc-ditto

by
Avant-Garde Systems
381 Pablo Point Drive
Jacksonville, Florida 32225
(904) 221-2904

Avant-Garde Systems, 381 Pablo Point Dr.
Jacksonville, Florida 32225 (904) 221-2904
Yes! Please send information on pc-ditto.
Name _____
Address _____
City _____ State _____ Zip _____

Clipboard

Tips and Tricks for the ST Owner

Compiled by Heidi Brumbaugh,
START Programs Editor

Last issue, we devoted the Clipboard to generic program file extenders. Here we present a list of file extenders used by some popular ST programs.

1-999	Superbase index files	HYP	Publisher ST hyphenation dictionary	SNG	Music file (Digi-Drum, EZ-Track & Music Studio)
3D,3D2	CAD-3D object	INI	Microsoft Write information file	SPC	Spectrum 512 compressed file
ADO	Cyber Paint movement file	KEY	Fleet Street Publisher key macro file	SPD	A-Calc Prime Worksheet/Anispec Spectrum 512 delta
ALT	WordPerfect alt-key definition	LD_	LDW Power backup spreadsheet	SPL	ST Replay sound file
ARC	Archive file	LDP	LDW Power print file	SPN	CAD 3-D Spin template
ART	GFA Artist picture	LDW	LDW Power spreadsheet	SPR	GFA Artist sprite file
BL1-BL3	DEGAS block pattern	MSK	Animator ST mask file	SPU	Spectrum 512 uncompressed file
BRU	DEGAS brush	NEO	NEOchrome picture file	STG	LDW Power sideways setting file
CAL	Swiftcalc worksheet	PAG	Fleet Street Publisher page file	STR	Animator ST strip file/Publisher ST error messages
CEL	Animator ST cel file	PAL	Spectrum 512 color palette	STY	Publisher ST style sheet
CMD	dBMAN program file	PAT	Easy Draw pattern file	SW	Swiftcalc font file
CNF	Flash configuration file	PC1-PC3	Compressed DEGAS file	SY1	GFA Artist title screen data
COL	Animator ST color map file	PER	Word Writer personal dictionary file	TNY	Tiny picture file
DBF	dBMAN database file	PFI-PF12	Uncompressed DEGAS file	TRN	Flash translation table
DEF	Flash function keys definitions	PFT	Publishing Partner printer font file	TST	WordPerfect test files
DFL	LDW Power defaults file	POL	Animator ST polygon file	TWO	Base Two database file
DIR	Flash dial directory	PRD	Microsoft Write printer file	UD0-UD2	WordPerfect undo
DLT	Cyber Studio delta animation	ROI	GFA Artist run-only interpreter file	VDF	Data Manager ST report format file
DMF	Data Manager ST database file	SBD	Superbase file format info	WID	Publisher ST font/system configuration
DO	Flash macro file	SBF	Superbase data file	WKS	VIP Professional/Lotus worksheet
DTP	Publisher ST document file	SBK	Superbase function key file	WP	WordPerfect system files
FIL,F11,F12	DEGAS fill pattern	SBL	Spectrum 512 picture buffer file	WPC	WordPerfect color system file
FLM	GFA Artist film file	SBP	Superbase program file	WPM	WordPerfect mono system file
FRM	Regent Base II form	SBQ	Superbase query file	WRK	Word Writer print spool file
GFA	Tokenized GFA BASIC 3.0 program	SBT	Superbase text file	XTR	CAD 3-D Extrude template
GFF	GFA Artist fill pattern file	SBU	Superbase update file	ZBX	Zoomracks database backup
GFT	GFA Artist font	SBV	Superbase form	ZRX	Zoomracks database
GPH	VIP Professional graph	SCR	Animator ST script file		
GRA	Data Manager ST graph file	SDF	Standard database format		
GRF	Data Manager ST graph data file	SEQ	Cyber Paint Compressed sequence animation		
HEX	1st Word Plus hex printer driver file	SID	Swiftcalc sideways file		
		SLV	Publisher ST slave disk path file		

ST SCI

Do you need to produce precision graphs on your ST for scientific or technical work? ST SciPlot is your solution! START's ultra-sophisticated graphing program is for use in universities, labs or wherever super-quality precision graphs are needed. Runs in high resolution monochrome only.

by
David P.
Heddle

*Plot your data precisely!
SCI.PLOT.ARC is on your START disk*

Business graphing programs are becoming more common on the ST, but if you have wanted to put the ST's power to work for you in the lab, you were out of luck. ST SciPlot is START's solution to your power graphing problems. Written in Personal Pascal, ST SciPlot is a full-featured GEM application that produces the kind of graphs found in technical literature. It requires the high resolution of the ST's monochrome monitor—sorry, color monitor owners!

Features

Some of the features that distinguish ST SciPlot from the ordinary graphing programs are:

- Each axis can be set to a linear or logarithmic scale.
- The X and Y-axes are interchangeable and vertical and horizontal error bars can be included.
- Up to four plots, each with up to seven curves, can be displayed at the same time, using six line types and six marker types.
- You can create your own font set or use (and edit) the default set which includes the full Greek alphabet and a mathematical symbol library.
- The fully editable and draggable text display includes optional legends, titles, annotations and axis and date/time labels, all with available superscripts and subscripts.
- Connecting lines can be linear or you can use the built-in cubic spline generator for smooth curves.
- Simple ASCII data sets may be

loaded, edited or deleted or you may enter data directly.

Getting Started

ST SciPlot is in the archived file SCI.PLOT.ARC on your START disk. To un-ARC ST SciPlot, copy SCI.PLOT.ARC and ARCX.PRG to a blank, formatted disk and follow the Disk Instructions located elsewhere in this issue. Once you have un-ARc'd SCI.PLOT.ARC, double-click on SCI.PLOT.PRG. The file SCI.PLOT.FNT must be in the same directory as SCI.PLOT.PRG.

A few definitions are necessary here for you to make the best use of ST SciPlot. A *plot* is a single set of up to seven curves. A *plot environment* is the full definition of all of the settings for a particular plot, including location, scaling, labels, line styles, etc. An *active plot* is the plot you have selected for modification; only one plot may be active at a time.

The Menus

When you boot ST SciPlot, you will see a menu bar with the headings as shown in Figure 1. Also shown in Figure 1 are all of the drop-down menus with their choices. Let's run through these menus.

The Action Menu

- Read Raw File—loads a set of raw data in ASCII format, replacing the current data set for the active plot. ST SciPlot uses a default filename extender of .DAT, although this is for convenience only. See below for how to set up a data file.
- Read Saved File—loads an ST SciPlot file with an .SPT filename extender,

PLOT

replacing the current data and plot environment. These files include the definitions of all of the plots at the time the file was saved, whether or not you had actually defined four plots.

- **Input By Hand**—allows you to enter data manually into the grid shown in Figure 2. The number of columns is the number of data sets and the number of rows is the number of data points per set; any empty boxes within a data set will be set to 0 (zero) by ST SciPlot.
- **Save Data**—Saves the current data and plot environments in ST SciPlot format. While no filename extender is required, .SPT is recommended.
- **Save Image**—Saves a snapshot of the current ST SciPlot screen in DEGA5 high-resolution format. Be sure to add the .PI3 extender.
- **Plot**—Plots the current data on the active plot using the current plot environment.
- **Plot Boxes Only**—Draws only the outline boxes and the labels without actually plotting any curves. This is useful for checking the locations of your plots without taking the time to actually draw the curves.
- **Print**—Prints the current screen. You can set your printer and paper type from the selector box called by this menu item.
- **Defaults**—Restores ST SciPlot environment defaults. A confirmation dialog box prevents you from resetting your environment accidentally.
- **Quit**—Quits ST SciPlot, again, with confirmation.

The Active Menu

There are four menu choices: Plot 1 Ac-

tive, Plot 2 Active, Plot 3 Active and Plot 4 Active; you may choose one of these plots to be active (modifiable).

The Style Menu

The Style Menu uses toggles (on/off switches) to select style attributes. If a checkmark appears by the attribute, that style is selected.

- **Markers**—Places a marker at each data point.
- **Lines**—Places a connecting line between adjacent data points.
- **Legend**—Displays the legend.
- **Legend Box**—Draws a box around the legend.
- **Title Box**—Draws a box around the title.
- **Error Bar Ends**—If you use error bars, this will place small, perpendicular lines at the ends of the error bars.
- **H-Zero Line**—If the Y-value range includes 0, this places a horizontal, dashed line through Y=0.
- **V-Zero Line**—If the X-value range includes 0, this places a vertical, dashed line through X=0.
- **Full Plot Box**—Draws a rectangle around a plot; otherwise, draws only

the axes.

- **Date & Time**—Displays the date and time at the time it is selected.
- **Order Data**—Orders (organizes) the X-axis data before plotting. Should be selected, unless you want to plot “parameter” plots.

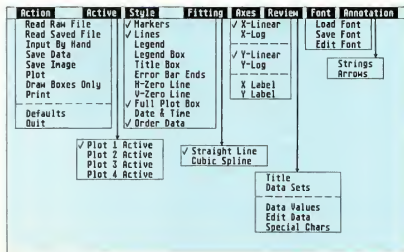
The Fitting Menu

- **Straight Line**—Uses a straight line to connect adjacent curve points.
- **Cubic Spline**—Uses a natural cubic spline to connect adjacent points on a curve, but takes more time to plot than Straight Line.

The Axes Menu

- **X-Linear**—Makes the X-Axis scale linear.
- **X-Log**—Makes the X-Axis scale logarithmic, unless the minimum X-Axis value is negative. If it is, ST SciPlot will use X-Linear.
- **Y-Linear**—Like X-Linear, but on the vertical axis.
- **Y-Log**—Like X-Log, but for the vertical axis.
- **X Label**—Allows you to generate and edit the label for the X-Axis. ▶

Figure 1. The ST SciPlot menu bar and the drop-down menus with their selections.



Set 1	Set 2	Set 3	Set 4	Set 5	Set 6	Set 7	Set 8
1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64
65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88
89	90	91	92	93	94	95	96
97	98	99	100	101	102	103	104
105	106	107	108	109	110	111	112
113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128
129	130	131	132	133	134	135	136
137	138	139	140	141	142	143	144
145	146	147	148	149	150	151	152
153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168
169	170	171	172	173	174	175	176
177	178	179	180	181	182	183	184
185	186	187	188	189	190	191	192
193	194	195	196	197	198	199	200

Figure 2. This is the manual input data grid. The number of columns is the number of data sets and the number of rows is the number of data points per set.

- Y Label—Like X Label, but for the Y-Axis.

The Review Menu

- Title—For editing the Title.
- Data Sets—Brings up the Data Set box shown in Figure 3 for editing of data set names, scale factors, axis limits, etc. See below for further discussion.
- Data Values—Displays the data sets in tabular form.
- Edit Data—Displays the data sets in grid format. Click on a box to select that value for editing, then enter a new value. Click on the row number to add a new row to be inserted with values of zero for each point. Click on the asterisk (*) at the right end of a row to delete that row.
- Special Chars—Displays the complete character set and the keystroke equivalents needed to generate the special characters. See Figure 4.

The Font Menu

- Load Font—Loads a new font file. Note, however, that ST SciPlot font files are not standard GEM font files and you will get an error message if you try to load one. Font files for ST SciPlot must be generated within ST SciPlot.
- Save Font—Saves the current font file to disk. While the .FNT filename extender is not mandatory, it is recommended. On boot-up ST SciPlot will read in the file SCIPLOT.FNT.
- Edit Font—Allows you to edit the

current font. Selecting *Edit Font* will bring up the font grids shown in Figure 5. Pressing a key selects that character for editing. The top left grid shows the character, the top right shows the backslash (\) character and the bottom two grids show the subscript and superscript versions. You edit a character by toggling individual pixels on or off with the left mouse button; you can see the actual character as you are editing it in the small box below the editing grid.

The Annotations Menu

- Strings—Allows you to enter up to ten lines of annotations per plot and specify their locations on the screen. Selecting *Strings* will bring up the Strings screen shown in Figure 6. See below for further information.
- Arrows—Brings up the Arrows screen (shown in Figure 7) and allows you to add up to ten arrows with open or closed arrowheads and specify the beginning and ending positions of the arrows on the screen.

Data Files

As mentioned above, ST SciPlot allows you to load in an ASCII data file. Each such "raw" data file can contain the curve data for a single plot. If you load in a raw data file using the Read Raw File option on the Action menu, it will replace the data in the active plot with the new data. You may generate your

own raw data file using any text editor or word processor that has an ASCII or "Print to Disk" option.

Each raw data file consists of a series of rows of numbers with each value delimited (separated) by a space and each row terminated by a carriage return. Each column is a set of values and all the columns together are a data set. You may have no more than eight columns per data set and each column must have the same number of items. You may interchange entire rows or columns freely without generating errors. However, by default, ST SciPlot does assign the first column as the X-Axis data set and the others as Y-Axis sets, but this may be changed in the Review Data Sets screen. (See below.)

Don't worry if you have more values in one column than another; simply pad the short column out with any arbitrary value so that the columns all have the same number of values. After loading in that set of values, you can specify the number of values to be used (Np) for that set. See below for more on editing data sets.

You may use integer, decimal or logarithmic (base 10) numbers in your data sets. For example, see Figure 8. This data file contains four data sets (columns) with five entries for each of the first two sets and three "real" entries for the last two sets and two padded values of zero.

Figure 3. The Data Set box allows you to edit the names of your data sets, the scale factors, the axis limits, the marker and line styles and data set axis assignments.

Active Plot: 1		Hdat: 25					
IT	Name	X Min	Fact	M L	Umin	Umax	Npt
1	Data Set 1	-1	1.0	-1	0.63	2.73	25
2	Experiment	1.3	1.0	1	0.85	1.37	25
3	Error Bars	-1	1.0	-1	-----	-----	---
4	Mu Theory	1	1.0	1	0.86	1.34	25
5	Nu Theory	1	1.0	-3	0.84	1.15	25

Type	AxisMin	AxisMax	DataMin	DataMax	Npt
MaxLn	0.60	2.80	0.63	2.73	1
MinLn	0.60	1.50	0.84	1.37	2

Styles:	
1:	4: ● 1: _____ 4: -----
2:	5: ○ 2: _____ 5: -----
3:	6: * 3: _____ 6: -----

Editing Data Sets And Data Display

There are two aspects of editing data sets: you can edit the *data itself* directly through the Edit Data selection on the Review Menu or you can edit the *display* of that data through the Data Sets selection on the same menu. The first alternative has been covered above.

The Data Sets Review screen is shown in Figure 3. All entries shown in the larger system font can be edited; all entries shown in the smaller custom font can not. The boxes at the top show which plot is active and how many data points it contains. The first column identifies the data sets; any Y-Axis data sets in inverse video will be plotted. Click on the set number to toggle it on or off.

The second column tells the type of data set, X-Axis (X), Y-Axis (Y) or Error Bars (E); click on each of these boxes to cycle through the choices. The third column contains the first 20 characters of the 60-character data set name that will appear in a legend. To change a name, click on it and edit it in the dialog box.

The fourth, fifth and sixth columns apply to Y-Axis data sets only. In order, they are X-Axis (X), Vertical Error (V) and Horizontal Error (H). Clicking on each of these boxes allows you to specify which of the other data sets will



Figure 4. In addition to the upper- and lower-case English alphabet and Arabic numerals, ST SciPlot has a complete Greek alphabet, plus an extensive mathematical symbol library.

be used for the X-Axis values, the vertical error values and the horizontal error values for that curve. *If you choose a hyphen (-) in the X column, that curve will not be plotted.*

The seventh column is the Factor (Fact) column. By clicking in any box in this column, you can change the scaling factor for that data set. The scaling factor is always applied to the original data, not to the data as previously scaled.

The next two columns, Marker Style (M) and Line Style (L), allow you to choose the style for that data set from the choices shown in the chart at the bottom of the screen. Just click on each to cycle through them until you have the one you want.

The next two columns can't be edited. They show the maximum and minimum values for each data set.

The last column shows the number of data points used to plot each curve. The maximum is *Ndat*, but you can select any number less than that by clicking on the appropriate box and typing in the new value.

In the middle of the screen is the Draw Plot(s) bar. Curve numbers shown in inverse video are plotted; they can be toggled on and off by clicking on them.

Below the Draw Plot(s) bar is the Axis Limit grid. You can change the Maximum and Minimum values for each axis (and the resultant scale of the plot) by clicking on them and entering new values. The labels are self-explanatory, but you must keep the maxima equal to or greater than the largest value in the data sets and the minima equal to or less than the minimum values in the data sets. If you attempt to set a maximum or minimum axis value that is within the data range, ST SciPlot will set that value to equal the limit value (highest or lowest).

The column to the farthest right is labelled Ntk. The values in this column (Number of Tick Marks) determine where the divisions are marked along the axes. ST SciPlot has an internal

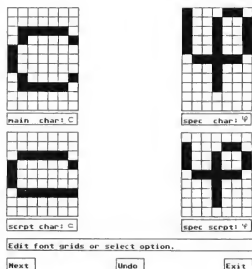


Figure 5. You can edit each character in ST SciPlot's custom font set. The top left grid shows the character, the top right shows the custom character and the bottom two grids show the subscript and superscript versions.

heuristic algorithm that determines values for these parameters. It attempts to minimize "waste" and to choose Ntk so that the divisions occur at "nice" places. The maximum value for Ntk is 6; you can choose any lesser value by repeatedly clicking on the appropriate box to cycle through the choices.

There are two boxes to the left and right of the Styles chart; to the left is the Exit box (self-explanatory) and to the right is the Recalc box. If you click on the Recalc box, ST SciPlot will recalculate the axis limits using its internal algorithm.

Editing Text Strings

ST SciPlot allows a variety of text strings to be displayed on a plot and all of them can be edited. The X- and Y-Axis labels are edited through the X Label and Y Label selections on the Axes Menu. The Plot Title can be edited through the Title selection on the Review Menu. The curve names can be edited through the Data Sets selection, also on the Review Menu.

As noted above, ST SciPlot uses a custom character set, which can be reviewed through the Special Chars selection on the Review Menu. In addition to the upper- and lower-case Eng- ▶

lish alphabet and Arabic numerals, ST SciPlot has a complete Greek alphabet, plus an extensive mathematical symbol library. (See Figure 4.) All of these special characters are accessed through a two-character sequence beginning with a backslash (\); this is the key just to the right of the Return key.

ST SciPlot can also display text in normal, superscripted and subscripted modes. To change to *superscripted* mode, type a caret (^) before the string by holding down the [Shift] key while pressing the number 6 key in the top row of the keyboard. To change to *subscripted* mode, type an underscore (_) in front of the string by holding down the [Shift] key while pressing the hyphen key. To return to normal text mode, type a vertical bar (|) by holding down the [Shift] key while pressing the backslash key.

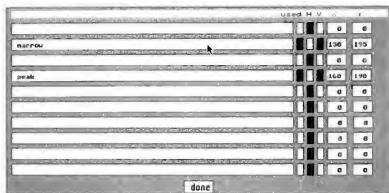
Annotations And Arrows

ST SciPlot also allows you to add up to ten lines of annotations of 60 characters or less each and specify their locations on the screen. When you select Strings on the annotations Menu, the Strings screen appears, as shown in Figure 6 and you may enter your annotations for the active plot.

Under the text bar on the Strings screen are ten lines for entering the text of your annotations. Each line may be up to 60 characters long and you may use the custom character set, superscripts and subscripts. Click on the line you wish to edit and then enter the text. As with all text or numerical entry boxes in ST SciPlot, you may use the [Escape] key to clear the entry or the [Delete] or [Backspace] keys in their usual manner.

To the right of the text lines are four columns of boxes. The first is labelled "used"; click here for each line of text you wish to display on the graph. A black box indicates that the text will be shown on the screen. Next to the used column are the "v" (for vertical) and "h"

Figure 6. From this Strings screen, you can specify up to ten lines of annotations and place them anywhere on the graph, either vertically or horizontally.



(for horizontal) columns; click on one or the other of these to specify the direction you want the text to run.

The next two columns are for the horizontal (x) and vertical (y) starting position of the text. This is specified in pixels, counting down and to the right from the upper left-hand corner of the screen. The useable area for a single character is from 0 on the left to about 630 on the right and 20 at the top to about 390 at the bottom. Click on each box to enter your setting. The default is set to 0; after you have brought up the entry box, be sure to clear it by pressing the [Escape] key.

After you have entered your annotation strings and set their location and direction, click on the "done" box to return to ST SciPlot's main screen. The Annotations may not be visible. If they

aren't, just re-plot the graph. If they still aren't visible, return to the Strings screen and check that the used boxes are highlighted for the annotations you want to display and that the x and y locations are within the ranges specified above.

Clicking on the Arrows selection on the Annotations Menu brings up the Arrow screen shown in Figure 7. From this screen, you can specify the position and arrowhead style of up to ten arrows for use with your annotations. There are six columns on the Arrows screen; the first is labelled "used" and operates just like that on the Strings screen. Just click on each box to turn that arrow on.

The next column (close) allows you to specify the arrowhead style. If the box is black, the arrowhead will have a triangular arrowhead. If the close box is white, the arrowhead will be drawn in the standard open drafting style.

The next four columns allow you to set the horizontal and vertical position of the "tail" of the arrow (x1 and y1) and the horizontal and vertical position of the "head" of the arrow (x2 and y2). These are specified in pixels, just like the string location. Again, be sure to press the [Escape] key to clear the default 0 setting before entering your numbers.

It may take a bit of practice to determine the exact locations for your annotations and arrows. Just remember that X=0,Y=0 specifies the upper left-hand corner of the screen and that the values increase as you go from left to right and from top to bottom. Also, remember that the annotations and arrows are specified in absolute screen locations

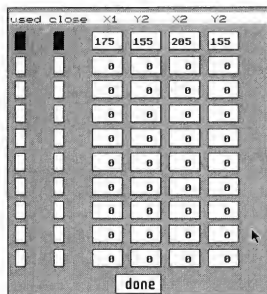


Figure 7. The Arrows screen allows you to specify up to ten arrows with either closed or open arrowheads anywhere on the screen. You specify their location by entering the pixel locations where you want the arrows to begin and end.

10	-4.0e3	1.20E01	-3421
2.0e+1	-2.2e-1	25	0.1E0
30	3.14159e2	.0031E4	350.6
50	6.77e2	0	0
60	7.9E+02	0	0

Figure 8. ST SciPlot can read this mixed data set with no trouble. It contains four data sets (columns) with five entries in each of the first two sets and three "real" and two padded values of zero in the last two sets.

and can not be dragged with the mouse. To change their locations, you must enter the Strings or Arrows screens and change the values there; also, re-sizing or moving your plot will not relocate the annotations or arrows.

Dragging And Sizing

Labels, titles and the time string can all be dragged around the plot to a new location by clicking anywhere within the text and dragging it in the usual GEM manner (just like dragging a Desktop icon). To drag a legend or an entire plot, first make sure that the plot is active and then drag it or the legend with the mouse, just as with the text strings. If you click outside a plot or any label, the active plot will flash.

There is an invisible GEM sizing button diagonally outside the lower right corner of each plot rectangle. If you wish to resize a plot, click within this sizing button and hold the left mouse button down. A sizing rectangle will appear and you can then size the plot just as with a GEM Desktop directory window.

Error Messages

As with any feature-intensive program, ST SciPlot will generally prevent you from attempting the impossible. Here are some common error messages:

Can't find Font File: SCIPLOT.FNT—The font file must be in the same directory as SCIPLOT.PRG on booting.
Data Too Close to Spline. Setting to Linear Fit—If the data points are too close together, using a cubic spline could produce an error. Try interchang-

ST SciPlot is START's solution to your power graphing problems.

ing the X-Axis and Y-Axis data sets.

Illegal Scaling Factor. No Scaling Performed—Scaling factors must be greater than 1.0E-20 and less than 1.0E+20.

Input Error. No Data Read.—Something is wrong with the data file format.

No Consistent Data.—You have made a mistake in the Data Sets Review screen that prevents a meaningful plot. For example, you may have set all data sets to be Y-Axis values.

Conclusion

As you can see, ST SciPlot is immensely powerful. Space just doesn't allow a full discussion of all of its features; yet ST SciPlot is so logically designed that an examination of the context in which it arises. Also, there is nothing like experimentation—you can't hurt your computer or the program by trying anything and everything ST SciPlot allows. Once you've worked through a plot or two and read through this article thoroughly, the interface will be second nature to you. And then you can put your ST to work in your lab! ■

David Heddle is a physicist at the University of Illinois and a consultant for Booz, Allen & Hamilton, Inc.



LIONHEART

BUSINESS & STATISTICAL SOFTWARE

Explanatory books with professional compiled software; the new standard for statistical use. The influential Seybold Report on Professional Computing has this to say about Lionheart "...our sentimental favorite because of its pragmatic approach to the basic statistical concepts... The thinking is that the computer merely facilitates the calculations; the important thing is to be able to formulate a problem correctly and to determine what type of analysis will be most valuable. Let Lionheart help you get ahead of the competition!

- EXPERIMENTAL STATISTICS..... \$145
- BUSINESS STATISTICS..... 145
- MARKETING STATISTICS..... 145
- QUALITY CONTROL..... 145
- BIOMETRICS..... 145
- ECONOMETRICS..... 145
- FORECASTING AND TIME-SERIES... 145
- SALES AND MARKET FORECASTING 145
- PROJECT PLANNING..... 145
- DECISION ANALYSIS TECHNIQUES. 145
- OPTIMIZATION..... 145
- LINEAR & NON-LINEAR PROGRAMMING 95
- MULTIVARIATE ANALYSIS..... 125
- REGRESSION..... 95

SEND FOR FREE BROCHURE

P.O. BOX 379, ALBURG, VT 05440
(514) 933-4918

MUSIC SCORING SEQUENCER

**ATARI 520/1040 ST
MU-SCRIPT I \$99.95**

VERSION 2.1 NOW AVAILABLE
IMPROVEMENTS:

- GEM TYPE USER INTERFACE
- SEQUENCE LOOPING IN BOTH SEQUENCE & SONG MODE
- MIDI MERGE
- READS AND WRITES STANDARD MIDI FILES
- 16 TRACK SEQUENCER
- 16 SEQUENCE SONG LIST
- 16 CHANNELS/VOLUMES
- BOUNCE (MUTE/MERGE/SPILT)
- CLIP/ARPEGGIO
- AUTOPUNCH/QUANTIZE
- MIDI EVENT EDITING
- COMPUTER NOTE ENTRY
- MULTI-STAFF SCORING
- SINGLE STAFF SCORING
- BEAMS/TRELSYRICS
- CHORDS/MINORS/TRIPLETS
- TRANSPOSE MIDI OR PART
- ORUM SYNC-METHOD
- EXTERNAL MIDI CLOCK INPUT FOR TAPE SYNC OPERATIONS

MU-SCRIPT II \$199.95

MIDI THRU

ADAPTOR FOR ATARI ST

- MIDI CABLE CONNECTS TO ST MIDI OUT/THRU
- 2 FRONT PANEL JACKS: MIDI OUT, MIDI THRU
- STURDY, ROADWORTHY METAL CABINET WITH RUBBER FEET
- SWAP OUT WITH THRU AT THE FLIP OF A SWITCH - NO NEED TO UNPLUG CABLES
- PREVENTS MIDI LOGJAM ASSOCIATED WITH SOFTWARE THRU



QLX2 MIDI THRU ADAPTOR \$33.95

QUIET LION
(818) 765-6224



P.O. Box 219
Sun Valley, CA 91353

STPlus•STPlus•STPlus•STPlus

P.O. 1197, Berkeley, Ca. 94701

Front line NEWS: GENLOCK for the ST, \$400, preorder.

Magic Sac + Translator & ROMS \$500•PCDitto, DOS, & Drive \$375

<u>BUSINESS</u>	<u>GRAPHICS</u>	<u>CLIPART</u>	<u>GAMES</u>	<u>MUSIC</u>
DBMan 4.0 175.00	Degas Elite 41.95	Warriors(720) 14.95	Gunship 35.00	Passport
Datamanager 39.95	CAD 3D 2.0 69.95	Outdoor(720) 14.95	Shadowgate 35.00	Master Tracks 280.00
Superbase 104.95	Cyber Paint 49.00	Buildings(720) 14.95	Uninvited 35.00	Midsoft Studio Jr. 104.95
Trimbase 69.95	Quantum 4096 27.95	Victorian(720) 14.95	Mouse Quest 14.00	Midrast Tracks 69.95
Phasar 3.0 63.95	Adv Art Studio 26.00	Etchings(720) 14.95	Slaygon 27.95	Hybrid Arts
Zoomracks 2 84.95	Spectrum 512 49.00	People (720k) 14.95	Barbarian 27.95	Sync Track 499.95
Base 2 42.95	EzDraw&Superch 104.95	Politics(720k) 14.95	Obliterator 27.95	EZ Track Plus 299.95
The Informer 69.95	Canon Scanner 104.0	Religion(720) 14.95	Gauntlet 35.00	Midiscore 48.95
Wordperfect 189.95	GFA Artist 1000l 55.95	Holidays(720) 14.95	Dark Castle 27.95	EZ Score Plus 104.95
1st Word Plus 69.95	Drax1 1 139.95	Ad Art (720k) 14.95	F-15 Strike Eagle 27.95	DX-Android 27.95
Word Up! 64.95	General Symbols 105.00	Vehicles(720) 14.95	Star Trek-Rebel U 27.95	CZ-Android 139.95
Best Accounting 279.95	Elec, or Arch, Sym 105.00	Boats (720k) 14.95	Questron II 35.00	Gen-Patch 69.95
Equal Plus 139.95	Athena 2 69.95	Planes (720k) 14.95	Lock-On 27.95	Dr. T's 104.95
Inventory Mgr. 69.95	Circuit Maker 55.95	All (9.2 meg) 99.95	Carrier Command 32.50	KCSequencer 199.95
Robolase Plus 63.95				KCS 1.6 w/PVG 289.95
Logistix Spread 104.95				MIDI rec studio 56.00
Microlawyer 49.95				Copyist level 1 75.95
Payroll Master 69.95				Copyist level 2 185.95
Construction EST. 94.95				Copy3-Postscript 299.95
Microsoft Write 35.00				
Datatrievie 94.95				
STOneWrite 48.95				
VIP Gem 104.95				
DacEasy Payroll 48.00				
DacEasy Acctg 52.00				
WordWriter ST 56.00				
SwiftCalc 39.95				
EZ Calc by Royal 48.95				
Analyze Spread 25.95				
Final Word 99.95				
PublishingPartner 140.00				
T-works Publisher 89.95				
EZData Base 48.95				
Chart Pak 35.00				
Compute Roots 27.95				
Thunder NEW! 28.95				
Habawriter 2 48.95				
Text Pro 35.00				
Becker Text 62.95				
Expert Opinion AI 59.95				
Time Link 35.00				
Partner ST 48.95				
Labelmaster Elite 35.00				
ST Accounts 149.00				
The Juggler 2.0 35.00				
Max Pack 35.00				
Stuff 27.95				
Flash 15 21.00				
Omni Res 27.95				
Turbo ST-(blitter) 35.00				
Signum Technical word processor 249.95				
SBT DLedger 195.00				
SBT DPayables 195.00				
SBT DInvoices 195.00				
SBT DMenu 49.95				
Neo Desk 27.95				
Sales Pro 69.95				
Mail Manager 39.95				
Mighty Mail 35.00				
First Word 1.6 14.00				

Remember: Every one thousandth purchaser gets a hundred dollars credit, and the ten thousandth purchaser will get a 10 meg Supra floppy. **RULES:** Have your customer number or credit card ready. Purchase as often as you like. We're your computer supermarket and we're ready to fulfill your dreams but we're not an information service. We ship right away and its your part to know what you want. Don't be cheap, at these prices you can spurge!

Thanks to you we are in our third year and growing everyday. Special Purchase Offer: Datamanager, Swiftcalc, or PartnerST: \$39.95 so long as our current stock lasts. If you want to be an ST Dealer write STPlus, P.O. 1197, Berkeley, CA 94701.

Support the ST! Buy lots of software and let your friends know you've got the best machine on the market. There's no better value or technology for the buck, that's why in Germany, the land of hitech the ST is appreciated.

<u>PROGRAMMING</u>	<u>EDUCATIONAL</u>
56.00 GFA Basic 3.0	14.00 Arakis Series
35.00 GFA Book	27-35 Unicorn Series
56.00 GFA Compiler	69.95 True Basic Stuff
125.00 Mark Williams "C"	
159.95 Laser "C"	
139.95 Cambridge Lisp	
27.95 RAID	
35.00 Fast Editor	
69.95 Alice Pascal	
59.95 OSS Pascal	
139.95 Fortran 77 GEM	
104.95 BCPL	
104.95 Modula 2 dev. kit	
48.95 Assempro	
56.95 Fast Basic	
69.95 True Basic	

Summer 520 STFM

Special
\$529 Mono
\$739 Color



Your Art Scanned
\$10 per page
75 to 300 dpi

<u>HARDWARE</u>	<u>The Best European Games</u>
10 Meg Supra floppy 875.00	1 Ball (neat, fast) 19.95
20 Meg w/dock 599.95	RanaRama(d&d) 29.95
30 Meg Supra 749.95	Warlock's Quest 29.95
60 meg Supra 1249.95	The Flintstones 29.95
33 Meg Tulin 699.95	35.00 Trivial Pursuit 29.95
51 Meg Tulin 839.95	27.95 The Enforcer 19.95
80 Meg BMS RRL 1249.95	24.95 Seconds Out 29.95
20 Meg SH205 639.95	35.00 Scruples(board) 29.95
250 Meg 3250.00	21.00 Livingstone 29.95
10 Meg Floppy 849.95	27.95 Battle Ships 29.95
AST PS LASER 3350.00	39.95 Outrun(fast cars) 29.95
Canon Scanner 1040.00	39.95 Crazy Cars 29.95
IMG Scanner 90.00	27.95 Tetris (from USSR) 29.95
ComputeryesMon 120.00	35.00 Screaming Wings 29.95
Supra 2400 modem 159.95	27.95 Spitfire 29.95
Atari SX2 12 modem 79.95	35.00 Blue War 29.95
	27.95 Star Quake 29.95
	Enduro Racer 29.95
	19.95 BMX Simulator 29.95
	19.95 Arkanoids 29.95
	48.95 Better Dead n Alien 29.95

Are you a gamer? How about joining our game of the month club? \$10 gets you the hottest new title at an extra 5% off & you can return it for 75% credit. Plus you'll be eligible each purchase to win as #1000 or #10,000. Call us and specify adventure or arcade. Get started with Jet for \$32.50 or Cosmic Relief \$26.00.

ONE NEW NUMBER 800-759-1110 Prices subject to change without notice.
We ship ANYWHERE! \$4.00 min S&H. No 1040's or Megs mail order. Hand delivery only, List plus \$100.

Steinberg/Jones MIDI Power

The Pro-24 Sequencer and Masterscore

by Jan Paul Moorhead

Reviewing today's professional level sequencers is tough—when programs like Steinberg/Jones' Pro-24 have reached their second or third generations, they have acquired so many features and capabilities that you have to avoid merely printing a long list. Here, I'll look at Pro-24 III's basic organization and then its more outstanding bells and whistles.

The Overview

The first thing to check out when investigating a sequencer is to determine its "general philosophy of sequencing." It may be a very powerful tool but if it's completely at odds with the way you work, then it's not for you.

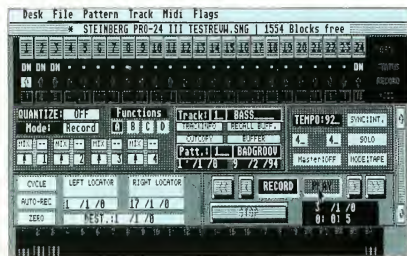
Pro-24 likens sequencing to tape recording and its top level display is designed accordingly. 24 tracks are displayed at the top of the screen, similar to buttons on a tape recorder, where you select tracks for recording, editing and muting. One drawback to this approach is that track names are visible only when a particular track is selected; you can't see all track names simultaneously. (It would also be nice to have more tracks for editing buffers.) Small "VU" meter graphics at the bottom of the screen correspond to each of the tracks, useful for determining what's

playing on a particular track. Pro-24 works best in monochrome, although it also looks satisfactory in medium resolution color.

The tape recorder analogy is carried

boxes. Patterns on different tracks are independent of each other and their lengths may vary wildly.

Patterns can also be given names or defined in the locators by bar, beat and



Pro-24 likens sequencing to tape recording and its top level display is designed accordingly. There are 24 tracks displayed horizontally across the top of the screen where you select tracks for recording, editing and muting.

further with "transport control" buttons, although it would be nice if the Tempo and Return to Zero indicators were closer to the transport control.

Pro-24 is not limited to tape recorder-like sequencing, however. Each track is organized by patterns whose limits are determined when recorded. Afterwards they can be truncated, extended, looped, spliced together or split apart with the right and left locator

sub-beat. Names are a more intuitive method of identifying patterns and are essential for the arrange functions.

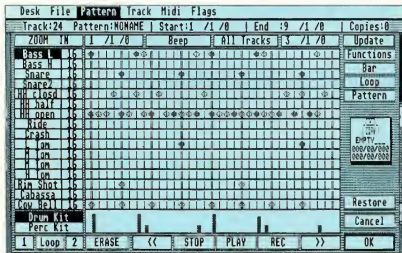
Modes Of Operation

Pro-24 has two basic modes: tape mode and sequencing mode. Sequencing mode is similar to drum machine-type operation. Tracks set to sequencer mode can be "arranged" when all the patterns in each affected track are set to the ▶

same length. Tracks left in tape mode will play unaffected by the structure set up in the arrange window.

Becoming comfortable with the locator boxes is essential. You can use either the mouse or keyboard to alter a value or define a range in these boxes and

particulars scrolling down the right-hand side of the screen. Grid editing excels in showing and manipulating the position and duration of pitches. You can alter values by clicking on the parameters in the note list or by dragging notes around on the grid.



The Drum Edit page is a very exciting creative tool. You can enter notes either recorded in real-time through MIDI, recorded from the computer keyboard or draw them with the mouse.

since most of the editing and other operations depend on these values, manipulating them quickly and effectively is important to getting the most from the program.

One big plus of Pro-24 is that you can execute most functions in a number of ways. You can use either the mouse or the keyboard; moreover, Pro-24 version 3.0 also allows control of basic recording functions directly from your MIDI controller.

Editing And Special Features

Pro-24's editing features are remarkable: there are six distinctly different methods to edit material in Pro-24. Pattern editing and arrangement-type editing are available from a menu on the front screen. The other options have their own screens or are nested within other screens.

Grid Edit is a piano-roll-type display of MIDI data. (I would prefer to have timed events scrolling left-to-right, but with a little time you'll get used to it.) Though less intuitive, it does give a complete list of MIDI events with all the

Score Edit displays MIDI data in traditional music notation, still the quickest and easiest method of editing out wrong notes and rhythms. Elements of musical feel are not visibly apparent, but Grid Edit is available for that. To facilitate using these two methods, you can instantly switch between pages using the Swap Edit Page command.

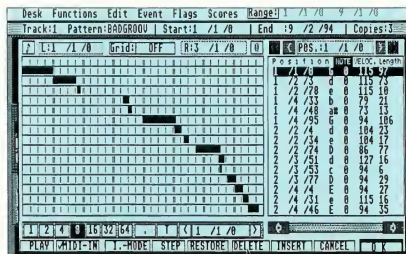
The Score Edit page also displays velocities in a graph format at the bottom of the page. By defining a range and designating beginning and ending velocities, you can create crescendos and

decrescendos that still maintain the relative velocities of each note within the range. In this fashion, accents and varying articulation are maintained within the crescendo. Velocity for individual notes can be altered by dragging on the bar graph below each note or chord.

The notation function is extremely fast and rhythmically accurate. It handles meter changes well and treats their notation logically even when you've entered meter changes after recording the music. Pro-24 is the first program I've seen that correctly notates complex rhythms and syncopations. I've seen other programs fall on their faces attempting the same thing.

The only limitations in rhythmic notation are determined by the level of quantization chosen for the display. For instance, sixteenth-note triplets will be displayed as an eighth and two-sixteenths when shown with quantization to the sixteenth. Getting comfortable with creating the correct settings for displaying a part is essential to effectively utilizing the Score Edit page. Another nice feature is that you can print a pattern from this window using Epson-compatible and NEC printers.

The step-time functions use MIDI input and are a breeze to use. A hint: Be sure to filter controller information when using step-time data entry. Step-time will automatically quantize each note entered; it therefore also quantizes



Grid Edit is a piano-roll-type display of MIDI data. Grid editing excels in showing and manipulating the position and duration of pitches.

aftertouch and other controller information and may produce undesirable effects unless they're filtered out.

The Drum Edit page is a very exciting creative tool, with a display similar to that on some Roland drum machines. Instruments are assigned down the left-hand side of the page and time is displayed from left to right on a grid on which you can zoom in or out. You can enter notes either recorded in real-time through MIDI, recorded from the computer keyboard or draw them in with the mouse. Two bars are displayed at a time and patterns can be looped, quantized, etc. from within this page.

Drum Edit provides many of the features offered in a high-end drum machine for those who use a sampler or sound source rather than a drum machine. You can create up to three "kits," each made up of a drum kit and a percussion kit. You can use Drum Edit to create pitched parts all in one scale or harmonic color. New Age effects are a breeze. You just design a kit that contains only notes in one chord or scale and then just draw patterns which might otherwise be a real bear to play.

Logical Edit is another powerful function—it lets you set a series of conditions and characteristics that define editing operations within a range. For instance the note G1 could be changed to G#2 in every instance or within a certain area. This, coupled with transposition, gives you diatonic or modal transposition. The velocity of a snare drum could have a specified amount added or subtracted to it or be multiplied or divided by a value without having to unmix the drum part to separate tracks.

Multiplication, for instance, will allow you to expand the range of velocities in a part, which in a sense amplifies the "feeling" you played into it—very effective in funk music. You can set conditions for an operation by pitch, velocity, channel, note length, and/or position within a bar. The values

Pro-24 has two basic modes: tape mode and sequencing mode.

affected by the operation defined can be pitch, velocity, channel, note length and position.

The last type of editing is Event Edit, which provides for editing of pitch bend, aftertouch and other controllers.

A Few Extras

Pro-24 has a few features that particularly stand out. It supports standard MIDI song files for import or export. If you work with a number of sequencers

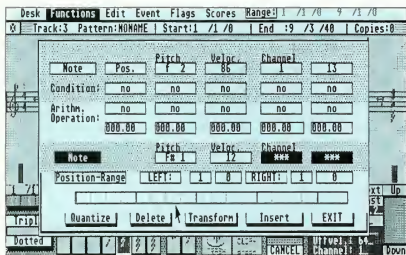
on up to four tracks at a time, enabling you to record people at live performances through MIDI.

There are a few things on my wish list: I'd like an Undo function, for instance. Some of the pattern edits can be catastrophic if you aren't paying very close attention to what you're doing. Also, the restore function in the edit pages should be more discriminating. It returns the part to what it was at the beginning of the editing session rather than merely undoing the last edit.

Finally, Pro-24 displays time by hours, minutes, and seconds. It would be a big plus to have resolution down to SMPTE frames and to be able to scroll back and forth in the music from the clock, as well as by bars and beats. To get these features you have to buy Steinberg's SMPTE interface.

Last Words On Pro-24

Steinberg's Pro-24 is not the easiest program to learn. It's powerful, but its dis-



Logical Edit lets you set a series of conditions and characteristics that define editing operations within a range.

or individuals with different systems, this is invaluable. There is a master track for tempo and time signature changes and Pro-24 will record System Exclusive dumps. Sets of commonly-used locator points or sets of track mutings can be stored and accessed from the function keys. "Take me to the bridge" can be as easy as hitting F3. This latest version allows you to record

play and manner in which some of its functions are implemented could have been clearer. However, the current version is a dramatic improvement over earlier versions. The first Pro-24 manual was out-and-out treacherous, but the newest one is very good. An index would be a nice addition however, especially for the impatient experienced user.

A final note: for copy protection. ▶

Pro-24 uses a hardware key, which unfortunately goes into the cartridge port. To switch between Pro-24 and Steinberg's companion program Masterscore (discussed below) you have to turn off your ST and change keys. Happily, the keys are idiot-proofed so that you can't fry them or your ST by incorrect insertion.

All in all, Pro-24 is an extremely powerful professional sequencer with a steep learning curve but a big reward at the top.

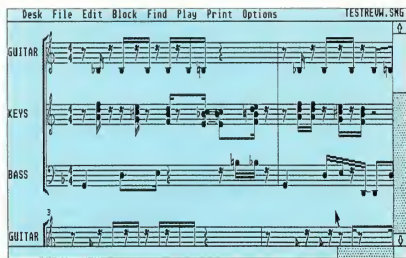
Masterscore

Masterscore is a companion notation program to the Pro-24 sequencing program. Like Pro-24, it looks best in monochrome although it also works well in medium resolution color. Masterscore will read Pro-24 files or standard MIDI song files; it works best if you read your data into Pro-24 first, unmix it to separate tracks and then read it into Masterscore by itself.

When reading in a file from Pro-24 and working with small amounts of data at a time, Masterscore transcribes with the same impressive speed and accuracy as Pro-24. Complex rhythms are correctly notated and vertical alignments are correct. Because of memory limitations, it's most efficient working with 8 to 16 bars at a time. It then prints in a batch mode that strings the sections all together.

Masterscore's main limitation at present is that you have to insert pitches entirely through text entry. Entering an entire score in this manner is something that should be reserved only for those guilty of capital crimes. (Steinberg tells

Packard printers.) The program includes information on how to create your own printer driver, but to me, this is an excessively painful and nerdy task. It does offer hope, however, to those who have really off-the-wall printers.



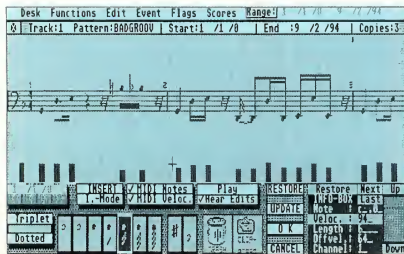
Masterscore will read Pro-24 files or standard MIDI song files; it works best if you read your data into Pro-24 first, unmix it to separate tracks and then read it in.

me that all the cut-and-paste and data entry tools available in the Score Edit page of Pro-24 will be available in Masterscore by January 1989.) Presently you can add articulation, dynamics, repeats, accidentals, first and second endings and more to the score by dragging the symbols to the appropriate areas of the screen. When you can do this with pitches and rests as well, Masterscore will be much more viable as a stand-alone program.

Masterscore supports seven different printers with more to come. (Notable exceptions are the Toshiba and Hewlett-

Many people see notation programs as substitutes for reading music—just push a button and presto, your song is written out. This is not the case. All such programs will require editing and knowledge of proper music notation. Masterscore is no exception, but it is easier to use than other notation programs I've worked with.

Masterscore does a good job for those using the Pro-24 sequencer. Although it falls short now, I expect it to become a very strong program for those who want to create scores from a stand-alone program. ■



Score Edit displays MIDI data in traditional music notation. The Score Edit page also displays velocities in a graph format at the bottom.

Jan Paul Moorhead is a professional musician who runs a recording studio in Los Angeles. He is a frequent contributor to START.

Products Mentioned

Pro-24 III, \$295; Masterscore, \$350.
Steinberg/Jones Marketing, 7700
Raymer St. Suite 1001, Northridge,
CA 91325, (818) 993-4091.
CIRCLE 277 ON READER SERVICE CARD

SOFTWARE DISCOUNTERS

S.D. of A.

USA/Canada Orders—1-800-225-7638
PA Orders—1-800-223-7784
Customer Service 412-361-5291

- Free shipping on orders over \$100 in continental USA
- No Surcharge for VISA/MasterCard
- Your Card is not charged until we ship

DE DATA EAST

Conquer a variety of courses by jumping your Speed Buggy over obstacles, driving on two wheels, and running into flags to gain time and bonus points. **Speed Buggy List \$39.95**
Our Discount Price \$25



Twilight's Ransom	.....\$23
EPYX	
California Games	.....\$33
Champ, Wrestling	.....\$14
Death Sword	.....\$14
Dive Bomber	.....\$33
Impossible Mission 2	.....\$24
Metrocross	.....\$16
Street Cat	.....\$16
Sub Battle Simulator	.....\$24
Temple Apathy Trilogy	.....\$14
Winter Games	.....\$14
World Games	.....\$14
EQUAL PLUS	
Financial Plus	.....\$129
FORESIGHT	
Gauntlet	.....\$119
FTL	
Dungeon Master	.....\$25
Dungeonomaster Hints	.....\$9
Olds	.....\$23
GAMESTAR	
GLF Champ. Football	.....\$25
GRIBNIF	
New Desk	.....\$19
BLD	
Athena 2	.....\$65
INTERSECT	
Interlink	.....\$25

Time Bandit	.....\$25
TUNE UP	
MICROLEAGUE	
Baseball 2	.....\$30
Gen. Manager/Owner	.....\$19
1987 Team Disk	.....\$14
WWF Wrestling	.....\$33
MICROBROS	
F-15	.....\$25
Gunship	.....\$33
Silent Service	.....\$25
MINDSCAPE	
Balance of Power	.....\$33
Blockbuster	.....\$25
Captain Blood	.....\$33
De Ja Vu	.....\$33
Gauntlet	.....\$33
Harrier Combat Simulator	.....\$33
Indiana Jones & The Temple of Doom	.....\$33
Into the Eagle's Nest	.....\$25
Paperboy	.....Call
Road Runner	.....\$33
720	.....Call
Shadowgate	.....\$33
Spartan Ice	.....\$33
Hockey	.....\$33
Uninvited	.....\$33

MINDSCAPE



This is the real thing. You're flying this mission solo into territory that's as hostile as it gets.

Harrier Combat Simulator
List \$49.95
Our Discount Price \$33



The Pawn	.....\$19
Ultimate Military Simulator	.....\$33
SCORPION	
Foundations Waste	.....\$25
SIERRA	
Black Cauldron	.....\$25
King's Quest 1, 2, or 3/3D Ed.	.....\$33
Leisure Suit Larry	.....\$25
Mixed Up Mother Goose	.....\$19
Poetry Quest	.....\$33
Space Quest 1 or 2	.....\$33
SIMON & SCHUSTER	
Star Trek: The Rebel Universe	.....\$25
SOFTICE	
Turbo ST	.....\$33
SPRINGBOARD	
Certificate Maker	.....\$25
C.M. Library Disk	.....\$19
SE	
Advanced Diagnosis & Diagnosis	
Heroes of the Lance	.....\$26
Phantasie 1, 2, or 3/26 Ed.	.....\$33
Quest 2	.....\$33
Rings of Zilfin	.....\$26
Roadwar 2000	.....\$26
Roadwar Europa	.....\$29
Stellar Crusade	.....\$39
War Game Const. Set	.....\$23
Warship	.....\$39
Wizard's Crown	.....\$26
SUBLOGIC	
Flight Simulator 2	.....\$33
Jet	.....\$33
Scenery Disk:	
#7-Washington	.....\$19
#11-Detroit	.....\$19

ACADEMY

Typing Tutor	.....\$23
ACCESS	
Leaver Beard Golf	.....\$16
w/Tour'n, Disk #1	.....\$16
Tenth Frame	.....\$25
ACCOLADE	
Bubble Ghost	.....\$23
Handball	.....\$25
Pinball Wizard	.....\$23
Test Drive	.....\$25
AGES	
Animator	.....\$44
Art Pak #1	.....\$19
ANTIC	
A-Calc Prime	.....\$25
A-Chart	.....\$19
Shadow	.....\$19
Base Two	.....\$39
Cyber Paint 2.0	.....\$49
City Studio	.....\$59
Flash	.....\$19
Phasar 3.0	.....\$59
Spectrum 312	.....\$44
3 D Breakthru	.....\$25
ARTWORX	
Bridge 5.0	.....\$23
Linkword French	.....\$19
Linkword German	.....\$19
Linkword Spanish	.....\$19
Strip Poker 2	.....\$25
Strip Poker Data Disk:	
#4 female	.....\$14
#5 female	.....\$14
AVANT GARDE	
PC Ditto	.....Call

BATTERIES INCLUDED

D.E.G.A.S. Elite	.....\$39
Thunder: The Writers Assistant	.....\$25
BAUDVILLE	
Award Maker Plus	.....\$25
Video Vegas	.....\$25
BRODERBUND	
Super Bike Challenge	.....\$14
Typhoon Thompson	.....\$23
CENTRAL POINT	
Copy 2	.....\$23
DATA EAST	
Speed Buggy	.....\$25
DATA SOFT	
Alternate Reality: City	.....\$26
Battle Droidz	.....\$23
Cromic Relief	.....\$23
Global Commander	.....\$26
Hunt for Red October	.....\$32
ELECTRONIC ARTS	
Alien Fires	.....\$26
Arcticfox	.....\$14
Barb's Tale	.....\$29
Chessmaster 2000	.....\$32
Marble Madness	.....\$26
Financial Cookbook	.....\$14
Lords of Conquest	.....\$14
Marble Madness	.....\$26
Mavis Beacon Teaches Typing	.....\$29
Roadwars	.....\$26
Rockford	.....\$21
Scrabble	.....\$21
Scrapules	.....\$26
Skyfox	.....\$14
Star Fleet 1	.....\$35



The Ultimate Joystick!
500XJ Joystick
List \$19.95

Our Discount Price \$14
(for right-handed players only!)

Revolver	.....\$33
ISD	
Masterplan	.....\$59
VIP	.....\$95
LDW	
Basic 2.0	.....\$59
Club Backgammon	.....\$23
Vegas Craps	.....\$23
Vegas Gambler	.....\$23
MATTEBROS	
Chengler	.....\$14
Ninja Mission	.....\$14
MICROTRON	
Air Ball	.....\$25
Art Ball Const. Set	.....\$16
GFA Basic Book	.....\$25
GFA Artist	.....\$49
GFA Basic:	
Compiler	.....\$39
Interpreter	.....Call
GFA Companion	.....\$33
Goldrunner 2	.....\$25
International Soccer	.....\$25
Juggler	.....\$33
Leatherneck	.....\$25
Master CAD	.....\$129
St. Replay	.....\$69
Tanglewood	.....\$25

MINDSCAPE:	
CINEMAWARE	
Defender of the Crown	.....\$33
S.D.I.	.....\$33
NEOTRON	
Font	.....\$23
Word Lip	.....\$49
OMNITREND	
Breach	.....\$25
Breach Scenario Disk	.....\$16
Univers 2	.....\$33
ORIGIN	
Autoduel	.....\$25
Moebius	.....\$25
Ultima 3	.....\$25
Ultima 4	.....\$39
PROGRESSIVE	
Superbase Professional	.....\$189
PROSPERO	
First Word Plus	.....Call
QMI	
Desk Cart	.....\$69
RAINBIRD	
Black Lamp	.....\$19
Carrier Command	.....\$29
Guild of Thieves	.....\$29
Jimster	.....\$25
Starglider 2	.....\$29

THUNDER MOUNTAIN

Bring home the excitement of world-class competition as you go for the gold in five challenging winter sports.

Winter Challenge
List \$14.95
Our Discount Price \$9.88



EPYX

Shoot the tube while surfing at Santa Cruz, do hand plants skateboarding in Hollywood, and cruise Venice in roller skates.

California Games
List \$49.95
Our Discount Price \$33



P.O. BOX 111327—DEPT. ST—BLAWNOX, PA 15238

*Please Read The Following Ordering Terms & Conditions Carefully Before Placing Your Order: Orders with cashiers check or money order shipped immediately on in stock items! Personal & Company checks, allow 3 weeks clearance. No C.O.D.'s shipping; Continental U.S.A.—Orders under \$100 add \$3; free shipping on orders over \$100. AK, HI, FPO, APO add \$5 on all orders. Canada & Puerto Rico add \$10 on all orders. Sorry, no other International orders accepted! PA residents add 6% sales tax on the total amount of order including shipping charges. CUSTOMER SERVICE HOURS: Mon-Fri, 9 AM-5:30 PM Eastern Time. REASONS FOR CALLING CUSTOMER SERVICE—412-361-5291 (1) Status of order or order closing (2) If any merchandise purchased within 60 days from S.D. of A. is defective, please call for return authorization number. We will not process a return without a return auth. # If defective merchandise will be replaced with the same merchandise only. Other returns subject to a 20% restocking charge! After 60 days from your purchase date, please refer to the warranty included with the product purchased & return directly to the manufacturer. Customer service will not accept collect calls or calls on S.D. of A.'s 800P order lines! Prices & availability are subject to change! New titles are arriving daily! Please call for more information. NEW, MORE CONVENIENT ORDER LINE HOURS: Mon-Thurs. 9:00 AM-7:00 PM Fri. 9:00 AM-5:30 PM Sat. 10:00 AM-4:00 PM Eastern Time.

COMPUTEREYES™



Capture Color Video Images: only \$249.⁹⁵

Capture B/W Images: only \$149.⁹⁵

Now you can easily and inexpensively acquire images from any standard video source - videotape, camera, disk - for display on your ST. Capture time is less than six seconds, and you have complete control of displayed color levels (or gray scales in monochrome).

ComputerEyes has everything you need interface hardware, complete easy-to-use software support on disk, and owner's manual. It fully supports all ST graphics modes and a variety of image formats and is compatible with virtually all popular graphics programs.

Think of the possibilities!

ComputerEyes is backed by a one year warranty and the success of over 10,000 systems sold. Satisfaction guaranteed or return it within ten days for full refund. Demo disk available, \$3. See your dealer or order direct. For more information call 617-329-5400.

To order call 800-346-0090
or mail your order to: Digital Vision, Inc.
66 Eastern Avenue, Dedham, MA 02026
VISA, M.C., or COD accepted
S&H \$4 for ComputerEyes
Mass residents
add 5% sales tax

**DIGITAL
VISION**

TECH WAY SALES

P.O. BOX 605 WARREN, MI 48090

1-800-USA-8832

IN MICHIGAN CALL 1 (313) 751-8807

WE SPECIALIZE IN ATARI AND THE ST LINE!

SOFTWARE & HARDWARE
WITH A FULL LINE OF ACCESSORIES

ALL SOFTWARE 30%
OFF LIST PRICE
EVERYDAY!!

WE CARRY ALL THE MAJOR NAME
BRANDS OF SOFTWARE AND
PERIPHERALS FOR THE ATARI'S

PRINTERS-MODEMS-MONITORS
HARD DRIVES-LASER PRINTERS
MIDI KEYBOARDS-JOYSTICKS
AND MUCH, MUCH MORE!

WE WELCOME C.O.D. ORDERS
MOST ORDERS SHIP OUT IN 24 HOURS

Hard disk recording on the rack!



RM 60/120

**THE RANGE OF TAPE - THE PRECISION OF MIDI
EVERY TAPE A MASTER**

UP TO 120 MEGS OF STORAGE

MOUNTS IN PERMANENT OR ROLLING RACKS

1 YEAR LIMITED WARRANTY

PROVEN ASTRA SYSTEMS QUALITY

USED BY TOP MUSICIANS WORLDWIDE

MAKE YOUR "ATARI ST" SING!

SOON YOUR "MAC" WILL SING TOO!

FROM UNDER

\$1600

SEE YOUR

DEALER



Astra Systems Inc.

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

Publishing Partner Professional

A START Preview

by Frank Kliever

When Publishing Partner first hit the street a year-and-a-half ago, I immediately put it to work in the production of a monthly user group journal. Those first few months were extremely difficult, as I learned the Prime Directive for this program was: "Save your work every few minutes—or less." Soft-Logik was good about updates and fixes, although even the final version still bombs when least expected. But you can learn to live with anything and despite the hassle, Publishing Partner became a valuable tool and one of my most-used programs.

A few days ago I experienced *deja vu*. After waiting six months from the first announced release date, I slipped a "Near Release" review beta version of Publishing Partner Professional into my disk drive. I hoped that Soft-Logik had cleaned up the few remaining bugs in Publishing Partner and added some eagerly anticipated additions. I had expected a few rough edges, but what I encountered was pure disappointment. Instead of polishing and extending Publishing Partner's capabilities, Soft-Logik decided to re-invent the wheel and completely rewrote the program. Pub-

lishing Partner Professional now looked more like a Mac DTP program (not a change for the better, I feel). But worse, it bombed out almost immediately in virtually every feature I tried.

Bugs And Bombs

Within the first hour of running Professional, it blew up over a dozen times. I gave up keeping track of bugs as I sought something that would actually work. Although there were some promising new features, such as text and object rotation, everything was overshadowed by the bugs and bombs.

Eventually, Soft-Logik will probably clean up Publishing Partner Professional with another series of updates. This is all too reminiscent of the early releases of Publishing Partner and WordPerfect for the ST. I contacted Soft-Logik for information about fixes, but did not hear back from them by press time. And now with many other loyal customers receiving Professional, the phone lines into Soft-Logik are jammed. I can just imagine the things being said.

I'm optimistic, however I hope to be able to report that Publishing Partner Professional is a totally operational pro-

gram (and much improved over Publishing Partner) in an upcoming issue of START. Until then, I can only recommend that you see every feature demonstrated successfully before you purchase Publishing Partner Professional.

(Editor's Note: We spoke with Brian Sarrazin, Vice President of Sales and Marketing for Soft-Logik at the end of July. He indicated that the copy being sold now including our reviewer's is a "preview" version and that Soft-Logik expects to have a debugged release version of Professional distributed before the end of August. We'll report their progress and publish a full review as soon as the final version is available.) ■

Frank Kliever is an Editor of the San Leandro *California Computer Club Newsletter*.

Products Mentioned

Publishing Partner, \$89.95; **Publishing Partner Professional**, \$199.95. Soft-Logik Corp., P.O. Box 290071, St. Louis, MO 63129, (314) 894-8608.
CIRCLE 266 ON READER SERVICE CARD

From the creators of SPECTRUM 512

UNISPEC

\$49.95

UNISPEC is a major enhancement of the past program SPECTRUM 512 which also provided a flexible link with all other Atari ST graphics programs. You can run UNISPEC and almost any other ST program at the same time, switching between them with a single mouse click. When switching in either direction you take your pictures with you. Or just small pieces of them. Or even large pieces that you make small while switching. UNISPEC is a 512 color program, which means that any number of images with different color palettes from different programs can be posted on a single UNISPEC screen. It is if you have a superprogram that combines SPECTRUM 512 colors with the powerful image-creating tools of all other ST programs. Whenever other programs you use: NEOchrome, DEGAS Elite, CAD-3D, Cyber Paint, even Basic and word processors - you'll be able to create beautiful 512-color images. And, that's not all. UNISPEC adds powerful new tools to SPECTRUM 512, as well as enhancements to an existing feature. Now you can rotate images, cut and paste smooth curved pieces of them, create transparent overlays, do precise layout work using SNAP and digital position readouts, and much, much more! And new UNISPEC 1.1 lets you create Spectrum delta animations - hundreds of frames, full 512 colors, real-time playback!

Requires SPECTRUM 512. Requires 1 megabyte of memory to run with most ST programs.

ST CONTROL

\$69.95

Imagine a Basic-like language with commands like "Draw a picture with Neochrome" or "Type text with First Word". In other words, a universal language that unlocks the power of all the specialized programs that you have. That's what ST Control is. In effect, it's a language with a set of commands to take as the entire set of functions and features of all ST programs ever written! And yet, ST Control's command set is very simple. The whole idea is based on the obvious fact that you can click any program icon anything it can possibly do by clicking the mouse in the right places and pressing the right keys. And that's the only thing ST Control does - clicking the mouse and pressing keys. So, there's no complex command syntax to learn: if you know how to control a program manually, you already know how to control it with ST Control. Just use ST Control's command that clicks the mouse in the same place as you would click it manually to make your program do whatever you want it to do. And you don't even have to type these commands by hand. ST Control can record any sequence of mouse clicks and keypresses; and then write the appropriate script itself. In addition to commands that click the mouse and press keys, ST Control has the standard set of commands for looping, conditional jumping, and calculation of arbitrary expressions. These are exactly the same as in Basic: FOR-NEXT, IF...GOTO, GOSUB and RETURN, etc. ST Control is a compiled language, which makes it so fast that you can even write real-time menu-driven scripts. The powerful feature: allow you to add new tools to any program you use, by recording arbitrary sequences of existing functions and activating them with a single mouse click or keypress. With ST Control you create your own superprograms using regular programs as building blocks!

Works on any ST, color or monochrome.

Call (617) 964-1673 or send check (add \$5 shipping and handling) to: TRIO Engineering, P.O. Box 332, Swampscott, MA 01907

Massachusetts residents please add 5% sales tax.

Dealer inquiries welcome.

APL.68000

\$99

A HIGHLY OPTIMIZED ASSEMBLER BASED APL INTERPRETER FOR FAST AND POWERFUL PROGRAMS. FEATURES A COMPLETE INTERFACE TO THE ATARI ST ENVIRONMENT WITH PULL-DOWN MENUS, DIALOG AND ALERT BOXES, AND GRAPHICS FACILITIES.

Order direct for \$99 + \$7 shipping, \$10 Canada. VISA/MC/AMEX + 4% NJ res + 6% sales tax.

SPENCER ORGANIZATION, INC.

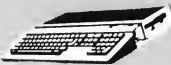
P.O. Box 248 Westwood, N.J. 07675
(201) 666-6011

BUY-SELL-TRADE BUY-SELL-TRADE BUY-SELL-TRADE

Computer Repeats, Inc.

UNBELIEVABLE DEALS EVERYDAY!

Atari 1040ST



\$499
NEW

with trade-in of 520ST CPU (TOS, RF) and SF354 Drive
\$CALL for your system

Products - New

520ST FM CPU	\$25	520ST FM Color Sys	\$819
612K RAM FM Instld	\$249	256K RAM Chips	\$CALL
EZ-RAM II	\$119	Atari SF314 Drive	\$219

SM124 mono Monitor	\$159	SC1224 col. Monitor	\$325
--------------------	-------	---------------------	-------

Supra 20MB ST	\$579	Avatec 1200HC	\$99
Avatec 2400HC	\$179	Supra 2400HC	\$159

Atari SX212 Modem	\$85	Modem cable	\$15
Star NX-1000 144cps	\$189	Star NX-1000 Color	\$249
Star NX-2400 (24 PIN)	\$389	Laser Printers	\$CALL

ALL ORDERS PROCESSED IN 24 HRS!

Supra 20MB Hard Drive



\$485
NEW

with trade-in of SF314 Drive
\$CALL for your system

Atari SC1224



\$269
NEW

with trade-in of SM124 Mono Monitor
\$CALL for your system

Products - Used

520ST Computer	\$335	1040ST Computer	\$585
SM124 mono Monitor	\$119	SC1224 clr. Monitor	\$259
SF314 Drive	\$175	SF354 Drive	\$99

Supra 20MB ST Drive	\$465	Hayes Smartmodem	\$39
Supra 10MB ST Drive	\$419	Diablo 630 Printer	\$249

Cash for your equipment!
Thousands of software & book titles
plus, MUCH, MUCH MORE!

2017 13th Street Suite A
Boulder, CO 80302

Atari 520ST FM



\$325
NEW

with trade-in of 800XL, 1050, 1702 Mon, 1200 Modem
\$CALL for your system

All references to trade-ins assume equipment to be in good working condition. Shipping handling fee above all prices. No additional charge for credit cards or COO. Mail order prices shown.

WE CHECK FOR CREDIT CARD THEFT!

1-303-939-8144

24 HR Modem Software Quotes: 1-303-939-8174



Authorized Dealers for
COMMODORE/AMIGA
and ATARI ST/XT/XE
Computers and Accessories.



VISA MASTERCARD DISCOVER AMERICAN EXPRESS COD

START's Putmaker

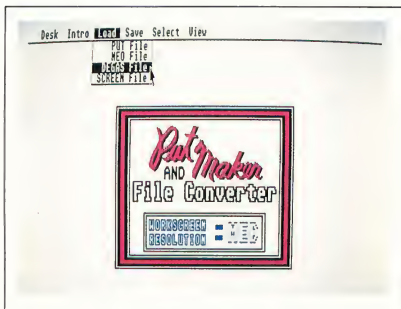
by A. L. Hubbard

Add colorful graphics and title screens to your GFA BASIC programs with PUTMAKER.ARC on your START disk.

This issue's BASIC column brings GFA programmers a simple utility that will dramatically improve the professional look of your programs. It's much easier to use a commercial graphics program like DEGAS or NEOchrome for your artwork than to try to do it in BASIC. Then, with Putmaker, you can clip and save a portion of a medium or low resolution DEGAS or NEO picture and use it in your GFA BASIC programs with a simple PUT command. The graphics file PUTMAKER.PUT used to jazz up Putmaker's title screen is a perfect example.

How It Works

There are two related GFA BASIC commands that let you manipulate a block of graphic screen data and store it as a bit pattern in a string variable. `GET X0,Y0,X1,Y1,AS` reads a rectangle from the screen and stores it in `AS`. `X0` and `Y0` are the coordinates of the upper left hand corner; `X1` and `Y1` are the lower right hand coordinates. `PUT X0,Y0,AS[,mode]` puts the bit pattern back



Putmaker's main screen. A colorful information box makes any program look more interesting and professional and with Putmaker, it only requires three lines of code!

on the screen, with the upper left-hand corner of the block's location specified with `X0` and `Y0`. The optional mode specifies the graphics mode, typically used to specify how the block interacts with the background. (See your GFA BASIC manual for specifics.)

Putmaker will load uncompressed DEGAS images, NEOchrome images, GFA BASIC PUT and SCREEN files. You can define a rectangular area of an image using the GEM-style rubberband box and save it back to disk as a GFA BASIC PUT file for use in your own programs. Finally, you can save a picture

back to disk in any of these formats, making Putmaker a graphics file converter as well!

Running The Program

To run Putmaker, copy the file `PUTMAKER.ARC` and `ARCX.TTP` to a blank disk and un-ARC the file, following the Disk Instructions elsewhere in this issue. Double-click on `PUTMAKER.PRG`, set the screen resolution to that of the picture you wish to clip and load the picture file into the workscreen. Simply "rubber-box" a section of the picture and then save it to disk as a PUT file. ▶

To load the PUT file into your own program, simply *BLOAD* the file into a string and then PUT the bit pattern wherever you want it. For an example of this, this is how Putmaker loads in its own title screen:

```
Mainscreen$=Space$(9926)
P$="PUTMAKER.PUT"
'
' Load main screen put file to
' variable ...
Bload P$,Varptr(Mainscreen$)
'
' ... and Put on main screen.
Put 164,60,Mainscreen$
```

Menu Options

Here's a quick run-down of Putmaker's menu options. Putmaker is definitely user-friendly and needs few directions.

Desk

• About This Program—Copyright and version information.

Intro

• Introduction—A simple reminder of program capabilities.
• QUIT—Exits the program.

Load

• PUT File—Loads a GFA PUT format file.
• NEO File—Loads a NEOchrome format file.
• DEGAS File—Loads a DEGAS format file.
• SCREEN File—Loads a GFA SCREEN format file.

Save

• PUT File—Saves the selected block in GFA PUT format.
• NEO File—Saves a NEOchrome format file.
• DEGAS File—Saves a DEGAS format file.
• SCREEN File—Saves a GFA SCREEN format file.

Putmaker is also a graphics file converter!

Select

• PUT Area—Lets the user select an area of the workspace for a PUT file.
• RESOLUTION—Prompts the user to set the resolution of the workspace.

View

• Selected PUT—Displays the PUT area previously selected.
• WORKSCREEN—Displays the workspace.

Program Take-Apart

The following discussions describe Putmaker's main procedures. To examine or print out the source code, double-click on PUTMAKER.LST from the Desktop. To load it into GFA BASIC, run the GFA BASIC Interpreter, click on Merge and then select PUTMAKER.LST.

PUT_LOAD

Loading a PUT file from disk starts with clearing any previous PUT information in memory. A call to *XBIO\$(5,L:-1,L:-1,W:0)* sets the correct resolution for the workspace. The first two parameters (passed as long words) affect the screen addresses and inform TOS not to modify these functions. The next parameter, a word, is 0 for low resolution; a 1 would change it to medium. *PUT_LOAD* then reserves space for the longest possible PUT string and loads the file from disk with the command *BLOAD*. It then PUTs the file on the workspace and stores the complete screen as the string *WORKSCREEN\$*. After a mouse click, it sets the program colors for the main menu screen and adjusts the resolution.

SCR_LOAD

A screen file contains no resolution or color information and unlike a PUT file, a screen file always takes up a full screen. This makes things very easy; *SCR_LOAD* simply *BLOADs* the file to the screen address *XBIO\$(2)*.

NEO_LOAD

NEOchrome and DEGAS files include color palette information along with picture information in the file. The procedure first opens a channel using the command *OPEN "T";#1, PATH_FILENAME\$*. It then moves to the fifth byte of the file using *SEEK #1,4*; this is where the color information starts. Each color value is stored as a word so it must be read in two bytes at a time, interpreted, and stored in the proper location. The command is *XBIO\$(7,N,Z)*. *XBIO\$(7)* is the GEM routine, *N* is the color number and *Z* is the color value, found by multiplying the high byte by 256 and adding the low byte to the result.

NEOchrome picture information starts at byte 128. To load it at the proper memory location, *NEO_LOAD* loads it to the screen address minus 128, then closes the channel, stores the workspace with *SGET* and exits.

DEG_LOAD

DEGAS pictures may be either low or medium resolution. *EXT\$="PI"+STR\$(RES)* forces the extension to match the workspace resolution. DEGAS color information begins at byte 3 so *DEG_LOAD* uses the command *SEEK #1,2*. The procedure then *BLOADs* the picture information to the screen address minus 34 to display it properly.

PUT_SAVE

Saving information to a disk file is the reverse of the previous processes. The *PUT_SAVE* procedure forces a conventional extension and then saves the PUT data using *BSAVE*.

SCR_SAVE

Saving the work screen string to disk is essentially the same as saving a PUT file; as before, the procedure calls BSAVE and passes it the file name, address and length of the file to save.

NEO_SAVE

NEOchrome pictures require a specific file format. After opening the disk file, NEO_SAVE must print four nulls (CHRS(0)) and the color palette information to it. Next, it saves the rest of the 128-byte header (PRINT#1;STRINGS(920);) and then the picture data (PRINT#1,WORKSCREENS).

DEG_SAVE

The procedure uses the first two bytes to denote the resolution (PRINT#1;CHRS(0);PRINT#1;CHRS(RES-1)); followed by the color information and picture data in the same manner as NEOchrome files.

PUT_SELECT

This is the core of the program. After giving a message to the user, the procedure calls PART_SELECT. This procedure displays the work screen and draws a rubber-band box around an area as long as the left mouse button is held down. It then displays the selected coordinates and gives the user a chance to try again, save the defined PUT block or cancel. ■

A. L. Hubbard is a 41-year-old father of three who tries to find time for a computer hobby which is fast becoming a passion. He is employed as a Technical Supervisor in the television broadcast business in Toronto, Canada.

Product Mentioned

GFA BASIC Ver. 2.0, \$79.95. MichTron,
576 Telegraph, Pontiac, MI 48503,
(313) 334-5700.

CIRCLE 152 ON READER SERVICE CARD

Sometimes Programming with ALICE Can be Dangerous



ALICE: The Personal Pascal makes programming so much fun it will distract you from other things that might need your attention.

• 700 Help Screens

If that doesn't tell you that ALICE is the only system for learning to program, then wait until you see ALICE's syntax directed editor that prompts and makes it impossible for you to make most errors.

• Use GEM Now

Nobody's GEM support comes close. You can write a program with menus or overlapping windows in seconds, not hours.

• Kill Bugs Fast

Use ALICE's Pascal interpreter to debug interactively at the source code level. Breakpoints, single-step, variable tracing - it's all there.

• Have Fun

ALICE's interactive feedback and super features turn programming into the engrossing, enjoyable task it was meant to be. And if programming can't be fun, why bother?

"[ALICE] is all anyone could ask for. I would recommend [it] to anyone who is considering learning Pascal . . . or anyone who wishes to prototype small applications which deal closely with GEM." - ST Informer

"An excellent value." - Antic

"It is about as painless a method of learning Pascal as can be devised short of Hypnosis. It works" - Computer Shopper

"If you enjoy programming languages, this comes pretty darn close to being as much fun as a video game." - Computing Canada

ALICE
The Personal Pascal.

Only \$79.95. (Add \$20 for textbook)
Orders dial: 1-800-265-2782

Looking Glass Software
LOOKING GLASS SOFTWARE

124 King St. N. Waterloo, ON
N2J 2X8 Phone 519/884-7473

Trademarks: Altair ST - Altair; GEM - Digital Research. ALICE refers to ALICE: The Personal Pascal, a trademark of Looking Glass Software. ALICE is also available for the IBM PC for \$95.

ATTENTION ALL READERS!!! CALLING ALL READERS!!!

DO THE BOTTOM OF OUR ADS LOOK EMPTY? WELL, THEY SHOULD. THE READER SERVICE NUMBERS ARE NOW LOCATED ON OUR ADVERTISERS INDEX. KEEP CIRCLING AND KEEP ON LEARNING!

SupraDrive

Atari ST Hard Disk Systems



- High performance hard disk drives for Atari ST and Mega ST computers
- DMA and SCSI connectors for daisy-chaining additional devices
- 20, 30, 45, 60, 120, and 198MB capacities
- Includes these useful utilities:
 - Formatting software that allows dividing the drive into as many as 12 partitions
 - Autobooting directly from the hard disk
- Battery backed-up real-time clock
- Built-in fan



NEW!

SupraDrive FD-10

10MB Removable Floppy

- Uses 10MB removable floppy disks for unlimited storage
- Fast transfer speed and disk access (80ms average access time)
- Reads IBM 360K and 1.2MB floppy disks
- Connects to Atari ST DMA port
- Built-in SCSI and DMA connectors
- Battery backed-up real-time clock
- Useful as primary storage and for hard disk backups and archival data storage

NEW!

MegaDrive

Internal Hard Disk System

- 40MB capacity
- Mounts inside the Atari Mega ST case
- High speed DMA data transfer
- Fast RLL drive — 28ms access time
- Leaves DMA and 68000 port free for other peripherals



Available at your local dealer, or call:

 **Supra Corporation**

1-800-727-8772 (Orders Only) or 503-967-9075
1133 Commercial Way, Albany, OR 97321 USA
Fax: 503-926-9370 Telex: 5106005236 (Supra Corp)

Superbase Professional

A Full-Powered, Programmable Relational Database Manager

by Heidi Brumbaugh
START Programs Editor

In the Winter 1987 issue of START I reviewed Superbase Personal, a relational database manager from Precision Software Ltd. (See that review for an overview of Superbase's interface and basic design.) At the time, I found Superbase to be adequate for some database procedures, exceptional in its user interface but lacking in the flexibility needed for complex database functions.

Precision Software's Superbase line consists of Superbase Personal (now \$79.95), Superbase II and Superbase Professional. Superbase II was not available for review at presstime, but it's basically a down-scaled version of Superbase Professional. It includes a built-in text editor and mail merge facility and is an improvement over the original: it no longer requires two keystrokes to enter data and it has a batch mode so you can enter a number of records rapidly. The records are stored in RAM and are only sent to disk when you're finished.

Other improvements include the ability to define default file paths for data, temporary data storage and the parameters settings file. You can save Update specifications to disk and Superbase now remembers which fields in a file are open. There are also improvements to the data types available; for ex-

ample, you can define a type as a time and perform all sorts of calculations on it. Also, you can set up a field that has multiple values—like an array.

Professional includes all of these changes and adds features that make it

both the Shift key and a function key or the Help key.

Precision's upgrade policy lets you move to more powerful products as your needs increase. You can buy the next product in the family for the differ-

The Forms Editor, a separate program that allows you to generate customized forms.

really soar. The most dramatic improvement is a Database Management Language (DML) that lets you program your Superbase application, customizing it to your own environment. The other major addition is the Forms Editor, a separate program that allows you to generate customized forms. You can also store up to 21 keywords, commands or text for later use by pressing a function key,

ence in retail price, plus \$10. When you upgrade, you can keep your original package.

A Basic DML

The main feature of Superbase Professional is a programming language you can use in your own applications. The Database Management Language is based on BASIC for ease of use. If you're ▶

coming from a dBASE environment, learning DML should be a breeze. DML gives you the power to do everything from creating a file to processing a report. It uses arithmetic and string functions such as INT, SQR, MOD, INSTR, MIDS and the logical operators AND, OR and NOT. Program control statements such as WHILE, .WEND, IF, .THEN, .ELSE and FOR, .NEXT and labels for GOTO and GOSUB help to make longer, structured programs possible.

This language is designed for complete control over your environment. You can create your own alert or dialog boxes or even menu bars. It allows arrays of up to three dimensions. You can open any kind of sequential file and search through it. To execute a program immediately on running Professional, simply name it START.

You can pop into the program or text editor from Professional's main menu screen, and run programs from within Professional. The editor is adequate for the task but not much more than that. Fortunately, you can edit your programs in your own word processor or text editor and import them as ASCII text files.

Here A Form, There A Form

The Superbase Forms Editor is so complex it requires its own separate program. Think of it as a page layout program for forms—you can graphically edit a page of information containing data from Superbase files. You can use this facility in three ways: as a front end to Superbase, as a forms generator and as a reports generator.

The Forms Editor lets you combine fields, text, boxes and lines to produce professional-looking forms just by pointing and clicking where you want objects to go. You can use an array of colors, fill patterns, line thicknesses, point sizes and styles to produce a form or report. The program comes with GDOS, so you can use multiple fonts in your reports. You can also load a picture

You can type your letters directly into the text editor and then merge them with a database.

into a form, clip a block of it and move it anywhere in the page. If you have a digitized copy of your company logo, for example, load it and combine it with text and data for internal company forms.

Using forms as a front end to Professional improves the interface dramatically. You can block out fields you don't need, use text to describe fields in more detail than you can with field names and link fields from multiple files. To further customize data entry, you can even write a short Professional program to monitor the user input and cross-validate data as it is entered.

When Superbase Personal first arrived at the START offices, I intended to use it to coordinate a file of product information with a file of software company information. Personal let me combine the two files into a report, but it wasn't until Professional that I was able to link the two files in the data entry process. You can use the Forms Editor to generate reports with headers, footers, calculations and summing. If you create a report form, the Forms Editor creates a DML program for you to generate the report. This lets you go in and fine-tune the program itself later.

The Superbase Text Editor

Being able to pop in and out of a text editor while using a database manager is a big convenience. You can type your-

self notes, draft letters or memos or simply use the screen as a scratch pad. You can define a Superbase data field as an external text file and then use the text editor to create the text files. This makes it easy to get around Superbase's limitation of 255 characters in a text field.

This is a bare-bones text editor; it doesn't have block copy or search and replace. It does let you set and change margins, delete lines and set text attributes like underline and bold. A major problem with the text editor is that it's slow; it's very easy to outtype it.

How Do I Merge Thee?

Superbase Professional's new built-in mail merge feature saves you the trouble of outputting records to ASCII format and then setting up your word processor's mail merge feature (if it has one) to use your Superbase data. You can type your letters directly into Superbase Professional's text editor or load them as ASCII files. The mail merge feature is very easy to use; you simply type in the names of the fields to use in the mailing, delimiting the fields with ampersands (&). Next, open the relevant text and database files and click on mail merge.

You can also access the mail merge function from the DML, so for more complicated merging operations you could write a program to control the text file contents, database contents and conditions of the merge.

Limitations And Lamentations

As much as I liked the power and flexibility of Superbase Professional, I found three consistent ways to crash the program and experienced a few unexplained program crashes during normal use. I reviewed version 2.03; according to the company they are now selling version 3.0 and some of these bugs have been fixed.

Professional was translated from an IBM environment—and it shows. IBM

programs generally must preserve every byte of RAM—and IBM programmers can safely assume every user has a hard disk. Like many ports, Professional doesn't really take into account that on the ST the opposite situation is more common. The program constantly accesses the disk, since it reads records from a file as it needs them rather than loading the file into memory all at once. Also, the Forms Editor uses the disk as a clipboard for cut-and-paste operations. This problem is made up in part by a feature that lets you set aside a certain amount of RAM to use as a cache buffer.

Professional uses a non-standard file selector box that doesn't let you search through more than one directory or drive for a file. Technically, you can open a file from a different directory by typing in the full file path before the name. However, the program is designed to work with everything in the same directory. On a floppy system this means all of your files should fit on one disk. If they don't, you'll be in for lots of disk swapping and you won't be able to combine two files from separate disks into the same form or report. The program documentation recommends a hard disk. So do I.

I find Professional's single-directory limitation very difficult to work with, even on a hard disk. You must put everything—forms, programs, databases, reports—in the same folder. You can store pictures and text files for external file fields in separate folders, but Professional's system commands (directory, copy, delete) use the same single-directory file selector.

Running On Manual

Superbase Professional comes with two manuals: one for the database manager and text editor and one for the DML and Forms Editor. It also has a large README file on disk that covers enhancements to the program not mentioned in the manual. The documenta-

tion is clear, but occasionally omits information: for example, it doesn't mention that fields must have an index to be linked together in the Forms Editor. Professional comes with an entire disk of sample files, but not all of them are referred to in the manual.

In general, the manuals are good for getting started, but they don't give you much help on sophisticated applications.

Wrapping Up

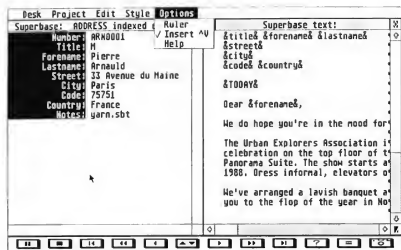
Superbase Professional has some great features, but some features aren't complete. Allowing a field to have multiple contents is a great idea, but you can't really do anything with the secondary field contents from the Forms Editor. The program editor is adequate, but it

load the program anyway, this is very inconvenient.

I urge Precision to abandon their copy-protection philosophy. Professional is simply too powerful and complex a package to use without the manual anyway.

Software With Precision

Precision Incorporated, the UK-based developer and publisher of Superbase, has recently opened offices in Texas and now offers North American distribution and customer support from there. (Previously, Progressive Peripherals and Software was supporting the product in the US.) The Superbase family, which includes versions for the IBM and Amiga, has sold over 130,000 copies, mostly in Europe.



You can pop into the program or text editor from Professional's main menu screen, and run programs from within Professional.

wouldn't let me indent anything. Since I'm a programmer, not being able to indent statements inside loops and multiple-level IF THEN statements was maddening.

Finally, Professional is copy-protected. Following the instructions in the manual on running the program from a backup disk simply will not work; they're superseded by a "Read me first" card that comes in the package. You can install the program on a hard drive, but the original disk must be in one of the disk drives for the program to run. Considering how long it takes to

The latest version of Superbase Professional is 3.0. It offers telecommunications functions, both from the front menu and DML, full transactional browsing (you can link more than one record from the same file in a form), cut and paste in the text and program editor, and program indentation. It will also be able to read dBASE files through version III+. Professional version 2.0 owners can upgrade to 3.0 for \$39.95.

Professional is designed to compete with corporate databases in the IBM market. Although many ST owners will find its price tag of \$349.95 daunting, ▶

THINKWARE

THOUGHTFUL DISTRIBUTION OF MUSIC SOFTWARE

Your one call source for:

Blank Software	Graphic Notes	Midmouse Music	Primera Software
Coda Music Software	Great Wave Software	Midsoft Corp.	Resonate
CMS	Hybrid Arts	Jim Miller	Sound Quest
Digital Music Services	Intelligent Music	Opcode	Take Note Software
Dr. T's Music Software	Lyre	The Other Guys	Twelve Tone Systems
Drumware	Magnetic Music	Passport	Turtle Beach

- ★ Newest Releases
 - ★ Competitive Prices
 - ★ Best Selection
 - ★ Knowledgeable Sales Staff
- GUARANTEED SAME DAY SHIPPING**

SIZZLERS

Introducing
The Program That Performs Your Pictures

MidiDraw™

New MIDI Software for the Atari ST™ lets you compose and perform music by drawing on the Atari screen. Suggested List Price...\$95.



Intelligent Music®

K1 DRUMWARE

Ed-Lib

Editor-Librarian

\$119 for Kawai K1/m/r

THINKWARE is a wholesale distributor of music software. Dealers call for dealer pack

FOR THE DEALER NEAREST YOU:

(800) 248-0403

MIDISOFT

CORPORATION

THINKWARE
1134 KIRKHAM
SAN FRANCISCO, CA 94122

TAKE NOTE

\$79.95

COMPLETE EAR TRAINING PROGRAM FOR MUSICIANS

MIDISOFT™ STUDIO
64-track professional sequencer for the Atari ST.

Advanced Edition: \$149

16 Exciting New Features Including:

- Midi Event Editing
- Velocity Scaling
- Programable Tempo Changes
- EZ Score + Compatibility

Standard Edition still only \$99

Feature-rich. Affordable.

Review Superbase Professional

the same program on the IBM sells for \$795. Professional is a developer's tool, and Precision hopes to see vertical applications spring up as they have for the dBASE market. (A Superbase run-only package is in the works, but pricing and availability haven't been announced.) Precision offers developers both technical and marketing support.

Because the ST and IBM programs use the same file types, ST users will have access to IBM Professional programs and files; ST vertical application developers will be able to market their product for both machines. The company also plans to port their product to Windows and Unix. Precision is finishing up a book on Superbase Personal and is planning a programmers guide.

Customer support services for registered owners includes free premium technical support for 90 days after you purchase the product, a quarterly newsletter and access to a Superbase bulletin board (OSIN).

Conclusion

When you consider an application that you use every day, little things really do make a big difference. I commend Precision for their changes; Superbase II and Professional's improvements over Superbase Personal are strong indicators of Precision's commitment to improving their products.

With Superbase Professional, Precision has increased the power of the program a thousandfold without sacrificing one iota of the ease of use that made the program so attractive in the first place. Complaints aside, Superbase Professional is the relational database manager for the ST. ■

Products Mentioned

Superbase Personal, \$79.95; Superbase II, \$149.95; Superbase Professional version 3.0, \$349.95. Precision Incorporated, 8404 Sterling St., Suite A, Irving, TX 75063, (214) 929-4888.

DotPlotter
available now!

Drafix 1. Turn your ST into a powerful CAD tool for just \$195.

The first serious CAD package for the ST.

Drafix 1 is loaded with drawing, designing and editing functions that Atari users have never seen before.

- Unlimited zooms and pans for extremely detailed work.
- Draw lines, arcs, circles, pointmarkers, polygons and ellipses. Select any of 16 pens, 256 layers, 8 line types, 32 point marker types, 14 cross hatch patterns and solid fill for tremendous design versatility.
- Flexible automatic dimensioning of lines, angles and arcs in the alignment that's best adapted to your workstyle.
- Draw in English or metric units.
- Automatic calculation of areas and perimeters.
- Precise positioning using snap modes.
- Use ortho lock to draw vertical, horizontal or normal lines.
- Keyboard input optional in absolute, relative and polar coordinates allows you to draw to the precision of 0.000001 accuracy.

— Powerful editing function that lets you stretch, shorten, trim, bevel, round and fillet, erase, unerase and more.

- Transform and copy commands allow copying, moving, rotating and alignment of items. Mirror objects about any axis and merge drawings together for true computerized cut and paste.
- Plus many more features that can usually be found only on sophisticated packages costing \$2,000-\$3,000.

Yet with all of its power, Drafix is one of the easiest software packages you'll ever use.

A breakthrough in screen design and user interface.

Drafix 1 features a second generation user interface—the Dynamic Screen Menuing System. This means all of the menus are visible at all times—there's no need to memorize menu hierarchies.

A "roll down" menu automatically appears to display all of the available options and a single keystroke or pointer device let's you make your selection "on the fly."

Its powerful features and ease of use makes Drafix 1 ideal for everyone from the hobbyist or student designing a simple room layout to the top design engineers at NASA.

New options available now!

- DotPlotter
 - Provides hi-resolution output to dot matrix and laser printers
- General Symbols Library
- Professional Symbols Libraries

Proven CAD software for only \$195.

Although Drafix 1 is newly available for the Atari ST it's been around long enough to be described by PC Magazine and others as "The best CAD buy in town" with "Incredible performance for the price."

Turn your ST into a powerful CAD tool. Use our toll-free number to order Drafix today.

Pointer prompts display current mouse or digitizer button functions for ease of use.

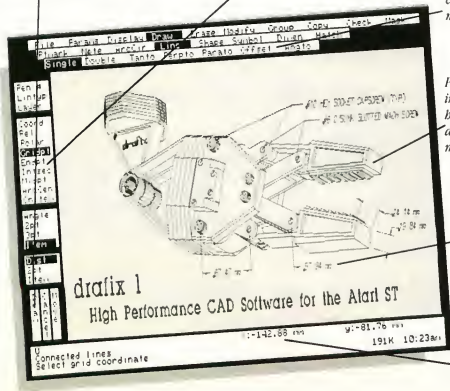
Item attributes, component and grid snaps can be selected "on the fly" for speed and accuracy.

Menus remain visible continuously to eliminate memorization.

Powerful drawing functions include arcs, ellipses, cross-hatching, solid fill, parallel and perpendicular lines and many others.

Flexible, automatic dimensioning system is powerful, easy-to-use and adaptable to your work style.

Message center displays step-by-step instructions and other useful status information.



DRAFIX 1 CAD ONLY \$195

Call for the name of your local Drafix dealer or place your toll-free order today.

1-800-231-8574

Visa, MasterCard or **ext. 950**
American Express welcome.

30-day money back guarantee
if you're not completely satisfied.

FORESIGHT
RESOURCES CORP.

10725 Ambassador Drive
Kansas City, MO 64153 (816) 891-1040

Dealers, contact us direct or call one of these distributors:

Horizon Computers/Denver, CO/
1-800-223-2487 ext. 133

IMSI/San Rafael, CA/1-800-222-4723

(In Calif. call 1-800-562-4723)

Kenfil Distribution/Van Nuys, CA/
1-800-662-0505

Micro-D/Santa Ana, CA/1-800-MICROD1

NEW ST!
for the

STAR QUAKE

It's a rogue planet. It's unstable. It's BIG. It's *very dangerous*—populated by strange and evil creatures whose sole purpose is to get rid of YOU! Hey, but you knew that when you volunteered. You were the best BLOB (Biologically Operated Being) controller in the Academy. If you can't do it, nobody can.

Get to it! *Every second counts.* Quick—Survey the planet. Identify the missing core elements. Fight your way through those 500 caverns filled with the most sinister, bouncing, cutting, shooting, spinning creatures this side of the Madgelein cluster. Locate and deliver those missing elements to the planet's core before it folds in on itself, dragging everything you know into the cold, timeless abyss of non-space. If you don't make it, you're *history*. But if you do, you'll be hopping stars in a gleaming Mallian cruiser, living the life you've only *dreamed* about!

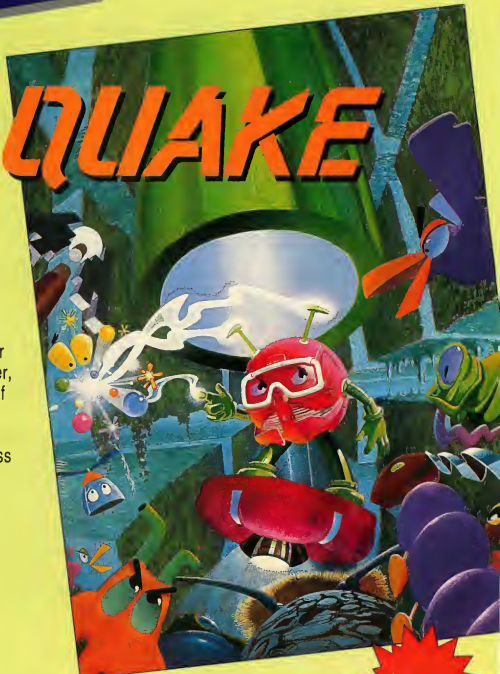
- Fast action arcade-style play.
- 500 action packed screens. A new, creative challenge game after game.
- Choose from four different musical scores.
- Terrific animations.
- Save scores to disk.

STAR QUAKE

Exciting To The Core!

*The Best Selling Action Packed
Game in England*

\$29⁹⁵



Also New from Terrific Software!

ALL ABOARD!

The Microgauge Train Set



It's a fantastic toy train set. Just like the one Dad got you for Christmas. Only this time *you'll* get to play with it.

Boot up All Aboard and design your own track layouts. Add tunnels, switches and scenery. Ready for trains? Choose the Black Cloud, the Red Devil or the streamlined Greased Lightening— or create your own. You might prefer to send a couple of trolleys around your route. Make sure you get those schedules right. You don't want any wrecks do you?

- Comes with pre-designed track layouts and trains, or
- Design your own with the All Aboard editor
- Detailed scenery for all seasons

Participate in Terrific's Casey Jones contest. Best track layout and engine design wins an HO train set. See product package for details.

\$24⁹⁵

TERRIFIC SOFTWARE

Look for these fine games at your favorite store.

800-234-7001

544 Second Street
San Francisco, CA 94107

MIDI

REVIEWS

PROJECTS

BASICS

Make the Most of your ST's MIDI port-

It's easier than ever with some help from Electronic Musician magazine.

Whether you're a computer enthusiast or an enthusiastic musician, *Electronic Musician* magazine is your complete guide to the new technology that links the world of computers with the world of music.



Every month, *Electronic Musician* de-mystifies musical electronics with articles on MIDI, microcomputers, recording, software - and of course, the instruments themselves: keyboards, guitar controllers, and electronic percussion. Special features of interest to Atari ST owners are often included, such as program listings, software reviews and special tips.

FREE ISSUE: send today to receive a free issue and to reserve your introductory subscription at the special rate of \$11/year (outside US and Canada add \$15).

Use the attached card or write to:
Electronic Musician
6400 Hollis St. #12
Emeryville, CA 94608

1-800-FOR-MIDI

THE FIRST AND STILL THE BEST!

MIDITRAX™



The Professional MIDI Sequence Library.

HIGH QUALITY, LOW COST SEQUENCES
TO SAVE YOU TIME AND EFFORT.
FOR ALL POPULAR SEQUENCERS
AND SOFTWARE

10 SONG VOLUME ... \$59.95

SEND \$4 FOR DEMO CASSETTE!

— SEND FOR FREE CATALOG —



(800) 367-6434 or (702) 826-6434
900 W. FIRST ST. - P.O. BOX 1090 - RENO, NV 89504
MasterCard and Visa Accepted

OMNIFRES

RUN LOW AND MEDIUM RESOLUTION PROGRAMS ON MONOCHROME
HIGH RESOLUTION PROGRAMS ON COLOR MONITORS OR TV

THE INDISPENSABLE UTILITY
FOR ALL ATARI ST OWNERS!

FOR MONOCHROME SYSTEMS!

Run the most popular COLOR-ONLY programs on your ATARI SM124 or SM125 monochrome monitor.

COLOR EMULATION FEATURES:

- 3 DISPLAY MODES, FULL SCREEN WITH 16 GREY SHADES, 1/2 SCREEN WITH 4 GREY SHADES, & A SPECIAL TURBO MODE THAT ACTUALLY RUNS MANY PROGRAMS FASTER ON THE MONOCHROME MONITOR THAN THEY DO ON A COLOR SYSTEM (DUE TO THE FASTER MONOCHROME VIDEO CLOCK!)

FOR COLOR SYSTEMS!

Run the most popular MONOCHROME-ONLY programs on your ATARI SC1224 (and compatible) color monitor.

MONO EMULATION FEATURES:

- 3 DISPLAY EMULATION MODES, 640x400 'SCALED', 640x400 'DITHERED' AND A 640x200 'DOUBLE-LENGTH & GREEN WITH THE REMARKABLE ABILITY TO SCROLL UP AND DOWN THE PAGE USING THE MOUSE! -USER SELECTABLE MONOCHROME DISPLAY COLOR.

- AUTOMATIC STARTUP, EASILY INSTALLABLE ON YOUR OWN DISKS.
- SUPPORTS GEM & TOS (ETC.) PROGRAMS.
- WRITTEN IN 100% MACHINE LANGUAGE FOR OPTIMUM PERFORMANCE.
- COMPATIBLE WITH 520, 1040 AND MEGA ST, INCLUDING NEW BITTER ROMS!
- NEW VERSION NOW COMPATIBLE WITH NORTH AMERICAN & GERMAN STs.

Works with virtually ALL programs, even copy-protected titles!
Discover for yourself why reviewers call Omnifres 'A MIRACLE'!

Only \$34.95

Price shown is in US. Canadian Price \$46.95. All orders add \$5 for shipping and handling. Payment by certified cheque, money order, VISA MASTERCARD and American Express. No personal cheques accepted.

Ph 604-942-5477
FAX 604-941-9358

HYPERTEK/SILICON SPRINGS DEVELOPMENT CORP
205-2571 Shughnessy Street
Port Coquitlam, B.C. CANADA
V3C 3G3



ABBY'S

DISCOUNT SOFTWARE

ATARI ST TOP HITS

Starglider II	\$ 32.95	Global Commander	\$ 29.95	Auto Duel	\$ 32.95
Laser "C"	\$149.95	Marble Madness	\$ 26.95	Ultima IV	\$ 39.95
Jet	\$ 37.95	Zany Golf	\$ 29.95	Mark Williams "C"	\$129.00
Typhon Thompson	\$ 25.95	Chessmaster 2000	\$ 32.95	Oilbaritor	\$ 25.95
Scrapules	\$ 29.95	Mavis Beacon Teaches Typing	\$ 35.95	Police Quest	\$ 32.95
First Word Plus	\$ 74.95	Advanced Dungeon & Dragons: Heroes of the Lance®	29.95	Certificate Maker	\$ 25.95
L.B. Golf Double Pak	\$ 18.95	Phantasia 1, 2 or 3	each \$ 25.00	Flight Simulator II	\$ 35.95
Road Runner	\$ 37.95	Questrom II	\$ 32.95	Dark Castle	\$ 29.95
P.C. Board Designer	\$135.00	Dive Bomber	\$ 25.95	Word Writer ST	\$ 54.00
Tesla Drive	\$ 27.80	Metro Cross	\$ 18.00	Desktop Publisher	\$ 89.00
Cyber Studio W/Cad 3D	\$ 60.00	Winter Games	\$ 14.00	Star Trek: The Rebel Universe	\$ 25.00
Copy II ST	\$ 26.00	Word Up	\$ 52.95	Print Master Plus	\$ 25.95
Bard's Tale	\$ 32.00	Breach	\$ 25.95	Word Perfect	\$269.00
Empire	\$ 32.00				

WE CARRY A COMPLETE LINE OF SOFTWARE & ACCESSORIES — CALL FOR CURRENT PRICES

ACCESSORIES		DUST COVERS		RIBBONS	
Supra 20/30/60 Meg Drives	CALL	520 ST Computer	\$ 8.00	SMM 804	\$ 7.50
IB 5 1/4" Drive	CALL	520 STFM/1040 ST Computer	\$ 8.00	Star SG10X, SG10	\$ 2.50
Internal GTS 100	CALL	SF 354/314 Disk Drive	\$ 7.00	Star NX/IN/FP10	\$ 7.50
Practical Solutions:		SC 124 Monitor	\$10.00	Star NX 1000, 100R	\$ 6.00
Video Key	\$ 99.00	SM 124 Monitor	\$10.00	Star NX 100 Rainbow & Color	\$ 9.00
Mouse Master	\$ 35.00	Okimate 10/20 Printer	\$ 9.00	Panasonic 1080/90/81/82	\$ 8.00
Monitor Master	\$ 44.00	Star 10" Printers	\$ 9.00	Nec 8023, C/TH 8510	\$ 5.00
Drive Master	\$ 44.00	Panasonic 10" Printer	\$ 9.00	Epson MX/RX/F 70, 80, 85	\$ 5.00
Terrific Corp:		Mouse House (Mille or Mac)	\$ 9.00	Epson EBX800/1000, LQ 2500	\$10.95
E Z Ram II	\$109.00	Mouse Mat	\$ 6.50	Okimate 10/20	\$ 4.50
		Fire Rate Control	\$ 4.95		

Order Line
1-800-282-0333



10 a.m.-8 p.m. Monday-Thursday
10 a.m.-6 p.m. Friday
10 a.m. to 3 p.m. Saturday

11 S. Wright Avenue, Fairborn, OH 45324

Customer Service
& Ohio Residents
1-513-879-9699

AD #AST118



SOFTWARE ONLY — Prepaid orders over \$60 receive free shipping via UPS in continental U.S. Please add \$3 orders under \$60. HARDWARE and all orders requiring shipment via U.S. Post Office are subject to additional freight charges. C.O.D. orders under \$100.00 accepted + add \$8. Charge card orders add \$2 service charge. Ohio residents add 6% sales tax. Personal cheques requiring a three-week waiting period. No waiting when paid by credit card, certified check or money order. All items subject to availability and price change. PLEASE CITE AD NUMBER WHEN ORDERING. ALL RETURNS MUST BE ACCOMPANIED BY AN AUTHORIZATION NUMBER. FOR YOUR PROTECTION WE CHECK FOR CREDIT CARD FRAUD.



Lotus and dBASE Files for Your ST

by Gregg Pearlman
START Assistant Editor

When professionals use spreadsheets, chances are that they use Lotus 1-2-3 on an IBM PC. But since Microsoft hasn't ported Lotus over to the Atari ST, the first question asked about a new ST spreadsheet is always, "Can you use it with Lotus 1-2-3 files?" The answer is "yes" for VIP Professional from ISD Marketing and LDW Power from Logical Design Works. The advantage of 1-2-3 compatibility is that IBM software areas in online services such as CompuServe and GENie offer a wealth of templates you can use immediately with LDW Power and VIP Professional.

On CompuServe, typing GO LOTUS from any "@" prompt brings up a menu for The World of Lotus.

Option 6 brings you to the LOTUSA menu, from which you choose download library 4—1-2-3 Utilities. Now choose option 1 to BROWSE through the files. Since VIP Professional can use Lotus templates with a WKS filename extender, enter WKS at the keyword prompt. LDW Power can also use .WK1 files, so enter WK1 or WKS.

Among the goodies available in this library are: TYMADD.ARC, TYSPEC.ARC and TESTTI.ARC. TYMADD.ARC is a .WK1 worksheet that does clock arithmetic, adding and

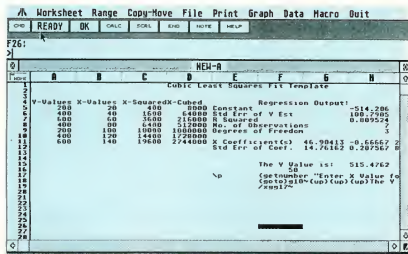


Figure 1: Numerous Lotus templates are available online for just the cost of the download time. This is a scientific template from SCITEMP.ARC on GENie.

subtracting hours and minutes (or minutes and seconds) in decimal format; this can be a true time-saver—in more ways than one! TYSPEC.ARC is also a .WK1 worksheet that simplifies copy preparation for typesetting and TESTTI.ARC is a .WK1 benchmark speed test that tracks the time your system needs to save and retrieve 1.5 megabytes of data.

In download library 8 (business applications), you'll find, among others, CPATOO.ARC, PAYROL.ARC and RENTAL.ARC. CPATOO.ARC is a set of .WK1 accounting templates that includes a tax planner, a client database and a Z-score analyzer. PAYROL.ARC is a macro-automated payroll worksheet

(WK1) featuring automatic calculation of FICA and Federal Taxes. RENTAL.ARC provides a complete template set for keeping records of rental property; it also includes a function that lets you print monthly statements of the balance sheet. It's compatible with WKS format, so you may have to convert it.

If you want WKS files, try TIMMAN.WKS or GLWKS. It's a complete time and billing system that maintains records of employee hours and produces client progress reports. GLWKS is the complete General Ledger model found in Lotus Magazine. If you're looking for a complete spreadsheet-based accounting system, GLWKS may be just the thing for you. ▶

If your online service of choice is Genie, just type "m617" - move to page 617-which brings you to the IBM PC Software Library. Choose option 3, Applications. From the Applications Library menu, choose option 3 again to search the file directory, using "Lotus" as a keyword. Among the Lotus-compatible files we found were 123LOAN.ARC, AMORTIZE.ARC, SCITEMPARC and 123BOWL.ARC. 123LOAN.ARC is a simple interest and payment calculator and AMORTIZE.ARC is a loan amortization worksheet. SCITEMPARC is a specialized set of scientific templates that would be of interest to those who use this issue's ST SciPlot. And to keep track of those times away from your ST, there's even a bowling league template: 123BOWL.ARC.

DBASE Files

In the database area, we again run into the "IBM/industry standard" roadblock. Currently, dBASE III+ seems to be the standard, but dBMAN for the Atari ST is almost 100% compatible with dBASE III+. Again, CompuServe and Genie are excellent sources for downloadable database forms.

On CompuServe, type GO IBMSW for the IBM Software Forum. Choose download library 3, General Utilities, and BROWse, using "dBASE" as a keyword. There for the downloading are LSRT23.ARC (LSORT) and CMGR.ARC. LSORT is a general purpose sort and merge program that sorts dBASE files and fixed and variable record size files. It even allows you to use your own subroutines. Contact Manager (CMGR.ARC) may be one of the most valuable programs to the businessperson. It lets you keep complete records on all business contacts, so that you'll be on top of things for that next telephone call or business meeting.

In download library 5, DBMS/Ac-counting, you'll find: DBMENU.PRG, MENUGE.ARC, LSTDB3.PRG, TELIST.ARC and PTOOLS.ARC.

You'll save yourself hours of time by spending just a few minutes online.

DBMENU.PRG is a menu routine you can customize for your own applications and use with either full-blown command files or just to access selected dBASE functions. MENUGE.PRG is also a menu generating program; it generates main menu and submenu command files for you. To make dBASE file structures accessible, LSTDB3.PRG is available to write the structure of specified .DBF files to an editable text file. At the other end of the spectrum, TELIST.ARC is a simple address and telephone database. Finally, PTOOLS.ARC is a set of over 30 Turbo Pascal routines that can be accessed from dBASE III through the LOAD and CALL commands.

In download library 12, Desktop/ Shells, we found TICKLE.ARC, an "alarm calendar" that reminds you of important events or tasks. ("Kind of a computerized spouse," the blurb said.) It works best on computers with a hard disk and clock/calendar.

On Genie, in the IBM PC Software Library, use dBASE as your keyword. Among other things, you'll find DBCONV11.ARC, DOLLARS.ARC, HOMEINV.ARC and DRUGS.ARC. DBCONV11.ARC converts dBASE II files to dBASE III and vice versa. DOLLARS.PRG is a quick routine that converts dollar amounts to words. HOMEINV.ARC is just the thing to record a room-by-room home inventory. And from the generally useful to the very specialized: DRUGS.ARC is an ambulance drug-tracking program.

There are far more dBASE III+ and Lotus 1-2-3 files available than I've mentioned here. If you find a template or form that will fill your needs and have the ST program that can use it, you'll save yourself hours of time by spending just a few minutes online.

(Editor's Note: If you find any files that are especially useful or that you think would be of interest to START's readers, just drop us a line. We'll be happy to pass on any information that would help our readers. Be sure include the name of the file, its applicability and where you found it. Thanks. ■

Products Mentioned

LDW Power, \$149.95. Logical Design Works, Inc., 780 Montague Expressway, #403, San Jose, CA 95131, (408) 435-1445.

CIRCLE 210 ON READER SERVICE CARD

VIP Professional, \$249.95. ISD Marketing, 2651 John Street, Unit 3, Markham Industrial Park, Markham, Ontario, Canada L3R 6G4, (416) 479-1880.

CIRCLE 211 ON READER SERVICE CARD

dbMAN 5.0, \$249.95; **Greased Lightning pseudo-compiler**, \$99.95. Ver-sasoft, 4340 Almaden Expressway #250, San Jose, CA 95118, (408) 723-9044.

CIRCLE 212 ON READER SERVICE CARD

Online Services Mentioned

CompuServe, CompuServe, Inc., 5000 Arlington Centre Blvd., P.O. Box 20212, Columbus, OH 43220, (614) 457-0802; (800) 848-8190.

CIRCLE 213 ON READER SERVICE CARD

Genie, General Electric Network for Information Exchange, General Electric Information Services Co., 401 N. Washington Street, Rockville, MD 20850, (800) 638-9636.

Ships, Planes, Strategy and Scrabble

This issue we present new ST entertainment programs: two futuristic strategy/action games with military themes and a computer version of a classic board game.

CARRIER COMMAND

by Scot Tumlin

Carrier Command, Rainbird Software's latest release, is the most complicated simulation I've ever played. It's also the best.

The game's scenario is complex: scientists have found a series of islands with volcanoes which they plan to tap as an energy source. Assisting them in this plan are two super carriers—the ACC Epsilon (under your command) and the ACC Omega (droid controlled). These vessels will then populate the islands with Control Center Builders (C.C.B.'s), which will construct buildings, collect raw materials and defend the islands.

The two carriers start at each end of the island chain and begin to work their way to the center when disaster strikes. A terrorist group has programmed the Omega to destroy each island one by one. Your mission is to gain control of



Carrier Command, Rainbird Software's latest release, is a complex futuristic simulation with great hardware.

each island and stop the ACC Omega, using every weapon at your disposal.

Your goal in Carrier Command is threefold: you must master the carrier's weapons and successfully engage the enemy's air and ground forces; use strategy to control the islands and battle the ACC Omega head-on—the greatest challenge in the game.

Island Strategy

The islands play an important part in Carrier Command. There are five types: base, resource, factory, stockpile and

defensive, and two base islands, one at each end of the island chain. Each carrier is at a base island when the game begins. The resource islands produce the raw materials used to manufacture equipment for the carrier. The factory islands create the equipment from the raw materials shipped from resource islands. The stockpiles island store the equipment which is then ferried to the carriers as needed. The defensive islands defend the other islands from enemy attack. The islands are connected by a network of transport routes ▶

used to move materials and equipment between them.

For example, if a resource island is connected to a factory island then raw materials from the first will be shipped to the second island and equipment will be produced. If during game play that network link is broken, then the raw materials won't make it to the factory island and your carrier's equipment and stores won't get replaced. As your network grows you'll find that some islands do not directly connect to others. Locating an island that connects both solves this problem.

Screen Display

Onscreen, the Epsilon's operations are broken down into five sections, each represented by an icon. Another series of icons let you control different functions depending on which section you're in. The screen also displays radar, radar controls and carrier status information. The center of the screen displays a forward first-person view from whatever craft you select—your carrier, fighter planes or tanks, described below.

The first section lets you pilot the carrier, plot courses, check damage control and monitor your supply stores. The latter lets you decide which of the carrier's support equipment you should produce first.

The second section controls the carrier's weapons systems, such as your laser turret, flares (to deflect enemy missiles), defensive drones and surface-to-surface missiles. Before you fire a missile the carrier launches a viewing drone that shows a bird's-eye-view of the carrier and any enemy targets in the area.

Completing your carrier's defenses are the Manta, an attack jet, and the Walrus, an amphibious assault tank. The Manta can engage enemy aircraft bomb ground targets; the Walrus can destroy ground-based targets and deliver cargo pods (loaded with C.C.B.'s) to islands. Different pods will convert

unoccupied islands to defensive ones, resource ones, etc. You can also deploy Virus bombs, which will convert enemy islands into friendly ones.

ACC Epsilon Vs. ACC Omega

As I said earlier, your greatest challenge in Carrier Command is the final battle with the ACC Omega. Just remember: if you confront the Omega at the beginning of the game, you're toast. The Omega has most of the same equipment you have and will know when you're coming. A hint: both carriers need weapons, which they get from their network. Without a functional network even the most powerful carrier is helpless.

The Game Play

There are many things to do in Carrier Command. Planning your strategy takes time and selecting islands to populate is very important. Certain islands are easier to defend than others. Make sure the islands you pick have network links, otherwise materials and equipment can't move through your network.

Most of the game's controls are fine, but there are a few things that could be improved. For instance, you can control only one Manta or Walrus at a time—the others are on autopilot, and if they get within enemy range they're sitting ducks. It would be nice if you could program autopilot macros that could set course adjustments or patterns like zig-zag, dodge, etc. The macro could also instruct the craft to launch a weapon if engaged by an enemy. (Imagine a macro that instructed a Manta to provide air support as a Walrus under your control lands on an enemy island.)

Carrier Command's manual is thorough but certain sections seem out of order. Flight information about the Manta and Walrus comes before information about weapons fitting and craft navigation. (I lost three Mantas before I realized they had no fuel!) The game uses the "keyword" copy-protection

method, where you're asked to enter a word from a specific place in the manual after you boot the game. Although some might find it annoying, it helps inhibit piracy but still allows you to make backup copies of the disk. Finally, enclosed in the package is a cassette tape with the Carrier Command soundtrack; a nice touch.

Overall, I recommend Carrier Command highly for anyone who takes their simulations seriously. There's a lot to learn and do, but that's what makes it so much fun!

STELLAR CRUSADE

by George Miller

Stellar Crusade is perhaps the most detailed ST strategy game I've seen. It's an exciting struggle for control of a small but vital star cluster. You'll need to combine exploration, economic power and military conquest as part of your overall strategy. It's not enough to simply be a good general; you must also plan well, develop your resources and anticipate your opponents' actions.

The Nuts And Bolts

Stellar Crusade is a two-player game (against either a friend or the computer). The two sides, comprised of The League (always human-controlled) and The People's Holy Republic (controlled by the human player or the computer) have been struggling for decades for control of this portion of the galaxy.

As leader of one of the factions, you must begin by exploring the galaxy in order to colonize the best planets. Your expedition must be properly equipped; each system has different characteristics and you'll need to have the correct supplies.

As your colonies begin to prosper and grow, you'll be making decisions affecting the economics of your side. Should you use surplus materials to develop new factories or mines? Is additional farming needed on some world?

Are your armies strong enough or is more training needed? You'll even be making decisions about what types of ships to build, and how large your armies should be. You are in total control of your forces.

Eventually, the inevitable conflict will erupt. Then you must equip your fleet and launch your Task Force in defense

is that they don't require much in the way of fleet support.

A typical campaign can be divided into three phases; exploration, colonization and, finally, battle. Your campaigns must be well-planned; a haphazard approach will only lead to disappointment and frustration. Expect to spend a considerable amount of time becoming

protected, so you can store it on your hard disk or make a backup copy.

Stellar Crusade is definitely not a beginner's game, but if you're ready for a challenge, it's definitely for you. Expect to spend many hours on each campaign.

You won't finish a campaign in one evening, but who wants a game you can master in one sitting?



Stellar Crusade is a highly detailed ST strategy game. You'll need to combine exploration, economic power and military conquest in your struggle for control of a vital star cluster.

SCRABBLE

by Louise Lanahan

Many people probably don't realize that the Scrabble board game is taken as seriously as chess by many fanatical players. Believe it or not, Scrabble players are nationally ranked, belong to officially sanctioned clubs, play in local and national tournaments and subscribe to newsletters to improve their games. The Scrabble ranking system is also surprisingly similar to the chess ranking system.

Leisure Genius/Electronic Arts' Scrabble should please a broad spectrum of Scrabble board game players, from the beginner up to the advanced player, although an extremely good player may be disappointed. The game has eight levels of play, with level one playing an average score of 200 points (in a two-player game) up to over 400 points at level eight. However, speaking as a nationally-ranked Scrabble player, I find the ST version's scoring system conservative at best.

The Dictionary

Before getting into the actual game play, it's important to discuss the dictionary. Scrabble has a dictionary of 23,000 words, all of which it accesses for play levels five through eight. Interestingly, the lower levels access only *part* of the dictionary, not including some words considered to be obscure such as "all acceptable two-, three- and four-letter words and extensions—some of these ▶

of your system, or even strike out on a bold mission of conquest. Movement of your forces and combat is quite complicated. Several pages in the manual are devoted to it and it's very difficult to master.

Rank And File

There are four military units in Stellar Crusade: Security forces, Light regulars, Heavy regulars and Special Forces.

The Security forces are lightly equipped, mainly reservists and are best used for defenses. The Regulars are the main ground force. They are well-equipped and trained for both defensive and offensive operations. The primary difference between the Light and Heavy regulars is in their equipment.

The Special Forces, as the name implies, are small elite units best used in independent operations. The nice thing

familiar with the game mechanics, not because Stellar Crusade is poorly constructed, but because it's so involved.

Not For Beginners

Stellar Command is not an easy game. You can toggle "reality levels" on or off to add to the realism and uncertainty and select difficulty levels ranging from "pushover" (difficult enough for the first time) to "hideous." The main screen is a map of space surrounding Kiffryn's Cats Cluster. It's an isometric view quite easy to adapt to. Other screens are displayed as needed and all your options are menu-driven, simplifying what might otherwise be an overwhelming task. Often, the computer is available to offer hints as to your course of action.

As in Carrier Command, Stellar Crusade uses the "keyword" method of copy protection. The game is not copy-

words are obscure and unusual!" (the instructions warn).

Anyone seriously interested in Scrabble should learn all 86 two-letter words and take advantage of the full range of the dictionary by playing at level five or above. The Official Scrabble Players Dictionary (OSPD) is an excellent investment; it's \$4.95 in paperback, \$10.95 in hardcover. You'll find it handy for playing real people, too.



Scrabble has eight levels of play, with level one playing on average score of 200 points (in a two-player game) up to over 400 points at level eight.

Rack randomly rearranges the letters on your rack which may help you to see other possible plays. Unfortunately, you can't point and click on these letters and rearrange them at your discretion—an annoying drawback. You can type them in and backspace to remove or rearrange them on another part of the screen, but it would be better to be able to rearrange the large tiles on your rack.

Down. Click at the appropriate places to set your tiles and the word appears instantly with its score. Then a screen prompt asks, "Do you want to try another word?" If you click on Yes, it removes the word and you can try it in a different place or try another word to compare scores. (A complaint: why aren't the buttons labeled Try Again and Play instead of Yes and No? You click on NO when you want to play, which seems strange. Or maybe the question should be "Do you want to play this word?")

If you choose to use the clock, choices of playing times range from 30 seconds per turn up to five minutes per turn, in 30-second increments. Tournaments allow 50 minutes per game, so if you play slowly you can use this to help you learn to speed up your game.

The Display Menu features View Thoughts and View Racks checked. View Thoughts is an interesting tool for getting ideas of what and where to play. Since I don't like seeing the other player's rack I usually disable it at the start of the game, but seeing what choices are made from the other rack could be a good way to learn. You can even have two computer players play one another and observe how they perform.

One thing I don't like is that if you disable View Racks so that you can't see what the other player has, you also don't see what you have while the other player is thinking. And at the higher levels, it can think for a long time. I got out a pencil and paper to record my rack so I could study both it and the board, just as you would in a regular Scrabble game. I'd prefer to just see my own rack still displayed on the screen.

Another thing I'd like to see improved is that after the ST thinks for a while, it suddenly plays, flashes its play on the board and then immediately proceeds to your turn. If you aren't looking at the screen at that moment, you end up searching for the computer's

Getting Wordy

After loading the game, the familiar color-coded board appears. There isn't room on the board to label each square so you should familiarize yourself with what premium each color represents (triple-word score, etc.). If you forget, a pull-down menu can show you Premiums, the Distribution of tiles and the Tile values of each letter; this information is also in the instructions.

Under the Option menu choices are Hint, Pass, Juggle Rack and Change Tiles. Hint will suggest possible plays, which may or may not be helpful. It gave me both good and terrible suggestions, but Hint might give you an idea you had missed or show you an unusual word or position.

Pass is usually used at the end of the game if you cannot play at all. Juggle

Change tiles is useful if your rack is, say, CIQVVZ or EIIUUUV and you can play none of them. You type in which letters you want to exchange, from one to all of them. Another nice feature is a running count of how many tiles you have left displayed in the lower-right-hand corner of the screen throughout the game.

Playing The Game

When you type in a word it appears on the lower right of the screen. You can backspace to change your mind or fix a typing error. If you have a blank tile, you hit Shift when you type what letter you want it to represent, and it will be shown in inverse. A screen prompt asks you to click on the place on the board where you want your word to begin; another screen prompt asks Across or

play on your own time (if you're using the clock). It should just display that information until you click to proceed. The game also plays only "good words," so you can't challenge it, but it will undoubtedly play unusual words that you'll want to look up and learn. (Know what *feu* or *kier* mean?) You can go to the Clock, turn it off, look the word up and turn the clock on, but it would be easier if you could just click to start your turn.

The same problem occurs at the end of the game. You get about a minute to study the board and look it over, but it clears automatically sooner than you might prefer. Again, I think you should click to clear it.

If the game challenges your word, you're on your honor. You can look it up in the OSPD then click on Yes when it asks if you're sure your word is good. The game has a finite (and presumably fixed) dictionary. You could cheat, but how fair (and fun) would that be?

Mincing Words

An extremely good Scrabble player will probably feel that, unless he or she is playing a Cray supercomputer, a top-ranked human being will make a better partner. I don't mean that this version of Scrabble is bad—it'll probably help you come across a new word or two and you don't always have another person to play Scrabble with. Occasionally the clock runs out on the game without the ST having played, whereas you will be able to play something and not waste a turn, even without scanning a dictionary. Although my average is only 350 to 360 points per game (the real experts maintain averages in the 420 to 430 range!), I can beat the game at its top level of play, partly because the clock runs out on it.

Overall, though, The Computer Edition of the Scrabble Brand Crossword Game is a lot of fun, and it should help rabid Scrabble players improve their vocabulary, strategies of play and speed. ■

Cot Tumlin is Direct Mail Sales and Support Supervisor for Antic Software; George Miller is Director of Product Support for MichTron, Inc.; Louise Lanahan is, in her own words, "an old-fashioned housewife" and is a nationally-ranked Scrabble player.

Products Mentioned

Carrier Command, \$44.95. Rainbird Software, distributed by Mediagenic, 3885 Bohannon Drive, Menlo Park, CA 94025, (415) 322-0900.
CIRCLE 150 ON READER SERVICE CARD

Stellar Crusade, \$54.95. SSI, distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404, (415) 571-7171.
CIRCLE 153 ON READER SERVICE CARD

Computer Scrabble, \$39.95. Leisure Genius, distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404, (415) 571-7171.
CIRCLE 155 ON READER SERVICE CARD

PAR 5

W

ESTERN EUROPEAN TOUR

Scenery Disk is so beautiful to fly, you'll want to make it the centerpiece of your Scenery Disk collection! This concludes our guided tour from London to Red Square.

Finally! After months of preparation and careful calculations, we've managed to make our way to Moscow. There's the Kremlin Wall to the left of Red Square.

We'll circle Red Square once in preparation for landing. Map view confirms that we've reached our goal!

subLOGIC Corporation
501 Kempton Road
Channahon, IL 61620
(312) 398-9400 Telex: 206805
ONLINE: 1-800-488-6888

"Find Red Square" Contest!
Find Red Square in Moscow and enter to win a real trip for two to Europe, courtesy of SubLOGIC and TWA! See the SubLOGIC Product Chart at your dealer or write SubLOGIC for complete details and contest rules.

TWA

CircuitMaker II

Iliad Software is proud to present CircuitMaker 2.0 for the Atari ST computer system. CircuitMaker 2.0 provides many enhancements over its predecessor including:

- * **Macro devices:** This gives you the ability to define your own working devices and save them in a library for future use!
- * **Separate windows:** CircuitMaker now shows the circuit and wave forms in separate windows each relocatable on the screen!
- * **More devices:** More devices are included in the standard library including a 32x8 PROM and 1Kx8 RAM!
- * **Enhanced printer support:** More printers are supported, and your drawings can be reduced or enlarged to whatever size you need! If your drawing is larger than one page, CircuitMaker 2.0 will break it up over several pages!
- * **Much, much more!!**

Come in and see CircuitMaker 2.0 today at your local Atari Dealer!!

Only \$149.95

iliad
Software Inc.

P.O. Box 1144
Orem, Utah 84059
(801) 226-3270

WHAT CAN **CRICIT**™ DO FOR YOUR BUSINESS?

CRICIT is an integrated **Cash Register & Inventory Control** package so complete that you can give your old cash register notice! CRICIT ties together many of the facets of running your business. Here's what CRICIT can do for you:

- Complete cash register functions
- Flexible inventory control for 65,500 products
- Daily, period and yearly reporting
- Price/product labels with optional bar code
- Coupon issue and redemption (fixed or % of sale)
- Customized receipts, coupons, inventory and reporting
- Ready-to-mail purchase orders with automatic re-order calculation
- Commission calculation for 15 sales clerks
- Mailing lists in list and label formats
- Lay-aways, auto-discounts, stock searches
- Between-store reporting via modem
- User-friendly error correction and training manual

\$249 U.S. / \$299 CDN

Demo disk is available for \$7 U.S. / \$9 CDN

Nice & Software, Inc.
103 Queen Street S.
Kitchener, Ontario
Canada N2G 1W1
(519) 744-7380

Visa & MasterCard

DATE	FILE	DESCRIPTION	AMOUNT	DEBIT	CREDIT	BALANCE
1	1	1.00	1.00			1.00
2	2	2.00	2.00			3.00
3	3	3.00	3.00			6.00
4	4	4.00	4.00			10.00
5	5	5.00	5.00			15.00
6	6	6.00	6.00			21.00
7	7	7.00	7.00			28.00
8	8	8.00	8.00			36.00
9	9	9.00	9.00			45.00
10	10	10.00	10.00			55.00
11	11	11.00	11.00			66.00
12	12	12.00	12.00			78.00
13	13	13.00	13.00			91.00
14	14	14.00	14.00			105.00
15	15	15.00	15.00			120.00
16	16	16.00	16.00			136.00
17	17	17.00	17.00			153.00
18	18	18.00	18.00			171.00
19	19	19.00	19.00			190.00
20	20	20.00	20.00			210.00
21	21	21.00	21.00			231.00
22	22	22.00	22.00			253.00
23	23	23.00	23.00			276.00
24	24	24.00	24.00			300.00
25	25	25.00	25.00			325.00
26	26	26.00	26.00			351.00
27	27	27.00	27.00			378.00
28	28	28.00	28.00			406.00
29	29	29.00	29.00			435.00
30	30	30.00	30.00			465.00
31	31	31.00	31.00			496.00
32	32	32.00	32.00			528.00
33	33	33.00	33.00			561.00
34	34	34.00	34.00			595.00
35	35	35.00	35.00			630.00
36	36	36.00	36.00			666.00
37	37	37.00	37.00			703.00
38	38	38.00	38.00			741.00
39	39	39.00	39.00			780.00
40	40	40.00	40.00			820.00
41	41	41.00	41.00			861.00
42	42	42.00	42.00			903.00
43	43	43.00	43.00			946.00
44	44	44.00	44.00			990.00
45	45	45.00	45.00			1035.00
46	46	46.00	46.00			1081.00
47	47	47.00	47.00			1128.00
48	48	48.00	48.00			1176.00
49	49	49.00	49.00			1225.00
50	50	50.00	50.00			1275.00
51	51	51.00	51.00			1326.00
52	52	52.00	52.00			1378.00
53	53	53.00	53.00			1431.00
54	54	54.00	54.00			1485.00
55	55	55.00	55.00			1540.00
56	56	56.00	56.00			1596.00
57	57	57.00	57.00			1653.00
58	58	58.00	58.00			1711.00
59	59	59.00	59.00			1770.00
60	60	60.00	60.00			1830.00

Dealer and Distributor Inquiries Welcome

BRAIN STORM HARD DISK SYSTEMS

- * 20, 30, 40, or 60 megabyte hard disk
- * 5.25" 380k PC type or
- * 3.5" 720k floppy disk
- * Real time clock
- * 1200 or 2400 bps modem
- * Monitor A/B switch
- * 4 AC outlets in back
- * AC control in front
- * Surge protector
- * Cooling fan
- * Cables included
- * Software included

FROM
\$745.00



20 megabyte hard disk plus 5.25" or 3.5" floppy disk	\$745.00
30 megabyte hard disk plus 5.25" or 3.5" floppy disk	\$845.00
40 megabyte hard disk plus 5.25" or 3.5" floppy disk	\$995.00
60 megabyte hard disk plus 5.25" or 3.5" floppy disk	\$1145.00
1200 bps internal modem	\$95.00
2400 bps internal modem	\$185.00
Monitor A/B switch	\$65.00

VOID PRODUCTIONS

911 E. PIKE, SUITE 325, SEATTLE, WASHINGTON 98122

206-324-6800

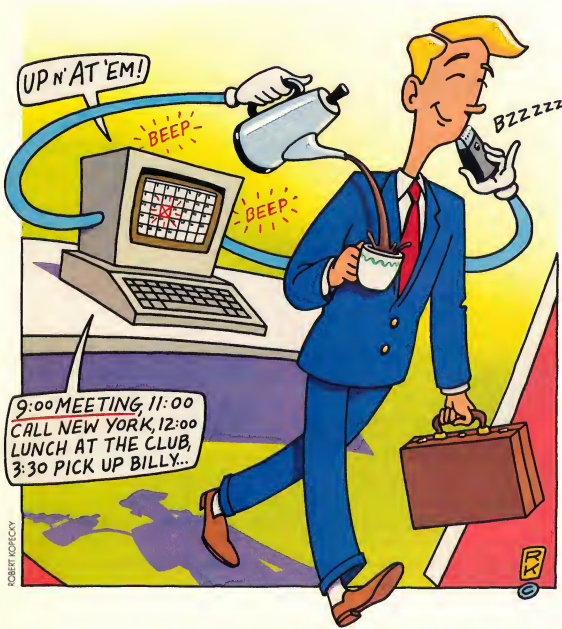
VISA/MASTERCARD ORDERS WELCOME

ON DISK!

PRO CALENDAR

Pro Calendar will keep you from missing those appointments—or losing those to-do lists—because it's a memory-resident Desk Accessory that lets you load and save calendars, set alarms and remember holidays.

by Anthony Barbieri



Let START help you stay on time with CALENDAR.ARC on your START disk! Runs in medium and high resolution.

Pro Calendar is an appointment calendar for your ST. It's also a Desk Accessory, which means you can check your appointments from the Desktop or from within any program that uses the GEM menu bar. You can scroll through calendars by months or years or jump directly to any month from January 1786 to December 32767. (We suggest you call and confirm any doctor's appointment you make for these later years.)

With Pro Calendar, you can enter your appointment schedule and write yourself short reminders or longer to-do lists, then save everything to disk. You can also set 279 (or fewer) alarms—and they'll even ring inside GEM programs! Pro Calendar has 22 major holidays memorized; it already knows, for example, that the fourth Thursday of every November is Thanksgiving. For those times you're away from your ST, you can also print out small, convenient ap- ▶

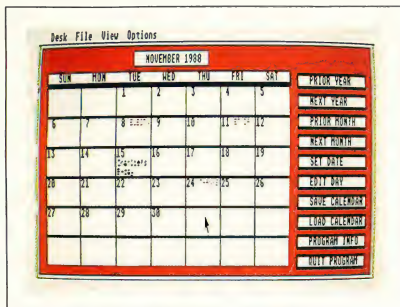


Figure 1. Pro Calendar is a full-screen appointment and reminder calendar. You can generate a calendar for any month between January 1786 and December 32767.

pointment schedules. You can even save a month's calendar in DEGAS picture file format. Pro Calendar runs in medium or high resolution.

Time To Go!

To set up your appointment calendar, copy CALENDAR.ARC and ARCX.TTP onto a blank, formatted disk and UN-ARC CALENDAR.ARC, following the Disk Instructions elsewhere in this issue. Next, copy CALENDAR.ACC into the root directory of your boot disk and reboot your ST. Pro Calendar will read the ST's internal clock and set itself correctly; unless you have a Mega, hard drive with an internal clock or have an add-on ST cartridge or chip clock, you must set your ST's clock to the correct date and time using CONTROL.ACC or any of the public domain time-setting accessories available.

To access Pro Calendar, simply click on Pro Calendar on the Desk menu of the Desktop or any GEM-based program. Pro Calendar will then display a calendar of the current month, such as that shown in Figure 1. On machines with no clock (or if you haven't set your ST's clock), you will most likely see January 2028.

You can move forward or backward through the calendar by month or by year by clicking on PRIOR YEAR, NEXT YEAR, PRIOR MONTH or NEXT

MONTH. Alternately, you can choose a month and year to display directly by clicking on SET DATE.

To load a calendar from disk, simply click on LOAD CALENDAR. Pro Calendar's default filename extender is .CAL, but Pro Calendar will check for invalid file formats so that you may use other extensions. Don't worry about setting the date before loading your calendar; Pro Calendar will automatically display the correct month and year. If you want to make maximum use of Pro Calendar, always load the current month's calendar before moving on to another application. Pro Calendar will then be able to ring any alarms set for that day.

In order to minimize memory usage, Pro Calendar holds only one calendar in memory at a time. Whenever you change calendars, an alert box will warn you that the current calendar will be cleared (and any entries you've made erased) if you continue. Just save your current calendar before moving on by clicking on SAVE CALENDAR. You may even have multiple calendars for the same month, say, one for business appointments and another for personal notes; just save each under a different filename. Pro Calendar will overwrite any calendar file on disk if you save your new calendar with the same filename, so if you want to have two different calendar files, just assign them

different filenames.

Appointments And Reminders

Just like any desk calendar or daybook, Pro Calendar lets you write down your appointment calendar, notes and reminders. To enter appointments or notes, first highlight a date by clicking on its number. Then click on EDIT DAY and a notepad such as shown in Figure 2, will appear. If you have already written yourself a note or reminder for that date, it will appear; otherwise the notepad will be blank. The APPOINTMENTS AND THINGS TO DO area gives you nine text lines for grocery lists, appointments or notes. You can move the text cursor with the mouse or with the cursor control keys and the Tab key will take you to the next line.

If you want to start over, click on CLEAR ALL to empty all the entries in the APPOINTMENTS AND THINGS TO DO area. If you decide not to keep any changes you've made, simply click on Cancel and you will be returned to the main Calendar screen with your original list intact.

The small notepad in the upper right corner labelled REMINDERS is for important notes that you want to appear on the calendar itself. Simply position the cursor in this area with the mouse, cursor keys or Tab key and type in your reminder.

Note that the cursor does not "wrap around" to the next line in either the APPOINTMENTS AND THINGS TO DO or REMINDERS areas. If you have an entry that requires more than a single line of text, you will have to Tab down to the next line when you come to the end of the first line. The Return key has no effect in text entry. To erase individual lines in the appointment or reminder box, position the text cursor on the line and press the Escape key. Once you are satisfied with your entries, click on OK and Pro Calendar will remember your list and reminders and return you to the main screen.

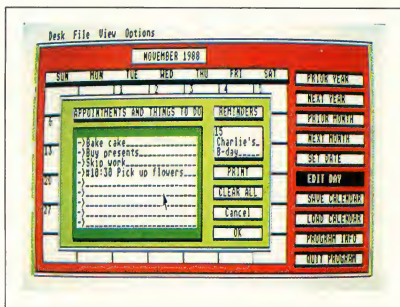
It's Alarming!

You can also set alarms that will ring from the Desktop or while running a GEM program. To set an alarm, type a number sign (#) at the beginning of a line in the APPOINTMENTS AND THINGS TO DO area, then the time in 24-hour format, a space and then the note itself. For example, a note to go shopping at 1:25 PM would be:

#13:25 Time to go shopping!

You can set up to nine alarms for each day of the month. After you set an alarm and return to your host program or the Desktop, Pro Calendar will monitor the system clock to see if it's time for an alarm. You must have the current month's calendar loaded into Pro Calendar and the system clock/calendar must be correct. When an alarm goes off, the monitor bell will ring and, if possible, an alert box will appear on the screen saying "IT'S TIME TO . ." followed by the text of the alarm message.

Figure 2. The notepad lets you post a quick reminder for a certain day or type in up to nine lines of appointments and notes.



Take Me Along

You won't always be sitting at your ST when you need to know your appointments. Pro Calendar will print out a wallet-size reproduction of your APPOINTMENTS AND THINGS TO DO list for you. Just make sure your printer is on-line and then click on PRINT from

the Edit Day screen. The printout consists of the title APPOINTMENTS AND THINGS TO DO, the date and your appointment list surrounded by a box of asterisks.

When you are done making entries, click on OK to return to the main calendar.

I Remember When. . .

You can save your calendar as data for Pro Calendar or save the entire screen as an uncompressed DEGAS image file in the current screen resolution. If you want to save your calendar as an image, be sure you have enough (at least 32K) free space on your disk. Once saved as a DEGAS file, you can load it into most popular drawing programs, edit it, embellish it, stretch it, shrink it and then print it out.

If you choose this to save your calendar as Data, a default disk and filename is provided for you; you need only press the Return key to use them. Otherwise, type the entire path and filename for the calendar. It's good practice to save your calendars before you exit Pro Calendar to the Desktop or enter another program, just in case your other program bombs and locks up the computer. ▶

HOLIDAY

New Year's Day
Martin Luther King Jr. Day
Lincoln's Birthday
St. Valentine's Day
Washington's Birthday
Ash Wednesday
St. Patrick's Day
Good Friday
Passover
Easter Sunday
Mother's Day
Memorial Day
Father's Day
Independence Day
Labor Day
Columbus Day
Halloween
Election Day
Veteran's Day
Thanksgiving
Hanukkah
Christmas Day

OCCURRENCE

January 1
3rd Mon. in January
February 12
February 14
3rd Mon. in February
varies (1988-1993)
March 17
varies (1988-1993)
varies (1987-2010)
2nd Sunday in May
Last Monday in May
3rd Sunday in June
July 4
1st Mon. in Sept.
2nd Mon. in October
October 31
1st Tue. after Mon. in Nov.
November 11
4th Thurs. in Nov.
varies (1988-1993)
December 25

ABBREVIATION

NEW YR.
MLK DAY
LINCOLN
ST. VAL
WASHTON
ASH WED
ST. PAT
GOOD FR
PASSOVR
EASTER
MOM DAY
MEMOR D
DAD DAY
INDEPEND
LABOR D
COLUMBUS
HALOWEN
ELECTN
VET DAY
THANKS
HANUKAH
XMAS

Figure 3. Pro Calendar remembers 22 secular and religious holidays. You can plan around them—or plan for them.

Holidays

Pro Calendar is programmed to remember the religious and secular holidays listed in Figure 3. You should never forget Mother's Day again (your mother will appreciate this). Certain religious holidays, such as Easter and Passover, are not based on our Julian calendar and are only included over the time frame noted.

Customizing Pro Calendar's Source Code

Pro Calendar makes an excellent desk accessory, but there may be times when it's more convenient for you to use it as a stand-alone application. If you have a C compiler with all the standard libraries for GEM, this is easy. First, completely delete these procedures and functions: `int alarm(day, hour, min, textp)`, `display_alarm(al_line)` and `get_rtime(year, month, day, hour, min)`. Next, replace the `main()` procedure with this:

```
main()
{
    appl_init();
    graf_handle(&gl_wchar, &gl_hchar,
    &gl_wbox, &gl_hbox);
    get_date(&curmonth, &curyear);
    resolution = Getrez();
    if (!resolution) /* if in low
    resolution */
        form_alert(1,
        "I3I | Only works in MEDIUM RES
        | or HIGH RES!Abort!");
    else
        build_tree();
        startup();
    }
    appl_exit();
}
```

Finally, compile and link it as a standard program. You must reserve a stack size no smaller than 4K.

Adding Your Own Holidays

For example, to add your birthday as

November 30th, first find the procedure called `ins_holidays(month, year, off)`. Next, find the case statement which corresponds to the number of the month your holiday is in (i.e. 11 for November). After the preset holidays and before the break enter a line in the form:

```
hol_tedloff+ [the date of holiday-1]
| te_ptext=" {7 chars. Max}";
```

our example is:

```
hol_tedloff+29| te_ptext="MY BDAY";
```

You may add as many new holidays as you wish, but if two fall on the same day, only the last one assigned will be shown on the screen.

Here's hoping that you'll never miss an appointment again! ■

Anthony Barbieri is currently a junior Computer Science major at San Jose State University

...Turns Your Atari™ Into A Mac™



"The most exciting product of the [West Coast Computer] show..." - *Infoworld Magazine*

"Probably the most interesting product demonstrated..." - *Jerry Pauriello, Byte Magazine*

"Data Pacific attracted a lot of attention." - *San Francisco Chronicle*

"The best back of 1986." - *Bruce Webster, Byte Magazine*

The Magic Sac...starting at \$149.95 list price.

For further information contact:
or your local Atari dealer.

Data Pacific Inc.
609 East Speer Blvd.
Denver, Colorado 80203 USA
Telephone: (303) 733-8158
Telex: 880366 (DATAPACIFIC)



Data Pacific, Inc.

©1987-88, Data Pacific Inc., all rights reserved.
Trademarks, and registered trademarks listed
are of the respective companies.

Fame and Fortune! Get Your Work Published in START!

The articles you read in START don't grow on trees—they're written by dedicated ST users like you!

We want articles of all kinds: programming tutorials (with accompanying software for our START disks), reviews, news, perspectives and tips on how to get the most out of the ST and Mega computers.

If you want to have your work read by over 75,000 ST owners and be well-paid for it, then submit your best efforts to us!

For a free copy of our author guidelines, write to:

Author Guidelines
START
544 Second Street
San Francisco, CA 94107

Get 2 Free Hours*
Sign-Up Today!



Wise up to nightly savings online with GENIE.TM

“GENIE has opened my eyes to what an online service can do for me. I thought I knew it all until I discovered GENIE's vast array of Special Interest Groups, offering thousands of software files, dynamic bulletin boards, lively discussions and “tips” from the experts. Not to mention services like Comp-u-store Online® shopping service, USA Today Decisionlines and access to Dow Jones News/Retrieval®. And those friendly people at GENIE really give a hoot about being helpful, day or night.

Compare GENIE for selection, services and price, night after night. It will open your eyes too. Only GENIE offers you so much online, for less.”

P.M. Byrd

Services Available	Compare & Save	Pricing**		
		Registration Fee	Monthly Minimum	Non-prime Time Rates 300 baud 1200 baud
Electronic Mail • CB • SIGs/User Groups • Travel • Shopping • Finance • Reference Professional • Leisure • Games • News	GENIE†	\$29.95	None	\$5.00 \$5.00
	CompuServe	\$39.95	None	\$6.00 \$12.50
	Other	\$49.95 \$10.00		\$8.40 \$10.80

*Get 2 Free Hours with Sign-Up.

Still just \$5 per hour. Get online today!

1. Have your major credit card or checking account number ready.
2. Set your modem for local echo (half duplex)—300 or 1200 baud.
3. Dial 1-800-638-8369. When connected, enter HHHH
4. At the U# = prompt enter XJM11753, GENIE then RETURN.

Need help or more information? No modem yet? We can help. In U.S. or Canada call 1-800-638-9636 or write GENIE, 401 N. Washington St., Rockville, MD 20850.



We bring good things to life.

**Basic rates and services in effect 1/30/91 apply in U.S. only. (Non-prime time rates apply Mon.-Fri. 6PM-8AM local time and all day Sat., Sun., and nat'l. holidays. Subject to service availability. Some services offered on GENIE may include additional charges.
†\$10 credit applies. Offer good for 30 days from sign-up.
© 1988 General Electric Company, U.S.A.

ADVERTISERS LIST

This list is provided as a courtesy to our advertisers. START does not guarantee accuracy or comprehensiveness.

	READER SERVICE NO.	PAGE NO.		READER SERVICE NO.	PAGE NO.
ABBY'S	001	90	NAVARONE	022	7,9,11
ALPHA STS/TEMS	003	53	NICE & SOFTWARE	031	98
ANTIC SOFTWARE		80	PRACTICAL SOLUTIONS	058	6,15
ASTRA SYSTEMS	041	40	PROCO PRODUCTS	033	104
AVANT GARDE	006	54	PSYGNOSIS	054	5
ACCUSOFT	063	39	QUIET LION	055	61
BRAD ROTIGEN ENTERPRISES	073	18	RAINBIRD	056	8,27
BRAINSTORM	007	98	THINKWARE	024	78
COMPUTABILITY	005	36	SOFTREK	057	14
COMPUTER CREATIONS	044	68	SOFTWARE DISCOUNTERS	042	67
COMPUTER REPEATS	026	70	SPENCER CORP.	025	70
DATA PACIFIC	008	102	ST PLUS	039	62
DIGITAL VISION	064	68	START		16
DR. T'S MUSIC SOFTWARE	010	48	STERLING CONNECTION	059	40
ELECTRONIC MUSICIAN	046	89	SUBLOGIC	040	97
FORESIGHT RESOURCES	047	79	SUPRA CORP.	060	74
FUTURE MUSIC	048	90	TAITO	061	10
GENIE	049	103	TECHWAY SALES	062	68
HYPERTEK	076	90	TIMEWORKS	028	105
ILIAD SOFTWARE	016	98	TRIO ENGINEERING	029	70
I.S.D. MARKETING	011	1,2			
J & Z SOFTWARE	050	18			
LIONHEART	015	61			
LOOKING GLASS	017	73			
MANX	019	50			
MARS MERCHANDISING	051	40			
MEGAMAX	020	19			
MICHRON	030	8C			
MICROTYME	071	26			
MINDSCAPE	052	12			

Don't Forget!

Advertising Deadlines for the January 1989 Issue

On Sale: December 1, 1988

Insertions: October 3, 1988

Artwork: October 10, 1988

ProCopy ST BACKUP UTILITY

You can't backup your software because copy protection locks you out. **ProCopy** is the key!

- Protects against the accidental loss of expensive software
- Works with all Atari STs
- Copies both S/S & D/S disks
- Use with 1 or 2 disk drives
- Not copy protected
- **FREE** shipping and handling
- **TOLL-FREE** telephone number
- Updates are only \$12 with return
- Orders shipped same day
- Disk analyze function included

Dealer
Inquiries
Welcome



and C.O.D.
orders

\$34.95

Call (800) 843-1223
Send check for \$34.95 (overseas add \$2.00 for air mail) to:

PROCO PRODUCTS

P.O. BOX 665, CHEPACHET, RHODE ISLAND 02814 USA
(401) 568-8459

Available
Internationally
in Europe
and
Australasia

THE MOVING FINGER CO.
Building 2
Sharnock Quay
Southampton, SO1-1QL
England
Tel. 0703-227274

TECH-SOFT
COMPUTER WHOLESALE
324 Stirling Highway
Claremont
Western Australia 6010
Tel. 09-385-1885

Get A Complete

#1 GUIDE TO THE ATARI ST
START

Call

800-234-7001

(6 am to 6 pm Monday through Friday PST)

Get the disk in
your hands fast!

Ask for
SDSI188

For same
day service
ask for the
disk desk.



For Atari, 1040, and Mega ST Computers:

Includes
• A Money Back Guarantee
• Free Customer Technical Support

New!

PUBLISH IT IN LESS THAN AN HOUR!

Introducing The... TImeworks Desktop Publisher ST™

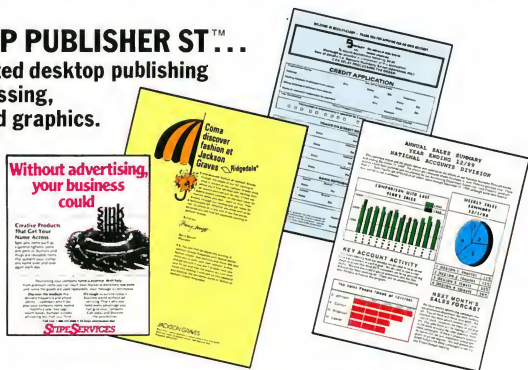
A full-featured, fully integrated desktop publishing powerhouse with word processing, page layout, typesetting, and graphics.

Even if you have no design skills or publishing experience, you can get results in less than an hour with THE TImeworks Desktop Publisher ST!

For all its state-of-the-art ability, PUBLISHER ST is incredibly easy to learn—refreshingly so. PUBLISHER ST combines the familiar GEM User Interface, our Quick-Start Mini-Manual, a full complement of Help Screens, and the practical WYSIWYG (What-You-See-Is-What-You-Get) display—all designed to get you up and running in less than one hour!

SPECIAL FEATURES

- **GEM User Interface:** It's fast and easy. Pull-down menus, icons, scroll bars, and dialogue boxes help you learn and use the program quickly. Your display screen shows you exactly what your final product will look like when you print—What-You-See-Is-What-You-Get!
- **Flexible Page Layout:** Use your mouse to overlap, reposition, or resize your text columns & graphics. Change your layout or experiment—almost effortlessly!
- **Built-In Fonts:** Chose from thousands of possible type-style combinations! Opt for bold, italic, underlined, outlined, light, and superscript or subscript characters. Type sizes range from 7 to 96 point.
- **Premium Quality Printouts:** PUBLISHER ST uses a special high density printout format to give you superior quality printouts on your dot matrix or laser printer.
- **Built-In Word Processor:** All the features necessary for everyday word processing, plus most of the sophisticated features found in complete word processing programs.
- **Text Importing:** Load documents directly from WORD WRITER ST, FIRST WORD, and FIRST WORD PLUS* or from any standard ASCII file.



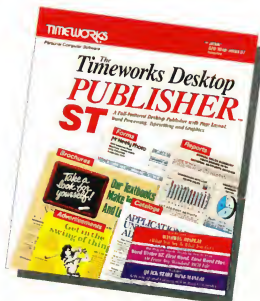
- **Built-In Graphic Toolbox:** Draw lines, boxes, circles, polygons, and more. Plus, choose from a wide variety of built-in line and fill patterns.
- **Graphics Importing:** Import graphics created with popular drawing programs—such as DEGAS, NEOCHROME, & EASY DRAW* Crop & scale to fit your document.
- **Kerning & Leading:** Adjustable letter and word spacing add those professional "finishing touches" to your document.
- **Automatic Text Flow & Word Wrap:** Flows text around graphics, and from column to column on the same page, or carries it over to subsequent pages.
- **Multiple Page Views:** View, edit, and layout pages at actual, double or half-size. Or, reduce them so the entire page fills the screen.
- **Professionally Drawn Graphics:** Ready-to-use art makes your documents even more eye-catching.
- **Plus you get special time-saving features, sample documents & more!**

For Atari 520, 1040,
& Mega ST Computers*
Sug. Retail Price . . . \$129.95

Available at your local dealer—
or order direct from Timeworks.
Call 1-312-948-9202

TImeworks

444 Lake Cook Rd., Deerfield, IL 60015
312-948-9200



(Documents do not print out in color.)
©1988 Timeworks, Inc. All Rights Reserved.
*Registered Trademarks of their respective companies.

GFA BASIC 3.0

the ultimate programming language just got better!

GFA BASIC 3.0 comes with over *three hundred* new commands, and offers an enormous increase in speed (40 to 60% faster for some programs). While others talk, GFA BASIC continues to deliver!

Even more important to the many thousands of current users of GFA BASIC, Version 3.0 remains compatible. You can still use all of the existing GFA BASIC program listings and reference books.

If you're tired of waiting for other languages to live up to their promises, come over to the one that offers automatic syntax checking, and an interactive programming environment that makes program development a snap. One of the more impressive new features is the ability to *hide* procedures. Once a procedure has been debugged, the programmer can conceal it. Only the procedure's name is shown in the listing. No longer will it be necessary to page through screen after screen of procedures.



- > Line-A commands are now supported
- > Joystick commands
- > Case distinction (Select-case and Else-if)
- > Fast integer math operations

Other important new functions are:

- > All AES functions have been implemented
- > Structured Programming

And much more!

Available for all Atari ST and Amiga computers with color or monochrome monitors \$99.95

GFA BASIC Programming Aids — No other BASIC is as well supported

Programming with GFA BASIC 3.0

Learn how to take advantage of the new power and structured programming commands in GFA BASIC 3.0. This intermediate programmers tutorial will guide you through the intricacies of this excellent programming language. Short example programs demonstrate the use of the new GFA BASIC 3.0 commands, while larger examples show you how to create complex programs. This book will enable you to begin creating the programs you've only dreamed about until now.

\$24.95

GFA BASIC Programmers Reference Guide, Volume I

This is the reference book that all intermediate and advanced programmers must have. It covers virtually every concept and command in the concentration you need. Many demonstration routines are included, suitable for use as procedures in your own programs. Whether looking to create sensational graphics and animation, or just having problems programming the RS-232 port, you'll find what you need and more in this impressive volume. For all GFA BASIC users.

\$29.95

GFA BASIC Training Reboot Camp

A brilliant beginners guide to the amazing world of GFA BASIC. This book will lead you effortlessly through the early steps necessary to make you a first class programmer. You'll even work with graphics and sound.

\$19.95

GFA BASIC Reference Card

The ultimate pocket guide to programming. Now every command is at your finger tips in this easy to follow card.

\$4.95



For more information on these or other fine products ask for our latest catalog!

576 S. Telegraph
Pontiac, MI 48053
(313) 334-5700

Dealer inquiries welcome.
Visa and Mastercard accepted.

THE CATALOG™

Quality Products You Can Trust

NEW!

- Cyber Sculpt
Advanced 3D Modeling Tool
- Cyber Texture
- Microbot Design Disk

Great New
Entertainment Titles

- Star Quake
- All Aboard!

with
TERRIFIC
SOFTWARE



CYBER SCULPT™ The Advanced 3D Modeling Tool™

by Tom Hudson

Create the most fantastic shapes imaginable with CYBER SCULPT—the mouse-controlled, 3D solid-object modeler featuring sophisticated tools previously found only on high-end workstations. CYBER SCULPT adds push, pull, twist, and bend tools to the basic spin and extrude features found on CYBER STUDIO(tm). The possibilities have now become endless!

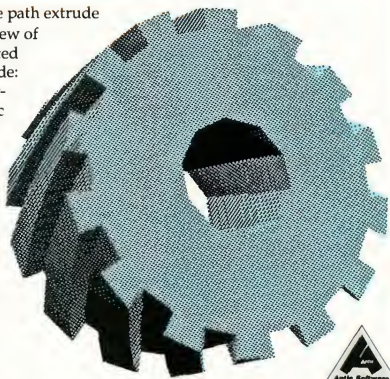
CYBER SCULPT includes cross-sectional modeling for shapes like boat and airplane hulls, or dimensional topography. Variable

New!

magnification, spline path extrude and spin are only a few of the many sophisticated options. More include: object distortion; vertex pulling; magnetic distortion; cross-sectional model creation; complex and simple extrude with end-capping; 3D mirroring; 3D primitives; and 2D/3D coordinate display.

Requires: 1 Megabyte RAM and CYBER STUDIO
STO255 \$89.95

© 1988 Tom Hudson



The Omni-color Paint Program

SPECTRUM 512™ The New Standard in Paint Programs

by Trio Engineering



SPECTRUM 512 is more than 24,389 2D colors. And, more colors means dramatically higher perceived resolution. But that's not all! SPECTRUM 512 contains a collection of the most sophisticated graphic paint tools available on any microcomputer. Take a look at just some of SPECTRUM's special features:

- Drawing: Freehand; Fill and New Fill; Patterns; Brush; Adjustable Airbrush; Search and

Replace with Sophisticated Color.

- Colors: Select 512 Array Menu; Save/Load Color Palettes; Auto-create Color Range; Color Cycle Brush or Airbrush; Color Edit Mode; Load CYBER, DEGAS* or NeoChrome* Pictures; Programmable Slideshow.
- Anti-aliasing: No Zag; Zag-Out.

Requires: Color monitor
STO249 \$69.95

© 1986 Trio Engineering

CYBER TEXTURE™ The Object Raster Master

by David Ramsden

Turn your DEGAS* or NeoChrome* pictures, or CYBER PAINT™ animations into CAD-3D™ objects with CYBER TEXTURE. Imagine a DEGAS picture pasted around a CAD-3D object—

New!



with CYBER TEXTURE, you can do it! It even includes a mobius strip! And with CYBER CONTROL™, CYBER TEXTURE objects can be animated for mind-boggling f/x!
Requires: 1 Megabyte Ram, a color system, CYBER STUDIO, and a source of low-resolution color images compatible with DEGAS or NeoChrome (such as CYBER PAINT). CYBER CONTROL is recommended for animating objects; CYBER PAINT is recommended for animating surfaces.

STO263 \$49.95

© 1988 David Ramsden

"Antic's CAD-3D™ is one of the best programs I've seen for the Atari ST* or anything else."

—Jerry Pournelle
BYTE MAGAZINE

CYBER STUDIO™

A two disk set featuring:

- CAD-3D 2.0 by Tom Hudson
- CYBERMATE™ by Mark Kimball

CYBER STUDIO is an intuitive 3D solid-modeling design system that has no limits. Sophisticated enough for professional artists, advertising agencies, and design firms—yet friendly enough for home and personal use. Let your creativity soar with the DEGAS*-style color design system; graphic lighting controls; enhanced spin, extrude and join tools; and GDOS output that supports laser and dot matrix printers.



CYBERMATE is a "post production" animation editing language that features sound effects; title generation and text display; sequence looping, cuts fades and dissolves; and color cycling animation.

Requires: 1 Megabyte RAM (Upgrade from CAD-3D 1.0 \$60.00 plus origi-

nal disk and \$5.00 shipping and handling)

ST0236 \$89.95

© 1986 Tom Hudson and Mark Kimball

CYBER CONTROL™ The CAD-3D motion control language

by Tom Hudson

Create animations automatically in hours that would normally take days. Expand and enhance your ST graphics universe with this animation scripting language that locks into any CAD-3D 2.0 feature.

Write your own BASIC-like programs with CYBER CONTROL™ using CAD-3D as a "graphics engine." Just start the program and walk away—your ST and CYBER CONTROL will do all the work!

Requires: CYBER STUDIO

ST0250 \$59.95

© 1987 Tom Hudson

CYBER PAINT™ 2.0

The pro animation studio

by Jim Kent

This program does it all! CYBER PAINT 2.0 is an animation system; a time-oriented paint program; a "cel" (celulloid) animation program; and a digital optical printer.

CYBER PAINT 2.0 contains all the standard paint tools—box, brush, rubber, line, fill, etc.—but adds the dimension of time anima-

tion. Images spin and glide around the screen like a magic carpet. Special features include a pixel f/x menu; palette change per frame and cut & paste color range; and an automatic traveling mask. All these features make CYBER PAINT 2.0 the fastest possible way to create professional looking animations.

Requires: 1 Megabyte RAM & Color Monitor (Upgrade from CYBER

PAINT 1.0 \$25.00 plus original disk)

ST0251 \$79.95

© 1986 Jim Kent



24 HOURS A DAY - VISA/MC ORDERS ONLY
FOR CUSTOMER SERVICE CALL (415) 957-0886



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

Works with all ST paint programs, plus CYBER STUDIO (ST0236).



Complete your collection of CYBER GRAPHICS Design Disks

Create and fill your 3D graphics universe with the complete library of Antic Software's design disks. From architectural renderings to animated video cartoon characters, these disks will bring your video creations to life! All contain a potpourri of sophisticated 3D clip art and component parts. A real bargain at \$29.95 each!

3D Fonts Itm

by Tom Hudson ©1986

Requires: CAD-3D™ 1.0 or CYBER STUDIO™

STO224

3D Fonts IItm

by Doug Thomas ©1987

Requires: CAD-3D 1.0 or CYBER STUDIO

STO254



Architectural Designtm

by Darrel Anderson ©1986

Requires: CAD-3D 1.0 or CYBER STUDIO

STO243



Cartoon Designtm

by Maurice Molyneaux and

Andy Eddy ©1987

Requires: CYBER STUDIO; CYBER CONTROL™ recommended

STO256



Human Designtm

by Richard Berry ©1986

Requires: CAD-3D 1.0 or CYBER STUDIO

STO242



Video Titling Designtm

by Maurice Molyneaux and

Andy Eddy ©1987

Requires: CYBER STUDIO; CYBER CONTROL™ recommended; CYBER PAINT™ for special f/x

STO261

Future Designtm

by Darrel Anderson ©1986

Requires: CAD-3D 1.0 or CYBER STUDIO

STO232



THE MICROBOT DESIGN DISKtm

by Darrel Anderson ©1988

This new addition to the ST* CYBER GRAPHICS design disk family by Darrel Anderson, designer of the incredible FUTURE™ and ARCHITECTURAL DESIGN DISKS™, contains advanced 3D clip art robotic designs and component parts for a variety of 3D applications. Use detailed, surrealistic modules to create cyborgs, both humanoid and alien. Comes complete with blueprints, models and design tips. Requires: CYBER STUDIO
STO262



GENESIStm

The 3D Molecular Modeler

by Scott Legrand

Create virtually any known molecule using the online periodic table of elements. Load and display amino acids, hydrocarbons, and

sugars. Create your own molecules on screen. Output molecules as CAD-3D objects, or as DEGAS*/NeoChrome* pictures. Or, explore X-Ray Crystallography. Requires: One megabyte RAM.

STO239 \$79.95

©1987 Scott Legrand



CYBER VCRtm

by Tom Hudson

Now you can transfer and edit your "CYBER GRAPHICS" creations onto video tape. CYBER VCR, a video sequencer, quickly produces professionally edited video tapes suitable for display to clients or viewing by friends and family. Bring the power of the

most expensive high-end computer graphics to your ST system.

Requires: One megabyte RAM; CYBER STUDIO or CYBER PAINT; SONY BETA VCR MODELS HF750 or HF1000, or SONY 8mm EVC8U, or SONY Camcorder CCD-V8 or CCD-V8FU or CCD-V9 or CCD-V110.

STO257 \$69.95

©1987 Tom Hudson

CAD-3Dtm 1.0

by Tom Hudson

All you need to create 3D computer graphics on your ST is 512K of RAM and CAD-3D 1.0. It's the original, basic animation system and is 520ST compatible.

STO214 \$29.95

©1986 Tom Hudson

All products in our Cyber Graphics Gallery (which have the letters "PD" in the product code) are public domain and may be distributed freely. Disks are \$12.00 each; the CYBERMATION VIDEOTAPE* is \$24.95.

All disks are self-running, with the exception of the three CAD-3D™ COLLECTION disks, which require CYBER STUDIO™ or CAD-3D 1.0. Please note the special requirements for each product before ordering:

SS = single sided disk DS = double sided disk
C = color M = mono or color
1 = 1 megabyte RAM .5 = 1/2 megabyte RAM

CYBERMATION VIDEOTAPE

The definitive "CYBER" display tool in both VHS and 8mm formats (\$24.95) © 1987 Tri Vision VHS0002



24 HOURS A DAY • VISA/MC ORDERS ONLY
FOR CUSTOMER SERVICE CALL (415) 957-0886

CAD-3D COLLECTION I

Tom Hudson's original collection of CAD-3D objects (SS, M, .5) PD9085

CAD-3D COLLECTION II

More complex CAD-3D objects (SS, M, .5) PD9101

CAD-3D COLLECTION III

The very latest complex CAD-3D objects (SS, M, .5) PD9103

CYBERSCAPE

Darrel Anderson's tour de force CYBER animation (DS, C, 1) © 1986 Darrel Anderson SB0104

CYBER DEMOS I

A demonstration of CYBER CONTROL's™ capabilities (DS, C, 1) PD9104

CYBER DEMOS II

Features texture mapping and advanced CYBER PAINT™ techniques (DS, C, 1) PD9105

CYBER DEMOS III

Real-time sequences and many more CYBER animations (DS, C, 1) PD9106

SPECTRUM 512 DIGIPIX

The best of beautiful digitized Spectrum™ pictures (SS, C, .5) PD9107

SPECTRUM SLIDE SHOW

The original slide show disk (SS, C, .5) PD9100

SPECTRUM PORTFOLIO

A Darrel Anderson and Richard Berry collaboration of Spectrum's fine art capabilities (SS, C, .5) © 1986 Darrel Anderson and Richard Berry SB9108

HOLO CONTEST I

Dann Parks demonstrates realistic object dynamics with a simple, six-line CYBER CONTROL routine (DS, C, 1) PD9109

HOLO CONTEST II

Create moving star fields for CYBER CONTROL with Paul Dana and Robert Mills' desk accessory (DS, C, 1) PD9120

HOLO CONTEST III

Dan Reifsnyder's topographical contour-mapping program plus animation (DS, C, 1) PD9121

For a complete list of Atari ST* PUBLIC DOMAIN products, call our toll free customer service line: (800) 234-7001 24 hours a day!

ST Mapping

MAPS AND LEGENDS™ 3.0

See the world on a disk!

by Harry Koons and David Chenette
MAPS AND LEGENDS accurately plots Earth land masses on your Atari screen using one of eleven available map perspectives. Float over any spot on Earth, from any altitude. Or if you wish, in stereoscopic depth.

This is a fascinating and educational program! Features include a custom overlay function to design your own maps, or use the DATA-MAPS disks; load pre-designed overlays; or save multiple map views. (Disk upgrade \$15.00)

You'll need StereoTek glasses* for stereoscopic effects.

ST0202 \$34.95

© 1987 Harry Koons and David Chenette



DATAMAPS I™

Boundaries of the World

Create national political boundaries with overlay files, or access historical maps with this original DATAMAPS collection.

Requires: MAPS AND LEGENDS 2.0, or greater

ST0227 \$24.95

DATAMAPS II™

Rivers and Highways

by David Murray
New DATAMAPS files create the world's rivers, the great highways, and spectacular man-made at-

tractions such as the Great Wall of China, the Alaskan Pipeline, the Trans Siberian Railroad, and the Orient Express.

Requires: MAPS AND LEGENDS 2.0, or greater

ST0258 \$24.95

© 1987 David Murray



THE NAVIGATOR™ 2.0

The professional, automated flight planner—a two disk set

by Scott D. Stephenson

Whether you are a private pilot, navigator, commercial operator, amateur, arm chair flyer, or student, THE NAVIGATOR 2.0 will enable you to create accurate, detailed flight plans.

(Upgrade to version 2.0 only \$15.00, including original disk)

ST0245 \$49.95

© 1987 Scott D. Stephenson

PHASAR™ 3.0 The Intelligent Financial Management System.

by *Marksmar Technology*

PHASAR, the friendly, GEM-based single-entry accounting system, is designed to manage all your financial affairs conveniently. PHASAR utilizes interactive accounts to track and provide you with a comprehensive record of your income and expenses. Here are just some of the many features PHASAR offers:

- Relational design integrates financial data
- Artificial intelligence parser predicts input, minimizes typing
- 130 expense/income categories
- Up to 500 transactions per month
- Custom check printing
- Instant help messages
- Split-category transactions
- Automatic transfers between accounts
- Transaction macros for repetitive entries

- Easy budget set-up and maintenance
- Loan/savings plans analysis
- Outstanding transactions display for any account
- Designs individual tax forms
- Clearly formatted printed reports
- Categories sorted in any order
- Stores up to 250 names, addresses and phone numbers
- Display calendar with highlighted special occasions

"Programs like this are making the promise of the personal computer revolution a reality." —Richard S. Lee, Photographer, Charleston, WV

STO237 \$89.95

© 1986 Tom Marks

BASE TWO™ The next step in databases!

by *Dan Matejka and Stanley Crane*

Until now, ST databases have either been too complex or too simple. None have had the ease or flexibility of BASE TWO. Entirely GEM-based, BASE TWO is an

MACRO MOUSE™ The Mouse Recorder

by *Charles Johnson*

MACRO MOUSE automatically records every move your mouse makes. A special "freeze" feature allows you to insert instructional text at any point for demos. Even load DEGAS fonts for customized displays. MACRO MOUSE also includes two bonus utility programs: ALTHelp, a collection of handy utilities instantly available from any program and; START SELECTOR, an improved replacement for the GEM file selector. Eliminate repetitive mouse movements on the Atari ST forever!

STO260 \$34.95

© 1987 Charles Johnson

intuitive, yet powerful database featuring an adaptable report generator plus many other features that add up to simply the best database application for your ST dollar.

STO246 \$59.95

© 1986 Dan Matejka and Stanley Crane

ST Telecommunications

SHADOW

The multitasking file transfer answer

by *Adrian Jovanovich*

This multitasking file transfer program works independently or with any telecommunications application. Now the Atari ST* can do what could never be done before—multitasking. SHADOW transfers files in the background while using any other program. Imagine, change resolutions, switch monitors, or press system reset—transfers will never be interrupted. No more waiting for file transfers!

Among SHADOW's features are a built-in desk accessory for

easy access to a background auto-dialer, and a VT52 terminal for standalone operation. For programmers, sample source codes and access information on SHADOW's routines are included.

"FLASH is my #1 choice on the Atari ST."

—Ron Luks, Founder of CompuServe's SIC* Atari and Atari Developers' Forum.

FLASH™ 1.6

The most popular ST terminal program!

by *Joe Chiazzese and Alan Page*

Simplify your online time and make telecommunications more enjoyable and less expensive! If

you own a modem, you should be using FLASH—totally programmable plus built-in word processing; terminal emulation and bullet-proof file transfers. FLASH is packed with features including intelligent, programmable macro ("do") files; a capture buffer large enough to record an entire online session; and the capacity to support most major protocols.

STO259 \$29.95

© 1987 Adrian Jovanovich

FLASH COMMAND CARDS
TH9025 \$7.95

STAR QUAKE

Action Adventure
in Deep Space

by Steve Crow and Bubble Bus

Test your knowledge of Einsteinian Physics to repair the very fabric of our universe! Your mission: replace the nine core elements in the rogue planet before the entire cosmos is destroyed. But wait, it's not gonna be that easy. . . .

If the bugs don't kill you, the quake sure will. This is a new planet, and BIG! Fresh from that black hole. It's unstable and ready



to blow! To make matters worse, you don't know where the planet's core is located, or what the nine elements are. And there's these things floating around that suck the energy right out of you when they pass by, not to mention those whirly-slicer doobads with blades, and weird artifacts everywhere. You could get stuck wandering around the alien-infested caverns for years without finding your way

out, if you should live that long (but you won't).

Features include:

- Fast action arcade-style play
- 500 action-packed screens
- 30 on-screen colors
- Save to disk
- Four different musical scores available
- Beautiful animations

Requires: Color system and joystick
STO403 \$29.95

© 1988 Steve Crow and Bubble Bus

TERRIFIC SOFTWARE

ALL ABOARD!™ The Microgauge Trainset

by Bay Cities Software

ALL ABOARD! is a wonderful computer toy for the youngster in all of us. It's endless hours of fun for people of all ages, from the adult train enthusiasts to the very young. ALL ABOARD! is a toy touring train set, just like the one Dad snuck home one Christmas and hid on the closet shelf. . . . Just like the one he spent all morning and most of the afternoon setting up and playing with, while you stood there itching to get your hands on it! Well here's your chance, 80's style!

ALL ABOARD! comes with several pre-designed track layouts, plus trains and detailed scenery for



all seasons. It's completely self-contained, or create your own miniature railroad, because ALL ABOARD! comes with its own editor. Use ALL ABOARD! with any DEGAS* or NeoChrome*

compatible paint program to create custom cars and scenery. Requires: Color monitor

STO402 \$24.95

© 1988 Bay Cities Software

Cyber Sculpt, Cyber Texture, CAD-3D, Cyber Paint, Cyber Studio, Cyber Control, Cybermate, Cyber VCR, Microbot Design Disk, Future Design Disk, Human Design Disk, Architectural Design Disk, Video Tiling Design Disk, Cartoon Design Disk, Genesis, 3D Fonts I, 3D Fonts II, All Aboard!, 3D Break-Thru, Spectrum 512, Flash, Shadow, Maps and Legends, Datamaps, The Navigator, Phasar, Base Two, Macro Mouse, Terrific Software, Antic Software and Antic are trademarks of Antic Publishing, Inc.

*DEGAS is a trademark of Electronic Arts; *Cybermation Videotape is a trademark of Tri Vision; *NeoChrome and Atari 51 are trademarks of Atari Corp.; *Stereotek Glasses is a trademark of Tektronics, Inc.



24 HOURS A DAY • VISA/MC ORDERS ONLY
FOR CUSTOMER SERVICE CALL (415) 957-0886

ORDERING INFORMATION

Mail Orders

To order by mail, complete order form and return, with payment to The Catalog, 544 Second Street, San Francisco, CA 94107.

Phone Orders

MasterCard or Visa cardholders, phone in, using our toll-free number, (800) 234-7001

Payment by check, money order, MasterCard or VISA

Payment must accompany all mail orders. Include shipping and handling charges with your payment. California residents add 6.5% sales tax to merchandise total. U.S. currency only.

Minimum order: \$20 U.S., \$40 Foreign, plus shipping and handling charges

We fill orders of \$20 or more. We ship domestic, Canadian and Mexican orders via first class mail. Foreign orders are shipped via air mail. For prompt delivery, be sure to include the correct shipping and handling charges with your order.

SHIPPING AND HANDLING CHARGES

Software	U.S./CANADA	FOREIGN*
Up to \$50.00	\$3.00	\$10.00
50.01-100.00	6.00	20.00
100.01-150.00	9.00	25.00
150.01-over	12.00	35.00

*Please remit with MasterCard or VISA number or check or money order in U.S. funds drawn on a U.S. bank. Wire transfers will not be accepted.

**For Questions or
Customer Service
Call (415) 957-0886**

Technical Support:
8AM-12PM PST

Customer Service:
8AM-4PM PST



MasterCard, VISA orders only
All 50 States, 24 Hours a Day

ORDER FORM — Please read all ordering information before filling out this form.
Allow 3 to 4 weeks for delivery.

CL85

Name _____

Address _____

City _____ State/Country _____ Zip Code _____

Phone Number _____

Quantity	Item Number	Description	Price Each	Total
		\$20.00 MINIMUM ORDER		

Thank You For Your Order!

Prices and availability subject to change without notice. Subtotal of all items ordered (\$20.00 minimum order)

Method of Payment

- Check/Money Order
- MasterCard
- VISA

California residents add 6.5% sales tax

Shipping and handling charges (See schedule above)

TOTAL

No Service Charge for MasterCard or VISA

Credit Card No. _____

Expiration Date _____

Name _____

Signature _____

CUSTOMER SERVICE INFORMATION

Our customer service team is here to serve you!

For technical support, product information, upgrade policies, or order inquiries, just call (415) 957-0886. Customer Service hours are Monday thru Friday 8:00 a.m. - 4:00 p.m., Pacific Time. Technical support hours are Monday thru Friday 8:00 a.m. - 12:00 p.m., Pacific Time.

Antic® Software
544 Second Street
San Francisco, CA 94107

Bulk Rate
U.S. Postage Paid
Antic Publishing, Inc.

READ THIS!

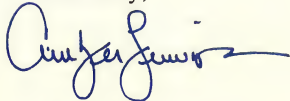
Dear Subscriber,

START magazine has gone monthly!

This change from 8 to 12 issues per year will also change your subscription expiration date. Don't worry, if you signed up for 8 issues of START magazine + disk, that is exactly what you will get. This means that you will now get your magazine every month, rather than every 6 weeks like before. Because of this, your subscription is going to expire sooner.

We don't want you to miss a single information packed issue or disk of START. So take a look at your new expiration date in the upper right hand corner of your mailing label. If it's getting close, take this opportunity to RENEW TODAY!

Sincerely,

A handwritten signature in blue ink that reads "Amber Lewis". The signature is fluid and cursive, with a long horizontal stroke at the end.

Amber Lewis
Subscription Coordinator

THE #1 ATARI ST MONTHLY
START[®]