



January
February
1994

Volume 5
Number 3

The *First* Apple IIgs[®] Magazine + Disk Publication!



Tell Your Sweetheart How You Feel With IPC
Use EGOed v2.0 To Write A Love Letter
Let MIDI Surgeon Convert & Play "Your Song"

Can't Afford Roses?
Say "I Love You" With One Of These IIGS Products

Ancient Glory • AudioClips
GNO/ME 2.0 • HyperLogo
The HP DeskWriter 550C Printer
The NCS Pro 240 Hard Drive
Pedigree

Writer's Block

By Steven W. Disbrow

Well, in case you didn't notice, we actually managed to publish the last issue of *GS+* Magazine two weeks ahead of schedule! This time around it looks like we are going to gain another week on our schedule! However, as you may have already noticed, we are gaining this time at the cost of a few pages. On this accelerated schedule, we simply didn't have enough material (or advertisers) ready to fill our usual 52 page format. So, Michelle and I decided, for this issue only, to drop back to 44 pages. We should be back up to our regular size next issue.

Of course, seeing as how we filled these pages during the Christmas holidays (Joe was in Hawaii for a week, Noreen and I went to the Bahamas for a week, and *everybody* took a few days off around Christmas and New Years), I think that pulling out 44 pages is pretty good trick. Best of all, if everything goes according to schedule, we should be getting the *next* issue out even faster than the last two. But, then again, nothing ever goes according to schedule around here . . .

Good Year, Bad Year

Looking over the books for 1993, I'm happy to announce that this has been our best year yet. Unfortunately, that news is not quite as good as it sounds—expenses are up (Can you believe that everybody wanted a raise? Sheesh!), and a good chunk of our income this year was from the TypeSet project we did with WestCode. *GS+* Magazine was still our major source of revenue, but it just wasn't as good as it was last year.

So, since I am actually in this to make a living, I've had to take a long, hard look at how things are done around here. Much to my surprise, I've found that I've done a pretty good job of holding costs down. However, I did find two places where we have actually been losing money:

1) First Class, Canada/Mexico and Foreign Surface mail subscription fees. Currently, these fees are \$1.50 an issue. The cost to mail a single issue of *GS+* Magazine (with or without the disk) is just under \$1.50. This is just for the *postage* and does not include the cost of the envelope we mail it in. More importantly, this also excludes the hourly wage that I pay Bob to actually package and mail out these issues. (Just as an example, it takes us about the same amount of time to prepare and mail all of

the First Class and foreign subscriptions [about 500] as it does to prepare and mail several *thousand* regular subscriptions.) So, effective immediately, the cost of First Class, Canadian/Mexican, and Foreign Surface mail subscriptions are going up by 50¢ an issue to \$2.00 an issue. (If you are an air mail subscriber don't worry, our foreign air mail rates are not affected.)

2) Magazine-only subscriptions. When I was starting *GS+* Magazine, there wasn't going to be anything such as a "Magazine-only" subscription. However, after much consideration, I decided to make this type of subscription available, at a much lower cost, for those who didn't need or want the disk. But, that was back when it was just Noreen and myself running the show, and I could afford to make a smaller profit on these types of subscriptions. Today however, that small profit has turned into a small loss, and I've got to stop it as quickly as possible. So, effective with this issue, the price of a *GS+* Magazine only subscription is going up from \$15 a year to \$18 a year. (This increase will *not* affect the price of a Magazine and Disk subscription—it will remain \$36 a year.) After our back issue sale is over (see below), this price increase will also be applied to back issues.

Now, some of you may be wondering why I've gone to all this trouble just to tell you about some measly 50¢ price increases. Well, the main reason is that I wanted to be as up front with you as I possibly could about why I am doing this. To sum it up in one paragraph:

"Business is good, but we are losing money on a couple of our subscription options. They are small losses, but over the years, they have begun to add up. So, to ensure the continued survival of *GS+* Magazine, I am increasing prices to eliminate these losses."

Another reason I'm being so . . . detailed . . . about all this, is that I don't want anyone to panic and start reporting that we are going out of business! (You may think I'm being paranoid, but the number two question we get around here is "Are you guys still in business?" The number one question is, "When is the next magazine going to be mailed out?") We are not going out of business!

Back Issues Still For Sale

As I write this, our back issue sale is going quite well. But, we've still got

quite a few copies left, and the sale ends on February 28th, so be sure to get your order in as soon as you can. After the sale is over, prices are going up!

What Else Is Happening?

Hmmm, nothing really. It's been a pretty quiet month in the IIGS world. At this point, I don't think we've even received any press releases for the "What's New" department. (Thank goodness next issue will be our annual April Fools issue and I can just make up some news.) Hopefully, that will change before we go to press. Remember folks, if you've got a new IIGS product, send us a press release! We want to let our readers know about it!

EGOed v2.0

I don't usually use this space to talk about what's in the magazine, but in the case of EGOed v2.0, I think I should make an exception. If you do a lot of text editing on your IIGS, or if you need to move word processing files to and from your IIGS, you owe it to yourself to check out this new version of EGOed. It includes the ability to read and save files in Rich Text Format! ("RTF" for short.) This is a file format that is used on Macintosh, Windows and NeXT computers, just to name a few. By using the RTF format, EGOed allows your IIGS to exchange word processing files with these computers, complete with font, size and style information *intact*! If you think that this *sounds* great, wait till you use it!

That's All Folks

Gee. That *is* all. I suppose I could tell you about the recent experience I had with my waterbed springing a tiny leak. For a month, I thought I had developed a severe sweating problem. (You were expecting a different problem maybe?) I could tell you about our new cat, Sassie. She was a stray that adopted my in-laws—until Noreen saw her. She's in heat as I write this (uh, Sassie that is), and we've got her scheduled to be "fixed" early in 1994. (Trust me, if you could hear her screaming, you would agree that she's broken and *needs* to be fixed!)

Well, there you go. I've just editorialized about wet bed sheets and a cat in heat. I think I'm through now.

Diz

CONTENTS

FEATURE ARTICLE

IPC (Igor's Playful Code).....5

PROGRAMS

EGOed v2.0..... 9
MIDI Surgeon v1.0..... 14

DEPARTMENTS

Writer's Block..... inside front cover
Letters..... 3
Warranty Disclaimer and Copyrights..... 7
GS+ Back Issue Information.....18
Rumors, Wishes & Blatant Lies..... 19
How to Use Your GS+ Disk..... 20
How to Get System 6.0.1..... 22
Errata..... 34
GS+ Classifieds.....40
GS+ Ordering
Information..... inside back cover

REVIEWS

- Ancient Glory..... 23
- Apple Extended Keyboard..... 24
- AudioClips..... 26
- GNO/ME 2.0..... 27
- HP DeskWriter 550C Printer..... 30
- HyperLogo..... 33
- NCS Pro 240 Hard Drive..... 35
- Pedigree..... 37

Products marked with a bullet (•) were review copies provided by the publisher.

ADVERTISERS

Alltech Electronics.....32
Big Red Computer Club.....39
LRO Computer Sales..... 12,13
Parsons Engineering..... inside back cover
Pegasoft..... 17
Sequential Systems.....25
TMS Peripherals..... back cover

GS+

Magazine

January-February 1994
Volume 5, Number 3

Publisher, Editor
STEVEN W. "DIZ" DISBROW

Executive Assistant to Mr. Disbrow
NOREEN M. "NORY" DISBROW

Technical Editor
JOSEF W. "GONZO" WANKERL

Production/Marketing Coordinator
MICHELLE B. "EESHUL" RIBARIC

Operations Director
ROBERT A. "BOB" RIBARIC

Contributing Editor
WILLIAM "BILL-ICIOUS" MOORE

On The Cover

Is it Bob and Carol and Ted and Alice?
No, No, No. It's just the GS+ crew and
their sweethearts wishing you a happy
Valentine's Day.

GS+ Magazine and its companion program diskette are copyright © 1994 by EGO Systems. No part of the magazine or its companion program diskette may be reproduced without the written permission of EGO Systems. The programs on the companion program diskette are *not* public domain or shareware!

GS+ is a registered trademark of EGO Systems.
All references to either Apple or third party products are trademarked and should be so noted.

GS+ Magazine is an independent publication, not affiliated in any way with Apple Computer, Inc.

Opinions expressed in this publication are those of the individual authors and do not necessarily represent those of GS+ Magazine or EGO Systems.

Subscription rates - Magazine only:

1/2 year (3 issues) - \$10

1 year (6 issues) - \$18

Subscription rates - Magazine w/Disk:

1/2 year (3 issues) - \$20

1 year (6 issues) - \$36

Tennessee residents add 7.75% sales tax.

Add \$2.00 per issue if you want First-Class delivery.

Canadian and Mexican orders add \$2.00 per issue.

Other foreign orders add \$2.00 per issue for surface delivery or \$5 per issue for Air Mail.

Send orders, ads, inquiries, and address changes to:

GS+ Magazine

P.O. Box 15366

Chattanooga, TN 37415-0366

Or phone Monday-Friday 9 am-6 pm Eastern Time:

(800) 662-3634 (orders only)

(615) 843-3988 (tech support)

(615) 843-3986 (fax)

If you have a submission for GS+ Magazine, send it to:

GS+ Submissions

P.O. Box 15366

Chattanooga, TN 37415-0366

GS+ Magazine can also be contacted on these online services:

America Online: send mail to GSPlusDiz

or visit our online area by using the keyword GSMAG.

Delphi: GSPlusDiz

GEnie: JWankerl

InterNet: gsplusdiz@aol.com

NewtonMail: Diz

GS+ Magazine is published bimonthly by:

EGO Systems

7918 Cove Ridge Road

Hixson, TN 37343-1808

(DO NOT SEND MAIL TO THIS ADDRESS—USE FOR UPS AND OVERNIGHT DELIVERIES ONLY!)

GS+ Magazine is produced on the Apple IIGS using the following products:

EGOed - Text Editing

GraphicWriter III - Interior Page Layouts

AppleWorks GS - Cover Layouts

Dream Grafix & Platinum Paint - Screen Shots

Proof pages are printed on an Apple LaserWriter IINT.

We use a Macintosh LC III as a file server because we have to.

Letters

GS+:

... Since upgrading to System 6.0.1, I am faced with an annoying Note alert every time I boot the machine that reads: "The selected AppleTalk connection could not be found. Be sure it is installed and the slot settings in the Control Panel are correct." Why is this happening and how do I get rid of it? ...

I also just got Print Shop GS and was enjoying using it until I discovered that the graphics files are unique and that I couldn't import PaintWorks Gold or other graphics into PrintShop. My question then is, is there a utility available for converting alien graphics to Print Shop graphics? My closest solution to this has been to import PaintWorks graphics into the Quickie software and then saving them in PrintShop format. However, this results in conversion of all colors to shades of gray. Not very satisfactory!

Walter C. Schneider
Silver Spring, MD

When you installed System 6.0.1, did you use the "Easy Update" option? That seems to be the most common cause of this problem. For some reason, the Easy Update seems to install AppleShare regardless of whether or not it was there before. The solution is to run the Installer again, pick the "Customize" option, and remove the AppleShare update. If that doesn't work, run the Installer again, and remove all of the AppleShare, AppleTalk, and Network related updates.

As for the Print Shop GS problem, unfortunately, I don't know of any utility that saves out Print Shop GS graphics other than the Quickie software. Does anyone out there know of a different utility that will give better results?

Diz

Dear GS+

It is my pleasure to renew GS+ Magazine for another year. As a charter member, I have seen a lot of changes since V1.N1. It has been an interesting journey, and I appreciate all you have done for those of us learning on the IIGS. Keep up the good work!

Reluctantly, my IIGS gets less use than it used to. I have recently become heavily involved in the OS/2 operating system which runs on my 486 (IBM) machine. I am looking forward to Taligent which will merge OS/2 and Apple software on

the new PowerPC platform. I only wish we could convince someone to work on IIGS emulation for the PowerPC (Bill Heineman, are you listening?), like they intend to do for the Mac.

OS/2 is a powerful multitasking system that has the same "cool feel" for me that the IIGS has. If I can run ancient MS-DOS 640K applications under OS/2, what a thrill it would be to be able to also run my IIGS favorites (like EGOed)! This is indeed a way to keep the IIGS alive forever.

Rick Kruer
Mesa, AZ

Well Rick, a IIGS emulator for the PowerPC platform should be possible, but I don't know if it is going to happen. What we IIGS owners need to do is let Apple know that we want, and would pay for, just such a product. If enough of us (especially those of us that represent schools) tell Apple that we want this, it might just happen. In fact, given that the IIGS emulator for the Mac LC series has been so successful, it might not be too hard to convince Apple that a IIGS emulator would be a big hit.

Diz

Hi:

I just saw your article on how to network [in GS+ V5.N1]. You explained everything very well. I think everyone should have a network.

... I have a network setup at home and [in my business]. In my computer room at home I have a IIGS, a Mac II and LaserWriter NT. My daughter has in her room (also in our home) a Mac SE30 and ImageWriter II. Our flower shop which is next to our house has an IBM with a Tops card for networking with the Macs and LaserWriter. I don't have to explain the many benefits of having all the computers and printers networked.

But I do have a question that maybe you can answer. I would like to use my old Apple IIe in the flower shop. My problem is I don't want to buy another SCSI card and hard drive to make it useful enough to handle a point of sale program. I only have the old DuoDisk (two 5.25-inch drives) hooked up to it. It would be great if all I needed to do was add an Appletalk card and be able to access files saved on the Mac drive. Now I know this is possible if you spend the mega bucks on the Mac Appleshare

software, but can you use the personal Appleshare that comes with Mac System 7? ... Of course our local computer store has no idea, or even wants to find out for me ...

Don Kramer
via America Online

Well, Don, I checked with a couple of friends at Apple, and they tell me that this should work. However, they had never personally tried it, and they didn't have the equipment on hand to test the theory. But, if all you want to do is access files on the server, a Personal AppleShare setup should work fine. However, I don't think that you will be able to boot your IIe over the network without buying the full-blown Appleshare application for your Macintosh. However, since I don't have a IIe to test this with, it's just an educated guess. Hopefully, one of our other readers has actually had experience with this type of setup and will write in to let us know how well it works.

Diz

Gentlemen:

... I would like to commend you and your staff on a very interesting and challenging magazine. I really enjoyed your recent [GS+ V5.N1] article on Object Oriented Programming. I feel like maybe I jumped into the deep end of the pool. Maybe you could recommend a starting place for me? (Possibly the baby pool or at least the shallow end of the pool.) ...

Tommy C. Thurlkill
Wichita Falls, TX

Thanks for the letter Tommy. As for a place to start working with Object Oriented programming, check out the next letter.

Diz

Dear GS+:

In a reply to a letter from Robert Hollingsworth of Huston TX (in GS+ V5.N2) Diz wrote:

"... you didn't say the names of those OOP books ..."

Here are two books available through Software Etc.:

Object Oriented Programming, by P. Coad, J. Nicola, from Prentice Hall/PTR. Learn how to "object think" and program with the two leading object oriented

program languages: SmallTalk and C++. Includes language summaries, examples, and extensive source code. \$41.95

Object-Oriented Design with Applications, by G. Booch, from Addison-Wesley. Practical guidance for the construction of complex object oriented systems. Complete descriptions of object oriented design methods and discussions of programming issues. \$49.95

... I also enjoyed the Object Oriented Programming article very much even though I don't program. To those people who tell you that *GS+* is too technical, don't listen to them. If you're not reading a little above your head, you're not learning anything!!

Also, kudos to Michelle for the magazine layout. You guys are the greatest.

Todd Legg
via the InterNet

Hello Diz:
I just read my floptical drive review [in *GS+* V5.N2], and I noticed one big goof-up.

In the paragraph where I talk about the speed of the drive being 1/3 that of my hard drive, and three times that of my 3.5-inch floppy drive. Well, if you think about this, this is a contradiction. It should read "three times slower than my hard drive, and three times faster than my 3.5-inch floppy drive."

Also, about the pricing. After the article went to print, I found out that the price has dropped from the \$399 price shown in the review. The external unit (in a case) is available for \$319; if you buy it as an internal, its price is \$259.

In the letters column, you ran a letter about Peter Watson's shareware MS-DOS utilities for the IIGS. I tried them out, and they seem to do a better job of formatting (MS-DOS style) on the floptical than a format from within the PC Transporter. I would thereby recommend that all "IBM formatting" be done with these utilities. This would also mean that the special lines needed in the `config.sys` file are no longer necessary. I am hopeful that these utilities will allow me to utilize a floptical diskette as a 20MB hard drive volume from within the PC Transporter. I will let you know when I achieve success with this.

... In the article, I mentioned that you must have a ProDOS disk in the floptical the first time you enter ProDOS 8. Well,

this is *kind of* true. You must have a disk in the drive that is acceptable to GS/OS (or else it will ask you to either initialize it or eject it). With the advent of System 6.0.1, and specifically the MS-DOS FST, you may have a MS-DOS formatted disk in the drive and it will work fine. Apparently, ProDOS 8 just looks to see if there is media in the drive, and if there is, it will map that drive to a slot/drive location....

Sorry about the goof-up, but please publish this letter as an update to the review.

Wayne Sheffield
Virginia Beach, VA

Dear Sir:

... I would like to take this opportunity to thank you for your excellent magazine and programs supplied over the past two years. I must say I prefer Softdisk G-S over your programs due to the amount of conflicts I have with your programs with the numerous DAs I have installed in my IIGS. The last feature I attempted to install was Cool Cursor, an excellent and fun desk accessory. However, upon installation (as with the majority of your DAs and programs) I found a conflict with a Dr. Mario program I had copied to my hard drive. I am nevertheless, steadfast in my praise and thankfulness for your publication. Yours is one of the few left which we faithful Apple diehards can turn to for trustworthy information and advice. Just recently you helped me by informing me of the availability of Econ Technologies product SoundMeister (now the only stereo sound board available for the Apple IIGS). This is after another company (QC) had told me there was nothing available. Thanks to your review and your helpful staff, I'll have one for Christmas....

Name Withheld

I'm glad to hear that you like GS+ Magazine, but I am a bit distressed to hear about the problems you have been having with our programs. Rather than just give up on them, why not take a few minutes to fill out a problem form (which is supplied on each and every GS+ Disk) and send it to us. After all, we do want you to be able to use the programs we write, but we cannot fix your problems unless you let us know about them!

Of course, at this point, I do know about your problem, but, if at all possible, I'd still like for you to fill out and send in the problem form. The reason I'm asking you to do this is that your letter simply doesn't give us enough information to

even begin to guess how to fix the problem. For example, which version of Cool Cursor are we talking about? Even more importantly, who publishes the game that it is conflicting with? Or is it freeware or shareware product? If it's a freeware or shareware game, and it's more than a couple of years old (older than System 6 to be exact), chances are that the problem is actually in the game itself and not in the Cool Cursor program.

Diz

Diz,

After the holiday rush, I finally got around to reading *GS+* volume 5, issues 1 and 2. I thought that your readers might be interested in knowing that Cables To Go in Dayton, Ohio (1-800-826-7904) has excellent pricing on the SCSI cables and terminators that Joe discussed in his SCSI article in V5.N2, and the AppleTalk and PhoneNet connectors that he discussed in his networking article in V5.N1. They also have hundreds of various computer cables, adapters and switchboxes for PCs and Apples.

An AppleTalk Compatible Kit (AppleTalk connector box and a 6' AppleTalk cable) that Apple sells for \$75 is only \$16.95. Six foot SCSI cables are \$6.99, as are SCSI terminator blocks (compared to \$25-\$30 elsewhere). A standard six foot IIGS to ImageWriter II printer cable is \$3.99 (compared to \$12 - \$15 elsewhere). Their products seem to be of excellent quality and their telephone sales reps seem to be well informed and willing to help. They charge only actual cost for shipping charges. There is a \$6 service charge for orders under \$50, but if you buy more than one item you easily save more than that....

Dale Barker
via America Online

If you have a question, comment, or criticism about *GS+* Magazine, we want to hear it! Due to space limitations, we cannot answer every letter here in *GS+* Magazine.

If you want a personal reply, please include a daytime phone number, or enclose a self-addressed, stamped envelope with your letter.

Please address all letters to:

GS+ Letters
P. O. Box 15366
Chattanooga, TN 37415-0366 *GS+*

IPC (Igor's Playful Code)

By Josef W. "Igor" Wankerl

We were browsing through the online services not too long ago and ran across a message requesting that we explain IPC (Inter-Process Communication). Instead of answering the letter in the letters column, we decided that it would make a fairly good programming article. So, if you think that IPC is intimidating or you just want to find out more, read on! Note that you should already have a copy of the *Programmer's Reference for System 6.0* if you want to do any System 6 specific programming. It'd be rather silly for me to duplicate the IPC pages, so all I'll do is explain IPC in simpler terms and give some good examples—if you're going to write actual code, you'll need the actual book.

IPC

IPC stands for "Inter-Process Communication." Still sounds aloof, doesn't it? Let's break it down: "Inter" means "between," and "Process" means any piece of code that is running on your computer. "Communication" means, well, communication. So IPC is a way in which processes can communicate with one another. When you write a program, you probably have already used a form of IPC—you called a function or procedure. IPC is really no different from calling a function: you pass the function some parameters and you can receive results back from the function. The way in which IPC differs from all this is that you can call functions in *other people's* programs! This provides for some really cool uses. A major program that uses IPC is the Finder. You can write special programs, called Finder extensions, which use IPC to talk to the Finder.

How It Works

IPC works by using two System 6 Tool Locator toolbox calls: `AcceptRequests` and `SendRequest`. If you're writing a program that will provide subroutines to be called, you call the `AcceptRequests` routine which makes your subroutines available to everybody else. If you want to call somebody's routine, you call the `SendRequest` routine. Note that you do *not* have to call `AcceptRequests` if all you want to do is call other peoples' routines. Also, you don't have to call `SendRequest` if all you want to do is provide routines for other people to call.

AcceptRequests

To make subroutines you've written available to other programs running in the

system, you first call the `AcceptRequests` routine. `AcceptRequests` requires the name of the set of routines you're "registering" with the system, the memory ID of the program making the `AcceptRequests` call, and a pointer to a dispatch routine (which I'll discuss a bit later). Note that you can call `AcceptRequests` as many times as you like to register different sets of routines—all you have to do is make sure that the name of the sets are different.

Names

There are two forms of names suitable for use with the `AcceptRequests` call. The first, and most common, form of name is "company~product~" where company is the name of your company and product is the name of your program. Each part of all name forms is delimited by the tilde (~) character. The second, less common, form of name is "productX~companyX~productY~" or similar, where productY is the name of your program and productX and companyX are the name of the program that will be calling your request procedure. The second form is used only for request procedures which are designed to be called by name from a specific product. In most cases you shouldn't have to worry about the second form of the request procedure name. In all forms of request procedure names, you can add additional delimiters and information to the name. For example, you could add the program version number or even dynamically add the program's memory ID to the name. An example would be: "EGOSystems~EGOed~2.0~5002~".

Dispatch Routines

When a program issues a `SendRequest` call, one of the parameters it gives is the number of the subroutine it wants to use. When you write your subroutines, you give each one a number, then you write a dispatch routine which looks at the number that the `SendRequest` caller wants and then dispatch control to the appropriate routine. Now, even though you may have different sets of routines registered with `AcceptRequests`, you can use a single dispatch routine, provided that the numbers you assign to your procedures do not overlap. The dispatch routine returns a true or false value which tells the Toolbox whether or not the request was handled (accepted) or not.

SendRequest

When a program wants to call a routine which somebody else has already

registered, it calls the `SendRequest` routine. When you call `SendRequest`, you give it the number of the subroutine you want to use, a generic parameter for the subroutine to use (which is usually used as a pointer to a data structure containing multiple arguments), a pointer to a result buffer where the subroutine can place any results it might generate, and you also tell `SendRequest` which subroutine set to use. When you call `SendRequest`, you need to tell the system exactly who to send the request to and how the request can be sent. One parameter `SendRequest` takes is a flag word, called the `sendHow` parameter. The `sendHow` parameter controls two aspects of the request: who to send it to and what to do if the request is received. There are three ways to specify who to send the request to: you can send the request to *all* currently registered subroutine sets (`sendToAll`), to a set beginning with a certain name (`sendToName`), or to a set with a certain memory ID (`sendToUserID`). The name and memory ID matches are based on the name and memory ID parameters that were passed to `AcceptRequests`. You can also have your request sent to all matching request handlers or to the first request handler which accepts the request. You can set the `stopAfterOne` flag to only have the first accepting request procedure receive the request, or you can leave the flag clear to have all qualifying request procedures see the request.

Who Gets It First?

There are two additional points you need to know about request procedures: how name matches occur and the order in which matches are tried. Name matches are case insensitive and length insensitive. Case insensitive means that "ego" and "EgO" will both match. Length insensitive means that "EGO Systems" and "EGO" both match. With that bit of information, you can see why you can add extraneous information to the end of your request procedure name—the caller doesn't have to know it, but it's nice for informational purposes. In case you need to have two request procedures installed by two copies of the same program, the optional memory ID part of the request procedure name will keep the two names separate.

The order in which matches are tried depends on the order in which the request procedures installed themselves. The last request procedure installed is the first one to be called. This is handy information to

know in the case of requests that are sent to all installed request procedures, especially if the `stopAfterOne` attribute is set when the request is sent. You can actually intercept the request before a later routine would receive it, do some processing, and then halt the request by accepting it.

Know Your Numbers

Of course, in order to make any sense out of all this IPC junk, you'll need to know who you can send requests to, what requests those procedures accept, and even what requests will be sent to you. To find out all this information, you need to consult with some reference material. For Apple products (such as the Finder and the Sound control panel) you'll want to look at the *Programmer's Reference for System 6.0*. For everything else, you'll need the documentation for that particular program. Usually contacting the author of the program will get you a nice file describing the request codes and who to send them to.

Request codes for programs will generally be in the \$8000 to \$FFFF range. Each code in the upper range is defined only for a particular request procedure. For example, the EGO Systems~Quick DA~ request procedure and the EGO Systems~Cool Cursor~ request procedure can each have request code \$8002 defined, and they will do different things. Request codes in the \$0001 to \$7FFF range are deemed system requests and no matter who the code is sent to, it will always have the same meaning. For example, if your request procedure receives code \$0003 (the `srqGoAway` request), the sender is asking if it is OK to call `UserShutDown` on your request procedure's memory ID.

Putting Two And Two Together

Now that you see how each part of the IPC mechanism works, let's put everything together and see some real IPC in action. I've made up a short Finder extension shown in Figure 1 that I'll go through, pretty much line by line, and explain what all is going on. The sample code is in C, but it's simple enough to follow along with even if you don't know C. Let's start from the top:

The first line tells the compiler to exit the program with a `RTL` instruction instead of using the `GS/OS` quit call, which is necessary for any Finder extension or init file. The second line tells the compiler to perform as many optimizations on the code as possible to reduce the size and increase the speed of the final load module. The next few lines read in some necessary header files which define

constants, data types, and Toolbox calls. The `#lint -1` line tells the compiler to perform strict type checking, which is not necessary, but I like to use it. Next come a few constants that I define, like the name of the request procedure we'll install, the name of the Sound control panel's request procedure, and the names of a couple of sounds. Finally I define a global variable to hold our program's memory ID. That's all for the setup information—now let's skip to the bottom of the code.

When the Finder starts up, it loads in all the extensions and calls their main entry point. For C programs, the main function is what is called. Our program sets the global memory ID variable and installs a request handler so the Finder can talk to us further. From here on out, the Finder will talk to us with IPC, and we will talk back similarly. When we registered our request handler, we registered it under the name of EGO Systems~Igor~ and we registered the `IPCRequest` routine as our dispatch routine. Let us now take a look at the dispatch routine to see how we handle the Finder talking to us.

Take note that the `IPCRequest` routine is bracketed by `#pragma databank` and `#pragma toolparms` compiler directives. When our dispatch routine is called, we have to explicitly set up our data bank register in order to access our global variables, which is what the `databank` directive does. Also, the dispatch routine is called in the Toolbox style, not in the C style, so we now have to tell the compiler to compile the routine just slightly differently, which is what the `toolparms` directive does. Of course, after the routine has been compiled, we can once again turn those compiler attributes back off.

Our dispatch routine has one local variable, called `Result`, which is initially set to accept requests. Next we fall into a `switch` statement to handle the individual request codes we'll accept. (For you Pascal affectionados, the `switch` statement is similar to a `case` statement.) There are only three requests which we care about: `srqGoAway`, `finderSaysBeforeOpen`, and `finderSaysOpenFailed`. All other requests will fall under the default category, which sets the result variable to false (to reject the request). When the dispatch routine exits, the `Result` variable is returned, which will either accept or reject the request. Now let's take a more in-depth look at what happens when a request we want to know about occurs.

When we see a `srqGoAway` request, we call the `DoGoAway` function to prepare our program for being removed from the system. Since this is a simple program, we don't have to do anything except fill in the result parameters that the request wants. When we see a `finderSaysBeforeOpen` or `finderSaysOpenFailed` request, we call the `PlaySound` function and set the result variable to false since we don't really open the file—this allows other extensions to have a crack at opening the file after we see it. Note that if our Finder extension is installed *before* an extension which accepts these requests then we'll never see the request and we won't be able to do our thing. So far so good. We've seen all the aspects of a dispatch routine now, so let's look at actually sending some requests.

The `PlaySound` function, if you haven't guessed by now, does the work of actually playing a sound when a file is being opened. To do this, it sends a few requests to the Sound control panel. The `PlaySound` function takes one parameter: the name of the sound to play. The first thing the `PlaySound` function does is define a local struct (equivalent to a record in Pascal) variable to hold the result of the `srqGetSoundSample` request. The next thing that happens is the `srqGetSoundSample` request is sent to the Sound control panel to see if the sound we want is available. If the sound is available then the `SendRequest` call will succeed—if not, the call will return with an error. We check for an error, and if one occurred, we simply exit. If no error occurred, we continue to play the sound. To do this we make the `srqSynchronize` request to wait for any sound that's already playing to finish, then we make the `srqPlaySoundSample` to play our sound. Note that for all of the requests we have sent, we have sent them specifically to the Sound control panel by name with `stopAfterOne` set. Finally, before we exit, we have to check to see if we need to dispose of the sound we played.

How Did I Know That?

How did I know that I needed to check to see if the sound needed to be disposed of? How did I know what the `finderSaysBeforeOpen` request means? I read the *Programmer's Reference for System 6.0*. Yes, I can't stress this point enough. Before you go off and write your own code which uses IPC, you should read up on what you're getting into. Specifically, read the chapters about the Finder and the Sound control panel. They'll tell you everything

you need to know to send requests and accept requests from them.

Due to space limitations, the code in Figure 1 is *not* on your GS+ Disk. So, you will have to type it in yourself. (And, believe it or not, we've actually had some readers that have called us *asking* for programs to type in—so we thought we would start with this short example.) After you have typed in and saved the code, use the following commands to compile it, and then copy the result file to your *:System:FinderExtras folder:

```
cmpl Igor.CC keep=Playful
filetype Playful $BC $0001
```

Debugging

If you get curious, and if you have the latest version of Nifty List by Dave Lyons

(don't forget to pay your shareware fee!), you can find out all the programs that have called `AcceptRequests`. To do this, enter Nifty List and type ~m to see the contents of the message center. Among the regular contents of the message center, you'll see named messages starting with the delete symbol (a checkered box) and a greater than symbol (>) followed by a receiving name. The id and proc fields will also be filled in for request procedures so you know who issued the `AcceptRequests` call and where the dispatch routine is in memory. It's usually pretty interesting to find out what request procedures are hanging around in your system. For more intense debugging, I recommend you check out a copy of the freeware program, `IPC Spy` by Richard Bennett. `IPC Spy` will show you exactly what requests are

being sent on your system and can be handy in tracking down bugs.

Where To Go Next

Now that you've read this, you should have a fairly good grasp of what IPC is and how it works. If you would like more examples of IPC, you should check out the EGOed source code on your GS+ Disk. The next thing you should probably do is write a program that uses IPC. A good place to start is writing a Finder extension. Why not make one that plays a different sound when certain menu items are chosen? Why not add a menu item to the Finder's "Extras" menu to perform a clean up by name so you don't have to hold down the option key and pull down the "Special" menu? If you get stuck, feel free to contact us for help. Good luck! GS+

Warranty Disclaimer And Copyrights

EGO SYSTEMS' LICENSOR(S) MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, REGARDING THE SOFTWARE. EGO SYSTEMS' LICENSOR(S) DOES NOT WARRANT, GUARANTEE OR MAKE ANY REPRESENTATIONS REGARDING THE USE OR THE RESULTS OF THE USE OF THE SOFTWARE IN TERMS OF ITS CORRECTNESS, ACCURACY, RELIABILITY, CURRENTNESS OR OTHERWISE. THE ENTIRE RISK AS TO THE RESULTS AND PERFORMANCE OF THE SOFTWARE IS ASSUMED BY YOU. THE EXCLUSION OF IMPLIED WARRANTIES IS NOT PERMITTED BY SOME JURISDICTIONS. THE ABOVE EXCLUSION MAY NOT APPLY TO YOU.

IN NO EVENT WILL EGO SYSTEMS' LICENSOR(S), AND THEIR DIRECTORS, OFFICERS, EMPLOYEES OR AGENTS (COLLECTIVELY EGO SYSTEMS' LICENSOR) BE LIABLE TO YOU FOR ANY CONSEQUENTIAL, INCIDENTAL OR INDIRECT DAMAGES (INCLUDING DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION, AND THE LIKE) ARISING OUT OF THE USE OR INABILITY TO USE THE SOFTWARE EVEN IF EGO SYSTEMS' LICENSOR HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. BECAUSE SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. EGO Systems' Licensor's liability to you for actual damages from any cause whatsoever, and regardless of the form of the action (whether in contract, tort (including negligence), product liability or otherwise), will be limited to \$50.

And furthermore,

Some of the programs on this GS+ Disk contain materials from the ORCA/C and ORCA/Pascal Run-Time Libraries, copyright 1987-1989 by Byte Works, Inc. Used with permission.

All other material is copyright 1994 by EGO Systems, unless otherwise noted. Purchasers of the GS+ Disk may use the source code and/or libraries in their own programs, provided that the following notice appears somewhere in the program or in its documentation:

"Portions of this program were created using source code and/or libraries from GS+ Magazine, and are copyright 1989-1994 by EGO Systems. Used with permission. For more information on GS+ Magazine, write to:

GS+ Magazine
P. O. Box 15366
Chattanooga, TN 37415-0366"

Figure 1
A Simple Finder Extension That Uses IPC

```
#pragma rtl
#pragma optimize -1

#include <finder.h>
#include <locator.h>
#include <memory.h>
#include <orca.h>

#pragma lint -1

#define IPCName "\\pEGO Systems~Igor~"
#define SoundName "\\pApple~SoundCP~"

#define OpenName "\\pTrumpets"
#define FailName "\\pQuack"

Word ProgramID;

void DoGoAway (srqGoAwayOutPtr dataOut) {
    dataOut->resultID = ProgramID;
    dataOut->resultFlags = 0x8000;
}

void PlaySound (char *soundName) {
    struct {
        Word recvCount;
        Handle soundHandle;
        Word flags;
    } SampleOut;

    SendRequest (srqGettrSoundSample, stopAfterOne + sendToName,
        (Long) &SoundName, (Long) soundName, (Ptr) &SampleOut);

    if (!toolerror ()) {
        SendRequest (srqSynchronize, stopAfterOne + sendToName, (Long) &SoundName, 0L, NULL);
        SendRequest (srqPlayrSoundSample, stopAfterOne + sendToName,
            (Long) &SoundName, (Long) SampleOut.soundHandle, NULL);
        if (SampleOut.flags & 0x8000) DisposeHandle (SampleOut.soundHandle);
    }
}

#pragma databank 1
#pragma toolparms 1
pascal Word IPCRequest (Word request, Long dataIn, Long dataOut) {
    Word Result = 0x8000;

    switch (request) {
        case srqGoAway:
            DoGoAway ((srqGoAwayOutPtr) dataOut);
            break;
        case finderSaysBeforeOpen:
            PlaySound (&OpenName);
            Result = 0;
            break;
        case finderSaysOpenFailed:
            PlaySound (&FailName);
            Result = 0;
            break;
        default:
            Result = 0;
            break;
    }

    return Result;
}

#pragma toolparms 0
#pragma databank 0

int main (void) {
    ProgramID = MMStartUp ();
    AcceptRequests (&IPCName, ProgramID, &IPCRequest);
}
```

EGOed v2.0

By Steven W. Disbrow &
Josef W. Wankerl

Wow! Can you believe it's been a year since we last published a new version of EGOed? (If you're a new subscriber, check out the "What Is EGOed?" sidebar for more info.) Well, it has been, but you can bet your lunch money that it's been worth the wait. Version 2.0 of EGOed is packed with features that *no other* IIGS text editor has; some are things that you asked for, and some are things that you didn't, but that you're going to love!

The Price of Power

EGOed v2.0 is a big program. Because of that, we've given up on trying to figure out how to fit it onto a floppy boot disk. So, to use EGOed v2.0, you *must* install it on a hard disk, or at least on a 1.44MB floppy disk! Also, since EGOed v2.0 requires System 6.0 or later, we *strongly* recommend that you have at least 2MB of RAM installed in your IIGS. If you've never installed EGOed before, turn to "How to Use Your GS+ Disk" for complete information on how to install and get started with EGOed.

What's New

When we were discussing what we wanted to include in this version of EGOed, three things kept coming up: kill all the known bugs, put in support for colored text, and make EGOed able to read and write the most useful file formats possible. So, that's just what we did. Along the way, we threw in a few new preferences that make EGOed even easier to use, and we sped up the Find and Replace functions as well as making EGOed open as quickly as possible.

Bug Fixes

Fortunately, EGOed has always been a very stable program, so most of the bugs that we had to fix were simply cosmetic ones. (A complete list of improvements is on your GS+ Disk in the file EGOed.2.Changes.)

However, one part of EGOed that needed a complete overhaul was the print function. We took what we learned while writing TypeSet for WestCode and used it to fix all the quirks in the EGOed printing function. As a result, EGOed now handles all printing much better than before, and it no longer hangs up if the printer isn't turned on when you try to print. (EGOed also handles things much better when you cancel printing by pressing Command-period.)

Color Menu

For a long time now, lots of people

(especially Joe) have been asking for us to put a color menu in EGOed. However, Diz has always held up the idea because he believes that colored text is only good for ransom notes, and because there wasn't enough room on the EGOed menu bar for two more menus (one for the foreground color and one for the background color). So, one day, Joe decided to put a color menu in EGOed all by himself.

Of course, Diz is probably wrong about colors only being useful for ransom notes, but he was exactly right about not having any more space in the EGOed menu bar! (After all, since EGOed is a New Desk Accessory, it has to work in both 640 and 320 modes—which means that what fits in 640 mode might not fit in 320 mode.) So, since Joe *couldn't* put in two color menus, he had to come up with a single menu for setting both the foreground and background colors. Other IIGS editors get around this problem by using a single color menu that lets you set the foreground color. To set the background color, you old down the option key while picking a color from the same menu. But, Diz didn't like this solution either.

The EGOed Color Menu

So, what he and Joe came up with was a single color menu that you can use to select either the foreground or background color without having to hold down any keys. The EGOed color menu is similar to the Color menus that you will find in other applications except that there are *two* sets of color squares to choose from. One set (which represents the foreground color) overlaps the other set (which represents the background color). To pick a

foreground color, you simply pull down the Color menu and pick one of the "front" color squares. To pick a background color, you simply pull down the Color menu and pick one of the color squares in the "back."

If you want to know exactly which colors are currently selected, just pull down the color menu, and look for the tiny boxes inside the color squares. These boxes show you exactly which foreground and background colors are active for the current selection. (See Figure 1.)

Find and Replace Colors

Of course, now that EGOed gives you a way to set the color of your text, it only makes sense that it should give you a way to find and replace those colors, just like it lets you find and replace fonts and styles. So, we've added a new button, Color, to the Find and Replace dialogs. When you click on this button, you get a dialog that lets you pick a new foreground and background color for the text that is selected in the Find or Replace dialog. After you set these colors, you use the Options button to bring up the Find and Replace options dialog. This dialog (see Figure 2) contains a bunch of check boxes that let you tell EGOed exactly what you want to find and replace. You can, for example, search for all of the occurrences of the foreground color red, and replace the them with a different color. (For a detailed example of how to use EGOed's powerful Find and Replace functions, be sure to read the EGOed.Docs file.)

New File Formats

For a long time, EGOed was the only

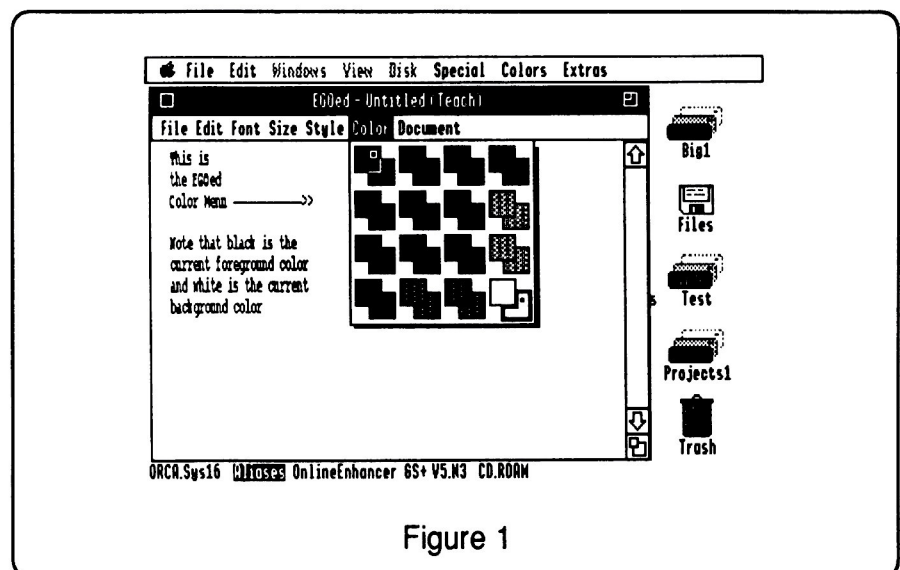


Figure 1

IIGS editor that could read AppleWorks GS word processing files (other than AppleWorks GS, of course). Then along came System 6 and the Teach application. Not only could Teach read AppleWorks GS files, it could also read MacWrite v5.0 files! While this capability sounded cool, IIGS owners quickly discovered that almost *nobody* in the Mac world actually *saves* files in MacWrite v5.0 format! You have to give Apple credit though, being able to open files created on the Mac is a very good idea—it's just that MacWrite was the wrong format to support!

Enter RTF

Several years ago, Microsoft created a file format called "Rich Text Format" (also called "Rich Text," or simply "RTF"). This format allows you to save just about any word processing or page layout file in a plain ASCII text file, with all font, size, style, graphic and layout information intact! Since the data is saved in a simple ASCII file, it can then be easily moved between *all* computer platforms that support the ASCII character set, which includes the IIGS. Of course, the actual data in this ASCII file is encoded, so to use these files, you must have the proper software that can decode the data and turn it into something that is meaningful to your computer. This is exactly what EGOed v2.0 does! Not only that, but EGOed will let you *save* files in RTF format too!

This means that you can go to work, use your Mac to start a document, save it to disk as an RTF file, bring it home, load it into EGOed and continue working on it without losing any font, size or style information! The next day, you can take the changes back to work with you, and load them back into your Mac word processor, with the font, size and style information intact!

What Is EGOed?

EGOed is a New Desk Accessory (NDA) text editor. When you install EGOed on your startup disk, you can use it to edit and print ASCII text, Teach, AppleWorks Classic and AppleWorks GS word processor files from inside any desktop program that properly supports NDAs. To use EGOed v2.0, you must install it on a IIGS System Software v6.0 (or later) startup disk with at least 120K of free space. For more information on installing and using EGOed, see "How to Use Your GS+ Disk."

And, if you have System 6.0.1, a SuperDrive and a SuperDrive controller card, you can read RTF files created by MS-DOS and Windows programs directly off of MS-DOS disks!

In fact, it doesn't matter which computer or program created the RTF file, as long as you can get it onto a disk that your IIGS can read, EGOed should be able to read it! But, that's not all!

Thanks to our good friends at Softdisk publishing, EGOed v2.0 also reads and writes Softdisk Issue Text. This means that you no longer have to run the Softdisk G-S shell to read the files that come on the Softdisk G-S disks! But wait! There's still more!

If you tell it to, EGOed v2.0 can open *any* file as a plain text file! This can be very, very useful in a lot of situations. For example, we keep our advertising page assignments in a HyperCard IIGS stack. One day, Diz tried to open the stack, only

to find it was corrupted—HyperCard wouldn't let him open it! So, using EGOed, he simply opened the stack as a text file, copied out all of the text that was related to the advertising page assignments, and pasted it into a new version of the stack! (See "The Open Dialog," below, for detailed information on this feature.)

With all of these new file formats, EGOed needed to have a new way to specify which types of files you want to open, as well as giving you an easy way to specify the type of a file that you are saving. To accomplish this, the Open and Save As dialogs now contain pop-up menus that list all of the possible file types you can open and save.

The Open Dialog

By selecting a file type from the pop-up menu in the Open dialogue, you can tell EGOed that you only want to look at that type of file. So, if you have a folder with thirty-five text files and ten Teach files, and the file you want to open is a Teach file, you would pick "Teach" from the pop-up menu, and EGOed would only show you the Teach files that were in the folder. The types of files that you can select are: AppleWorks Classic, AppleWorks GS, ASCII Text/RTF, Softdisk Issue Text, Source Code and Teach.

In addition, there are two other items in the Open dialog's pop-up menu: "All Known Types," and "Any File As Text."

When you select "All Known Types" (which is the default selection), EGOed lists *all* of the types of files that it knows how to open.

Selecting "Any File As Text," makes EGOed show you *all* files, regardless of whether or not EGOed knows how to open them! If you wanted to, you could use this feature to open a binary file, an application or any other file you have! Any file that you open using this option will be opened as if it were a plain ASCII text file. In other words, if you open a Teach file using this option, all you will get will be the text portion of the file, the style information will be ignored!

It should also be noted that saving files that you open this way can be dangerous! For example, if you open the Finder (or some other application) as a text file, and then save it back out with the same name, it will no longer be an application file! In general, you should only use this option to recover data from corrupted files, and not to monkey around with application files! In other words, be careful!

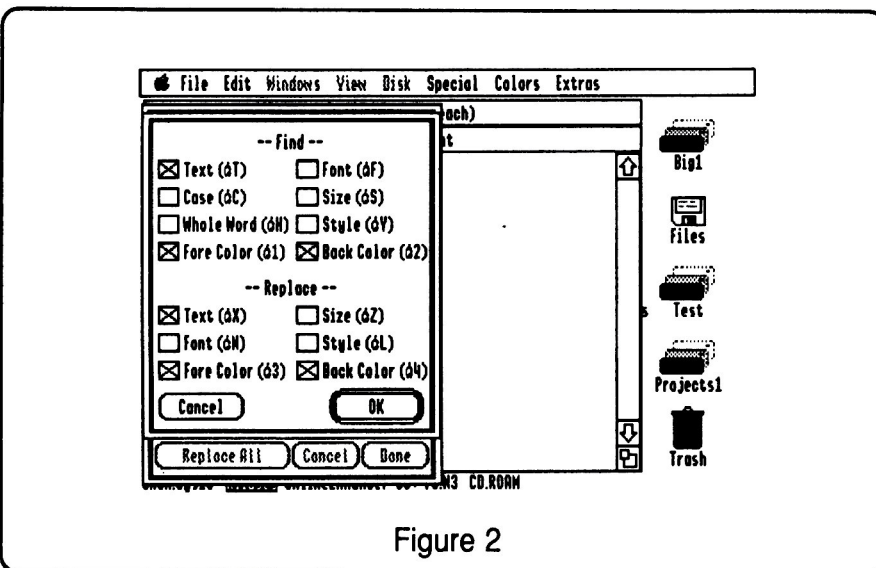


Figure 2

The Save As Dialog

Previous versions of EGOed could also open a lot of different file types, but they didn't make it easy to actually save your work in different formats. EGOed v2.0 does away with this difficulty by allowing you to pick the file type you want to use from a pop-up menu. Using this menu you can save your work as one of the following types: AppleWorks Classic, ASCII, Rich Text (standard or "default"—more on this below), Softdisk Issue Text, Source Code (APW C, Hyper/3D Logo, Installer script, ORCA/C, ORCA/M, ORCA/Modula-2, ORCA/Pascal, PostScript, REZ and Other [see below]), and Teach. While most of these formats are self-explanatory, a few of these choices need some explanation.

Saving RTF Files

Normally, when you load in an RTF file into an editor (any editor that can read RTF files, not just EGOed), it gets translated into the format normally used by that editor. In the case of EGOed, that means that it will be translated into a Teach file. Then, when you save the file back out, it will automatically be saved as a Teach file. However, if you save your RTF files using the "Rich Text (default)" selection, any editor that loads those files will know automatically that it should save that file back out as an RTF file and *not* in its normal format. Saving a file in this format makes it easy to move the file between different platforms and editors, because you don't have to keep selecting "Save As" to save the file as an RTF file.

Saving Source Files

As you can tell from the list of file types that EGOed can save, EGOed knows about lots of different kinds of source code languages. However, the pop-up menu in the Save As dialog only lists the most commonly used languages that we know of at this time. Since new source code language types are being defined every few months, EGOed has a way to let you save your source code with any language stamp (i.e. auxiliary file type) that you wish. All you do is select "Source: Other" from the pop-up menu in the Save As dialog. This will bring up another dialog that will let you type in the auxiliary file type that should be used for the source code file. So, for example, if The Byte Works should ever release ORCA/COBOL (God forbid!), and its source files have a language stamp of \$9999, you could save a file as an ORCA/COBOL source code file by selecting "Source: Other" from the Save As dialog, and then typing "9999" in the dialog box that appears. The file would then be saved with a file type of \$B0 (which is the file type that all source code

files have) and an auxiliary type of \$9999, which would mark it as an ORCA/COBOL file.

New Preferences

With all of these new features, we just had to throw in a few new preferences to help you use them more efficiently. There are four new preferences in all, two are new Load/Save preferences, and the other two are new preferences that work only in the Finder. (For complete information on how to use the EGOed preferences system, be sure to read the EGOed.Docs file.

New Load/Save Prefs

Always Translate RTF Files - RTF files are by definition, simply ASCII text files. However, they contain a special sequence of characters at the start of the file that identifies the contents of the file as being in Rich Text Format. So, whenever you use EGOed to open a text file (*any* text file) it automatically looks at the first few characters of the file to see if it is an RTF file. If the file is an RTF file, EGOed will put up a dialog informing you of this, and ask you if you wish to translate the file. This preference gives you the ability to skip that dialog so that EGOed will always translate RTF files automatically when you open them.

Present Open Dialog For New - If you use EGOed in the Finder, you probably don't see the Open file dialog; you probably just double-click on the files you want to edit. However, if you use EGOed in other programs, you probably have to go through the Open file dialog every time you create a new EGOed window. Which is where this new preference comes in really handy. If you have this preference turned on, EGOed will automatically present you with the Open file dialog every time you create a new EGOed window. If you have to edit a lot of files one after another, this can be a *big* time saver! (If you need to reverse the current setting of this preference, simply put down the caps lock key before you create a new EGOed window.)

New Finder Preferences

Ignore .BXY, .SHK, etc. Files - Ever since System 6 came out, EGOed users have had a problem with EGOed accidentally opening ShrinkIt archives. After all, when you download these files, they usually end up as text files on disk, and EGOed doesn't have a 100% reliable way to ensure that the file wasn't an actual text file. This preference is an attempt to fix that. When you turn this preference on, EGOed will look at the last few characters of the file name of any file that you double-click on. If those characters are ".SHK", ".BXY", ".BNY", or

".BQY", EGOed will *not* open the file so that it can be passed on to ShrinkIt-GS. (Note that this is *not* a case sensitive comparison. So, EGOed would also ignore files ending with ".shk".)

Treat .RTF Files As Text Files - As was mentioned earlier, one of the main purposes of the RTF file format is to allow data to be easily moved between computer platforms. However, this doesn't always work as well as everyone would like. For example, if you have an MS-DOS disk with an RTF file on it, chances are that the program that created the RTF file named it something like MYDOC.RTF. Unfortunately, the MS-DOS FST does not realize that a MS-DOS file name ending in ".RTF" usually means that the file is actually an ASCII text file. So, it reports that the file is of type "Unknown." Normally, you would have to copy the file to another disk and then change its file type to a plain text file before EGOed could read it. But, if you turn this preference on, EGOed will check any file that you double-click on to see if its name ends with ".RTF". If it does, EGOed will treat that file as if it were an ASCII text file, regardless of the file type that GS/OS says it is. If you do a lot of work with RTF files on MS-DOS disks, this preference will become one of your favorites!

What's Next?

So, there you have everything that's new in EGOed v2.0. Pretty cool huh? Well, heck, you haven't seen anything yet! We've got a bunch of other great stuff in the works that we had to leave out of this version because we just ran out of time.

But heck, just because we've got a list of stuff *we* want to do, doesn't mean that we don't want to hear *your* suggestions! We want EGOed to be the editor of choice for IIGS users, and with your ideas and feedback, we'll be able to do that.

And, please don't forget to take a few minutes to read the EGOed.Docs file on your GS+ Disk. It contains all the information you need to know to really get the most out of EGOed, and it's very important that you read it!

Finally, if you find a bug in EGOed, please fill out one of our problem forms and send it to us! We don't think you'll find any problems with EGOed v2.0, but if you do, we want to fix it as soon as possible! **GS+**

APPLE II EXPANSION HEADQUARTERS!

WE HAVE THE PRODUCTS YOU NEED WITH THE PRICES YOU WANT!

HARD DRIVES

Our NCS Pro SCSI Hard Disk drives have all of these great features:

- 2 year warranty (Quantum Mechanisms)
- High impact ABS case (not flimsy plastic material)
- Dual SCSI connectors for easy daisy-chaining
 - Access indicator light
- Termination accessible via access door
- External SCSI ID selector

We also include the latest System Software for your Apple IIs. You also get 30+ megs. of shareware and utilities at your disposal. Works great for other Apples too.

And if you're still not satisfied, just return the drive by taking advantage of our no-hassle return policy.



Orders over \$300 automatically upgraded to Airborne Express!

NCS Pro Drives

42mb. Q ELS	\$159
85mb. Q ELS	\$219
170mb. Q ELS	\$249
245mb. Maxtor	\$299
270mb. Quantum*NEW*	\$329
525mb. Q LPS	\$679
1.08gig. Q *NEW*	\$1,029

NCS Pro Removable Drives

NCS Pro R44mb. \$299

44mb. Syquest Removable Drive

NCS Pro R88Cmb. \$499

44mb. / 88mb. SyQuest Read and Write

All removable drives include one cartridge.

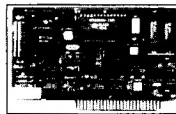
Extra 44 / 88 carts are \$68 / \$108

30 DAY MONEY-BACK GUARANTEE

HARD DRIVE INTERFACES

SEQUENTIAL SYSTEMS RamFast SCSI Card

The RamFast is the most powerful SCSI interface available for the Apple IIs Computer. It features expandable Cache, and upgradable ROM support.



RamFast GS v3.01

w/256k Rev.D **\$139 / \$149**

w/1mb.Rev.D **\$189 / \$199**

(with hard drive / without hard drive)

RamFast v3.01 Upgrade (for current RF users) Rev. C or D \$15

TRADE-IN YOUR APPLE SCSI CARD FOR A RAMFAST SCSI CARD, CALL FOR DETAILS!

APPLE High Speed SCSI Card \$99

\$109 without hard drive purchase

SEIKO DATA WATCH SPECIAL!

Put the scheduling power of your Apple II on your wrist. Allows you to keep daily details, appointments all on your wrist. Uses the easy to use Time-Trax 23-month scheduling software. For any Apple II computer! Includes interface cable, transmitter, Silver slim-line LCD watch, software and manual.

\$24.95

DELIVERED OVERNIGHT! (MOST AREAS)
\$19 WITH ANY OTHER PURCHASE

SEQUENTIAL SYSTEMS

RAM GS

(4megs/GS) **\$118***

*\$129 without any other purchase

- 4MB. ON BOARD FOR IIGS
- 100% DMA COMPATIBILITY
- INCLUDES DIAGNOSTIC UTILITIES DISK

PaceMark IIGs SuperRam IV \$99*

4mb. ram card for IIGs - 100% compatible!

*109 without any other purchase

ZIP ACCELERATORS



Put your GS into the fastlane with ZIP Accelerators. Over **300%** faster with a Zip 9/32 installed. Makes your GS Finder like new!

Zip 7mhz/8k Cache **\$135**

Zip 8mhz/16k Cache **\$174**

Zip 9mhz/32k Cache **\$225**

Zip 10mhz/64k Cache **\$399**



School and Government P.O.s Welcome!

Serving the Apple II Community for over 5 Years!

THE SMALL PRINT

No Cash Card Refunds. Standard shipping charges for UPS Ground or Priority Mail \$3. Minimum \$5. No COD shipping on orders over \$200 unless under \$300 and a surcharge of \$8 for UPS COD and \$12 for Airborne Express. COD Call for additional charges for Air and International shipments. Illinois residents add 6.25% sales tax. No sales tax for out of state purchases. Returns of hardware for up to 30 days with an RMA. No returns accepted without RMA. All net ms. for credit are charged by handling fee. Returns past 30 days, and incomplete product returns are at our discretion. Shipping charges vary. Prices and availability is subject to change. This advertisement is ©1983 by ERA Computer Sales. All rights reserved. Any violation can be punishable by law. All or both, if and where prohibited. Continental USA only.

VITESSE

Quickie / Inwords Bundle.....\$199

Includes Vitesse's Quickie Handscanner for the Apple II and WestCode Software InWords v1.1 OCR Software. Quickie (separately).....\$149

HEAVY DUTY POWER SUPPLIES

Iigs HD Power Supply \$79
Ile HD Power Supply \$69

NEW YEAR SPECIAL!

NEW CONCEPTS PRISM



IIGS 3200 Color Graphics Conversion Utility
NC Prism Graphic Conversion Program
\$34.95

Applied Engineering

ÆVulcan Gold Upgrade.....\$ 47
Æ 5.25" for LC or A2.....\$149
AMR 5.25" for LC or A2.....\$119
AMR and Æ 5.25" drives are daisy chainable!
Æ SuperDrive.....\$229
1.44/800K 3.5" Floppy Drive for A2 & Mac
Apple SuperDrive I/F.....\$138
3.5" interface for A2 and Iigs / Req'd for 1.44mb.

Memory Upgrades

1mb SIMMs.....\$46
1mb RamFast Upgrade.....\$59
1mb Expansion Set (8 Chips).....\$49
1mb GS-Ram III Upgrade.....\$59
256k GS-RAM Ultra Upgrade.....\$15
256k Apple Exp. Kit.....\$18

BRAND NEW!

SEQUENTIAL SYSTEMS DiscQUEST™

SEQUENTIAL SYSTEMS DiscQUEST™ Software bundled with a CD-ROM drive allows YOU the Apple Iigs user to explore the hundreds of CD-ROM disks previously unaccessible.

SEQUENTIAL SYSTEMS DiscQUEST™ has powerful features you would not expect, for instance:

- Search CD-ROMs by Word, Title, Author
- Display Graphics from Mac or IBM CD-ROM disks
- Play audio from CD-ROM disks
- Browse through Mac and IBM CD-ROM disks

SEQUENTIAL SYSTEMS DiscQUEST™ CD-ROM Bundle **\$569**
-includes Software, RamFast SCSI, CD-ROM Drive and 4 CD-ROM titles!
SEQUENTIAL SYSTEMS DiscQUEST™ Software alone **\$79**
-includes Family Doctor CD-ROM

SEQUENTIAL SYSTEMS

Switch-It!.....\$48.00
Switch-It! allows you to run several applications at once, and switch between them in an instant. Compatible with practically all GS/OS programs. Requires GS/OS 6.0, and 4mb for optimum performance (2mb minimum)

DREAMWORLD

DreamGrafix.....\$58.00
3200 COLOR PAINT PROGRAM FOR IIGS

ECON TECHNOLOGIES

Universe Master.....\$ 68.00
COMPLETE IIGS HARD DRIVE MANAGEMENT UTILITY
AutoArc.....\$24.00
-NEARLY DOUBLES THE SIZE OF YOUR IIGS HARD DRIVE

Roger Wagner Publishing

HyperStudio.....\$97.00
-FUN AND EASY TO LEARN HYPERMEDIA FOR THE IIGS

WestCode SOFTWARE

Pointless.....\$ 46.00
-TRUE TYPE FONT INTERPRETER FOR IIGS
InWords.....\$78.00
-ALLOWS THE QUICKIE TO SCAN IN TEXT FOR EDITING

Vitesse

Harmonia.....\$29.00
-IIGS PRINTER DRIVERS FOR HP PRINTERS

InTrec

ProTerm 3.1 NEW.....\$78.00
-HIGHLY RATED APPLE II COMMUNICATIONS PROGRAM

TimeWorks

Publish It! v4.0 **SPECIAL**.....\$39.00
-APPLE II PAGE LAYOUT UTILITY

Seven Hills Software

(ALL COMPATIBLE WITH THE MANAGER)
Shoobox.....\$34.00
HOUSEHOLD RECORD KEEPING AND MESSAGING
Express.....\$24.00
-IIGS PRINT SPOOLER
Kangaroo.....\$28.00
-TIMESAIVING FOLDER UTILITIES FOR IIGS
Manager.....\$48.00
-MULTITASKING ON THE IIGS

SPECTRUM (NEW).....\$CALL
-SYSTEM 6.0 BASED COMMUNICATIONS PROGRAM. SUPPORTS ZMODEM AND COMPUSEIVE B+ PROTOCOLS!

Apple Computer, Inc.

GS/OS System 6.0.....\$39.00
HyperCard GS.....\$69.00

// Productive

BullsEye TrueType Font Collection for the Apple Iigs. Includes over 300 TrueType Fonts, Font Viewing Utility, America Online Software Kit and MUCH MORE for only.....\$45.99

// Productive BullsEye

and

WestCode Pointless.....\$88.00

MODEMS

SUPRA v.32bis, 14.4bps Send / Receive Data/Fax Modem (Universal).....\$269
Zoom 2400 with Cable for Iigs.....\$79

Check out Seven Hills Hot NEW Spectrum Iigs Communications Package!

(800) ASK-4LR0

FAX ORDERS: (815) 338-4332
TECH SUPPORT: (815) 338-8746
INTERNATIONAL: (815) 338-8658
ILLINOIS RESIDENTS: (815) 338-8685
224 WEST JUDD STREET
WOODSTOCK, IL 60098

MIDI Surgeon v1.0

By David M. Tribby

When Apple released the MIDI Synth tool set with System Software version 6.0, they gave Apple IIGS users a powerful capability to play music. The "MIDI" in the tool set name stands for "Musical Instrument Digital Interface," a series of standards covering physical connectors, electrical specifications, data formats, communication protocols, and conventions for assigning sounds to instruments. Many different manufacturers sell computers interfaces and musical keyboards that conform to these standards.

The description of the MIDI Synth tool set in *Programmer's Reference for System 6.0* reveals that its sequences contain the same information as standard MIDI data files, although in a completely different format. MIDI Synth's sequencer acts upon many of the standard MIDI messages, and will pass any MIDI message to musical instruments connected via the IIGS's MIDI interface.

Although MIDI Synth sequences are stored in a format unique to the Apple IIGS, MIDI Surgeon allows you to translate a standard MIDI file for use with MIDI Synth. Standard MIDI files are available from many on-line services, and also on various Internet FTP (File Transfer Protocol) sites.

Basic Program Functionality

Although MIDI Surgeon's primary purpose is to translate MIDI files to MIDI Synth format, it will also perform "surgery" on a MIDI Synth sequence, removing unwanted entries and changing track and channel assignments. Other

program functions will be familiar to users of synthLAB, Apple's MIDI Synth utility: playing MIDI Synth sequences, opening instrument files for use with a sequence, and assigning all notes on a track to play a particular channel (instrument). MIDI Surgeon tries to make the basic translation of MIDI files as simple as possible. Here are the steps you might use:

1. Get a MIDI file.

MIDI files are available from a variety of sources. For example, if you move to page 430 on GENie and choose option 3, you will find yourself in the MIDI Software Library. A directory listing will reveal thousands of MIDI files. Many files uploaded from non-Apple systems are packed in formats that are not usable on the Apple IIGS. You will want to choose a file that has a ".MID" suffix, indicating that it is an unpacked MIDI file, or one that ends in ".ARC", a compression format that can be interpreted by GS-ShrinkIt.

2. Set the correct file type.

When you download the file, it will probably be assigned a generic "binary" or "text" file type. In order for MIDI Surgeon to recognize it as a MIDI file, it must be given the "MIDI standard data" file type, MDI (or hexadecimal \$D7). From a desktop program, you can use GS+ Magazine's NoDOS NDA (last seen in GS+ V4.N4) to change the file type. This can also be done for an entire group of MIDI files using a shell program.

```
In ORCA/M:  
FILETYPE =.MIDI MDI 0
```

```
In GNO/ME:  
chtyp -t \xD7 -a 0 *.mid
```

3. Execute MIDI Surgeon.

Launch MIDI Surgeon just as you would any other desktop application. It requires System Software 6.0 or later. The amount of memory it uses depends upon the size of the MIDI file; I run with 4MB of RAM (including an 800K RAM disk and ten New Desk Accessories) and have only experienced memory shortages with one extremely large (more than 200K) MIDI file. If MIDI Surgeon runs low on memory, it will print a message in its Translation Status window.

4. Open the MIDI file.

Choose "Open MIDI..." from the "File" menu and select your MIDI file. If the file doesn't appear in the Standard File selection dialog, you probably did not give it the correct file type in step 2.

After your file is read, a small window will appear in the upper left of your screen describing the size of the file and the number of MIDI tracks it contains.

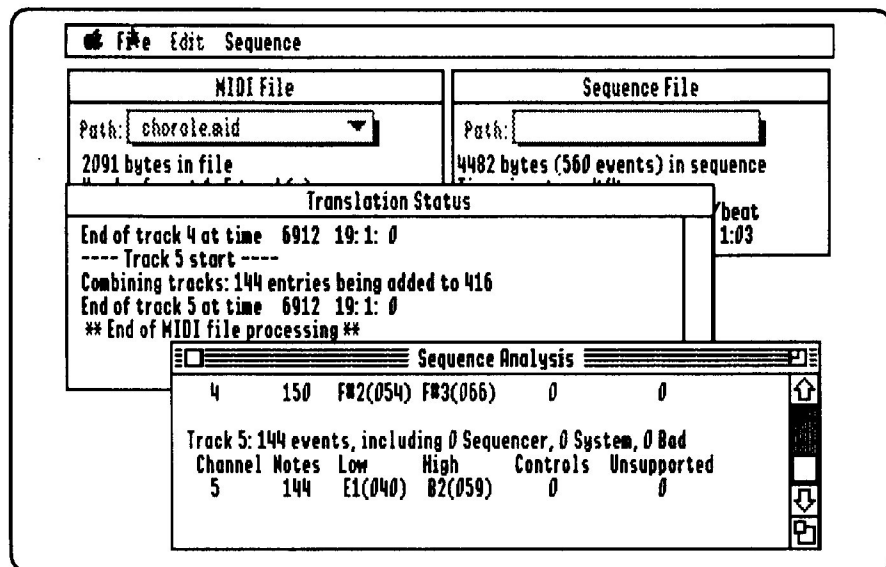
5. Translate.

The MIDI File window contains a "Translate" button; click on it to start the process of translating from MIDI to MIDI Synth.

MIDI Surgeon uses a text window to describe what it is doing, note unusual data, and report errors (such as low memory). MIDI files sometimes contain commands that are meaningful for a single manufacturer. MIDI Surgeon will report unrecognized bytes, but these messages can usually be ignored. If the resulting sequence sounds good to you, don't worry about any warnings. If the status window contains information you want to save in a text file, choose "Save Status..." from the "File" menu.

During the translation, a small window appears in the top middle of the screen. The thermometer in this window indicates the byte number being processed in the MIDI file. If you wish to terminate the translation prematurely, press the "Stop" button.

When the translation process is complete, MIDI Surgeon opens a "Sequence File" window showing characteristics of the translated MIDI Synth Sequence. MIDI Surgeon can only handle one sequence at a time. As long as this window is open, you cannot translate another MIDI file or



load a MIDI Synth sequence file. The Sequence window includes an estimate of how long the sequence takes to play, based upon the starting tempo and the number of measures. The estimate will not be correct if there are tempo changes, or if there are non-playing commands at the beginning or end.

6. Choose Instruments.

Before you can play the sequence, you must choose a MIDI Synth instrument file. For most songs, the best choice is to first play all tracks on a piano. Once you hear what a sequence sounds like, you may wish to use a variety of instruments. Using the "Open Instrument..." item in the "File" menu, I usually open the "Piano.bnk" instrument file provided on the synthLAB disk from Apple. I then use the "Tracks..." item under the "Sequence" menu to force all of the tracks to use channel 1, the piano. You can also use the track menu to turn off the playing of specific tracks and to assign names to tracks. (synthLAB only allows access to the first 8 tracks, but MIDI Surgeon lets you change all 16.)

The MIDI Synth waveform file used by the instrument file must be in the same directory as the instrument file. If it isn't, MIDI Surgeon will report an error and request that you open a different instrument file.

7. Play the Sequence.

You use the "Play" item in the "Sequence" menu to start playing the sequence. You can also use "Stop" to stop the playing of a sequence.

8. Save the Sequence.

If everything sounds fine, use the "Save Sequence..." item (under "File") to save your MIDI Synth sequence. If things don't sound so fine, you may need to use a different set of instruments or perform some surgery on the sequence.

Advanced Features

The eight steps described above are all you need to translate most simple MIDI files. However, complicated files may present special challenges. The following menu items will help you deal with these situations.

Analysis.

This command prepares a summary report of the contents of a sequence. For each track, it reports the total number of events and classifies the events into several groups. (See Table 1 for a description of all message groups.) The first group consists of track messages that apply to all instruments: Sequencer, System, and Bad. The second group contains messages directed to a particular channel: MIDI Surgeon summarizes the number of "Note On" and "Note Off" events, the

tonal range those notes cover, and the number of non-note messages. The non-note messages are divided into two categories: those that are used by MIDI Synth's sequencer and those that aren't.

The analysis will help you decide whether your sequence needs to have surgery. MIDI Synth can't use bad entries or "unused" messages, and few (if any) MIDI Synth players know what to do with a program change.

Tracks.

Use the Tracks screen to turn off the playing of any track, cause all notes on a track to play a single instrument, or assign a 15-character name to a track. The track and instrument windows are designed so that both can fit on the screen at the same time, making it easy to experiment with assigning instruments to tracks while a sequence is playing. Simply choose the number of the instrument in the track's pop-up menu, and make sure the track's "Play" check box is filled in.

Surgery.

Use this option to make changes to the sequence. Use the "Remove" options to get rid of the following:

Bad entry: malformed entries, as described above.

Table 1: MIDI Surgeon Message Groups

Group	Command (status byte)	Comments
Sequencer	SeqMarker (\$00)	Invokes a callback routine
	SetSeqBeat (\$02)	Changes ticks per beat
	SetRelTempo (\$04)	Changes tempo
System	System Common (\$F0-F7)	Unused by MIDI Synth
	Real-Time events (\$F8-\$FE)	Unused by MIDI Synth
Bad	Any message with an unused status byte value (less than \$80 and not \$00, \$02, or \$04) or with a length byte value greater than 2.	
Notes	Note Off (\$8x) Note On (\$9x)	
Controls	Polyphonic Pressure (\$Ax)	Unused by MIDI Synth
	Program Change (\$Cx)	Invokes a callback routine
	Channel Pressure (\$Dx)	Unused by MIDI Synth
	Pitch Bend (\$Ex)	Used by MIDI Synth
	Parameter Change (\$Bx)	128 parameters can be set

Only the following parameters are used by MIDI Synth:

Main Volume (7)
Sustain Pedal (64)
All Notes Off (123-127)

Figure 1

MIDI Clock	Measure:	Beat:	Tick	Track	Channel	MIDI Command
288	1:	4:	0	5	Ch 5	Note_on F#2 vel 0
288	1:	4:	0	5	Ch 5	Note_on E2 vel 64
384	2:	1:	0	2	Ch 2	Note_on C#4 vel 0

Unused entry: a valid MIDI event that is not used by MIDI Synth. You may wish to retain these for transmission to other MIDI equipment.

Program change: not generally used.

Pitch bend: the MIDI event that causes a slurring effect on notes; you will usually want to keep these.

Sequencer msg: a non-standard MIDI Synth sequencer message; you will usually want to keep these.

Any control: any non-note message that doesn't fit an earlier category.

Surgery can also change channel numbers on tracks, and cut/paste messages from one track to another. The Surgery Options window lets you change or move three selections on each pass through the sequence. If you do not want to use a change or cut/paste option, leave its channel field set to "--".

These options are particularly useful for MIDI files that contain track numbers greater than MIDI Synth's limit of 16. For example, "Cut channel 11 from track 24 & paste on trk 6" will take all of the messages on track 24 and reassign them to track 6.

When multiple channels appear on a single track, you can split them apart and put them on different tracks with something like "Cut channel 11 from trk 1 & paste on trk 14". Once a track contains a single channel you can use the

Tracks window to modify instrument assignments.

When you cannot split multiple channels from a single track, you can still change instrument assignments with the "Change channel" surgery command. For example, "Change channel 11 on track 1 to 7" and "Change channel 12 on track 1 to 8" would reassign two instruments without affecting their track position.

After you select options and press the "Start Surgery" button, MIDI Surgeon examines each entry in the sequence and applies the editing commands in the order specified on the screen. If you press the "stop" button during surgery, MIDI Surgeon discards any changes it has made and restores the pre-surgery version of the sequence.

Save Sequence as Text.

This item creates a detailed report on the contents of the MIDI Synth sequence, with one line for each entry, and writes the result to a text file. Some sample entries are shown in Figure 1.

The first column shows the absolute MIDI clock, with the next three columns expressing the clock as measure:beat:tick (just as in synthLAB). The next column shows the track number, followed by the channel number and MIDI command ("Note On" in this example).

The dump will only be of use to those who have a deep understanding of MIDI commands (for example, someone who wants to know exactly what "bad" entries

appear in a sequence). Most sequences contain thousands of MIDI messages.

Beyond Translation

After you have a translated sequence you will need to assign appropriate MIDI Synth instruments. Apple includes five different instrument files, each with 7 to 16 individual instruments defined. See Table 2 for a summary of what instruments are available in each file.

It is possible to use synthLAB to tweak the characteristics of these instruments, or create new instruments from the wave files provided by Apple. A freeware program, waveLAB, allows you to combine instruments from different files and define new waveforms. Be aware that creating well-tuned instruments that mix well with others across a large range of notes can be a challenging and time-consuming task.

Getting drums to play correctly can be tricky. The General MIDI (GM) specification defines 47 different percussion sounds, each assigned to a unique note on channel 10. If you want to use drums, you will probably have to experiment with the three drum kits available in two of the instrument files, assigning the appropriate drum channel to the track containing the drum notes. If the original sequence contains too many different drum styles, you might want to turn off the playing of tracks that do not match up well with what is available.

Other Hazards

Some of the MIDI Synth instruments have a fairly long "attack" segment in

Table 2: MIDI Synth Instrument Files provided by Apple

	Combo.bnk	Demo.bnk	Orch.bnk	Piano.bnk	Synth.bnk
1	DrumKit1	Pipes	PanFlute	Piano	Drum Kit 3
2	SlapBass	Voice	Clarinet	HonkyTonk	SlapBass
3	SynthLead	Kybrd	Harp	Steel Piano	Pan Flute
4	Marimba	Dx Hpsd	Hard Strings	Piano Pluck	Flute 1
5	Xylophone	WoodFlute	Bassoon	Hpsd	E. Piano swell
6	Flute	AnalogStr	MedStrings	Icnc	Hammond
7	Trombones	LeadGuitar	Trombones	Strange	Brass
8	ChiffFlute	Glass			
9	Dx Marimba	Clarinet	Soft Strings		
10	DrumKit2	Guitar	Orchestra		
11		Hammond			
12		FeedBack			
13		A Bass			
14		Guitar 5ths			
15		Accordian			
16		Trumpet			

their sound envelope. These instruments do not work well with passages of quick notes, because the instrument does not reach full volume before it must release and go to the next note. In some cases, you may not hear any sound at all.

Even when you assign appropriate instruments, the music may sound as if some notes are missing. This can be caused when too many notes are played at once. MIDI Synth is designed to play seven distinct notes, and can handle a few more by stealing time from other notes. If your song begins to sound "spotty," try turning off the playing of one or more non-melody tracks.

MIDI Synth specifies a limit of 128K for sequencer files. MIDI Surgeon can create and play much larger sequences, but some players (synthLAB, e.g.) can't handle it.

Further Information

I found a lot of MIDI information by using FTP to access various sites on the Internet. Of particular note are summaries of MIDI messages by Dave Oppenheim and Bob McQueer. Also useful is an overview of General MIDI (GM) Level 1, including a list of percussion sounds assigned to note numbers. One system that has these documentation files is ucsd.edu in the directory /midi/doc (archived in Unix "tar" format and compressed). The directory

/midi/scores/DMCS has a dozen or so uncompressed MIDI files. Another Internet system worth looking at is louie.udel.edu, particularly the "mid" files under the /pub/midi/BertsGreatestHits directory.

Inside the Program

MIDI Surgeon's code is written entirely in ORCA/C, and its resources are written in REZ. The C code is divided into the following files:

MIDIread.c: reads MIDI files. Most of this code comes from a public domain library of routines named midifiles, originally written by Tim Thompson. Both of the Internet systems mentioned have a compressed "tar" archive of the midifiles source code.

MIDIconv.c: makes calls to MIDIread routines to build a MIDI Synth sequence, and writes the MIDI Synth sequence file. MIDIconv and MIDIread are designed to be compatible with non-IIGS systems.

callback.c: contains the MIDI Synth callback routines and a routine to initialize them. I created this short file so that ORCA/C debugging modes could be turned on in the rest of the program without affecting the callback routines. (ORCA's stack checking debug code gets very confused when the sequencer invokes a callback routine.)

Actions.c: reads the user's menu and control selections, opens windows, loads instruments & waves, and places calls to MIDIconv to perform file I/O. This is the heart of the MIDI Surgeon program.

MIDISurgeon.c: starts the program and has a variety of routines to maintain the desktop.

Each of these five files has a corresponding header file declaring global data and the interfaces to the callable routines. Additional header files are:
Options.h: defines compiler options so they can be turned on consistently throughout the program.

SynthFile.h: defines data structures and offsets used in MIDI Synth sequence, instrument, and waveform files.

Other than dealing with a zillion details (like allocating the correct size of memory, making sure the right menu items are turned on, coordinating the MIDI Synth information out of three different files, anticipating error situations, etc.) the Actions and MIDI Surgeon portions of the program are similar to many other Apple desktop programs. The MIDI Synth calls may be exotic to those who haven't used them, but are not too complicated. GS+

What did you *miss* in the last Pegasoft Newsletter?

PROGRAMS

DrawTools 3.1: All-assembly graphics and animation toolset, & more pixie-power than ever. Works in almost any GS language. Used in Tresures from Heaven.

Pegasus Pascal 2.0	The definitive IIGS language
Pegasoft's Jukebox 1.3	Plays music to patterns
Thought for the Day 1.0	Good with morning coffee
Quest for the Hoard 1.1	The classic strategy game
Tresures from Heaven 1.1.1	Breath-taking piling game

FEATURES

Software update news, interview with Steve Brunier (creator of Micol Advanced BASIC), "viewer mail", IIGS multifinder compatibility chart, winner of free software, a brand new contest, Pegasoft Partner program, editorial on the fall on the AII, Pegasus Pascal Strings unit tutorial, Pegasoft's fall software catalogue, TurboRez GS news, and a few other bits & bytes.

The Pegasoft Newsletter is sent free to owners of Pegasoft software. We believe in keeping our customers informed and up-to-date. If you haven't seen the newsletter, write for a trial issue today.

PEGASOFT™

R. R. #1, Honsberger Avenue
Jordan Station, Ontario, Canada
L0R 1S0



Canadian orders: we eat the PST & GST.
Phone: 1-905-562-4267.
Support low-cost, quality Apple IIGS software.
We don't have to be crazy, but it helps

GS+ Back Issue Half Price Sale!

Back Issue Magazine only \$2.25

Back Issue Disks only \$3.25 !

Back Issue Magazine + Disk Sets only \$4.75! *Hurry! Special Pricing Ends February 28th 1994!*

Sep-Oct 1989 (V1.N1)

- System Software 5.0 Compatibility Chart
- NoDOS - A file utility New Desk Accessory
- Graphics Galore - Drawing "how-to" with pictures on disk
- Reviews: Arkonoid II (new custom levels on disk), Crystal Quest, ORCAC, Rocket Ranger, Silpheed, Test Drive II, TransWarp GS, Turbo Mouse ADB

May-Jun 1990 (V1.N5)

- AppleFest Report
- Beginner's Guide to System Disks - Part 1
- GS/OS prefixes - PreFixer CDev
- Brush with Greatness - How your IIGS makes colors
- Reviews: CMS 45MB Removable Hard Drive, S&S-RAMCard, DataLink Express modem, Visionary GS digitizer, GraphicWriter III, ZapLink, McGee, Math Blaster Plus IIGS, The New Talking Stickybear Alphabet, ZipGS

Sep-Oct 1990 (V2.N1)

- Brush With Greatness - Making the most of your digitizer
- Interview with Brian Greenstone (programmer of Xenocide)
- PING - Video table tennis program
- Shuffle - An INIT that shuffles desktop windows
- Battery Brain - A CDev that saves BRAM parms
- Reviews: GS Sauce memory card, Salvation—Wings, World GeoGraph, Orange Cherry Talking Schoolhouse series, OIX, Solitaire Royale, InnerExpress

Jan-Feb 1991 (V2.N3)

- AppleFest/Long Beach '90 & Apple II Achievement Awards
- Interview with Jim Carson of Viesses, Inc.
- Introduction to System Software v5.0.4
- RAM Namer - A CDev that allows you to rename RAM disks
- GS+ program updates: Battery Brain v1.1, EGOed v1.32c, Teach Translator for GraphicWriter III v1.1
- Reviews: ZipGSX, LightningScan, Design Your Own Home, Print Shop Companion IIGS, Your IIGS Guide, Dragon Wars, 2088: The Cryllan Mission - Second Scenario, Space Ace, Sirbad & the Throne of the Falcon

Sep-Oct 1991 (V3.N1)

- Protecting Your Investment - A Guide to Surge Protection
- A Conversation with Roger Wagner - Part 2
- Working with the Toolbox - Part 4: QuickDraw II
- FGS - A desktop program that generates Fractals
- GS+ program updates: EGOed v1.36, Autopilot v1.1, NoDOS v1.6
- Reviews: two 100MB hard drives, Nite Owl Slide-On Battery, ORCA/Integer BASIC, ORCA Talking Tools, Storybook Weaver: World of Adventure HyperBole, HoverBlade, Shareware: DeskTop Painter, SoundSmith, IIGS Classic: Bard's Tale IIGS

Jul-Aug 1992 (V3.N6)

- KansasFest 1992
- Introduction to 3-D Graphics - Part 3: Speeding Things Up
- Working with the Toolbox - Part 8: The Control Manager
- Understanding FSTs
- Using rBundles in Your Programs
- Quick Folder - A Finder Extension that allows you to open folders from the Finder's Extras menu. **Requires System 6.**
- Extra Bits - A Control Panel that lets you change the new Battery RAM parameters that System 6 didn't provide a Control Panel for. **Requires System 6.**
- GS+ program updates: EGOed v1.7 (requires System 6), Quick DA v2.0 (requires System 6), Replicator v1.3
- Reviews: ZipGS (10MHz CPU/64K Cache), Gate, Space Fox, Utility Launch & Utility Works

Sep-Oct 1992 (V4.N1)

- Apple EXPO East
- Open From Desktop - A Finder Extension that allows you to open any item on your desktop from the Finder's Extras menu. **Requires System 6.**
- II Notes - A 20-page NDA notepad. **Requires System 6.**
- Miscellaneous Library - A collection of useful routines to use from any programming language that supports linking to standard libraries
- GS+ program updates (require System 6): Autopilot v2.0, Quick DA v2.1, EGOed v1.7.1
- Reviews: ContactsGS, GSymbolix, Kangaroo, ORCA/Debugger, UltraCat, Storybook Weaver: World of Make-Believe

Nov-Dec 1992 (V4.N2)

- Understanding Accelerators
- The Basic IIGS
- Working with the Toolbox - Part 9: The Menu Manager
- Font Reporter - A program that lets you display and print out any font in your system. **Requires System 6.**
- Miscellaneous Library (updated)
- GS+ program updates: EGOed v1.8 (requires System 6), Replicator v1.3.1
- Reviews: AutoArk, 1990 GEM Apple II CD-ROM, IIGS System Transport Case, Out of This World, TrueType Font Collection, Universe Master
- Review updates: Desktop Enhancer v2.0, Pointless =v2.0

(All programs after this issue require System 6, unless otherwise noted)

Jan-Feb 1993 (V4.N3)

- The World at Your Fingertips
- Understanding the Desktop
- Batt Reporter - A program that generates plain English reports from battery RAM configuration files
- Rainbow - A Finder extension that lets you change the colors of your device icons
- Miscellaneous Library (updated)
- GS+ program updates: Battery Brain v2.0, Open From Desktop v1.0.1, Rebuild Desktop v1.1, EGOed v1.9
- Reviews: CV-Ram Memory Card, StyleWriter printer, ProSet-16, TransProg III v1.1, Ant Wars, FloorTiles, Quest for the Hoard

Mar-Apr 1993 (V4.N4)

- Beginner's Guide to Finder v6.0
- Working with the Toolbox - Part 10: LineEdit
- LASERbeam - A program that lets you download PostScript files to a PostScript printer
- Font Memories - A control panel that lets you keep your bit-mapped fonts on a disk other than your startup disk
- EGOed lite - a smaller, faster version of the EGOed New Desk Accessory
- Miscellaneous Library (updated)
- GS+ program updates: Rainbow v1.0.1, NoDOS v1.8
- Reviews: Salvation—Deliverance, DreamGraphix, The Manager, The Passport House Letter, The Lost Tribe, DuelTris

May-Jun 1993 (V4.N5)

- The Scavenger - Using your IIGS with CD-ROMs from other computers
- Apple EXPO West Report
- Anna Matrix - a Cool Cursor Editor
- GS+ program update: Cool Cursor v2.0, Miscellaneous Library
- Reviews: Apple Desktop Bus Mouse II, Baccarat, Key Fonts Pro CD-ROM, MAZER II: The Ghost of Mordaine, Pick 'n' Pile, Shanghai II: Dragon's Eye, Solarian GS, Twilight II, TypeWest Volume 1

Jul-Aug 1993 (V4.N6)

- System 6.0.1—For Users
- KansasFest 1993
- Catch the WAV: A Guide to Scavenging Sound Files
- Secrets of Writing Twilight II Screen Blankers
- Finder Binder: Avoid the annoying "An application can't be found for this document" dialog by connecting documents to an application
- GS+ program updates: AutoSave v2.0, EGOed lite v1.0.1, Extra Bits v1.0.1
- Reviews: Castle Metacrus, HardPressed, The Lost Treasures of Infocom, Treasures From Heaven: Quest for the Hoard 2, Your Money Matters, Zip Drive

Sep-Oct 1993 (V5.N1)

- So You Bought a Hard Disk... Now What?
- Apple (Jive) Talkin'
- An Introduction to Object Oriented Programming
- File Dump: A complete Object Oriented Programming example written in ORCA/Pascal v2.0.1.
- GS+ program updates: Anna Matrix v1.0.1, Cool Cursor v2.0.1
- Reviews: Applied Engineering's High Density Disk Drive, Apple II SuperDrive Controller Card, MODZap, soniqTracker, ORCA/Pascal v2.0.1, SoundMeister, TypeSet

Nov-Dec 1993 (V5.N2)

- IIGS Maintenance—Part 1: The Mouse and Keyboard
- SCSI ("Simple Connections," Says Igor.)
- Balloon v 1.0: A finder extension that lets you extract files from Shrinkit Archives
- CD-ROMs: An application that lets you scavenge files off of CD-ROMs
- KaBlooc! A version of the classic game Minesweeper for your IIGS
- Reviews: 3D Logo, Focus Drive Hard Card, Prism, Tulin Floptical Disk Drive

Any issues that are not listed are sold out.

All prices *include* postage and handling (orders will be sent First-Class to the U.S., Air Mail to Canada and Mexico, and surface mail to all other countries. For Air Mail to all other countries, add an additional \$3.50 per issue). **Tennessee residents must add 7.75% sales tax.** Mail back issue requests to: GS+ Back Issues, c/o EGO Systems, PO Box 15366, Chattanooga, TN, 37415-0366; or call 1-800-662-3634, Monday through Friday, 9 a.m. to 6 p.m. Eastern Standard Time, to order or verify availability. Please include your phone number on all orders placed by mail (in case we are sold out of an issue)! For MasterCard or VISA orders placed by mail, also include your card number, expiration date, and signature.

Finally!

If you ordered a copy of the *Programmer's Reference for System 6.0.1* and you've been wondering where it is, you should have it now! If you've been waiting to order yours until you knew for sure that it was available, the wait is over! The Byte Works finally got the last draft of the System 6.0.1 documentation from Apple in December and they've been shipping out back orders just as fast as they can. If you ordered a copy, and it hasn't shown up yet, or if you want to order a copy now that it's available, give The Byte Works a call at (505) 898-8183.

Note however, that if you also ordered the Apple Tools 6.0.1 Update Disk, you'll have to wait a while longer for it. Apple *still* hasn't finalized that disk, so The Byte Works can't ship it yet.

The End of Forever?

Well, the boss man couldn't bear to run this press release in the "What's New" section, so he gave it to me to run. However, this item is 100% true, and I haven't changed it one bit.

"Apple IIe Position Statement"

Since its introduction in 1977, the Apple IIe computer has been one of the most popular computers with K-12 customers in the United States, having sold more than 5.5 million systems. With the introduction of the Macintosh Classic and the Macintosh LC family, our education customers have found the increased performance, functionality and flexibility of the Macintosh platform to be a powerful and viable migration platform from the Apple II platform. This has been strongly evidenced by the fact that in 1993, more than 93 percent of all computers sold by Apple to K-12 customers were Macintoshes, with the LC line becoming the best selling line of educational computers.

As a result, since 1992, Apple has seen a dramatic reduction in sales of IIe systems to our customers. With such low demand for the IIe and the continuing strong market acceptance of newer, more powerful Macintosh computer systems, Apple can no longer justify the manufacturing expense given our current business model and has removed the Apple IIe computer system from our Education Price List."

And the Good News is?

Well, to balance that out, I should tell you that in the year since the IIGS was

discontinued, our business has held steady, and has actually been getting better in the last few months! Not only that, but most of the IIGS developers I've talked to say that their business has also been steadily improving over the last few months! So, hey, maybe we don't need Apple's support to survive after all!

StyleWriter II Driver?

Lots of folks have written and called to ask if there will ever be a IIGS driver for the StyleWriter II printer. Well, at this point, the answer is "no." Even worse, the StyleWriter II is so different from the original StyleWriter printer that the StyleWriter driver that comes with System 6.0 and System 6.0.1 *will not work* with the StyleWriter II. Of course, if anyone ever decides to produce a IIGS driver for the StyleWriter II, we'll let you know about it.

Give Apple Some Credit

Did you have an old Apple credit card? Were you a bit upset when Apple simply discontinued them with no warning or notification at all? Well, guess what... Apple is about to start up another credit card program, similar to the one that General Motors has been offering for the last year or so. You know, the GM card is the one that lets you put 5% of your credit card purchases towards the purchase of a new GM automobile. Well, apparently Apple liked the concept so much that they are about to announce their own version. It will be a Citibank credit card that you can use to obtain rebates on the purchase of Apple products. Up to \$500 in a single year, or up to \$1,500 over three years. It sounds like a great idea to me! (Best of all, with Citibank involved, Apple probably won't be able to just bail out of this credit card program like they did the last one.)

More Wishes

Well Christmas is behind us (thank goodness), but around here it's always time for wishing! In particular, I wish:

- For a version of Pointless that uses PostScript Type 1 fonts. Adobe has released the documentation detailing how to use these fonts, so it *could* happen!
- For a C++ compiler for the IIGS.
- That this whole Michael Jackson thing would be over with.
- That some of my co-workers would begin using personal hygiene products developed in the 20th century.
- That the ash tray outside my office would go away.

- That Joe would see his dream of becoming a super-model, come true.
- That I had better IIGS wishes.

That's me in the Corner...

Losing my religion? No. Not really, but I have heard a couple of rumors that I'm at a loss to explain.

First of all, I've heard that one of the major reasons that the Apple II software for America Online hasn't been updated in several years is because they actually *lost* the source code for it.

Secondly, according to one of the programmers working on Quality Computers' update to AppleWorks GS, Claris actually *lost* the database containing the list of all of the bugs that were in AppleWorks GS! So, the programming team is having to compile their own list of bugs to fix, which, of course, adds to the time it will take to get the update completed. Speaking of which, here's my official list of the...

Top 10 AppleWorks GS Bugs

10. Typing "moof" in the About dialog brings up animation of John Sculley choking Steve Jobs.
9. Error dialogs all contain the phrase "You screwed up again!"
8. Footers smell like Fritos brand corn chips.
7. Headers suffer from receding margins.
6. Manuals printed in Kanji.
5. Typing in secret code allows you to decapitate opponents.
4. Calling the support number actually gets you a suicide prevention hotline.
3. Copy protection scheme requires you to wear a bra while using software.
2. Telecommunications module won't dial 1-900 numbers.
1. Packwood diaries too long to fit in a single word processing document.

Hey Buddy...

Is that a rumor in your pocket, or are you just shaking hands with Mr. 8-Ball? Really? Well, hey, more power to you. As for the rest of you, send those rumors, wishes and blatant lies to me at:

GS+ Rumors
P. O. Box 15366
Chattanooga, TN 37415-0366 GS+

How to Use Your GS+ Disk

The first thing you need to do is **make a backup copy of your GS+ Disk with the Finder!!!** Do *not* make your backup on your hard disk! Instead, copy the GS+ Disk to another 3.5-inch disk (this is *very* important). Next, put the original in a safe place. If you are having a problem making a backup copy, give us a call at (615) 843-3988. If your disk is damaged, let us know, and we'll get a new one to you as soon as possible.

Installing The Software

To install the software on this issue's GS+ Disk, start up your computer using System Software v6.0 or later. (Note that all of the programs on this issue's disk *require* System 6!) Next, place your *backup* copy of the GS+ Disk in a drive. (You *did* make a backup didn't you?) Now run the Installer program that is on your backup GS+ Disk. (From the Finder, just double-click on the Installer icon.) *It is extremely important that you use the Installer that is on your backup GS+ Disk! Do not use any other copy of the Installer!*

When the Installer window appears, select the item you want to install from the list on the left-hand side of the window, and the disk you want to install it on from the list on the right-hand side of the window. Then click on the Install button. For more information on using the Installer, refer to your IIGS owner's manual.

Before you attempt to use your backup GS+ Disk, please take a few minutes to read the **a.Read.Me** file for any last minute corrections or information. If you do not already have our EGOed (or EGOed lite) text editor installed in your system, you can use the Teach application supplied with System Software v6.0 to read this file.

Installing EGOed

The following is a detailed example of how to install EGOed. The other programs are installed in a similar manner.

- Start up your IIGS with System Software v6.0 or later—the version of EGOed that is on this GS+ Disk *requires* System 6! (Your GS+ Disk is *not* a startup disk, so don't try starting your computer with it.)
- Insert your backup copy of the GS+ Disk into a drive and run the Installer program that is on your backup GS+ Disk. It is *very*, *very* important that you run the Installer that is on your backup

GS+ Disk and *not* some other copy of the Installer.

- When the Installer finishes loading, click on the Disk button on the right-hand side of the Installer window until your startup disk appears. (If you only have one 3.5-inch disk drive, you will have to remove the backup GS+ Disk from the drive and replace it with your startup disk. You should also refer to the "Making Room" section below for hints on how to free up room on your boot disk.)

Please Remember . . .

The contents of the GS+ Disk are not public domain or shareware! We depend on your honesty to stay in business. Please do not give away copies of the GS+ Disk or any of the programs on it. If you do, we will not be able to stay in business. It really is that simple!

- On the left-hand side of the Installer window, you will see a list of the items on the backup GS+ Disk. One of the items in this list should be "EGOed." (If EGOed is *not* in this list, quit the Installer and begin again. Be sure that you are running the copy of the Installer that is on your backup GS+ Disk!) Once you see the EGOed item, click the mouse on it so that it becomes highlighted.
- Click the mouse on the Install button in the middle of the Installer window. The Installer will then install EGOed on your startup disk. If you only have one 3.5-inch disk drive, you may have to switch disks several times. Just insert each disk as the Installer asks for it.
- When the Installer has finished, click on the Quit button in the middle of the Installer window. This should cause your IIGS to restart.
- When your IIGS finishes restarting, pull down the Apple menu and select EGOed (note that you have to be in a desktop

program like the Finder to have access to the Apple menu).

- When it finishes loading, notice that EGOed has its own menu bar. Select Open from the *EGOed* File menu and then put your GS+ Disk in a drive. You should see a list of the files and folders on the GS+ Disk.
- Open the **Documentation** folder on your backup GS+ Disk and then open the file **EGOed.Docs**. This file contains complete documentation on how to use EGOed. *Please take a few minutes to read this documentation.*

Making Room

If you do not have a hard drive, you will probably have to remove some files from your startup disk to make room for the New Desk Accessories, control panels, and other system files on your GS+ Disk.

Towards that end, we have prepared the following list of "expendable" files that you can "safely" remove from your System Software v6.0 startup disk to free up some space. (We've put quotes around "expendable" and "safely" because almost *all* of the files in the IIGS System Software have some sort of use! The files listed here are the ones that are the "least" useful for a specified hardware setup.)

Be sure that you *never* delete *any* files from your original System Software boot disk! Always work on a backup copy!

System Software v6.0

If you use the System 6 **:Install** disk to create a minimal, 800K, System 6 boot disk, that disk will have 26K of free space on it when the installation is finished.

It must be noted that *all* of the files on this disk are *very* important and the files that you can *safely* remove depend, for the most part, on your hardware setup. So, please read these instructions carefully before removing *any* files.

The first two files you can delete depend on what you will be doing with your IIGS. If you will not be running AppleSoft BASIC programs, you can remove the file **BASIC.System** (11K) from the root directory of the disk. If you will not be running ProDOS 8 software, you can remove ***:System:P8** (18K).

If you do not care what time it is, you can delete the following file:

***:System:CDevs:Time** (11K)

After that, the files that you can safely remove depend on your *hardware setup*.

If you have a ROM 01 IIGS, you may delete the file:

*:System:System.Setup:TS3 (41K)

If you have a ROM 03 IIGS, you may delete the following file:

*:System:System.Setup:TS2 (37K)

If you do *not* have a 5.25-inch drive, you may delete the following 8K file:

*:System:Drivers:AppleDisk5.25

If you do *not* have a printer, you may delete the following file:

*:System:CDevs:Printer (5K)

Finally, if you have deleted all control panels, and you won't be installing any control panels from the *GS+* Disk, you can also delete the 19K file:

*:System:Desk.Accs:ControlPanel

Removing some or all of these files will give you ample room (up to 139K on a ROM 01 IIGS and up to 135K on a ROM 03 IIGS) on your startup disk to install EGOed or any of the other system utilities from your backup *GS+* Disk.

Having Problems?

*If you are having a problem with one of the programs on your *GS+* Disk, we want to help! But we can't help if we don't know about it!*

*If your *GS+* Disk is defective, let us know and we will send you a replacement. You can call us at (615) 843-3988 (Monday through Friday between 9 a.m. and 6 p.m. Eastern Time), to request a replacement disk.*

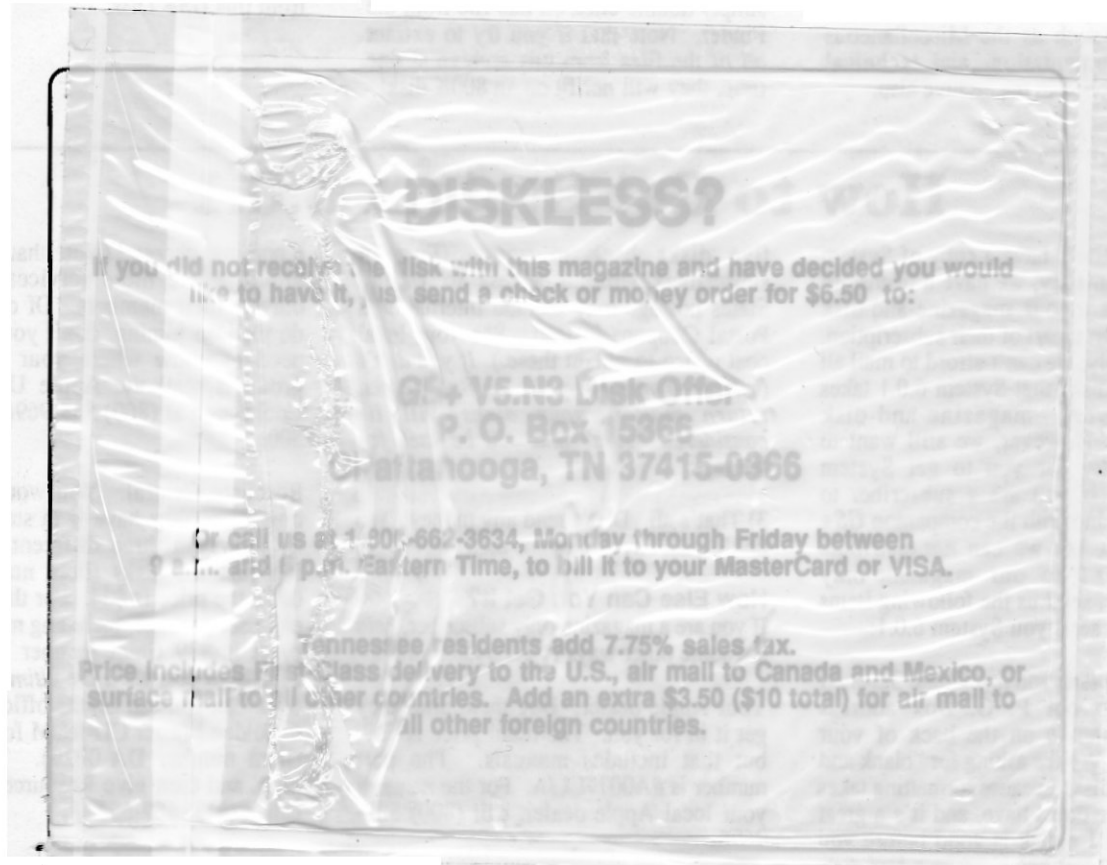
*If you are having a problem using one of our programs, please fill out the problem form that is on your *GS+* Disk and send it to "*GS+* Problems" at the address shown below.*

Note: You will *not* be able to print from EGOed or any other desktop program when using an 800K, System 6.0 boot disk. (There isn't enough room for all of the required drivers and control panels.)

If you want to save even *more* space, you might want to consider using Autopilot (from *GS+* V4.N1) as a replacement program launcher. With Autopilot installed on the minimal System 6 boot disk, initial free space goes up from 26K to 163K! You can then use Autopilot to autolaunch the Finder from a second 3.5-inch disk drive and still have plenty of room on your boot disk for lots of system extensions. For more information on Autopilot, refer to the "Autopilot v2.0" article in *GS+* V4.N1 or give us a call.

Self-Extracting Archive

We use *GS-ShrinkIt* v1.1 to compress the source code and related files on the *GS+* Disk into a *self-extracting archive*. To extract the files from the archive, simply double-click on the *GSP.V5.N3.SEA* program on your backup *GS+* Disk. *You do not need to have a copy *GS-ShrinkIt* in order to use any of the programs or other materials on this *GS+* Disk!* However, you will gain better control over



IMPORTANT!
Use scissors or a knife to open disk bag!
Do not attempt to pull bag away from magazine!

the files you wish to extract if you have GS-ShrinkIt v1.1. If you do not have GS-ShrinkIt v1.1 and you would like a copy, check with your local user group or give us a call here at *GS+* Magazine and we will try and help you locate a copy.

What's On The Disk

The programs on this disk *require* System Software v6.0 or later. There are six items in the root directory of this disk:

a. Read.Me

A lot can happen from the time we send this magazine to the printer and the time we get ready to mail them out. If anything does happen, we will put everything we can find in this file. Please read this file before using the *GS+* Disk.

Documentation

This folder contains the new EGOed documentation file. This is a Teach file which can be read using Teach, EGOed, or any other TextEdit editor.

GSP.V5.N3.SEA

This is a self-extracting archive (SEA) containing the source code and related files for all the programs contained on this *GS+* Disk. The archive also contains the Miscellaneous Library. Technical information, such as the Miscellaneous Library documentation, and technical notes are supplied in the archive also.

In fact, we tried to pack so much material on this disk that we also had to shrink the **Talk.To.GSPlus** folder and place it in this archive as well. This folder contains our feedback form, the complete *GS+* Glossary, a troubleshooting guide, and the *GS+* Problem Form.

The feedback form is a plain ASCII text file. Fill it out, and let us know what you thought of this issue.

The *GS+* Glossary file is a plain text file containing all of the terms defined in the past installments of the "*GS+* Glossary".

The troubleshooting guide contains tips on how to resolve some of the more common problems you may experience while trying to use the programs on your *GS+* Disk. If you are having a problem, *please* read this file before you go to all the trouble of filling out a problem form! But, if the troubleshooting tips don't help, *please* fill out the problem form and send it to us! This is a Teach file, you may use EGOed or the Teach application to view it.

To extract the files from the archive, simply double-click on this file from the Finder. Note that if you try to extract *all* of the files from this archive at one time, they will *not* fit on an 800K disk!

Installer

This is the Apple IIGS Installer. The installer requires System Software v5.0.4 or later. Run it to install the other programs on this issue's disk. For more information on using the Installer, be sure to read the example on the previous pages, and refer to your IIGS owner's manual.

Programs

This folder contains the EGOed and MIDI Surgeon programs, plus two sample MIDI sequence files for use with MIDI Surgeon. Use the Installer provided on your backup *GS+* Disk to automate the installation of these files. All the programs in this issue require System 6 to operate.

Note that you must have the MIDI Synth tools installed on your startup disk to use MIDI Surgeon. The MIDI Synth tools can be installed from your System 6.0 or System 6.0.1 master disks. MIDI Surgeon can be installed in, and run from, any folder on any disk. If you wish, you can even run MIDI Surgeon directly from your backup *GS+* Disk.

Scripts

This folder contains all of the scripts that are used by the Installer to install the files from this *GS+* Disk. **GS+**

How to Get System 6.0.1

Everyone should have a copy of System 6.0.1. Fortunately, we have a license to distribute it to our magazine-and-disk subscribers as a part of their subscription. Unfortunately, we can't afford to mail all five of the disks that System 6.0.1 takes up to every magazine-and-disk subscriber. However, we still want to make it easy for you to get System 6.0.1. So, if you are a subscriber to *GS+* Magazine with the companion *GS+* Disk (sorry, but we can *not* distribute System 6.0.1 to our magazine-only subscribers), send us the following items and we will send you System 6.0.1:

1) Five (5) *blank and formatted*, 3.5-inch diskettes to our P. O. Box address (which is shown on the back of your magazine). We are asking for "blank and formatted" disks because formatting takes time that we don't have, and it's a great way to tell if a disk is good before you send it to us. *If you send us a bad disk, we aren't going to replace it.*

2) A *self-addressed* return disk mailer with enough postage on it to mail the

five disks back to you. (Foreign subscribers without access to United States postage may include International Postal Coupons instead. See your local post office to obtain these.) *If you don't provide a postage-paid, self-addressed return mailer, your disks will be considered "gifts" and will be used for backups.*

3) That's all. Don't send any money. We don't want any money for this.

How Else Can You Get It?

If you are a magazine-only subscriber, here are some other ways to get System 6.0.1.

Your Apple dealer. Bug them until they get it in for you. The retail price is \$39, but that includes manuals. The part number is #A0077LL/A. For the name of your local Apple dealer, call (800) 538-9696.

Your user group. Take your own disks and they should only charge you a small copying fee. Some user groups may have it already copied for you and available for

a nominal charge. (Note that some user groups make these services available only to their members. Of course, you do plan on joining, don't you?) If you need to know where your local user group is, call the Apple User Group Connection at (800) 538-9696 extension 500.

Resource Central. You won't have to bug them, they have it in stock, and in no less than three different "flavors." For just the disks (item number DA-006), the price is \$24. For the complete end-user package, including manuals, the price is \$39 (item number DA-0013). Finally, if you want the *ultimate* System 6 bundle, you can get the official System 6 Golden Master CD-ROM for only \$99 (item number DA-0029). Take your pick, and then give Resource Central a call at (913) 469-6502.

And, of course, if you have a modem, you can download it from your favorite online service. The total download time is about 5 hours. **GS+**

Reviews

Ancient Glory

IIGS version by Mike Howard and John Wrenholt

Retail price: \$20

Requires 1.25MB and System Software 5.0.4 or later

Big Red Computer Club
423 Norfolk Ave
Norfolk, NE 68701
(402) 379-4680

Reviewed by Robert A. Ribaric

I HAVE THE POWER!

I am Hercules, son of Zeus, and was born mortal. My strength and cunning have made me a hero here in mythological Greece. I have accomplished much in my life as the son of a god, but wish to join my father on Mount Olympus for all eternity. I want to become immortal!

One of my father's lesser goddesses, Athena, has promised to help me achieve my goal to become a legend. Assisted by Hermes, she has instructed me to accomplish five tasks in order to prepare for my ultimate challenge—the destruction of Medusa! With her snake-like hairdo, Medusa has stopped all other warriors cold . . . STONE COLD! So that I won't end up as a statue instead of a god, I must take the time to go about this properly.

The Challenge

During my travels throughout the Greek countryside, I suspect that many fierce beasts will be there to oppose me. Athena has warned that another goddess, Hera,

(who is Zeus' wife, but *not* my mother) is fraught with jealousy and will send her evil servants to put a quick end to my quest. I do know that there are many weapons and devices hidden among the cities, ruins, and lairs I must visit. The only problem is finding them without falling prey to any of the numerous monsters which surely guard them.

I have heard rumors of these magnificent weapons strewn about the land. Swords, spears, bows, and sickles have all been mentioned to me. I don't think all of them are suited for the same applications. I know there is usually one best way to tackle each of my enemies, but sometimes I have to make do. I have always been bothered by your average scorpions, crabs, and snakes. These animals along with bulls and lions have often pestered me here around town. I've killed these types with cheap wood clubs and even by kicking them. They aren't too tough, but I am still a bit concerned. In a visit to three blind witches last night, I was foretold of several creatures sent to kill me. In my youth, elders tried to scare us with tales of half-men/half-horses, one-eyed giants, multi-headed dragons, and a guy who is shall we say—bull-headed! I grew up to know them as centaurs, cyclopes, hydras, and minotaurs. Someone forgot to tell me that they were real, however! I also anticipate running into the water god, that two-headed dog, and those pesky harpies. I only wish those three hags could have told me where Hera planned to deploy these demons . . .

As a good Greek citizen, I am well aware of my country's layout. And, I bet I'll need to be as I'm not exactly sure where I

need to end up. Something about a boat I think, or maybe that was just a dream. Anyway, I've already been to the normal places like Athens, Thebes, Thermopylae, and Eleusis. One of my first destinations will be to seek advice from the oracle at Delphi. It's really far away on foot, but I'll work on my dexterity, strength, and stamina as I go. Perhaps a shortcut through the fabled underground could help speed things up. In the end, I intend to check everywhere before I face Medusa.

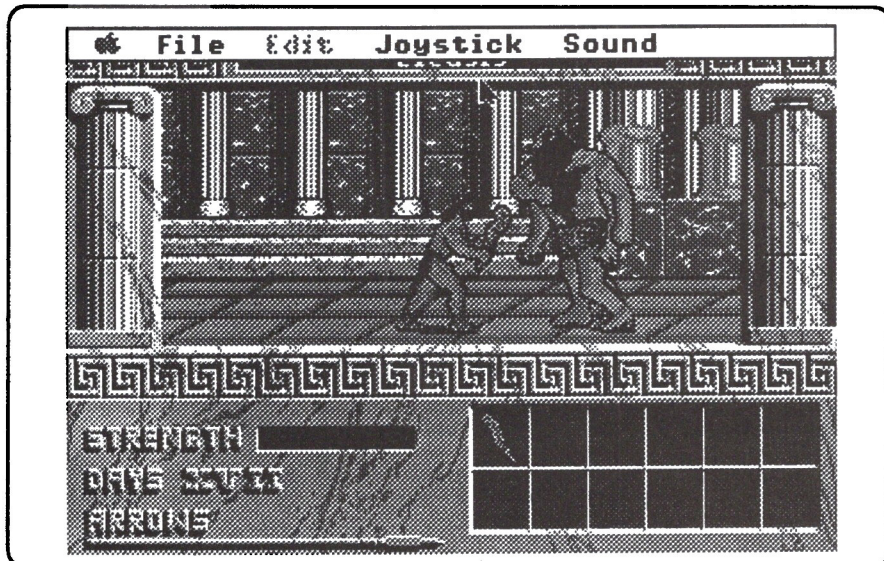
How To Survive The Five Trials

Athena swears that I shouldn't even think of seeking the head of Medusa without first surviving five tests. Successful completion of these tasks will reward me with useful magical items that could really help me out. Funny thing, she also referred to those childhood horror stories of mine. I'd better go back and think about how those fiends were supposed to be defeated, because Athena won't permit my ascension to godhood without getting that head! I hope those rewards include some really good armor and equipment!

Boy, I can really feel as if I'm being guided by the hand of a god as I head out on these five quests. I'm not sure whether they'd be using a keyboard or joystick, but I bet whoever's controlling me enjoys the ease of movement. I even feel as if time freezes every once and awhile! Weird. Well, that's okay because sometimes even the cool sounds of my surroundings get on my nerves. The one thing I hate is spending a lot of time on something just to be forced to start all over! I wish I could save my position every now and then. That'd be a great feature in my life! Oh, well.

I'm Off!

Enough of this musing. Time is of the essence, because I've only got seventeen days to trade Medusa's head for eternal life. Whoa, a lightning bolt just fried a scorpion up ahead! This could be a lot of fun if nature keeps helping out like that. Oops, I spoke to soon. A spearman seems to have dropped from the sky! I think he wants a word with me. Hey, you should still come along—it'll only cost you twenty drachmae. That's a bargain for all this glory. Come on, think about the rewards! An opportunity like this doesn't come to both ancient Greece and the IIGS world often. Wait a minute, that's right . . . I'm Greek not Roman. Shouldn't I call myself Heracles? Next thing you'll know, they'll be stealing our legends and renaming them! GS+



Apple Extended Keyboard

Retail price: \$185
Typical mail-order price: \$119
(refurbished)

Available from:
Sun Remarketing
P.O. Box 4059
Logan UT 84323-4059
(800) 821-3221

Reviewed by Bill Moore

Although limited in its usefulness in some situations, an extended keyboard can be a very useful thing to have hooked up to your Apple IIGS. With a full set of keys, an extended keyboard can be a real timesaver with the correct software. And who better to get a keyboard from than Apple? Although pricey, Apple's products are durable, and you know it'll work. One good way to beat the price problem is to buy refurbished Apple equipment from a place such as Sun remarketing, or Shreve Systems.

Last spring, I took the plunge and purchased an OmniMac keyboard from Sun. Although a very nice keyboard, it had one extremely annoying problem. It refused to pass a control-reset sequence properly to the IIGS. Command and option were ignored if they were pressed. It became really annoying to keep two keyboards on my desk (my original IIGS keyboard, along with the OmniMac) to get any work done. Finally, I reached my limit of tolerance, and asked Sun for a trade-in on an original Apple extended keyboard. (In development, this keyboard's code name inside Apple was Saratoga, presumably because it seems like it's about the size of an aircraft carrier on your desk. Thus, I'll refer to this keyboard as Saratoga from here on out.) The deed was done, and I am now reviewing the very unit my fingers now dance on writing this review.

Extend Yourself. . .

Some folks might be asking "Why bother with an extended keyboard?" Well, there is the benefit of having a layout identical to most PC-style keyboards, which can definitely be a heavenly godsend for PC Transporter users. For those who have macro programs such as, TimeOut UltraMacros, MacroMate, or Shortcuts by Softdisk G-S, an extended keyboard gives you lots and lots of keys that you can assign macros to. Another *really* nice thing about the Saratoga is its dual set of Control, Option, and Command keys on either side of the spacebar. With these, your hands doesn't need do to calisthenics in order to issue commands like print or

open. Plus, almost any command can be done one-handed without having to stretch your fingers wide enough to palm a basketball.

I can hear the skeptics now: "So why get an Apple keyboard, when other compatibles can be had from places like MacWarehouse cheaper?" I thought along these same lines until the first time I had to reset my computer with the OmniMac hooked up to it. With an Apple keyboard, you *know* it'll work, period. The Saratoga is compatible with any Apple IIGS or Mac you'll ever stumble across, so long as they have an ADB port. Another reason I like this keyboard is appearance. This is personal preference, but I like this Apple unit sitting on my desk more than that huge gray steel leviathan called the OmniMac, and it's much better than the diminutive keyboard Apple provided me when I bought my IIGS. Although this keyboard winds up costing more than third-party ADB extended keyboards, it's still the most inexpensive keyboard with Apple's logo on it. Finally, whatever else you may say about Apple, they do build stuff to last. I can rest easy knowing that this unit probably won't give me any hardware trouble, unless I do something stupid like spill tea on it. To combat this possibility, there's a "keyboard condom" on its way. (See the article "IIGS Maintenance Part I: The Mouse and Keyboard" in *GS+ V5.N2*)

In my opinion, there's a lot to like about this unit. I've played with an ADB Extended Keyboard II (the current model from Apple), and this keyboard has the same quiet tactile keys and feel of that unit—at almost half the price. Actually, there's very little difference between this unit and the Extended Keyboard II.

Mylar templates are available for this keyboard to fit over the function key area, allowing you to write down your assignments for function keys. Buying a used keyboard like I did means you probably won't get a template with it. If you simply can't go on without one, many Apple dealers can order the template as a spare part. I did this at a dealer here in Chattanooga, and the template set me back six bucks and tax.

All is not beer and pretzels with me and the Saratoga, however. One gripe that I do have is the fact that this unit's height is not adjustable in any way unlike the Extended Keyboard II. The height is pretty close to what I'd set it to anyway if it were adjustable, so it's not a huge concern of mine. But everyone has his or her own preference, and I am well aware

that one size does not fit all. So try one out if possible before buying.

Another thing that got my goat—when the Saratoga showed up at my doorstep, all Sun had done was shrink-wrap the keyboard and cable, then they shipped it to me. No one had touched the thing with any kind of cleaning apparatus. In other words, it was filthy. Externally, it looked pretty bad. Once I opened it up, I discovered it was so dirty that I was amazed it worked. After *four and a half hours* of cleaning, it looked great. However, that's an experience I never want to have to repeat.

The final thing that aggravates me is Apple's fault, but the blame lies in the software rather than hardware division. Apple's support of extended keyboards in the IIGS System software is practically non-existent. Third-party extensions such as the NDA Shortcuts by Nathan Mates (published in *Softdisk G-S #46*) help this a bit, but there are rough spots on the road you'll have to travel to use the special keys on an extended keyboard. Support of an extended keyboard varies from program to program. Some, like our own EGOed, have very good support.

The single most annoying problem is the one I've had the most trouble reproducing. Sometimes when an extended key is pressed, it keeps repeating until a regular key is pressed. Diz also has an extended keyboard, and so we've done tests, and discovered that this problem is most likely a System 6 bug. Aside from this problem, there's also the fact that few programs will actually support special extended keyboard functions. I realize that IIGS owners with an extended keyboard are a small group within a small group, but it would still be awfully nice to see existing software updated, and new software written with extended keyboards in mind. A specific example would be AppleWorks GS 2.0.

Conclusion

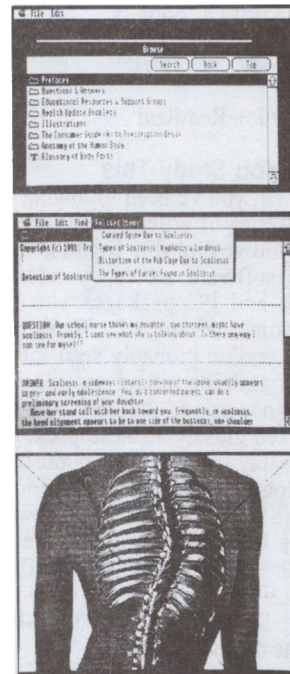
If you're in the market for an extended keyboard, I would highly recommend the Apple "Saratoga" extended keyboard. It has a very nice feel, is easy to clean (four screws and a hinge keep it together), and at these prices, is quite a value. Some companies (Shreve Systems, for example) offer both the original Saratoga model and the newer Extended Keyboard II for the same price. If that's the case, get the Keyboard II. It fixes every gripe I have about my Saratoga keyboard, and is an even better bargain. **GS+**

A World of Information for your Apple IIGS...

Sequential Systems would like to introduce you to **DiscQUEST™**, your access to the exploding world of information now available on CD-ROM. Lately, you've probably been hearing a lot about the world of Multi-Media CD-ROM and perhaps you assumed that you and your Apple IIGS were just out of luck. **NOT!**

With DiscQUEST™ software by Sequential Systems, you now can access literally **THOUSANDS of MEGABYTES** of Text, Graphics and Audio data currently available on CD-ROM. And since **DiscQUEST™ uses Standard, Off-the-shelf CD-ROMS for MAC & MS-DOS, and a standard SCSI CD-ROM drive**, your investment in Multi-Media will be intact for virtually any computer you'll be using down the road!

With DiscQUEST™ you can quickly search by word, title, author, graphic, etc. from thousands of articles on many popular CD-ROM titles like Creative MultiMedia's "Family Doctor" & "Parenting" or Bureau Development's "Great Literature" series. (Call us for a complete list of supported titles.) Buy DiscQUEST software for your CD-ROM system or buy our DiscQUEST™ Bundle, which includes DiscQUEST software, an auto-eject CD-ROM Drive, 4 CD-ROM titles, and our RamFAST™ SCSI interface for Apple IIGS and you'll be searching through GigaBytes of data faster than a MAC LCII!



(Actual screen shots from DiscQuest™ and "The Family Doctor")

With **RamFAST™**



**A World of Information
for Your Apple IIGS...**

AND YOU!

discQUEST™
SEQUENTIAL SYSTEMS

AudioClips
Terminator™ 2 - Judgement Day
Star Trek™ - The Logical
Collection

IIGS conversions by Bill Moore

Retail price: \$24.95 each or \$39.95 for both

Requires System 6 or later and approximately 2.5MB of disk space for all sounds in each package.

Sound Source Unlimited
 2985 E. Hillcrest Dr. Suite A
 Westlake Village, CA 91362
 (800) 877-4778

Reviewed by Jon Remilard

I Suggest You Study This

If, like myself, you've been following the Scavenger series of articles here in *GS+* Magazine, you've probably begun to hang out in the software stores, wondering which Mac and PC packages you can *really* get some use out of. While you were there, you've probably seen lots of packages containing sound samples for use with Windows and the Mac. And, if you've looked closely at these packages, you've probably seen the same publisher's name on lots of them: Sound Source Unlimited (SSU). Well, the good news is that, with a little work, you *can* use the sounds in these packages with your IIGS. (See "Catch the .WAV: A Guide to Scavenging Sound Files" in *GS+* V4.N6 for complete details).

However, thanks to SSU and Bill Moore, you don't have to do *any* work to use the Terminator 2 - Judgement Day, and Star Trek "The Logical Collection" packages with your IIGS! That's right, SSU has actually converted these sound collections specifically for use with the IIGS!

Did It Work?

Each of these packages contains approximately 2.5MB of sound samples (which are called "AudioClips" by SSU) on three disks. The sounds are all packed with GS-ShrinkIt into self-extracting archives. This means that you don't need to have GS-ShrinkIt to unpack the files, you just double-click on the archives and they unpack themselves! Another nice touch is that each package comes with the freeware program Finder-Sounder (written by Mike Fleming). This is a Finder extension that allows you to hear any rSoundSample sound file (including AudioClips) just by double-clicking on them. This is a nice touch, because it means that you don't have to use the Sound control panel to listen to all of the sounds. (Using the Sound control panel

to listen to sounds is awkward, and it requires that the sounds you want to listen to be on your boot disk.)

Unlike many products that are converted from another computer for use on the IIGS, these AudioClips packages come with manuals written specifically for the IIGS. The manual covers installation of the sounds, how to play them back using the Sound control panel, and troubleshooting any problems that you may have. The manual also includes a list of all of the events that the Sound control panel can play sounds for.

In addition to the standard manual (which is the same for each package), each different AudioClips collection comes with a separate sheet listing all of the sounds in the package, along with their ProDOS file names on disk.

Leave That Alone

The only concern I have about these packages is that they each come with a pre-configured settings file for the Sound control panel. This settings file is intended for people that don't already have their systems set up to play custom sounds for certain events. But, if you do already have your Sound control panel customized, and you aren't overly careful during installation, this settings file can overwrite your normal settings. However, this situation is explained in the manual, and if you follow the manual's installation instructions, you should not have any problem. (Even if you do accidentally overwrite your old sound settings, you can use the Sound control panel to easily set them back to the way you want them.)

Excellent

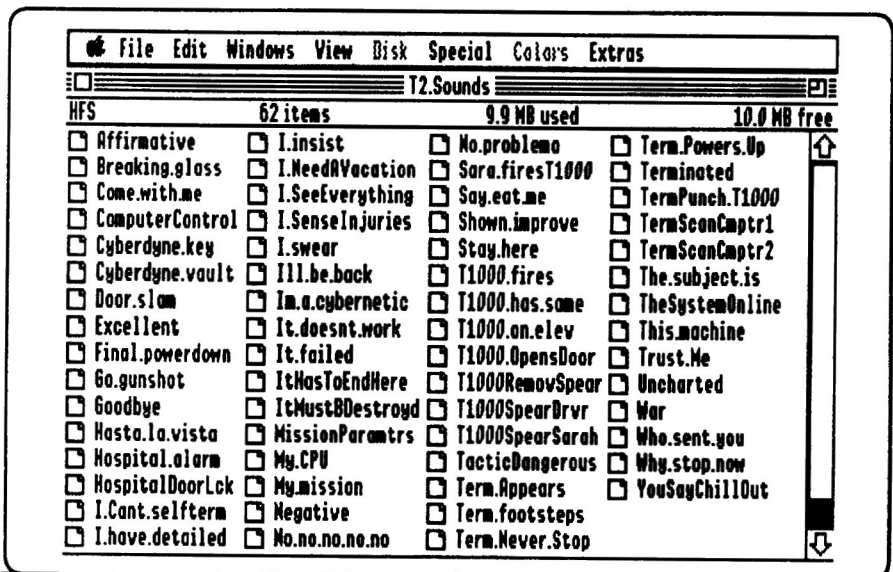
By now, you are probably wondering,

"How do these sounds, *sound?*" They sound *great!* According to the AudioClips manual, these sounds were originally recorded straight from the original soundtrack tapes (in the case of the Star Trek sounds) or from laser disc. The result (as far as my ears are concerned) is that the sound that comes out of your IIGS is a flawless reproduction of the original. The only thing that might bother some folks is that these sounds aren't in stereo, but hey, I can live with that.

It Has To End Here

The bottom line is: if you are a IIGS sound junkie, and you are a fan of Start Trek and/or Arnie, you will absolutely *love* having these sounds on your IIGS. Just imagine ejecting a disk and having your IIGS say, "I'll be back." Or, hearing the classic Star Trek "Red Alert" sound whenever your IIGS presents you with an error message! It's great!

With new titles for the IIGS on the decline, we all owe Sound Source Unlimited a vote of thanks for taking the time and effort to convert these great sounds to the IIGS! I can only hope that they sell enough of these two products to convert move of their packages to the IIGS! So, what are you waiting for? Give SSU a call! **GS+**



GNO/ME™ 2.0

(GNO Multitasking Environment)

By Jawaid Bazyar (kernel), Tim Meekins (shell), and Derek Taubert (kernel support and utilities)

Retail price: \$89 (Resource Central)

Upgrade: \$30 (Procyon)

Not copy-protected

Requires: 2MB RAM, 5MB of disk space. 4MB RAM and an Accelerator are recommended.

Procyon Enterprises, Inc.

P.O. Box 620334

Littleton, CO 80162

Phone: (303) 781-3273

Reviewed by David M. Tribby

GNO/ME is Procyon's UNIX-like multitasking environment for the Apple IIGS. (UNIX is a registered trademark of UNIX Systems Laboratories Inc. in the U.S.A. and other countries.) With its kernel, command interpreter, libraries, and nearly 100 utilities, it is a formidable software package, primarily targeted at program developers. A novice user should expect to spend at least some time reading some of the 18 books in the introductory manual's "Reading List." Although most people will be entering fundamental commands fairly quickly, it does require study and experimentation in order to take complete advantage of all of the features in a product that is this complex.

Genesis of Nifty Offshoot

Operating Systems may have been the most stimulating computer class that I took while I was in college. The "secrets" of writing complex code were revealed: memory allocation, dispatching, time-slicing, I/O systems, etc. After taking an Operating Systems class, many students figure that, given enough time, they too can write a fairly decent system on their own.

In the 1980s, UNIX became the operating system that was most often studied in the universities. Written by software gurus for other hackers, it helped to evolve and bring about numerous software development utilities (most with very cryptic interfaces). A UNIX "philosophy" emerged: write programs that each perform a focused task, then string these programs together in order to accomplish a big job. For example the "more" program displays a page of text, waits for the user to press a key, then displays the next page. By using "more" as a back-end processor, other programs don't have to worry about the details of presenting text to users.

Making this philosophy work requires efficient flow of data from one program to the next. The UNIX pipe takes output from one process and makes it the input to another while both processes execute simultaneously. UNIX's multitasking environment also allows multiple users to access the system simultaneously, or allows a single user to complete multiple tasks at the same time.

Computer science students familiar with the Apple II fantasized about porting UNIX to the IIGS. After all, the original UNIX systems (developed by AT&T in the late 1960s) ran on much less powerful processors with limited memory. Since ORCA/C provides a C compiler and many standard library routines, shouldn't it be a simple matter of programming to get something close to UNIX up and running? Older and wiser experts knew the job would be nearly impossible: UNIX requires multitasking, something unavailable from GS/OS; and the modern UNIX kernel has grown to require many megabytes of memory.

A group of programmers led by Jawaid Bazyar somehow made this dream a reality. By mid-1991 they had formed Procyon and were shipping Alpha versions of the multitasking environment they named GNO, a takeoff on the Free Software Foundation's GNU operating system. (GNU stands for "GNU, Not UNIX" while GNO stands for "GNO, Not ORCA.") Targeted at the command-line interface rather than the desktop, GNO makes it possible to run several programs simultaneously. (One of these can be a desktop program.) Several popular UNIX libraries were provided with GNO, and a significant number of UNIX utilities were ported. GNO version 1.0 began shipping in early 1992, and version 2.0 followed in September 1993. (By November of 1993,

Procyon had fixed several minor problems and made version 2.0.3 available to customers.)

Great New OS

The major pieces of the GNO system are:

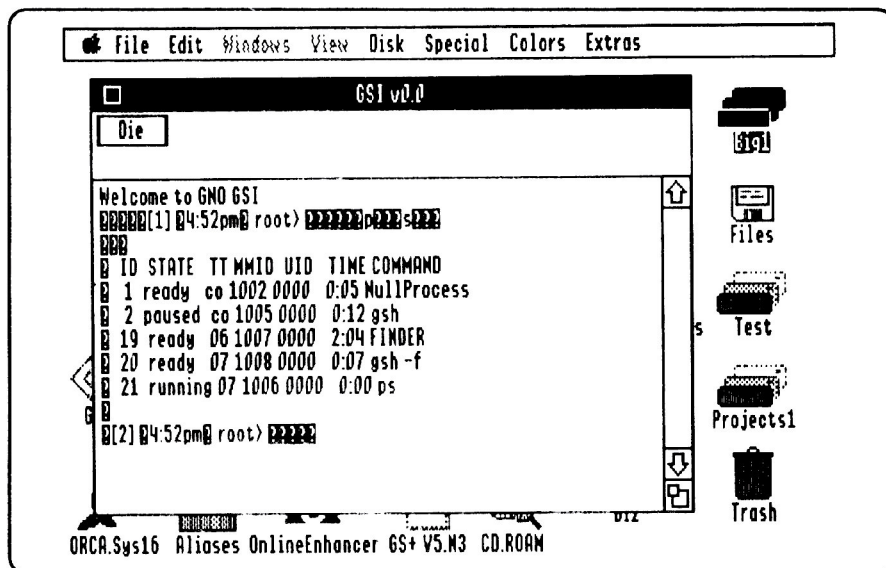
Kernel: this is the fundamental piece of GNO software. It manages such things as multitasking time-slicing (20 times per second), context switching, and pipes (plus other types of inter-process communication). It also intercepts some GS/OS file system and Toolbox calls, allowing programs to execute simultaneously without interfering with one another. The kernel runs as a GS/OS application.

Shell: gsh, the GNO shell, allows users to interact with the kernel through keyboard commands. Additionally, it provides command history and editing, expands command line arguments, moves processes to the background or foreground, and establishes pipes between processes.

Utilities: GNO ships with dozens of utility programs, including many popular UNIX programs such as cat, compress, grep, more, less, nroff, strings, tar, time, uniq, and vi. It provides a minimal, though workable, version of make. Many of these utilities take advantage of GNO features and will not run with other shells, such as ORCA's.

Man pages: GNO has UNIX's on-line help system, man, which provides formatted manual pages for programs and libraries. GNO's man system accepts the standard nroff-embedded commands and files formatted by AppleWorks GS.

Libraries & Headers: included with GNO are library and C header files



implementing calls from Berkeley UNIX, as well as some modifications to header files shipped with ORCA/C.

Drivers: GNO has its own drivers (used by the kernel) to access the console and modem. These implement some of the advanced library features. GNO uses GS/OS drivers and File System Translators to access disks.

Multi-user package: version 2.0 provides password logins and multiple accounts. Two different users can be logged on at the same time, one on the console and the other through the serial port. (Since this package is entirely optional and I am the only one using my IIGS, I have left it off of my own system and will not comment on it further.)

Desk Accessories: the GNO Snooper CDA aids debugging of programming problems. Two NDAs help support GNO in the desktop environment. The Graphical Shell Interface provides access to gsh from a text window. Suspend causes the desktop program to "freeze" into the background and brings the text shell to the foreground. (Use the "fg" command to resume execution of the desktop program.)

Printed documentation: in addition to a short introduction, the GNO documentation includes a 38 page Kernel manual, 57 pages on the GNO shell, and 97 "man" pages on utilities and subroutines.

Getting Newly Operational

Installation of GNO 2.0 is amazingly simple if you have a couple of megabytes available on your hard disk. The software comes on three 3.5-inch disks. The first disk includes a minimal version of GNO,

which you copy to your hard disk. GNO then uses an installation script to install the compressed software from the three disks. The entire process takes perhaps ten minutes.

If you boot into the Finder, double-click on the "kern" (for kernel) program icon to enter GNO. (You can also choose to set up your system to boot directly into GNO.) If you installed correctly, you will find yourself in gsh, the GNO shell command interpreter. As you become familiar with the available utilities, you will be able to do things such as

```
fgrep "alloc(" *.c | more
```

to find all the memory allocation calls in the C source code found in the current directory; or

```
make &
```

to compile in the background while you do something else.

GNO? Not ORCA

GNO does not replace ORCA, the family of programming languages and utilities created for the Apple II by The Byte Works Inc. GNO includes no compilers of its own, but it has been engineered to be compatible with ORCA's languages and utilities. In fact, one of the major reasons for GNO v2.0 was support for the 2.0 versions of ORCA/M, ORCA/C, and ORCA/Pascal.

Users of the ORCA shell will find the transition to gsh relatively painless. By making ORCA's utilities directory an entry in the PATH variable, gsh will be able to find and execute those programs. About the only reason to use the ORCA shell is for some of its built-in commands

that have no counterpart in gsh (compress and switch are the only ones I use) or to execute an ORCA shell script.

Once you become familiar with gsh, you will probably not use the ORCA shell very often. Here are a few of the things GNO has that ORCA lacks:

The pipes and process controls mentioned earlier

Ability to terminate any process with the kill character (usually control-C, but changeable by users), the kill command, or using the GNO Snooper CDA

Command history is saved when exiting the shell

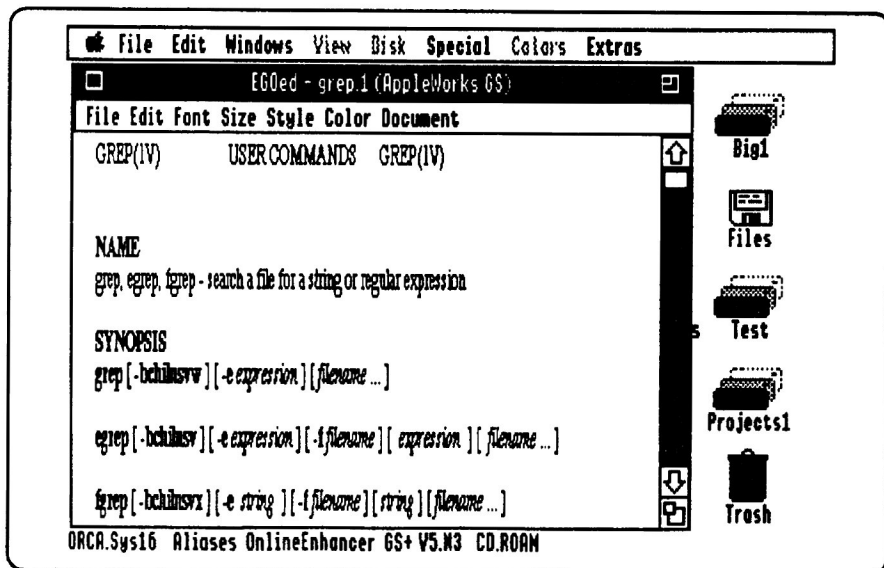
Command-line parameter expansion by the shell is automatic (makes writing programs that read arguments from the command line extremely easy)

GSH searches all directories in the PATH variable to find executable files (not just the current directory and utilities)

Gauging Nimble Oratory

Procyon calls GNO "our amazing UNIX implementation for the Apple IIGS." Certainly, anyone who is familiar with the UNIX environment will feel at home using GNO. Although the list of UNIX utilities is impressive, it is not quite complete. Four major pieces of missing UNIX functionality are the awk, diff, find, and sort programs; in addition, GNO's make is extremely simple compared to its UNIX counterpart. There is C code publicly available for each of these programs, but the complexity of the source code structure (extremely large case statements, for example) and an assumption of 32-bit integers makes them incompatible with ORCA/C. (These incompatibilities haven't kept programmers from porting many UNIX utilities to GNO, and these five may some day be available.)

GNO's multitasking emulates UNIX's, but the limitations of an unaccelerated IIGS become quite apparent with only a few competing processes. Version 2.0 does contain performance improvements that makes pipes work much more efficiently, but you will still need an accelerator in order to take real advantage of multitasking. (My 8MHz/64K Zip board provides plenty of horsepower for three simultaneous processes.) Even when the IIGS can deliver enough computing bandwidth, multitasking may be limited by available stack space and main memory.



The shell's lack of control statements (if/then and loops) limits its usefulness for creating command files, but gsh's job control, use of regular expressions, and command history are similar to those in UNIX's csh shell.

GNO does not implement the UNIX file system, but relies upon GS/OS and its various File System Translators for access to disks. (I have used GNO utilities to list directories and read files from ProDOS, HFS, Pascal, and MS-DOS disks.) Procyon deals with GS/OS-specific issues by modifying some UNIX commands (for example, an ls -l directory listing includes flags for ProDOS characteristics rather than user/group/other permissions) or by providing new commands (chtyp changes a file's type and auxiliary type).

One of the amazing additions to v2.0 is the emulation of the directory structure that many UNIX programs assume is present (/usr, /bin, /etc, /tmp, /user, /dev, and /var). GNO uses the /etc/namespaces file to map these names to files in your system. I have /tmp set to my RAM disk; whenever I refer to a file on /tmp the file is actually accessed on /RAM5.

Good News On-line

Procyon provides excellent on-line support in both areas I use: the Internet and GENie. On the Internet, Jawaid Bazyar and many other knowledgeable users provide quick answers to questions in the comp.sys.apple2.gno news group. Jawaid is also active in the A2Pro (Apple II Programmer) area of GENie, particularly in Procyon's category 30. In addition to answering questions, Procyon uses the electronic media to distribute product updates, new utilities, and source code. GNO's documentation lists the following contacts:

America OnLine: GNOJawaid, GNOTim2
GENie: Procyon.Inc
Internet: bazyar@cs.uiuc.edu
Delphi: JAWAIDB

GNO has caught on with a number of programmers (particularly on the Internet), and they have produced numerous freeware packages. Many mimic UNIX utilities or make connecting to UNIX systems much easier. Philip Vandry's work with access via modem and Ian Schmidt's shell access NDA are two that are particularly noteworthy.

Gripes & Negative Observations

Although GNO has been well engineered, it does have some characteristics that might thwart inexperienced users.

Some programs that work well from the ORCA shell may seem to lose typed characters when run under GNO. This is usually because they read the keyboard hardware locations directly rather than going through the console driver or text tools. Discovering that a program doesn't work can be irritating, but the fix for such programs is to change the auxiliary file type to \$DC00 using the command:

```
chtyp -a \ $DC00 filename
```

ORCA's editor cannot determine the correct language type when run from gsh. When editing several files of different languages or creating a new file, the editor may not save the source file with the correct language type. I sometimes have to enter the commands:

```
chtyp -l C *.c *.h  
chtyp -l Rez *.rez
```

to change the language type so the compile command will choose the correct compiler.

GNO will not run ProDOS 8 programs and, it will also handle only one desktop program at a time. (Procyon's SwitchIt! program can be that program, however, and it can switch among other desktop applications.)

The many programs available for GNO provide a lot of functionality, but it is difficult to keep track of the various versions of each one, and Procyon does not provide a lot of help with this task.

Many of the rough edges can be worked out through the on-line services mentioned above. For example, I posted a problem with the edit command: even though the ORCA v2.0 editor allows multiple files, gsh would complain when more than one name was entered on the command line. Within a day, another user posted a replacement edit command that fixed the problem.

Go/No-go . . . Oh!

I have used GNO for over two years and find it excellent for program development. Non-programmers might find some of the utilities useful, but it does not seem to be targeted toward that market. Users with minimal systems (no hard disk and limited RAM) will probably be frustrated with GNO's performance.

Rank novices will have a steep learning curve before they master GNO's features, but the documentation will provide enough information so that most people will be doing the fundamentals fairly quickly.

Anyone who uses the ORCA v2.0 shell should consider getting GNO; the languages and utilities you are familiar with will continue to work, but you will be able to take advantage of a whole new group of productivity tools.

Those who are still using GNO v1.0 should contact Procyon and order the new version for \$30 plus shipping (\$3 in US, \$8 overseas). The bug fixes, enhancements, performance improvements, integration with ORCA v2.0, and additional utilities are well worth the price.

GNO would also be a useful product for Apple IIGS owners who want to learn about UNIX. For a relatively inexpensive investment you get an implementation that includes most features, and one that goes a long way toward allowing communication with other UNIX systems. Those already familiar with UNIX will find out that GNO is a familiar environment that increases the usefulness of your IIGS. **GS+**

HP DeskWriter 550C Printer

Generally available for: \$589

Manufactured by:
Hewlett-Packard Company
18110 SE 34th Street
Camas, WA 98607
(800) 752-0900 Customer Information
(208) 323-2551 Customer Support

This printer operates in conjunction with an Apple IIGS only when using:
Harmonie H.P. - GS/OS Printer Driver
Software for Hewlett-Packard printers

Generally available for: \$24.95

Published by:
Vitesse, Inc.
P.O. Box 929
La Puente, CA 91749-0929
(818) 813-1270

Vitesse also sells packages of software and Hewlett-Packard printers together (including the 550C) at prices that appear attractive when considering the lack of sales tax (outside of California). There is also a full blown version of Harmonie that includes the HP drivers as well as many other printer drivers for use in conjunction with the Apple IIGS. The full version (not needed for the 550C) is generally available for \$39.95.

Reviewed (slowly) by Greg Zimmerman.

"Colors speak all languages!"
Joseph Addison, *The Spectator* (1711-1712)

Are you tired of the dot dot dot of your ImageWriter II color printer? But you've hesitated moving to a higher resolution laser printer because that would mean giving up the color? Looking to upgrade that old Epson, but don't know which way to go? Well, there is an answer for you . . . and you too. It's not exactly a cheap answer, but the best things in life are not always free!

What Is An HP DeskWriter 550C Printer, What Is Harmonie, And Why Should I Care About All This Stuff Anyway?

The 550C (for short) is a color ink jet printer made by one of America's true industrial giants. It wasn't brought to market with the IIGS in mind, but the good people at Vitesse have published printer drivers that will allow the IIGS to print to the 550C. This is good news for IIGS owners, because the output quality of the 550C far exceeds the quality of an ImageWriter II printer, as well as most of the other non-laser printers commonly

used by IIGS owners. When printing strictly black type, the 550C prints at a quality level which is comparable to many laser printers.

This Sounds Too Good To Be True! Is Life Still As Simple As "Plug And Play" In This Ever More Complicated World?

Well, it is pretty simple, but there are some drawbacks and some requirements. Let's start with the requirements:

You'll have to have at least System Software v5.0 or later. That's easy enough. If you are reading this magazine, I'd say it's a safe bet you will be at least as up to date as v5.0. You'll also need at least one megabyte of RAM. Again, no problem as far as I can tell. Those are about the only absolute requirements for your system configuration, though as usual, things will move along a lot faster with minor items such as hard drives and accelerator cards.

What Is An Inkjet Anyway?

An inkjet printer uses cartridges of ink. The ink is forced out of small nozzles in the bottom of the cartridge onto the paper to form the letters or pictures that you want to print. The 550C is capable of resolutions as high as 300 d.p.i. (dots per inch) which is the same resolution as many lower priced laser printers on the market today. [This issue of *GS+* Magazine was printed at 300 d.p.i. - Ed.] The difference is that when the inkjet "sprays" the ink on the paper, the ink tends to be absorbed by the paper and run slightly as it dries. The more absorbent the paper, the more this slight "run" negatively effects the final print quality. So a 300 d.p.i. inkjet printer may not give quite the same results as a 300 d.p.i. laser printer. Items that will effect the final output include the type of ink in the cartridge, the type of paper you are using in your printer (special papers are available which give much better results), as well as the kind of image you are printing. Solid images that cover areas larger than normal type can use so much ink that the page is somewhat soaked. This causes the paper to curl, or get waves in it. Most inkjet ink is water soluble, and will run if you get it wet later.

Color? How Many Inks Are In The Printer?

The 550C uses two different ink cartridges. One contains all black ink. The other contains three color inks; cyan, yellow, and magenta. The black and color inks are mixed to form other colors. By varying the amount of the black and the three colors in the mix, and also by dithering the colors as it applies the ink to

the page, the 550C can produce just about any color you may want to see. In my case this is easy for the 550C to do; I'm seriously color blind.

Anyway, this is the print equivalent of what your RGB monitor does with red, green, and blue to display different colors on the screen of the monitor. Instead of RGB color values, the printer produces CYMK color values. One of the challenges in printing color is to get the CYMK color that your printer applies to the paper, to match as closely as possible the RGB value displayed on the screen.

Wait A Minute, Why Is "Resolution" Important?

The more dots that your printer can squeeze into each square inch of a page, the finer the detail your printed output will be. The smaller the dots, the smoother the edges, and the smoother the separation of colors, shades, and patterns. So the higher the number of dots of ink in a given area, the better the quality generally is. The number of dots in each square inch is called the "resolution."

So 300 d.p.i. is generally better than 75 d.p.i. Of course, there are ancillary considerations, such as the ones I mentioned above when explaining how an inkjet works. That's why a 360 d.p.i. StyleWriter II may not produce as high quality output as some 300 d.p.i. laser printers.

What About The 550C?

The 550C is a very easy to use inkjet printer. You start with an installation of the Harmonie printer driver software on your IIGS. Using the Installer provided by Vitesse, the whole process takes less than one minute. You then select the special driver which you've installed, and you select the printer type in the DC Printer Control Panel. The special driver overrides the settings of your printer port, so if you are switching between the 550C and possibly your old ImageWriter II, you shouldn't have to readjust the port settings each time you change printers.

Why would you be switching between printers? The main reason is that the Harmonie driver software only works with GS/OS applications that print using the Print Manager. This means that ProDOS 8 programs such as AppleWorks and Publish It; and desktop applications that do not use the Print Manager (like Word Perfect GS and Print Shop GS) will not work with Harmonie. However, Vitesse is working on patches for these specific four programs to enable them to print to the 550C. Vitesse hopes these patches will be available by the end of March.

Set-up of the 550C takes 5 to 15 minutes, depending on how familiar you are with printers, and with "stuff" in general. Unpacking is the most time consuming aspect of the set-up. There is a power plug, the cable to connect to the IIGS, the two print cartridges to install, and you're off to the races. Did I say "races"?

Is The Thing Really Fast?

NO! Printing at high resolutions requires more time than printing at low resolutions. The driver software scales fonts up and down and around to do it's thing, and all of this takes time. Fortunately, the dialog box that the software produces allows you to choose from amongst different resolutions (quality) levels, so that you can decide if you want to speed things up or go for the highest (slowest) quality. You also get the chance to adjust the color settings, and some other good stuff (if you have time) to fine tune the final images that the printer will produce. Finally, if you plow your way through the Harmonie Manual, you'll learn about a bunch of other stuff that you never knew you didn't know, including resident fonts, external rendering, color factors, and some other serious stuff for people that are so inclined.

Other Stuff You Should Know

If you are used to printing with an ImageWriter II, you'll be amazed at how much more quiet the 550C is, so quiet, in fact, that it seems to have more "finesse."

Also, the 550C does not use perforated printer paper, it uses plain paper, including the same stuff that most people use in their photocopy machines. Envelopes are pretty easy to do with the 550C, and the printer will hold about 100 pages of paper.

The possibility of buying an HP printer from Vitesse should not be overlooked even if the cost is slightly higher than some other option. Try calling HP, or any HP dealer and start talking about the Apple IIGS. You may get as dumbfounded a look as you can get over the telephone. But if you buy the package from Vitesse, they know the software and the hardware, and they know what works, and how it works. That's a definite plus in the customer support area. By the way, did I mention "aspect ratios" as one of the things you'll get a chance to learn about?

One Little Headache (Or Two)

There is a problem with the current version of the printer driver, which Vitesse says is the result of a bug in QuickDraw (a System Software component). When in 640 mode, and attempting to print at resolutions at or over 150 d.p.i., problems can occur in that the final printed output may be off a couple of pixels from what you'd expect. There are a couple of work arounds, especially for users that have software which allows switching resolutions, such as Platinum Paint. However, users of AppleWorks GS have limited options.

Also, the driver software does not support networking. This is an inconvenience especially in view of the limitations of the driver software wherein only GS/OS applications are supported. A typical user might be using some ProDOS 8 and ProDOS 16 applications and want to switch back and forth between an ImageWriter II (or some other printer) and the 550C. The 550C has built in AppleTalk support, so addressing this problem should be easy (for me to say) for Vitesse to address in future releases of the software. Until that hoped for time, the AB switch is the only practical option.

Would You Buy This Printer (And The Driver Software)?

That's not a fair question for me because I already own the printer. But, there are serious questions to be answered as you start looking at spending \$600 or so to buy a printer and driver software that is going to be used with a IIGS that cannot fully utilize the quality of the printer with all popular IIGS software.

I would be jumping up and down screaming BUY if the driver software worked with the Big 4 ProDOS applications listed above, and if the driver software supported networking. On the other hand, Vitesse has continued to improve many of it's products for the IIGS, and the company has said it hopes to release patches (or an updated driver) soon which will allow printing to the 550C with those applications. Networking? That's the wave of the future and of the present. This is a serious drawback.

On the other hand, if you want the best quality in color printing with your IIGS, as far as I know, this is the only option. The quality can be stunning, especially compared to the ImageWriter II. I think I'm a little bit spoiled with the IIGS, the ease of use of all it's components, and the compatibility of all the stuff that makes up my IIGS system. I just expect everything to work, and to work in a way that a normal user would use the stuff. This combination doesn't qualify in this regard, solely because the driver software doesn't fully utilize the features of the printer.

So, is the glass half full or half empty? If you want the best no matter what, it's half full. If you want it all, it's half empty. GS+

Having Problems?

If you are having a problem with your **GS+** Magazine subscription, or one of the programs on the **GS+** Disk, we want to help! But we can't help if we don't know about it!

For subscription problems, or if your **GS+** Disk is *defective*, you can call us at (615) 843-3988, Monday through Friday between 9 a.m. and 6 p.m. Eastern Time.

For problems with one of our programs, *please* fill out the problem form that is on your **GS+** Disk and send it to us.

For *any* of the above, our address is:

GS+ Magazine
P. O. Box 15366
Chattanooga, TN 37415-0366

APPLE II PERIPHERALS - UPGRADES - SERVICE PARTS - HARD DISKS SCHOOL & UNIVERSITY P.O.s ACCEPTED! - SCHOOL QTY. DISCOUNTS AVAILABLE*

RAM CHIPS

RAM Chips for your....
Expanding your... Apple IIgs Memory Card, AE GS-RAM, AE RAMWorks, Super Expander & Compatibles

768K Exp. Set (24 41256)\$24.00
41256.....\$1.25
Expanding Your GS Juice+, S&S AEGS RAM + / II, CV Tech or Chinook 4000
41024 (1 Meg)\$3.00
Bank of 8\$24.00
Expanding Your AE GS-RAM Ultra or RAMPak4 GS
44256 (256x4)\$3.00
Bank of 8\$24.00
Expanding Your OctoRAM, GS Sauce, Q-RAM GS, Pacemark 4 Meg RAM Card
1 Meg SIMM\$24.00
RAMFast / CV Tech RAM 1Meg
Upgrade Set 2 441024-80.....\$40.00

Refurbished Printers

C-Itoh ProWriter Jr (9 Pin)\$84.00
ImageWriter I.....\$129.00
ImageWriter I (Wide)\$139.00
ImageWriter II\$199.00
9 Pin Parallel Printer.....\$75.00
IW-I/II Ribbons.....6 for \$12.00

Print Heads
IW-I (Exch Only)\$35.00
IW-II (Exch. Only)\$79.00
Epson 9 Pin Heads (Most)\$59.00
We rebuilt print heads

Accessories

IIgs Internal Fan.....\$14.95
9 Pin Joystick, IIgs.....\$12.95
Mouse Pad (Static Free).....\$2.95

Cables & Switch Boxes

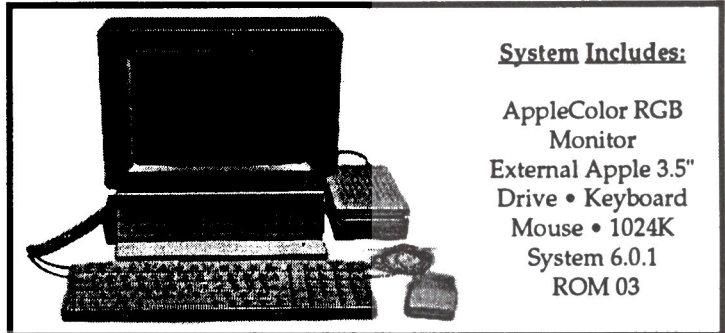
METAL, GBBS Sysops. HST/v.32bis hardware hdshk cables! (Specify).....\$14.95
19 Pin Drive Converter.....\$14.00
IIgs,e,c to ImageWriter I/II.....\$7.95
Fullnet Connector.....\$14.95
Switch Boxes.....\$19.00 - \$29.00
ADB Replacement cable.....\$9.95
SCSI Cable, 25-50 or 50-50.....\$9.95

PERIPHERAL CARDS

Zip GS 7Mhz / 32K Cache ..\$159.00
Zip Chip 8 Mhz (IIe, IIc)\$139.00
AEC SCSI Card.....\$59.00

Manuals & Software

Misc. Software. Games, Utils, More. \$5.95 to \$19.95. Ask For List.
Apple Manuals Avail. Ask For List



System Includes:

AppleColor RGB Monitor
External Apple 3.5" Drive • Keyboard
Mouse • 1024K System 6.0.1 ROM 03

Apple IIgs System.....\$599.00

Cordless ADB Mouse 6 foot range. Works Great!\$59.00
Apple ADB Mouse II (New) \$69.00..Refrb ADB Mouse \$49.00
Apple IIgs System 6.0.1 Disk / Manual Set\$35.00
Apple IIgs System Transport Case (Full System).....\$19.95

PC Transporter

101 Keyboard for PCT\$29.00
PCT IBM Keyboard Cable.....\$7.00
MS DOS 5.0 Package.....\$49.00
3.5" 720K Ad-on Drive.....\$49.00
4464 Zip / PCT Mem. Exp.....\$2. ea.

Motherboards/Service Parts

IIgs Power Supply Exch.....\$59.00
IIgs Power Supply New\$79.00
IIgs Keyboard Exchange\$45.00
IIgs Keyboard Refurb\$55.00
IIgs Keyboard NEW.....\$69.00
Apple / Ie or / Ic Case.....\$10.00
IIgs Case\$25.00
ROM 01 Motherboard Exch.....\$149.00
ROM 03 Motherboard Exch.....\$199.00
Upgrade: ROM 01 to ROM 03
W/Working ROM 01\$125.00
W/NonWorking ROM 01\$175.00

Vision Plus Enhanced IIgs \$209.00 IIgs

Includes Allison™ Digitizing Software. Real Time Video Digitizer. 30FPS B&W. Movie Mode & More! Upgrades available for current Vision Plus Owners. Call for details. Allison Upgrade...\$49.95
Actual Screen Image



Modems

USR 1200 Modem (NEW).....\$19.00
Hayes SM1200 (Refurb)\$29.00
2400 Ext & Cable MNP5\$69.00
Omron 14.4 Ext MNP1-7.....\$149.00
Cable/Modem Combo.. add\$5.00
Modems include ProTerm 3 Demo.

Bulk Disks

3.5" DSDD Disks 50 for\$14.50
3.5" DSHD Disks 10 for\$3.90

Alltech Electronics Co.

602 Garrison St. Oceanside, CA 92054
9-6 PM Mon-Fri. - 9-5 PM Sat.

Orders Only:



All other Inquiries: & Tech Support: 619/721-7733

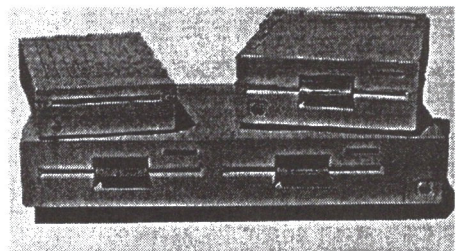
Fax (School PO's, Quotes, Info.): 619/721-2823

800/995-7773

BBS (FutureNet #30) 300-14.4 v.32: 619/721-0705

SEQUENTIAL SYSTEMS

Sequential Systems RAM-GS 4096K\$119.
Meg 80 Z (1 Meg, Apple IIe)\$59.00
Q:Talk LTO (AppleTalk & 32K for IW-II) ..\$69.00
RAM IIc with 1024K (IIc or IIc+).....\$119.
bit Mouse card \$49.00with mouse.....\$65.00
SuperCOMM \$54.00.....SuperCOMM /c \$45.00



Apple FDHD \$199.00

Disk Drives

5.25" Generic Full Height w/19 Pin\$69.00
5.25" Apple Disk II (Refurb) add \$10.00 for above.
Apple DuoDisk 5.25" Exch.....\$129.00
Apple DuoDisk 5.25" (Refurb)\$159.00
AppleDisk 3.5" (Platinum).....\$165.00
AppleDisk 5.25" (Refurb)\$165.00
Apple 3.5" 800K Drive Service Exchange \$95.00

Great for DiscQuest!

Apple CD 150 \$199.00

Monitors

IIgs Compatible (Atari) RGB Monitor.....\$129.00
AppleColor RGB, IIgs (Refurb)\$169.00
AppleColor RGB IIgs (NEW)\$225.00
Apple Color Comp or Color 100 (exch)\$109.00
Composite Green (Refurb).....\$35.00
Composite Green "Box" Monitor 9".....\$39.00
Apple Monitor II or III (Refurb).....\$49.00

SCSI Hard Disks

40 Meg External w/AEC Card (Refurb).....\$159.
40 Meg External Drive (Quantum)\$139.
80 Meg Ext.....\$189.00 w/Apl SCSI\$295.
SyQuest 44.....\$259.00 SyQuest 88.\$359.
External Drive Cases
SCSI Case & P/S for 3.5" or 5.25" HH\$49.
SCSI Case & P/S for Full Hight 5.25"\$69.

CA Residents please add 7.75% Sales Tax • COD Orders, Cash/Certified Funds Only • Minimum Shipping & Handling Charge \$5.00 (This covers most orders) • Some products are refurbished products and carry a 120 day warranty. • New products are covered by a one year warranty. All Repairs are warranted for 120 days. • Some RAM Chips may be new but pulled, all RAM has a one year warranty. • NO Returns without an RMA number, please call before shipping anything back to us. • A 20% Restocking Fee is applied to all returns due to incompatibility or unneeded product or Products purchased in error. Please be sure what computer you have before placing an order. • Educational P.O.s Accepted, Others on AOC only. • Prices and availability subject to change at any time without any notification whatsoever. *Discounts on certain merchandise only and min. Qty Applies.

HyperLogo

By Mike Westerfield

Retail price: \$95

Requires System 6 or later and HyperStudio v3.01 or later. Current version is 1.0.1. If you have version 1.0, contact The Byte Works for a free upgrade.

Not copy protected.

The Byte Works, Inc.
4700 Irving Blvd. NW Suite 207
Albuquerque, NM 87114
(505) 898-8183

Reviewed by Steven W. Disbrow

I've worked with a lot of computer languages in my time but I must say that I've never seen anything quite like HyperLogo—unless you count 3D Logo, which I just reviewed in the last issue of *GS+* Magazine. Just like 3D Logo, HyperLogo is an implementation of the Logo language that has extensions which allow it to display 3D images and "movies" on your IIGS screen. Unlike 3D Logo, HyperLogo is *not* a stand alone product, it is a "plug-in" language for HyperStudio.

Fraternal Twins

HyperLogo and 3D Logo have a lot in common: they were written by the same person, they are both very good implementations of the Logo programming language, and they are both published by The Byte Works. But the similarities don't end there! The manuals for each product are virtually identical, and the programs that you write with one will run with the other package with little or no modification. In fact, the only place these products really differ is in their intended audience. So, since these products are so incredibly alike, I'm going to forego the discussion of the Logo programming language that I did in my review of 3D Logo, and get right into what makes this product different: the HyperStudio environment. (If you are completely in the dark about Logo, see the 3D Logo review in the last issue for an explanation. Everything that I said about Logo in that review applies equally to HyperLogo.)

Separated At Birth

The main difference between 3D Logo and HyperLogo is that 3D Logo is a stand alone application and HyperLogo runs from inside HyperStudio. This is a big difference, but if you get to use both products, you probably won't even notice it. About the only things that 3D Logo has that you might miss in HyperLogo are

that HyperLogo can not switch to 320 mode, and that HyperLogo can not create stand alone applications.

However, these "limitations" probably won't be a problem for most users. Very few HyperStudio stacks use 320 mode for anything other than displaying graphics, and since you are actually *inside* HyperStudio, you have access to all its stack building features, which are actually more powerful and flexible than the applications that 3D Logo can create.

So, while these are differences that you need to be aware of, they really aren't that big of a deal.

The HyperStudio Interface

Now that we've gotten all of the "twin" jokes out of the way, lets talk about how HyperLogo actually works with HyperStudio. In a word, it's seamless.

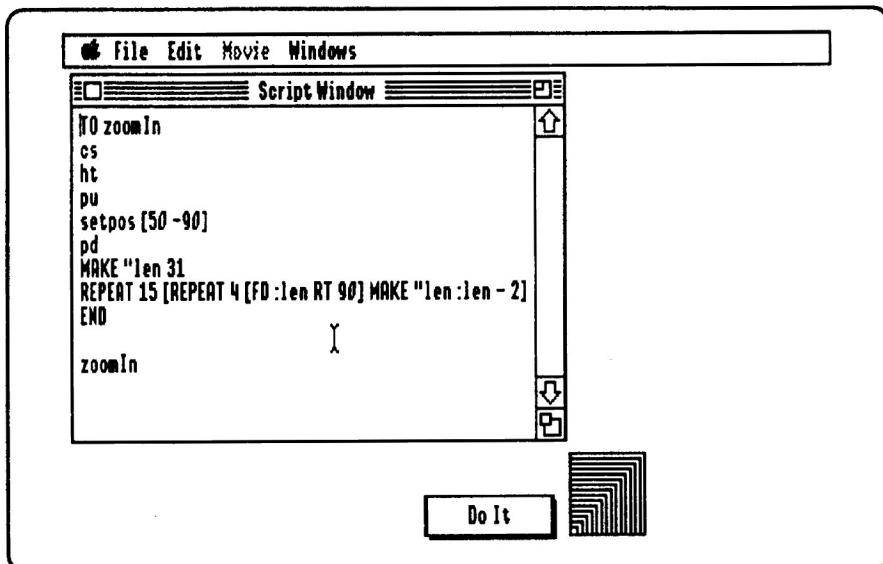
In fact, you use HyperLogo just as you would use SimpleScript. (If you don't know what SimpleScript is, put this magazine down and go read your HyperStudio manuals. None of what I'm about to say will have any meaning for you if you don't have some familiarity with SimpleScript.) All you do is create a new button, and in the Button Actions dialog, click on the Scripting Language check box. Then, choose HyperLogo from the list that comes up. When you do this, you will be taken into the HyperLogo environment, which is where you develop your Logo programs.

The HyperLogo environment is almost exactly the same as the 3D Logo environment, except that if you move all of the HyperLogo windows out of the way, you'll actually get to see your HyperStudio stack on the screen. This environment has the same types of

windows as 3D Logo: Text and Edit windows for creating Logo commands, turtle windows for viewing the output created by your Logo code and Movie windows that you can create animations in. And, best of all, these windows work just like their 3D Logo counterparts, which means that you can write your Logo code and execute it directly from inside the HyperLogo environment. This means that you can create and debug your button scripts without having to actually go back to HyperStudio! This is an *extremely* cool feature that SimpleScript just can't touch.

HyperLogo also has another type of window, the Script window, that shows exactly what your button script will contain when you return to HyperStudio. This allows you to develop and test your script in the Text and Edit windows, and, as you get bits of it working properly, you can then copy it into the Script window.

Of course, a HyperStudio button script isn't very useful if you can't make that script exercise some control over HyperStudio itself. HyperLogo lets you do this by providing an extensive set of HyperStudio "Callbacks" that let you use HyperLogo scripts to move around inside a stack, hide and show items, get text from a field, call NBA's and much more! These Callbacks are very well explained in the manual, very easy to use, and they give HyperLogo the same ability to control HyperStudio as SimpleScript has. While we are on the subject of Callbacks, this is a good time to mention that this is the one place where HyperLogo and 3D Logo actually differ. If you use a lot of Callbacks in your HyperLogo programs, you won't be able to automatically take those programs and use them with 3D Logo.



3D2

Even though it doesn't have "3D" in its name, HyperLogo also shares 3D Logo's ability to create 3D displays on the IIGS screen. As in 3D Logo, these displays are simple red and blue line drawings that appear three dimensional when viewed through a set of classic 3D glasses. (3D glasses are provided with every copy of 3D Logo and HyperLogo, and extra sets are available from The Byte Works. But, in a pinch, you can use any old pair you may have laying around the house.) As in my 3D Logo review, I'm not going to go into a detailed explanation of the 3D process—the HyperLogo manual does a fine job of explaining things. However, I will point out once again that the whole process of creating 3D graphics is almost completely painless (HyperLogo takes care of all the tricky math), and the results are pretty darn impressive. The HyperLogo package includes several demonstration programs that show off this capability in some very cool ways, so you don't have to start from scratch

Makin Movies

Once again, HyperLogo and 3D Logo share something in common: the ability to easily create "movies" and play them back. As in 3D Logo, HyperLogo movies are created one frame at a time in a special Movie window, and are then saved to a disk as standard PaintWorks animation files. So, not only can you use them in HyperLogo, you can use them with any other program that can play PaintWorks animations. Movies are also a good example of how HyperLogo helps to make HyperStudio a "one-stop creativity shop." Instead of having to use some other program to make your animations, you can create them while you are still inside HyperStudio. Of course, movies created

with HyperLogo are going to consist only of what you can actually draw with HyperLogo. This means that without some hard work, your movies will be limited to a few simple shapes moving around the screen. However, if you are willing to put in some time and effort, you can get more complex shapes (like molecules) for use in your movies. Again, movies can be in either two or three dimensions, and the results can be very impressive.

Distribution

One of the nice things about HyperStudio is that, thanks to the run-time module that comes with it, you've always been able to share your stacks with the world. Fortunately, HyperLogo also includes a run-time module that you can distribute just like you distribute the HyperStudio run-time module. The only additional step you need to take is to place The Byte Works copyright notice somewhere inside your stack so that users can see it when they run the stack.

Problems

For the most part, the only problems I have with HyperLogo are the same ones that I had with 3D Logo. However, since HyperLogo is not a stand alone product, two of the three problems I had with it (printing from 3D Logo applications and switching from 640 to 320 mode) no longer apply. And, since I wrote that review, The Byte Works has fixed the problem with blank lines inside Logo procedures making the Logo interpreter go crazy. So, that effectively eliminates all of the real bugs that there were in 3D Logo, but it leaves me with the fact that there is no good way to manage all of the windows that you can have open in the HyperLogo environment. As in the 3D

Logo environment, opening up more than two or three windows can quickly lead to a cluttered screen and more than a little confusion.

And, lest I forget, there is one real bug in HyperLogo: if you open a New Desk Accessory (NDA) while you are in HyperLogo, clicking the mouse anywhere on the screen results in the system beeping at you. You can still use the keyboard to control the NDA, but the mouse just won't work until you close the NDA window.

Conclusion

If you are a HyperStudio fanatic or just a HyperStudio user that has become frustrated with SimpleScript, you should definitely pick up a copy of HyperLogo. It is a solid and easy to use addition to the already powerful and flexible HyperStudio environment. And, it's a much more powerful programming language than SimpleScript. HyperLogo is also a good investment if you are going to be developing stacks for both the IIGS and Mac versions of HyperStudio.

Now if only we could get
Hyper/C++ GS+

Errata

In last issue's review of the Tulin Floptical Disk Drive, the sidebar "Using the Floptical Disk Drive With a PC Transporter" said that a program called `SlotList.BAS` was on the *GS+* Disk. The actual name of the program was `List.Volumes`. For more additions and corrections to the Tulin Floptical Disk Drive review, see this issue's "Letters" column.

In last issue's reviews of 3D Logo and Prism, we neglected to include the minimum system requirements for each program. 3D Logo requires System 6.0 or later, at least 1.5MB of RAM, and takes up approximately 300K on disk. Prism requires System 6.0 or later, 1.25MB of RAM, and takes up 600K on disk. Neither product is copy protected.

In last issue's "GS+ Classifieds" section, in the ad for "MusicWriter Fonts," we inadvertently messed up the contact address. For corrected contact information, see the "GS+ Classifieds" section in this issue.

If you find a mistake in *GS+* Magazine, we want to fix it! Give us a call at (615) 843-3988 or write to us at:

GS+ Magazine
P. O. Box 15366
Chattanooga, TN 37415-0366

NCS Pro 240 Hard Drive

Current price: \$319 plus \$9 S/H (overnight delivery)

Available only from:
LRO Computer Sales
224 W. Judd St., 1st floor
Woodstock, IL 60098
Orders: (800) 275-4576
Tech Support: (815) 338-8746
Fax: (815) 338-4332

Reviewed by Bill Moore

Bigger Is Better

Last January, I finally became a member of the hard drive club. And let me tell you, it was *almost* as much fun as joining the mile-high club would be! For a brief time, my 40MB Q-Drive was a little slice of heaven. Forty whole megabytes! How would I *ever* fill that up? Well, I found out . . . much more quickly than I ever expected. A mere two weeks later, I had to do what would become standard operating procedure for the next few months. I had to copy files back off the drive, Shrink them, and archive onto floppies—all to gain a precious couple of megs for whatever *had* to be on the hard drive at that particular moment. Slowly, what little sanity I ever had began slipping away. "Enough!" I declared, "it's time to go shopping!" So, armed with Mom's credit card number, I gave LRO a call.

When I began considering a successor to my Q-Drive, my first choice was going to

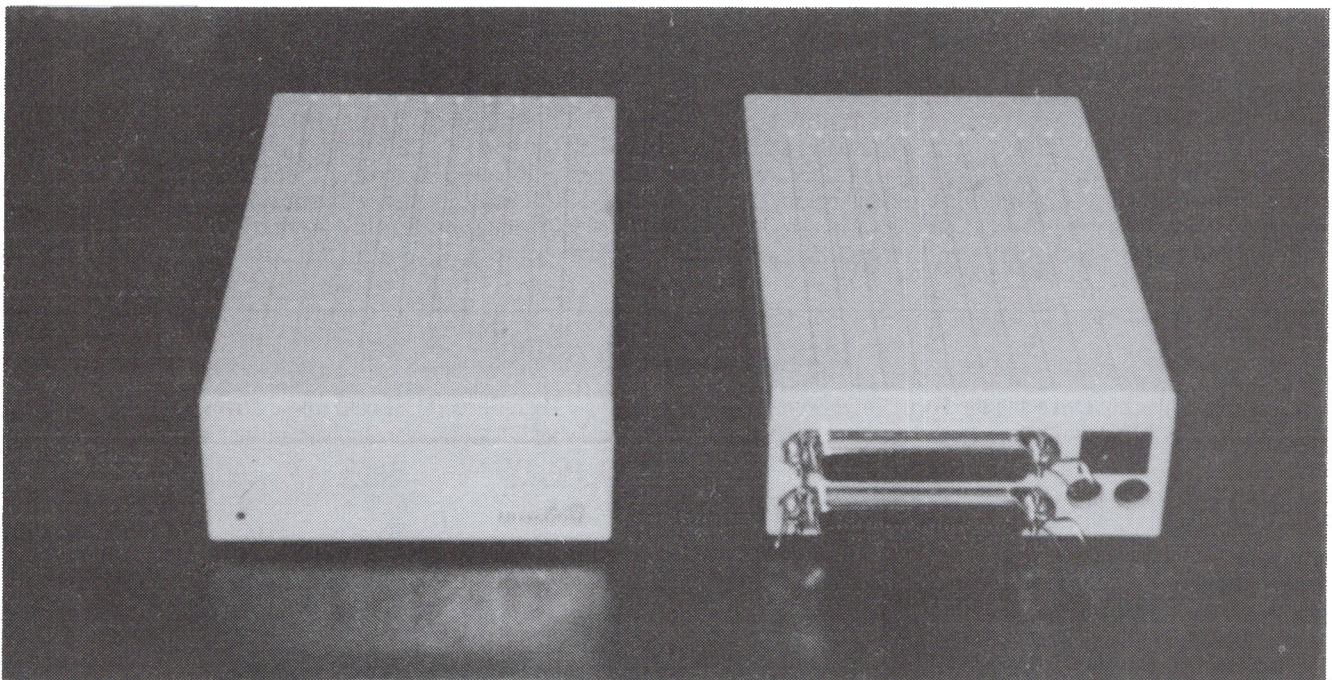
be an X-Drive. Oh, well . . . so much for *that* idea. [Editor's Note: In case you didn't know, Econ's gotten out of the hard drive business, and is no longer selling the X-Drive.] Then, I turned my eye toward an Envisio SmartStack. (Go peek at a Mac rag if you aren't familiar with this one. Ads for it are all over the place.) The idea is smart, but the prices will only make your wallet smart (as in hurt). A final idea I considered for an expandable external was to get an external SCSI case with two bays, then buy a hard drive and later get a removable drive intended for internal installation in a Macintosh. This idea would've ended up costing me more than to buy two external drives of these types.

With the rug pulled out from under me on an expandable drive, I decided on a small unit, which could be considered portable (at least, transportable). So basically, I had two choices—the NCS drives by LRO, or the Shadow by TMS. (See review of the Shadow in *GS+* V3.N4.) I don't like how the Shadow has only one SCSI port, so that kind of ruled it out. Thus, I gave LRO a ring.

It was rather interesting. When I called LRO on Monday, October 25 to order a 240MB drive, I was informed that Quantum mechanisms were not available in the 170MB and 240MB sizes. It seems Apple's purchase of Quantum drives in these sizes was about 50% bigger than expected, which has created a shortage. (LRO thinks the crunch will end about mid-January, so it should be

over by the time you read this.) The interesting part is, the shortage is apparently due to the fact that Apple's getting back in the hard drive business with 160MB and 230MB external hard drives for the Mac. (Are you listening, Professor Gumby?) Anyway, I digress. The short version is, this created a paucity of drives in these sizes by *any* manufacturer. Compounding this problem was the fact that Quantum is in the process of revamping their drive lineup. I wanted a Quantum, but decided on a Maxtor 245MB drive mechanism to go in my NCS Pro. The week before, Diz had ordered exactly the same drive for use as our file server drive. I liked that drive, so I got the same thing.

I asked LRO for some custom partitioning (if you don't specify how you want a drive carved up, you get as many 32MB partitions as possible, then a smaller partition of whatever's left over). Here, I screwed up. I want to be able to bring this drive into the office from time to time if I have massive amounts of data to transfer either to or from the file server. Thus, it will primarily work on my Apple IIGS, but on rare occasion I may want to hook it up to a Mac. LRO partitioned and formatted my drive with a IIGS, just the way I wanted it (four 30MB ProDOS partitions, and two 60MB HFS ones). The problem is, a hard disk or partition formatted by the IIGS as HFS *will not be recognized* by a Macintosh. The reason for this is that the Mac stores the driver for the hard drive in an invisible partition on the disk itself. If that driver isn't



present, the Mac can't mount *any* partitions from the drive on the desktop. I knew about this problem, but I wasn't thinking about it when I ordered. It would've been no problem for LRO to do this, *if I'd asked*. So remember kids: If you have special partition or formatting needs, be sure to mention it! Because I forgot, I had to erase the drive, then reformat and repartition it on a Mac.

But . . . How's The Thing Work?

After a couple of weeks of near-insanity (Due to the above problem, then the software conflicts from hell plagued me . . . and then I had another weird problem. See below.) things seem to have settled down and life with this drive is better perhaps than I expected! The NCS Pro 240 drive (I'll call it "Pro" from here on out for brevity,) is, like the TMS Shadow, actually smaller and lighter than an Apple 3.5-inch drive. According to the postal scale in the office, the Pro weighs in for the bout at 33.7 ounces. That's a few ounces heavier than the Shadow's 25.5 ounces, but it isn't a noticeable difference. To convert to pounds, the Shadow is approximately 1.6 pounds vs. the Pro's 2.1 pounds. Of course, there's a tradeoff here for that small size and weight—the power supply's bigger than Rush Limbaugh's ego, and weighs more than he does, too. (Well, it's not *that* big or heavy, [What could be? — Ed.] but it certainly seems that way!) To avoid lugging "the brick" with you when you take the drive to roam, LRO includes a cable to allow you to plug into a Mac or IIGS floppy port for power. Actually, this is the only cable you get for power if the drive's size is smaller than 240 MB. If you decide you want a brick, LRO sells the power supply as a separate item for \$39. This is a better deal than the \$65 TMS charges for another Shadow power supply.

Externally, there's not that much that's exciting about the Pro. A green light showing drive access shares real estate on the front with an iDS Livingstone logo.

(It seems that NCS/LRO bought out iDS, one of the pioneers of really small Mac hard drives. So now, they use iDS cases.) On the back of the unit are the power supply plugs. (Yes, Virginia, there are two plugs. No, I don't know why.) Also on the back is the main reason I bought the Pro—two SCSI ports. With two SCSI ports, the Pro can be anywhere in your SCSI chain that you want it. If you want it at the end, the Pro has a nifty way of doing internal termination. A small removable panel on the bottom of the drive allows access to the internal terminators. The terminators have white tabs attached, which is a really nice touch LRO has added. Put away your needle-nose pliers, because with these tabs attached, you can pull the terminators out by yanking on the tabs. This makes removing the termination a snap, and since the ends of the tabs can hang outside the case, you can tell at a glance if the drive is terminated or not. Also on the bottom of the unit is the SCSI ID selector. It's a wheel that requires a screwdriver (or very small fingernail,) to set. In summary, the Pro won't fit into an Applied Engineering Conserver, but it's a nice, small unit.

What's Your Problem?

An extremely weird one. The weekend after getting the drive up and running, the computer crashed while booting from the Pro . . . again and again. When I finally could boot up, I started checking out my four ProDOS partitions with the Finder, Deliverance, and Prosel. The weird part is, all three told me files were corrupted, but none of them would agree on the same files! After zeroing and reformatting *several* times without eliminating the problem, I obtained a RamFAST/SCSI card from LRO. While installing it, I noticed in the instructions that if you have a TransWarp GS (which I do), the setting "AppleTalk/IRQ" must be set to "on" (which it wasn't). I'm wondering if that, and not my Apple High-Speed SCSI card, wasn't the cause of my woes all along. Attaching an external terminator, between

the drive and the SCSI card, allowed the drive to work with the Apple card. This makes me suspect that the terminators soldered to the Apple card are wearing out.

The other strange thing about the whole affair was that I have two HFS partitions on this drive that performed like champs the whole time. Never even a hint of trouble from them, or from either partition on my old 40MB Q-Drive. The RamFAST seems to have corrected the problem. While dealing with these problems, I kept expecting to hear the Twilight Zone guitar chords and Rod Serling's voice. "Picture a man . . ."

On another note, I learned some hard lessons about deleting files. My mouse went haywire one night, and suddenly one of my HFS partitions on the Pro was *erased*. After weeping and gnashing of teeth, I found out another unpleasant fact . . . all current IIGS file recover utilities won't touch an HFS disk. I had to use MacTools 3.0 to recover my files, and it screwed up. Apparently, the last block of a file was recovered as the first block of another file. This review was on that partition, so for all I know, the conclusion I'll have to rewrite was stuck onto an rSoundsample file! As I've said before, experience is a stern teacher, and so Watchdog (see *GS+ V2.N6*) now resides in my CDevs folder to prevent this incident from reoccurring. At least I can take cold comfort in the fact that I did recover most of my irreplaceable data.

Conclusion

If you're in the market for a new hard drive, I strongly recommend the NCS Pro line. With good prices, dependability, and a knowledgeable tech support staff, the combination of these factors made this drive a deal too good to pass up. My drive is doing just fine now, and our file server has seen three months of constant use without a whimper. Wow . . . two hundred and forty megabytes. How will I *ever* fill that up? **GS+**

DiskTimer GS v2.0 results

All drives except the Zip Drive and the Focus Drive were attached to an Apple High-Speed SCSI card (these drives are not SCSI drives, and are attached to their controller card). All readings were taken on an unaccelerated IIGS. (Lower numbers are better.)

	<u>Read</u>	<u>Multi-block Read</u>	<u>Seek</u>	<u>Adapter</u>
Focus Drive 80	13	61	61	07
NCS Pro 240	37	24	52	21
Q-Drive 40	45	66	76	28
Zip Drive 40MB	15	62	65	09
Pegasus 100i	31	23	19	21
Shadow 105MB	36	26	22	21
TMS 105 Pro	33	24	21	20
Tulin Half Shell	36	24	68	22

Pedigree

By Volker Herrmann

Retail price: \$40

Requires at least 1.25MB and System Software 6.0 or later. More memory and a hard disk are strongly recommended.

Bright Software
P.O. Box 120
Exeter, ME 04435-0120

Reviewed by Robert A. Ribaric

Finally, a captive audience! You see, no one here wants to listen to me talk about my family tree. I've been researching my family history for about two years now, and it's become a big hobby of mine. I think of it as a great mystery that needs solving. And believe me, this is hard work. I'm of Slavic descent which makes it particularly difficult to get information because of language barriers. I have to send requests to archives in eastern Europe which come back in Slovak, Slovenian, or German. Sometimes I still can't translate the documents that I paid for! I even have trouble squeezing data out of my own relatives here in the states. You really have to be dedicated to commit the necessary time and money. And let me tell you—it can get frustrating! I've spent all this time and money finding my roots, but until now I haven't had a good way to document everything. Using a computer seemed like a good way to make things easier so I started using my word processor to create a tree representation to record names and dates. That was time consuming and hard to update, but I had no choice—until I heard about Pedigree.

Roots

I started out with Pedigree by entering information on myself and immediate family like the manual suggests. I then progressed back in time all the way to the 1700s. The manual contains its fair share of genealogical jargon, but since I am up to date on all the latest accepted genealogical procedures, it wasn't that confusing to me. The Mormon Church based in Utah has set most of these precedents. They have standards on the proper layout for family tree documents, and are a very good source of advice and information. I guess they're really big on keeping track of their fold and its religious history. Anyway, this is where I realized my first concern about Pedigree. The manual refers to the Mormons' GEDCOM standards, and Pedigree can store data in and get data from GEDCOM files. But, this seems to be the only Mormon Church standard that Pedigree follows. The program uses a very

unorthodox approach to organizing its data and printing it out.

Huh?

The first example of this is the way family trees are arranged. Pedigree puts the most current generation (you) at the top and places previous generations below that. Now, there are two main ways I've seen this done. Unfortunately, one is just the opposite of this and the other goes sideways. Most other genealogy programs I've checked out use the sideways method. This is similar to the way sports playoff tournaments are shown in the newspaper. You start off with all the teams shown on lines at the left of the page. As teams are knocked off, the lines converge toward the right where only the final winner remains. On a tree chart, this champion would be your generation and going left would take you back in time on the tree branches. This way is great for getting the most data to a page. However, I prefer the other method which puts your information in a box at the bottom of a page and other boxes branch upward. Each square above contains one of your ancestors. As I said earlier, Pedigree does not use either of these techniques.

The author of this program is European, so I dismissed this first criticism by assuming that European genealogists do things differently. (After all, they like to express dates in the day-month-year format, don't they? Incidentally, Pedigree uses the American way [month-day-year] for expressing dates.) Well, I later realized that this really doesn't matter for hard copies because Pedigree won't even print text on the tree graphic it *does* make. This problem bothered me a *lot* more than how the tree was set up.

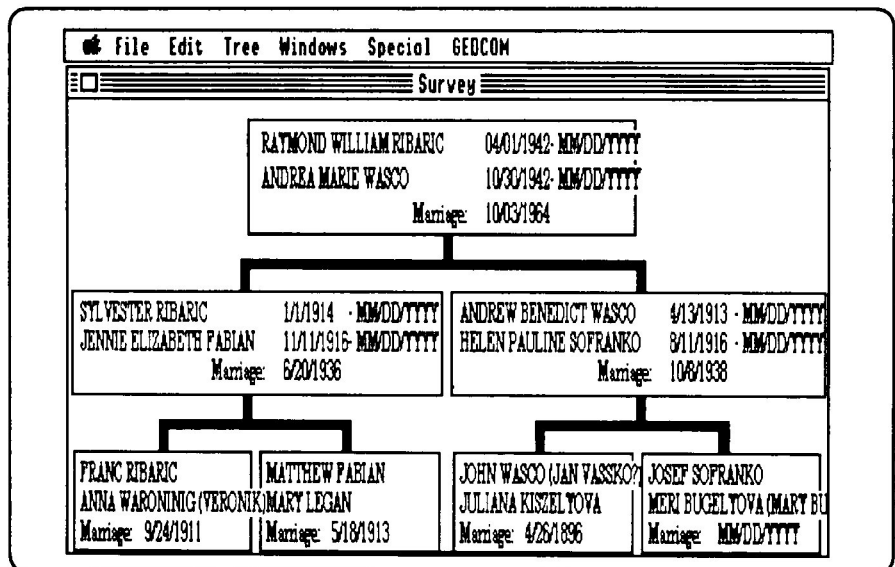
Pedigree's Priorities

My main reason for even using a

computer program was to get a nice, printed graphical representation of my family tree. Unfortunately, Pedigree seems to be more concerned with just organizing data on disk for viewing on the screen. In this, Pedigree actually does pretty good job, but as I said, one of the main things I'm interested in is getting my family tree off of the screen and onto a piece of paper. Pedigree does have a nice screen display of a family tree (which is called the "survey" mode), which shows names and dates of family members in the tree. However, you simply can't print the information out in that same format. Another disappointment is that, while you can scan in photos of loved ones to be included with their information, you can't print those pictures out.

I had hoped that Pedigree would permit printing of complete family tree diagrams with some data included. Without this information, it would be pretty senseless to show it to anyone. (See Figure 1 for an example of what I mean.) When you're writing to a distant relative overseas for information, you should be able to send them a hard copy showing who you are and how you are related to them (people are much more likely to cooperate with a relative [even a distant one] than they are a complete stranger). Unfortunately, the printouts Pedigree generates aren't much help with this.

Feeling a bit disappointed with the lack of printout options, I decided to go back through the documentation just in case I overlooked some features. The book has many typos and phrasing that doesn't make much sense. I guess that it was just poorly translated from the original German. It isn't very well organized, either (although it does have an index). The manual basically just lists Pedigree's features and goes over the menu items.



exactly compatible with every other computer, your data will be.

Is It Worth It?

I can almost give you a straight negative answer to this, but let me take a step back. This was originally a shareware program written by someone with a IIGS who wanted to record his genealogical findings. However, Pedigree is no longer a shareware program, and it still has problems that should not be in a piece of retail software. For instance, Pedigree will not run very well over AppleShare—trying to open a data file generates an error message.

So here's the conclusion I came to: If I was writing this as a shareware review, Pedigree would get much higher marks. Maybe if you want a IIGS-specific family tree program and only want to store your data, this is for you. I don't know of any other IIGS-specific genealogy programs. If you are, instead, very serious about your research and want to show people your findings (without having to drag them in front of your computer), look elsewhere. I can't even really suggest this program for beginners because I feel amateur genealogists (like I was a mere two years ago) would be led astray by the odd formats Pedigree uses. I've used the older, shareware version of this program and hoped the retail Pedigree would be better. In fact, you may be better off digging up the old shareware version. If you actually do like it, you can send in your money. I'd hate to plunk down cash for this version and then discover it's shortcomings. This version of Pedigree should have remained shareware! **GS+**

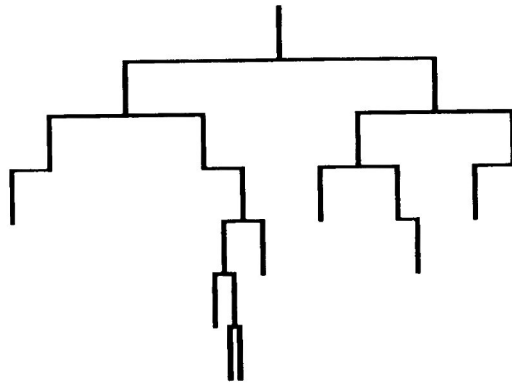


Figure 1

Rob's family tree, beginning with Rob's parents, as printed out by Pedigree

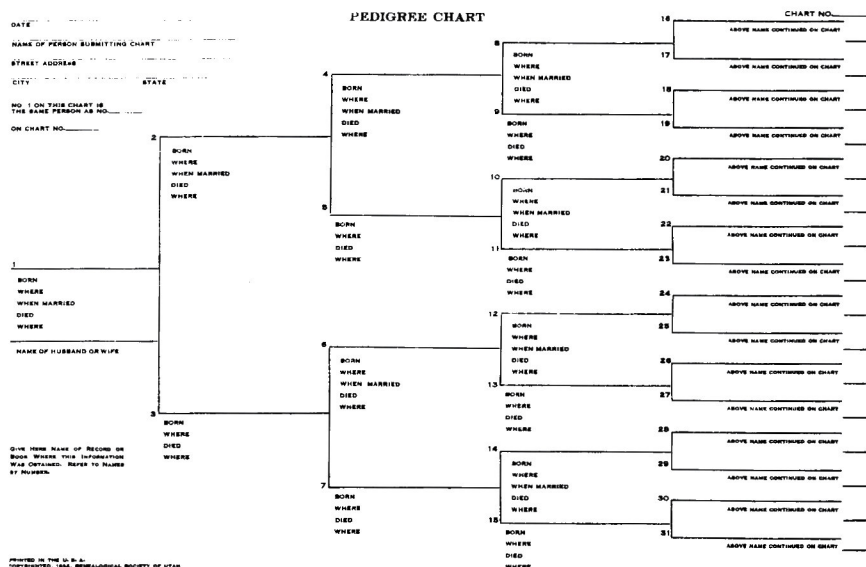
Nowhere in the documentation does it show a good tree example or even go over sample records. I really think it should walk you through an example—step by step. The program does contain a file of Ronald Reagan's ancestry which you can peruse and print out, but that doesn't help much.

What It Does Do

Okay, I don't mean to just sit here and bash this program. Maybe I'm a little overly critical because I'm so interested in genealogy. Therefore, I'll now tell you exactly what Pedigree can do for you. This program will accept your family's names, birth, death, location, nationality, religion, and marriage information. It will then organize this data and display it in text, survey (family tree), list, or tree

graphic modes. It will save digitized images in the file and let you search for records using various criteria. The list feature allows you to click on a name and have Pedigree display that branch of your family in the text window. You can also set defaults for the different data categories, to help speed up data entry. A little side feature allows you to see what day of the week a particular date was. Finally, Pedigree offers printouts in a somewhat limited manner.

Pedigree does require System 6, and it not only supports, but encourages, use of The Manager. This helps speed up work during Pedigree's GEDCOM feature. By the way, Pedigree's ability to read and write data in GEDCOM format is very nice. Even though your IIGS is not



Typical sideways family tree chart

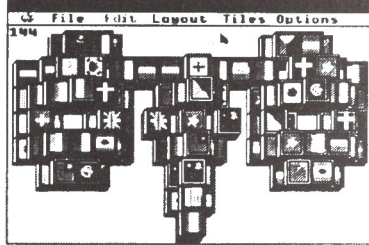
Exclusive Source for the Best IIGS Programs

The Lost Treasures



Lost Treasures of Infocom™: A compilation of 20 captivating games in one package including Zork, Planetfall, Deadline, Sorcerer, Spellbreaker, Infidel, Ballyhoo, Suspect, Witness and other classics. A fortune in Interactive Mystery, Fantasy and Science Fiction Adventures. Now available in GS specific format with menus and GS/OS compatibility! **Order product number BR93 for \$59.95.**

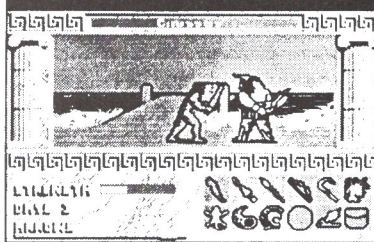
Shanghai II



Shanghai II: Dragon's Eye™: Shanghai II gives you 8 beautifully detailed tile sets, over a dozen different layouts, animated tilesets and over 100 sound effects. Several ways to play - Solitaire, Challenge & Tournament. Beyond all this there is the interactive version of the Dragon's Eye, a special challenge for superior Shanghai players. **Order product number BR92 for \$49.95.**

Ancient Glory™ from Big Red Computers. Brand new for the IIGS, this is an arcade action game based on the mythology of Hercules. Use a joystick to guide Hercules past raging bulls, centaurs, the Hydra, and the Minotaur. Your goal is to defeat Medusa and carry her head to Athena. The gods are watching and they will both aid and hinder your journey. **Order product number AG50 for only \$20.**

Ancient Glory

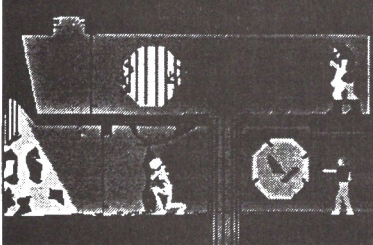


Hover Blade™ from MCX. GS+ Magazine rated Hover Blade in the top five IIGS games because of its astounding graphics and sound. You must test fly a new fighter hovercraft through treacherous terrain in order to prove its worthiness. Zip left, right, up and down to avoid collisions with 3-D objects that scream by at an alarming speed. You'll need to gather fuel and shield power. **Order product number MX50 for only \$15.**

Hover Blade



Out of This World



Out of this World™: HIGHEST RATED GAME EVER by Computer Game Review! Using the new technology of polygonal graphics, *Out of this World* is a masterpiece in action/adventure games. Hurtled through space and time by a nuclear experiment gone wrong you must blend logic and skill to survive the alien land. **Order product number IP60 for \$49.95.**

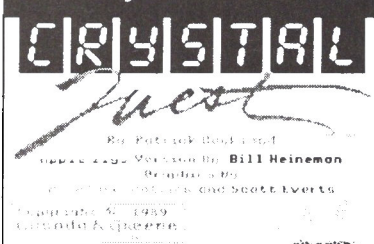
Mazer II



Mazer II™: Virtual reality on your IIGS. Cross a fantasy adventure with a flight simulator, then add a great deal more of something unexpected, and you have Mazer II. Enter a world of continuous movement with real-time point-of-view graphics for arcade action plus adventure. Be prepared to meet snails, seahorses, evil rats and The Oracle. Requires 1.25 Megs and System 5.0 or higher. **Order FF50 for \$20.**

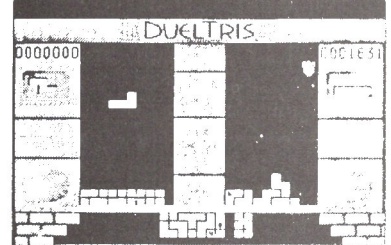
Crystal Quest™: Your job is to collect all the crystals while avoiding mines, bullets, and 12 different kinds of nasties which chase you through more than 40 different waves! There are nasties that hide in corners and gush bullets like a hail storm. There are nasties that come at you like a cruise missile. Warning: this is a very addictive game. **Product number CG50 is only \$20.**

Crystal Quest



DuelTris™: Just when you thought you'd seen every variation on Tetris™, DreamWorld releases DuelTris. It's similar to Tetris, but you can play against another human or against the computer. When one player fills out a row, it's moved to the other player's field making it more difficult. Plus there are special pieces like a gun, a bomb and an anvil to liven things up. **Order DG55 for \$25.**

Dueltris: Limited Ed.



Big Red

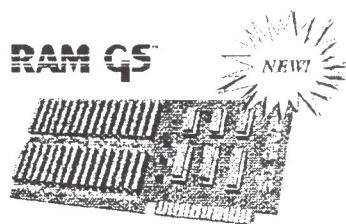


423 Norfolk Avenue, Norfolk, NE 68701

Fast Service
Order by Fax (402) 379-3361
Order by phone (402) 379-4680
MasterCard or Visa Accepted
School purchase orders accepted

No Credit Card Surcharge. Add \$3 per order for shipping and handling fee for UPS Ground/Priority Mail. Add \$7 per order for UPS Blue Label (2 day) delivery. Call for Overnight & International Shipping Charges.

RAM GS



Sequential Systems RAM-GS™: With memory expansion this cheap, there's no excuse for "Out of Memory" errors. RAM-GS is a low-cost, 4 Megabyte memory expansion for the IIGS. Easily installed, it is fully compatible with GS/OS, DMA and all software. Its multi-layer circuit design makes it run cool and draw less power. **Order product number SQ50 for only \$129.**

For Free Catalog and To Order - Call Now! - (402) 379-4680

GS+ Classifieds

Bargains! Bargains! Bargains!

Apple Memory Board (OK) - \$25
256K SIMMS, 150ns (Perfect for OctoRAM & older Macs) - \$5 each!
Call *A.P.P.L.E.* back issues, from January 1988 to July 1989 (call for availability). \$2.00 each.
"Magnetic Media! Do not bend or X-Ray!" labels, perfect for mailing diskettes. 144 labels for \$5
Free shipping on labels or if you take more than \$10 worth of the other stuff off our hands!

Contact:
GS+ Magazine
P. O. Box 15366
Chattanooga, TN 37415-0366
(615) 843-3988

MusicWriter Fonts

At last, professional output from MusicWriter GS with the MW.Font package! The MW.Font package includes:
1) A TrueType version of the font, for use with Pointless.
2) A complete set of IIGS bitmap fonts, from 14 to 112 points.
3) A PostScript version of the font, for PostScript printers (you must download the font manually with a utility program).
4) A Macintosh package (PostScript, TrueType and bitmap fonts) for Macintosh network servers.

Price: \$85 (by International check, includes shipping and handling).

Contact: P. Pavlides
19 Botsari Str.
Thessaloniki Greece 546 43
FAX (31) 858 552

Nite Owl Products

Slide-On Battery Kit (ROM 1.0) IIGS - \$14.95
TADIRAN Battery (ROM 3.0) IIGS - \$10
Best of Shareware 10 disk set - \$35
Nite Owl Journal or WRAITH Adventure - \$10
Include \$2 S/H per order (\$5 foreign)

Contact:
Nite Owl Productions
5734 Lamar Lane
Mission, KS 66202

Readers can place an ad in the *GS+ Classifieds* for only \$5. This cost buys 25 words in one issue of *GS+ Magazine*. Additional words are just 25 cents each. The *GS+ Classifieds* are a great way to contact thousands of other IIGS owners.

The deadline for inclusion of a classified ad in the next issue (Volume 5, Number 4) of *GS+ Magazine* is March 4, 1994. Simply send your ad along with your name, address, phone number, number of issues to run, and payment (made payable to "EGO Systems") to *GS+ Classifieds*, P. O. Box 15366, Chattanooga, TN 37415-0366; or call us at (615) 843-3988, Monday through Friday between 9 a.m. and 6 p.m. Eastern Time, to place an ad with your MasterCard or VISA. You can also FAX us your classified ad by calling our FAX number: (615) 843-3986.

GS+ Classified Ad Order Form

Ad copy: _____

Number of issues to run: _____ Number of words: _____ Total enclosed: \$ _____

Name: _____ Phone: (_____) _____ - _____

Address: _____

City: _____ State: _____ Zip: _____

GS+ Ordering Information

GS+ Magazine is published bimonthly and sold for \$4.00 an issue for the magazine only, and \$8.00 an issue for the magazine + disk. But, if you sign up for a 1-year subscription (six issues) or a 1/2-year subscription (three issues), you can save 11-25%! To sign up, send this completed form (or a photocopy) along with a check or money order (payable to "EGO Systems"), or your credit card number, to:

GS+ Subscription Services
P.O. Box 15366
Chattanooga, TN 37415-0366

Name:..... Phone: (.....).....

Address:.....

City:..... State:..... Zip:.....

Please ✓ item you wish to order:

- 1-yr subscription (mag + disk) - \$36
- 1/2-yr subscription (mag + disk) - \$20
- 1-yr subscription (mag only) - \$18
- 1/2-yr subscription (mag only) - \$10
- Sample issue (mag + disk) - \$8
- Sample issue (mag only) - \$4

Please ✓ delivery method:

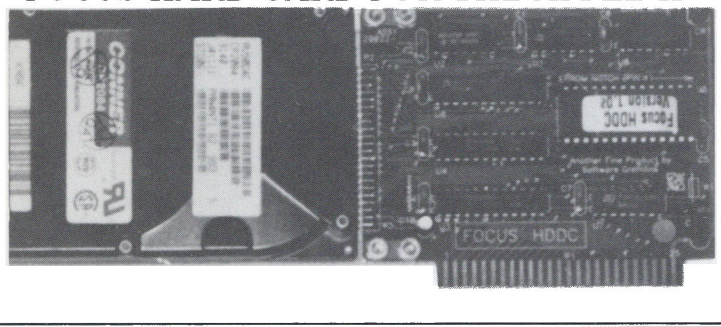
- Third Class to U.S. - free
- First Class to U.S., or Canada/Mexico, or Foreign surface - \$2.00 per issue
- Foreign Air Mail - \$5 per issue

Please ✓ payment method:

- Check or Money Order enclosed
- Bill my MasterCard
- Bill my VISA
- Card #:.....
- Expiration Date:/...../.....
- Signature:.....

If you prefer to use your credit card to order by phone, give us a call at 1-800-662-3634, Monday through Thursday, between 9 a.m. and 6 p.m. Eastern Time. (9 a.m. till 5 p.m. on Fridays.) All subscriptions will start with the next issue published. GS+ Magazine is published bi-monthly, so please allow up to 12 weeks for delivery of the first issue of a subscription. Tennessee residents add 7.75% sales tax. System 6, 4MB of RAM, and a hard disk are recommended for magazine + disk subscriptions. Please remember to indicate delivery method and include additional charge if indicated.

FOCUS HARD CARD FOR THE APPLE II



FEATURES:

- * Small quiet Internal Hard Card for the Apple IIs and Ile systems.
- * Complete 2.5" Hard drive with Controller.
- * Hard disk sizes from 20 to 250 Megabytes.
- * Easy to install, just plug in and power up the system, No cabling required.
- * Uses existing internal power supply.
- * Full size Apple II card footprint
- * Can occupy any slot except slot #3.
- * Up to 2 FOCUS drives per system using the standard Apple II power supply.

- * Drives can interchange between IIs and Ile without loss of data or configuration changes.
- * Price includes hard card, GS/OS and ProDOS system files, and utility software. Nothing else required.

PRICING:*

- | | |
|---|---|
| * FOCUS 20, 20 Megabyte Hard Card....\$249.00 | * FOCUS 80, 80 Megabyte Hard Card.....\$399.00 |
| * FOCUS 40, 40 Megabyte Hard Card....\$299.00 | * FOCUS 120, 120 Megabyte Hard Card....\$529.00 |
| * FOCUS 60, 60 Megabyte Hard Card....\$349.00 | * FOCUS 250, 250 Megabyte Hard Card....\$699.00 |

TERMS:

- | | |
|---|--|
| * California residents add 8.25% sales tax. | * American Express credit card accepted. |
| * Add \$15 for shipping & handling. | * User group, school and dealer discounts available. |
| * Add \$7 for COD orders. | * 1 Year warranty on controller card and disk drive. |

Parsons Engineering

5010 Rimhurst Ave.
Covina, California 91724

***For an extra 10% discount mention GS+ Magazine ***

Sales/Service: (818) 966-5538
Fax: (818) 966-5701

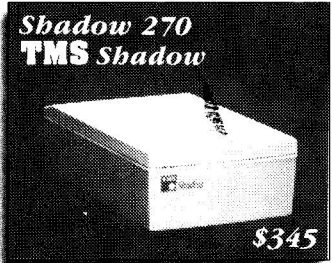
TMS

Peripherals



TMS Will Meet or Beat ANY Advertised Price!

QUANTUM Hard Drives



SHADOW/PRO STANDARD FEATURES:
Quantum, SyQuest or TEAC mech's. • System 6.0 & 26+ Mbs of shareware • Shadow/Pro Series Manual • 25/50 SCSI cable • Internat'l. auto-switch, power supply • Thermostatic fan (Pro Series) • External SCSI ID • Dual AC jacks (Pro Series) • SCSI-Tee • EXCELLENT Customer & Tech Service 30 Day MBG • 1/25 Year Warranties • ESP Extended Warranty Program (Optional)

MECHANISM	*Int.	Pro	Shadow
QUANTUM 170 ELS 2yr.	\$205	\$265	\$265
QUANTUM 170 LPS 2yr.	215	275	275
QUANTUM 270 LPS 2yr.	285	345	345
QUANTUM 340 LPS 2yr.	339	399	399
QUANTUM 525 LPS 5yr.	615	675	675
QUANTUM 540 LPS 5yr.	Call	Call	Call
QUANTUM 540 Pro 5yr.	Call	Call	Call
QUANTUM 700 Pro 5yr.	839	899	899
QUANTUM 1050 Pro 5yr.	925	985	985
QUANTUM 1080 Emp. 5yr.	1025	1085	1085
QUANTUM 1225 Pro 5yr.	1099	1159	1159
QUANTUM 1800 Pro 5yr.	1449	1509	1509

*Internal prices include complete bracket kit—Mac only!

Shadow Soft-Touch Carrying Case \$9.95

TMS PRO REMOVABLES

TMS Pro R45 with 1 cartridge	\$369
TMS Pro R88c with 1 cartridge	\$535
TMS Pro R105 with 1 cartridge	\$589
Extra cartridges R45 \$61, R88c \$95, R105 \$60	

TMS PRO TAPE BACKUP

TMS Pro T155 & 1 tape	\$499
Extra tapes \$22.50	

Sequential Systems

RamFAST SCSI • DRIVE CONTROLLERS
Twice as fast as any other SCSI card under GS/OS. Five to eight times faster under ProDOS! Supports ALL media and has tape backup software written into the ROM with FULL utility program. **2 YEAR PARTS & SERVICE WARRANTY!**

256K Rev. D V3.0 \$169 • 1 Mb Rev. D V3.0 \$219

CV-RAM • IGS MEMORY EXPANSION

CV-Ram comes with 4 Mbs installed, is user expandable to 8 Mbs! Adding memory is as easy as plugging in two chips and moving a jumper for memory intensive applications, like the GS/OS Finder. Need a Ramdisk? Under GS/OS 6.0 using or adding any frills such as fonts or desk accessories can eat up several megabytes in a hurry. Don't buy a non-expandable memory card. The CV-Ram is backed by a **2 Year Parts & Labor Warranty & 30 Day Unconditional Money Back Guarantee.**

4 Mb \$245 • 5 Mb \$299 • 6 Mb \$355
7 Mb \$409 • 8 Mb \$465

RAM-GS 4 Mb \$129 / \$119*

*Bundled with Seven Hills' The Manager

MEG80Z • 1 Mb Aux. slot IIe memory card \$49

bit MOUSE • Serial Apple II Interface	\$45
bit MOUSE with Mouse	\$65
MegaBuff • 1 Mb I/W II Buffer	\$110
Q-Buffer • 32K ImageWriter Buffer	\$25
Q-Print • Apple II Printer Interface	\$29
Q-Print II • Apple II GPI	\$39
Q-System GS+ • 7 Serial Inputs	\$399
Q-System GSe • 5 Input, 1 Output	\$355
Q-System Parallel/Serial	\$189/\$249
Q-Talk LTO • LocalTalk Card	\$69
Ram 80 • 64K/80 Column Card	\$15
SuperCOMM/SuperCOMM Ic	\$55/\$45

Bundle InTREC's ProTERM 3.0 with modem & take \$5 Off!

Supra Corporation
Fax Modem V.32 bis \$239

TECHNOLOGY

8 MHz/16K Cache	\$179/\$169*
8 MHz/64K Cache	\$239/\$229*
9 MHz/32K Cache	\$239/\$229*
9 MHz/64K Cache	\$299/\$289*

*This price good with the purchase of any Closeout item. 1 Year Full Warranty on ALL ZIP Technology Products

IIGS Products From Seven Hills Software

IIGS MultiFinder

The MANAGER \$39

The 1st & only TRUE MULTIFINDER for the IIGS! Multiple applications can be opened simultaneously. You DO NOT have to quit one application to start using another as long as you have sufficient RAM available! Fully compatible with AppleWorks GS, GraphicWriter III, Platinum Paint, Teach and a whole lot more! Not merely a program "switcher," but a TRUE MultiFinder environment for your Apple IIGS!

GRAPHICWRITER III™	\$89
SHOEBOX™	\$35
EXPRESS™	\$29
KANGAROO™	\$29
TRANSPROG III™	\$25
DRIVE CLEANER™	\$25

II PRODUCTIVE

340 TrueType™ Fonts. Includes HyperCard IIGS with Reference Stack, Shrinkit GS & FREE AOL Software & log time. Includes fonts such as Ambrosia Hollow, Arenski, Foxtrot, Future, Groening (Simpson's font!), Jester, ShockFont, Steelplate, Stucco, Varsity, Western, Windsor, Zingnats and hundreds more!!! **ONLY \$45!!!**

True Type Font Collection POINTLESS BUNDLE \$85

4Mb \$119*
Ram-GS
2 Year Warranty

CLOSEOUT

APPLIED ENGINEERING	
DL Express V.42 B.S. Fax	\$279
ReadyExpress Package	\$229
GS Ram III 0 Mb	\$79
BEAGLE BROTHERS	
TimeOut SpreadTools	\$32
TimeOut MacroEase	\$21
BRÖDERBUND	
McGee at the Fun Fair Macintosh	\$21
The Playroom Macintosh	\$27
Katie's Farm Macintosh	\$21
McGee Macintosh	\$149
BeagleWorks Macintosh	\$149
DREAMWORLD SOFTWARE	
DreamGraphx	\$58
INTREX	
ProTERM	\$69
ROGER WAGNER	
Macromate	\$25
VITESSE	
Deliverance/Renaissance	\$42
Harmonie	\$35
WESTCODE	
Inwords	\$59
Pointless	\$39
Hardpressed	\$39
TypeWest™/Pointless Bundle	\$55

"TMS Peripherals...combination of better-than-average speed, design and construction quality, packaging, and support is a sum greater than its parts."
—MacUSER April 1992

Sales: 9 a.m. - 8 p.m. M-F; 10 a.m. - 4 p.m. Sat. (ET) Tech. Support & Customer Service 10 a.m. - 6 p.m. M-F (ET)

International 407.998.9928 • FAX: 407.998.9983 Compuserve: 75300.2231 • America On Line: TMS Periph

800-ASK-4TMS

1120 Holland Drive, Suite 16 • Boca Raton, Florida 33487



PAYMENT: Visa, Mastercard, Discover, Certified Checks, PO's and COD's accepted. TAX: Florida residents add 6% sales tax. PRICES: Subject to change and availability. SHIPPING: Minimum \$5-UPS Ground, Blue, Red & Federal Express Economy. RETURNS: Products must be in original condition and require an RMA. Seal must not be opened on software packages. Some items may be subject to a restocking fee. Please inquire when ordering. TMS will not be held liable for errors in typing or photography. All Trademarks and Service Marks belong to their respective owners.

GS+ Magazine
P.O. Box 15366
Chattanooga, TN 37415-0366
Forwarding & Return Postage Guaranteed

Downloaded from www.Apple2Online.com

BULK RATE
U.S. POSTAGE
PAID
Chattanooga, TN
PERMIT NO. 616