GS+ ™

July
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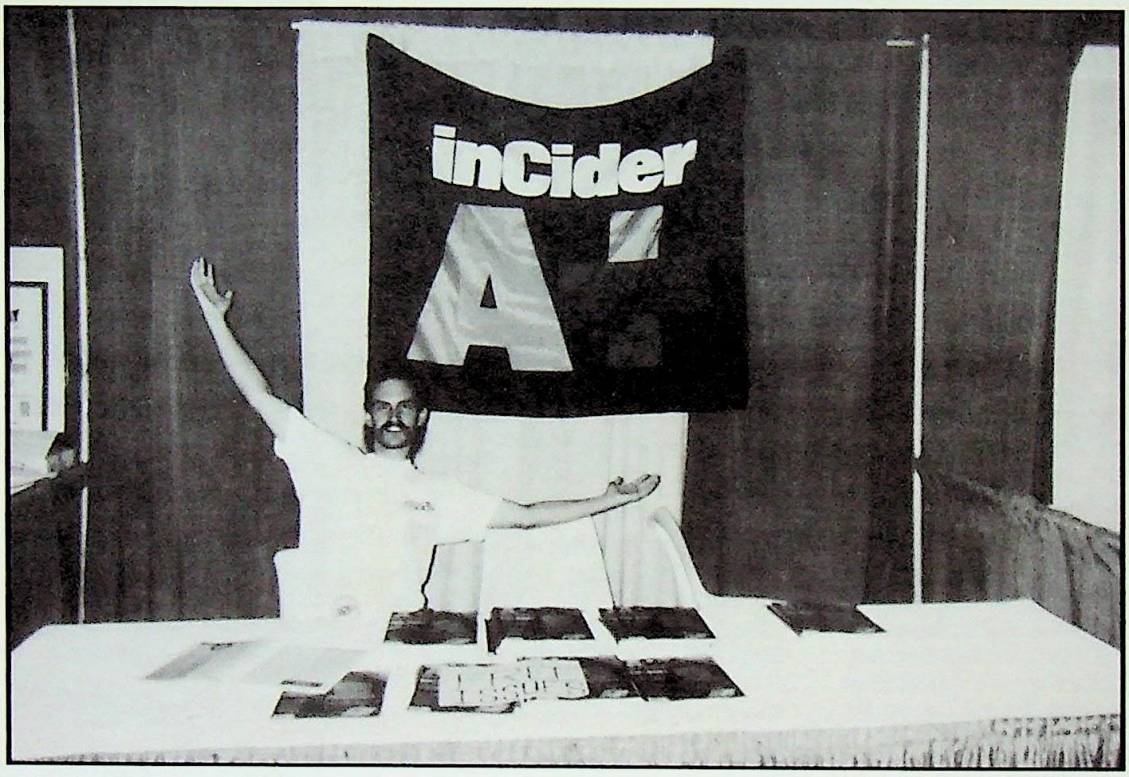
1992

Volume 3
Number 6

The *First* Apple IIGS® Magazine + Disk Publication!

KansasFest 1992!



Our Publisher *Defects*!

(Details On Page 53)

Featuring

Introduction To 3-D Graphics Part III: Speeding Things Up
Understanding File System Translators
Using rBundles In Your Programs
Working With The Toolbox Part 8: The Control Manager

New Programs

Extra Bits •Quick DA •Quick Folder

Reviews

ZipGS 10/64 •Gate •Space Fox

Plus

An Expanded "Rumors, Wishes & Blatant Lies" Section!
Complete Lyrics To "The Programmer's Song"!

Writer's Block

By Steven W. Disbrow

First and foremost, let me apologize for the lateness of this issue. As you can imagine, preparing for and going to KansasFest caused us to slip a few weeks behind schedule. That was to be expected. However, I caught a cold on the way back from the show, and have been less than 100% for the last few days. To make matters *even* worse, the new hard disk controller I bought at the show was defective, so my IIGS was effectively out of commission until I could get a replacement. And, on top of all that, we committed to help Resource Central with another, post-KansasFest project that took up a bit more time than we expected. (As I write this column, I can't talk about this project. However, it's possible that this may change soon. Check the **a.Read.Me** file on your *GS+* Disk for any last minute information.)

The end result of all of this is that this issue will be *at least* a week late, and my grass is about seven inches high.

All of that aside, KansasFest was a *lot* of fun, and the EXPO was very good for us money-wise. For more info on the show, check out our "KansasFest 1992" report in this issue. A special thanks to the road trip crew: David Farber, Joe Wankerl, and Noreen Disbrow.

Speed It Up!

So what can we do to speed things up and get back on our slightly-skewed publishing schedule? Well, for quite some time it's been apparent that we have been in need of some additional full-time help around the office. (Noreen helps out when it's time to edit material and lay out the magazine. The rest of the time however, she has her own real-world, full-time job.) So, I've hired Michelle Epling to take over some of the more time-consuming tasks (answering the phone, processing orders, handling renewals, etc.) that were keeping me from doing the things that actually get the magazine out the door. These may sound like trivial tasks, but they are the kinds of things that keep a business *in* business. It's been hard for me to turn these things over to someone else, but Michelle has done an excellent job so far, and I'm really looking forward to having more time for writing and programming.

Reprints?

At KansasFest, the question I heard more than any other was, "When will you reprint your sold-out magazines?" Unfortunately, the answer is still, "I don't know." This is something that I *want* to do, but I'm really not sure if it would be worth the time and money required to do it.

One thing that has been suggested is that we reprint individual articles (similar to the reprint policies of *Byte* magazine). I like this idea, but I need to investigate it a bit further before I commit to anything.

New T-Shirts

I hate to use this column for such blatant hucksterism, but there isn't any other place in this magazine to tell you about our new T-Shirts. Our old T-Shirts didn't sell very well, so I wasn't all that keen on printing up new ones for the EXPO. Noreen talked me into trying a new color for the shirts (it's called "ash-grey" or "heather"), and I must say that they got a much better reception than I expected. In fact, they sold out. So, I'm going to have some more printed up. The price will be the same as for the old shirts ($11.50, including shipping), but they will only be available in Large and Extra Large. (We still have some of our old, plain-white, Medium-sized shirts left, but they just haven't sold well enough to print up a new batch.) There isn't a space on the subscription form to order a T-Shirt, so just drop us a note or give us a call to get yours.

Giving Them A Break

In the past few issues, I've talked about some of the trials and tribulations that we've had in becoming registered Apple II developers. Recently, someone sent me some e-mail asking, "So, what do you get when you join the developer's program . . . besides a bill?"

After I finished laughing, I realized that I had been a bit too harsh on the Apple Developers Group. We *have* had problems with the program (all of which have been resolved to my satisfaction), and I *am* disappointed in the amount of Apple II material provided. However, without exception, the technical support and *personal service* we have gotten from the people at Apple has been outstanding. Without this aid (most notably, Matt Deatherage's) our last issue, and this one, could not have been done. Having access to these individuals is worth at least *twice* what they charge for the entire package.

Using The *GS+* Disk

A couple of issues ago, we expanded our "How To Use Your *GS+* Disk" section to give more complete and detailed instructions. The reason we did this is because we were getting between five and ten calls a week asking how to use the disk. We also began asking, on the feedback form, what you thought of the more detailed instructions. Those results were fairly predictable, individuals that rated themselves as "experienced" users (or better) told us that the instructions were a waste of ink. But, the folks that rated themselves *below* the "experienced" user level told us that the instructions were right on the money. Even more telling is the feedback that we *haven't* been getting. Since we began printing the more detailed instructions, we have gotten a total of *one* call about how to use the disk. So, with apologies to our more experienced readers, the more detailed instructions are here to stay.

Diz

GS+

CONTENTS

FEATURES

KansasFest 1992.....5
Introduction to 3-D Graphics - Part 3: Speeding Things Up.....9
Working with the Toolbox - Part 8: The Control Manager.....14
Understanding FSTs.....16
Using rBundles in your Programs.....18

PROGRAMS

Quick Folder.....37
Extra Bits.....40
Quick DA.....41
Replicator v1.3.....45
EGOed v1.7.....46

REVIEWS

ZipGS (10MHz CPU/64K Cache).....29
* Gate.....31
* Space Fox.....33
The Software Bargain Bin - UtilityLaunch & UtilityWorks....34

DEPARTMENTS

Writer's Block.....inside front cover
Letters.....3
Warranty Disclaimer and Copyrights.....17
Rumors, Wishes & Blatant Lies.....20
How to Use your *GS+* Disk.....24
GS+ Classifieds.....28
Errata.....46
What's New.....47
GS+ Back Issue Information.....48
Buying Ad Space in *GS+* Magazine.....49
GS+ Ordering Information.....49

Products marked with an asterisk (*) were review copies provided by the publisher.

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On The Cover
The publisher of *GS+* Magazine attempts to take over the *A+/inCider* booth at this year's Apple Central EXPO!

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

Letters

Usually, we don't print letters about things happening in other publications, but this one sounded kind of important . . .

In recent issues, [two other Apple II publications] printed subscriber letters which state the HFS FST works fine under System Software 5.0.4.

This is dangerously incorrect.

While Apple tries to keep the internals of GS/OS fairly stable from release to release to minimize the opportunity for errors, GS/OS has always required substantial internal changes when new read/write file systems are added. This was true in System Software 5.0 for AppleShare and is true in version 6.0 for HFS.

The HFS FST may appear to work in normal circumstances (as the letters indicate), but the older versions of GS/OS do not meet the demands of the newer FST. The FST will almost certainly crash if you try to initialize any disks.

Components from different system software versions do not mix and match—do not use older system software files with newer system software versions. GS/OS drivers are an exception—they have a stable, documented interface and will work fine with any version of GS/OS later than the one for which they were designed, although some manufacturers may require newer features of newer drivers. (For example, the System Software 6.0 Apple 3.5" driver supports SuperDrives attached to an Apple II 3.5 Disk Controller Card—while you can use the older version of the Apple 3.5 driver safely with System Software 6.0, you won't be able to use drives connected to an Apple 3.5 Disk Controller Card.)

Mixing and matching system software in general is dangerous—but using the HFS FST under 5.0.4 will eventually crash and it may trash your disks. Do not attempt this with any disks online that you want to keep.

Matt Deatherage
Apple Computer, Inc.

While we're busy doing things we don't usually do, here's a letter from an old friend detailing a bug that he has found in, AppleWorks Classic v3.0 . . .

Thanks to several helpful AppleWorks users on GEnie's A2 online area, an annoying and aggravating non-destructive AppleWorks v3.0 spell checking bug has been identified and confirmed, and a simple work around solution has been offered.

To encounter the spell checker anomaly, you'll need to be displaying a list of misspelled words via the summary on screen method. The bug only manifests itself if using this option, and there are duplicate words found in your **Cust.Dictionary**. If these conditions are met, you will be presented with a staggering amount of unknown words, on the order of 65,535.

When the AppleWorks Spell Checker detects a word that is not found in either the Main Dictionary or your Custom Dictionary, it offers the option to "Get Suggestions" for alternate spellings. If you choose that option, however, AppleWorks only displays suggested words that are included in the Main Dictionary. As an example of how duplicate words can creep into your Custom Dictionary, if you misspell the word "UltraMacros" as "UltraMacroes." the spell checker will inform you that "UltraMacroes is not in the main Dictionary" and will therefore be unable to offer any suggested alternate spellings. You will be offered the option to manually enter the correct spelling and to add that new word to your Custom Dictionary. If you already have "UltraMacros" in your Custom Dictionary, you'll now have a duplication, and might be rudely surprised the next time you invoke the spell checker and find out that you have more than 65,000 misspelled words in a 200 word document.

The work around solution at this time involves periodic maintenance of your Custom Dictionary to prevent duplications. That maintenance can be done manually, or with a macro.

The easiest way to perform dictionary maintenance manually is to create an alphabetized data base from your Custom Dictionary. To do that:

1) From the Main Menu, select "Add Files to Desktop."
2) Then choose to "make a new file for the Data Base."
3) Choose option to "make a new file from a text (ASCII) file."
4) Then, load in your **Cust.Dictionary**.
5) Choose option for "Return after each category."
6) Answer one (1) at the prompt "How many categories per record."
7) Then press Open-Apple A to sort the data base.
8) Choose the "A to Z" option.

At that point, you'll need to look carefully at all the entries in your dictionary and remove any duplicate words with an Open-Apple-D. Once you've removed all the duplicates, plus any misspelled words accidentally added to the Custom Dictionary, you'll need to "print the data base to disk as an ASCII file." You can easily do that by:

1) Pressing Open-Apple-P.
2) Choose "Create a new 'tables' format."
3) Choose option "from current record layout."
4) Extend column width with Open-Apple-Right Arrow.
5) Then press Open-Apple-P to print "A text (ASCII) file on disk."
6) Choose option "Return after each category."
7) Enter the pathname to store your duplicate free dictionary.

If you use UltraMacros, you can save yourself a lot of eye strain by compiling the following macro and invoking it with an option-C after you've loaded your Custom Dictionary as a data base.

```
start
C:<adb  OA-L  rtn  esc  rtn
OA-9  OA-C  rtn>1<rtn  OA-9
:

OA-Y>ZZZ<rtn OA-A  rtn  rtn
begin : $1 = cell  tab  $2 =
cell :

OA-tab if $1 = "ZZZ"  then
OA-D  rtn  OA-1  endmacro
endif  down :

$3 = cell tab  $4 = cell
OA-tab  if $3 = $1 and $4 =
$2  then :

OA-D  rtn  up  endif  rpt>!
```

This macro will remove all the duplicate words from your Custom Dictionary. You'll then need to follow the above steps to save the data base back to disk as an ASCII text file.

Joe Kohn
San Rafael, CA

To *GS+* Magazine:

My name is Brock Chatson and I am with the Apple user group in Saskatoon . . . . For the last several months I have been including articles from [the *GS+*] User Group Connection Disk 1 and just recently used the last article. Members have found the articles helpful and informative along with the *GS+* Magazine that we receive. So I am writing to find out if there is a disk 2 available yet . . . . Thank you for your time!

Brock Chatson
Saskatoon, SK
Canada

At this point, there is not a second disk available. However, this is something that I plan to do in the near future. When it is ready, we will do a mailing to all of our User Group Connection members to let you know about it.

Diz

Dear *GS+*:

I don't particularly want to write a full-fledged article about where to get TrueType (TT) fonts or a review of their quality, but I can supply some information. Being a sort of font junkie myself, I've acquired nearly 300 of the things, so I know a bit about them and where to get them.

Currently there are a number of places to acquire TT fonts fairly easily.

1) From WestCode Software Inc. In addition to the 7 fonts supplied with the program, they claim to be preparing several disks of other fonts. So far, I haven't seen these advertised, but I'm sure they'll eventually show up. I expect these will be of high quality and fully configured as are the original fonts they supplied.

2) Big Red Computer Club [phone: (402) 379-4680] has to date issued 3 disks with TT fonts (Big Red product numbers TF01, TF02, and TF03). They claim to be somewhat selective in their collection, stating that the fonts are all high quality. As I have only seen the first in the series, I can't substantiate that claim. Their disks sell for $3.50 each which includes postage.

3) National AppleWorks Users Group (Box 87453, Canton, MI 48187) has 20 disks of TrueType fonts available. You can get a sample printout and order sheet by sending them $1 along with a self-addressed stamped envelope (with 52 cents postage on it). The font disks themselves sell for $6 each plus $2 s/h per order or all 20 disks for $102.00 (includes postage). This collection is a pretty mixed bag, ranging from utterly useless, poorly drawn fonts with missing characters to some really desirable ones. I don't think there was much thought in what fonts to include, most of them apparently being ported over from Macintosh public domain and shareware fonts without much change in them. The text included (shareware notices, etc.) is often difficult to read, having lots of extraneous characters, etc. In a couple of cases, the name of the shareware author was totally unreadable. If you paid for all the fonts whose authors request shareware payment, you'd have to lay out about $400. Fortunately, I plan to ignore a lot of those requesting payment as their fonts are too highly specialized for my use or are otherwise not acceptable.

4) From the shareware notices I have picked up names of persons who have other fonts for sale. So far I have investigated only one: Ingrimayne Software, P. O. Box 404, Rensselaer, IN. 47978. From this author I received 6 disks (approximately 60 fonts) which are uniformly high quality. They range from the useful to the fanciful, but I haven't been disappointed in any of them. He sells his entire type library for $36 plus $4 s/h. Be sure to request TrueType fonts; and it wouldn't hurt to explain you're using the Apple IIGS. I have explained to him about our newly acquired ability to use TT fonts on Macintosh disks so he won't be surprised. Incidentally, I have found that a regularly formatted 800K Macintosh disk is perfectly readable by System 6.0, and I haven't had any trouble copying or using any of the fonts in that format.

5) Washington Apple Pi, Ltd. (7910 Woodmont Avenue, Ste 910, Bethesda, MD 20814) has a Macintosh Disk Library with a 10 disk set of TrueType fonts. If you are a member of the club, the cost for the set is $30 plus $5 s/h. If you are not a member, one must add $3 per disk to the listed prices. I haven't investigated this source at first hand, but many of the fonts they list are duplicates of those available from NAUG.

6) Professional font makers. In many of the magazines devoted to desktop publishing, there are lots of advertisements for the companies anxious to sell you their fonts. Admittedly most of them are in (Adobe PostScript) Type 1 format, and one company I called had no TrueType fonts at all. But others advertise their availability. I haven't gone into this avenue as yet; I'm too busy making printouts of the fonts I have already to want to get more for now.

7) In addition to the above, where the collecting work is pretty much done for you, it should be possible to download fonts from Macintosh services. I can't address this point with any expertise as I don't go online myself. WestCode mentions it in their manual.

As you can see, there is no dearth of TT fonts available if one just looks for them.

Constance L. Graves
San Jose, CA

Thanks for the great detective work Constance! I'm sure a lot of our readers will appreciate this information! And I think you *deserve an extra issue of GS+ Magazine!*

Diz

To *GS+*:

. . . I know a lot of IIGS owners feel over a barrel as support dwindles and are afraid of "ticking off" any of our remaining supporters. Tough! You keep calling them as you see them and we'll get along just fine. I'd rather deal with an honest error and a retraction than have you tout trash with smoke and mirrors. If companies . . . don't like critical reviews then they can always do it right the first time.

[Also,] I realize that some considerations must be given the beginner but please do not dilute your current technical standards in the process. When I first got into micros 15 years ago everything I read was over my head. I didn't reach my level of understanding by being fed predigested pap . . . .

Elmo Dorf
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 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+*

KansasFest 1992

By Steven W. Disbrow

For those of you just getting into the Apple II world, let me explain what KansasFest is. KansasFest is an annual gathering, hosted by the fine people at Resource Central, of Apple II developers that want to see and talk about the latest and greatest stuff for the Apple II. You can also find an assortment of Apple Computer employees at the show.

At this point, I should point out that the proper name for KansasFest is actually "the *A2-Central* Summer Conference." However, no one that attends ever calls it that. They all call it "KansasFest." Why? Because "KansasFest" is easier to say. Actually, the show is called "KansasFest" in homage to the "AppleFest" shows that used to take place. This is quite a compliment—the old AppleFests were really something special—and this year the show really deserved the compliment.

At this point, I have to confess that one of the reasons I enjoyed this year's show so much is because I was pretty heavily involved in putting together some of the entertainment for the show. For the most part, I'll try to stay away from talking about that stuff and just concentrate on all the other neat stuff that happened at the show.

Back To School!

The first two days of the conference were colleges providing in-depth coverage of the following topics: C Programming, Pascal Programming, HyperStudio, and IIGS Sound and Graphics Techniques. Unfortunately, I did not get to attend any of these colleges, so I can't really comment on them. However, I did hear good things about them from several people that did. After the colleges were over, the time came for the developers conference to start.

The Woz!

The conference was opened by Tom Weishaar (lovingly referred to as "Uncle DOS" by his millions of adoring fans) who showed us a videotape of an interview he conducted with Apple II creator, Steve Wozniak. The interview was filled with lots of really neat stories about the creation of the Apple II and Mr. Wozniak's days with Apple.

For me, the most interesting aspect of the interview was the revelation (to me anyway) that Apple *originally* ignored the Apple II in order to push the Apple III. One of the funniest, and most revealing, stories that Mr. Wozniak told about this episode was as follows:

Apparently, Apple wanted the Apple III to be thought of as a business machine, and the Apple II to be thought of only as a home/hobbyist machine. Towards that end, Apple went to extremes to keep the two products from being confused in people's minds. How extreme? Well, in the original design of the Apple III, when you flipped the switch that set the Apple III to Apple II emulation mode, you still had 80 columns of text in Apple II mode. (Remember, at this point in time, Apple IIs only had 40 column text, so this would have been a *very* neat little "freebie" for Apple III owners.) Apple was apparently very concerned that this would *confuse* people, so they had the engineers build in "extra chips" that would force the machine into 40 columns when you went to Apple II mode. To finish the story, Mr. Wozniak said, " . . . I don't know where that kind of thinking comes from, but it certainly doesn't come from an engineer!"

Some Call Him . . . Tim

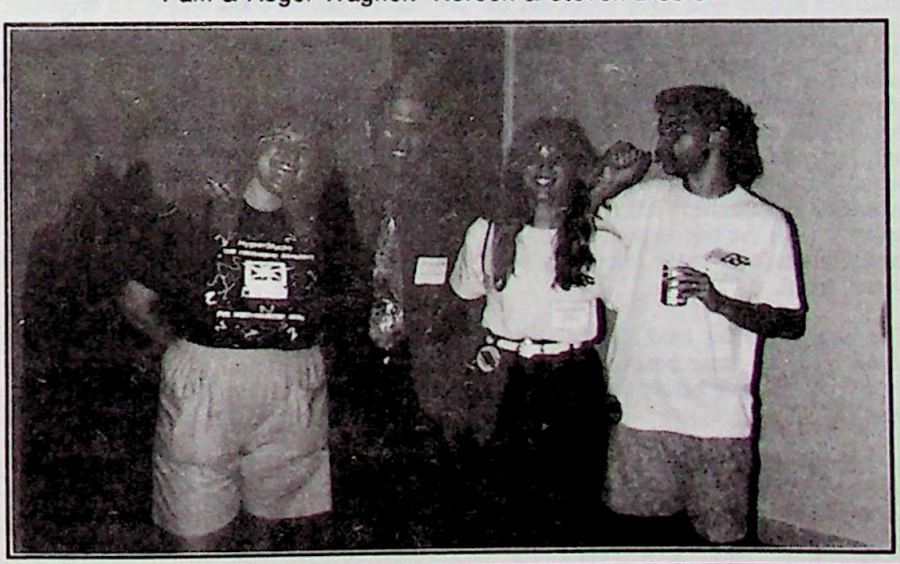
After the interview was over, Uncle DOS turned the stage over to Tim Swihart (pronounced "sw-eye-hart," or just plain "Tim"). Tim is the leader of the Apple II Continuation Engineering group and, this year, it was his job to give us the speech that such luminaries as Jane Lee and Ralph Barnes had given in past years. You know the speech I'm talking about don't you? The "we'll support it as long as it sells" speech. Personally, I felt a bit sorry for Tim—this is *not* the kind of speech that he should have to give! After all, he's an engineer, not a marketing person, and he had absolutely no control over the decisions that he had to tell us about. At any rate, he handled himself quite well, and most of the conference attendees seemed to realize that Tim was just doing what he had to do.

So, what *did* he have to tell us? Actually, the news wasn't really that bad. The worst of it was that the Apple II Business Unit is no more. What we have now is the aforementioned Apple II Continuation Engineering group. The job of a "Continuation Engineering" group is to handle all product issues *after* a product is released. It's important to note that *all* Apple products have a Continuation Engineering group. However, it appears that this is *all* the Apple II has now. Unlike other Continuation Engineering groups though, the Apple II Continuation Engineering group will also be doing work on some new projects. The last bit of really bad news was that, where the old Apple II Business Unit was about 70 people, the Apple II Continuation Engineering group is less than a dozen.

Getting past that however, the news is actually pretty good! First, Tim reviewed all the things that Apple had released for the Apple II in the previous year: the SuperDrive Card (a.k.a. the Apple II 3.5 Disk Controller Card), HyperCard IIGS v1.1, and, of course, System Software v6.0.

Married, Monogamous Couples of KansasFest

Pam & Roger Wagner. Noreen & Steven Disbrow.



Next, Tim presented us with some figures detailing the installed Apple IIGS base. Basically, there are about 1 million IIGS computers out there, most of which are considered by Apple to be "still active." About 66% of these are ROM 01 machines and about 75% are used in an education environment. This last figure pretty much confirms what Apple has been telling us all along, the big Apple II money is in the education market.

Moving on, Tim detailed the recent acquisition by Resource Central of the products formerly handled by the Apple Programmer's and Developers Association (APDA). Under this new arrangement, Apple II developers have access to the technical information that they need and, best of all, you no longer have to wade through all of the Macintosh stuff that was in the old APDA catalogs.

Peek-A-Boo! New Stuff Too!

Now it was time to talk about all of the neat new stuff that the Apple II Continuation Engineering group was working on.

First and foremost was the EtherNet card. You may remember that this card was announced at last year's KansasFest, but for some reason it was never released. Apparently, the reason was that the original design had a *lot* of problems, so many in fact that they got rid of it and began the project over from scratch. As you might imagine, this can really screw up a schedule, so the project was put on the back-burner until System 6 was completed. Now that System 6 is done, the EtherNet card is one of the Apple II Continuation Engineering group's number one priorities.

For those of you just joining us, the EtherNet adapter will allow IIGS and IIe computers to be part of high-speed EtherNet networks. EtherNet is a networking standard that provides much higher speeds of operation than standard AppleTalk networks. According to Tim, only really crowded networks (like a large school computer lab) will benefit by switching to EtherNet. Users on a small network (like the one here at our office) probably won't see much improvement in overall speed.

The new EtherNet card design is just about ready to enter beta-testing and it should be available before the end of this year.

System Software v6.0.1

Moving on, Tim told us that, on the IIGS, the EtherNet card would *require* System Software v6.0.1, which is currently in development. The number one priority for the System 6.0.1 designers is support of the EtherNet card. This will require some low-level changes to the system as well as the inclusion of a new driver and Control Panel for controlling the card.

But, if you aren't going to be using EtherNet, what's System 6.0.1 going to have for you? Well, if you are a developer, not much. The main focus of System 6.0.1 is on fixing things for *users*. That includes things like ensuring compatibility with some popular applications that are "broken" under System 6 and fixing any bugs in the user interface.

Beyond that, there are at least two new (planned) features that *should* be in System 6.0.1. (Remember, support of the EtherNet card is the number one priority and may require them to leave out other features!) The first of these is a Finder Extension that will allow you to navigate through your Finder windows using the keyboard! For example, you open a window and then, instead of clicking on an icon to select it, you just type the first few characters of its name and it's selected! To move to the next icon, you just press an arrow key! This is a really cool feature of the Macintosh Finder and I personally can't wait to have it on the IIGS.

Next, and maybe even better, is a planned MS-DOS File System Translator (FST)! At this point, the plan is to include a *read-only* MS-DOS FST with System 6.0.1. (Beyond System 6.0.1, the plan is to change this FST into a read-write FST.) With this FST and a SuperDrive (and a SuperDrive controller card) you would be able to read 720K and 1.44MB MS-DOS disks. It is important to realize that a standard 800K Apple 3.5 drive can *not* read MS-DOS disks formatted on a PC, so you will have to have either a SuperDrive (and a SuperDrive controller) or a PC Transporter. (For related information, see "Understanding FSTs" in this issue.)

When Tim was finished with his presentation, he opened the floor to questions, most of which were unanswerable (by Tim anyway). Questions like, "Who killed the ROM 04?" and "When will Apple sell off the Apple II?" There were a few solid questions asked though, and from them we learned that Apple is *not* working on a IIGS emulator for the Mac LC II, or a MultiFinder IIGS, and that Apple has no plans to give the IIGS the ability to be a file server. We also found out when System Software v6.0.1 would be released. The official date is, "When it's finished." The session ended on a fairly upbeat note with everyone thanking Tim and his group for the work they have done on the Apple II, especially System 6.

Off To The Show!

After the speeches, it was time to move on to the conferences! I had to *give* one that morning (remember last year I said that I would!) and, although I ran out of time, I think it went very well and I got lots of positive feedback from the folks that attended. After that, I was kind of busy setting up that evening's entertainment and generally trying to patch things up with all of the folks that I've managed to tick off over the last three years. (This in itself was a two-day event.) So, as you might expect, I didn't have time to attend all that many conferences. However, I did make a point of getting comments from the other attendees. I'll get to those in a bit . . . but first, let's talk about something that *everybody* hated last year: the food.

The Food

KansasFest is a pricey show. ($300 for the two days of conferences. The colleges are extra.) So, the attendees expect something more than a fast food lunch. Last year, everyone that I talked to was a bit disappointed with the food served during lunch at the conferences, and I said so in last year's KansasFest article. So, as I related in last issue's "Writer's Block" the folks at Resource Central called me up this year to ask me to help with the menu selection for this year. So, I did. However, at the last minute, they changed caterers and all of my menu suggestions went out the door with the old caterer. Fortunately, the food that the new caterer served was *excellent!* Everyone I spoke with this year really enjoyed the food this time around. Hopefully, Resource Central will put these folks back on the payroll for next year's show.

Speaking Of Lunch

During lunch the first day, Joe Kohn of *A+/inCider* magazine announced a programming contest sponsored by that same magazine. Basically, when the FTA broke up, they gave Joe a bunch of source code for a bunch of unfinished games. The contest is to see who can take that source code and finish it the best. For more information on the contest, see page 10 of the August 1992 issue of *A+/inCider*.

Is Something Burning?

Not some*thing*, some*one*! Roger Wagner to be exact. You see, later that evening, Roger was kind enough to be the guest of honor (i.e. "victim") of a celebrity roast of which I was the master of ceremonies.

Among those taking part in the roast were Matt Deatherage of Apple Developer Technical Support, Paul Statt of *A+/inCider*, Jay Jennings of *SoftDisk G-S*, Tim Swihart of the Apple II Continuation Engineering Group, and Tom Weishaar from Resource Central. For those of you that aren't familiar with the "celebrity roast," it's a nifty little gathering where guest speakers get up and tell stories (and lies) about the guest of honor. At the end of the evening, the guest of honor gets his chance to tear into the guest speakers. As you can imagine, celebrity roasts have been banned in some smaller countries, but it was a perfect way to end the first evening of the conference.

Day 2

The second day of the show consisted of more conferences and, during lunch, an embarrassing little comedy skit and song that I and six other brave souls (Tony Diaz, Bill Heineman, Max J. Vandament, Roger Wagner, Andrew T. Wallo, and my lovely wife) put on for the lunch crowd. It was well received (lots of folks asked for the lyrics to the song—you'll find them in this issues "Rumors, Wishes & Blatant Lies") and we even managed to make a few people laugh.

The Conferences

As I said earlier, I didn't have time to personally attend many of the conferences. However, in talking with other attendees, I did hear some of the same complaints that I heard last year. Namely, a lot of the speakers weren't adequately prepared. Another concern that I heard was that several of the conferences were simply hour-long commercials for products or companies.

However, after telling me about these problems, most attendees were quick to point out that overall, they were pleased with the conferences and that they were definitely getting their money's worth.

So, to sum up the developers conference, almost everyone I spoke with thought the developers conference was a great success. And, even though I didn't get to go to all of the conferences that I wanted to go to, I would have to agree that the show was well worth the cost.

The Apple Central EXPO

After the developers conference was over, it was time for the Apple Central EXPO. The EXPO, put on by the folks at Event Specialists, is one of the few trade shows left that includes Apple II vendors. One thing that is *extremely* important to note about the EXPO is that it is not affiliated *in any way* with KansasFest or the folks at Resource Central. Granted, the EXPO does take place in the same building as KansasFest, and it begins the day after KansasFest ends, but the two events are done by completely different companies. (So, why did I bore you with this information? Because I overheard several EXPO attendees giving Uncle DOS a hard time about the number of Macintosh vendors at the EXPO and frankly, it ticked me off. It's not his fault.)

This was a really good EXPO. Even though there were quite a few Macintosh vendors, there were more Apple II vendors and the mood was very upbeat. All of the vendors I spoke to said that business was good during the show, except of course, for the times that *everyone* left to see Roger demonstrate HyperStudio (I'm going to be introducing legislation to ban this from future trade shows). And all of the regular attendees I spoke with seemed to be having a good time. (For more on the EXPO, see "Rumors, Wishes & Blatant Lies" and "What's New" in this issue.)

This was a great EXPO for *GS+* Magazine, on both a financial and a personal level. Financially, we made great big wads of dough (no money, just great big wads of dough). On a personal level, I really enjoyed meeting and talking to everyone there. I've probably said this before, but meeting our subscribers and hearing firsthand what you think of *GS+* Magazine is one of my favorite parts of this job.

Summer Camp

So, to wrap things up, I'd like to take something that Roger Wagner said during the roast and twist it to fit my own evil designs. Roger said that, for him, KansasFest is like a "summer camp." (Actually, Roger was more right than he knows, Noreen and I both suffered from a large number of insect bites while at the show.) He goes to the show, not to sell truckloads of HyperStudio boxes (no software, just the boxes), but to have *fun*.

Roger got it exactly right, the 1992 KansasFest and Apple Central EXPO were a *lot* of fun. *GS+*

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Introduction to 3-D Graphics

Part 3: Speeding Things Up
By Michael Lutynski

If you've been following my last two articles on three-dimensional programming ["Introduction To 3-D Graphics," parts 1 and 2, in *GS+* V3.N2 and V3.N4], you may have noticed that 3-D leaves a lot to be desired in terms of speed. There's no reason why we can't make it go faster, and this article will show you how to optimize 3-D code. Wait! Don't turn the page yet! If you've ever written an application that used floating-point math and it was too slow, you will probably want to read this article. I'll be discussing the Integer Math tool set, which not only does fractional math, it does it fast. And in keeping with the speed theme, I'll present some surefire techniques to speed up graphics in general.

SANE vs. Integer Math

The main bottleneck of 3-D software is its math. Every time you write an equation with floating-point values, like `y = -3.25 * 17.5`, you have to wait for your IIGS to figure it out. How long does this take? It depends on which math tool set you use. The one automatically used by all IIGS compilers is the *Standard Apple Numerics Environment*, or *SANE*. The other, lesser known, math tool set, which is *not* automatically used by compilers, is the *Integer Math* tool set.

Both tool sets have their strengths and weaknesses. To its credit, SANE is incredibly precise, but it is also agonizingly slow. However, Integer Math is precise and fast. (See Table 1.) SANE has a robust suite of mathematical functions, while Integer Math is rather limited. But since speed is more of a concern with almost everyone, some sacrifices will have to be made. Using the Integer Math tool set also means that we will have to closely monitor the range of values in our equations—*overflow* and *underflow* problems can cause some serious headaches if not prevented. Overflow occurs when the maximum size of a number format isn't large enough to hold a given value, while underflow happens when a number is too small to be represented by a numeric format. Finally, compilers will not automatically convert values to and from the special `Fixed` or `Frac` formats, so we must explicitly do so ourselves.

Integer Math

In addition to multiplying and dividing different types of numbers, the Integer Math tool set converts numbers between number formats. There is also a small set of functions which convert strings to values and vice-versa.

The number formats which Integer Math operates on are *`integer`*, *`long integer`*, *`Fixed`*, and *`Frac`*. `Fixed` and `Frac` are integers with a fractional part. Both have bit 31 as their sign bit, but the difference is in how many bits are devoted to the fractional part. `Fixed` has 16 bits for the fractional part, while `Frac` has 30. `Frac` seems to be best suited for trigonometric equations, whereas `Fixed` is a more general purpose type because it has just enough representation in both its integer and fractional parts. The high order word of a `Fixed` number is its integral value and is represented as a regular `integer`. On the other hand, its fractional low order word is represented differently: bit 15 has a value of 1/2; bit 14 is 1/4; 13 is 1/8; and so on to bit 0 which is 1/65536. (See Figure 1 on the next page.) The significance of this is that all *bit-shifting* operations will work with positive `Fixed` or `Frac` numbers! For example, the value 3 bit-shifted right once will give us 1.5. (Bit-shifting is a very fast form of multiplying or dividing. Shifting to the right divides by 2, while shifting to the left multiplies by two.)

Operations

It isn't necessary to show step-by-step how to use the Integer Math functions, like multiplying or dividing, because there's really nothing to it. Instead, the basic tool set calls will be given. In all but the first and last cases, the values supplied to the functions will already be in the `Fixed` format, as will be the result of the calls.

Conversion of SANE `extended` format to `Fixed`:

```
y = X2Fix (3.1415);
```

Multiplication:

```
y = FixMul (multiplicand,
            multiplier);
```

Division:

```
y = FixDiv (dividend,
            divisor);
```

Addition:

```
y = value1 + value2;
```

Subtraction:

```
y = value1 - value2;
```

Negation:

```
y = -value1;
```

Rounding to an `integer`:

```
i = FixRound (value1);
```

(Note to C programmers: The `FixRound` function declaration in the **Intmath.h** interface file is incorrect. It is declared as returning an unsigned `integer` value while it actually should return a signed `integer`.)

The `Frac` equivalent to `FixMul` and `FixDiv` is `FracMul` and `FracDiv`. Notice that addition and subtraction use the compiler's regular "+" and "-" operators. This is because the `Fixed` (and `Frac`) format is a kissing cousin to its `long integer` counterpart. The only problem is that `FixMul` and `FixDiv` will pin values to their most maximum or minimum value if overflow or underflow occurs, while + and - will not. Negation doesn't incur any penalties.

Also, comparing `Fixed` (or `Frac`) values with the <, >, <=, >=, and == comparison

Format	Maximum	Minimum	Precision	Size	Speed	Tool Set
extended	1.1 E+4932	1.7 E-4932	1.9 E-20	80 bits	79	SANE
double	1.7 E+308	2.2 E-308	2.2 E-16	64 bits	124	SANE
single	3.4 E+38	1.1 E-38	1.1 E-7	32 bits	93	SANE
Fixed	32767.9999	-32768.0	1.5 E-5	32 bits	17	Integer Math
Frac	2.0	-2.0	9.3 E-10	32 bits	17	Integer Math
integer	32767	-32768	1	16 bits	3	Integer Math
long integer	2147483647	-2147483648	1	32 bits	8	Integer Math

Table 1. Speed is measured in seconds. The result was averaged over three trials running on a stock IIGS. The test programs consist of 6000 of each x, ÷, +, and -. The `integer` and `long integer` tests, which do not deal with fractional values, are not fair evaluations. `Single` is referred to as `float` in the C language. `Extended` is referred to as `real` in Pascal. C and Pascal will automatically handle the *, /, +, and - operators for all formats, except for * and / when using the `Fixed` or `Frac` formats.

Bit number	15	14	13	12	11	10	9	8
Value	1/2	1/4	1/8	1/16	1/32	1/64	1/128	1/256
Bit number	7	6	5	4	3	2	1	0
Value	1/512	1/1024	1/2048	1/4096	1/8192	1/16384	1/32768	1/65536

Figure 1. Binary fraction values for the `Fixed` format

operators works as you would expect. For example, the following would evaluate to true and print a message:

```
value1 = X2Fix (-3.25);
value2 = X2Fix (17.5);
if (value1 < value2)
 printf("This works");
```

The one notable exception to Integer Math's repertoire is a `Fixed` square root function. However, one can be created using this formula:

```
newGuess = (oldGuess +
(value / oldGuess)) / 2
```

You start with an initial guess and the formula makes an improvement upon the guess. The improvement becomes the new guess and the process continues until two consecutive new guesses are equal. The closer the initial guess is to the answer, the faster the process will go; 1/2 of `value` is a good place for `oldGuess` to start.

There is one final caution with regard to Integer Math: some equations may have to be reordered so that overflowing or underflowing will not occur. For example, the basic formula for converting a 3-D point to the 2-D screen is:

```
x2D = (distortion * x3D) /
      z3D;
y2D = (distortion * y3D) /
      z3D;
```

In our program, the `distortion` constant is set to 1200. Using a calculator, you can easily see that if `x3D` or `y3D` is greater than 27, an overflow will occur! This cannot be allowed to happen, so the formula must be rewritten using ordinary algebraic rules. The new formula will look like this:

```
x2D = (distortion / z3D) *
      x3D;
y2D = (distortion / z3D) *
       y3D;
```

The result is exactly the same, but the risk of overflow is greatly minimized by first dividing `distortion` by `z3D` and *then* multiplying.

Implementation

Our 3-D program needs a simple way to switch the compilation process between SANE and Integer Math for the benefit of those who have invested in a math coprocessor card. A math coprocessor intercepts all SANE functions and may work faster than Integer Math because a coprocessor works at hardware speeds. And it's always a good idea to keep your SANE code readily at hand for when the need arises to check the Integer Math code against a correctly working model.

We will take advantage of C's conditional compilation feature so that if we put

```
#define sane 1
```

at the beginning of our code (specifically in the **Defs.h** file), only the SANE functions will be compiled. But if instead we put

```
#define sane 0
```

then all Integer Math functions will be compiled. Clever? You bet. Messy? That too.

Our actual code will look something like this:

```
#if sane
y = -3.25 * 17.5;

#else
val1 = X2Fix (-3.25);
val2 = X2Fix (17.5);
y = FixMul (val1, val2);

#endif
```

If `sane` is set to 1, then the first section will compile (SANE math), else the second section will compile (Integer Math).

The variable `y` is of the *`real`* type. In C, there is no `real` type like in Pascal, so we will create our own special `real` using `typedef`:

```
#if sane
typedef extended real;
#else
typedef Fixed real;
#endif
```

If we're compiling for SANE, then `real` will be a SANE `extended` type; if we're compiling for Integer Math, `real` will be a `Fixed` type. This way, any time we need a floating-point variable in any of our formulas, we just declare the variable as `real`.

Look-up Tables

Another area for speed improvement is in the calculation of the sine and cosine values needed for rotating objects. If we compute the sines and cosines once at the beginning of the program for 360 angles and store the results in an array or table, then we merely have to read the table to obtain the proper sine or cosine. For example, we could replace all costly computations such as:

```
s = sin (45.0);
c = cos (45.0);
```

with the faster look-up table method:

```
s = sinTable [45];
c = cosTable [45];
```

(`sin` and `cos` actually take radians, not degrees; the 45.0 is just for illustration.) `sinTable` and `cosTable` are simply arrays which contain 360 sine and cosine values. One entry in the table corresponds to one degree.

Minimize

You may want to keep in mind that there is no law requiring that objects be rotated about the x, y, and z axes. The classic 3-D video game "Battle Zone," which pits you against tanks, only rotated its objects, or tanks, about the y axis. In fact, for most 3-D video games, rotation about the x and y axes is all that is needed. Eliminating an axis can save much needed time.

Faster Graphics

We can greatly improve the speed of our object drawing routines without abandoning the IIGS's QuickDraw calls. So far we've been displaying our objects as solids by painting each surface with a color. That may look nice, but it slows down the process. What if we were to just draw the edges of the surface, not filling the inside? Edges are lines and can be quickly drawn with the `LineTo` tool function. The result is a wireframe, which looks like a toy model, but there's no arguing about the gain in speed.

Another less obvious way to make sure the graphics draw as quickly as possible is

to keep other windows off of the object window. A window which overlaps the object window will slow down the object drawing because QuickDraw will then have to mask out the overlapping window from the object window underneath. So be sure to keep the object window uncovered whenever possible.

And finally, any desktop program can boost all of its graphical operations 8 to 20 percent by taking advantage of the IIGS's hardware. The IIGS actually has two graphic screens to draw on: a fast and a slow screen. Before System Software v5.0, graphics were only drawn on the slow screen. But with the advent of System Software v5.0, programs could use the fast screen, although doing so uses an additional 32K of memory. To make QuickDraw use the fast screen, set bit 15 to 1 in the `masterSCB` parameter of the `QDStartUp` call. Or, if you're using the new `StartUpTools` call, set bit 15 of the `videoMode` parameter to 1. Users of Genesys, a resource and program generator, need only check the FastPort box in the Tool Table window.

The Demo

This issue's demonstration program uses fast Integer Math. It's almost identical in form to the last article's demo program except for the

```
#if sane
 /* SANE Stuff */
#else
 /* Integer Math Stuff */
#endif
```

statements required to switch between the two math tool sets. There is also a new Render menu. It contains four selectable render modes (in order of fastest to slowest): *Wireframe*, *Wireframe without Backsides*, *Unshaded Solid*, and *Shaded Solid*. Shaded Solid takes light into consideration, while Unshaded Solid does not. Wireframe without Backsides performs hidden surface removal, whereas Wireframe does not.

The **Only3D.cc** and **Init.cc** source code files contain the most changes to accommodate the Integer Math tool set and the creation of the look-up tables. **Desk.cc** is appended slightly to handle toggling between solid object and wireframe drawing modes. All new code, except the converted Integer Math formulas, are marked NEW.

Quiz on Monday

As you've seen, 3-D programming is more dependent upon speed issues than almost any other type of application. But regardless of speed, you should have a practical understanding of 3-D programming, and a host of ideas for interesting applications.

(My thanks to Marty Knight for the square root formula and Eric Shepherd for his SANE fact-checking.) *GS+*

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Steven W. Disbrow, Publisher *GS+ Magazine, Mar/Apr '92*

Working with the Toolbox

By Josef W. Wankerl
Part 8: The Control Manager

The Control Manager, much like the Event Manager, presents a method for letting users interact with your program. The Control Manager presents familiar metaphors (buttons, scroll bars, check boxes, etc.) which enhance the desktop interface. Managing such controls is what the Control Manager is for.

Control Manager Dependencies

The Window Manager, Control Manager, and Menu Manager all depend on each other. In order to start one of those three up, you must start all of them. Even though we haven't talked about the Menu Manager (wait for the next installment) you won't find any of the calls to them very complex. In fact, you won't find any calls at all in this issue's demo program since all that's needed are the the startup and shutdown calls, and they are done by the `StartUpTools` and `ShutDownTools` calls for you.

How To Work A Control

Jumping right in, what is required to put a control in a window and let the user interact with it? Not much, really. First, to create the control, a `NewControl2` call can be used, or `NewControl2` can be called automatically for you when you issue the `NewWindow2` call. Once the control is created, all you need to do to see what happens to the control is to watch the result from `TaskMaster`. If the result code is `wInControl`, then there was a click or keystroke in the control. One thing to note is that I am talking about *extended* controls. The Control Manager supports two types of controls: non-extended and extended. Non-extended controls can only be simple buttons, check boxes, radio buttons, scroll bars, and size boxes. Extended controls were introduced in System Software v5.0, and should be used since they are more flexible. Extended controls support such features as key equivalencies, the notion of targetable controls, and much more.

Prefabricated Controls

The Control Manager provides you with a heavy arsenal of ready-to-use controls. In order to keep this article from spanning the entire magazine, I'll only talk about the seven most fundamental controls that the Control Manager provides. Other tool sets provide the resources to create the other ready-made controls, namely the Menu Manager, LineEdit, TextEdit, List Manager, and QuickDraw II Auxiliary. The basic controls the Control Manager offers in System 6 are simple buttons, check boxes, radio buttons, size boxes, scroll bars, rectangles, and thermometers. Controls that require additional tool sets are picture controls, icon buttons, pop-up menus, static text, LineEdit controls, list controls, and TextEdit controls.

Common Control Properties

Each control belongs to a window. In order to keep track of the controls in a window, each control is numbered. The number is called the Control ID. Every control also has a bounding rectangle which determines where the control will be drawn inside the window. Every control, with the exception of the simple button, will always be drawn inside the bounding rectangle. (Simple buttons with square drop shadows or default buttons will have the extra shadow drawn outside the bounding rectangle.) Every control can also be active or inactive. To make a control active, call `HiliteCtl` with the `noHilite` parameter. To make a control inactive, call `HiliteCtl` with the `inactiveHilite` parameter. When a control is inactive, `TaskMaster` will not return hits on the control. Each control also has a refCon value which your application can use for anything it likes. You can examine and change the refCon value with the `GetCtlRefCon` and `SetCtlRefCon` calls.

Controls also have a flag byte, a title longword, and a value word which can control special properties of the control. (For example, the flag byte can control: the control is visible or invisible flag, the type of button frame, the family number for a radio button, and scroll bar properties.) Each of these values are specific to the type of control.

Simple Buttons

Simple buttons are used to cause an immediate action. When a user clicks on a button, your program should take it as a signal to do something. Most simple buttons are framed with round rectangles and have the title of the button inside the frame. Default buttons (buttons that are activated by the return key) are framed with a double round rectangle. The two other simple button frame types are a rectangle and a rectangle with a drop shadow. The rectangular versions of the button are not consistent with Apple's Human Interface Guidelines (rectangular buttons and pop-up menu controls look the same) and should not be used except under unusual circumstances. The button title string can be examined and changed by using the `GetCtlTitle` and `SetCtlTitle` calls.

Check Boxes

Check boxes are used to set Boolean parameters (parameters that can be either on or off). Check boxes should not cause an immediate action, but, instead, should control some future action. Check boxes are drawn with a square check region and a title to the right of the check square. If the check square is empty, the check box is "turned off." If the check square has an "X" inside it, the check box is "turned on." If a check box is turned off, its value is zero. If a check box is turned on, its value is non-zero. You can examine and change the value of a check box with the `GetCtlValue` and `SetCtlValue` calls. The check box title string can be examined and changed by using the `GetCtlTitle` and `SetCtlTitle` calls.

Radio Buttons

Radio buttons are used to set Boolean parameters when only one parameter in a family can be on at any one time. Radio buttons are grouped into families. It does not make any sense to have a single radio button in a family as it will always be "on." While it makes sense to have two radio buttons in a family, most likely it would make more sense to have a check box. There are cases, though, where a two member family is appropriate (e.g. "I want pizza" or "I want spaghetti"). Radio buttons are most useful when there are three or more mutually exclusive options to choose from. Radio buttons, like check boxes, should not cause an immediate action, but, instead, should control some future action. Radio buttons are drawn with a circular select region and a title to the right of the select circle. If the select circle is empty, the radio button is "turned off." If the select circle has a solid circle inside it, the radio button is "turned on." If a radio button is turned off, its value is zero. If a radio button is turned on, its value is non-zero. You can examine and change the value of a radio button with the `GetCtlValue` and `SetCtlValue` calls. When you turn on a radio button, all other radio buttons in the same family are automatically turned off. Note that it is possible to have a family of radio buttons all turned off, but that is not consistent with Apple's Human Interface Guidelines. You should make sure that each family of radio buttons always has one radio button turned on. To find out which radio button is selected in a family, you can use the new System 6 `FindRadioButton` call. To use the call effectively, the control numbers for the radio buttons in a family should be

consecutive. A radio button's title string can be examined and changed by using the GetCtlTitle and SetCtlTitle calls.

Rectangle Controls

Rectangle controls are simple controls used to draw rectangles in windows. This is useful so that a window's contents can be drawn with a single DrawControls call. Most likely only simple graphics, like rectangles, are going to be drawn in a window with controls, so having a rectangle control simplifies the content draw procedure. Rectangle controls are useful in drawing rectangles around related controls, such as a family of radio buttons, or in drawing lines in a window (by setting the height or width of the rectangle to small, but *not* zero, values).

Thermometer Controls

Thermometer controls are used to display progress information. Thermometer controls are drawn with a rectangular frame, and the mercury position is drawn inside the frame. There are two values which determine how "full" the thermometer is: the *scale* and the *mercury position*. When the mercury position is zero, the thermometer is "empty." When the mercury position is equal to the scale, the thermometer is "full." You can examine and change the mercury position of a thermometer control with the GetCtlValue and SetCtlValue calls. The idea behind using a thermometer control is to set a fixed scale, then call SetCtlValue starting at zero and incrementing to the scale as the operation progresses. The thermometer scale can be examined and changed by using the GetCtlTitle and SetCtlTitle calls (only the low word of this value is valid, the high word is reserved).

Size Box Controls

Size box controls are used to draw an icon to be used for resizing an object. Size box controls don't do anything by themselves—they just draw an icon. Once your application has determined that a size box his been hit, it should do the resizing operation. Optionally, if you want the hit on the size box to resize the window the size box is currently in, you can set a bit in the control's moreFlags word when you create the control.

Scroll Bar Controls

Scroll bars are used to set a relative value. Because of the way scroll bars operate, they should not be used to set an absolute value unless the value is also shown more precisely than the scroll bar can. A scroll bar consists of an up arrow, down arrow, page up region, page down region, and a thumb. (On a horizontal scroll bar, the left arrow is the up arrow and right arrow is the down arrow.)

When a user clicks on the up arrow, the value of the scroll bar value should decrease by one "unit." When a user clicks on the down arrow, the value of the scroll bar value should increase by one "unit." When a user clicks in the page up region, the value of the scroll bar value should decrease by a determined "page" value. When a user clicks in the page down region, the value of the scroll bar value should increase by a determined "page" value.

The page and unit values are determined by your application. If you have a scroll bar that is the vertical position in a text document in pixels, with each line of text being ten pixels high, your unit value will be ten (so you scroll one line of text at a time). Your page value will be the number of pixels that can be displayed at one time (so you scroll one page of text at a time). The user can drag the thumb region to set any value that the scroll bar can have. The control manager will handle the dragging of the thumb region automatically. Your application must control the action of the up arrow, down arrow, page up region, and page down region with the use of a custom action procedure. To give a control a custom action procedure, (other controls besides scroll bars can have custom action procedures, but only the scroll bar requires one to work properly) issue the SetCtlAction call. Whenever the scroll bar is hit, your action procedure will be called in order for you to update the scroll bar value and do any additional processing that may be required.

There are two values which govern the display of a scroll bar: the *data size* and the *view size*. The data size is the maximum size of data the scroll bar can span. The view size is the amount of data that can be shown at a time. The scroll bar will never take on a value greater than the *data size minus the view size*. This means that if you want to have a scroll bar that will take on values between zero and ten, set the data size to ten and the view size to zero (10 - 0 = 10).

The scroll bar data size and view size can be examined and changed by using the GetCtlParams and SetCtlParams calls. The scroll bar data size and view size can also be examined and changed by using the GetCtlTitle and SetCtlTitle calls, however the GetCtlParams and SetCtlParams calls are the appropriate way to access these values. The current value of the scroll bar can be examined and changed by using the GetCtlValue and SetCtlValue calls. Remember that the control value will never exceed the data size minus the view size.

Control Manager Demo

The Control Manager demo program on your *GS+* Disk provides some good examples of the most frequently used Control Manager calls (and even some of the more obscure ones). The program displays four windows. The first is the "Quit" window. The quit window contains a single button labeled "Quit" which will quit the Control Manager demo program when you click on it. The second window is the "Beep" window. The beep window contains a simple default button, three radio buttons, a thermometer, and a rectangle control. When you click on the default button, the speaker will beep as many times as the selected radio button, and the thermometer will fill as the operation progresses.

The third window, the "Action" window, is where the fun comes in! The action window contains a check box, a scroll bar, and a thermometer. When the check box is unchecked, the default action procedure for scroll bars are used. However, when the check box is checked, a custom action procedure is used. This custom action procedure updates the thermometer control as well as the thumb region of the scroll bar. Clicking on the check box calls SetCtlAction to set or clear the custom action procedure. The custom action procedure checks which part of the control was hit and adjusts the scroll bar's value (and the thermometer value) accordingly.

The fourth window, the "Size" window, simply contains a single size box control. The size box control is set up to resize the window when it is selected. After the window has been resized, the size box is moved to the lower right-hand corner of the window.

That's All, Folks!

There's a lot of information to take in when it comes to using controls in your programs, so take it easy and learn a bit at a time. The source code for the Control Manager Demo program covers most of the more common Control Manager calls. If you need to do more than the Control Manager Demo program does, you're really getting a grasp of what's going on and should be able to read the Toolbox references without my help. Still, if you had trouble following this article, or the Toolbox references, let me know and I'll attempt to clarify. *GS+*

Understanding FSTs

By Josef W. Wankerl

GS/OS has had the ability to support multiple file systems since day one. With System Software v6.0, there are currently six defined *File System Translators* (FSTs) available: ProDOS, Macintosh HFS, AppleShare, High Sierra (used by some CD-ROMs), Apple DOS 3.3, and Apple Pascal. When System Software v6.0.1 hits the scene (see the "KansasFest '92" article for more information), you might even see a MS-DOS FST—bringing the total count to seven. I have seen a lot of confusion about what File System Translators do (a lot of the confused people are even developers!), and so I thought that this confusion merited an article. The concepts presented here are not extremely technical (the technical stuff is explained clearly), so (hopefully!) even novice users should be able to understand File System Translators and how they interact with the entire GS/OS system.

Three Levels

There are three distinct levels to GS/OS: the device level, the file system level, and the application interface to GS/OS. The File System Translator is right in-between the device level and the application interface level, and performs the translation of raw device data into what GS/OS finally presents to applications. In order to continue, you must know a few things about devices, file systems, and GS/OS. The best way to see what goes on is to work from the top level down.

Application Interface To GS/OS

IIGS applications can tell what a file contains by looking at the file type and auxiliary type of the file. (The file type of a file determines what "generic" kind of file it is. The auxiliary type of a file specifically classifies the file within its generic file type.) Even though GS/OS doesn't really care about these things, one of its main jobs is to provide applications with correct file type and auxiliary type information. This is so applications will be able to tell what a file contains regardless of the file system the file is stored in.

For example, file type $04 is a text file, file type $06 is a binary file, and file type $E0 is a library file. Furthermore, files of type $E0, with an auxiliary type of $800A are Replicator documents. When programmers write applications using GS/OS, they are guaranteed that files of type $E0, auxiliary type $800A are Replicator documents, no matter what file system the file exists on. There are a couple of other attributes a file can posses that application programmers can count on, namely dates and access attributes, all of this is presented to applications in a standard GS/OS format.

So, the next question is, "How and when do all of these file attributes get translated into the correct format?" It's a good question, and it brings us to the . . .

File System Level

The file system determines exactly how and where files are stored on a device. The File System Translator knows how a particular file system physically stores information on a device. For example, with the ProDOS file system, the master directory is stored on block 2, and it is in a distinct ProDOS format. When GS/OS needs to know something about a file, it calls the File System Translator to do all the dirty work of reading directory blocks and finding where the file physically exists on the disk. When a file is accessed, the FST will know where to get information from the device. The FST makes calls to device drivers to actually retrieve and save information on the disk. The independent relationship between file system translators and device drivers is what makes GS/OS so flexible. Any file system can exist on any kind of device, as long as a device driver can read the information from the device.

When a file is accessed by GS/OS, the File System Translator is called to determine what the file on the device is, and to take the file system specific information and turn it into generic GS/OS information. For example, High Sierra does not have the concept of file types and auxiliary types, but it does have a three character extension to its name which is used to classify its type. When a file ends in a **.TXT** extension, the High Sierra FST will determine that the GS/OS file type is supposed to be $04, a generic text file. Using another example, HFS uses file types and creator types, which are four characters long each. A HFS file with a creator type of **dCpy** and a file type of **dImg** translates into GS/OS file type $E0, auxiliary type $0005, which is a DiskCopy disk image file. When a file is created or changed by GS/OS, a reverse translation process takes place to change the generic GS/OS information into the format that the file system understands. Note that I have used file types and auxiliary types as an example—there are also other attributes of a file that get translated, such as dates and access attributes. On a ProDOS disk, the date of a file is stored in standard ProDOS format. The ProDOS FST automatically converts this ProDOS date into a standard GS/OS date so only one date format needs to be supported by applications running under GS/OS.

If a File System Translator is read-only, the FST has the option of actually translating raw data into a more conventional format. For example, the Pascal FST will translate special Pascal editor files into plain text files. This conversion process is optional, and can be turned off with specific calls to the FST.

Device Level

Different devices store raw data in different ways. As you might guess, compact discs have a different method of storing and reading data than regular magnetic floppy disks. Also, there are different methods of storing and reading data on magnetic floppy disks. Floppy disks created in an IBM disk drive cannot be read by an Apple 3.5 drive simply because the method used to store the data is radically different.

Once you have a disk that a device can properly read from, it's the device driver's job to actually interact with the device. All device drivers know how to do is to read and write blocks of data at a very low level—they do not know *anything* about what these blocks are used for (that's the File System Translator's job).

So What Does This All Mean?

Well, now that you know how the File System Translator interacts with GS/OS and device drivers, it's not very hard to put everything together to see how the system works. If a device driver can read and write information on a device, then the File System Translator can recognize the file system on the device and translate it into what GS/OS applications expect to see. To take a generic example to make things crystal clear:

I have a disk with a text file on it that I would like to open with EGOed. I first need to find a device that will properly read the disk. Next, I have to make sure that a File System Translator is present that matches the file system on the disk so the file will be recognized by GS/OS. If the device can read the disk, and there is a File System Translator that will read the information from the disk, EGOed can then take a look at what the file is (based on the standard GS/OS file type and auxiliary type information) and request that GS/OS read the file. GS/OS will then call the File System Translator to pull the information from the disk. The File System Translator will look at the file system information for

the file and know exactly which blocks to read from. The File System Translator then calls the device driver to read the correct data blocks. The device driver will blindly read the information from the requested blocks and return them to the File System Translator, which then returns to GS/OS, which then returns to EGOed, which will then have read the file.

Now, to give another example (which is hypothetical, since the MS-DOS FST isn't available yet): using the Finder, I can format a regular 800K disk in an Apple 3.5 drive as a MS-DOS disk. This is because the File System Translator doesn't care what kind of device is used to store or retrieve data. Of course I can't use this disk with an IBM machine because IBM disk drives can't read the kind of information that the Apple 3.5 drive stores, but the IIGS can read this disk just as it would any other MS-DOS disk. Because the file system is independent of the device level, any device can be of any file system, even if the file system's native computer can't read disks that the IIGS can. However, if someone were to invent an interface between the Apple 3.5 drive and an IBM machine, the 800K MS-DOS formatted disk could be used just fine on an IBM.

That's All There Is To It!

I hope that this article has cleared up some confusion (as opposed to creating more). If you decide you *still* don't understand what's going on, or if you just have some general questions about File System Translators, feel free to contact me and I'll do my best to help. *GS+*

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Using rBundles in your Programs

By Josef Wankerl

For those of you writing applications, you almost certainly want to provide a custom set of icons that will distinctly identify your application and its data files while inside the Finder. In the past, your icons were created with a handy-dandy icon editor and were matched to files based on filename, file type, and auxiliary type. Also, these icons had to contain a hardcoded pathname to your application. This was a pretty good way of doing things, but only if the user never moved or renamed your application.

With System 6, you can use the new and improved `rBundle` resource to increase the flexibility of how your custom icons are matched to your application and its data files. In this article, we'll look at what `rBundles` can do for you, and what you need to do to use them with your applications.

Before we begin our look at `rBundles`, however, I need to make it clear that you *must* get the *Programmer's Reference For System 6.0* (available from The Byte Works), in order to completely understand the `rBundle` resource. It contains all the definitions and explanations for all the fields in the resource.

Match Game '92

As with old-style icon files, the job of the `rBundle` is, basically, to tell the Finder which icons to use for which files. However, instead of having two separate files, one for your icons and one for your application, the `rBundle` resource allows your icons to be contained in the resource fork of your application. Since the icons are directly related to the application file, this simplifies the task of keeping track of your icons.

Another advantage of the `rBundle` over old-style icon files is that the way in which icons are matched to files has been greatly enhanced. With an `rBundle` resource, you can match icons based on file type, auxiliary type, file name, creation dates, modification dates, FST specific information, and more! With a lot of the matching criteria, you can match if the fields are less-than, greater-than, or equal to your match data.

What good is all of this matching criteria? Well, if you were writing a backup program, you could, for example, provide a set of icons that show up for files that need to be backed-up. This would allow the user to tell, at a glance, which files he needs to back up. Another good example would be two different icons for New Desk Accessories (NDAs)—one would be for an active NDA, the other would be for when the NDA is inactive. The only difference between the two icons' matching criteria would be for the active bit in the local access flags.

The Desktop Database

The desktop database is basically one big, invisible file containing `rBundles` and other related resources. This file (which is named **Desktop**) is kept in the **Icons** folder of each disk. When the Finder starts up, it loads in all the desktop databases from each online volume.

For each `rBundle` in the desktop database, there will be at least three other resources: `rVersion`, `rFinderPath`, and one or more `rIcons`. The `rBundle` resource contains references to `rIcon` resources for each document type it supports. The `rVersion` resource contains version information for the application. The `rBundle`, `rVersion`, and any `rIcon` resources are copied from the applications resource fork. Finally, there's an `rFinderPath` resource, which is created by the Finder, that contains the pathname to the application. This single pathname is associated with each icon referenced by the `rBundle`.

When the Finder is adding a new application to the desktop database, it fills in certain fields in the `rBundle` structure first. It's also important to note that only an `rVersion` and `rBundle` resource (plus any any related `rIcon` resources) needs to be present in the resource fork of your application. No `rFinderPath` resources should be present. The `rFinderPath` resource is generated by the Finder, and the `pathID` field in each `OneDoc` structure (discussed below) is filled in before the final `rBundle` is written out to the desktop database file.

So, whenever you use the Finder to launch an application that has an `rBundle` resource, the Finder checks the `rVersion` resource of the application. If this version information represents a newer version than the one that is currently in the desktop database, or if there isn't *any* information for this application in the desktop database, the Finder will update the desktop database with this new `rVersion` and `rBundle` information. Whenever a document is opened that matches the criteria in an `rBundle`, the application specified by the corresponding `rFinderPath` resource is launched.

And, if you rename an application, or if you move it to a different folder, then launch it, the Finder will look in its desktop database, recognize the `rVersion` information and realize that the application has been renamed or moved and update the `rFinderPath`. This way, no matter where you put your application, and even if you decide you want to rename it, the Finder will always be able to find and launch the correct application when you double-click on a document. The Finder can do this because the `rVersion` resource for the application has not changed. An `rVersion` resource can uniquely identify an application even if the application's filename changes.

The rBundle Resource

OK. Now it's time to talk about the actual format of an `rBundle`. Open your copy of the *Programmer's Reference for System 6.0* to page 419. As you can see, an `rBundle` is basically a header followed by an array of `OneDoc` structures. Each `OneDoc` entry contains the information necessary to match a file to an icon. The `rBundle` resource was designed to be extensible—in the future, new fields can be added to the header and/or to the `OneDoc` entries without any compatibility problems because everything contains an offset to the next entry. This means that when new features are added, you don't have to know what they are, you can just skip over them.

The `iconID` field in the `rBundle` structure is intended to be a reference to a large icon to display for the application. However the current Finder pretty much ignores this field. You should keep this field valid though, because a future version of the Finder may use this field correctly. Until then, the only way to get the Finder to display a custom icon for your application is to create a `OneDoc` structure specifically for your application. Note that there is no `iconID` field to equate a small icon to an application. But, since the `rBundle` structure is so extensible, such a field could be easily added without breaking anything. Also note that by creating a `OneDoc` structure for the application, both large and small icons will be displayed.

The OneDoc Structure

The `OneDoc` structure contains a bunch of fields that contain information about how to map a file to an icon, and some additional information about the file type. Among these are references to the large

and small icons to use, plus an optional document description string that will be displayed in the Finder's "Icon Info" window. Each `OneDoc` structure also contains a field that sets the "voting" priority for the `OneDoc`. This is included so that the Finder can use these priorities to decide which application is best suited to open a particular kind of document. As more applications appear that can open different kinds of documents, this will become increasingly important. For example, Replicator is the owner of Replicator documents and Replicator preferences files. However, Replicator can only *open* DiskCopy disk image files. (See the "Replicator v1.3" article for more on this.) So, if a new disk copying application comes along that can open *and* save DiskCopy disk image files (i.e. it could handle DiskCopy disk image files better than Replicator), the Finder would determine that this application should be used instead of Replicator to open any DiskCopy disk image files.

Matching Files

So, how *does* the Finder match files to icons? Well, at the end of the `OneDoc` structure is an array of *match fields*. Each match field lets you specify a different matching criteria. While you can specify all sorts of match fields and matching criteria, the Finder looks at another `OneDoc` field, called MatchFlags, to determine which of the match fields you actually want it to use. So, for example, if you wanted to match based on a file type and an auxiliary type, you'd set the MatchFlags bits corresponding to file type and auxiliary type, and then you'd add the appropriate match fields for file type and auxiliary type. Unused match fields will have a type of zero so the Finder knows that no valid information is in them.

The `OneDoc` structure is fairly straightforward when you're reading through the *Programmer's Reference For System 6.0*, but when you look at all the fields, some required and some optional, you might begin to wonder exactly what an `rBundle` will look like when it's coded in Rez. Not to worry—the source code for Replicator v1.3 (which is on your *GS+* Disk) contains a good example of an `rBundle` resource coded in Rez. I generated the Rez code by first running the DeRez utility on a file with an existing `rBundle` resource and then taking a look at what DeRez produced. I then cleaned it up a bit, formatted it to my liking, and then changed and added fields and `OneDoc` structures to get the final result.

What About . . .

So now you want to add an `rBundle` resource to your application, right? Go right ahead! What's that? You're not writing an application? You're writing a <insert non-application program type here>? You're going to have to use some trickery to get the Finder to recognize your `rBundle` resource, because the desktop database is only updated when you launch an *application*. You're most likely going to have to write a request procedure to accept Finder requests and then send a `tellFinderAddBundle`, after you see a `finderSaysHello` request, to explicitly force the Finder to update its desktop database based on your `rBundle`. Be sure that all your `OneDoc` structures are set to just display the icon, and *not* launch it, or else a user could open an icon and the Finder would try to launch your non-application program. That would not be good.

The End . . . Really!

Adding `rBundle` resources to applications is actually a pretty trivial task. A bit of reading is all that's needed to get the latest in icon mapping included in your own applications. And if you need a "real world" example, the Replicator v1.3 source code is a great place to start, and, once again, it's on your *GS+* Disk. And finally, to repeat myself (yet again), you *need* the *Programmer's Reference for System 6.0* in order to completely understand the `rBundle` resource type and everything that you can use it for. ***GS+***

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Rumors, Wishes & Blatant Lies

By Prof. G. S. Gumby

A+/GS+/inCider?

Can it be true? Has *A+/inCider* bought out *GS+* Magazine? Will the next editorial you read be Paul Statt's? Of course not! Rather, *GS+* Magazine has taken over *A+/inCider*! Well, at least their booth at the EXPO. (For a little while anyway.) As you can see from our cover photo, while the *inCider* cats were away, our rat of a publisher was free to play. The *inCider* folks stepped out for a moment and, knowing a great photo-op when he sees one, our publisher quickly sat down at the booth and began proclaiming that *inCider* would soon return to the "good old days." Which apparently requires intervention by someone named "Wayne Green" and his "cat-o-nine-tails." Shortly thereafter, he was subdued by a flying-tackle from *inCider* contributing editor, Joe Kohn.

Speaking Of InCider . . .

It was revealed during the course of the Roger Wagner Roast (see "KansasFest 1992" in this issue), that our good friend Matt "DTS" Deatherage is going to begin writing an opinion column for *inCider*. According to Matt, the people at *inCider* wanted to call the column "Life & Deatherage." However, for some reason, the name they eventually settled on was "Deatherage Be Not Proud." (The best part about this story is that *I* don't have to write the punch-line.)

So *why* are we giving all of these plugs to *inCider*? Because we like them! Paul Statt, Cameron Crotty, and Joe Kohn are some of the nicest folks you could want to meet. Besides, maybe they'll give *us* a plug, and we'll get lots of new subscriptions. (Just be sure to get our toll-free number right Paul! It's 1-800-662-3634.)

Couples Of KansasFest

Last year, our "Babes Of KansasFest" pictorial stirred up more than its fair share of controversy. So, in order to keep our NEA grant, this year we are presenting, "Married, Monogamous, Couples Of KansasFest." In these photos (which are scattered throughout this issue), you will see the patient spouses behind the developers, as well has the developers themselves. (Note the inoffensive uni-sex wording!) Coming next year, KansasFest trading cards!

New Vaporware

As usual, KansasFest was *the* place to check out all of the hottest vaporware that is currently in development.

First we have *Twilight II*, by the Digital Youth Alliance. Twilight II is the followup to Twilight, the original modular IIGS screen saver. Our very own Joe Wankerl spent many hours helping the Digital Youth track down and solve various bugs that have held up Twilight II's release. When Joe left them, they were almost finished. Look for it any year now.

Next we have *Out Of This World*, which is the latest crop from the fertile minds of Bill Heineman and InterPlay productions. Actually, Out Of This World is a IIGS conversion of a Super Nintendo game that Bill did. (We told you this would happen, didn't we?) Out Of This World is *literally* out of this world! It should be released very soon (maybe even by the time you read this). If you are a IIGS gamer that has been depressed by the lack of new game software for the IIGS, and you *don't* buy a copy of this game, you don't deserve the oxygen you breathed today. For more information, give InterPlay a call at (714) 545-9001.

Another game that was being shown at KansasFest and the EXPO was *Time Lord*. Actually, this was the *third* KansasFest that Time Lord has been shown at. It looks like an extremely well-done IIGS version of Ultima, but at this point, we have no idea when it will be released (if ever), or who will be publishing it.

Moving to utilities, we have *AutoArc* by ECON Technologies. AutoArc is a product that automatically compresses and uncompresses your application and data files "on-the-fly." According to the information supplied by ECON, files are compressed an average of 50%. In addition, you will be able to encrypt and password protect your files! AutoArc is scheduled for a mid-September release (hopefully *after* you get this magazine) and will include an Init, a New Desk Accessory, a Classic Desk Accessory, and a Finder extension to allow you to get to your compressed files from inside almost any GS/OS application. The retail price should be about $60.

ECON is also working on a new stereo/digitizer card. What will set this card apart from others is that it is also an amplifier. So, you can use regular, unpowered, speakers with it. Not only that, but the supplied digitizer software will supposedly record sounds that are limited by available *disk space* rather than available RAM. A price has not been set

Top Ten Things To Do At KansasFest '92

10 Get stuck in Avila elevator. Scream for help.
9 Try not to stare at the paranoid guy. I think you know who I'm talking about.
8 Tell Roger Wagner, "C'mon Roger, just one more humiliating event . . . it'll be *fun*!"
7 Search for a *real* screwdriver.
6 Watch the hot air balloons drift by.
5 Ask Jay Jennings, "Are your *undergarments* black too?"
4 Wake up Avila nuns with gas-powered, remote-controlled cars.
3 Fix Derek Young's IIGS monitor using bear-skins and stone knives.
2 (Tie) Sleep? What's that?
(Tie) Hide from the Technical Editor with the long hair & video camera. (Ladies only.)

And The Number One Thing To Do At This Years KansasFest Was:

Try not to mess up Tom Swihart's last name. (Remember, the "i" is a long "i".)

yet, and the board is not due to be available until the fall. For more information on these products, give ECON a call at (407) 365-4209.

The fellows at PROCYON, Inc., makers of GNO/ME, have several products scheduled for release this fall. First, is *Splat!*, which is a source-code level debugger for ORCA compatible languages. Splat! should have many of the same features as the ORCA/Debugger (see "What's New" from last issue) and will be able to take advantage of GNO/ME if it is present. No price or availability information was given.

The other product PROCYON announced was, *Switch-It!*, which is, you guessed it, a Switcher type application for the IIGS. With Switch-It!, you should be able to quickly move from one application to another. Switch-It! will also include scrapbook and screen capture New Desk Accessories to make it easier to move data from one program to another. It should be stressed that this does *not* appear to be a Multi-Finder for the IIGS. It merely allows you to have multiple applications open at once and move between them. Only the currently visible application will actually be running, the others won't be able to do anything until you switch back to them. No price or availability information was given. PROCYON can be reached at (303) 933-4649.

Our very own Michael Lutynski was demonstrating his new product, *Animasia 3-D*. Animasia 3-D is a 3-D animation program that takes the concepts Michael has presented in his "Introduction To 3-D Graphics" articles (*GS+* V3.N2, V3.N4 and in this issue) and combines them all into what looks to be a very powerful animation system. A partial list of its features includes the ability to model 2- and 3-D shapes, 15 drawing layers, automatic shading, multiple light sources, unlimited length animations (which can be played back at up to 30 frames per second), and the ability to import objects from AutoCAD DXF files! Animasia 3-D should be available this fall at a price of $99. For more information, call (203) 455-0298.

One of the most exciting products at the show was from, believe it or not, *Applied Engineering*. The product is a 21MB *floptical disk drive*. This is a SCSI drive that not only allows you to use the new 3.5-inch, 21MB floptical disks (which are about $20 each), it also allows you to use regular 800K and 1.44MB floppies in the drive! And, yes, they are going to be providing a IIGS-specific driver (along with comparable Macintosh software) with the drive! And, the biggest shock was the special show pricing that they were offering! It was actually reasonable! The retail price of $679 is fairly reasonable too (I've seen similar drives advertised for almost $800). In talking with the Æ rep at the show (yes, they had a booth and they sent a human to work in it!) we learned that Æ is currently *re-evaluating* the Apple II market, and they thought that this would be a good show to do it at, and a good product to do it with. We agree. So, give them a call at their new order number 1-800-554-MACS (hey, they were passing this number out at the show, so they *must* want us to call it!) and tell them you are an Apple IIGS owner that is interested in their new floptical drive!

(continues on next page . . .)

The Ties That Blind, Part 2

Yes, once again, *GS+* Magazine is short on material. So, we are proud to present our second annual Roger Wagner KansasFest Necktie Report. As you know, Roger's company publishes a couple of neat software packages for the IIGS and other Apple II's. However, Roger's real claim to fame is his fabulous neckware. Superlatives regularly take their own lives when trying to describe these fabulous fabric strips, so, in simple terms, here is what Roger Wagner had around his neck during KansasFest. (Once again, I must point out that these are *real* neckties, *not* sissy-boy clip-ons.)

Thursday morning, July 23rd: Cow heads. Three of them on one tie. Very *mooo*ving to look at.

Thursday evening, July 23rd: Looney Tunes filmstrip. This tie (shown below) consisted of several cells (individual frames of animation) from various Looney Tunes cartoons, arranged vertically. This tie won first prize at the "Creative Black Tie" party that was held that evening. This is ironic, because first prize was a picture of Roger.

Friday, July 24th: Deep sea divers. All of the divers were men, causing charges of sexism to surface from one or two troublemakers.

Saturday, July 25th: More deep sea divers. This time, however, women were the featured divers. This seemed to quiet the complaints of the previous day.

Sunday, July 26th: Van Go. Actually, this tie had pictures of irises (flowers) on it. Roger called it "Van Go" because, apparently, Vincent Van Gogh had painted some irises once and, since Sunday was the last day of the show, it was time for them to get in the *Van* and *Go* back to the airport. (I should point out, lest my college art professor disown me, that "Van Gogh" is actually pronounced, "Vän Gokh," not "Van Go." I do this because this was the one and only thing I learned in college.)

Last but not least, The Byte Works was showing off its next ORCA language, *ORCA/Modula-2*. The Modula-2 language was developed by the author of the Pascal language (Niklaus Wirth), and was intended to be the successor to the Pascal language. ORCA/Modula-2 is being developed by a fellow named Peter Easdown (who just happens to live in Australia) and should be released sometime this fall. It will be packaged and priced similarly to the other ORCA languages. Give The Byte Works a call at (505) 898-8183 to request more availability information.

In addition to vaporware, there were a few products that were actually released at the show. See "What's New" in this issue for more details on these.

Speaking of new products, if you, or someone you know, has been looking for concrete proof that software theft is hurting the IIGS, look no further than our next item.

Scumbag, Pinhead, etc. . . .

If you don't know by now, Seven Hills Software has been forced to stop development of the commercial version of SoundSmith. Apparently, one of the beta testers felt he should share it with the world and uploaded it to a bulletin board. It spread like wild-fire, eventually getting back to the author of the program (who lives in Spain, I believe). This left the author with a very bad impression of Seven Hills and he decided to pull out of the project. Now, the "scumbag, pinhead, etc . . . ." I'm writing about here is *not* anyone at Seven Hills (you can't blame Seven Hills for wanting to properly test the software), and it certainly isn't the author of SoundSmith (you can't blame him for being angry). Rather, I'm referring to the sub-human that uploaded the software. Thanks *so* much for killing a great new IIGS product. Jerk.

Help Me! Help Me!

KansasFest comes only once a year, you know! (In other words, I've got space to fill next issue!) So, send me your rumors, wishes, blatant lies and maybe the name of our scumbag uploader, and I'll see if I can't get it in the next issue. Send that incriminating evidence to:

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

I'm A Programmer And I'm OK!

Here, by popular demand, are the lyrics to the song that our publisher and his cohorts in comedy (Tony Diaz, Noreen Disbrow, Bill Heineman, Max J. Vandament, Roger Wagner and Andrew T. Wallo—known collectively as "the Choir") wrote and sang for the KansasFesters during lunch on Friday the 24th of July. (Sung to the tune of "The LumberJack Song" by Monty Python.)

Programmer: Oh! I'm a programmer and I'm OK!
I code all night, and I sleep all day!

Choir: (Chorus)
Oh! He's a programmer and he's OK!
He codes all night, and he sleeps all day!

Programmer: I write my code,
Compile it once,
Its so good it's a crime!
I get calls from *Bill Heineman*,
For advice all the time!

Choir: (Repeat verse and Chorus with Programmer.)

Programmer: I get a project
From my boss
I finish it real fast
I do it in assembly
Cause Pascal is half-assed!

Choir: (Repeat verse and Chorus with Programmer.)

Programmer: I never look at tech-notes
Because I know it all
If a system update breaks things
I just give Matt (Deatherage) a call!

Choir: (Repeat verse and Chorus with Programmer.)

Programmer: I rush my code to market
I don't test it at all
And when the bugs have surfaced
I'll just ignore them all!

Choir: (Repeat verse and Chorus with Programmer.)

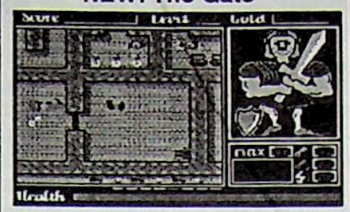
Programmer: I eat junk food
For every meal
I've gained a little weight
But mark my words, I'm not a nerd
Someday I'll have a date!

Choir: He eats junk food
For every meal
He's gained a *lot* of weight
But mark our words, He *is* a nerd
He'll *never* have a date!

(Repeat Chorus twice)

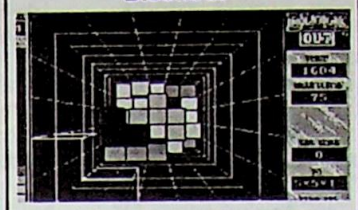
Exclusive Source for the Best IIGS Programs

NEW! The Gate™



The Gate™: Fight your way through a castle riddled with mazes to save a bewitched kingdom. Battle against ghosts, magicians, snakes and other evil monsters. You'll need to use your head to solve the puzzles and your agility to conquer the action. Nintendo type action for the IIGS. It earned InCider's Editors' Choice award. **Order product number SV71 for only $30.**

Blockout™



Blockout™: It's like Tetris™ but it's 3-dimensional. Your job is to rotate and maneuver various 3-D blocks as they fall into a pit. The idea is to make the blocks fall into the proper positions to form complete layers. As each layer is completed, it vanishes, giving you more room to work with. **Order product number CD54 for only $20 for non-members or $15 for members.**

Task Force™

Task Force™: Your mission is to clean up the streets in L.A., Chicago, Washington, San Francisco and New York. Starting with a pistol, you end up with flame throwers, missile launchers and grenades. The graphic detail and fluid animation is amazing. The hottest action for the IIGS. **Order product number DW56 for only $25 for non-members or $20 for members.**

NEW! Space Fox™

Space Fox™: Pilot your spacecraft through multiple levels while you're constantly under attack. Use your arsenal of weapons and your wits to destroy the attacking ships. Use your skills to strategically dock with your home base. Be a Space Fox and master the levels of the galaxy. This game is rated a WOW!! **Order product number SV70 for only $30.**

Airball™

Airball™: Can you maneuver a balloon through a maze of spears, broken glass and other pointed objects without popping it? That's just part of the challenge of this game. The object is to bounce the balloon through a haunted castle. You must first find the spellbook and then other challenges await you. Just don't let your balloon pop! **Product number BR80 is $20.**

Other Great Apple IIGS Programs

Title	Member's Price	Non-Member's Price
Mindscape		
Balance of Power 1990	$15	$20
Captain Blood	$15	$20
Deja Vu I or Deja Vu II	$10	$15
Shadowgate	$10	$15
Electronic Arts		
Bard's Tale I or II	$15	$20
Deluxe Paint II	$10	$15
Instant Music	$10	$15
Instant Synthesizer	$15	$20
Keef the Thief	$15	$20
Skate or Die	$10	$15
The Immortal	$24	$30
Zany Golf	$20	$25
Interplay		
Dragon Wars	$25	$30
Neuromancer	$10	$15
Sierra On-Line		
Black Cauldron	$20	$25
King's Quest I, II, or III	$20	$25
Gold Rush	$20	$25
Manhunter – New York	$15	$20
Mixed Up Mother Goose	$15	$20
Police Quest	$20	$25
Silpheed	$15	$20
Smart Money	$35	$45
Space Quest I or II	$20	$25
Thexder	$15	$20
Microillusions		
Blackjack Academy	$20	$20
Fire Power	$20	$20
Accolade		
Bubble Ghost	$10	$15
Fastbreak	$10	$15
The Duel: Test Drive II	$15	$20
Hardball!	$10	$15
Jack Nicklaus' Golf	$20	$25
Mean 18 Golf	$20	$24
Serve and Volley	$15	$20
4th & Inches	$15	$20

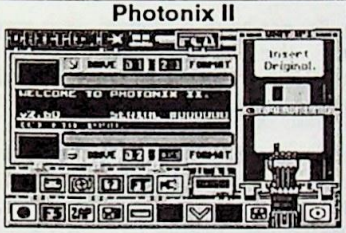
Title	Member's Price	Non-Member's Price
Software Toolworks		
Chessmaster 2100	$20	$20
Gin King/Cribbage King	$15	$20
Hunt for Red October	$10	$15
Life & Death	$15	$20
Mavis Beacon Typing	$15	$20
Activision		
Clip Art 3-Pack	$25	$30
GBA Basketball	$20	$20
Hacker II	$20	$20
The Last Ninja	$20	$20
Music Studio	$34	$39
PaintWorks Gold	$34	$39
Shanghai	$20	$20
California Dreams		
Club Backgammon	$8	$10
Triango	$8	$10
Tunnels of Armegeddon	$15	$20
Vegas Craps	$10	$15
Vegas Gambler	$10	$15
FTL		
Dungeon Master	$20	$25
Britannica		
Gnarly Golf	$7	$9
Great Western Shootout	$10	$15
Jigsaw!	$10	$15
Merit Software		
Transylvania III	$10	$12
Seven Hills Software		
Express	$26	$26
SuperConvert	$26	$26
Shoebox	$39	$39
DreamWorld Software		
DreamGrafix	$75	$75
Westcode Software		
Pointless	$55	$55
Apple Computer		
System 6.0 with Manuals	$39	$39

Free Shipping & Handling

Crystal Quest™

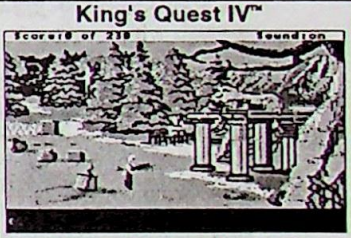
Crystal Quest™: Your job is to collect all the crystals while avoiding mines, bullets, and 12 different kinds of nasties which chase you through more than 40 different waves! There are nasties that hide in corners and gush bullets like a hail storm. There are nasties that come at you like a cruise missile.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

Photonix II



Photonix II™: In Speed We Trust! That's the motto of the FTA and in this fantastic disk duplication program, the FTA lives up to their motto. This program will copy a 3.5" disk in less than 30 seconds. It's by far the fastest disk copier that we've ever seen. Plus it has lots of other useful utilities. **Product number FT72 is only $20 for non-members or $15 for members.**

King's Quest IV™



King's Quest IV - The Perils of Rosella™: Help the Princess Rosella save her ailing father's life. Discover strange lands and reveal hidden secrets. This 3-D animation contains exotic characters, hundreds of locations to be explored. Can you capture the unicorn? **Product number SL54 is only $25 for non-members or $20 for members.**

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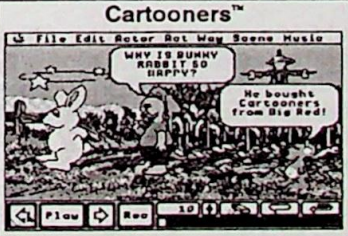

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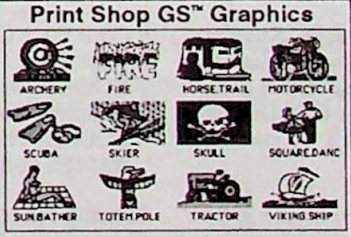

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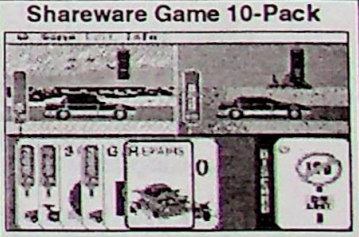

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How to Use your GS+ Disk

The first thing you need to do is **make a backup copy of your *GS+* Disk with the Finder!!!** 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 v5.0.4 or later. (Note that several of the programs on this issue's disk *require* System 6! For more information, refer to the article for each individual program.) 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 *GS+* Disk. (From the Finder, you would double-click on the Installer icon.) *It is* extremely *important that you use the Installer that is on your* 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 left-hand window, and the disk you want to install it on in the right-hand window. Then click on the Install button. For more information on how to use the Installer, refer to your IIGS owner's manual.

Before you attempt to use your *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 EGOed 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 on your *GS+* Disk 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.)

- 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. Simply 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 EGOed finishes loading, select Open from the EGOed File menu and then insert your backup *GS+* Disk into a drive. You should then see a list of the files and folders on the *GS+* Disk.

- Open the **EGOed** 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 Panel Devices, and other system files that come on the *GS+* Disk.

Towards that end, we have prepared the following list of "expendable" files that you can "safely" remove from your System Software v5.0.4, or 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 we are presenting 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 v5.0.4

The standard System Software v5.0.4 **:System.Disk:** has 12K available on it. The following items can be deleted from the root directory of the disk: **Tutorial** (11K), and **AppleTalk** (0K).

After this, things get a bit tricky. Other files that you can safely delete depend on your *hardware setup*. If you have a ROM 01 IIGS, you may delete the file ***:System:System.Setup:TS3** (15K). If you have a ROM 03 IIGS, you may delete the following file: ***:System:System.Setup:TS2** (41K).

If you do *not* have a modem, you may delete the following files: ***:System:CDevs:Modem** (6K), and ***:System:Drivers:Modem** (3K).

If you do *not* have a printer, you may delete the following files: ***:System:CDevs:Printer** (6K), ***:System:Drivers:Printer** (3K), ***:System:Drivers:Printer.Setup** (1K) and ***:System:Drivers:ImageWriter** (26K). If you have a printer other than the ImageWriter, you can still delete the ***:System:Drivers:ImageWriter** file (unless your printer is an ImageWriter compatible).

If you do *not* have a 5.25-inch drive, you may delete the following file: ***:System:Drivers:AppleDisk5.25** (7K).

Removing some or all of these files should give you ample room (up to 90K on a ROM 01 IIGS and up to 116K on a ROM 03 IIGS) on your startup disk to install EGOed or any of the other system utilities on your *GS+* Disk.

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 the file ***: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 other 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 file: ***:System:Drivers:AppleDisk5.25** (8K).

If you do *not* have a printer, you may delete the following file: ***:System:CDevs:Printer** (5K).

Finally, if you have deleted the files ***:System:CDevs:Time**, and ***:System:CDevs:Printer**, you can also delete the file ***:System:Desk.Accs:ControlPanel** (19K).

Removing some or all of these files should 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 on your *GS+* Disk.

Note however, that you will *not* be able to print from EGOed or any other desktop program when using a 800K, System Software v6.0 boot disk.

Small Talk

Beginning with *GS+* V2.N6, we began using GS-ShrinkIt to compress the *source code* on the *GS+* Disk. To extract the source code files from their archives, you will need to use GS-ShrinkIt v1.0.6 or later. If you do not have GS-ShrinkIt, check with your local user group or give us a call here at *GS+* Magazine and we will help you locate a copy.

GS-ShrinkIt is* not *required to run any of the programs on the* GS+ *Disk! It is only required if you want to look at the source code that is used to create the programs!

What's On The Disk

The programs on this disk will work under System Software v5.0.4 unless explicitly stated that System Software v6.0 is required. There are 17 items in the root directory of this issue's disk. They are:

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

DISKLESS?

If you did not receive the disk with this magazine and have decided you would like to have it, just send a check or money order for $6.50 to:

GS+ V3N6 Disk Offer
P. O. Box 15366
Chattanooga, TN 37415-0366

Or call us at 1-800-662-3634, Monday through Friday between 9 a.m. and 6 p.m. Eastern Time, to bill it to your MasterCard or VISA.

Tennessee residents add 7.75% sales tax.
Price includes First-Class delivery to the U.S., air mail to Canada and Mexico, or surface mail to all other countries. Add an extra $3.50 ($10 total) for air mail to all other foreign countries.

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

can find out about it in this file. Please try to read this file before you attempt to use the *GS+* Disk. This is a plain text file.

ControlManager
This folder contains the Control Manager demo program and source code that accompanies this issue's "Working With The Toolbox" feature.

The Control Manager demo program requires System Software v6.0.

Demo.3D.III
This folder contains the demonstration program discussed in "Introduction To 3-D Graphics, Part 3: Speeding Things Up." This program can be run directly from your backup copy of the *GS+* Disk. To run this demo, simply open this folder and double-click on the **Demo3D** file. This folder also contains the source code for the demonstration program in the GS-ShrinkIt archive, **ThreeD.SRC.SHK**.

EGOed
This folder contains EGOed v1.7. EGOed is a New Desk Accessory text editor that allows you to read and print ASCII, AppleWorks (Classic and GS) and Teach files. This folder also contains complete user and technical documentation for EGOed v1.7 in the files **EGOed.Docs** and **EGOed.1.7.Tech**. The **EGOed.Docs** file is a plain ASCII text file while **EGOed.1.7.Tech** is a Teach file. EGOed must be installed on a startup disk with at least 60K free.

EGOed v1.7 requires System Software v6.0.

ExtraBits
This folder contains the Extra Bits control panel and its source code (in the GS-ShrinkIt archive **XtraBit.SRC.SHK**).

Extra Bits requires System Software v6.0.

Feedback
This is the Feedback form for this issue. Fill it out, and send it to us to let us know what you thought of this issue of *GS+* Magazine and what you want to see in future issues of *GS+* Magazine. This is a plain ASCII text file. (Note that we did not have room for a printed Feedback form in this issue of *GS+* Magazine. If you do not get the *GS+* Disk, but know someone that does, ask them to print you out a copy of this file so that you may fill it out and send it in.)

Glossary
This is a plain text file containing all of the terms defined in the past installments of our "Glossary" department.

Icons
This folder contains Finder icons used by the various programs on the *GS+* Disk.

Among these is the file, **ReplicatorIcons**. These icons are for the Replicator program and, when Replicator is installed on your boot disk in a folder called **Replicator**, allow you to open Replicator documents simply by double clicking on them. The **ReplicatorIcons** are only useful under System v.5.0.4—System v6.0 and later will make use of the icons that are actually inside the **Replicator** application.

Installer
This is the Apple IIGS Installer. Run it to install the other programs on this issue's disk.

For more information on using the Installer, refer to your IIGS owner's manual.

Make.v2.0
This folder contains a GS-ShrinkIt archive containing version 2.0 of the Make utility from V3.N4. For more information on using Make v2.0, read the **Make.Docs** file. Make v2.0 is used to compile the programs on the *GS+* Disk. If you do not plan to compile the programs, you can forget this folder even exists.

OSLibrary
(If all you want to do is *run* the programs on the *GS+* Disk, forget that this folder even exists. You don't need it). This folder contains a GS-ShrinkIt archive of the OS Library. This library is needed to recreate several of the programs on this *GS+* Disk. This archive also contains documentation for OS Library in the file **OSLibrary.Docs**.

Problem.Form
This is the standard *GS+* problem report form. If you have a problem with one of our programs, *please* fill out this form and send it to us. This is a Teach file. You may use EGOed to view it.

QuickDA
This folder contains the Quick DA control panel and its source code (in the GS-ShrinkIt archive **QuickDA.SRC.SHK**).

Also in this folder is a *preliminary* file type note describing the format of a Quick DA configuration file.

Quick DA requires System Software v6.0.

QuickFolder
This folder contains the Quick Folder Finder extension and its source code (in the GS-ShrinkIt archive **QFolder.SRC.SHK**).

Also in this folder is a *preliminary* file type note describing the format of a Quick Folder configuration file.

Quick Folder requires System Software v6.0.

Replicator
This folder contains version 1.3 of the Replicator program. Replicator can be installed on any disk and in any folder (you can even run it from a backup copy of your *GS+* Disk if you wish), but we recommend that you install it on a startup disk with at least 70K free.

This folder also contains the file **RepTech.Docs**. This is a Teach file containing technical and programming information about Replicator. There is also a set of Replicator icons, which are described under "Icons" above.

Scripts
This folder contains all of the scripts that are used by the Installer in order to automate the installation of the files from this *GS+* Disk.

Technical.Notes
This folder contains a GS-ShrinkIt archive containing the various Technical Notes that were mentioned in this issue.

These technical notes are copyrighted by Apple Computer, Inc. But, they may be freely distributed as long as the copyright notice inside each file remains intact.

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! *GS+*

Total Hard Drive Mastery!

Desktop Interface

Conforms to the Apple Human Interface Guidelines making each function simple and intuitive to use. Takes advantage of many System 6.0 interface enhancements.

Batch Command Functions

Common tasks are grouped together as 'command buttons'. Just select the folders you want to work with and click the appropriate button...

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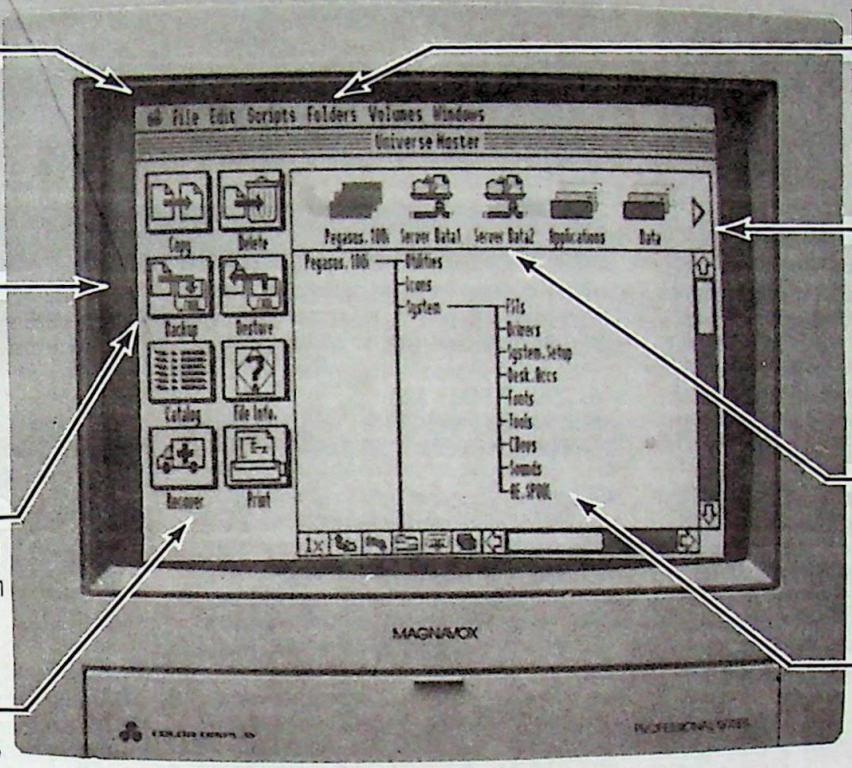
Create backup scripts that can be executed later either within Universe Master or from the Finder™ desktop...

Advanced Functions

File attribute modification, file undeletion, and extensive volume printouts are just a simple mouse click away...



Folder Manipulation

Edit folder contents at the file system level. You can also sort folder entries based on multiple criteria.

Volume Management

Validate volume contents and repair any file system corruption. Other functions include media analysis, data optimization, volume reconstruction, and a block level editor.

Full GSOS Support

Perform operations on any device recognizable by GSOS including network file servers.

Hierarchical Display

View the contents of your volumes hierarchically as stored on disk. Select a folder or hierarchical branch just by clicking on it.

Introducing Universe Master™, a whole new experience in disk management utilities. Universe Master is the first Apple IIgs utility that seamlessly integrates all of the disk management capabilities you will ever need into a single, desktop based, System 6.0 specific application. Universe Master opens the door onto a whole new world of disk management. No longer will you postpone backups because they are slow and cumbersome... No longer will your data become disorganized and scattered across redundant folders... No longer will you live in fear of corrupted file systems. Universe Master makes managing your hard drive safe, effective and downright fun. If you have an Apple IIgs and a hard drive, why take chances with anything else?

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(415) 459-7788

ROM 01, 7MHz/16K ZipGS, 4.25MB RAM, 80MB HD, Stereo Card, Conserver, 2 3.5-inch & 1 5.25-inch floppy drives, Epson LQ-800 & Okimate 20 printer. 100's of programs of all types, joystick: $1,500 Or best offer.

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Hampton Bays, NY 11946
(516) 728-3435

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

The deadline for inclusion of a classified ad in the next issue (Volume 4, Number 1) of *GS+* is September 15, 1992. Simply fill out a photocopy of the coupon below; or 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.

GS+ Classified Ad Order Form

Ad copy: _____

Number of issues to run: _____ Number of words: _____ Total enclosed: $_____
Name: _____ Phone: (_____)_____-_____
Address: _____
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Reviews

ZipGS (10MHz CPU/64K Cache)
Version GSX1.02

Retail Price: $429
Available only direct from Zip Technology, not sold through any dealers. 30 day money back guarantee and 1 year warranty.

Zip Technology
5601 Slauson Ave.
Culver City, CA 90230
(301) 337-1734 Technical support
(800) 937-9737 Orders

Reviewed by Greg Zimmerman

The ZipGS 10MHz, 64K Cache (10/64) accelerator card is the fastest rated card containing the largest cache available for the Apple IIGS. [Editor's Note: Zip has just announced the availability of a 14MHz ZipGS. For more information, contact Zip Technology.]

It is a faster version of the other accelerator cards that Zip advertises for sale as shown in the following chart:

Speed	Cache Size	Price
7MHz	8K	$149.00
8MHz	16K	$198.90
9MHz	32K	$258.90

These prices are the retail prices suggested by Zip Technologies. The 8 and 9MHz cards are available from mail-order companies and other resellers, possibly at lower prices.

Combinations of speed and cache other than those listed above are available. For example, you could get an 8MHz card with a cache size other than 16K. Call the company for pricing.

Technical support is via a recently installed 24-hour message service. It is not toll free, but it's not a 1-900 number either. Users can access this support at any hour of the day or night and choose from a menu of categories to get to pre-recorded answers to most common questions. Talking to a person instead of a machine is no problem either, it's just that it can only be done during normal business hours.

I found the support people at Zip to be polite, knowledgeable, and anxious to answer questions. Of course, the newly installed message service for tech support will be very helpful for users that have questions when most people do—at night and on the weekends when you can't reach anyone at the company.

What You Get For Your $429
When your ZipGS 10/64 card arrives, you get the card, a chip puller, one software disk, and a manual.

The chip puller is a handy little tool that makes the job of prying out the chip you are going to replace on the motherboard a lot easier.

The manual is a photocopied affair that, in spite of its cheap looks, does explain the installation and the operation of the card in a very straightforward and satisfactory manner.

The disk contains software which is not required to operate the card, but which can make the operation of the card a lot easier. It also contains a HyperStudio-based demonstration of how to install the board in your IIGS.

The card itself looks like a rather simple, well-designed piece of work, containing very few chips and parts, especially when compared to other cards that you may be used to seeing in your IIGS. This is a good sign, because it means less chips and parts to fail. It should also indicate cooler operation, though I made no effort to empirically test the temperature range during operation in the IIGS.

What It Does
The ZipGS 10/64 speeds up the operation of your IIGS considerably.

But along the way to faster operation, Zip has loaded the card and software with plenty of features and options to allow each user to customize, to a degree, the operation of their system in conjunction with the card.

The operation of the card is controlled by DIP switch settings on the card. But the included software enables you to install a CDA or a control panel, either of which can control the operation of the card. There is also an Init that allows you to override the settings of the DIP switches during startup, and an application that allows you to configure the Init.

For example, you may choose which slots to accelerate. Some cards and functions just don't work right, or don't work at all, if they are accelerated past the IIGS's normal speed. While this will be a rare occurrence, this feature allows you to continue to use those cards or functions without having to slow down your whole system if you come upon this problem.

You can also adjust system speed on a sliding scale all the way up to the full 10MHz, you are not just left with the option of "on" or "off" for acceleration. This may be helpful for some games that are impossible to play at 10MHz. There are also some miscellaneous adjustments that the card allows you to make which deal with areas that can cause compatibility problems if the acceleration of particular functions is not handled properly. Again, having to use these features would be the exception rather than the rule, but they would certainly come in handy if a problem does arise.

Having all of these ways to make these adjustments (DIP switches and Init, CDA, control panel) is a great user convenience which contributes to the ease of use of the board. Also, the number of possible adjustments which can be made makes it easier to achieve compatibility should a conflict rear its head with your hardware or software.

The HyperStudio-based demonstration of how to install the card is something that can be very helpful, particularly in conjunction with the explanation in the manual. Considering the two different explanations which Zip gives you, installing the board should be relatively painless, even for the first time "chip puller."

The ZipGS 10/64 can be installed in slots 1 through 3, and with a special cable (available from the company for $5), it can be installed in slot 4. I installed mine in slot 3 and had no problems of any kind.

One last feature I'd like to mention is the inclusion on the card of a storage socket for your old 65C816 CPU chip. This feature only comes in handy when you have to take the card out and replace it with the original CPU, but this way you won't have to try and remember where the heck you put the chip. I myself have spent hours looking for things that fit in the category of "I know exactly where I put it," so having this little storage spot on the card is a nice feature.

How Fast Does It Go?
Just how fast things move along for you will, of course, depend on your system setup—which is why I want to take a minute to tell you a few things about mine. Different systems will get different results, and I know that the timing chart which follows is dependent on my specific system. For example, I have an Apple II

High-Speed SCSI card as my hard drive interface. I know that if I had a RamFAST/SCSI card instead, that the results of some operations would be even faster. I also have System Software v6.0, with a system folder that is 4.5MB in size. A smaller system folder, fewer desk accessories and Inits to load, etc., would result in some operations being performed faster, just as a larger amount of system stuff to load would result in slower operation in some areas.

So, the relevant information on my system is: ROM 01, 4MB of DMA compatible RAM, a TMS 105MB external hard drive, an Apple II High-Speed SCSI card, and System Software v6.0.

The comparisons shown in Figure 1 are for the IIGS running at its regular "fast" speed of 2.6MHz, the IIGS with a 7MHz/8K Cache TransWarp GS installed, and the IIGS with the ZipGS 10/64 card installed. All times are in seconds.

Looking at any one of these tests could be misleading depending on your setup and the way in which you use your IIGS. But looking at them as a group, it is clear that a IIGS equipped with a ZipGS 10/64 is measurably faster in overall operation, and in just about each specific kind of operation, than a IIGS equipped with a 7MHz/8K cache TransWarp GS.

(By the way, if you're interested in a real "Apples and Oranges" comparison; on a 16MHz Macintosh LC, with a 25MHz math-coprocessor installed, a restart took 51 seconds, launching Microsoft Works from the Finder took 11 seconds, and duplicating a 4.5MB folder with 116 items in it, took 85 seconds.)

I used the ZipGS 10/64 for some time, trying it out on dozens of different software programs and also exchanging and using different cards in the various slots of the IIGS. I found no compatibility problems, though I certainly did not test all software and hardware that is out there in the market today.

Zip says that some users of ZipGS cards that also use PC Transporters can experience a crashing problem under a very specific circumstance. This problem is said only to occur if you have a ZipGS, a PC Transporter, and are using Transdrives to copy files in DOS mode. I do not have a PC Transporter, I do not have Transdrives, I do not copy files in DOS mode, and I did not experience this problem. Because it is extremely unlikely that I (and most users) ever will experience this problem, I consider it extremely minor. The company reports that if any such problem does occur, disabling the card while copying files in DOS mode using Transdrives will solve the problem.

Other Stuff

All of the slower ZipGS boards are upgradeable to higher speeds and cache sizes. Cache upgrades (more RAM) are simply mailed to the user for self-installation. Speed upgrades require the card to be returned to the company.

Did I mention anywhere that according to the company, Zip has also delivered some boards that are faster than 10MHz and that also contain very fast 64K RAM caches? Zip indicated that these boards, up to 12MHz, may be available for special order depending on the availability of parts. If you are interested in one, you should call the company for details.

Should You Buy The Thing?

Buying the ZipGS 10/64 is certainly a good way to speed up your IIGS. The company is very helpful, the board appears to be very well designed, and it works perfectly in normal operation.

About the only thing that I would think about would be the price. The 7MHz/8K ZipGS is only $149. This is a great bargain. The 10MHz/64K ZipGS will run faster than the 7MHz/8K card, but I don't think it will run nearly three times as fast, even though it costs nearly three times as much. Here's why . . . .

All computers, including the IIGS have bottlenecks that cannot be overcome no matter how high you pump up the MHz of the CPU. I/O and disk functions in particular are a bottleneck area that reach their speed limits with a IIGS long before you get to 10MHz. Look at Figure 1 and see for yourself the DiskTimer GS readings for the TransWarp GS and the ZipGS for Multi-Block reads, or for verifying the 31.2MB partition. Those readings show that further increases in MHz above a certain point do nothing to accelerate those functions. The bottleneck level is reached before you get to 10MHz, and increasing speed to 11MHz or 12MHz probably won't increase that specific area of performance.

On the other hand, many performance areas have not reached their bottlenecks at lower speeds and will continue to benefit from increases in MHz.

So as you increase the MHz of the CPU, you get diminishing overall increases in system speed as you hit the limits of performance in different areas. You still go faster overall because many areas continue to benefit from increased speed, but you don't get the same bang for the buck out of the last few MHz increases as you do out of the first few.

With this in mind, if you want to be computing as fast as possible on your IIGS, the ZipGS would seem to me to be the way to go. It's a well-designed, smooth operating piece of hardware that is backed up by a company that in my experience is anxious to do anything within reason to have satisfied customers.

Summary

My IIGS feels like it's really moving along with the ZipGS 10/64 installed. Window opening, scrolling, you name it; it seems like it's all going faster. My overall system speed in typical use is significantly increased, and that saves me time and frustration.

I like this card a lot. And after talking to different people at Zip on a variety of subjects, both as a reviewer and as a "customer," I like Zip too.

If you want to accelerate, and you have the money to spend, I say buy the ZipGS 10/64. It does exactly what it's supposed to do, and it does it smoothly and transparently. *GS+*

Figure 1

	"Fast" 2.6MHz	TransWarp GS 7MHz/8K	ZipGS 10MHz/64K
"Real-world" Tasks			
Run AppleworksGS from Finder	21	12	9
Restart from shutdown screen	74	56	50
Verify 31.2MB Hard Disk	76	60	60
Duplicate 4.5MB folder (410 items)	480	298	275
DiskTimer GS v2.0 Results			
Single Block Read	32	25	15
Multi-Block Read	25	20	20
Seek	18	15	9
Adapter Speed	18	14	9

Gate
Programmed by Bright Software

Typical mail-order price: $30.00
Not copy protected
Requires one 3.5-inch disk drive, at least 1MB of RAM

Seven Hills Software
2310 Oxford Road
Tallahassee, FL 32304-3930
(904) 575-0566

Reviewed by Mark Ranes

Just when IIGS owners thought they'd have to buy a Super Nintendo to enjoy a new adventure game, along comes Gate! Gate was written in France by Bright Software and was recently picked up for distribution in the United States by Seven Hills Software. Gate is supplied on two 3.5-inch disks and includes a short but useful manual. Programmed in the familiar Ultima style, Gate is an adventure game that blends action and puzzle solving. Gate features smooth maze scrolling and a lively background soundtrack.

Before starting game play, the user chooses between the English and French language version. Next, a choice of input device, either keyboard or joystick, must be made. It's too bad that the programmers didn't allow for these two choices to be set as default preferences. The fact that I am an English-speaking, joystick-using gamer will not change, yet I must make these selections each time I start up Gate.

After Gate loads, the screen is divided into five sections. The uppermost area contains information about your game progress. This area includes your score, the level of the maze you are currently in, and how much gold you've collected. Your score increases as you wipe out any of the various guards and monsters that you encounter. Gold is collected by walking onto treasure chests that are scattered throughout the mazes.

The bottom of the screen contains a meter that reflects the health of your character. If you touch guards or monsters, or you step onto certain shaded squares, your lifeline decreases. Stepping onto small bottle icons and spending gold in magic shops allows you to improve your health. When your lifeline is gone, the game is over.

The largest window shows an overhead view of the maze with the player in the center. The maze scrolls smoothly in the direction the player moves. Character movement is easy to control, as a single push on the joystick moves your character one space in the direction you choose. This degree of control is necessary to avoid stepping on squares that cause your character's lifeline to shorten. Gate can be played without a joystick by using the keys on the numeric keypad, but as in most games, game play is easier and more enjoyable with a joystick.

The upper right section of the game screen contains a picture of your character. His appearance changes as you upgrade your armor. Occasionally, he turns and faces a different direction or changes his facial expression, but it seems unrelated to actual game play and it adds little to the game. In my opinion, this area of the screen could have been put to better use.

The lower right portion of the screen contains information concerning your character's possessions. The maximum number of items your character can carry is displayed, as well as the numbers of the two types of keys you will collect during the game. Both red and yellow keys can be found in the mazes, and you must have the correct color key to open the right type of door. The number of lightning bolts (described later) that you possess is also tabulated in this area. A portion of the inventory screen area contains a box that remains empty until you step onto an area of the maze that contains an object. The object is displayed in this box along with its name. Other information, concerning your weapons and the number of magical amulets you possess, is also displayed in this box.

The game opens with your character trapped in the prison of a castle. Your job is to escape the prison by battling various enemies, collecting keys to open doors, and gathering items to increase your character's abilities. Each level of the initial maze is unique and several have puzzles that must be solved in order to move on to the next level. After completing the prison mazes, your character is teleported outside to the Land of Diversia where many more enemies must be defeated.

Diversia contains three castles (named after the programmers of the game) that must be conquered in order to receive passwords necessary to open the altars of the earth, air, and water. Each altar contains an amulet that must be placed in the proper place in order to travel to the Fire Plain. It is at the Fire Plain that you will meet and battle the evil Darg. Defeating Darg restores peace and harmony to the land of Diversia.

As you wander through mazes, certain squares contain different kinds of messages that are important to your progress in the game. Some squares contain parchments that, when stepped on, reveal clues you should record on paper for later use. Parchments only reveal their message once—the first time you step on them. Several squares contain hidden messages that often provide information for immediate use. Many of these squares give directions to help guide you through the mazes. Other squares hold small road signs that tell directions and help you navigate your way through the mazes.

At various points in the game you will encounter situations that require you to answer questions using information picked up elsewhere in the game. When you meet certain characters, they may ask you a question that, when answered correctly, opens a pathway to other areas of the maze. Also placed throughout the mazes are question marks, that like other characters, open new areas of the labyrinth to you. It is imperative that you keep written records of every piece of information that becomes available to you as you travel through Diversia. Without the correct answers to questions posed in the game, progress is limited. Often, upon answering questions correctly, there is no apparent change in the immediate surroundings, but the screen border will flash briefly, telling you that something has indeed happened.

Another important part of the game is digging holes to find gold, teleporters, and information. Pressing the *clear* key on the numeric keypad causes your character to dig in each square he steps on. Digging is a slow process, particularly when chased by enemies, so you'll want to dig only in those areas that might prove profitable. Scrolls and hidden messages provide clues as to what areas of the maze you should dig in.

Navigation through the various portions of the maze often includes the use of teleporters. Sometimes they are invisible, while other times they are clearly seen. As in other games of this sort, using teleporters can be time consuming and often tedious in nature.

Spread throughout the land are small, red, L-shaped buildings that are magic shops. Magic shops provide many things for a price. You can purchase food, keys, lightning bolts, increased item carrying ability, better armor, better weapons, and—what I purchased the most—perfect health for your character. Prices are high and gold is hard to come by (particularly in the earliest levels), so it is important to spend your limited resources very carefully.

One of the most valuable treasures that you will find in the mazes are small lightning bolts that allow you to terminate all enemies on the screen. This can be very useful when you encounter a portion of a maze with monsters coming at you from all directions. When enemies are safely blocked behind locked doors, it is best to scope out surrounding areas carefully and place your character in a screen area that holds the greatest number of enemies. Also to be considered in using lightning bolts is that some monsters cannot be slain using traditional weapons. They can only be destroyed by lightning. It is important to use lightning bolts judiciously. Also found scattered throughout the labyrinths are bombs and stars. Bombs cause enemies that shoot at you to be destroyed, and collecting stars causes monsters to flee from you. Both cause short-term effects that last only for a period of a few seconds. I found these two items to be relatively worthless. One other item that will prove very valuable is the blue potion bottle. Each bottle you collect allows you to carry one more item, such as keys and lightning bolts, in your inventory.

Many of Gate's options can be governed by use of its special control panel. Gate's control panel can be accessed at any time by pressing *escape*. The most useful function of the control panel is the ability to save and load games in progress. I found it useful to have multiple save disks handy, and users should have several formatted disks on hand. Only one game can be saved on a disk.

Concerns . . .

My greatest misgiving with Gate is the fact that it uses a nonstandard operating system. It *cannot* be installed on a hard drive and *must* be booted from a 3.5-inch disk drive. Many IIGS users have come to rely on hard drives for both speed and convenience, and Gate's nonstandard operating system proved to be quite a nuisance for me.

Another problem with using a nonstandard operating system is that to make working copies of Gate you must use a non-GS/OS volume copy program. Since GS/OS does not recognize Gate's operating system, the Finder will not allow you to copy the disks. Users must use a copy program such as ZZ Copy or Photonix. If you don't own a non-GS/OS volume copy program, you will have to play Gate using the original program disks.

Gamers with a single drive will be frustrated by the disk swaps necessary while recovering a previously saved game. After your character dies, the game requests the second disk to record your score, then the first disk to reload the game (including selecting the language and input device!), and then you must insert your save disk to get back up and running. This entire process clocked in at whopping 1 minute and 42 seconds! Most gamers will die many times, and this process gets old after the first few times. Again, if Gate was hard drive installable, this problem would be alleviated.

I also encountered a problem if the second game disk was write-protected when Gate tried to save a score to disk. Rather than ejecting the disk and telling the user to adjust the write-protect tab, the drive spun endlessly and forced me to reboot.

Open the Gate?

Should you buy Gate? If you enjoy adventure games programmed in the Ultima style, you will probably like Gate. It plays well, has a good story line, and includes many challenging puzzles. I enjoyed many hours of game play. In these times of IIGS software drought, Gate will be a welcome addition to many gamers' libraries. ***GS+***

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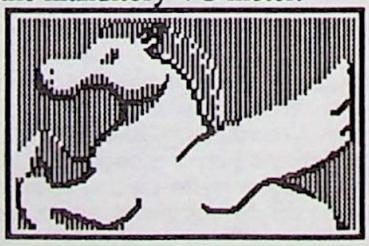

Either program still a mere $15. Please send check or money order to:
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Space Fox

Programmed by Bright Software

Typical mail-order price: $30.00
Not copy protected
Requires one 3.5-inch disk drive, at least 1MB of RAM, and a joystick

Seven Hills Software
2310 Oxford Road
Tallahassee, FL 32304-3930
(904) 575-0566

Reviewed by Mark Ranes

Space Fox is a new Apple IIGS arcade game written by Bright Software and distributed by Seven Hills Software. Space Fox is supplied on two 3.5-inch disks and includes a short nine-page manual. The game is hard drive installable and includes over a megabyte of SoundSmith music to accompany your flight.

Space Fox is a "shooter" type game where the player takes the role of a pilot in a futuristic spaceship. Your goal is to pilot your spaceship though ten levels of increasingly stronger enemies. In the tenth level, you must battle the strongest enemy of all, The Brain.

The game screen is broken up into three main areas. The top of the screen contains information concerning the level you are currently battling in, the number of reserve ships you possess, and your score. Also in this area is a meter that reflects how much fuel you are carrying. As you fly through space, your fuel level decreases, but by touching a ship enhancement bonus, you can pick up more fuel and even increase the size of your fuel tank. If your tank runs dry, your ship explodes and you lose all equipment and weapon enhancements you've collected since the last time you docked at a space station.

The bottom portion of the screen shows information about your weapon systems. It tells how many shots your weapon is currently capable of delivering, as well as the direction and the speed of your shots. Also in this area is a meter that reflects the level of shield energy available to your spaceship. Pressing button number one on the joystick activates the shields. Shield energy depletes quickly, so their use should be limited as much as possible. Shield energy regenerates very slowly when not in use. Both weapons and shields can be upgraded by collecting special ship enhancement bonuses that become available during the game.

The main area of the game screen shows a side view of your spaceship hurtling through space. You start the game with five ships. As you fly through space you will encounter many enemies and obstacles. Some enemies seem harmless, in as much as they can only hurt you if you crash into them. Other enemies will fire weapons at you. Some will fire only single shots that seem to home in on your location, while others fire many shots that travel out in all directions. The easiest enemies and obstacles are destroyed by a single shot, while others will require ten or more direct hits from your weapons to destroy them.

At the end of each level, you are given the opportunity to dock your ship at a space station. Docking at a space station can prove tricky, as the motion of the station varies at each level. If you don't pull your ship into the station perfectly, it will explode. So why bother to dock at a space station you ask? Docking records all weapon, shield, and fuel enhancements you've accumulated during the previous stage. If you choose not to dock at the end of a stage and your ship explodes, the replacement ship you receive will have the same characteristics as the spaceship you possessed when you last docked. Players can also choose the weapon configuration they wish to start the next stage with while docked. When you see the message telling you that your weapons have been disabled and docking is imminent, you should back off to the left side of the screen. Several times while I was playing Space Fox, the space station materialized directly over my spaceship, causing it to explode.

As I first played Space Fox, I was more concerned with survival than playing aggressively. I also earned very low scores and failed to get very far into the game. It is important for players to be aggressive and attempt to destroy as many enemies and obstacles as possible. Often a ship enhancement bonus will be revealed after you destroy an enemy. Also, most of the enemies attack in waves. If you annihilate an entire wave you will usually receive a ship enhancement bonus. In the earliest parts of the game this is extremely important, as it is the main way you can improve your weapon systems. Without increasing the number of shots you can deliver at one time, as well as the shot speed, you will not survive even the earliest stages of the game.

I would strongly suggest players turn off any accelerator cards before tackling Space Fox for the first time. Everything is already moving fast enough! In addition to blasting enemies out of space, players will need to be constantly in motion to avoid enemy fire and coordinate shield use when collisions are unavoidable. A IIGS running at 9MHz makes these combined tasks seem formidable.

Concerns

The graphics in the main action area of Space Fox are unimpressive. The ship you are piloting is only slightly longer than one-half inch in size and enemies are often somewhat smaller. Gunning down objects of that size is not always an easy task. The best graphics in Space Fox are shown between stages while docked at a space station, but they really don't add anything to the action portion of the game.

Another concern I have is that Space Fox does not restore the screen border color on exiting. While this is a simple cosmetic matter and really causes no problems, I find it irritating when programs don't give me back my machine the same way I gave it to them!

I also found myself wishing that some sort of save feature or password system was built into this game. Space Fox is tough! Most players will have to restart from the beginning of Space Fox many, many times before encountering the final battle with The Brain. Even experienced gamers will wish they could enter at the beginning of a previously conquered stage.

Bringing It All Together . . .

Space Fox is an extremely challenging game. Experienced arcade game players will welcome the challenge Space Fox provides. Some players may experience levels of frustration that might cause them to abandon the game before finishing it. The graphics are comparable to previous IIGS space shooters, but lack the detail I've come to expect in IIGS software. The background music in Space Fox is well composed and enhances gameplay.

Arcade game enthusiasts will find Space Fox to be a decent play, but the game lacks innovation and replayability. My teenaged nephew, an arcade animal, voiced many of my gameplay concerns after a session with Space Fox. He wanted more substance to the game. I hate to down play *any* new IIGS game software, but Space Fox is only an average game. It's not a bad game, but it becomes repetitive after a short period of time. ***GS+***

The Software Bargain Bin

Shareware Reviews
By Brian M. Winn

UtilityLaunch & UtilityWorks
Programmed by George R. Wilde

Shareware fees: $10-UtilityLaunch
$20-UtilityWorks
$25-both

Requires System 6.0, 1.25MB RAM
Download time (at 2400 baud): Approximately 1 hour and 25 minutes (including documentation).

grw Systems
24402 Broadwell Ave.
Harbor City, CA 90710

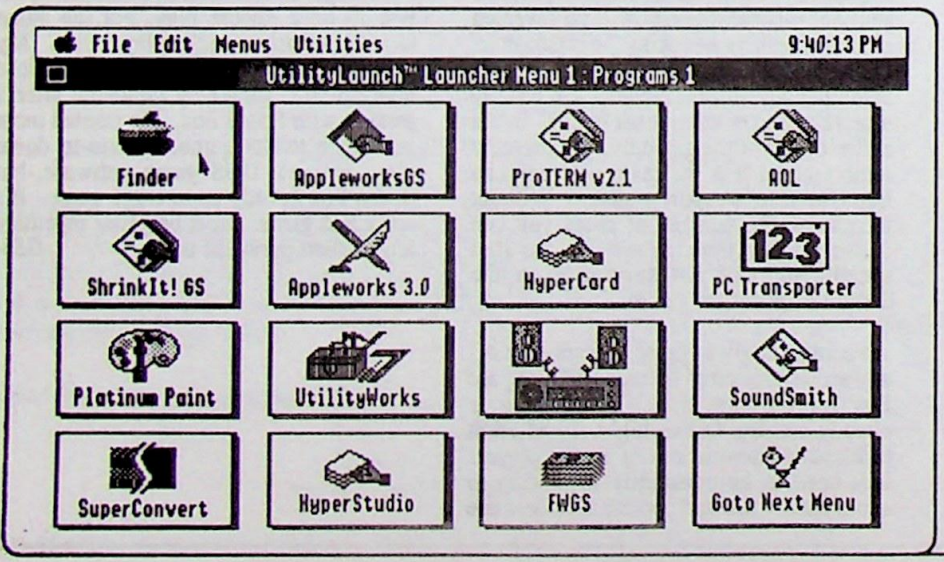
Drag Finder 6.0 To The Trash Can?

Andy Nicholas did a wonderful job on Finder 6.0. Don't use it! (Just kidding!) The Finder has many great uses, but it may not be the best choice for your startup application. UtilityLaunch may be a much better program for this purpose. UtilityLaunch is simply a launching program with a few utilities. (Intuitive, huh?) I have been a die-hard fan of the Finder and I thought I would never replace it with another launching program such as, gasp, Autopilot (from *GS+* V2.N5). This has all changed with the new version of UtilityLaunch.

When you run it, UtilityLaunch presents you with a launching menu. This menu will typically be composed of pushbuttons. These buttons represent preconfigured functions. The most basic action a function will perform is launching a program. Once the buttons are configured, you will never have to wade through folder after folder of files to find the one you want to run. Unlike the Finder, UtilityLaunch will launch almost all types of files, including SYS files, S16 files, BINary files, BASIC files, EXEcutable files, and, if you have a PC Transporter, it can even run your IBM programs! The buttons can be configured to do much more than simply launching an application, however. You can also set them up to turn your accelerator card off, boot to slot 5, purge memory, reconfigure the printer ports settings, and change the screen colors. And, even better, you can perform multiple tasks with just one pushbutton. For example, you can have a pushbutton that changes your ZipGS to 6.5MHz, changes the border color to black, and then boots to your non-GS/OS program in your 3.5-inch drive. Pretty nifty, eh? All the options you change upon launching a program will be restored when you return to UtilityLaunch.

UtilityLaunch allows you to set up over fifty of these launching menus. The program defaults to the first menu, but you can select other menus from the menu bar, or you can program the buttons on a menu to flip between menus. Each menu can contain either 16 or 50 buttons. The menus with 50 buttons are labeled with simple text descriptions. The 16 button menus allow you to use your favorite icons (taken from old-style icon files) on each button as well as a text description. Unfortunately, you can not use icons contained in rBundles.

The program also has a host of handy utilities. You can autolaunch a program on startup, such as AppleWorks GS, and when you quit from that program you will return to UtilityLaunch. You can set a password to lock people out of certain menus. There is a screen blanker to prevent screen burn-in. You can place the time and date on the menu bar. You can park the heads of your hard drive when you shut down your computer. And much more.



The Straight & Skinny

This program is very easy to use and set up, and the on-disk documentation is wonderful. Actually, I had it up and running before even peeking at the documentation. If you are a power user that changes your system settings often between executions of programs, or if you are a basic user that wants an easier way to launch your favorite programs than the Finder offers, UtilityLaunch may be for you.

The AppleWorks Of Utilities!

UtilityWorks takes over where UtilityLaunch leaves off. UtilityWorks contains almost every disk utility imaginable. George Wilde has clearly sculpted a masterpiece in UtilityWorks. While UtilityLaunch is geared toward any IIGS user, I would only recommend UtilityWorks for the more experienced IIGS user. The Finder's visual methods of performing disk utilities (click and drag) are much more visual than those used in UtilityWorks. However, UtilityWorks's interface allows you to achieve your desired actions much more quickly.

There are so many utilities in this application, I only have space to just touch on the most notable ones. To summarize briefly, the program performs disk, path, file, display, text, font, and general system utilities.

To Elaborate . . .

UtilityWorks performs all the filing utilities offered by the Finder plus a few extras. You can copy, delete, rename, move, verify, and undelete files (undelete only works on ProDOS disks), get info on a file, and change its file type. On the device level, you can copy, format, erase, rename a device (or volume), verify, and eject. UtilityWorks allows you to view the current prefixes, and even redefine them. There is a handy feature which allows you to display your files and folders in a hierarchical tree structure (similar to Copy II+). You can catalog directories and generate a catalog listing. You can backup and restore your hard disk. These utilities (with the exception of undelete files) are compatible with all file systems and file types supported by System 6.

UtilityWorks has extensive file display and editing capabilities. For the power user, there is an icon editor, a file or block editor, and a resource editor (not quite Genesys caliber though). It has been mentioned that most applications, unfortunately, do not yet have rBundles. UtilityWorks solves this with a utility which allows you to create rBundles for your old applications! UtilityWorks does not stop there, however. You can open and display many types of graphics files: pictures (SHR, packed, unpacked, GIFs, 3200 color), animations, fonts, icons, PrintShop graphic files, and more. You can open and display data files: ASCII text, Teach, Applesoft BASIC, AppleWorks Classic, Appleworks GS (though font, size, and style information is lost), WordPerfect, and APW Source files. UtilityWorks can also edit and create ASCII text and Teach files as well. The editor allows you total control over color, font, and even a ruler. This ruler (only one is allowed per document) allows the user to set line spacing, justifications, and margins. And yes, you can print files from within UtilityWorks.

UtilityWorks will also perform many system utilities. It will load Classic Desk Accessories (CDAs) and New Desk Accessories (NDAs). It can enable or disable any CDA, NDA, control panel (CDev), driver, or initialization file. UtilityWorks allows you to purge and view your system's current memory. You can also view a complete summary of system information, including tool set version numbers.

Enough!

Oh, did I mention that you can also display the time and date in the menu bar? Or that it has a screen blanker similar to the one in UtilityLaunch? Whew! I did not mention *all* the utilities, but I believe you get the idea. UtilityWorks is definitely one complete application. Serious IIGS users should definitely have UtilityWorks in their arsenal of utility software.

Hats off to George Wilde for his wonderful contributions to the IIGS. ***GS+***

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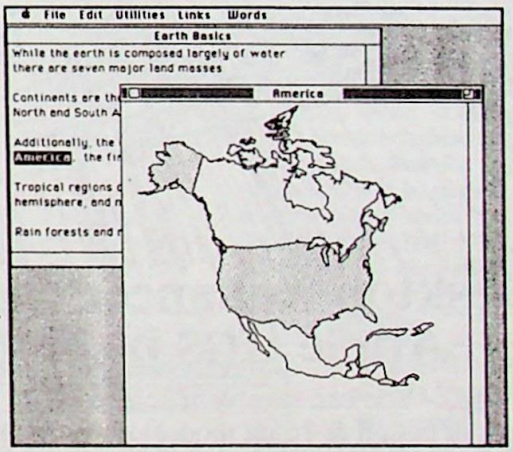

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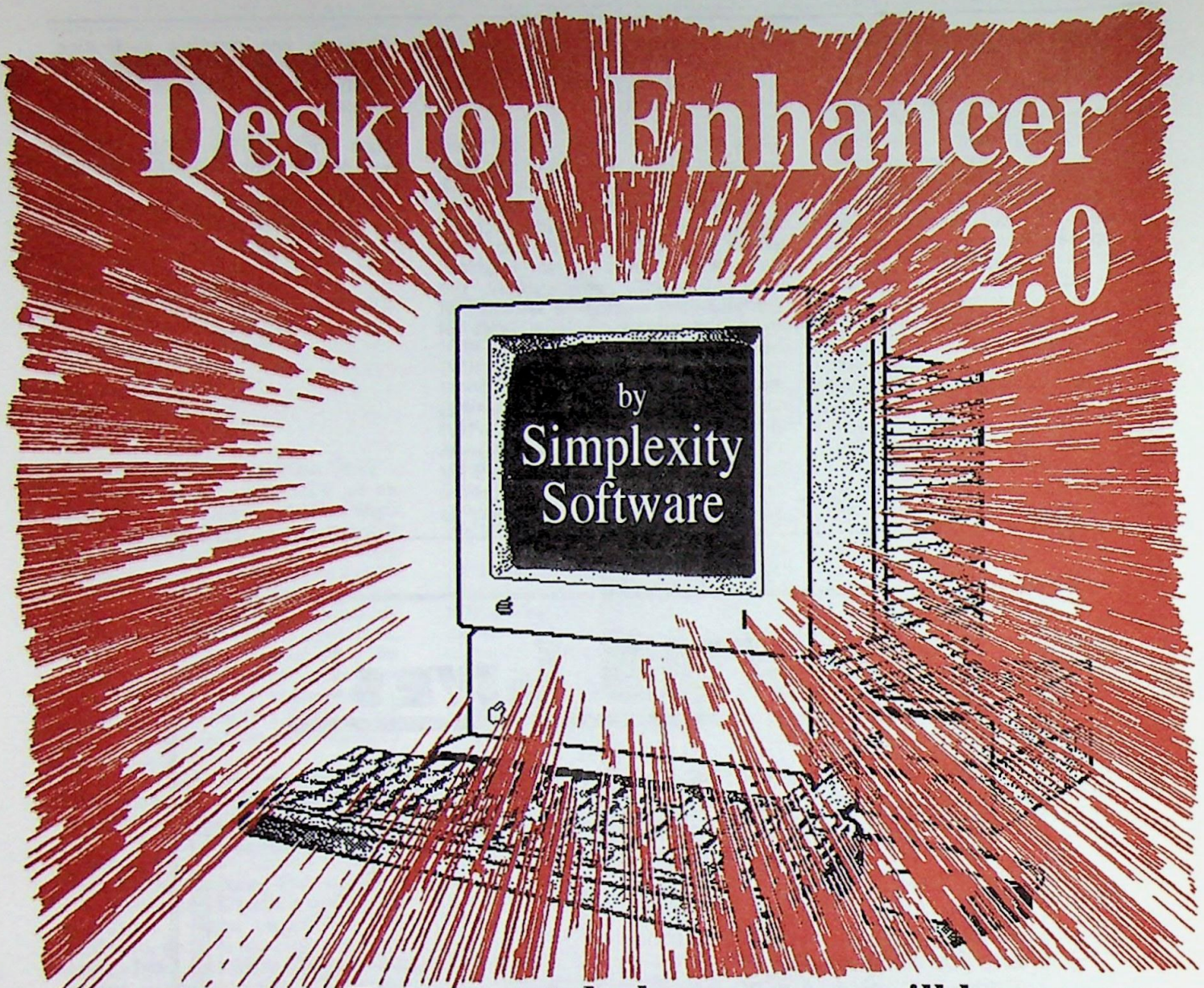
Desktop Enhancer 2.0



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Quick Folder

By Josef W. Wankerl

When I write my articles for *GS+* Magazine, I normally keep the text on our file server. I don't want to open several folders to get to my text file, though. I want a quick and easy way to open the folder where I keep my text from the Finder. "Drag the folder out onto the desktop," you say? What a great idea! The System 6 Finder will finally let me do that! But wait . . . the folder is on a file server. The Finder complains loudly when I try to put server items on the desktop. Looks like I'm stuck. What's that you say? I could use this neato-keen new Finder extension that I wrote, called Quick Folder, to add folders to my Extras menu? You say it will even remember my icon selections in the folder windows, and optionally, tell the Finder to open my selected icons so I can go straight to EGOed or my favorite word processor? What a great idea!

Some Installation Required

To install Quick Folder, use the Installer program on your *GS+* Disk. If you need help using the Installer, see the "How To Use Your *GS+* Disk" article in this issue. Quick Folder will then appear in the Finder's Extras menu the next time you run the Finder.

Working With Quick Folders

To add a Quick Folder to the Finder's Extras menu you must first have that folder open and its window must be in the front. Only *folder* windows are allowed to be added—icon information, trash, clipboard, system (desk accessory), and "about" windows are not allowed to be added. If the front window is not a folder window, the "Add A Quick Folder" menu item will be disabled. When you choose the "Add A Quick Folder" menu item from the Extras menu, the frontmost window's title will be added to the Extras menu. Quick Folders appear in the Finder's Extras menu underneath the "Add A Quick Folder" menu item. Quick Folders will have either an open folder, closed folder, or application icon to the left of its name. An open folder icon means that the Quick Folder has selected icons saved with it. A closed folder icon means that the Quick Folder does not have any selected icons saved. An application icon means that the Quick Folder has selected icons saved with it, and they will be automatically opened when the menu item is selected. Once you have added a Quick Folder to the Extras menu, simply select the menu item. The window will then open, and any saved icon selections for the window are restored, and optionally, the selected icons will be opened.

The Shift Key

When you select the "Add A Quick Folder" menu item from the Finder's Extras menu and have the shift key held down, the frontmost folder window will be added to the Quick Folder list; however, any selected icons in the window will *not* be added. When you select a Quick Folder from the Extras menu and have the shift key held down, the window corresponding to the menu item will open, but any saved icon selections for the window are *not* restored and, consequently, nothing will be opened. Basically, the shift key tells Quick Folder to ignore icon selections.

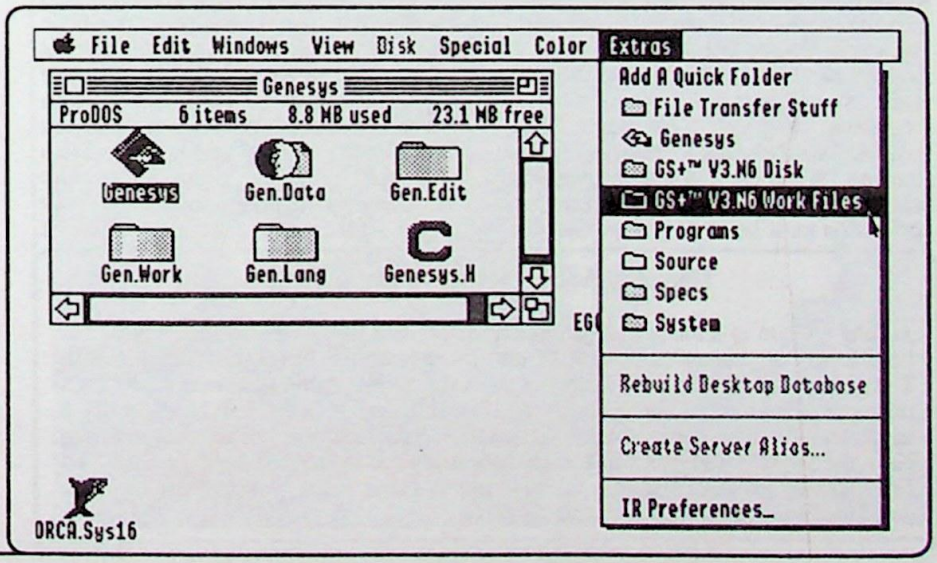
The Control Key

When you select the "Add A Quick Folder" menu item from the Finder's Extras menu and have the control key held down, the frontmost folder window will be added to the Quick Folder list. Then you will have the option to rename the corresponding Quick Folder menu item name and set the "Open selected icons" flag. When you select a Quick Folder from the Extras menu and have the control key held down, you will be presented with a dialog letting you rename the corresponding Quick Folder menu item name and set the "Open selected icons" flag. The folder window corresponding to the menu item will *not* be opened. Basically, the control key tells Quick Folder to present the edit dialog.

The edit window contains a LineEdit control where you type in the new name for the Quick Folder menu item. You can view the path of the window that will be opened by the menu item by pressing and holding the mouse button on the "View Folder Path" pop-up menu control. Selecting an item from the pop-up menu will not take any action. The pop-up menu is present only to show you the folder window's path. The "Open selected icons" check box in the edit window tells Quick Folder to automatically open any selected icons when that Quick Folder menu item is selected. If the Quick Folder does not have any saved icon selections, the "Open selected icons" check box will be dim. Clicking on the "Okay" button dismisses the dialog and changes the name of the Quick Folder to what you have typed in the LineEdit control. Clicking on the "Cancel" button dismisses the dialog and leaves the name of the Quick Folder menu item alone. Note that if you held down the control key when selecting the "Add A Quick Folder" menu item and you select the "Cancel" button from the edit dialog, that the frontmost folder window *will* still be added to the Quick Folder list and it will have its original name.

The Command Key

When you select a Quick Folder from the Extras menu and have the command (Open-Apple) key held down, the folder corresponding to the menu item you chose will then open, and any saved icon selections for the window are restored, just as always. Next, if the "Open selected icons" check box from the edit dialog is *not* checked, then the Finder's "Open" menu item will be chosen. If the "Open selected icons" check box from the edit dialog *is* checked, then the Finder's "Open" menu item will *not* be chosen.



Holding down the command key while selecting the "Add A Quick Folder" menu item from the Extras menu has no effect. Basically, the command key tells Quick Folder to reverse the setting of the "Open selected icons" check box from the edit dialog.

The Option Key

When you select a Quick Folder from the Extras menu and have the option key held down, the Quick Folder you selected will be removed from the Quick Folder list. Holding down the option key while selecting the "Add A Quick Folder" menu item from the Extras menu has no effect—the folder will still be added to the Extras menu.

The Configuration File

Quick Folder stores your assignments in a file called **QuickFolder.Cfg**. This file will most likely be present in your ***:System** folder. If you want a quick way to remove all the Quick Folders from the Extras menu, simply delete the **QuickFolder.Cfg** file.

And that's all there is to using Quick Folder! Hopefully, you will find it as useful as we have. If you want to know what makes Quick Folder tick, read on....

Programming Considerations

Quick Folder was written entirely in ORCA/C. In order to write a Finder extension, you need to get your hands on the *Programmer's Reference For System 6.0* (available from The Byte Works), which describes all of the requests that the Finder knows about.

Using Resources

In order for a Finder extension to use resources, it must start the Resource Manager. An excellent time to start the Resource Manager is when the `finderSaysHello` request is received. For every `ResourceStartUp` call, a `ResourceShutDown` call must be made. An excellent time to shut down the Resource Manager is when the `finderSaysGoodbye` request is received. When the Resource Manager is being shut down, the current resource application must be set to the memory ID of the Finder extension before the `ResourceShutDown` call is made. Whenever a resource is to be loaded, the current resource application must be set to the memory ID of the Finder extension. When the Finder extension exits, the current resource application must be set to what it was when the Finder extension was entered. Following those simple rules will keep the Resource Manager happy.

Quick Folder also opens its own resource fork at `finderSaysHello` time. Each time Quick Folder is called, the current resource application is switched to Quick Folder, which means that Quick Folder's resource fork is available. Quick Folder's resource fork is closed at `finderSaysGoodbye` time. Note that this is different from the handling of the **QuickFolder.Cfg** file, which is opened and closed only when needed. The contents of the **QuickFolder.Cfg** file are described in a *preliminary* File Type Note on your *GS+* Disk.

Starting And Stopping

When Quick Folder receives the `finderSaysHello` message, it adds the "Add A Quick Folder" menu item to the Extras menu, starts the Resource Manager, then calls the `AddQuickList` function to add the Quick Folders to the Extras menu. The current window variable is fudged so that it is not equal to the front window's grafPort, and finally the `FinderSaidHello` variable is set to true. When the `finderSaysGoodbye` message is received, the `DoGoodbye` function is called. `DoGoodbye` checks the `FinderSaidHello` variable, and if it's true, then the `RemoveQuickList` function is called to remove the Quick Folders from the Extras menu, the "Add A Quick Folder" menu item is removed, then the Resource Manager is shut down. Then the `FinderSaidHello` variable is set to false. The `FinderSaidHello` variable is used so that multiple `finderSaysGoodbye` messages are not destructive. When the `srqGoAway` request is received, the `DoGoodbye` function is called just to be extra sure that Quick Folder is ready to disappear. Note that the program that issued the `srqGoAway` request will remove *your* request procedure for you before it removes your program from memory. You do not (and should not) remove your request procedure when you accept the `srqGoAway` request.

Menu Item Enabling

Quick Folder accepts the `finderSaysIdle` request in order to maintain the status of the "Add A Quick Folder" menu item. When the front window is different than the last front window, then the new front window is checked to see if it is a system window. If there is no front window, or if the front window is a system window, the "Add A Quick Folder" menu item is disabled. If the front window is an application window, the `tellFinderGetWindowInfo` request is sent to find out what type of Finder window is in the front. If the front window is a folder window, the "Add A Quick Folder" menu item is enabled, otherwise it is disabled.

Menu Item Choosing

When the `finderSaysExtrasChosen` message is received, Quick Folder checks the menu item ID against the "Add A Quick Folder" menu item. If the "Add A Quick Folder" menu item was chosen, the `AddWindow` function is called to add the front window the the Quick Folder list, otherwise the `CheckListItem` function is called to see if a Quick Folder menu item was chosen. `CheckListItem` traverses the list of Quick Folder menu IDs, comparing them against the menu ID chosen. If a match does not occur, the `finderSaysExtrasChosen` request is not accepted. If a match does occur, the Option key is checked to see if the menu item should be removed. If the option key is down, the `RemoveWindow` function is called to remove the menu item from the Quick Folder list. Otherwise, the resource ID of the folder window's pathname is retrieved from the resource fork of the **QuickFolder.Cfg** file, and the `tellFinderOpenWindow` request is sent to open the window.

Adding A Quick Folder

To add a Quick Folder, the Quick Folders are first removed from the Extras menu. Next the **QuickFolder.Cfg** file is opened, or if it is not present, it is created and an initial number of Quick Folders resource (rListSize, ListSizeID) is added and set to zero. Next, the `tellFinderGetWindowInfo` request is sent to get the title and pathname of the frontmost window. A unique resource ID is then determined, and the window title is written out as an rPString, the window path is written out as an rC1InputString, the resource ID is added to the list of Quick Folders resource (rListRef,

Manually Adding Icons To Menu Items

Adding an icon to a menu item is a fairly simple task under System v6.0. First you need to add an `itemStruct` to the menu item with the `SetMItemStruct` call. The `itemStruct` structure simply extends the normal menu item record so that a reference to an icon can be maintained. Note that the `itemStruct` is not really a template, so you can't reuse the same `itemStruct` structure for multiple menu items. Next, the `SetMItemIcon` call is made to actually add the icon to the menu item. To find pointers to some standard icons to put in menu items, you can use the new `GetSysIcon` QuickDraw II Auxiliary call.

MasterListID) if it exists, or a new list of Quick Folders resource is created if it was not present, and the number of Quick Folders resource is incremented. If there are icons selected in the front window and the shift key is not held down, then the stringList containing the pathnames of the selected icons are also saved as an rWStringList and an rOpenFlag resource for the Quick Folder is set to zero and saved out. Finally the remaining Quick Folders are added back to the Extras menu.

Initially when I coded Quick Folder, I created a number of Quick Folders resource and set it to zero, and I made a zero length list of Quick Folders resource. Then I just resized the list of Quick Folders resource and did no special casing. However, this method made the Resource Manager crash with a fatal error $1E42 whenever the `CloseResourceFile` call (actually the `UpdateResourceFile` call—`CloseResourceFile` calls `UpdateResourceFile`) call was made. Error $1E42 is documented in the System 6 release notes, and means that a resource file's free list is corrupted. Changing the code around so I never had a resource that was a length of zero seemed to fix this.

Also, I originally wanted to use the List Manager's `SortList` call to sort the list of Quick Folders for me (without creating a list control). However, when I tried it, the Quick Folder list appeared to be randomly arranged. I asked Apple about the problem, and they said that the `SortList` call will only sort non-control lists that are pointers to pascal strings. Since I was sorting a list of resource IDs to rPString resources, the List Manager didn't like it. I could have created an invisible window, added an extended list control, and then called `SortList2` on the control, but that was more work than benefit. So I fell back to writing my own little Bubble Sort routine. The routine calls `CompareStrings` to actually do the string comparisons. And, for historical reasons just noted, the Quick Folder configuration file still contains an rListRef resource to keep track of the Quick Folder list instead of some custom resource.

Removing A Quick Folder

Removing a Quick Folder is fairly straightforward. First the resource ID of the `rPString`, `rC1InputString`, rWStringList, and rOpenFlag associated with the Quick Folder is determined. Next the Quick Folders are removed from the Extras menu. The rPString, rC1InputString, rWStringList, and rOpenFlag resources are then removed from the **QuickFolder.Cfg** file, and the number of Quick Folders resource (rListSize, ListSizeID) is decremented by one. If the number of Quick Folders is zero, then the list of Quick Folders resource (rListRef, MasterListID) is removed; otherwise, the resource ID is removed from the list of Quick Folders resource. Finally the remaining Quick Folders are added back to the Extras menu.

Adding Quick Folder Menu Items

The `AddQuickList` function adds the Quick Folders to the Extras menu and also creates the list of Quick Folder menu IDs. First, a handle for the list of Quick Folder menu IDs is obtained, and the number of items in the list is set to zero. Next, the **QuickFolder.Cfg** file is opened and the number of Quick Folders resource (rListSize, ListSizeID) and the list of Quick Folders resource (rListRef, MasterListID) is loaded. If the number of Quick Folders is zero, or if the **QuickFolder.Cfg** file does not exist, nothing is added to the Extras menu. If there is at least one Quick Folder, then the list of Quick Folders is traversed. For each Quick Folder, the rPString resource for the menu item is loaded and detached, and the `tellFinderAddToExtras` request is sent to add the item to the Extras menu. Next some memory for a MItemStruct is obtained, and the `SetMItemStruct` call is made to add the structure to the newly added Quick Folder menu item. The `GetResourceAttr` call is made to determine whether an rWStringList resource exists for the Quick Folder. If an rWStringList resource exists, the rOpenFlag resource is checked to determine whether an open folder or an application icon is to be used. If an rWStringList resource does not exist, a closed folder icon is to be used. Finally the `SetMItemIcon` call is made to add the appropriate Quick Folder icon to the menu item. (The pointer to the folder icon is obtained with the `GetSysIcons` call.) See the "Adding Icons To Menu Items" sidebar for a more detailed explanation of how to add icons to menu items. Finally the newly added menu item ID is placed in the Quick Folder menu item ID list.

Removing Quick Folder Menu Items

The `RemoveQuickList` function removes the Quick Folders from the Extras menu. The Quick Folder menu item ID list is traversed, and for each menu item, the `tellFinderRemoveFromExtras` request is sent to remove the menu item from the Extras menu. Then a `DisposeHandle` call is made on the handle to the item's `MItemStruct` and the handle to the item's pascal string name. After all the menu items have been removed from the Extras menu, a `DisposeHandle` call is made on the handle to the Quick Folder menu item ID list.

As usual, if you find a problem with this program, fill out the problem form supplied on your *GS+* Disk and let us know about it. ***GS+***

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Extra Bits

By Josef W. Wankerl

When Apple designed System 6, they threw in a lot of new features, some requiring parameters that are remembered in the battery backed-up RAM. Unfortunately, Apple didn't have time to design Control Panels for all of these battery RAM parameters. So I decided to do something about it. Extra Bits is a control panel that lets you change these parameters.

To use Extra Bits, use the Installer to install Extra Bits on your System 6 boot disk (Extra Bits will not work without System 6 or later), reboot, and choose Extra Bits from the Control Panels NDA. The Extra Bits window will appear and you can change these parameters.

Smooth Mouse Pointer Tracking

If you have an accelerator for your IIGS, or a video overlay card, you may notice that your pointer cursor flickers when you move it. Checking the "Smooth mouse pointer tracking" check box tells QuickDraw II to not use scanline interrupts to refresh the cursor. In English, this means that your cursor will not flicker anymore.

Show Icons On Boot

When you boot your computer, you'll most likely see a bunch of icons march across the bottom of your screen as system extensions make their presence known. If this annoys you, you can uncheck the "Show icons on boot" check box. Your system extensions will still install themselves, you just won't see their icons.

WaitUntil Scaling

System 6 is much more tolerant of accelerated systems. Sometimes on an accelerated system, actions will happen faster than a human can take them in. Important events, such as the scrolling of a scroll bar, the highlighting of a control, or the blinking of a menu item, are purposefully slow so that humans can take them in. The `WaitUntil` tool call is what is used to slow the system down for these actions. You can scale the `WaitUntil` tool call's wait time to suit your needs. The default value for the `WaitUntil` scale is 255 (0 is the same as 255). If you want to slow your system down, use a number between 2 and 254 for the scale. If you want to completely eliminate the delay caused by `WaitUntil`, use a value of one (1).

Of course, you may be wondering why you should fiddle with this `WaitUntil` scaling at all. What exactly does it affect that might make your system more responsive? Well, among other things, the `WaitUntil` scaling affects the speed of the following operations:

Control highlighting
Menu scrolling
Menu blinking
Scroll bar scrolling
Text scrolling
Whooshing rectangles

These are all minor things, but if they are *all* a bit faster, your overall system speed gets a bit faster too.

Install Debug CDAs On Boot

On ROM 03 computers, there is a battery RAM bit that, when set, will install two Classic Desk Accessories (CDAs) in your system when you boot. These CDAs are called "Visit Monitor," and "Memory Peeker," and are useful mostly for debugging. To get these CDAs to install automatically, you can check the "Install debug CDAs on boot" check box. (It's interesting to note that this bit has been around even before System 6, and Apple still hasn't provided a way for users to set it.) If you have a ROM 01 computer, you will not see the "Install debug CDAs on boot" check box since it does not work (at this time) on ROM 01 machines.

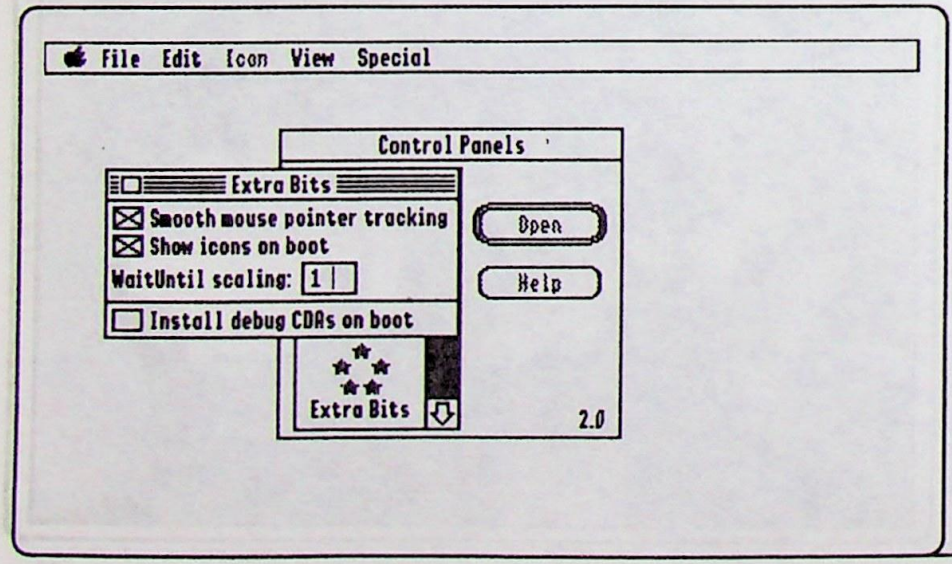
Source Code Trickery

Extra Bits is probably the most straightforward control panel that *GS+* Magazine has ever published. The value for `WaitUntil` scaling is taken from battery RAM parameter $60. The "Install debug CDAs on boot" check box is set from battery RAM parameter $59. If the high bit of parameter $59 is set, the debug CDAs will be installed. This is documented in the Apple IIGS Technical Note #26 (close to the bottom of the tech note), which is provided on your *GS+* disk. The two main check box controls are set from bits in the battery RAM parameter number $5F. The bits in that parameter byte defined are as follows:

0: alphabetize desk accessories (0 = do not alphabetize, 1 = alphabetize)
1: ShowBootInfo shows icon (0 = ShowBootInfo shows icons, 1 = ShowBootInfo does not show icons)
2: refresh cursor with scanline interrupts (0 = refresh with scanline, 1 = refresh without scanline)
3-5: reserved - should be set to 0
6-7: byte initialized (10 if byte is valid, any other combination if byte is invalid)

Extra Bits doesn't have a check box for the "alphabetize desk accessories" bit because it is handled by the General control panel that comes with System 6. Our friends at Apple tell us that the other bits were not addressed because they were either things that don't affect all users (bit 2 for example, really only benefits users with accelerators), things that are kind of obscure (like the `WaitUntil` scaling) or they were added after Apple "froze" the user interface for System 6 (which is the case for bit 1).

Extra Bits may seem trivial, but it does give some good examples of a "general" control panel, and you can actually get a tiny bit more speed out of your system by setting the `WaitUntil` scaling to one. If you find a problem, please send in the problem form on your *GS+* Disk. *GS+*



Quick DA

By Josef W. Wankerl

A little over a year ago, I was rather irked because there had been a rash of New Desk Accessories (NDAs) that provided Command (Open-Apple) key equivalents for opening themselves. In some weird instances, those Command key equivalents would conflict with application-defined Command keys. But, I liked the idea of being able to quickly open the NDA with a Command key. So, I wrote a really keen little program, Quick NDA (originally presented in *GS+* V2.N4), that would open NDAs with control-keypad keys. (That is, you hold down the control key while pressing a key on the numeric keypad and one of your NDAs opens.) Opening NDAs has never been the same since! With System 6, and the new `GetDeskAccInfo` Toolbox call, the potential presented itself for me to add the quick opening of *Classic* Desk Accessories (CDAs) as well. And so Quick DA was born. (Note that Quick DA is actually an entirely new version of Quick NDA, so the version numbers for Quick DA start at 2.0.)

Some Installation Required

To install Quick DA, use the Installer program on your *GS+* Disk. If you need help using the Installer, see the "How To Use Your *GS+* Disk" article in this issue. After you install Quick DA, you must reboot for it to be available.

Configuration

Before you can benefit from Quick DA, you have to configure it. Go to your favorite desktop application which supports NDAs, open the Control Panels NDA, and open the Quick DA control panel. This will present you with Quick DA's configuration window.

The controls you should be interested in right now should be the two pop-up menus, labeled "NDAs" and "CDAs," and the list control. The list control displays the keypad keys (as well as function keys) and the desk accessory assigned to each key. To assign a desk accessory to a keypad key, first select the keypad key (or function key) from the list, then select a desk accessory from either the NDAs or CDAs pop-up menu. As a standard, I suggest that everyone assign keypad-key 0 (zero) to the Control Panels NDA. To do this, first select "0" from the list control, then select "Control Panels" from the NDAs pop-up menu. This tells Quick DA that when you press control-keypad-0, you want to bring up the Control Panels NDA. You can configure other keys to other desk accessories in a similar manner.

Now that you have assigned the Control Panels NDA to keypad-key zero, why not test it? Hold down the control key and press the 0 (zero) key on the *keypad*. The Control Panels NDA will be brought to the front if it was already open, or if it was closed, it will be opened for you!

Even though you can assign quite a few desk accessories, I find that it's difficult to remember more than a handful. The only assignments I ever use are control-keypad-0 for the Control Panels NDA, control-keypad-1 for EGOed, control-keypad-3 for Transfusion, control-keypad-* for Nifty List, and control-keypad-+ for the GS/OS Exerciser CDA. (I assign all my NDAs to number keys on the keypad and all my CDAs to the non-numeric keys on the keypad.)

If you ever have the urge to delete a keypad assignment, simply open up the Quick DA control panel, select the keypad number that you no longer like from the list control, and click on the "Clear Assignment" button. Or, you can select the "< None >" menu item from either pop-up menu to clear the assignment.

Extended Keyboards

You may have noticed that I've referred to "function keys" as well as keypad keys. That's because, if you have an extended keyboard, Quick DA lets you assign desk accessories to the function keys (F1 through F15) or the other extra keys (help, delete, home, end, page up, page down) on your keyboard. You make these assignments just like you would for keys on the keypad. And you still have to press the control key along with the other key to activate your desk accessory. The control key is required so that Quick DA won't walk all over other programs that make use of extended keyboards.

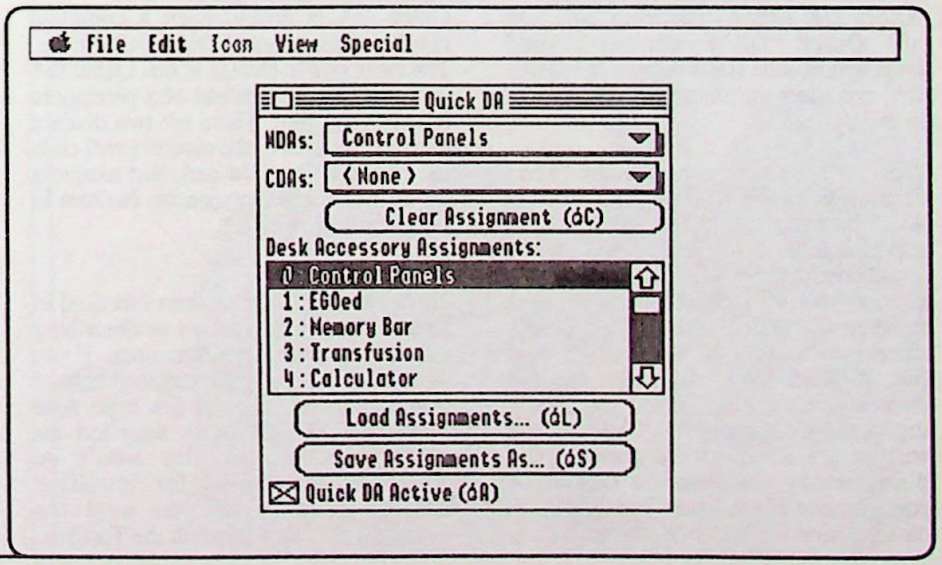
CDAs

Even though the ability to open CDAs is present in Quick DA, Apple Computer, Inc. does not support, endorse, or otherwise bless this bit of programming trickery. But, the fact remains that it works. I've tried opening quite a few CDAs with Quick DA, and not once has it ever failed. However, there may be a CDA out there that won't work. My advice is to very carefully test each CDA with Quick DA before you begin relying on Quick DA to open that CDA. To tell you the truth, I just wanted the ability to open Nifty List and the Exerciser DA, and both of those open just fine with Quick DA. If you happen to find a CDA that doesn't open, or doesn't work properly when opened with Quick DA, please don't hesitate to fill out the problem form supplied on your *GS+* Disk and send it in.

Why Is It Beeping At Me?

Quick DA will beep (or play the "Operation Impossible" sound if you have it assigned in the Sound control panel) at you if it is unable to perform a function that you have requested. For example, if you press control-keypad-0 to try to bring up the desk accessory associated with it, but the desk accessory assigned to that key is "< None >," Quick DA will beep at you.

If the front window is an alert window (if it has an alert frame) and you press the control-keypad sequence to open a NDA, Quick DA will beep at you (or play the "Operation Impossible" sound if you have



it assigned) because no windows can be overlaid on an alert window.

Reconfiguration

The original Quick NDA maintained the list of NDA assignments by number. If you added or removed NDAs from your system, you most likely had to reconfigure Quick NDA, because when you remove a NDA from your system (either by deleting it or making it inactive), the relative position of the NDAs in your system will change, and a number that was previously valid may disappear or change. Also, with System 6, your desk accessories can be arranged either alphabetically or in the order that they were loaded.

Quick DA maintains the list of desk accessories by *name*. This means that even if you delete desk accessories, or if you reorder them, Quick DA will know which desk accessory you want to open. (If you are the observant type, you would have noticed that EGOed lost the version number from its menu item in the last issue so that future versions will all have the same name. This way, you won't have to reconfigure Quick DA each time you install a new version of EGOed.)

More Controls To Learn

There are three more controls to learn relating to the Quick DA configuration window. The first control is at the very bottom of the window: the "Quick DA Active" checkbox. When the checkbox is checked, Quick DA is in control and will intercept all control-keypad keypresses. This also means that control-function keypresses will be intercepted on an extended keyboard (since internally, when you press a function key, it sets the "key was pressed on the keypad" bit). If, on the off chance, you need an application to receive a control-keypad (or control-function key) keypress, unchecking the "Quick DA Active" checkbox will turn off Quick DA's control-keypad interception code (thus turning off Quick DA) and allow the keypress to fall though to the application.

The two remaining controls, the "Load Configuration..." and "Save Configuration As..." buttons, let you maintain different lists of desk accessory assignments. When you choose the "Save Configuration As..." button, you will be presented with a standard file dialog letting you choose a name and location for the configuration file. A Quick DA configuration file will then be saved to disk. When you choose the "Load Configuration..." button, you will be presented with a standard file dialog letting you choose a Quick DA configuration file to load. The Quick DA configuration file will then be loaded from disk and the assignments in the configuration file will be set.

The standard file dialogs follow the *GS+* standard for saving prefixes. This means that Quick DA will remember where you were when you last used the load or save configuration buttons. If you wish to override this, you can hold down the option key when you click on the button. If you don't want Quick DA to save where you were when you are inside the standard file dialog, hold down the option key when you click on the "Open," "Save," or "Cancel" buttons. Quick DA saves separate path information for the load and save buttons. If you want to use the save path for the load button, or the load path for the save button, hold down the shift key when you click on the button.

Icon

In the vein of Cool Cursor v1.0, I'm not completely happy with the icon for Quick DA. If you think that *this* icon looks bad and doesn't convey the meaning of Quick DA, you should have seen the one I initially drew! Does anyone know where I can take a good computer graphics art class that will teach me how to draw using a mouse, sixteen ugly colors, and a 20 by 28 fatbit grid? If you can draw a better icon for Quick DA, send it in and I just might use it for the next Quick DA version.

I want to know what you think of Quick DA! If you have any comments or suggestions, be sure to send them in. And, as usual, if you find a problem with this program, fill out the problem form supplied on your *GS+* Disk and let me know about it. A version of Quick DA that will open individual control panels is in the works, so stay tuned!

Programming Considerations

Quick DA is pretty much a complete rewrite of the original Quick NDA code. The most visible change is that Quick DA is a control panel instead of a permanent initialization file. There are two distinct parts to Quick DA: the control panel code (written in C), and the code that monitors for control-keypad keypresses (written in assembly language).

The Control Panel

There are only a few routines that need to be described here. I won't be describing the common control panel routines. If you want a description of the common control panel routines, pick up file type note FTN.C7.XXXX, which is supplied on your *GS+* Disk. I also won't be describing the details for installing Toolbox patches. If you want the information on how to patch the Toolbox, pick up *GS+* V3.N3 and read the Cool Cursor article. What I *will* be describing is how the desk accessory menus and list controls are built as well as how desk accessories get mapped.

Building DA Menus

To insert the items in the NDAs pop-up menu, a simple `FixAppleMenu` call is made. This allows any NDAs that add icons to their NDA menu items to get the chance to add the icon to the menu item. Building the CDAs pop-up menu isn't as easy, but it isn't difficult, either. To build the CDAs pop-up menu, `GetDeskAccInfo` is called to get the handle of each installed CDA, then the name entry (which is a pascal string—just right for stuffing into a menu) is added to the CDAs pop-up menu. Before the `InsertMItem` call is made, though, the high bits of the CDA name are cleared. If they weren't, the "Alternate Display Mode" CDA would look something like: "¡ÏÙÂÚÓ·ÙÂ†ƒÈÛÏ·˜†ÕÒ‰Â." That isn't very pretty. In all further references to the name of a CDA, the high bits will be clear.

cda & ndaNameToNumber

The main idea behind mapping desk accessories to keypad keys is keeping a table of desk accessory numbers to pass to `OpenNDA`, or the index number of the CDA to pass to `GetDeskAccInfo`. However, Quick DA saves all assignments by name, not number. So, the `ndaNameToNumber` and `cdaNameToNumber` routines are called to convert the names of the desk accessories to their corresponding numbers. The same process is used for each procedure: loop through all the installed desk accessories calling `GetDeskAccInfo` and compare the name of the desk accessory to the desired name. If there's a match, return the desk accessory index number.

Whenever a desk accessory is chosen from one of the pop-up menus, `xdaNameToNumber` is called to actually make the assignment. Also, `AssignDAs` calls `xdaNameToNumber` to make all the assignments from the in-memory copy of the rTaggedStrings desk accessory assignment list resource.

Maintaining Assignments

The list of desk accessory assignments is kept in an rTaggedStrings resource. (The rTaggedStrings resource format is defined in Apple IIGS technical note #76, which is on your *GS+* Disk.) This resource must be updated every time a new assignment is made or cleared. Since the rTaggedStrings resource is a variable length structure, some fun memory manipulation must take place. The `ChangeAssignment`

function actually takes an existing entry and changes the in-memory copy of the rTaggedStrings assignment resource by inserting the new entry in the correct place. It does this by creating a new handle of the correct size (old handle size - old entry size + new entry size) and copying the entries from the old handle to the new handle one at a time, except for the entry to change (which is used instead of the invalid copy from the old handle). When `ChangeAssignment` is done, the old handle is disposed of and the new handle is used for all future references to the in-memory copy of the rTaggedStrings assignment resource.

The Control-Keypad Monitor

The old Quick NDA checked for the control-keypad sequence from a RunQ task. Since RunQ tasks execute only once in a while, it was possible to press a control-keypad sequence and Quick NDA not intercept it. Quick DA solves this problem by patching out the `SystemEvent` call. `SystemEvent` is called with every event that is posted so there is no chance of ever missing a control-keypad sequence. Also, with the RunQ method, the activation key sometimes slipped through . . . so, for example, if you were opening Transfusion with control-3, there was a one-in-four chance that the 3 key would get "typed" into Transfusion. The `SystemEvent` patch *always* subdues all control-keypad keypresses while Quick DA is active.

Opening A NDA

Once a control-keypad sequence is detected, the type of the desk accessory assigned to the key is retrieved. If the assignment is a NDA, the front window is checked to see if it's an alert window. If it is, `SysBeep2` is called to issue an Operation Impossible sound and nothing else happens. If the front window is not an alert window, or if there is no front window (no windows are open), it is safe to proceed and attempt to open an NDA. The NDA is opened with the `OpenNDA` tool call. If, for some reason, the NDA couldn't be opened, `SysBeep2` is called to issue an Operation Failed sound to signify the error.

Opening A CDA

Since the Toolbox doesn't have an `OpenCDA` call, I had to write one. The reason Quick NDA didn't open CDAs was because there was no reliable way to get the number of installed CDAs or their entry points. With System 6, the `GetDeskAccInfo` call will return a handle to any CDA in the system. Once the handle is determined, it's a fairly easy task to find the entry point (you just skip over the CDA name pascal string). The hard part is setting up the environment for the CDA. `SystemEvent` must return a false value on all `keyDown` and `autoKey` events when a CDA is open because a NDA could be the front window, and it would steal the keypresses from the CDA. There must also be a way to inhibit a user from entering a CDA twice. This is done by calling `SetEventMask` and globally masking off desk accessory events. As added protection, the system busy flag is automatically incremented at the start of the `SystemEvent` patch code. Before dispatching to the CDA, the stack must be set in page one of memory, so $100 bytes (a page) from 00/0100 is moved to E0/0300 in case anything important was there and needs to be saved. The text screen must be switched in, so `SaveScrn` is called to save the screen where CDAs expect the screen to be saved, and the current screen state is saved (and text mode is switched in) by calling `SaveTextState`. Finally the stack is set in page one, the direct page register is set to zero, and control is transferred to the CDA entry point. After the CDA returns control back, the stack pointer is restored to what it was before it was switched to page one, the screen is restored, and the page of memory at E0/0300 is moved back to 00/0100. Lastly, desk accessory events are enabled with `SetEventMask`.

If you'll note, I'm calling `SaveScrn`, a call that applications are *not* supposed to make. The call simply takes the text screen and saves it in a different part of memory, where CDAs expect the saved text screen image to be. The reason the call is not supposed to be made by applications is because the screen is always stored in the same place. Multiple calls to `SaveScrn` could really mess things up. However, since Quick DA is going to dispatch control to a CDA, `SaveScrn` should be allowed since nobody else will call it (it's normally the job of the Desk Manager to do all the setup work, but Quick DA takes the place of the Desk Manager in this case.) The reason I say *should be allowed* instead of *is allowed* is because Apple does not, and probably never will, endorse applications making the `SaveScrn` call.

Naughty Program!

Quick DA is a rather big jump up in complexity from Quick NDA, and it does a few tricks that aren't approved by Apple. And, yes, it does (slightly) go against our own policy of "follow the rules, use the tools." But it's just so darn *useful*, and it seems to works so well, that we thought it was worth the risk of having Apple slap us on the wrist, or, worse, causing us to appear a bit hypocritical. (Besides, you don't *have* to use it with CDAs if you don't want to!) I hope you like it and find it as useful as we have. If you have any questions, or suggestions, don't hesitate to let us know about them. *GS+*

Married, Monogamous Couples (& Families) of KansasFest

Mark & Tammy Wolfgram (Lunar Productions).
Jeff & Della & Greg Smith (Roger Wagner Publishing).

The HyperStuff Collection

First in this innovative series is ClipTunes ™

ClipTunes™ is a collection of MidiSynth™ format songs. Included in the package is an Xcmd player for HyperStudio™ and HyperCard IIGS™. The "Synth" Xcmd allows the HyperCard™ and HyperStudio user to easily play 7 voice stereo music from within their own stacks. The songs were specially arranged for the Hypermedia environment and play in the background so you can open menus, click buttons, switch cards, animate Icons all while the music continues to play. Selections range from Holiday music, marches, songs for special occassions, and music to switch cards by. ClipTunes comes complete with tunes, sample stacks, Xcmd player, and MidiSynth tool (Tool 35). Suggested Retail Price $39.95

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Available from most major software mail venders or contact:
(516) 732-3771 (516) 360-0797
or America-On-Line Direct Connect Area

TRIAD VENTURE INC.
P.O.Box 12201
Hauppauge, New York 11788

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HyperStudio is a registered TradeMark of Roger Wagner Publishing.
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Replicator v1.3

By Josef W. Wankerl
& Steven W. Disbrow

I had an itch to put an rBundle resource in Replicator's resource fork, and in the process, managed to somehow crack open the source code and add a bunch of nifty new stuff to Replicator. Even though Replicator now sports the spiffy new rBundle, it will still work with System Software v5.0.4.

Special Installation

Because Replicator now has an rBundle resource, you no longer need the **ReplicatorIcons** file if you are using System Software v6.0. So, if you are using System 6, use the installer to simply install Replicator. If you had a previous version of Replicator installed, select Replicator Icons from the installation list and click on the Remove button. If you are using System Software v5.0.4 then you need to install both Replicator and Replicator Icons. Next, you should seriously consider upgrading to System Software v6.0!

Super Drive!

If you have a SuperDrive Controller Card in your IIGS, you've probably noticed that Replicator would not recognize any disk drives attached to it when you tried duplicating disks. Replicator v1.3 fixes this. (The technical reasons for this are explained in the **RepTech.Docs** file on your *GS+* Disk.) So, if you want, you can plug three SuperDrive Controller Cards into your IIGS and have *eight* (8) 3.5-inch disk drives hooked to your IIGS that you can duplicate disks on. (Two drives hooked to the SmartPort and two drives hooked to each SuperDrive Controller card. You could also hook up to a total of four, old UniDisk 3.5 drives to your system, for a total of *12* drives. We haven't been able to test this yet, but talking about it tends to make Diz's eyes glaze over.) Note, however, that if you plan to hook this many drives up to your system, you will probably need a heavy-duty power supply.

Improved Error Handling

If you have been using Replicator with more than one disk drive, the "Clear errors on insert" preference has never really worked especially well . . . until now. I finally managed to figure out how to do it right. It's now a preference worth having turned on all the time.

Faster Compares

The routine that compares disk images has never been very fast, but Replicator v1.3 sports comparing of disk images at least twice as fast as v1.2! (The more free memory you have, the faster compares will be.) I'd like to thank Steve Peterson of Edina, MN (the author of *Your Money Matters*) for supplying me with a modified version of the compare routine that got me started in almost completely rewriting the routine from scratch.

Option Close

Replicator v1.3 now supports closing all the windows when you hold down the option key and click on the close box of a window (or when you hold down the option key and select the Close menu item from the File menu).

Identification

Diz had complained to me because he could never remember which device was which. Which device is ".APPLEDISK3.5A" and which is ".APPLEDISK3.5C"? So, in order to appease him, I've added in a device identification window which you can pull up by selecting the "Identify Devices" menu item from the Disk menu. The device identification window contains a list control with the names of all your online devices, plus the names of any volumes that may be in the devices. When you double-click on a device, or when you click on the "Identify" button, the device information window for the device will be opened. If the device is a block device and it has media in it (i.e. there's a volume name for the device), then the volume information window for the volume will be opened as well. To force the list to be updated with new volume names if you eject or insert a disk, you can click on the "Rescan" button.

DiskCopy

In the May 1992 File Type Notes, Apple documented the specifications for *DiskCopy* disk image files. (This File Type Note is supplied on your *GS+* Disk.) DiskCopy is a Macintosh application created by Steve Christensen and is used by Apple to distribute disk images for several Apple products. Both Macintosh and Apple II disks can be archived using DiskCopy. DiskCopy has a limitation in that it can only create disk images of 3.5-inch floppy disks. Replicator can now read DiskCopy disk image files and make disks from those disk image files. You cannot, however, save a DiskCopy disk image file with Replicator. When you open a DiskCopy disk image file, you will be presented with a new window, a DiskCopy information window, which will give you information about the DiskCopy disk image file. You can then use the "Duplicate" menu item to make copies of the disk image file, just like you would a normal Replicator document! Note, however, that Replicator cannot correctly duplicate DiskCopy disk image files that contain "tag data." If there *is* tag data, the "Tag Checksum" field will be something other than $00000000.

Happy Replicating!

I keep saying that Replicator has reached a "final state" each time, but then I think of more stuff to add! So, in order not to make a fool of myself, I will not declare this as the last Replicator version to be seen for a while. However, in not declaring it so, it will probably turn out that way because of the "Joe is a fool no matter what he says" law. Of course, if you happen to find a bug, please fill out the problem form on your *GS+* Disk and send it in so that we can grind them into dust (the bugs that is, not the problem forms). If you want to know more about the internal workings of Replicator, be sure to read the file **RepTech.Docs** which is on your *GS+* Disk in the **Replicator** folder. *GS+*

What Is Replicator?

Replicator is a IIGS-specific, *desktop-based disk duplicator*. Unlike other IIGS disk duplication programs, Replicator will work with any GS/OS disk and any device supported by GS/OS. Replicator will even work with your old UniDisk 3.5 drives, and it's great for copying HFS disks! For complete documentation on how to use Replicator, be sure to read the file **Replicator.Docs** which is on your *GS+* Disk in the **Replicator** folder.

EGOed v1.7

By Steven W. Disbrow

To be honest, I hadn't planned on doing another EGOed update for a while. I was afraid that everyone was getting sick of them. However, the reaction to EGOed v1.6 was so good, I decided to do at least one more update before taking a break from EGOed. So, without further delay, let me tell you about EGOed v1.7. (If you are new to *GS+* Magazine, the "What Is EGOed?" sidebar and the file **EGOed.Docs**, which is on your *GS+* Disk, are required reading. You should also check out "How To Use Your *GS+* Disk" for detailed information on how to install EGOed.)

Multiple Files & Windows

Ever since EGOed first appeared, people have asked for the ability to edit multiple files at one time. Before System 6, this wasn't really possible (well, it probably *could* have been done, but it would have been very messy). System 6, however, has built-in support for New Desk Accessories with multiple windows. EGOed v1.7 takes full advantage of this by allowing you to open as many files as you want (limited only by the memory in your system), each in its own EGOed window. For example, from Finder v6.0, you simply double-click on the AppleWorks Classic, AppleWorks GS, APW Source, ASCII Text, or Teach file you want to read, and EGOed will open it for you in its own window. If you select multiple files, each one will be opened in its own EGOed window. Once you have the files open, you can then work with each one as you would with earlier versions of EGOed—with the added advantage that you can copy and paste between the different windows.

Outside The Finder

If you aren't in the Finder, you can still have multiple files open in multiple windows, you just have to do a bit more work. (All of these techniques work inside the Finder as well, but you don't *have* to use them there.) After you select EGOed from the Apple menu, you will be presented with an EGOed window, just like in earlier versions. You can then use the Open menu item to open a file in this window for editing.

To create *another* EGOed window, simply pull down the EGOed File menu and select the "New Window" item (formerly known simply as "New") or press Command-N. A new EGOed window will then open for you to work with. Formerly, this item was used to clear the EGOed window so that you could begin working with another file. If you hold down the *control* key while selecting "New Window," EGOed will clear the current window (just like it used to do) instead of creating a new window.

Another way to get a new EGOed window is to hold down the *control* key while selecting the "Open" from the EGOed File menu. When you do this, EGOed will present you with its standard open file dialog. The difference is that when you have selected the file you want to open, it will be opened in its own window instead of replacing the file in the current EGOed window.

Another menu item that has changed is the "Close" item. This item is now called "Close Window" and it does exactly what the old "Close" item did, except it only does it to the current EGOed window.

Gimme Some Elbow Room!

With all these windows floating around (Joe had over 90 EGOed windows open once), the tiny IIGS screen can get a bit crowded. To help keep the crowding to a minimum, EGOed uses five different overlapping window positions for any non-Teach files that you open. (Actually, there are *15* default window positions: one set of five for the Finder, one set for other 640-mode programs, and one set for 320-mode programs.) Of course, Teach files will be opened using whatever window position information they were saved with, and the "Zoomed On Open" preference will override these default positions.

Faster Typing

Several users noticed that EGOed v1.6 seemed to be a bit slow at accepting keystrokes and would even lose an occasional keystroke if you typed very fast. This was related to the I-beam cursor used in EGOed v1.6 and has been fixed in EGOed v1.7.

Is That All?

Yep. That's all there is to the new features in EGOed v1.7. However, I think you will find it amazingly useful. It's already made our lives here at *GS+* Magazine much easier. For those of you that want all the technical details, be sure to read the file **EGOed.1.7.Tech** which is on your *GS+* Disk in the **EGOed** folder. For those of you that just want to *use* EGOed, turn to "How To Use Your *GS+* Disk" and follow the instructions there to read the **EGOed.Docs** file. As always, if you have ideas for EGOed, let me hear them! (I got lots of neat new ideas from the folks at KansasFest. Look for these to start popping up in the next version or two of EGOed.) And if you should find a bug, please fill out a problem form (which you will find on your *GS+* Disk) and let me know about it. *GS+*

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 v1.7, you *must* install it on a IIGS System Software v6.0 (or later) startup disk with at least 60K of free space. For more information on installing and using EGOed, see "How to Use your *GS+* Disk."

Errata

In last issue's "Writing Phantasm Screen Blankers" article, under the section "Saving Configurations," it was stated that Phantasm gives each blanking effect a 64 byte buffer for saving configuration information. This is incorrect. The buffer size is actually 32 bytes.

Also, in last issue's "Errata" column, we printed a small code change for Michael Lutynski's "3-D Demo II" program from *GS+* V3.N4. Actually, that change was for the "3-D Demo *III*" program that appears in *this* issue. (Talk about being ahead of the curve!) Not to worry, the changes have already been applied to the source code that is on this issue's *GS+* Disk. Our apologies for any confusion that this precognitive errata may have caused.

What's New

By Steven W. Disbrow

Turbo IDE Card

If you own a Vulcan or Vulcan Gold internal hard drive and you are jealous of the speed RamFAST/SCSI owners enjoy, or if you wish you could use an inexpensive IDE hard disk (the type used by most IBM PC Clones) with your IIGS, you should take a look at the new *Turbo IDE Card* from SHH Systeme of Germany. Based on the demonstration the developers gave me at KansasFest, I would say that this card is at least as fast as a RamFAST (if not actually faster) and it appears to be very well put together.

As I said before, this card lets you use inexpensive IDE hard disks with your IIGS. You can hook up to two IDE drives to this card and it is pin-compatible with Vulcan Hard drives. (According to the developers, the Turbo IDE card is *twice* as fast as the Vulcan Gold controller.) Each drive can have a capacity of up to 256MB (for a total of 512MB with two drives), and, under System 6, you can have HFS partitions on the drives. The card is DMA compatible, and should be priced about the same as a RamFAST. For more information, contact:

SHH Systeme
Dipl. Ing. Joachim Lange
Schoenstraße 80a
8000 Muenchen 90
Germany

What's That Number?

Ever forget an address? What about a phone number? Ever wish your computer could dial the phone? Well then, you should check out *Contacts GS* from Simplexity Software. For only $14.95, Contacts GS gives you an address, phone book, and phone dialer in a single New Desk Accessory (NDA). The phone dialer works through your IIGS speaker (hold the handset of the phone up to the computer speaker and tell the NDA to dial the number), or you can use an optional HyperDialer. Also, Contacts GS saves its phone book information in a simple ASCII Text file, so that you can use AppleWorks Classic (or any other program that can import ASCII Text files) to format and print mailing lists. For more information, contact:

Simplexity Software
13045 Chapman Ave., Ste 302
Orange, CA 92668
(714) 283-3957

Get It

All through this issue, we've referred to the new *Programmer's Reference for System 6.0* from The Byte Works. Even though we mentioned it in this column in our last issue, this book is important enough to warrant another mention. It was released at KansasFest, and according to the folks at Apple, if you are programming for System 6, the Engineering Reference Specifications (ERSs) provided on the System 6 Golden Master CD-ROM are *not* good enough! To really take advantage of System 6 from your programs, you *must* have this new book.

Among other things, this book includes all new tool calls and updates since System Software v5.0, technical documentation for Finder v6.0 and the new Sound Control Panel, and information about the new File System Translators. All of this information takes up 480 pages—including a concordance that cross-references *all* of the Toolbox documentation. To get your copy, contact:

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

Measure This!

Are you an engineer or chemist that wishes you could use your IIGS for data collection and analysis? Well, now you can! With the AIB-II (Advanced Interface Board for Apple II computers, retail price $260) board, GS Scope (a IIGS-specific oscilloscope program, retail price $39.95), and appropriate interface modules from Vernier Software, you can turn your IIGS into a nifty little data collection and analysis station.

While I certainly don't understand *all* of the information presented in the handouts I picked up at KansasFest, I could tell that these products are geared towards educators on a tight budget (site licenses start at about $30). If this sounds like something you could use in your classroom or basement laboratory, contact:

Vernier Software
2920 SW 89th St
Portland, OR 97225
(503) 297-5317

Ad 'Em Up!

There were at least three other new products (Universe Master, Foundation, and Desktop Enhancer v2.0) introduced at the Apple Central EXPO, but I'm not going to tell you about them because they all have advertisements in this issue! (See the "Advertisers Index" for more information on these products.) However, one last product that I *will* tell you about is *SoundREM*. SoundREM, from Triad Venture, is a "native mode" editor for Foundation that allows you to edit rSound resources (these are the types of sounds used by the Sound Control Panel). SoundREM will also import HyperStudio, FutureSound, and Binary sound files (as well as the sound files created by Applied Engineering's sound cards), so that you can save them in rSound format. SoundREM requires Foundation v1.0 or later and costs $24.95. To order, contact:

Triad Venture, Inc.
P. O. Box 12201
Hauppauge, NY 11788
(516) 732-3771

Modula-2 Too!

In "Rumors, Wishes & Blatant Lies" we told you about the new ORCA/Modula-2 compiler that The Byte Works has under development. Well, believe it or not, another company sent us a press release describing their new ORCA compatible, Modula-2 compiler. It's going to be called "Modula-2 GS" and, as I said, it's an ORCA compatible compiler that generates OMF v2.0 object files. It also includes a Pascal to Modula-2 source-code converter, a Make utility, and complete interfaces for the Toolbox, ORCA-shell and GS/OS. Included with the press release was a list of benchmark results (and the source code for the Modula-2 program that generated them) showing Modula-2 GS beating the stuffing out of ORCA/Pascal.

Unfortunately, they neglected to mention how much it was going to cost, or when it would be available. Oh well, at least they gave an address:

EMBE
Hofstr. 14
D-4150 Krefeld
Germany

If you have a new product or service available for the IIGS, send your press release to:

GS+ What's New
P. O. Box 15366
Chattanooga, TN 37415-0366

GS+ Back Issue Information

Sep-Oct 1989 (V1.N1)
- System Software 5.0 Compatibility Chart
- NoDOS - A file utility New Desk Accessory (ORCA/C)
- Graphics Galore - Drawing "how-to" w/pictures on disk
- Reviews of Arkanoid II (new custom levels on disk), Crystal Quest, ORCA/C, 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 (ORCA/Pascal)
- 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

Jul-Aug 1990 (V1.N6)
- KansasFest Report
- Beginner's Guide to System Disks - Part 2
- Translusion - An NDA terminal program (ORCA/C)
- Reviews of AMR AS800K 3.5-inch drive, Salvation: The Exorciser, Disk Access, MD-BASIC, Katie's Farm, Task Force, BLOCKOUT, OMEGA, 2088: The Cryllan Mission, Hunt for Red October, Revolution '76, Where in the U.S.A. is Carmen Sandiego?

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 (Merlin assembly)
- Shuffle - an Init that shuffles desktop windows (ORCA/M)
- Battery Brain - CDev that aves BRAM parms (ORCA/C)
- Reviews of GS Sauce memory card, Salvation: Wings, World GeoGraph, Orange Cherry Talking Schoolhouse series, QIX, Solitaire Royale, InnerExpress

Jan-Feb 1991 (V2.N3)
- AppleFest/Long Beach '90 & Apple II Achievement Awards
- Interview with Jim Carson of Vitesse, Inc.
- Introduction to System Software v5.0.4
- RAM Namer (CDEV) - renames RAM disks (ORCA/C)
- ***GS+*** program updates - Battery Brain, EGOed (ORCA/C), GWIII TeachText Translator
- Reviews of ZipGSX, LightningScan, Design Your Own Home, Print Shop Companion IIGS, Your IIGS Guide, Dragon Wars, 2088: The Cryllan Mission - Second Scenario, Space Ace, Sinbad & 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 Fractal Generator (ORCA/C)
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- Reviews of 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: The Bard's Tale IIGS

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- Buying Used IIGS Equipment
- AutoSave (NDA) - periodically saves documents (ORCA/M)
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- Reviews of Octo-RAM Memory Board, DataLink II Express, Talking First Words, Talking Cloze Technique Greek Mythology, Shareware: CosmoCADE, Star Trek Classic

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- How Printing Works - an article by Matt Deatherage
- Working with the Toolbox - Part 6: The Resource Manager
- Buying & Using Mac Hard Disks
- Cool Cursor - A Control Panel that replaces the old watch cursor with an animation. (ORCA/M and ORCA/C)
- Replicator - Desktop based disk duplication program that works with any GS/OS device and file system (ORCA/Pasca)
- ***GS+*** program updates - EGOed v1.4: Find and Replace fonts, sizes and styles
- Reviews of MacLand 105MB Hard Drive, Tulin 120MD Hard Drive, SuperConvert, Signature GS, Learn to Program in C, 4 shareware reviews.

May-Jun 1992 (V3.N5)
- TrueType on a LaserWriter
- Using Archiver
- Writing Phantasm Screen Blankers
- Working with the Toolbox - System 6 Updates
- Whoosh - Control Panel written in ORCA/M that turns off the System 6 whooshing rectangles
- Rebuild Desktop - Finder Extension written in ORCA/C that will rebuild the invisible desktop file under System 6
- ***GS+*** program updates - Cool Cursor, EGOed, Replicator
- Reviews of Pegasus Internal Hard Drive, Express, Formulate, Second Chance v2.0 & X2, Shoebox

GravenStein Apple IIgs User's Group P.O. Box 751454 Petaluma, CA. 94975-1454

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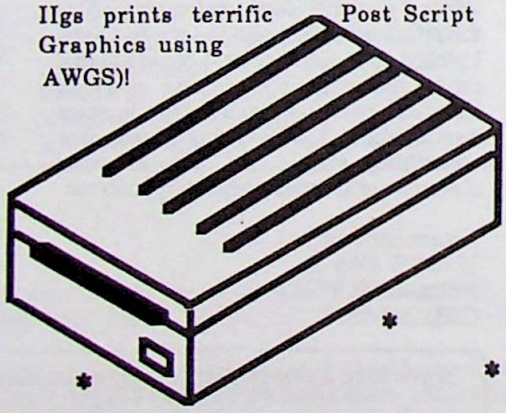
Serving the Apple IIGS User with Information & Education

GravenStein Apple is one of the fastest growing IIgs clubs in the country, and out of the country. Members are across the United States, and around the world. With over 250 MEGs of Public Domain IIgs software, and growing, the club claims one of the largest selections of software for all members. All for only $3.50 a disk, shipping included! The club's newsletter rivals most MAC newsletters with articles of interest for both the new and experienced IIgs user. Currently topics in the columns are on the use of AWGS, reviews, and the use of EPS graphics. (Yes, the IIgs prints terrific Post Script Graphics using AWGS)!



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