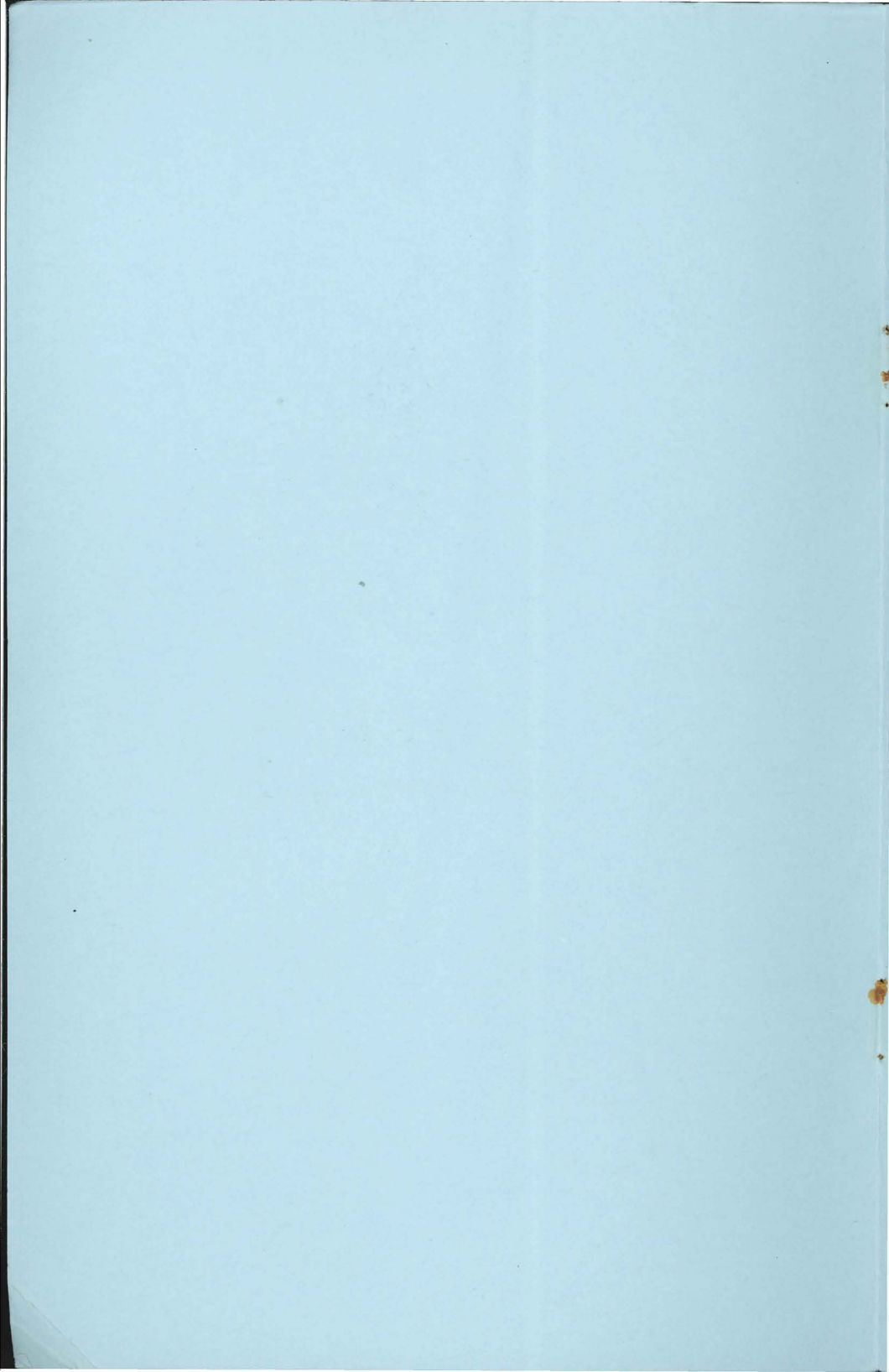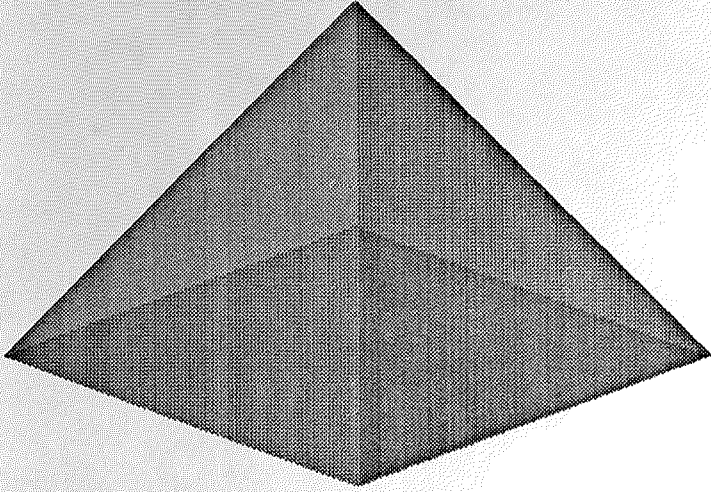# PRISM

Image Conversion & Processing™
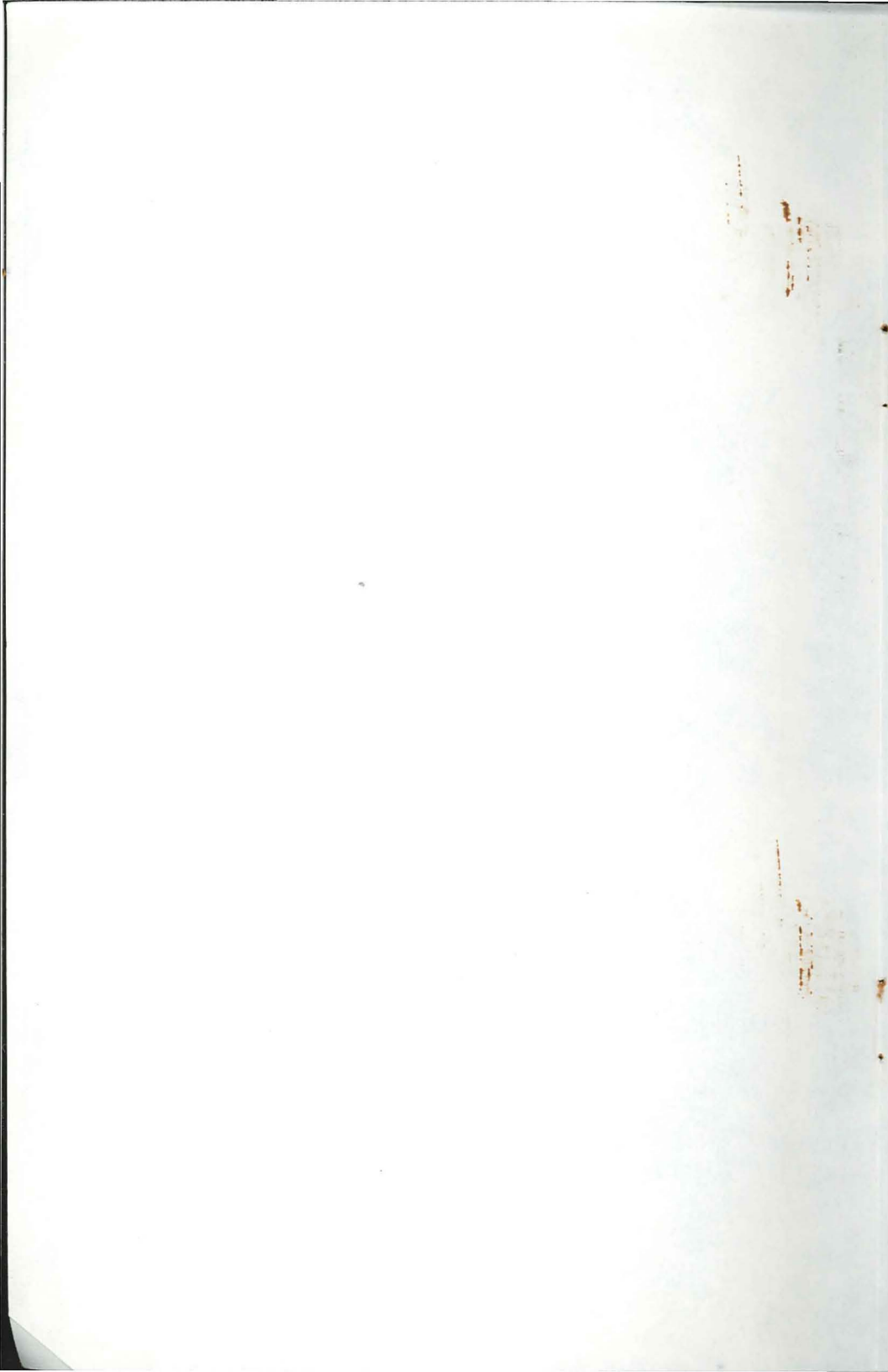
The Manual

PRISM

Image Conversion & Processing™

The Manual

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CONTENTS

1 *WELCOME*

Introduction

Thank you for purchasing Prism.™ We are glad you have invested in our program and are confident that you will enjoy its ease of use, power, and results. By selecting Prism as your image conversion utility, you have given yourself the power to convert images from other platforms such as the Macintosh™ series of computers, IBM™ PC compatibles, NeXT,™ Commodore Amiga™ and any other platform that supports the standard image formats of the computer industry.

With Prism, you will be able to convert foreign and native graphic files to native Apple IIGS™ graphic formats to grayscale, 16, 256, and 3200 colors. Once in Apple IIGS format, you can edit or use the images to your liking with programs like HyperStudio,™ Hypercard IIGS,™ DeluxePaint II,™ Platinum Paint,™ DreamGrafix™ and many others.

We Count on You

Prism is the result of over two years of hard work and refinement. Please do not illegally copy and distribute copies of Prism to anyone, not even your good friends. Piracy is a killer. Please encourage your friends to purchase their own copy of Prism. This is the best way you can help us continue publishing quality software for the Apple IIGS.

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Please take a minute to fill out the registration card and mail it. This way you will be notified of any new upgrades and products.

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number on-hand when calling.

You can also contact us at:

New Concepts
Suite 2
665 West Jackson Street
Woodstock, IL 60098

or through FAX at (815) 338-4332.

2

GETTING
STARTED
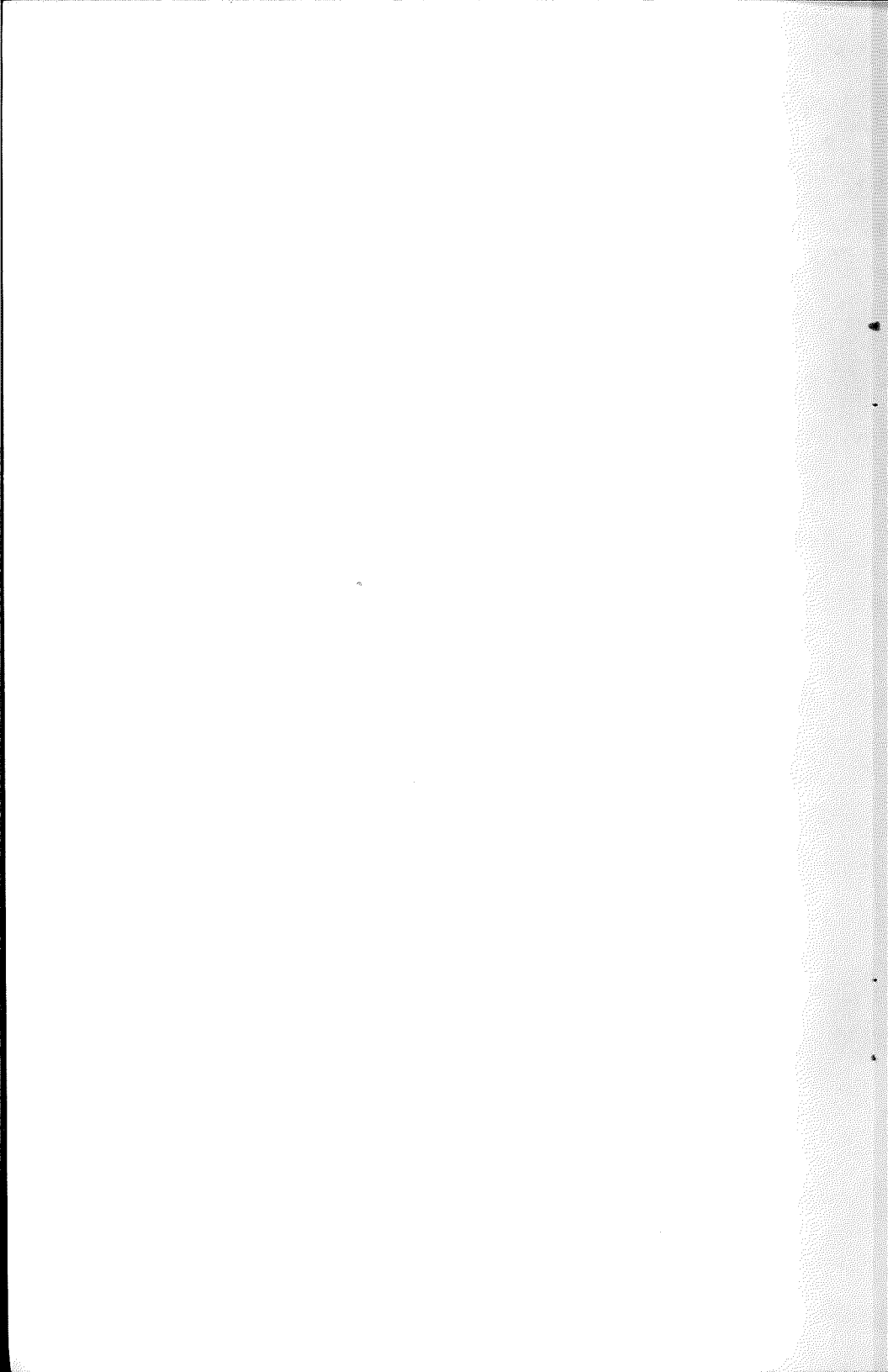
What You Should Know

This manual assumes that you have a basic knowledge using GS/OS™ v6.0. You should also know how to:

▲ Use the mouse and keyboard

▲ Pull down menus and select options from pop-up menus

▲ Choose from a menu

▲ Use the directory dialog box to load and save files

▲ Use keyboard equivalents (such as ⌂-O)

Minimum Requirements

To use Prism you will need:

▲ An Apple IIGS

▲ GS/OS System Software version 6.0 (or later)

▲ One 3.5" disk drive

▲ 1.25 Megabytes of RAM (Random Access Memory)

We recommend a hard drive, an accelerator card, and lots of memory for faster performance when loading, saving and processing images.

Installing Prism

The Prism Program Disk is not a self-booting disk. You will need to start-up your Apple IIGS with your own copy of GS/OS either from a floppy disk or from a hard drive. Before you go any further make sure to make a backup copy of the original Prism Program Disk using your favorite program or Apple's Finder.™

The Prism Program Disk contains a file labeled Prism and two directories, one labeled Icons and the other labeled Prism.Samples. In the Icons directory you will find a file labeled Prism.Icons. In the directory labeled Prism.Samples you will find the two images used

in the tutorials (Crush and Desert) and other images for you to experiment with.

To install Prism follow these steps:

1   Start up your IIGS.

2   Insert the copy you just made of the Prism Program Disk into a 3.5" disk drive.

3   Copy the file labeled Prism and the directory labeled Prism.Samples into the desired volume or folder on your hard drive or floppy disk.

4   Copy the contents of the directory labeled Icons into the Icons folder in your volume.

Checking the Version Number

To check Prism's version number and other information launch Prism and select the About... menu item under the Apple menu. You will need to supply the version number for technical support.

3

PRISM IN ACTION
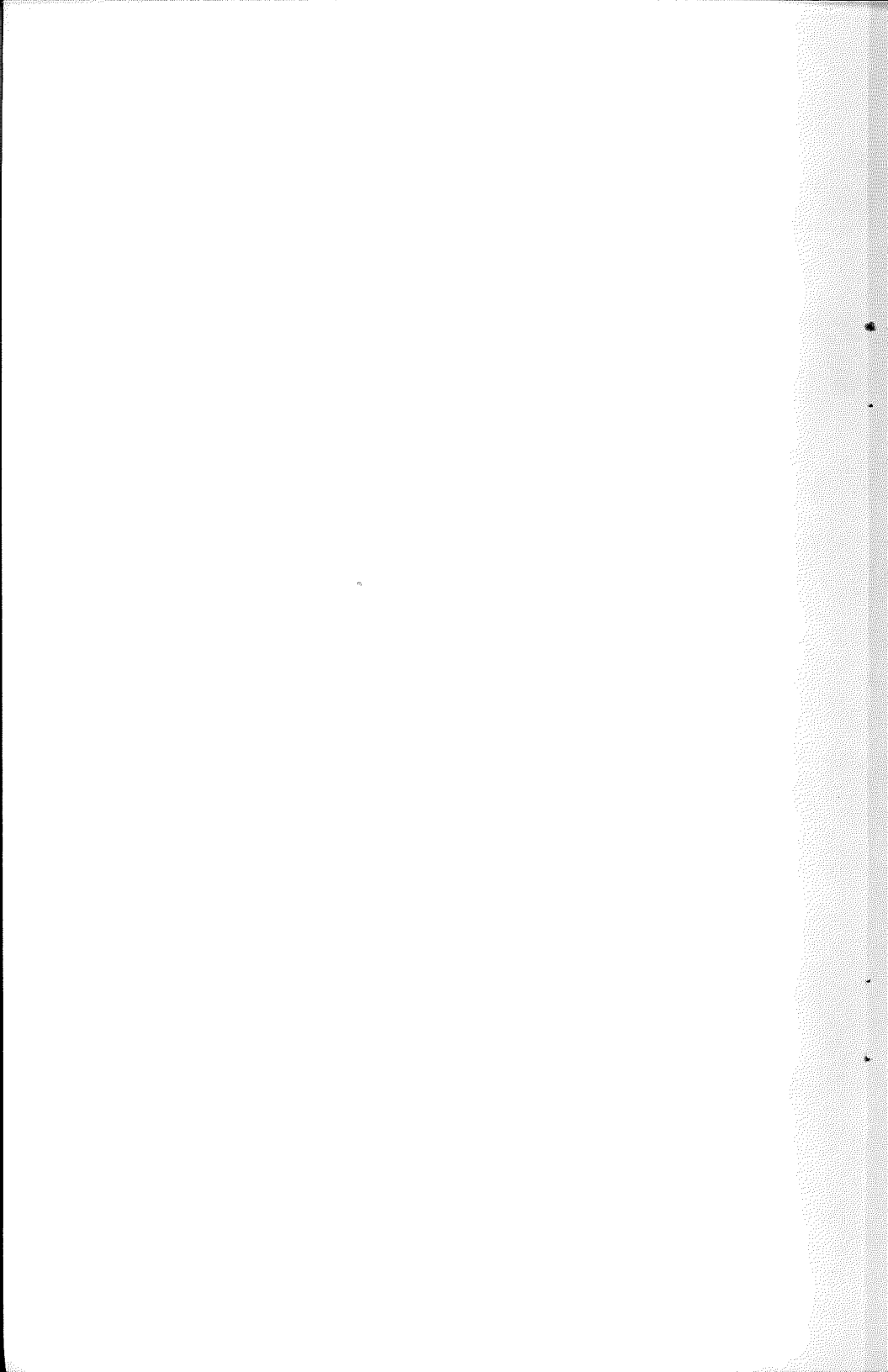
Starting Prism

You can start Prism by launching it from from your favorite program launcher. In our example we will use Apple's Finder.

To launch Prism from the Finder simply double-click on the Prism icon (Figure 3-1). You will be greeted by Prism's title screen. A couple of seconds later the screen will blank and you will be in Prism's desktop.

Prism

Figure 3-1   The Prism Icon

Converting an Image

Let's start by using Prism's most powerful tools: the True Color Viewers and Conversion Settings. We must first load an image to work on. To do so simply:

>   *1* Pull down the File menu and select *Open Image...*, or press ⌘-O.

A standard Open Dialog Box will appear prompting you to select the file you wish to convert.

>   *2* Select the file named Crush from the directory named Prism.Samples inside of the Prism directory.

A dialog box with a thermometer (Figure 3-2) will pop up displaying the name of the file being loaded and updating you on the progress as the file loads.

Loading: "Crush"...
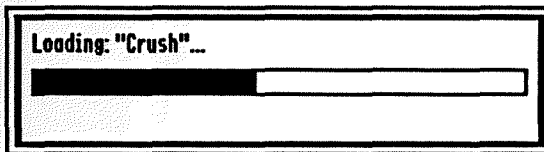
Figure 3-2   The Open Thermometer Dialog Box

Immediately following you will see another thermometer dialog box informing you of the progress as it counts the distinct colors in the image.

Note: Prism comes with the Count Distinct Colors preference enabled. If you have disabled this option through the Preferences menu, Prism will skip this step. Once Prism is done counting the distinct colors in your image, you will be presented with two windows located one atop the other on the top right side of the desktop. These are the Image Information and the Conversion Settings Windows (Figure 3-3).


```
┌─────────────────────────────────────┐
│          Image Information           │
├─────────────────────────────────────┤
│ Filename: Crush                      │
│ Format:  GIF (Graphics Interchange Format™) │
│                                      │
│ Width:   320    Palette Size:  256   │
│ Height:  200    Palette Count: 1     │
│                                      │
│ Memory Used: 63k   Distinct Colors: 256 │
└─────────────────────────────────────┘
┌─────────────────────────────────────┐
│         Conversion Settings          │
├─────────────────────────────────────┤
│ ⊠ Dithering     Color Separation [ 2 ] │
│    Global Histogram Impact [ Proportional ] │
└─────────────────────────────────────┘
```
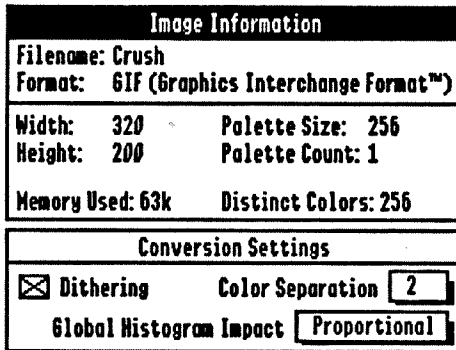
Figure 3-3   The Image Information and Conversion Settings Windows

Notice how the Image Information Window displays all relevant information about the image.

   3 Select *View True Color* or *View True Color (Wide)* from the Goodies menu.

A thermometer dialog box will pop up informing you of the progress as it converts the image to raw data.

   4 You can now scroll through the image by moving your mouse in all directions.

You will notice that the bottom leftmost Crush soda can in the image is lavender while the rest of the cans are red. Keep this little but important fact in mind.

5 Select *16 Colors* from the Conversion menu or press ⌘-2.

Again you will see the familiar Thermometer Dialog Box informing you of the progress as it converts the image to 16 colors. Right under the thermometer bar you will see a line informing you of the status of the conversion. This is there for those of you more technically inclined who would like to know just what Prism is doing while you wait for the conversion to take place. After Prism is done converting the image, it will display the results in the Full View Display. Notice how the bottom leftmost Crush soda can is gray in our conversion. If you recall from what you saw in the True Color Viewer, it is supposed to be lavender! We can try to correct this by changing the settings on the Conversion Settings Window. To exit the Full View Display click on the mouse button. Prism will now place the converted image in a desktop window titled Crush.16 (16 Colors). If you want, you can check again what the real color on the Crush soda can is supposed to be by selecting one of the True Color Viewers from the Goodies menu and scrolling to the bottom right end of the image where the soda can is located.

6 Select a level of three through the Color Separation pop-up from the Conversion Settings Window (Figure 3-4).
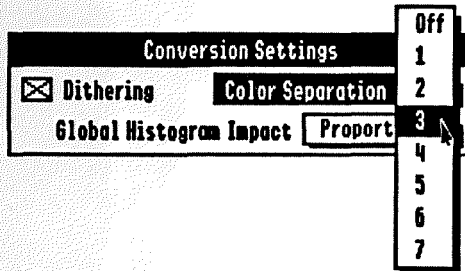

Figure 3-4 Selecting a Color Separation Level of 3

7 Reconvert the image to 16 colors by repeating step 5.

An Alert Dialog Box will appear prompting you to save the

conversion. At this point you must either choose Yes, No or Cancel.


```
┌─────────────────────────────────────────────────┐
│  ┌───┐  "Crush.16 (16 Colors)" has not been saved. Would │
│  │ ⚠ │  you like to save it now?                   │
│  └───┘                                             │
│     ┌────────┐    ┌────────┐    ┌────────┐        │
│     │   No   │    │  Yes   │    │ Cancel │        │
│     └────────┘    └────────┘    └────────┘        │
└─────────────────────────────────────────────────┘
```
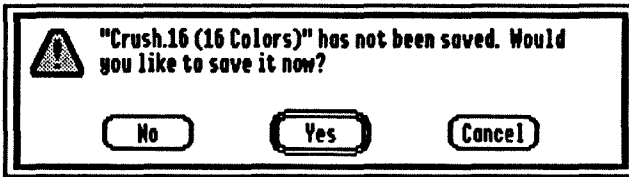
Figure 3-5   The Alert Dialog Box

If you choose Yes you will be taken to the Save Dialog Box where you can save the converted image. Once the image has been saved Prism will continue reconverting the image. If you choose No Prism will close the current 16 Color Conversion Window and continue with the conversion. If you choose Cancel Prism will stop the conversion process and leave the current 16 Color Conversion Window intact.

> *8* Go ahead and click No to allow Prism to reconvert without first saving the current conversion.

Prism will reconvert the image and display the conversion in the Full View Display. This time you should notice that the bottom leftmost Crush soda can is the right color– it's lavender!

Raising the Color Separation up one value made a real difference in the conversion. By setting the value to three, we instructed Prism not to allow any colors into the palette of the converted image unless they were at least three values apart. You can now understand how important and useful the True Color Viewers are. By first checking what the image looked like in its true color (raw data) form, you were able to determine that there was a color missing and correct the problem.

Now that you have completed your first successful conversion, you may want to save it for use in some other program. To do so:

> *9* Pull down the File menu and select *Save As*, or press ⌘-A.

A standard Save Dialog Box will appear prompting you to select the volume or directory where you wish to save the file. Prism has already assigned the conversion the name Crush.16. If you are happy with the name, click on the Save button; if not, rename the image to whatever you want and then click on the Save button.

Note: Prism ships with the Append Suffix preference enabled. If you have disabled this option through the Preferences menu, Prism will use the filename of the original image to save the converted image. In our case, if you had disabled this option, Prism would have left the filename of the image to be saved as Crush. We recommend you leave this option on, just so can keep track of what type of conversions you have performed.

Reserving Colors

Prism allows you to reserve colors when converting an image. You can instruct Prism to use anywhere from sixteen down to two colors per palette when converting an image. This comes in real handy when you work with 256 or 3200 color images in paint programs that support these modes. People who like converting images and adding their own multi-colored text over an image will love this feature. For example, let's say you wanted to add some titling (text captions) to your converted image. If you reserved one color, Prism would only use 15 out of the possible 16 colors per palette. The reserved color would not be used in the entire converted image. You could then go into your favorite paint program and assign any color you would like to that unused color to use for your own image. This is what you have to do to instruct Prism to use a specific number of colors per palette:

1 Pull down the Apple menu and select *Preferences*.

2 From the Preferences menu select the number of colors you would like Prism to use per palette by using the Colors Per Palette pop-up menu.

That's it! Now every color conversion (not grayscale) that you do

will take this into consideration.

Note: Prism will reserve the highest color (number 15) in the palette first and work its way down. So that if you instruct Prism to use only 14 colors per palette, it will reserve colors number 15 and 14 from all palettes and set them to white.

Resizing and Applying Effects

Let's try using some of Prism's resizing effects.

Cropping

This option allows you to crop a 320 by 200 area from an image larger than that. We must first load an image to work on. By now you know how to load a file.

    1   Go ahead and load the file Desert from the directory Prism.Samples (included in your Prism Program Disk).

You will notice that the image took longer to load and that the thermometer moved slower than when we loaded the previous image (Crush). The image we just loaded (Desert) is over twice as large as the previous one! Just look over in the Image Information Window and you will see that Desert is a 640 by 480 GIF, while Crush was only a 320 by 200 GIF. Which brings us to this point: the larger and more colorful the image, the more memory you will need and the longer it will take to load and process.

    2   Select *Grayscale* from the Conversion menu or press ⌘-1.

After the image has been converted, pan the image around using your mouse. This will give you a feel for how big the image is. To exit the Full View Display just click on the mouse button. Upon exiting, the conversion will be placed in a desktop window (Conversion Window) titled Desert.Gray (Grayscale).

Note: If you want to view the conversion in the Full View Display after Prism has placed it in a window, just click on the

View button, located on the leftmost position of the Conversion
Window's Info Bar, right under the Title Bar.

Let's just say that you are not interested in converting an image so large. All you care about is a screen size portion of the image which shows the mountains and the clouds. To achieve just that, you should crop your image to a screen size. To do so:

> *3* Pull down the Effects menu and select the *Crop to Screen...* option.

An Alert Dialog Box pops up letting you know that you are about to modify the image in memory. You can either proceed or stop the operation. We want it to proceed.

> *4* Click on the Yes button.

Immediately after you click Yes, a Thermometer Dialog Box appears letting you know that Prism is preparing the image for a crop. Once this process is done, your image will be displayed in grayscale (just like when we converted the image to Grayscale) in the Full View Display.

Now you have to select which 320 by 200 area you want to crop (keep). To select the area:

> *5* Pan the image around with the mouse until what is displayed in the screen is the area you want to crop.

> *6* Click the mouse button to finish the crop.

If you look in the Image Information Window, you will see that our image was reduced to 320 by 200. Prism has now discarded all the extra information from the original image in memory and only kept the area which you selected. Now wasn't that easy? You have successfully cropped an image. Congratulations!

You can now go ahead and perform any type of conversion you like. If you like the results you obtain after converting the image, go ahead and save your conversion. If you think that you can get a

better result by changing the Conversion Settings, by all means do so.

Halving

The halving options are pretty straight forward. You can either Halve, Halve Height, or Halve Width an image. Let's use the same image we used in the last tutorial (Desert). This time, however, we will use a new way to load the image; we will use the Revert option from the File menu.

    1   Pull down the File menu and select *Revert*, or press ⌘-R.

The Thermometer Dialog Box appears showing you the status of the file being loaded. You can see the advantage of just reloading the previous image without having to search for it.

    2   Pull down the Effects menu and select *Halve*, or press ⌘-H.

An Alert Dialog Box pops up letting you know that you are about to modify the image in memory.

This Effect will modify the image in memory, and can not be undone. Do you wish to continue?

[Yes]   [No]
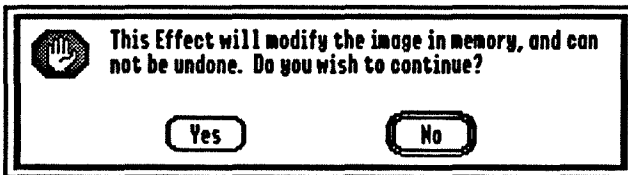
Figure 3-6 The Alert Dialog Box

You can either proceed or stop the operation. We want it to proceed.

    3   Click on the Yes button.

Immediately after you click Yes the Thermometer Dialog Box appears showing you the status of the image being halved. Once done, you will notice that Prism recalculates the distinct colors (if you have the Count Distinct Colors enabled in the Preferences

menu) being used in the image and updates the width and height in the Image Information Window.

You are now ready to perform any conversion you wish on the image in memory.

Color Effects

Prism has some handy color effects which you can apply to an image in memory before converting it. These are: *Blend, Mix, Noise Reduction,* and *Sharpen.*

To use these effects simply load an image and apply the desired effect by selecting it from the Effects menu. It's that simple! After an effect has been performed you can convert your image to any of the conversion modes and save it.

4

PRISM REFERENCE

THE APPLE MENU

Under the Apple menu you will find the *About...* menu item, the *Preferences...* menu item, and any other New Desk Accessories you have installed in the disk you booted from.

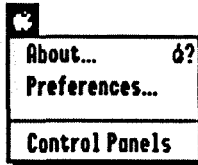Figure 4-1 The Apple menu

About...   &-?

This menu item will bring up the About Dialog Box. In it you will find information regarding the program, such as the versio number, author's name, credits, etc.

Preferences...

Selecting this menu item will bring up the Preferences Dialog Box:
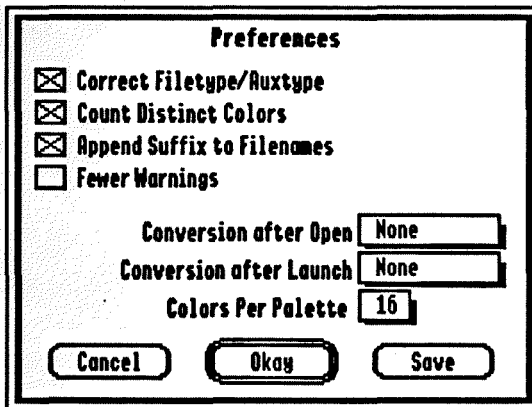

Figure 4-2 The Preferences Dialog Box

Once inside, you will be presented with the following options regarding Prism.

Correct Filetype/Auxtype

If this option is checked off, Prism will automatically correct the filetype and/or auxtype of files which have them set incorrectly.

> *Note: Some programs rely on the filetype/auxtype of a file to determine which format it is stored in. Prism will change the filetype/auxtype of a file to the registered Apple filetype/auxtype. One such example are GIF files. Usually these have the type of BIN ($06,0000) or TXT ($04,0000). The new Apple registered filetype/auxtype for GIFs is $C0,8006.*

Count Distinct Colors

With this option Prism will automatically count the number of distinct colors of an image after you load or perform an effect on an image. A window with a thermometer will be displayed to show you the progress. Prism will then display this information in the Image Information Window next to the Distinct Colors entry.

Append Suffix to Filenames

If this option is checked off, Prism will automatically add a suffix of .gray, .16, .256, or .3200 to the filename depending on the conversion performed. For example, if you convert an image called Bill.Car to 3200 colors, Prism will append the suffix .3200 to Bill.Car. The final name would be Bill.Car.3200.

Fewer Warnings

Prism is very careful to warn the user any time an action which may modify the image in memory or current conversion is about to take place. With this option checked off, Prism will not warn you about these actions.

Conversion after Open

This option allows you to chose which conversion Prism will automatically apply to an image right after you load it from the Open Dialog Box. You can select None, Grayscale, 16 Colors, 256 Colors, or 3200 Colors through a pop-up menu. Next time you open a file, Prism will automatically convert it to the selected type using the current Conversion Settings.

Conversion after Launch

This option allows you to chose which conversion Prism will automatically apply to an image right after you double click on the image's icon in the Finder. You can select None, Grayscale, 16 Colors, 256 Colors, or 3200 Colors through a pop-up menu. Next time you are in the Finder, just double-click on the image you would like to load. Prism will automatically launch, skip the title screen, load the image, and convert it to the preset conversion using the current Conversion Settings.

Colors Per Palette

This option allows you to select how many colors Prism should use on the conversion per palette. You can select anywhere from 16 down to 2 colors. This option comes in handy if you want to reserve some colors in the palette for your own use after the conversion has taken place.

Let's say you want to put a title on an image. What you would do is select 15 from the Colors Per Palette pop-up menu and then convert the image. Prism will then convert the image using only 15 colors per palette, which leaves you one free color. Take your image to a paint program, change the color of the last position in the palette (the unused color– always white) to the color you want your text to be and type in your title using the text (font) tool. That's it! This comes in real handy when you want to add a title to a 256 or a

3200 color image.

On the bottom of the Preferences Dialog Box there are three buttons: Cancel, Okay and Save.

▲ Click on Cancel to exit the Preferences Dialog Box and leave the settings as they were.

▲ Click on Okay to temporarily use these settings.

Note: Prism will not save your preferences upon exiting Prism if you click Okay.

▲ Click on Save to save the current preferences. Prism will use these preferences until the next time you resave them.

Note: Prism saves these preferences upon exiting Prism, not after you click the Save button. If for whatever reason your computer was to crash before you exited Prism, none of the preferences would be saved. Prism also saves any of the options which can be toggled on or off with checkmarks from the pull-down menus (640 mode, Default Palette and Smoothed Reductions).

THE FILE MENU

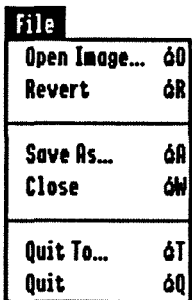Through this menu you will be able to load and save your images and exit Prism.

```
┌─────────────────┐
│ File            │
├─────────────────┤
│ Open Image...  ⌂O│
│ Revert         ⌂R│
├─────────────────┤
│ Save As...     ⌂A│
│ Close          ⌂W│
├─────────────────┤
│ Quit To...     ⌂T│
│ Quit           ⌂Q│
└─────────────────┘
```

Figure 4-3   The File menu

Open Image...   ⌘-O

This option is used to load all images. Once this menu item is selected, you will be presented with a standard Open Dialog Box.

```
┌──────────────────────────────────────────┐
│ Select Image to Open:                      │
│ ☑ ▭ HD3 (ProDOS)                           │
│ ┌────────────────────┐  ┌──────────────┐  │
│ │ ▣ DL            ⬆ │  │   Volumes    │  │
│ │ ☐ EV.Demo.Pics     │  └──────────────┘  │
│ │ ☐ Music.Apps       │                     │
│ │ ☐ Pics.Misc        │  ┌──────────────┐  │
│ │ ☐ Stuff            │  │     Open     │  │
│ │ ☐ TrueType.Fonts   │  └──────────────┘  │
│ │                  ⬇ │  ┌──────────────┐  │
│ └────────────────────┘  │    Close     │  │
│                          └──────────────┘  │
│ ☐ Show All Files         ┌──────────────┐  │
│                          │   Cancel     │  │
│                          └──────────────┘  │
└──────────────────────────────────────────┘
```
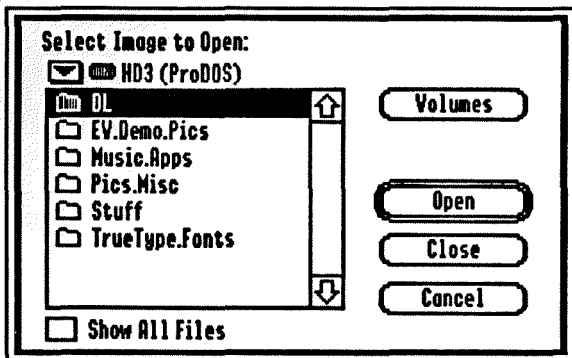
Figure 4-4   The Open Dialog Box

The following formats are supported for loading by Prism:

▲ Graphic Interchange Format™ (GIF)

▲ Interchange File Format™ (IFF- form ILBM)

▲ Tag Image File Format™ (TIFF- no Packbits or JPEG)

▲ PaintWorks™ 1.0

▲ PackBytes

▲ Apple Preferred (all types)

▲ Super Hi-Res Screen

▲ French APP 3200 Color Super Hi-Res Screen

▲ 3200 Color Super Hi-Res Screen

▲ Packed 3200 Color Screen

▲ Allison™ Raw Data

▲ Visionary VID Raw Data

▲ ComputerEyes™ GS

Prism has a built-in loading filter that will only display the files it supports for loading, in all of its different filetype/auxtype variations. On the lower left side of the dialog box is a check box labeled Show All Files. Click on this box to show all the files (overriding Prism's loading filter) in the current drive or directory.

To load a file simply click on the filename and click on the Open button, or just double-click on the filename. After you do so, Prism will display a thermometer dialog box to inform you on the progress as the file you selected loads.
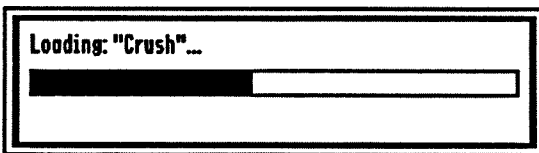
```
┌─────────────────────────────────────────┐
│ ┌─────────────────────────────────────┐ │
│ │ Loading: "Crush"...                 │ │
│ │ ┌─────────────────────────────────┐ │ │
│ │ │██████████████████               │ │ │
│ │ └─────────────────────────────────┘ │ │
│ └─────────────────────────────────────┘ │
└─────────────────────────────────────────┘
```

Figure 4-5 The Thermometer Dialog Box

Note: Prism will automatically recognize and ignore Macintosh headers from GIF files. Prism will also recognize IBM PC and

Macintosh GIF and IFF files downloaded from America Online.™

If Prism cannot open an image, it will let you know so. If you are certain that the file's format is supported by Prism, then there is a chance that the file might be damaged or corrupted.

Revert   ⌘-R

This option re-loads the last file you loaded. This option provides for a quick way to reload the previously loaded image without you having to search for it from your volume/directory. For example, let's say that you load an image, perform a Halve and Sharpen effect to it, but you do not like the results after you see the conversions. Simply select Revert and it will load the original image without any of the effects applied to it.

Save As...   ⌘-A

This option allows you to save the converted image back to disk. Selecting this menu item will bring up the standard Save Dialog Box which allows you to name the converted image (if you don't like the one Prism suggests) and save it to the volume/directory you want.
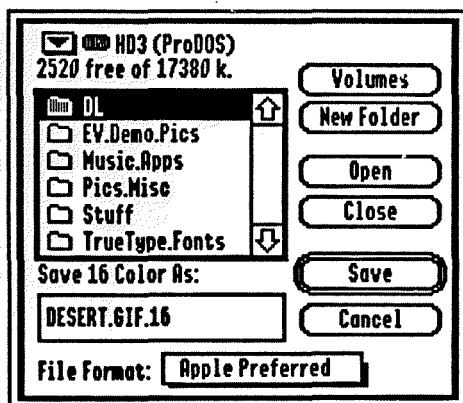
```
┌─────────────────────────────────────────┐
│  ┌──────────────────────────┐            │
│  │ ▼ 💾 HD3 (ProDOS)         │            │
│  │ 2520 free of 17380 k.    │  ( Volumes  )│
│  │ ┌──────────────────┐     │            │
│  │ │ 📁 DL          ⇧ │  ( New Folder )│
│  │ │ 📁 EV.Demo.Pics   │            │
│  │ │ 📁 Music.Apps     │  (  Open   )│
│  │ │ 📁 Pics.Misc      │            │
│  │ │ 📁 Stuff          │  (  Close  )│
│  │ │ 📁 TrueType.Fonts⇩│            │
│  │ └──────────────────┘     │            │
│  │ Save 16 Color As:        │ ( Save   )│
│  │ ┌──────────────────┐     │            │
│  │ │ DESERT.GIF.16     │     │ ( Cancel )│
│  │ └──────────────────┘     │            │
│  │ File Format: [ Apple Preferred ]│     │
│  └──────────────────────────┘            │
└─────────────────────────────────────────┘
```

Figure 4-6   The Save Dialog Box

Prism allows you to choose in which format to save the image through the File Format pop-up menu, located in the bottom of the Save Dialog Box. The File Format pop-up menu has two options: Apple Preferred and 3200 Color Screen.

The Apple Preferred format is supported by most, if not all, Apple IIGS applications. It can handle images of very large sizes in both modes and in all color configurations. Prism will activate the 3200 Color Screen format if your conversion is a one screen (320 by 200 pixels) 3200 color image. If not, this item will be dimmed out.

Close $\circlearrowleft$-W

This option will close the active Conversion Window. You can achieve the same result by clicking on the Conversion Window's Close Box (top left corner of window).

If you do not have the Fewer Warnings preference enabled, it will prompt you to save the image everytime you close a Conversion Window that has not been saved yet. If you want, you can override the prompting manually by holding down the Option key while selecting Close from the File menu, or by holding the Option key while clicking on the Conversion Window's Close Box.

Quit To... $\circlearrowleft$-T

This option allows you to quit back to (or actually launch) any application you want, not just to the program launcher you used to launch Prism.

When you select Quit To... an Open Dialog Box will appear asking you to select which application to quit to. After you have selected the desired application, simply click the Open button, or double-click on the name of the application. Of course, you can always click on the Cancel button to abort this operation.

This option will come in handy after you have converted an image

and wish to edit it in another program. Instead of quitting back to your program launcher, you can go directly to the program you wish.

Quit   ⌘-Q

This option simply exits Prism and quits you back to the program launcher you used to launch Prism.

THE EDIT MENU

Prism does not utilize this menu at all, that is why it is dimmed out. It is there only for the use of NDAs (New Desk Accessories) that might require it.
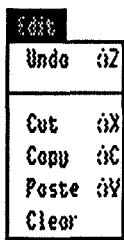

Fig 4-7 The Edit menu

MODES, PALETTES AND COLORS

On the Apple IIGS there are two color modes: 320 mode and 640 mode. The first mode, 320 mode, is named so because of the total number of pixels, or dots, that can fit horizontally on one line on the screen. The second, 640 mode, allows a total of 640 pixels to fit horizontally on one line on the screen. Prism, like most Apple IIGS desktop programs, operates in 640 mode. A program like Deluxepaint II or Platinum Paint, for example, can operate in both modes.

There are benefits and drawbacks for both modes. Using the 320 mode allows you to have more colors per palette than using the 640 mode (16 vs. 4); but using the 640 mode gives you a finer resolution, or more dots horizontally than using the 320 mode (640 vs. 320).

A color palette is defined as the number of colors that you can use, or in Prism's case, display, at one time. While the Apple IIGS has a total color palette of 4,096 distinct colors (12 bit color: four bits red, four bits green, four bits blue), each mode is limited to a specific number of colors it can use at one time.

In 320 mode, the total number of colors you can have in a palette is 16. You can, however, have a total of 200 different palettes in 320 mode, giving you a total of 3200 distinct colors per screen. In 640 mode, the total number of colors you can have in a palette is 4. Through a technique called dithering, 16 colors can be achieved in 640 mode by placing all possible two-color combinations from the four basic colors in the palette side by side to form the other 12 colors. Keep in mind that these other 12 colors, unlike in 320 mode, are not pure colors, but mere optical illusions to achieve a more colorful effect.

In the 16 color 320 mode, you have only one palette to work with. That provides you with 16 distinct colors for the entire image. In the 256 color 320 mode, you can assign a total of 16 palettes to the entire image, providing you with a total of 256 distinct colors. Each of the 16 palettes, however, is assigned to a specific section of the image, so that the colors of the section to which palette nine was assigned, for example, may not be present in another section. The 3200 color 320 mode is just an extension of the 256 color 320 mode, but instead of assigning 16 different palettes, 200 different palettes are assigned to your image (16 colors multiplied by 200 palettes equals 3200, the magic number).

The use of 3200 colors has been around for a while. Only until recently have people begun to exploit its uses. By using 3200 colors, you can achieve photorealistic images on your stock, out-of-the-box Apple IIGS.

THE GOODIES MENU

The Goodies menu gives you access to certain features in Prism
which will enhance the use of the program. Although not necessary
to an extent, the following options are useful to help you determine
if your Conversion Settings are correct. Once you understand their
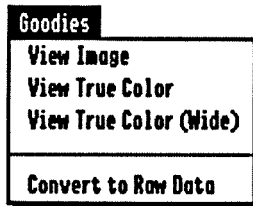purpose, you will find them indispensible.

```
┌─────────────────────────┐
│ Goodies                 │
├─────────────────────────┤
│ View Image              │
│ View True Color         │
│ View True Color (Wide)  │
├─────────────────────────┤
│ Convert to Raw Data     │
└─────────────────────────┘
```

Fig 4-8 The Goodies menu

View Image

This option allows you to view any native Apple IIGS format
without having to convert it first. It will only be enabled when you
load a native Apple IIGS format, if not it will be dimmed out.

View True Color

This option will allow you to view the original image in its true
colors. There is a catch to this. Due to the Apple IIGS' limitation of
only being able to display 16 colors per line, you will only be
allowed to see through a column of 15 pixels horizontally by 200
pixels vertically at a time. Each of those 15 pixels can have a distinct
color. The remaining color is black, which serves to cover the entire
image. You can scroll the image under the column left, right, up, or
down by simply moving the mouse.

View True Color (Wide)

This option is just like View True Color, but the column is half as tall and twice as wide. Actually, there are 2 bars that are swapped back and forth rapidly, creating the illusion of a wider bar . This option allows you to view a wider section of your image at once. The trade-off is that the bar will flicker as Prism has to swap between the two bars. Nevertheless, it is a nice feature that lets you view a wider portion of the image in true color.

> *Note: When you view an image in either of the two True Color Viewers, Prism converts the image to raw data, so that you can actually see from all of the 4,096 colors available, if need be. Of course, since the Apple IIGS only has 12-bit graphics, you may not see any colors beyond that. So if you were to view a 24-bit image (that's from a palette of 16.8 million colors!), many of the colors would be representations of the true colors. If you use an accelerator such as the TransWarp GS™or Zip GS™your display will flicker less.*

Convert to Raw Data

When an image is loaded into memory, it is loaded with a specific palette or set of palettes. Because of this, when Prism applies an effect, it is restricted to use the colors in that palette(s). Convert to Raw Data removes the palette restriction on an image.

Some effects try to add colors to the image to enhance its appearance. When you apply such an effect, Prism, by default, will remap the new colors (use the most similar colors already in existence from that image's palette) instead of adding new colors. If you convert the image to raw data first and then apply an effect which deems necessary the addition of colors, Prism will add the necessary colors that are not currently in the palette.

THE CONVERT MENU

This is where it all takes place. From here you will instruct Prism to magically convert an image from one format to another, all while you are constantly updated of the progress.
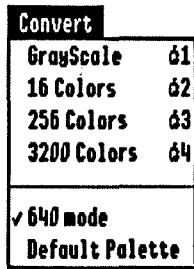
```
┌─────────────────┐
│ Convert         │
├─────────────────┤
│ GrayScale    ⌘1 │
│ 16 Colors    ⌘2 │
│ 256 Colors   ⌘3 │
│ 3200 Colors  ⌘4 │
├─────────────────┤
│ ✓ 640 mode      │
│ Default Palette │
└─────────────────┘
```

Figure 4-9 The Convert Menu

The Convert menu is used to convert an image to any of the following formats:

▲ Grayscale in 320 mode

▲ 16 Colors in 320 mode

▲ 256 Colors in 320 mode

▲ 3200 Colors in 320 mode

▲ Grayscale in 640 mode

▲ 16 Colors in 640 mode

Once you load an image, perform any effect desired and select the Conversion Settings, you are ready to make your conversion to the desired format.

To do so select the appropriate format from the Conversion menu and let Prism do the rest. If you select the Grayscale, 16, or 256 Color format for conversion, a thermometer dialog box (Figure 4-10) will pop up informing you on the progress and status of the conversion. If you wish to cancel the conversion in progress just

press ⌘-. (period) at any time.

```
╔═══════════════════════════════════════════╗
║ Converting to 16 colors...    ⌘. to cancel ║
║ ████████████████████████                  ║
║ Status: Generating converted pixel map     ║
╚═══════════════════════════════════════════╝
```
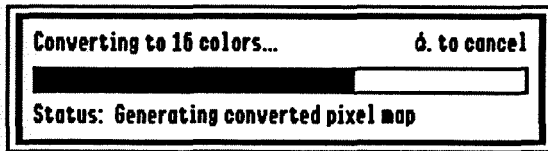
Figure 4-10   The Conversion Thermometer Dialog Box

If you select the 3200 Color format for conversion, you will be
taken to a black screen where the conversion will take place. A
horizontal bar (the Conversion Bar) of 15 lines tall will move down
the screen as it converts the image to 3200 colors line by line. As it
moves past the first 15 lines of the image towards the bottom of the
screen, you will see that the lines left above are displayed in
grayscale. Do not worry, this is the normal process. If the image is
taller than one screen (200 lines), the Conversion Bar will stop at
the center of the screen and the image will scroll up past the bar.
This way you will always know at what point of the conversion you
are at. Once the conversion is done, it will be displayed in full 3200
colors. If you wish to cancel the conversion in progress just press
⌘-. (period) at any time.

After a conversion is performed the result will be displayed in the
Full View Display. If the converted image is larger than a screen
(320 by 200 pixels) you may move the mouse in every direction to
pan the image around the screen.

Once you are done viewing the image, click the mouse button to
return to Prism's desktop. The converted image you were just
viewing will be placed in a window on the desktop. The Title Bar
on each Conversion Window will identify the conversion by
conversion type (ex: Grayscale, 256 Colors, etc.).

Grayscale   ⌘-1

This option will convert the loaded image into grayscale. This is the

fastest of all conversions. None of the conversion settings apply to grayscale. Prism will automatically use the best grayscale palette for the image.

16 Colors ⌘-2

This option will convert the loaded image into 16 colors. Prism will rescale the number of colors of the original image to use a maximum of 16 colors.

256 Colors ⌘-3

This option will convert the loaded image into 256 colors. Prism will rescale the number of colors of the original image to use a maximum of 256 colors.

3200 Colors ⌘-4

This option will convert the loaded image into 3200 colors. Prism will rescale the number of colors of the original image to use a maximum of 3200 colors.

640 mode

When this item is selected, a checkmark will appear next to it. When you enable this option, Prism will allow you to convert your image to any of the supported 640 color modes: Grayscale and 16 Colors; the other two modes, 256 Colors and 3200 Colors, will be dimmed out.

This option is very useful to convert images for use in Hypercard IIGS, HyperStudio, or any other application that supports 640 mode graphics.

Default palette

This item can only be used when the 640 mode option is enabled.

When this item is enabled, a checkmark will appear next to it. This option will force Prism to convert an image to 640, 16 color mode using the default Apple palette (the same one used in the Finder).

THE EFFECTS MENU

Through the different effects found under this menu, you can manipulate the image to fit your needs. You can change an image's size and perform various color enhancements to it. The first set of effects listed are the ones that affect an image's size: Crop to Screen, Halve, Halve Height, Halve Width and Reduce to Screen. The second set of effects are the ones that affect an image's colors: Blend, Mix, Noise Reduction and Sharpen.

```
┌─────────────────────────┐
│ Effects                 │
├─────────────────────────┤
│ Correct Aspect Ratio    │
│ Crop to Screen...       │
│ Halve              ⌥H   │
│ Halve Height            │
│ Halve Width             │
│ Reduce to Screen        │
├─────────────────────────┤
│ ✓ Smoothed Reductions   │
├─────────────────────────┤
│ Blend              ⌥B   │
│ Mix                ⌥M   │
│ Noise Reduction    ⌥N   │
│ Sharpen                 │
└─────────────────────────┘
```

Figure 4-11 The Effects Menu

Note: When performed, most of the effects will modify the image in memory. You will be notified of this through an Alert Panel. If you have the Fewer Warnings option in the Preferences menu enabled, Prism will not bother prompting you every time you perform an effect. If you want to manually override the warnings, just hold down the Option key before you select any effect.

Correct Aspect Ratio

Using this effect will try to correct the aspect ratio of some images.

This option will only be enabled when you load GIFs that are meant to be displayed on a vertical resolution of 240, 480, 600, 768, or 1,024 or Amiga interlaced IFFs. The pixel ratio of an IBM PC is 1.3 to 1; the pixel ratio of an Apple IIGS is 1.6 to 1. If you think that your image is slightly longer than what it should be, try this effect.

Crop to Screen...

This effect will crop a screen's worth (320 by 200 pixels) of data from the image in memory. This option will be dimmed out if the loaded image is not larger or is smaller than a screen's size.

To use this option just load an image larger than one screen. Select *Crop to Screen...* You will be presented with a thermometer dialog box showing you the progress as Prism prepares the image for a crop. Next, Prism will display a grayscale version of the image on the screen. By moving the mouse in any direction you can view the entire image. To select the portion of the image you would like to crop just position the part of the image that you want so that it is all visible on the screen and click the mouse button. Prism will then dispose the parts of the image which were not visible and leave the screen that was visible unaffected.

You may then apply any other effect you would like. After that proceed to convert the image to the desired mode.

Halve   ⌘-H

This effect will halve both the height and width of your image. This effect comes in handy when you load an image which is 640 by 400 pixels and want it to only take up one screen.

Halve Height

This effect will reduce the height of your image by half. If an image seems too tall and stretched out, selecting this effect should improve

its appearance.

Halve Width

This effect will reduce the width of your image by half. If an image seems too short and fat, selecting this effect should improve its appearance.

Reduce to Screen

This effect will force the image to fit into one screen. Prism will shrink the image (not crop) into one screen while preserving its original aspect ratio.

Smoothed Reductions

When this item is selected, a checkmark will appear next to it. When an image is resized with the *Crop to Screen...*, *Halve*, *Halve Height*, *Halve Width*, or *Reduced to Screen* effects, Prism has to remove lines or columns from the image. By doing so, Prism is also removing any color information that was there before.

When you enable this option, Prism will allow any resizing to be done taking into account the colors in the lines and/or columns to be removed. Prism will actually average the colors to be removed to the adjacent pixels and remap, or add new colors if the image was previously converted to raw data, the necessary colors, thus creating more subtle transitions from line to line, column to column. This allows for a reduction of your image's size without compromising quality. For best results, we recommend you leave this option on at all times.

Blend   ⌘-B

This effect will look for hue (color) splits, the area between two similar hues, and generate a new color which blends in between the two hues to make a smoother transition between the hues. This

option can greatly improve the quality of your original images. Blend will remap the generated colors, or it will add the new colors if you have previously converted the image to raw data. Imagine having a sequence of the following pixels: black, black, black, black, white, white, white and white (Figure 4-12). After you apply this effect, the sequence will change to: black, black, black, gray, white, white and white (Figure 4-13). To obtain smooth conversions on choppy images, we recommend you use Blend.

Figure 4-12 Image before Blend

Figure 4-13 Image after Blend

Mix   ⌘-*M*

This effect will look for hue splits between two similar hues and flip the two innermost pixels to simulate a smoother transition between the two hues. This effect will not add any extra colors to your image. Imagine having a sequence of the following pixels: black, black, black, black, white, white, white and white (Figure 4-14). After you apply this effect, the sequence will change to: black, black, black, white, black, white, white and white (Figure 4-15).

Figure 4-14 Image before Mix

Figure 4-15 Image after Mix

Noise Reduction   &-N

Using this effect will remove any stray pixels, usually referred to as
noise, from the image. As result, this effect will often remove several
unnecessary colors from the image. This effect is recommended
when converting images that were digitized using the
ComputerEyes or Visionary (AST VisionPlus™) video digitizers.

Sharpen

Using this effect will sharpen the image. Prism will look for smooth
color transitions and make them more sharp from one color to
another.

Note: Every time you perform an effect Prism will update the
Image Information Window to reflect the changes. If you have
checked off the Count Distinct Colors option from the Preferences
menu, a thermometer dialog box will pop up showing you the
progress as it recalculates the distinct colors.

CONVERSION WINDOW

The Conversion Window contains a converted image. You can
have up to four different Conversion Windows on your desktop,
each one containing one of the different types of conversions
(Grayscale, 16 Colors, 256 Colors and 3200 Colors).
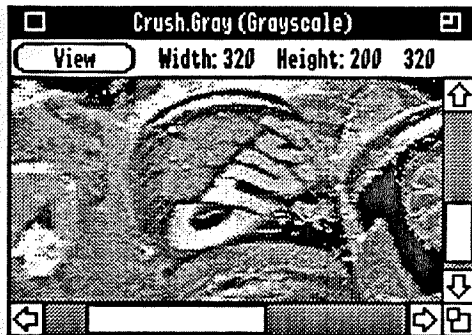
Figure 4-16   The Conversion Window

The Conversion Window's Title Bar displays the name which will
be used to save the conversion with the appended suffix (if the
option was selected from the Preferences Dialog Box) and the
conversion type (ex: Grayscale, 256 colors, etc.) in parenthesis. Just
below the Title Bar is the Info Bar. It contains the View button, the
width, height and mode (320 or 640) of the converted image
(Figure 4-16).

Each Conversion Window can be manipulated. You can move the
window by clicking and dragging the window by its Title Bar. You
can scroll through the image using the Scroll Bars along the right
and bottom sides of the window. You can resize the window by
using the Zoom Box on the top right of the window or the Resize
Box on the bottom right of the window. You can close the window
by clicking on the Close Box, on the top left corner of the window.
To view any converted image in the Full View Display just click on
the View button in the Info Bar.

THE IMAGE INFORMATION WINDOW

The Image Information Window displays the filename, format, width, height, memory used, palette size, palette count and the number of distinct colors of the current image in memory.

Figure 4-17 The Image Information Window

Filename

This entry displays the name of the current image in memory.

Format

This entry displays the format of the current image in memory.

Width

This entry displays the width in pixels of the current image in memory.

Height

This entry displays the height in pixels of the current image in memory.

Memory Used

This entry displays the amount of memory in kilobytes that the current image uses. The larger the image, the more memory it uses.

Palette Size

This entry displays the total number of colors per palette of the current image in memory.

Some image formats store their palette information as raw data. These include IFFs, TIFFs, Allison Raw Data, Visionary Raw Data, ComputerEyes GS or any image which you have converted to raw data using the *Convert to Raw Data* option from the Goodies menu. When one of these images is loaded, the Palette Size entry in the Image Information Window will read Raw Data.

Palette Count

This entry displays the number of palettes of the current image in memory. Every time you perform an effect which affects the size of the image in memory, the Palette Count will be updated.

When you load an image which stores its palette information as raw data or convert an image to raw data using the *Convert to Raw Data* option from the Goodies menu, the Palette Count entry in the Image Information Window will read N/A, to signify that there are no distinct palettes.

Distinct Colors

This entry displays the total number of colors of the current image in memory. This option can be turned on or off from the Preferences Dialog Box. If turned off, images will load slightly faster and N/A will be displayed instead.

THE CONVERSION SETTINGS WINDOW

The Conversion Settings Window allows you to change the way the current image in memory will be converted. By changing the values of the Color Separation and the Global Histogram Impact and setting the Dithering check-box on or off, you can enhance the appearance of the image after conversion.
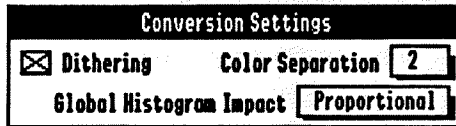
Figure 4-18 The Conversion Settings Window

Dithering

By setting the Dithering check-box on, Prism will apply dithering to the image once it converts it. Dithering is a technique that puts different colored pixels next to each other in order to simulate more colors. For example, by dithering black and white, you can produce gray. We recommend you leave this option on all the time for it enhances the quality of the converted image.

Note: Dithering does not affect Grayscale conversions.

Color Separation

Color Separation determines how similar (or close in value) the colors in a palette are. By specifying a lower value, Prism will allow similar colors to be included in the converted image's palette. On the other hand, by specifying a higher value you let Prism know that it should only allow colors that are not too similar to each other to be included in the converted image's palette.

You can select the Color Separation value through the pop-up menu in the Conversion Settings Window. To change the setting

just click on the Color Separation pop-up menu and select the setting you desire. The various settings range from Off to 7. A value of 2 is the default value. Setting the Color Separation value to Off will just take the most used colors in order. Setting the value to 1 will skip every other color. Setting the value to 2 will skip every second color and so on.

Conversion Settings	Off
	1
☒ Dithering Color Separation	2
Global Histogram Impact Proport	3
	4
	5
	6
	7
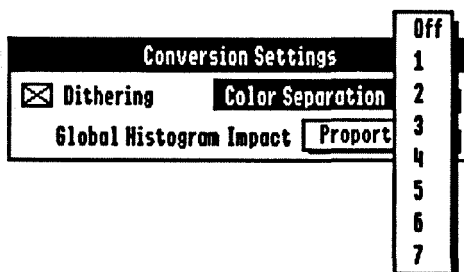
Figure 4-19 The Color Separation pop-up menu

Global Histogram Impact

Global Histogram Impact will determine how well your image will convert. If you try to understand the following concepts, you will tap much of Prism's power.

A histogram is a measure for determining the amount of color usage. For example, the more the color red is used in an image, the higher the histogram value for that color will be.

Prism uses two types of histograms: local and global histograms. A local histogram is a measure that determines how much each color is used in each line of an image. Each line can have a different local histogram value. A global histogram is exactly the same as a local histogram except that it applies to the entire image. Global Histogram Impact takes the value of the the local histogram of each line and adds it to the global histogram. By specifying a higher or lower setting, you can assign how much impact the global histogram will have on the image once it is converted. A higher

setting will cause the global histogram to affect the final image more than a lower setting.

Let's say that there is a lot of green on a small area in an image, but not really anywhere else. By raising the Global Histogram Impact setting, you can have Prism give less priority to that color in the image because it only appears in that area (locally) and not anywhere else in the image (globally).

You can select the amount of impact through the pop-up menu in the Conversion Settings Window. To change the setting just click on the Global Histogram Impact pop-up menu and select the setting you desire. The various settings range from Off to Maximum. Proportional is the default value.
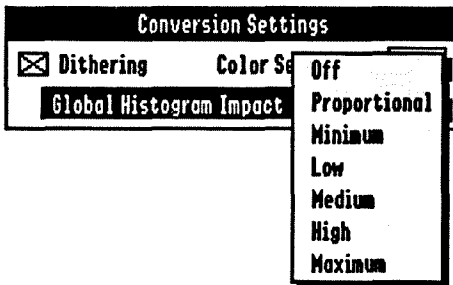
Figure 4-20 The Global Histogram Impact pop-up menu

Note: There is no specific science or magical combination for Color Separation and Global Histogram Impact. You must play with different combinations to achieve the best results. The defaults we suggest are usualy a good starting point, but it all varies depending on the image you are trying to convert.

Always check to see what the image really looks like with any of the True Color Viewers. These can provide you with a pretty accurate preview of what the image should like after an optimum conversion.

KEYBOARD SHORTCUTS

⌘–A	Save As…
⌘–B	Blend
⌘–H	Halve
⌘–M	Mix
⌘–N	Noise Reduction
⌘–O	Open…
⌘–Q	Quit
⌘–R	Revert
⌘–T	Quit To…
⌘–W	Close
⌘–?	About…
⌘–1	Grayscale
⌘–2	16 Colors
⌘–3	256 Colors
⌘–4	3200 Colors
⌘–.	Cancel
Option-Key	Override Warnings

a

c

g

h

i

COLOPHON

Documentation

Dino & Ronny Bagdadi.

Production

This manual was designed and layed out on a NeXTstation TurboColor using RightBrain PasteUp, Altsys Virtuoso, and Appsoft Image.

We would have used a Macintosh– but why when you can be a step ahead– NeXTSTEP.

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