



MicroFrontier

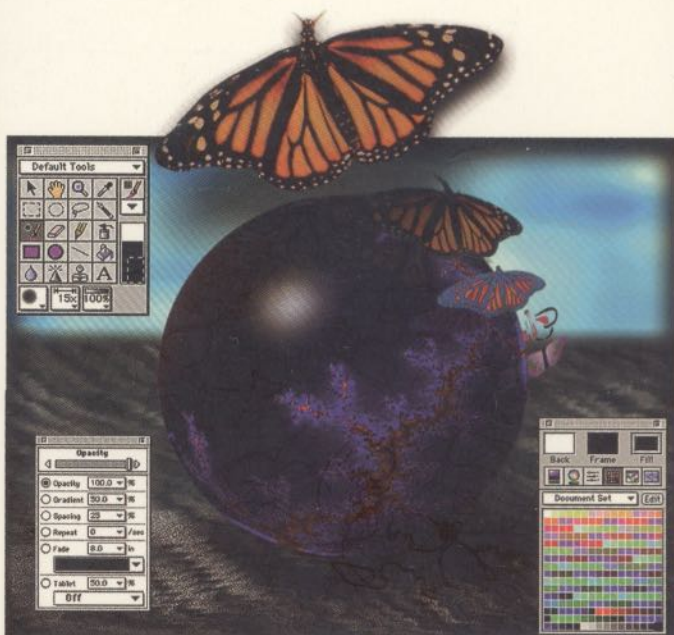


COLOR IT!

REFERENCE MANUAL

**Easy-to-Learn
Easy-to-Use
Image Editing
& Paint Program**

- Multiple Undos
- Photoshop Plug-ins
- Pressure Sensitive Tools



Warranty Registration Card

please retain this stub for your record.

C130 18944

COLOR IT!

Version 3.0

Reference Manual

*Easy-to-Learn
Easy to Use
Image Editing
& Paint Program*

MicroFrontier



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Program: John Ehm, Kevin Tieskoetter, Troy Gaul
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Manual: Wayne Davis
Cover: John R. Tow
First Printing: April 1994

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1: Getting Started

Whether you are experienced in working with digital images or just starting out, Color It!™ provides the necessary tools to do high-quality, professional work. With Color It!, you can create original works or manipulate existing images with ease.

Color It! supports images from 1-bit line art to 24-bit full color in all the major Macintosh graphic formats.

This Reference Manual explains the many features offered by Color It!, arranged by palette and menu.

System Requirements

To use Color It! you should have:

- A Macintosh II, LC, Performa, Centris, Quadra or Power Macintosh computer
- At least 2 megabytes random access memory (RAM)
- A hard disk
- Apple System software 6.03 or later
- 32-bit QuickDraw in your System folder (for System 6 machines. If you have a Macintosh IIci, IIfx, IIsi or LC model, or if you are running System 7.0 or later, you do not need to install 32-bit QuickDraw)
- An 8-bit or greater gray scale or color video card is recommended

The Color It! Program Package

In addition to this Reference Manual, your Color It! package should contain:

- A license agreement envelope with a Color It! disk
- The registration card

If any of these items are missing, please call MicroFrontier Customer Relations at (515) 270-8109 (outside of the U.S. contact your local MicroFrontier distributor or dealer).

Before You Begin

Make a Backup of the Color It! disks

It's a good idea to make a backup copy of your program disks, just in case anything happens to the master disks.

The original disks are shipped unlocked. We strongly recommend that you lock these disks to prevent them from being accidentally erased or overwritten. Store the original and backup disks in a safe place.

Complete and Return the Registration Card

Be sure to complete and mail the Registration Card right away. Returning your Registration Card will allow us to keep you informed of the latest changes and improvements in the program. In order to receive technical support, you must be a registered user.

NOTE: *If you received your copy of Color It! direct from MicroFrontier, you were automatically registered at the time of purchase and will not receive a registration card.*

Conventions Used in the Reference Manual

This manual assumes you are familiar with the basic Macintosh operations—point, click, drag, open, save, etc. If you are not familiar with these operations, refer to the manual that came with your Macintosh for more information.

In order to make the manual as easy to use as possible, style variations are used to distinguish different types of features:

Menu names appear in bold type (...The **File** menu)

Commands in menus appear in bold type (...**Save As...**)

Keyboard Shortcuts appear in bold type within brackets (...[**Command-S**])


Palette names appear in bold type (...The **Tools** palette)

Tool names appear in bold italic type (...The ***Pointer*** tool)

Pop-up menu names appear in bold type (...**Color Set**)

Check/Text box names appear in bold type (...**Fill With**)

Button names appear in bold type (...**Cancel**)



To help you find your way through the menu chapters, a small picture of the menu for that chapter is shown in the upper left corner of the left hand pages with the particular command being discussed highlighted.

Installing Color It!

It is recommended that you have at least 1 megabyte of free space on your hard drive. This will insure that the program has enough free space to operate.



Color It!™ 3.0 Installer

To install Color It!, insert the program disk in your floppy disk drive. Double click on the **Color It!™ 3.0 Installer** icon to launch the installer program.

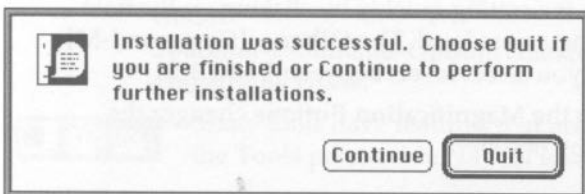


A splash screen will appear. Click the **Continue** button, and continue through until this dialog box opens. Click the **Switch Disk** button if you wish to install Color It! on a different disk. Click the **Install** button to install on the pictured drive.

The installer creates a Color It!™



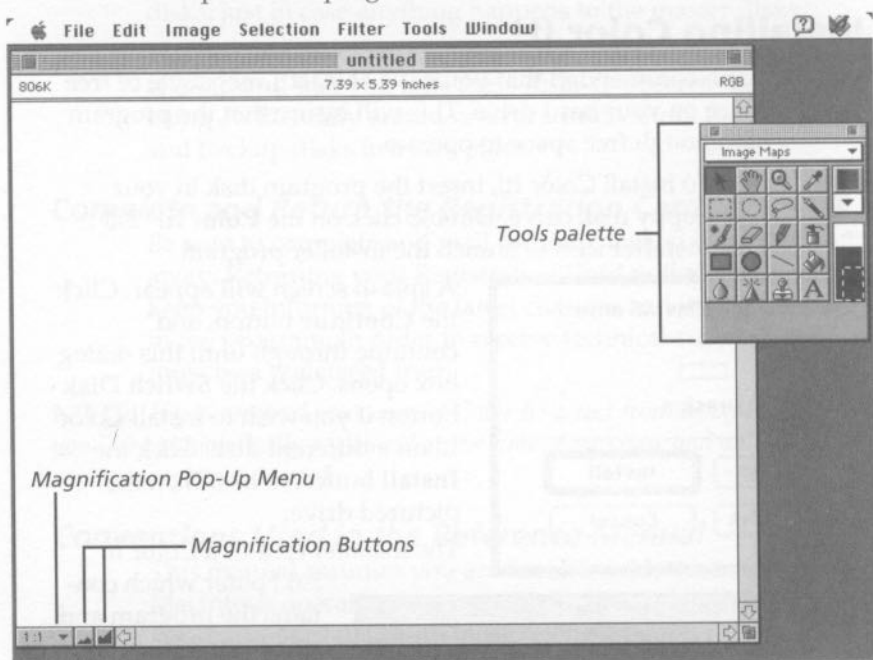
3.0 Folder which contains the program and a Color It!™ Stuff folder. The Color It!™ Stuff folder contains a number of supplemental folders and files which add more power and versatility to Color It!.



A dialog box tells when the installation is complete. The first time you use Color It!, you will be asked to personalize your copy.

Color It! Document Windows

Color It!'s windows have the same features found in most standard Macintosh windows. There are also some features unique to this program:



The **Tools** and other palettes always float above your document. For more screen space, the palettes can be shrunk to just the title bar by clicking on the zoom box (upper right corner of the palette). Clicking again expands them.

Other... %M
1:8
1:4
1:3
1:2
Fit
✓ 1:1
2:1
4:1
8:1
16:1

The **Magnification Pop-up Menu** shows the current magnification or reduction level of the document. You can change the setting quickly by clicking on the field and selecting a new level. The **Other... [Command-M]** option lets you select levels between 1 and 32x.

Clicking on the **Magnification Buttons** changes the view level by one step.

2: The Tools Palette



The **Tools** palette is a floating palette that contains tools that let you view, select and modify documents.

The palette is closed by clicking the close box in the top left corner. The **Tools** command in the **Tools** menu [**Command-T**] is a toggle which opens and closes the palette. Move the **Tools** palette by clicking on the title bar and dragging it to a new position.

The **Antialiasing** command in the **Tools** menu is a toggle which turns antialiasing on and off for many tools.

Additional Tools

Several additional tools are available in the pop-up menu in the upper right side of the **Tools** palette. When a tool is chosen, it appears above the pop-up pointer when the menu closes.



Tools can be re-arranged within the main tool display and between the display and the additional tools pop-up. See **Editing the Tool Palette** on page 31 for more information.

Modifier Tool Shortcuts

Several shortcuts are available by using modifier keys. Unless otherwise noted under the review for an individual tool, the following are common for all tools:

Shift: constrains the action of the tool to horizontal or vertical movement.

Option: changes to the *Eye Dropper* tool.

Spacebar: changes to the *Mover* tool.

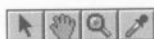
Spacebar-Command: changes to an enlarging *Magnifying Glass*.

Spacebar-Command-Option: changes to a reducing *Magnifying Glass*.



Many tools have features that appear at the bottom of the **Tools** palette when a tool is selected.

General Tools



The general tools are the *Pointer*, *Mover*, *Magnifying Glass* and *Eye Dropper*.

Pointer



The *Pointer* tool lets you move a selection without moving its contents. Clicking outside of a selection with the *Pointer* does not deactivate the selection; rather it repositions the selection centered on the mouse click.

While the *Pointer* tool is selected, you can open the *Mouse Coordinates* palette by double-clicking on the *Pointer* tool.

Mover



The *Mover* tool lets you scroll the document when it is too large to fit in the active window. An active selection is picked up and moved like a floating paste; it does not affect the background until deselected.



The three icons at the bottom of the palette control how the document is displayed. The left icon is **Normal Window** mode which displays all the standard Macintosh window elements as well as Color It!'s magnification pop-up and buttons.

The center icon is **Full Screen** mode. The document fills the entire screen (except the menu bar) if the view is large enough. If the view of the document is not large enough, a solid color background fills the rest of the screen. The right icon is **No Menubar** mode, similar to the **Full Screen** mode except the menu bar is hidden as well. Although hidden, the menu bar will appear when the mouse button is held down as you click in the menu bar area at the top of the screen.

(See **Chapter 11, Window Menu** for more information on these modes).

Double-clicking on the *Mover* zooms the window to fill the screen and resizes the document view to **Fit**. Double-clicking again changes the view to 1:1.

Option + *Mover* drags an outline of a mask. This is useful for positioning when one document is the mask for another.

Magnifying Glass



The *Magnifying Glass* tool lets you reduce or enlarge your view of the document.

Clicking and dragging the *Magnifying Glass* tool over a region fills the window with that region when the mouse button is released.

Double-clicking on the *Magnifying Glass* tool sets the document view to 1x magnification.

Command + *Magnifying Glass* tool sets the document view to 1x magnification and centers the click point in the window.

Option + *Magnifying Glass* tool sets it to reduction mode.

Eye Dropper



The *Eye Dropper* tool lets you pick up a color from the document. When you select it, a color bar and an area selector feature is added to the bottom of the **Tools** palette.



Clicking in the document fills the bar with the color at the point clicked.



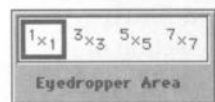
Clicking and dragging fills the bar with a gradient blending from the color where you first clicked to the color where you released the mouse. The most recent color becomes the foreground, background or frame color depending upon the color region currently selected.



To create a unique set of colors, hold the Shift key down while you click or click and drag between multiple colors. The graduated bar continues to divide into different subsets. You can select a total of 16 colors or graduated bands.

Clicking the *Eye Dropper* inside the color bar selects a specific color.

The contents of the color bar can be assigned to the **Paint Is** and **Image Is** color bars in the **Paint Controls** palette by choosing the **Current Gradient** command.



Clicking on the pop-up at the bottom right corner of the **Tools** palette changes the size of the sample area the *Eye Dropper* uses. The color value selected is the average of the pixels in the area chosen.

Double-clicking on the *Eye Dropper* displays or hides the **Colors** palette.

Shift + Option + *Eye Dropper* changes the to the *Mover* tool.

Selection Tools

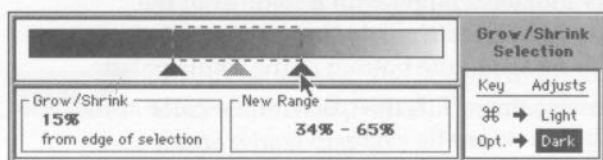


The selection tools are the *Shape Selection* (rectangle and circle shown), *Lasso*, *Magic Wand*, *Zap*, *Scissors*, *Crop*, and *Bezier*.

All of the selection tools can be repositioned from the keyboard. Pressing an arrow key nudges the selection 1 pixel at a time. Shift-arrow nudges the selection 10 pixels.



Several of the selection tools (the *Shape Selection*, *Lasso* and *Magic Wand*) tools share the **Grow/Shrink Selection** and **Selection Calculator** features.



The **Grow/Shrink Selection** opens a dialog box that lets you increase or grow or shrink the current selection

area by the percentage you set in the dialog box. As you move the mouse over the graduated bar, black pointers show the current range selected. The areas added or dropped from the current selection are only those containing the same color values as the current selection. Holding the Command key down selects only colors lighter than the current selection. Holding the Option key down selects only colors darker than the current selection.

The **Selection Calculator equals (=) button** lets you make a new selection. The **Plus (+) button** or [Command] adds to



Original

Plus

Minus

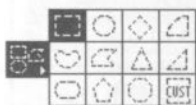
Intersection

the current selection. The **Minus (-) button** or [Shift] subtracts from the current selection. Selecting with [Command-Shift] selects the intersection of the two selections.

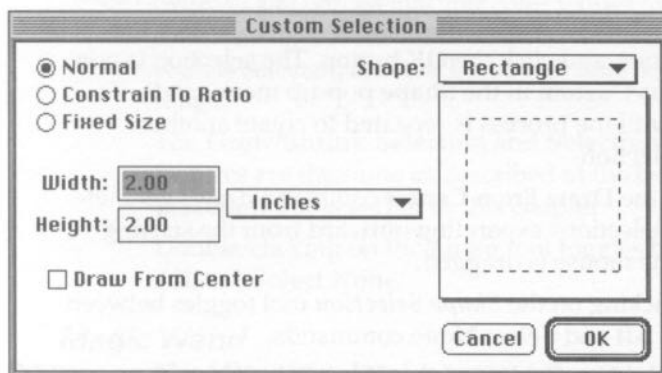
Shape Selection



The *Shape Selection* tool selects an area of a document. When this tool is chosen, the **Grow/Shrink Selection** and **Selection Calculator** (discussed above) and the **Shape Selector** appear at the bottom of the **Tools** palette.

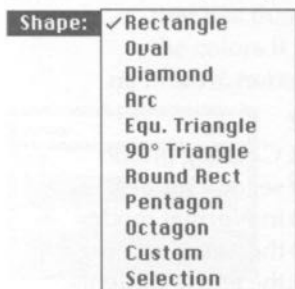


The **Shape Selector** offers eleven standard shapes and a custom shape option. Choose a shape by moving the cursor over the shape and releasing the mouse. The chosen shape then appears in the **Tools** palette.



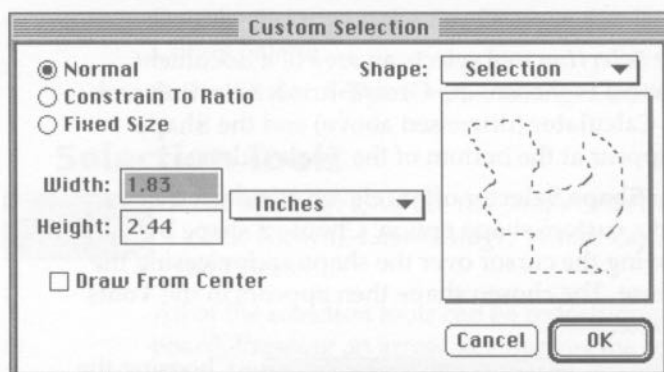
Choosing the **Custom Selection** from the shape selector opens a dialog box that lets you set the size and some selection attributes as well as add

completely customized shapes for the *Shape Selection* tool.



Select a shape from the **Shape** pop-up menu. All of the preset shapes from the shape selector are listed, and can be customized using the **Constrain to Ratio** (proportional width/height) or **Fixed Size** buttons. Enter numbers in the **Width** and **Height** textboxes for the ratio or fixed size to be used. The units pop-up menu next to the **Width** and **Height** textboxes lets you choose from pixels, inches, centimeters, picas or points.

To create a completely customized shape, make a selection in the document using any of the selection tools. With the selection still active, choose one of the *Shape Selection* tools, hold down the Option key and double-click on the tool to open the **Custom Selection** dialog box.



Choose **Selection** from the **Shape** pop-up menu. The active selection in the document appears in the square to the right. Choose any of the

other options, and click the **OK** button. The selection is now available as **Custom** in the **Shape** pop-up menu, and remains until the process is repeated to create another custom selection.

Checking the **Draw From Center** command draws geometric shape selections expanding outward from the starting point as the mouse is dragged.

Double-clicking on the *Shape Selection* tool toggles between the **Select All** and **Select None** commands.

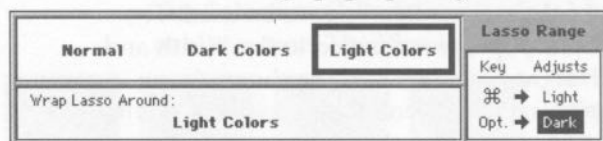
Option + double-clicking on the *Shape Selection* tool opens the **Custom Selection** dialog.

Lasso



The *Lasso* tool lets you make a tight selection around an irregularly shaped object.

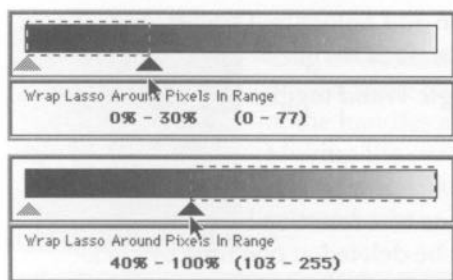
Color It! defaults to selecting light colors. Clicking on the **Lasso Range** pop-up lets you select from several modes.



In **Normal** mode, the *Lasso* will grab the entire contents of your selection. **Dark Colors** mode

selects only darker colors; **Light Colors** selects only lighter colors.

Modifier keys permit precise control over the range of grays selected. The Option and Command keys change the



display to a graduated bar. Dragging the mouse over the bar selects all grays from black to that point with the Option key or from white to that point with the Command key. As you move the mouse, a pointer moves along the bar with a selection box indicating the

colors chosen. The **Wrap Lasso Around Pixels in Range** box displays the percentage and color values for the range selected. Release the mouse button when the range you wish is selected, and the *Lasso* will only select colors in that range.

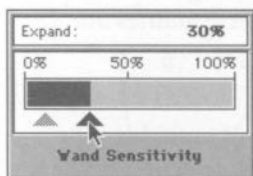
The **Grow/Shrink Selection** and **Selection Calculator** features are the same as described at the beginning of the **Selection Tools** earlier in this chapter.

Double-clicking on the *Lasso* tool toggles between **Select All** and **Select None**.

Magic Wand



The *Magic Wand* tool is a very powerful and flexible selection tool. A single click on an document selects the area that has that color. Dragging the *Magic Wand* reads all of the colors it passes through and selects any contiguous areas with those colors.



Selecting the *Magic Wand* tool adds a **Wand Sensitivity** pop-up menu to the bottom left of the **Tools** palette that controls the range of colors selected when you click or drag the tool on a document (clicking on a color with a 10% sensitivity selects all colors within 5% on each

side of the selected color). Low sensitivity expands the selected range of colors only a few levels; higher sensitivity adds more levels to those chosen with the tool. As you change the sensitivity, a black pointer shows the current level and a gray pointer the previous level.

The **Grow/Shrink Selection** and **Selection Calculator** features are the same as described earlier in this chapter.

Double-clicking on the *Magic Wand* toggles between **Select All** and **Select None**.

Zap



The *Zap* tool deletes portions of a selection by clicking on them. Multiple regions can be deleted at one time by clicking and dragging a line through them.

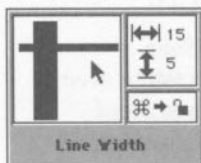
Scissors



The *Scissors* tool cuts unwanted portions of a selection. Once a portion is separated, the *Zap* tool deletes the portion from the selection.



To use the *Scissors* tool, click and drag through a selection to cut off unwanted regions. When the mouse button is released the selection is divided into separate regions. The *Zap* tool can then be used to delete regions.



With the *Scissors* tool selected, a **Line Width** feature appears at the bottom left of the **Tools** palette. Clicking on it opens a dialog box where the line width can be set. Moving the cursor within the left box resizes the line widths as you move. Holding down the Command key makes the sizing non-proportional. The width of horizontal and vertical lines are displayed in the box at the upper right.

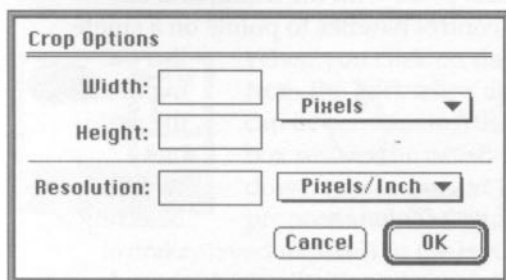
Crop



The *Crop* tool deletes any areas of a document outside of the current selection. Only the portion within the selection is left as the entire document.



After selecting the tool, click on the document and drag to create the selection. Grow handles are placed at the corners of the selection. Click on one of the handles and drag to resize the selection. Moving the cursor inside the selection changes it to a scissor. Clicking crops the document to the selected area.



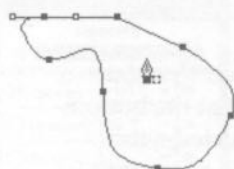
Double-clicking the *Crop* tool opens the **Crop Options** dialog box. You can crop the document to a specific size by entering values in the **Width** and **Height** text boxes. Select pixels, inches, centimeters, picas or points from the

pop-up menu at the upper right. Enter a value in the **Resolution** text box and choose pixels per inch or centimeters per inch from the pop-up menu. If no value is entered in the **Resolution** text box, the document's present resolution will be used.

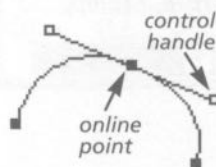
Bezier



The *Bezier* tool lets you draw an outline with straight segments and smooth curves to create a selection.



Click to set the first point, then click at a different point to connect a straight line with the previous point. Clicking and dragging creates a curved line. To close the selection, click again on the first point. To make the closed outline a selection, click inside the outlined area.



Curved online points also have control handles that control the curves. Moving the control handles adjusts the curves.

The modifier keys change the way online points and control handles are adjusted. Holding down the Command and Option keys adds another point when clicking on the Bezier line. Selecting an online point with the Command key held down moves the online point.

Selecting a control handle with no modifier keys snaps both control handles to points on a single line with the same length. Selecting a control point with the Command key held down snaps both control handles to points on a single

line but maintains the previous lengths. Selecting a control



Control handle
without modifier



Control handle
with Command key



Control handle
with Control key

point with the Control key held down permits the single control handle to be moved independently.

The **Grow/Shrink Selection** and **Selection Calculator** features are the same as described at the beginning of the **Selection Tools** earlier in this chapter.



Brush Tools

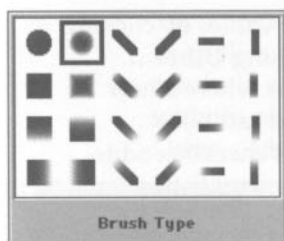
The brush tools are the *Paint Brush*, *Eraser*, *Pencil*, *Air Brush*, *Blur*, *Sharpen*, *Stamp*, *Smudge*, *Lighten* and *Darken*.

Paint Brush

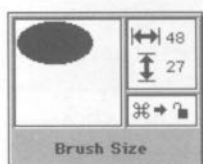


The *Paint Brush* tool applies paint and is used to retouch a document. The first two features that appear at the bottom of the **Tools palette** when *Paint Brush* is selected—the **Brush Type** and **Brush Size**—are common to most of the brush tools: *Paint Brush*, *Air Brush*, *Blur*, *Sharpen*, *Stamp*, *Smudge*, *Lighten* and *Darken*.

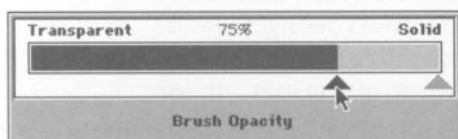




The **Brush Type** pop-up menu contains the different brushes available. The current brush has a square outline around it, and the outline follows the cursor as you move it over the different brushes. To select a different brush type, move the cursor over it and release the mouse button. The solid black brush shapes indicate tools that are not antialiased.



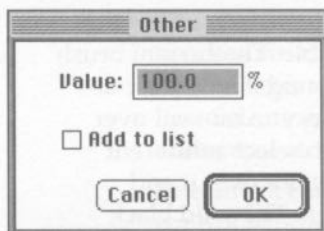
When you click on the **Brush Size** pop-up (second from the left), a box appears where the brush size can be set. Moving the cursor within the upper left box resizes the brush size as you move. Holding down the Command key makes the sizing non-proportional. The width and height of the brush is displayed in pixels in the box at the upper right.



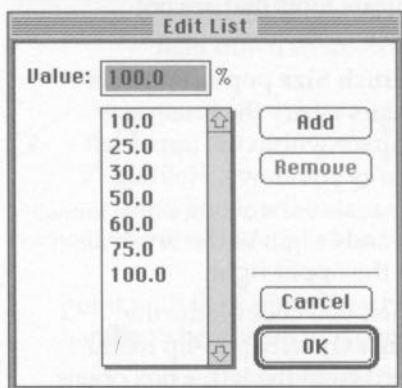
When you click on the the **Brush Opacity** pop-up menu (third from the left) a box opens that controls the transparency of the paint. As you change the opacity by moving the cursor over the bar, a black pointer shows the current level and a gray pointer the previous level. The percentage readout changes to indicate the current opacity.



Double-clicking on the **Paint Brush** shows or hides the **Brush Options** palette. The **Brush Options** palette lets you set several controls for a brush at one time. As you click on the buttons for each box, the slider at the top changes to reflect the setting for that option. The **Opacity** functions the same as the **Brush Opacity** pop-up described above. As you move the button on the slider, the values in the pop-up menu in the box change.

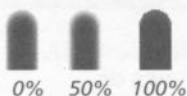


You can add predefined values by clicking on the pop-up and choosing **Other...** which opens a dialog box where a new value can be typed in the text box. Checking the **Add to list** checkbox adds the value to the pop-up menu listing.

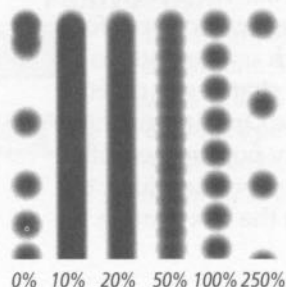


Add or delete values to the list by choosing **Edit...** from the pop-up. A dialog box opens with a scrolling list. Click on a value in the list and the **Remove** button to delete. Typing a new value in the text box and clicking the **Add** button adds the value to the list.

The **Gradient** option adjusts the overall level of antialiasing for the brush tools. The amount can be selected with the slider or with the pop-up using the **Edit...** or **Other...** choices described above.



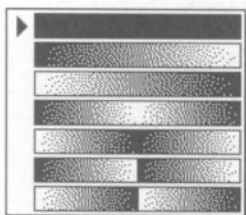
A heavy gradient (100%) creates a harsh edge. A low gradient creates a smoother edge. A 0% gradient antialiases from the center in a linear manner.



The **Spacing** option adjusts the spacing of the paint/retouching effect in percent from 0% to 999%. The amount can be selected with the slider or with the pop-up using the **Edit...** or **Other...** choices described above.

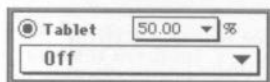
The greater the spacing selected, the more space between the areas where a brush applies paint. A spacing of 0% means that the computer does its best to keep up with the mouse. However, if you move the mouse too fast, holes appear in the stroke.

The **Repeat** option adjusts (in seconds) how quickly Color It! applies paint to the document. A higher repeat rate results in a faster application. The amount can be selected with the slider or with the pop-up using the **Edit...** or **Other...** choices described on the previous page.



The **Fade** option adjusts the type and distance of a brush stroke fade. The top pop-up menu lets you select a distance in inches for a fade.

The bottom pop-up menu lets you select from seven different types of fades.



When a pressure sensitive device such as the Wacom or Calcomp tablet is connected, a **Tablet** option appears at the bottom of the **Brush Options** palette. The pen may be used just like a mouse for pointing, selecting, and dragging.

When used with the *Paint Brush*, *Air Brush*, *Blur*, *Sharpen*, *Stamp*, *Lighten*, *Darken* or *Smudge* tools the stylus pressure can be used to vary tool characteristics such as thickness, opacity, repeat rate or spacing through the pop-up menu.

The **Heavier** and **Lighter** commands control the opacity for the *Paint Brush* or *Stamp*, the intensity of the *Blur*, *Sharpen*, *Lighten* or *Darken* and the flow of the *Air Brush*. The **Wider** and **Thinner** commands vary the size of the *Paint Brush*, *Air Brush* or *Stamp*. The **Farther** and **Closer** commands vary the spacing of the tool selected (this overrides the setting in the **Spacing** option). The **Faster** and **Slower** commands vary the repeat rate (this overrides the setting in the **Repeat** option). This works best with the *Air Brush* to control the frequency of spray.

The command name indicates the direction in which the variable will change as you increase the stylus pressure (for example, greater stylus pressure with **Wider** selected produces a wider stroke as you paint).



NOTE: Each tool saves its own tablet settings between uses.

The percentage setting represents the sensitivity of the stylus. A sensitivity of 50% means that each change in pressure will result in a corresponding change in the current option. At low percentages, greater pressure is required for even small changes in the option chosen. At high percentages, even small pressure changes result in a large change in the option. The amount can be selected with the slider at the top of the palette or with the pop-up using the **Edit...** or **Other...** choices discussed under the **Opacity** option.

NOTE: While tablet sensitivity controls the pressure sensitive options, the tablet threshold (usually set in a control panel) sets the pressure level at which the pen begins to respond. Any pressure level applied below this threshold will be ignored by the tablet.

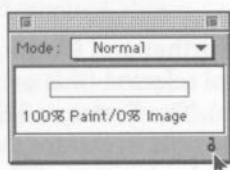
The tablet is unavailable.
The Wacom driver is off.
Check all tablet settings.

If you are working with a tablet but the **Tablet** option does not appear, check your connections and the tablet's control panel. If the tablet is

turned off or the settings are incorrect, a warning message appears at the bottom of the palette. Once the tablet is turned back on or readjusted, the **Tablet** option box will display.



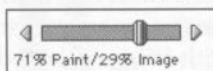
The **Paint Controls** command opens a palette that controls paint, paste and filter operations.



The **Paint Range** area of the palette can be hidden by clicking on the small level icon on the right side of the palette.

- Normal
- Blend
- Add
- Subtract
- Colorize

The **Mode** pop-up menu controls the effect the operation has on the document. The slider determines the percentage of the effect.



Normal covers the document with the colors added.

Blend blends the colors you are adding with the document. For paste operations, the slider adjusts the image in real time. For paint and filter operations, the slider must be set

before the operation is performed.

Add lightens the colors you are pasting, painting or filtering to the document. For paste operations, the slider adjusts the image in real time. For paint and filter operations, the slider must be set before the operation is performed.

Subtract darkens the colors you are pasting, painting or filtering from the document. For paste operations, the slider adjusts the image in real time. For paint and filter operations, the slider must be set before the operation is performed.

The **Paint Is** and **Image Is** pop-up menus let you select from several different options:

All Colors
Current Gradient
Equal To
Not Equal To

The **All Colors** command uses every color in the **Colors** palette. Selecting **All Colors** for both operations performs a normal paste, filter or paste operation.

The **Current Gradient** command uses the colors in the **Colors** palette gradient. The gradient is created when you drag the *Eye Dropper* tool across the image or when you drag the *Eye Dropper* from one color to another in the **Colors** palette.

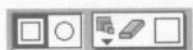
Clicking the color bar in the **Equal To** command opens the standard Apple color picker, where you can choose any color you wish. The colors in the image which are equal to the one selected will be affected by the operation to be performed.

Clicking the color bar in the **Not Equal To** command opens the standard Apple color picker, where you can choose any color you wish. The colors in the image which are not equal to the one selected will be affected by the operation to be performed.

Eraser

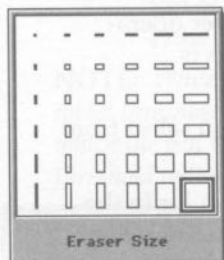


The *Eraser* tool wipes away the image leaving only the background color.



Two features appear at the bottom of the **Tools** palette when the *Eraser* is selected. The left feature lets you select either a square or round shape. The

current shape has an outline around it.



The pop-up menu on the right side lets you select a size for the *Eraser*. The current size has an outline around it. The **Eraser Size** dialog lets you select a size for the tool by moving the cursor over the shape you wish.

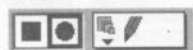
Double-clicking on the *Eraser* erases the entire document, leaving only the background color.

Option + *Eraser* acts as an un-erase tool, returning the erased area to its state before the last operation was performed.

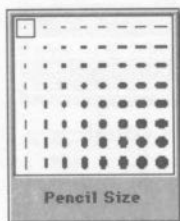
Pencil



The *Pencil* tool changes selected pixels to the foreground color.



Two features appear at the bottom of the **Tools** palette when the *Pencil* is selected. The left feature lets you select either a square or round shape. The current shape has an outline around it.



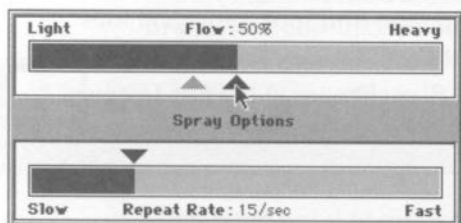
The pop-up menu on the right side lets you select a size for the *Pencil*. The current size has an outline around it. The **Pencil Size** dialog box lets you select a size for the tool by moving the cursor over the shape you wish.

Double-clicking on the *Pencil* tool toggles between 1x and 8x views of the document. The 8x magnification makes pixel editing with the *Pencil* easier.

Air Brush



The *Air Brush* tool sprays the current foreground color on a document. Selecting the *Air Brush* tool adds a number of pop-up features to the bottom of the **Tool** palette. The **Brush Type** and **Brush Size** pop-ups are described under the *Paint Brush* tool earlier in this chapter.



The **Spray Options** pop-up adjusts the **Flow** and **Repeat Rate** of the tool. Entering a higher **Flow** setting applies more paint to your document. A lower **Flow** setting allows more of the document to show through. The **Repeat**

Rate adjusts (in seconds) how quickly paint is applied to the document. As you change the settings by moving the cursor over the bars, a black pointer shows the current level and a gray pointer the previous level. The percentage readouts change to indicate the current settings.

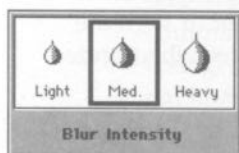
Double-clicking on the *Air Brush* displays the **Brush Options** palette.

Shift + Option + *Air Brush* changes to the *Eye Dropper* tool.

Blur



The *Blur* tool smooths or blurs the document. Selecting the *Blur* tool adds a number of pop-up features to the bottom of the **Tools** palette. The **Brush Type** and **Brush Size** pop-ups are described under the *Paint Brush* tool



earlier in this chapter. The **Blur Intensity** pop-up opens a **Blur Intensity** chart that adjusts the intensity of the tool as Light, Medium, or Heavy. The heavier the setting, the larger the sampled region of the document used in the blur process.

The smoothing effect of the tool does not accumulate as you make multiple passes over the same region—the smoothing is applied only once. To increase the smoothing effect release the mouse then press and drag over the region again.



If you want a finer adjustment, open the **Brush Options** palette and use the **Intensity** option to change the percentage. The amount can be selected with the slider or with the pop-up using the **Edit...** or **Other...** choices described under the *Paint Brush* section earlier in this chapter.

Double-clicking on the *Blur* tool displays/hides the **Brush Options** palette.

Shift + Option + *Blur* changes to the *Eye Dropper* tool.

Sharpen



The *Sharpen* tool enhances edges to bring out detail. Selecting the *Sharpen* tool adds several pop-up features to the bottom of the **Tools** palette. The **Brush Type** and **Brush Size** pop-ups are described under the *Paint Brush* tool earlier in this chapter. The **Sharpen Intensity** pop-up opens a **Sharpen Intensity** dialog box that adjusts the intensity of the tool as Light, Medium, or Heavy. The heavier the setting, the larger the sampled region of the document used in the sharpening process.



The sharpening effect of the tool does not accumulate as you make multiple passes over the same region—the sharpen is applied only once. To increase the sharpening effect release the mouse then press and drag over the region again.

If you want a finer adjustment, open the **Brush Options** palette and use the **Intensity** option to change the percentage. The amount can be selected with the slider or with the pop-up using the **Edit...** or **Other...** choices described under the *Paint Brush* section earlier in this chapter.

Double-clicking on the *Sharpen* tool displays the **Brush Options** palette.

Shift + Option + *Sharpen* changes to the *Eye Dropper* tool.

Stamp

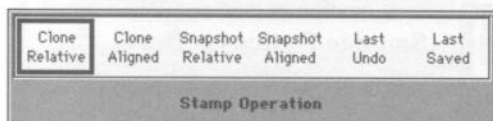


The **Stamp** tool paints a copy of a document from a point you choose anywhere else in that document or in another document.

Selecting the **Stamp** tool adds a number of pop-up features to the bottom of the **Tools** palette. The **Brush Type** and **Brush Size** pop-ups are described under the **Paint Brush**

tool earlier in this chapter.

The **Stamp Operation** pop-up opens the **Stamp Operation** dialog box with several choices.



Clone Relative and **Clone Aligned** allow you to select a region of a document by holding down the Option key and clicking on the portion of the document you want. You can also select a portion of another document. When painting begins, a copy of the selected image is painted on top of the current image. **Clone Relative** paints a copy of the selected

image from the exact location you first selected, and each paint operation starts anew from the point set with the Option key. **Clone Aligned** aligns the image that you are painting with the original image and locks the copied image to the point where you begin painting.



Clone Relative



Clone Aligned

The **Snapshot** commands differs from the **Clone** commands in that an image of the entire document is taken when the **Snapshot** commands are first applied. Unlike the **Clone** commands, any subsequent painting does not reflect changes made by the earlier **Snapshot** painting—the original image is still available for painting.

Last Undo returns the stamped area to its state before the last operation performed. **Last Saved** returns the stamped area to its state before the last save.

Double-clicking **Stamp** opens the **Brush Options** palette.

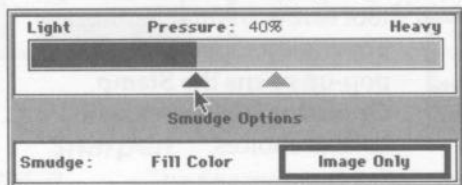
Option + **Stamp** and clicking sets the reference point for the **Stamp** tool.

Smudge



The *Smudge* tool smudges the document with the fill (foreground) color or the colors in the document. The effect is similar to dragging your finger across wet ink.

Selecting the *Smudge* tool adds a number of pop-up features to the bottom of the **Tools** palette. The **Brush Type** and **Brush Size** pop-ups are described under the *Paint Brush*



tool earlier in this chapter. The **Smudge Options** pop-up opens a dialog box with several choices. As you change the pressure by moving the cursor over the bar, a black pointer shows the current level

and a gray pointer the previous level. The percentage readout changes to indicate the current pressure. The percentage indicates the amount of color blended with the background. 100% smudges an exact copy of the brush stroke over the top of the document. The lower the pressure percentage, the shorter the smudge effect is drawn into an edge. The bottom portion lets you choose whether the smudge uses the foreground color or the document image. The current selection is marked with a black border.



If you want a finer adjustment, open the **Brush Options** palette and use the **Pressure** option to change the percentage. The amount can be selected with the slider or with the pop-up using the **Edit...** or **Other...** choices described under the *Paint Brush* section earlier in this chapter.

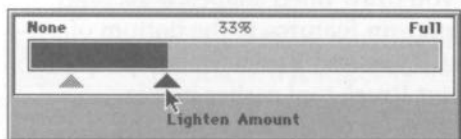
Double-clicking on the *Smudge* tool displays the **Brush Options** palette.

Shift + Option + *Smudge* uses only the fill color when smudging.

Lighten



Painting with the *Lighten* tool lets you lighten the document under the brush. Selecting the *Lighten* tool adds a number of pop-up features to the bottom of the **Tools** palette. The **Brush Type** and **Brush Size** pop-ups are described under the *Paint Brush* tool earlier in this chapter. The **Lighten**



Amount pop-up opens a dialog box that lets you adjust the effect. As you change the settings by moving the cursor over the bar, a black pointer

shows the current level and a gray pointer the previous level. The percentage readouts change to indicate the current settings.

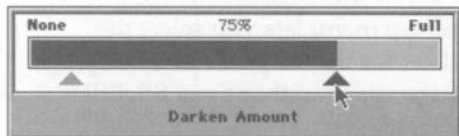
Double-clicking on the *Lighten* tool displays the **Brush Options** palette.

Shift + Option + *Lighten* changes to the *Eye Dropper* tool.

Darken



Painting with the *Darken* tool lets you darken the document under the brush. Selecting the *Darken* tool adds a number of pop-up features to the bottom of the **Tools** palette. The **Brush Type** and **Brush Size** pop-ups are described under the *Paint Brush* tool earlier in this chapter. The **Darken**



Amount pop-up opens a dialog box that lets you adjust the effect. As you change the settings by moving the cursor over the bar, a black pointer

shows the current level and a gray pointer the previous level. The percentage readouts change to indicate the current settings.

Double-clicking on the *Darken* tool displays the **Brush Options** palette.

Shift + Option + *Darken* changes to the *Eye Dropper* tool.

Paint Tools

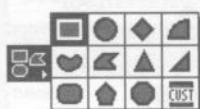


The **paint tools** are the *Shape Objects* (rectangle and circle shown), *Line*, *Paint Can*, *Text*, and *Gradient*.

Shape Object



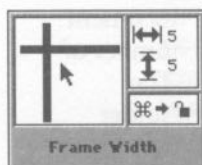
The *Shape Object* tool lets you draw filled shapes. Selecting this tool adds a number of pop-up features to the bottom of the **Tools** palette. The **Brush Type** and **Brush Size** pop-ups are described under the *Paint Brush* tool earlier in this



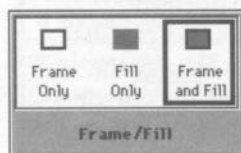
chapter. The **Shape** pop-up on the left opens the **Shape Selector** that lets you choose from 11 predefined shapes or create a custom shape. Choose a shape by moving the cursor over the shape and

releasing the mouse. The chosen shape then appears in the **Tools** palette.

Choosing **Custom** from the pop-up menu or double-clicking on the *Shape Object* tool opens the **Custom Shape** dialog box. See the **Custom Selection** discussion under the *Shape Selection* tool earlier in this chapter for more information.



In the **Frame Width** pop-up, moving the cursor within the upper left box resizes the line widths as you move. Holding down the Command key makes the sizing non-proportional. The frame thicknesses are displayed in the box at the upper right.

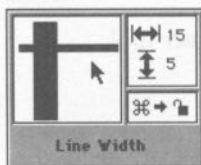


The **Frame/Fill** pop-up menu lets you select the frame and fill options for the shape. **Frame Only** draws a frame for the shape without any fill. **Fill Only** draws the selected shape without a frame. **Frame and Fill** draws the frame of the selected shape and fills it with the foreground color.

Line



The *Line* tool lets you draw lines. Selecting the *Line* tool adds two pop-up features to the bottom of the **Tools** palette.



The **Line Width** menu lets you set the width of the lines. Moving the cursor within the upper left box resizes the line widths as you move. Holding down the Command key makes the sizing non-proportional. The width of horizontal and vertical lines are

displayed in the box at the upper right.

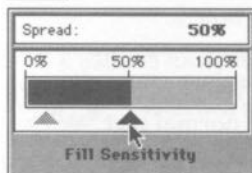
Shift + **Line** constrains the line to horizontal, vertical, or a 45° angle.

Shift + Option + **Line** changes to the *Eye Dropper* tool.

Paint Can



The *Paint Can* tool fills an area with the fill color. Selecting it adds two features to the bottom of the **Tools** palette.



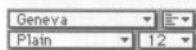
The left pop-up opens the **Fill Sensitivity** menu. Choosing a high percentage of spread fills the document. With a lower percentage of spread, the *Paint Can* fills until it reaches a boundary or object.

Double-clicking on the *Paint Can* fills the entire document.

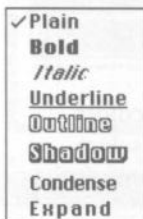
Text



The *Text* tool lets you add text to a document. When you select the *Text* tool, **Fonts**, **Sizes** and **Options** pop-ups are added to the bottom of the **Tools** palette.



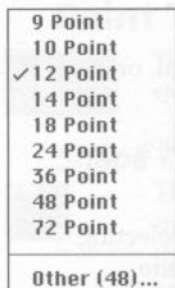
The **Font** pop-up menu shows all fonts installed in your System or loaded with third-party products like Suitcase. The current font is indicated with a check mark.



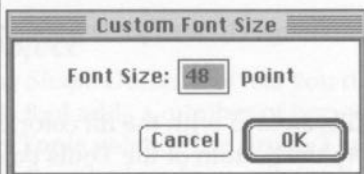
The **Size/Style** pop-up lets you select the style for text. The current style is indicated with a check mark.



The **Text Alignment** pop-up lets you choose the alignment for the text. The current alignment is indicated with a check mark.



The **Text Size** pop-up lets you choose the alignment for the text. The current size is indicated with a check mark.

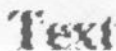


Choosing **Other...** opens a dialog box where you can enter the point size for the type in the textbox.



Clicking on a document with the **Text** tool creates a rectangular box with a cursor in it. Text can be entered by typing, with most of the normal text editing features available. Double-clicking on a word in the text box selects it, and clicking while holding down the Shift key extends the selection. The text box can be resized by clicking on one of the handles at the corners of the text box and dragging. Shift-clicking the handles constrains the box to the aspect ratio of the original. Option clicking the handles varies only the height of the text box. Command clicking the handles varies only the width of the text box.

Option clicking in the text box changes to the **Mover** tool.



Double-clicking on the **Text** tool converts text to a floating paste selection.

Clicking outside the box or selecting a different tool after entering the text pastes it onto the document. After pasting, the text becomes part of the underlying image and is no longer editable through typing.

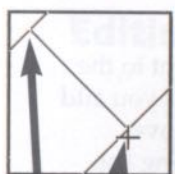
Gradient



The **Gradient** tool lets you create a gradient between colors or custom gradients with up to 16 blends. When you select the **Gradient** tool, a gradient bar is added to the bottom of the **Tools** palette.



The gradient Color It! creates exactly matches the gradient bar at the bottom of the **Tools** palette. When



Starting color
Ending color



you move the crosshair over the active window, two parallel lines show you where Color It! will create the gradient. The line that appears on the side of the crosshair where you start is the beginning point of the gradient and the opposite line is the ending point.

Shift + *Gradient* constrains the gradients to horizontal, vertical, and 45 degree angle gradients.



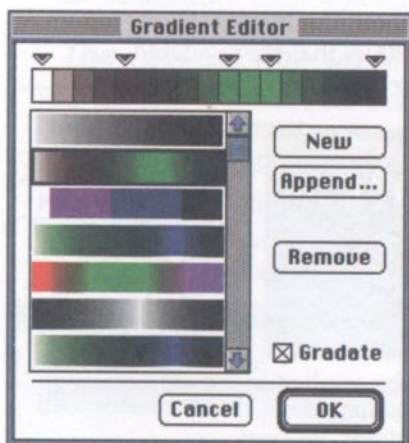
The Gradient tool will fill the current selection with the specified gradient.

There is no active selection or mask, so the entire document will be filled.

Cancel

Fill

If no selection is made before using the *Gradient* tool, an alert dialog opens informing you that the entire document will be filled if you proceed.



Clicking on the color bar in the Tools palette opens the **Gradient Editor** dialog box. Here you can create custom gradients or modify existing ones. Color It! ships with several pre-made gradients. To modify a gradient, click on it from the scrolling list on the left. The selected gradient appears at the top. The pointers indicate a chosen color at that point in the gradient. Colors can be removed from a gradient by clicking on a pointer and dragging it away from the display.



To add a color to a gradient, click on a square. The standard Apple color picker opens. Select a color, click **OK**, and it appears in the display showing a blend to the colors on either side. The color can

be repositioned by dragging the pointer to any other square. Each

color bar can have up to 16 colors for gradients.

The **New** button adds a new white-to-black gradient to the bottom of the scrolling list. The **Append** button lets you add custom gradients from other documents. The **Remove** button removes a selected gradient from the scrolling list.



☒ **Gradate**

☐ **Gradate**

Checking the **Gradate** checkbox for a gradient shows the colors smoothly blending into one another. Unchecking the **Gradate** checkbox changes the

colors to solids with no blending of colors.

Filter Tool

Kernel



The **Kernel** tool lets you apply filters to an image with the same setting as the brushes. Selecting this tool adds several

pop-up features to the bottom of the **Tools** palette. The **Brush Type** and **Brush Size** pop-ups are described under the **Paint Brush** tool earlier in this chapter. The **Filter List** pop-up shows the same filters that are available through the **Filter** menu.

- ✓ Blur - Heavy
- Blur - Light
- Blur - Medium
- Dark Shadow - East
- Dark Shadow - North
- Dark Shadow - Northeast
- Dark Shadow - Northwest
- Dark Shadow - South
- Dark Shadow - Southeast
- Dark Shadow - Southwest
- Dark Shadow - West
- Detail - Heavy
- Detail - Light
- Detail - Medium
- Edge - Horizontal
- Edge - Horizontal
- Edge - Vertical
- Laplacian - Heavy
- Laplacian - Light
- Laplacian - Medium
- Line - Diagonal (+45°)
- Line - Diagonal (-45°)
- Line - Horizontal
- Line - Vertical
- New Conv
- Shadow - East
- Shadow - North
- Shadow - Northeast



Select a filter from the list, choose your brush shape and size and begin painting on the document. The

chosen filter will be applied to the area painted with the brush.

See **Chapter 9, The Filter Menu** for more information about filters.

Editing the Tools Palette

You can edit and save custom tool sets in Color It!. Tools can be placed wherever you wish and specific attributes can be assigned to each tool. For example, two brushes can appear in the same palette: one with a round shape and one with a diagonal shape.



To edit the **Tools** palette, click on a tool and hold down the mouse button. As you move the mouse, an outline of the tool follows the pointer. When the outline is moved over another tool, that tool is highlighted. Releasing the mouse button places a duplicate of the selected tool in that position, and the tool originally in that position is moved to the **Additional Tools** pop-up list. Tools in the pop-up can be moved to the main tool display as well.

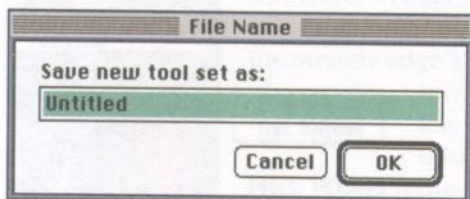
NOTE: The **Allow Editing of Tool Positions** checkbox in the **Tool Preferences** dialog box pop-up must be checked before the **Tools** palette can be changed.

The Tool Set Pop-up Menu



The **Tool Set** pop-up menu controls editing of the **Tools** palette. It lets you create, save, reset and select different palettes.

It is important to save any tool sets you wish to keep before rearranging tools. Any modifications made to the **Tools** palette are saved when you close Color It!.



The **New Tool Set...** command opens a dialog to create a new tool set based on the current **Tools** palette. The new tool set name appears at the bottom of the **Tool Set** pop-up.



Reset this tool set to:

- ☒ Same as last time opened
☐ Factory defaults

Cancel

Reset

The **Reset...** command opens a dialog box where you can return to the **Tools** palette active when Color It! was last opened or the

original palette shipped with the program.

All of the available tool palettes are listed at the bottom of the pop-up menu. Selecting one makes it the current palette. To remove a tool set from the list, quit Color It! and open the Tool Sets folder in the Color It! Stuff folder. Select the tool set you wish to remove and drag it to the trash.

3: The Colors Palette



The **Colors** palette is used to select and edit colors and patterns. It can be opened from the **Tools** menu [**Command-Y**] or by double-clicking the *Eye Dropper* tool.

The **Back** box indicates the color or pattern used for the background color. This fills holes created when selections are moved, cleared or cut. The **Frame** box indicates the color or pattern chosen for frames. The **Fill** box indicates the color or pattern used in painting and fill operations. Choose a color type for editing by clicking in the box. The selected color type is shown with a gray border.

Six different displays are available for the bottom portion of the Colors palette: **HSB Range**, **Color Wheel**, **Sliders**, **Color Grid**, **Scratch Pad**, and **Patterns**.

HSB Color Range

The **HSB Color Range** displays a graduated range of colors. The color saturation increases as you move from left to right. The color brightness increases as you move from bottom to top. The hue for the display is selected by moving the slider at the very bottom of the palette. Select a color by clicking in the display.

Color Wheel



The **Color Wheel** shows a graduated range of colors, showing all hues or colors, fully saturated at the outside edge and decreasing as you move toward the center. The pop-up menu lets you choose between **HSB Wheel** (Hue-Saturation-Brightness) and **HSL Wheel** (Hue-Saturation-Lightness). In **HSB Wheel**, the slider at the bottom controls the brightness. In **HSL Wheel**, the slider controls the lightness.

Sliders



Sliders displays slider controls to change the selected color. The pop-up lets you choose between

- ☒ RGB Sliders
- ☐ HSB Sliders
- ☐ CMY Sliders
- ☐ Grayscale Sliders

RGB, HSB, CMY and Grayscale. The sliders are adjusted by clicking and dragging on the button.

Clicking on the pointers at each end changes the settings one unit at a time. Changes made are reflected in the selected color box at the top of the palette.

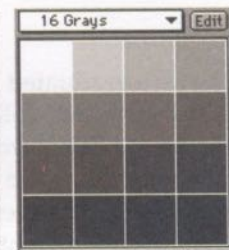
Color Grid



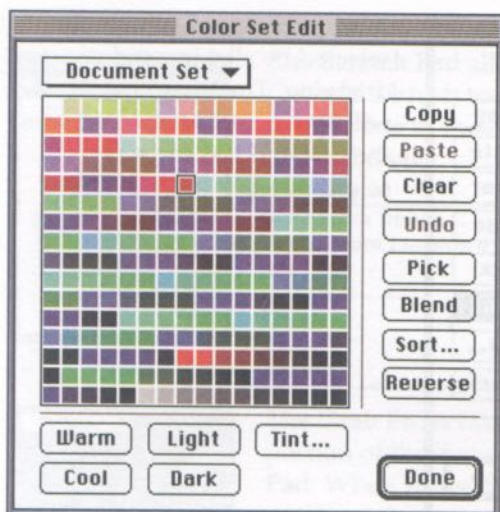
The Color Grid displays colors that may be chosen by clicking on a color square. The pop-up menu

- ☒ Document Set
- ☐ 256 System Colors
- ☐ 16 System Colors
- ☐ 256 Grays
- ☐ 16 Grays
- ☐ Earth Tones
- ☐ Flesh Tones
- ☐ ImageWriter Colors
- ☐ Pastel Hues
- ☐ Vivid Hues

gives you a choice of palettes of different colors. The number of colors displayed depends on the type of document open. A grid of 256 colors will appear for documents with 256 colors to millions of colors; documents with 16 or fewer colors will display a grid of 16 colors.



Grayscale documents with 256 levels show a grid of 256 grays; documents with 16 or fewer grays display a grid of 16 gray levels.

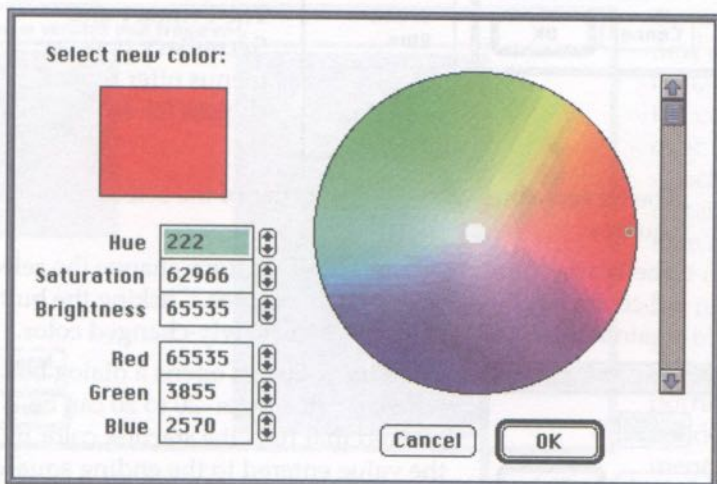


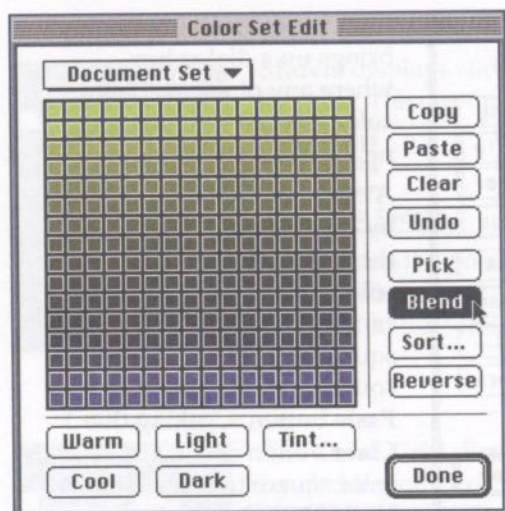
Clicking the **Edit** button brings up a dialog box where any of the available color sets can be edited or a new color set created.

A color square is selected by clicking on it. Clicking the **Copy** button copies the color square. The square can be pasted into another square by clicking on the square and clicking the **Paste** button. Clicking the **Clear** button changes a color square to black. The **Undo/Redo** button is a

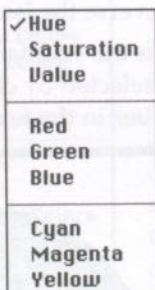
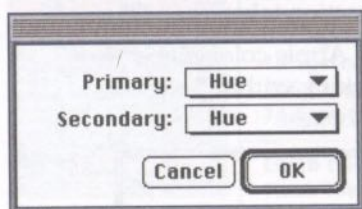
toggle that lets you reverse the last action taken for a square.

The **Pick** button opens the standard Apple color picker, where a color can be selected by clicking within the color wheel or entering values in the text boxes.





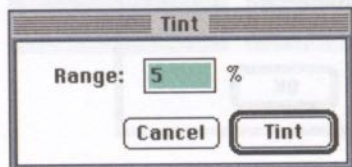
A range of squares can be selected by clicking and dragging. The **Blend** button will blend colors between the first and last squares selected.



The **Sort** button opens a dialog box that lets you choose methods of sorting the colors in the set. The **Primary** and **Secondary** pop-up menus offer several choices for sort methods.

The **Reverse** button swaps the order of the selected color squares.

The **Warm**, **Cool**, **Light** and **Dark** buttons change the selected colors by changing their color values. Clicking the button again repeats the operation on the newly-changed color.

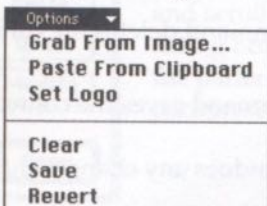


The **Tint...** button opens a dialog box where a value from -20 to 20 can be entered that tints the starting color by the value entered to the ending square. A positive range lightens the selected colors; a negative value darkens the selected colors.

Scratch Pad



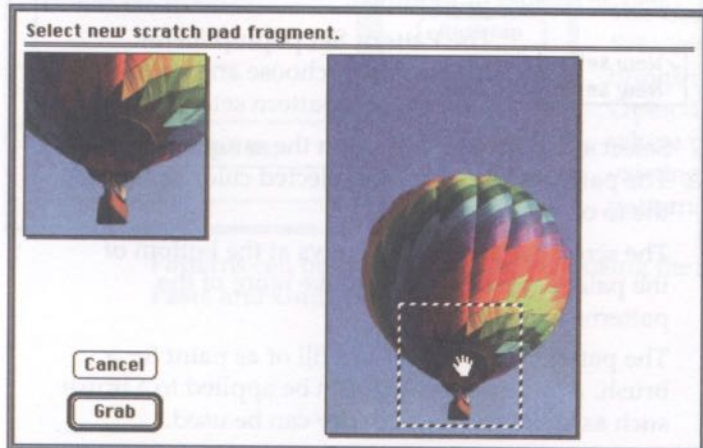
The **Scratch Pad** allows you to experiment with Color It!’s brush tools or make temporary changes to a portion of the image without changing the original image.



The commands in the **Options** pop-up menu let you import images into the **Scratch Pad**.



The **Grab From Image...** command lets you grab a portion of the document and place it on the **Scratch Pad**. When you select the command, a dialog box appears where you can select a portion of your document to copy to the **Scratch Pad**.



To make a new selection, move the cursor over the selection rectangle, then click and drag the rectangle to a different portion of the document.

For finer control, move the cursor over the box on the left, then click and drag to nudge the selection. Once you have selected a new area, click the **Grab** button.



The **Paste From Clipboard** command pastes the clipboard contents into the **Scratch Pad**. Clipboard images are scaled to fit.

The **Set Logo** command places the default Color It! image into the **Scratch Pad**.

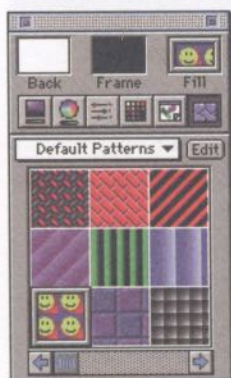
The **Clear** command deletes the contents of the **Scratch Pad**.

The **Save** command saves the contents of the **Scratch Pad**.

The **Revert** command undoes any changes made to the **Scratch Pad**.

Clicking the **Eye Dropper** checkbox turns tools moved over the **Scratch Pad** into the **Eye Dropper** tool. Clicking on the **Scratch Pad** selects the color at the point selected.

Patterns



Pattern fills can be used like any other fill with selections, as paint for brushes, etc. Color It! comes with a number of patterns. Patterns and sets can also be created or modified.

✓ **New Set 1**
New Set 2

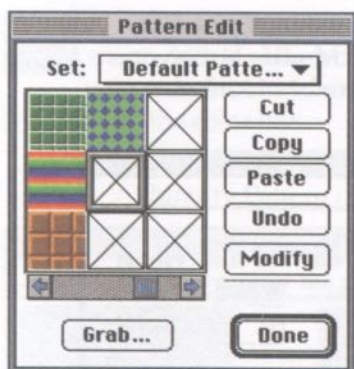
The **Pattern Set** pop-up menu allows you to choose and save patterns and pattern sets.

Select a pattern by clicking on the sample square. The pattern appears in the selected color square at the top of the **Tools** palette.

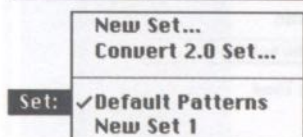
The scroll bar and scroll arrows at the bottom of the palette can be used to make more of the patterns in the set visible.

The pattern can be used as a fill or as paint for a brush. Any attributes that can be applied to a brush such as style, size and opacity can be used.



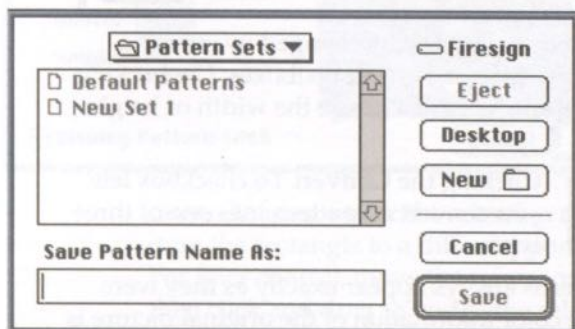


Clicking the **Edit** button opens the **Pattern Edit** dialog box where patterns can be created or modified. A pattern square is selected by clicking on it and a gray frame is displayed. The scroll bar and scroll arrows at the bottom of the dialog box can be used to make more the patterns in the set visible. Each pattern set can hold up to 24 patterns.



Patterns are arranged in sets. The **Set** pop-up menu lets you choose a set, convert a Color It! 2.0 set, or create a new pattern set.

The **New Set...** command brings up a standard **Open** dialog box showing the

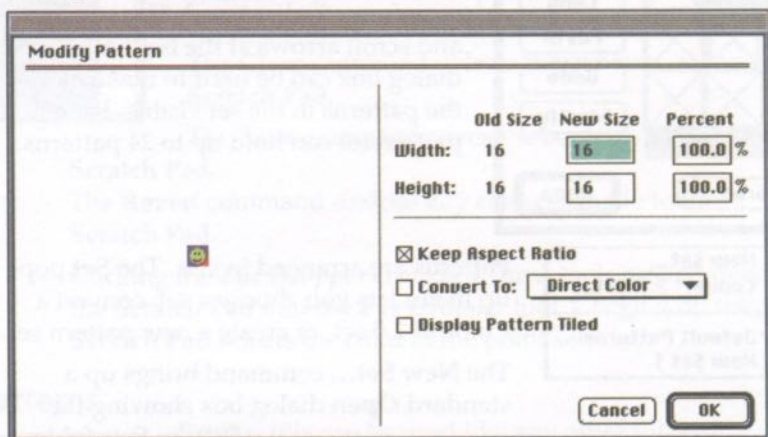


Pattern Sets folder (located in the Color It! Stuff folder.)

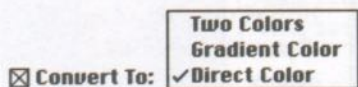
The **Convert 2.0 Set...** command also brings up a standard **Open** dialog box where you can locate existing Color It! 2.0 patterns.

Patterns can be changed and moved using the **Cut**, **Copy**, **Paste** and **Undo** buttons.

Patterns within sets can be manipulated using the **Cut**, **Copy**, **Paste**, and **Undo** buttons. The **Modify** button opens a dialog box where existing patterns can be modified or new patterns created.

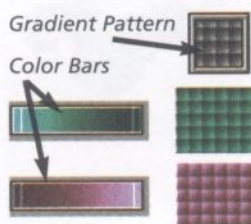


The pattern width or height can be changed by entering numbers in the **New Size** or **Percent** textboxes. Unchecking the **Keep Aspect Ratio** lets you change the width or height independently.



Clicking the **Convert To** checkbox lets you convert an pattern into one of three types:

Direct Color patterns always appear exactly as they were created. All of the color information of the original picture is saved, and it is not be affected by changes to the fill or background colors.

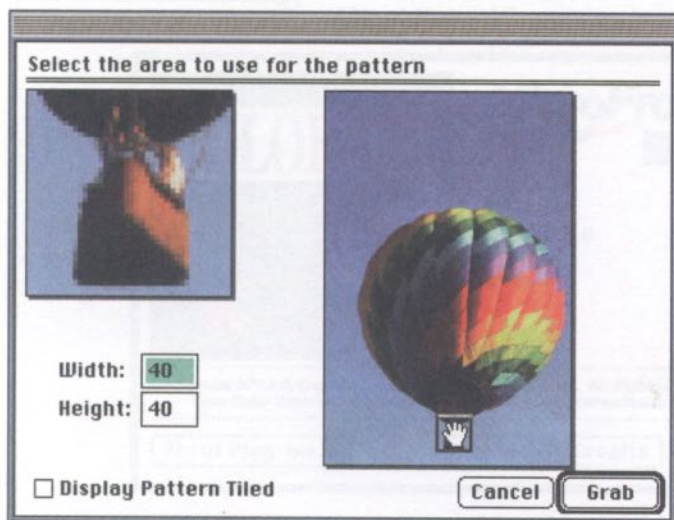


Gradient patterns are displayed using the colors in the color bar in the **Tools** palette. The grays in the pattern will be directly replaced by the colors in the color bar. The white regions of the pattern use the colors at the left side of the color bar; the darker regions of the pattern use the colors at the right side of the color bar.



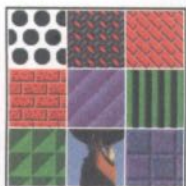
Two Colors patterns use only solid white and black. The white is replaced with the color at the left end of the color bar; the black is replaced with the color at the right end of the color bar.

Clicking the **Display Pattern Tiled** fills the left end of the Modify Pattern dialog box with the pattern.



Clicking the **Grab** button at the bottom of the **Pattern Edit** dialog box lets you use a portion of the active document to create a new pattern. Enter numbers in the **Width** and **Height** checkboxes.

move the cursor over the selection rectangle, then click and drag the rectangle to a different portion of the document. For finer control, move the cursor over the box on the left, then click and drag to nudge the selection. Once you have selected a new area, click the **Grab** button. You are returned to the **Pattern Edit** dialog box. Clicking the **Done** button and save changes.

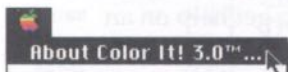


The new pattern now appears in the patterns shown and is available for use.



4: The Apple and Help Menus

The Apple Menu



The Apple menu contains the desk accessories installed in your system and lets you open the About Color It!... dialog box.



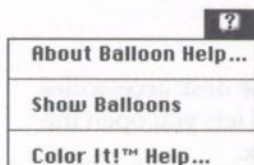
Selecting **About Color It!...** from the Apple menu displays a dialog with the version number, copyright information and name and company entered when the program was first personalized.

Clicking the **About Plug-Ins...** button will display information for any plug-ins that have it available.

Clicking the **Credits** button displays a scrolling list of those involved with Color It!'s production. Clicking the **About** button returns you to the **About Color It!...** screen.

Clicking the **Done** button sends the dialog box away.

The Help Menu



Balloon Help

Color It! supports the basic balloon help feature of Apple's System 7. To get help on an item, you must first turn balloon help on by opening the **Help** menu cartoon balloon on the right side of the menu bar and choosing **Show Balloons**.

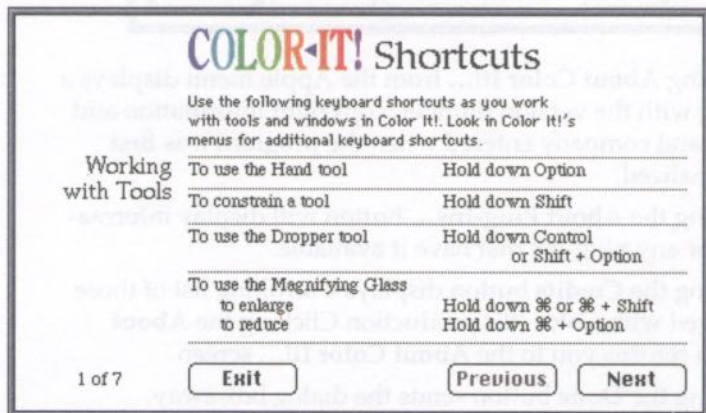


To select this tool for use, click it. To make an instance of this tool in the grid, click and drag it to a location. (The tool currently in that location will be moved to the pop-up menu below.)

With **Show Balloons** on, pointing the cursor at an item such as a menu, button, or window displays a help balloon that describes that feature.

To turn balloon help off, go to the **Help** menu and choose **Hide Balloons**.

Color It! Help...



The **Color It! Help...** command opens a dialog box with more information about basic aspects of Color It!

Information is available for **Working with Tools, Sets, Palettes and Colors; Miscellaneous Options, and Improving Performance**. Advance forward by clicking the **Next** button; move backward by clicking the **Previous** button. Close the Shortcuts by clicking the **Exit** button.

5: The File Menu

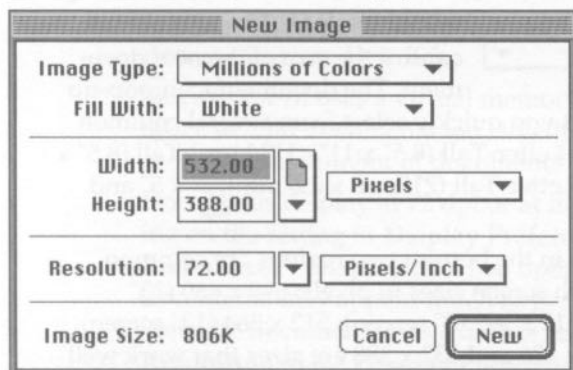
File	
New ...	⌘N
Open...	▶
Close	⌘W
Save	⌘S
Save As...	
Revert To Saved	
Scan/Import	▶
Export	▶
Print One Copy	
Document Setup...	
Print...	⌘P
Quit	⌘Q

The File menu contains commands for creating new documents as well as opening, closing, getting info about, saving and printing existing documents. The File menu also controls the scanning, importing and exporting of images.

New...

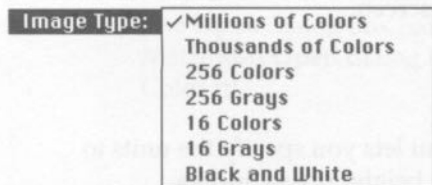
The New... command [Command-N] lets you open a new, empty document where you can create or

import images or graphics. When you select New... from the File menu, the New Image dialog box lets you specify the image type, a fill color, dimensions, and the resolution of the new document.



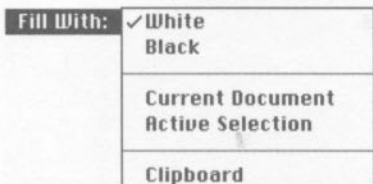
The New Image dialog box is titled "New Image". It contains several controls:

- Image Type:** A dropdown menu currently set to "Millions of Colors".
- Fill With:** A dropdown menu currently set to "White".
- Width:** A text field with "532.00" and a small icon to its right.
- Height:** A text field with "388.00" and a small icon to its right.
- Resolution:** A dropdown menu currently set to "72.00".
- Units:** A dropdown menu currently set to "Pixels".
- Image Size:** A label showing "806K".
- Buttons:** "Cancel" and "New" buttons at the bottom right.



The Image Type pop-up menu shows the following options:

- ✓ Millions of Colors
- Thousands of Colors
- 256 Colors
- 256 Grays
- 16 Colors
- 16 Grays
- Black and White



The Fill With pop-up menu shows the following options:

- ✓ White
- Black
- Current Document
- Active Selection
- Clipboard

The Image Type pop-up menu lets you choose the type of document Color It! creates: Millions of Colors, Thousands of Colors, 256 Colors or 16 Colors for color documents; 256 Grays or 16 Grays for grayscale documents; and Black and White.

The Fill With pop-up controls the initial appearance of the new document. You can select white or

black fills or duplicating the contents of the current document, active selection or clipboard.

Current Document is available only when an existing document is open. The new document duplicates the contents of the document active at the time you chose **New....** The height and width boxes automatically change to show the dimensions of the current document.

Active Selection is available only when a selection is active. The new document duplicates the contents of the active selection. The height and width boxes automatically change to show the dimensions of the current selection.

Clipboard is available only when an image is stored on the Clipboard. The new document duplicates the contents of the clipboard. The height and width boxes automatically show the dimensions of the clipboard image.

Width: 532.00
Height: 388.00

Units: Pixels

<input checked="" type="checkbox"/> Current Size
US Letter - Tall US Legal - Tall A4 Letter - Tall
3" x 5" 8" x 10"
640 x 480 512 x 342 512 x 384
646 x 486 532 x 388

<input checked="" type="checkbox"/> Pixels
Inches
Centimeters
Picas
Points

Width, Height: These text boxes control the size of the new document. The document icon pop-up

menu lets you quickly select from several common sizes: US Letter-Tall (8.5" x 11"); US Legal-Tall (8.5" x 14"); A4 Letter-Tall (210mm x 297mm); 3" x 5" and 8" x 10".

The sizes in the bottom two regions are common Macintosh screen sizes in pixels: 640 x 480 (13" screen); 512 x 342 (9" screen); 512 x 384 (12" screen). The 646 x 486 and 532 x 388 are sizes that work well for video or on a 14" screen.

The units pop-up menu lets you specify the units to be used for width and height: pixels, inches, centimeters, picas, or points.

✓ 72.00
50
72
75
80
100
144
150
200
300
400
600
1200

Resolution: The resolution text box controls how much information Color It! stores in the document. Higher resolution takes more disk space, preserves more image details and the final printed image appears closer to the original.

✓ Pixels/Inch
Pixels/Cm

The pop-up menu lets you select pixels per inch or per centimeter.

Image Size: 806K **Image Size:** Color It! calculates the amount of disk space needed for the document you are about to create based on the width, height and resolution entered.

NOTE: Screen image resolution is measured in pixels per inch. It differs from output device resolution, which is measured in dots per inch.

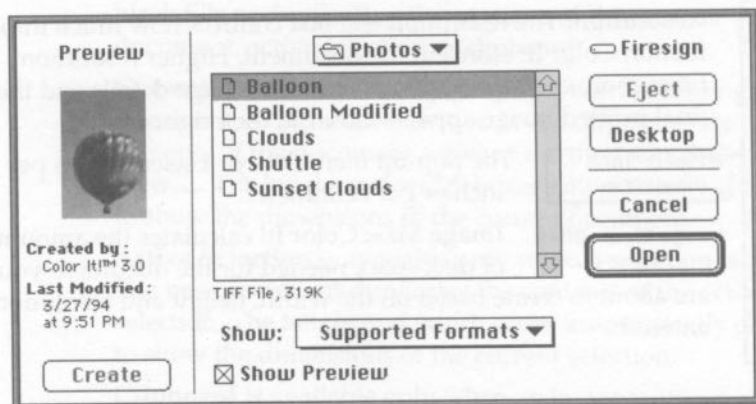
Open...

The **Open...** command [**Command-O**] lets you open documents stored on disk.

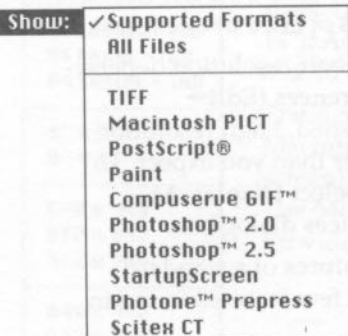
Since Color It! uses a virtual memory scheme that uses disk space to hold documents too large to fit in RAM, it can have an unlimited number of documents opened at one time.

Documents display at 72 dpi or at their resolution depending on the setting in **Display Preferences (Edit> Preferences>Display...)** when opened. High resolution documents may appear much larger than you expect. To view the document at its true size select **Display At Resolution** in the **Display Preferences** dialog box.

The **Open** dialog box has all the features of a standard Macintosh **Open** dialog box, plus a few features found in Color It!



Checking the **Show Preview** checkbox at the bottom expands the dialog to show a preview for a document if one has been created. If the document has no preview and the format is supported by Color It!, clicking the **Create** button creates a preview. Documents with previews also list the program which created the document and modification date and time.

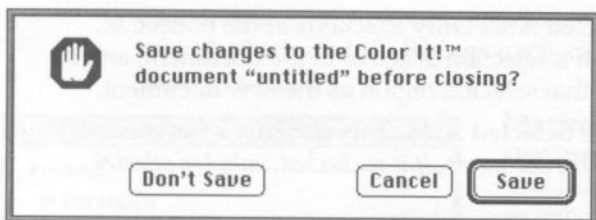


The **Show** pop-up lets you select the file formats to be listed in the scroll box, and speeds the process of searching for documents in a specific file format by limiting the number of files shown.

Supported Formats shows all documents in formats that Color It! can open. **All Files** shows all files regardless of format. If the document selected is not a supported format, Color It! will try to determine its format and open the document.

Close

The **Close** command [**Command-W**] closes the active window. If more than one document is open, the next open window comes to the front.



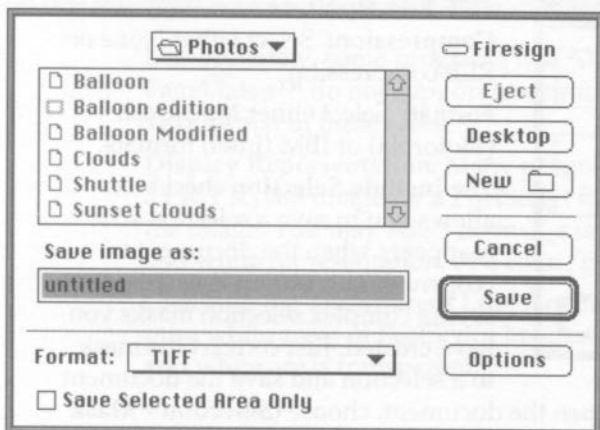
If you made changes to the document since it was last saved, a dialog appears asking if you want to save the changes.

If the document is new and has never been saved, the **Save As** dialog opens. (The **Save As** dialog is described below.)

Save

The **Save** command [**Command-S**] saves the most recent version of the document. When working on an existing document, Color It! saves all changes under the current file name and format. If the document is new and has never been saved, the **Save As** dialog opens. (Options for the **Save As** dialog are described below.)

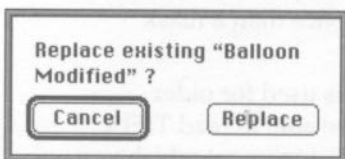
Save As...



The **Save As...** command lets you name and save a new document or save an existing document under a new name, a new file format or in a different location.

The **Save As...** command opens a dialog box with the current file name (or "Untitled" for a

new document). If you click the **Save** button for a document with a name that already exists in that folder, Color It! asks if you want to replace the existing document.



The **Save Selected Area Only** checkbox at the bottom is available only if a selection is active in the document, and if checked saves that selected region as the new document.

NOTE: Be sure the **Save Selected Area Only** checkbox is not checked if you mean to save the **entire** document. If it is checked, only the selected area will be saved.

Format:

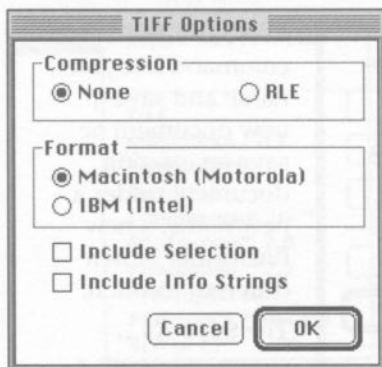
✓TIFF

Macintosh PICT
PostScript®
Paint
Photoshop™ 2.0
Photoshop™ 2.5
StartupScreen
Photone™ Prepress
Scitex CT
QuickTime™ PICT

The **Format** pop-up menu is used to select the specific file format in which to save the document. Options include TIFF, Macintosh PICT, PostScript®, CompuServe GIF™, Photoshop™ 2.0 and 2.5, StartupScreen, Photone™ Prepress, Scitex CT and QuickTime™ PICT.

The **Options** button opens a dialog box allowing you to set format-specific preferences.

NOTE: *Paint, StartupScreen, Photone Prepress, Scitex CT and QuickTime PICT formats do not have any options.*

**TIFF File Options**

Compression: Select either None or RLE compression.

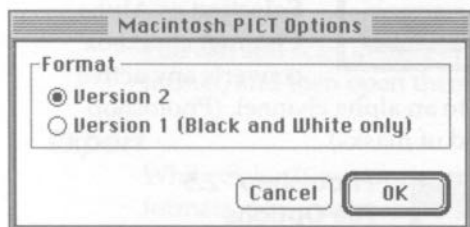
Format: Select either Macintosh (Motorola) or IBM (Intel) formats.

The **Include Selection** checkbox allows you to save a selection so it reappears when the document is reopened. This option is useful for saving complex selection masks you have created. Just convert the mask to a selection and save the document.

When you reopen the document, choose (**Selection**→**Mask Operations**→**Selection To Mask**) and you recreate the original mask. This takes less disk space than a mask normally requires.

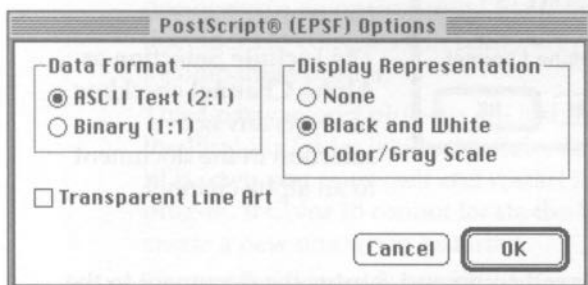
The **Include Info Strings** checkbox is used for older versions of programs that may not be able to read TIFFs with info strings. (If you have a TIFF document which you

cannot open in a program, reopen it in Color It! and save it with the **Include Info Strings** unchecked. You may then be able to open it.)



Macintosh PICT File Options

You may save the document as either version 2 or version 1. Version 1 should be used only if you are saving a black and white document for an older paint program.



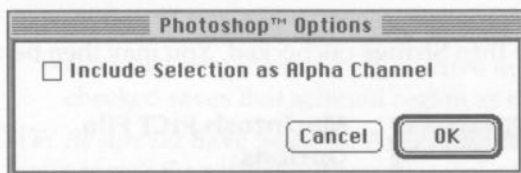
PostScript® (EPSF) File Options

Data Format: Saving PostScript documents in Binary format is usually preferred, as it is half the size of ASCII and transfers faster to the printer.

Unfortunately, some programs like Aldus Freehand™ and PageMaker™ do not support binary files. Use the ASCII Text format in these cases.

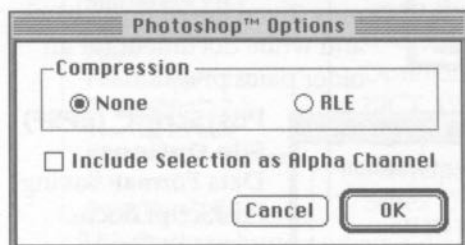
Display Representation: Many programs open and display a PICT screen image for a PostScript file to help you position the image. You may select no image representation, a black and white representation, or a color/grayscale image.

Checking the **Transparent Line Art** checkbox makes all pure white areas of PostScript images containing only black and white areas transparent.

**Photoshop™ 2.0****File Options**

The **Include Selection as Alpha Channel** checkbox converts any active

selection in the document to an alpha channel. (Photoshop uses alpha channels instead of masks).

**Photoshop™ 2.5****File Options**

Compression: Choose None or RLE.

The **Include Selection as Alpha Channel** checkbox converts any active selection in the document to an alpha channel.

Revert to Saved

The **Revert To Saved** command returns the document to the last version saved on the disk. It is available only if the document has been changed since the last save.

Scan & Import

The **Scan & Import** hierarchical menu gives you access to third party drivers that

communicate with scanners and other third party hardware and software. Color It! works with any scanner or digitizer which has a Photoshop™ or Digital Darkroom™ compatible driver. The **Twain Acquire...** and **Twain Select Source...** work with drivers that meet Twain scanner standard specifications.

Scanner drivers are installed by placing the driver in the Plug-ins folder located inside the Color It! Stuff folder. If Color It! is open you must quit and restart it to use the driver. Drivers automatically appear in the hierarchical menu whenever the program is opened. If Color It! cannot locate a

Plug-ins folder, it will create a new one when restarted.

Contact the manufacturer if you are unsure whether your specific scanner supports any of these standards. If the manufacturer does not have a compatible scanner driver, you can still scan images and save them in any common file format, and then open them in Color It!.

Export

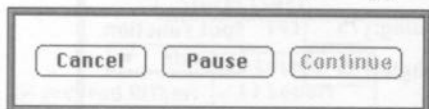
While Color It! supports a wide variety of the common file formats, you may want to save or export documents in other file types. Third party export plug-ins permit you to save a document in an unsupported file format or export a document to compression hardware/software or to an incompatible printer.

Third party export plug-ins are installed by placing them in the Plug-ins folder inside the Color It! Stuff folder. If Color It! is open you must quit and restart it to use the export plug-in. If Color It! cannot locate the Plug-ins folder, it will create a new one when restarted.

Contact the vendor for specific information on any third party export plug-in.

Print One Copy

The **Print One Copy** command is designed as a simple way to print a single copy of the document. A minimal dialog



box appears that permits you to cancel or pause the printing. The **Continue** button is available when printing is paused.

Document Setup...

LaserWriter Page Setup 7.1.2

Paper: ☒ US Letter ☐ A4 Letter
☐ US Legal ☐ B5 Letter ☐ Tabloid

Reduce or Enlarge: 100%

Orientation:

Printer Effects:
☒ Font Substitution?
☒ Text Smoothing?
☒ Graphics Smoothing?
☒ Faster Bitmap Printing?

OK Cancel Options

The **Document Setup...** command opens the standard Macintosh **Document Setup** dialog box. Controls are available to set the paper size and orientation of the printed image. Image reduction or enlargements and special printer effects can be specified. The options available depend upon the type of printer selected in the Chooser.

LaserWriter "LaserWriter" 7.1.2

Copies: 1 Pages: ☒ All ☐ From: To:

Cover Page: ☒ No ☐ First Page ☐ Last Page

Paper Source: ☒ Paper Cassette ☐ Manual Feed

Print: ☒ Black & White ☐ Color/Grayscale

Destination: ☒ Printer ☐ PostScript® File

☒ PostScript®
☐ Color PostScript®
☐ QuickDraw
☐ Custom Dither Options...

Screen Ruling: 75 LPI Spot Function: Circle

Angle: 45°

☐ Optimize for 300 DPI Printer
☐ Use Screen Default Settings

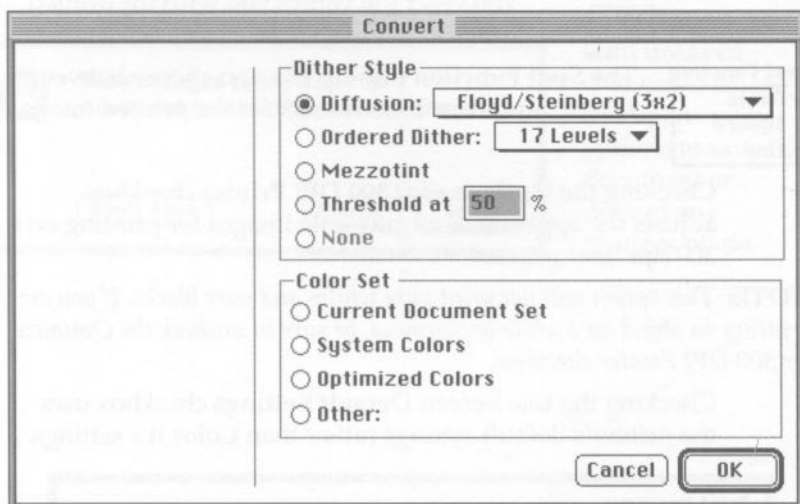
Print Cancel Options... Preview

Print...

The **Print...** command [**Command-P**] controls the output options for the document. The options available in the top portion depend upon the type of printer selected in the Chooser. Options specific to Color It! appear at the bottom of the dialog box.

The **Printing Method** radio buttons let you choose between PostScript, Color PostScript, QuickDraw or Custom Dither.

Clicking on the **Custom Dither Options...** button opens the **Convert** dialog box.



The **Dither Style** area offers radio buttons with several different styles:

- **Diffusion:** ☒ Floyd/Steinberg (3x2)
Jarvis/Judice/Ninke (5x3)
Stucki (5x3)

Diffusion has a pop-up menu with several choices for diffusion dither methods.

- **Ordered Dither:** ☒ 9 Levels
17 Levels
33 Levels

Ordered Dither has a pop-up menu with several choices for dither levels.

Mezzotint converts the image to a random dither.

Threshold converts the image to a posterized image consisting of pure blacks and whites. The percent entered in the textbox determines the level at which the black-to-white change takes place.

The **Color Set** area lets you choose one of several color sets to be used when printing the document. Selecting **System** or **Optimized Colors** dithers the colors for printing.

Screen Ruling: 75 LPI

Angle: 45 °

The **Screen Ruling** and **Angle** textboxes let you enter the values you wish for printed output.

Spot Function

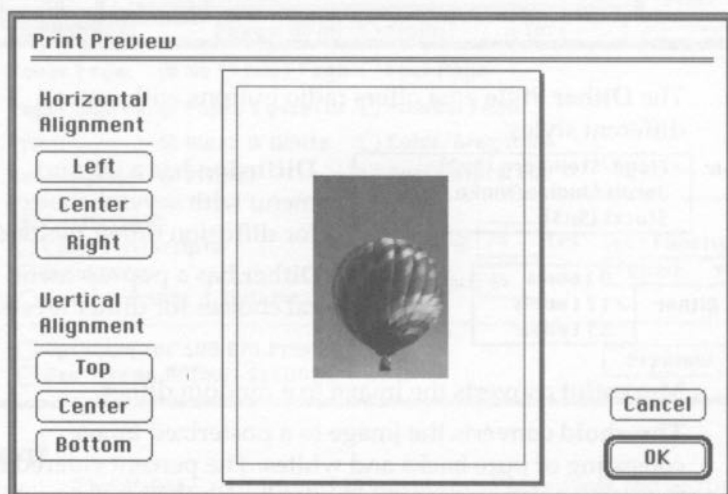
☒ Circle
☐ Square
☐ Line

The **Spot Function** pop-up lets you choose between **Circle**, **Square** or **Line** rulings for the printed image.

Checking the **Optimize for 300 DPI Printer** checkbox adjusts the appearance of grayscale images for printing on a 300 dpi laser printer.

NOTE: This option will not print pure whites and pure blacks. If you are printing an object on a white background, be sure to uncheck the **Optimize for 300 DPI Printer** checkbox.

Checking the **Use Screen Default Settings** checkbox uses the printer's default settings rather than Color It's settings.



Clicking the **Preview** button opens a dialog box that allows you to position the document image on the chosen page size by using the horizontal and vertical alignment buttons.

Quit

The **Quit** command [**Command-Q**] closes any open documents and quits Color It!. If there are any documents

with unsaved changes, a dialog box opens with options to save the document or discard any changes made.



Save changes to the Color It!™ document "untitled" before quitting?

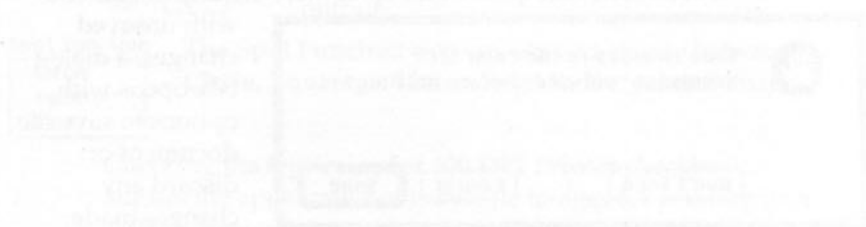
Don't Save

Cancel

Save

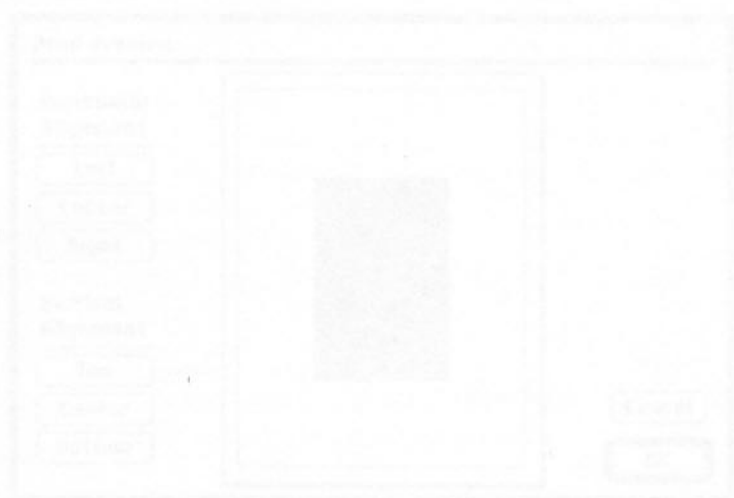
Use Color It! to save any graphics, including all special effects, as the background when printing the document. Selecting System or Optimized Color and Save will save the background.

When the Save Background dialog box appears, click the Save button to save the background. The background will be saved as a separate file.



After the background is saved, the Color It! application will return to the main window. The background image will be visible in the background of the document.

Clicking the File menu item will open the File menu. The File menu contains the following items:



Clicking the Preview button will allow you to position the document image on the page and adjust the horizontal and vertical alignment of the image.

6: The Edit Menu

Edit	
Undo Selection	⌘Z
Redo	⌘R
Cut	⌘H
Copy	⌘C
Paste	⌘V
Clear	
Paste Into	
Paste Behind	
Paste To Fit	
Fill	
Frame...	
Publishing	▶
Preferences	▶

The **Edit** menu contains commands that allow you to cut, copy, paste, clear, and fill a document or a portion of a document. There are also commands for publishing and setting various preferences.

Undo

The **Undo** command [**Command-Z**] allows you to reverse the actions you perform in a document. The menu display shows the last action taken that can be undone (such as **Undo Selection**). If the change can't be reversed, the Edit menu displays **Can't Undo**.

Color It! provides multiple levels of **Undo**—you can undo up to 16 of the last operations performed in a document, in reverse order. The

number of undos are set in the **General Preferences** dialog box. When you switch to a different document, Color It! keeps only the most recent undo for the inactive documents.

Redo

The **Redo** command [**Command-R**] lets you restore an action you reversed with the **Undo** command.

Like the **Undo** command, Color It! provides up to 16 levels of **Redo**. When you switch to a different document, Color It! keeps only the most recent **Redo** for the inactive documents.

Cut

The **Cut** command [**Command-X**] removes the active selection from the document (leaving a hole filled with the background color) and places it on the Clipboard.

Copy

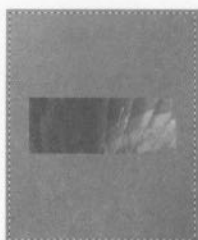
The **Copy** command [**Command-C**] copies the active selection and places a duplicate of it on the Clipboard.

Paste

The **Paste** command [**Command-V**] places a copy of the Clipboard contents into a document while keeping a copy of the image on the Clipboard.

Clear

The **Clear** command functions much like the **Cut** command: it removes the active selection from the document (leaving a hole filled with the background color) but does not copy to the Clipboard.



Paste Into

The **Paste Into** command puts the contents of the Clipboard into a selection, keeping its original proportions. The marquee lines show the shape of the pasted image, and it can be moved to position the portion wanted to show through the selection.



Paste Behind

The **Paste Behind** command puts the contents of the Clipboard behind a selection rather than into it. The original image shows in the selection. The pasted image can be moved to reposition it behind the selection.



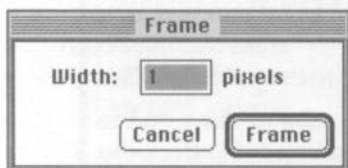
Paste To Fit

The **Paste To Fit** command changes the proportions of the contents of the Clipboard so that the pasted image completely fills the selection.

Fill

The **Fill** command fills a selection with the foreground color.

Frame...



The **Frame...** command opens a dialog box that lets you set the width of a frame for a selection in pixels. Clicking the **Frame** button puts a frame of the specified width using the Frame color within the selection.

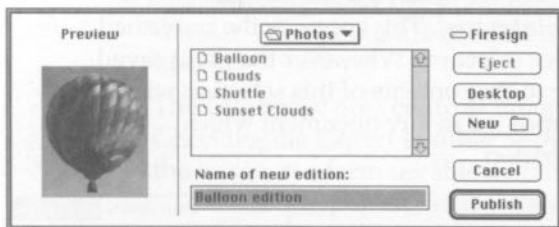
Publishing

Publishing

Create Publisher...
Publisher Options...
Show Borders

If you are working with System 7.0 or above, Color It! adds publishing options to the **Edit** menu.

The ability to publish images is a very powerful feature. Any document or selection can be published and then be subscribed to by other documents. Once this link is made, any changes in the original image will automatically be updated in any subscribing documents.

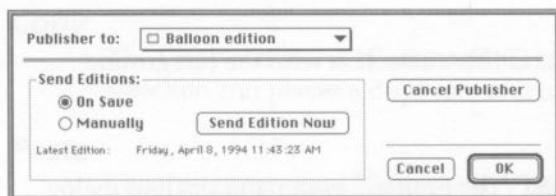


Create Publisher...

This command allows you to publish any part of a document. This command opens a dialog box where the location and name for the new publisher

document is specified. Once a publisher is created, it can be subscribed to in other Macintosh programs that support publish and subscribe.

To create a publisher, first select an area of the document with any selection tools. If there is no active selection, the entire document will be published. Next select **Create Publisher...** and choose a location and a file name. To publish the image, select the **Publish** button.



Publisher

Options... By

default, whenever a document that contains publishers is saved, changes to areas that have been

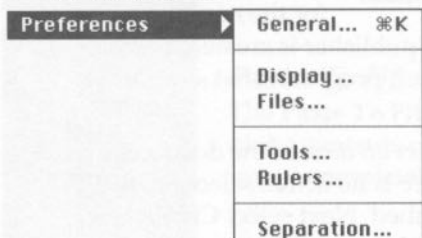
published will be automatically saved to the publisher files.

You can choose to override this option by clicking on the **Manually** radio button. While this setting is in effect, the publisher will only be updated when you click the **Send Edition Now** button in the **Publisher Options** dialog box. To update publishers each time a document is saved, click the **On Save** radio button.

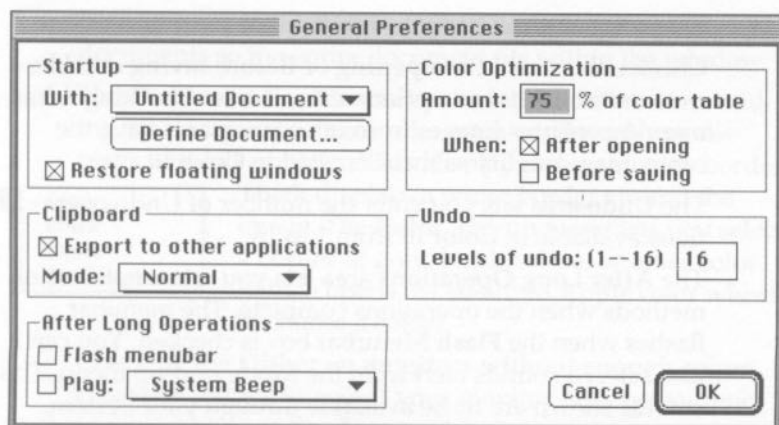
The **Publisher Options** dialog box also allows you to cancel a publisher. Clicking the **Cancel Publisher** button will remove the publisher from the document. By clicking on the pop-up at the top of the dialog, you can see the path to the current publisher.

Show Borders/Hide Borders is a toggle command that displays or hides grey borders around each published regions in a document. To select a publisher, click on its border with the **Pointer** tool. This converts the published region into an active selection. Whenever the file is saved, any changes made to the contents of this selection will automatically be updated in any document which subscribes to this region.

Preferences



The **Preferences** hierarchical menu lets you set preferences defaults for many areas of Color It! These include General, Display, Files, Tools, Rulers, and Separation.



General Preferences [Command-K]

With: ☒ Untitled Document
☐ New Dialog
☐ Open Dialog
☐ Nothing

The **Startup** area controls what Color It! displays when first started. The **Startup With** pop-up lets you select Untitled Document, New Dialog, Open Dialog, or

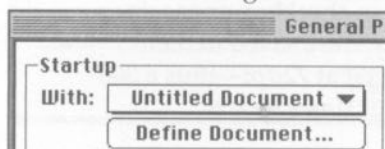
Nothing. The **Define Document...** button (active only when **Untitled Document** is chosen) opens the **New Image** dialog box, where options are set for the document appearing at startup. The options are described in **Chapter 5, The File Menu**.

The **Clipboard** area controls images copied to the clipboard. Checking the **Export to other applications** checkbox stores the image in a form useable by other programs. The Mode

Mode: ☒ Normal
☐ Dither
☐ Transparent

pop-up menu lets you select Normal, Dither, or Transparent modes. Transparent converts pure white areas of the image to clear areas.

The **Color Optimization** area optimizes images displayed on monitors with fewer colors than in the image—say, viewing a millions of colors document on a 256 color screen.



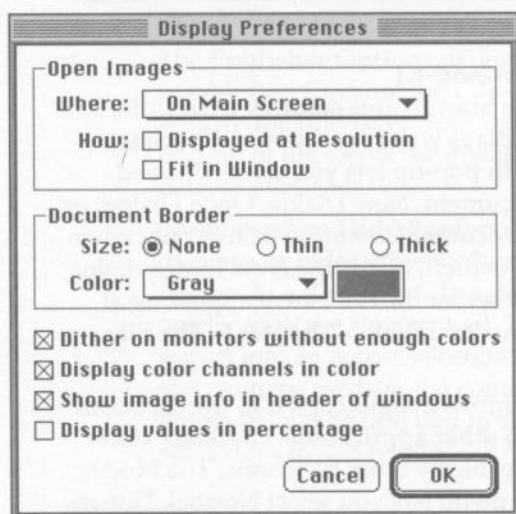
Enter the percent of colors in the image to be optimized in the **Amount** checkbox. It is generally best to leave this at the default setting of 75% to allow for

new colors introduced through paint or paste operations.

Check either the **After opening** or **Before saving** checkboxes to determine when optimization occurs. Checking **After opening** ensures images from other programs have the same image quality as those created in Color It!

The **Undo** area lets you enter the number of Undo operations available in Color It! from 1 to 16.

The **After Long Operations** area lets you select notification methods when the operations complete. The menubar flashes when the **Flash Menubar** box is checked. You can also select a sounds alert from the **Mode** pop-up menu. The sounds shown are those available through your System.



Display Preferences

The **Open Images** area lets you select how images are displayed.

☐ On Best Screen
☐ On Alternate Screens
☒ On Main Screen

The **Where** pop-up menu lets you choose a monitor in multiple-monitor systems. **On Best Screen** opens the window on the screen with the highest resolution when multiple screens are used.

On Alternate Screens

keeps the same number of windows on each screen when multiple screens are used.

On Main Screen opens all windows on the screen containing the menu bar (the main monitor).

Checking the **Display at Resolution** checkbox opens documents at the same dimensions they were saved in. Left unchecked, documents are displayed at 72dpi—thus a 300 dpi document appears roughly four times its size.

Checking the **Fit in Window** checkbox always sizes documents so the entire document fits within the window.

The **Document Border** area controls the borders surrounding the document image in the main window. **None** displays without a border; **Thin** displays a 4 pixel wide border;

Color: ☒ Gray
☐ Black
☐ White
☐ Other Color

Thick displays a wider border around the image. The **Color** pop-up menu lets you select a border of gray, black, white, or other color (which opens the standard Apple color wheel to choose a color).

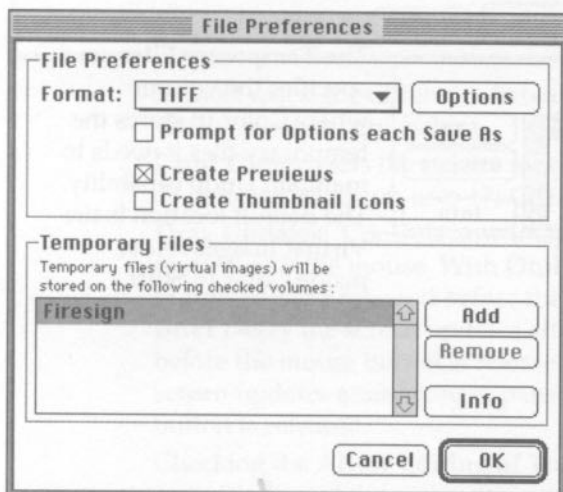
Checking the **Dither on monitors without enough colors** checkbox dithers images if your monitor does not support as many colors as the document contains.

Checking the **Display color channels in color** shows the individual channels in the appropriate colors (Yellow for the yellow channel of a CMYK image, for example).



Checking the **Show image info in header of windows** displays the file size, measurements (in units set in the **Ruler Preferences** dialog box) and the file type.

Check **Display values in percentage** if you wish to do so.



Files... Preferences

The File Preferences area controls many aspects of the document.

The **Format** pop-up menu is used to select the specific file format in which to save the document. Options include TIFF, Macintosh PICT, PostScript®, Paint, Photoshop™ 2.0 and Photoshop™ 2.5, StartupScreen,

Format: ☒ TIFF
 Macintosh PICT
 PostScript®
 Paint
 Photoshop™ 2.0
 Photoshop™ 2.5
 StartupScreen
 Photone™ Prepress
 Scitex CT
 QuickTime™ PICT

Photone™ Prepress and QuickTime™ PICT.

The **Options** button opens a dialog box allowing you to set format-specific preferences. The options for each format are discussed under **Save As...** in Chapter 5, The File Menu.

Checking the **Prompt for Options** each **Save As** checkbox opens the Options dialog each time a **Save As** is performed.

Preview



Checking the **Create Previews** checkbox creates a preview of the document that is displayed in the **Open** dialog box.

Created by:
Color It!™ 3.0



Balloon

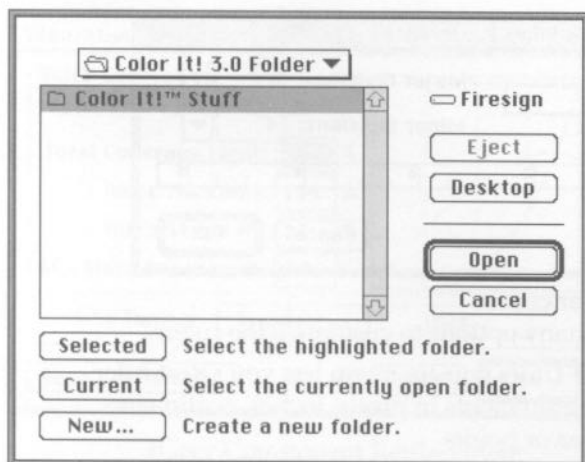
Checking the **Create Thumbnail Icons** checkbox creates miniature views of the document for the icon views in the Finder.

Temporary Files

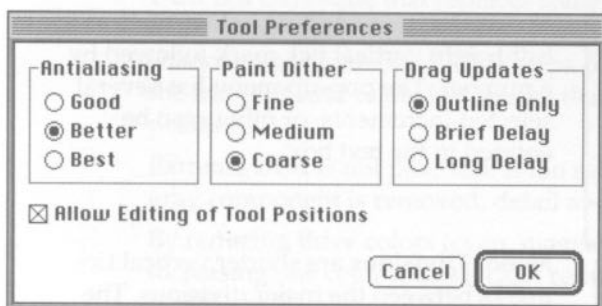
Temporary files (virtual images) will be stored on the following checked volumes:

Firesign		Add
		Remove
		Info

The **Temporary Files** area specifies the volume where Color It! stores the temporary files it needs to maintain Undo capability. The default location is the Virtual Images folder inside Color It! Stuff folder.



Clicking the **Add** button brings up an **Open** dialog box to choose additional storage areas. The **Selected** button chooses the highlighted folder. The **Current** button chooses the folder currently open. The **New...** button creates a new folder you can name and locate.



Tools... Preferences

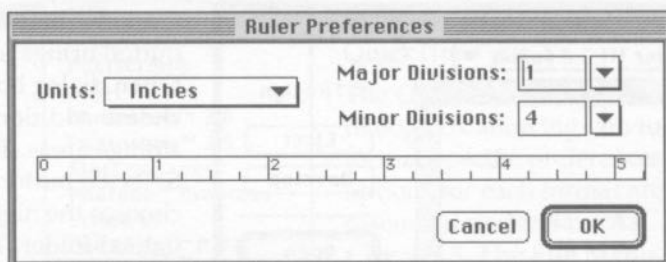
Antialiasing eliminates the jagged edges of text or colored objects. These buttons let you select the amount of antialiasing used.

In most cases, the difference between **Good** and **Best** is virtually indistinguishable.

Paint Dither: Sets the palette for dither patterns. **Fine** uses 33 patterns; **Medium** uses 17; **Coarse** uses 9.

Drag Updates: Controls how images are displayed when moved with the mouse. With **Outline Only** the mouse button must be released before the screen updates. With **Brief Delay** the screen updates after a slight pause and before the mouse button is released. With **Long Delay** the screen updates after a longer pause and before the mouse button is released.

Checking the **Allow Editing of Tool Positions** allows repositioning of the tools within the Tool palette. See **Chapter 2, The Tools Palette** for more information.



Rulers... Preferences

Color It! offers many options to customize the rulers.

Units:

- ☐ Pixels
- ☒ Inches
- ☐ Centimeters
- ☐ Picas
- ☐ Points

The **Units** pop-up menu lets you select ruler measurements in pixels, inches, centimeters, picas or points.

Major Divisions:

- | | |
|-----|---------------------------------------|
| 1 | <input checked="" type="checkbox"/> 1 |
| 1 | <input type="checkbox"/> |
| 2 | <input type="checkbox"/> |
| 5 | <input type="checkbox"/> |
| 10 | <input type="checkbox"/> |
| 20 | <input type="checkbox"/> |
| 50 | <input type="checkbox"/> |
| 100 | <input type="checkbox"/> |

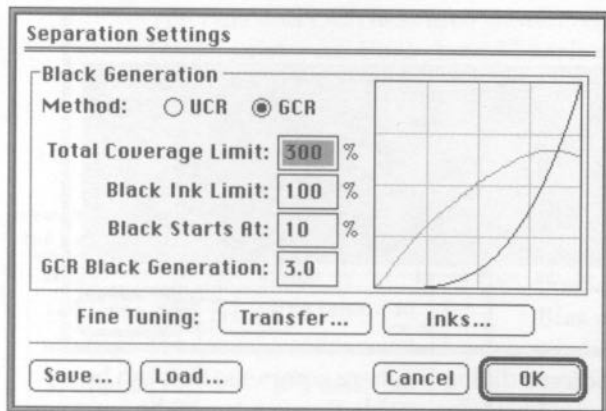
Major Divisions appear in the rulers as a full-height vertical tick mark followed by a number. The pop-up menu has several selected increments, or others can be entered in the text box.

Minor Divisions:

- | | |
|----|---------------------------------------|
| 4 | <input checked="" type="checkbox"/> 4 |
| 1 | <input type="checkbox"/> |
| 2 | <input type="checkbox"/> |
| 3 | <input type="checkbox"/> |
| 4 | <input type="checkbox"/> |
| 5 | <input type="checkbox"/> |
| 6 | <input type="checkbox"/> |
| 8 | <input type="checkbox"/> |
| 10 | <input type="checkbox"/> |
| 12 | <input type="checkbox"/> |
| 16 | <input type="checkbox"/> |

Minor Divisions are shorter vertical tick marks between the major divisions. The pop-up menu has several selected increments, or others can be entered in the text box.

As changes are made, the ruler at the bottom of the dialog automatically updates to reflect the current values.



Separation... Preferences

The **Separation...** command opens the **Separations Settings** dialog box.

The **Black Generation** area offers two methods: **UCR** (Undercolor Removal) or **GCR**

(Grey Component Replacement).

UCR is a technique that replaces some of the cyan, magenta and yellow components of the neutral gray and dark shadow areas with black. This helps compensate for some of the trapping and related problems that occur in multicolor printing.

Extreme UCR is not practical. If too much of the three-color gray component is removed, detail and density will be lost.

By reducing three colors (cyan, magenta and yellow) and increasing one color (black), UCR reduces total ink coverage significantly.

GCR replaces gray components in the colored areas of a reproduction with black. The least prominent color is reduced or removed completely along with proportional amounts of the other two colors to define a gray component which is replaced with black ink.

Total Coverage Limit can be set from 200% to 400%.

Black Ink Limit can be set from 0% to 200%.

Black Starts At can be set from 0% to 90%.

GCR Black Generation can be set from 0 to 90.

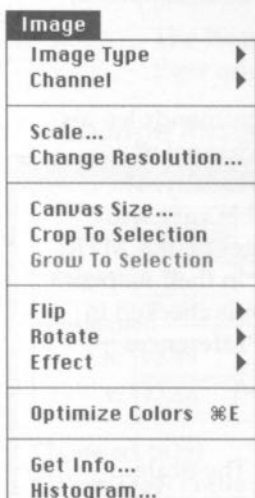
Clicking on the **Transfer...** button opens the **Transfer Curves** dialog box.

The Hue and Grayness area should remain untouched. Densitometer readings should be taken for each of the percentages listed. Numbers can be entered in the **Gray Balance** textboxes to adjust for color shifts. The numbers should be adjusted to produce a neutral gray from the three process colors.

Ink Component Bias	
Gray	
1/4 Tone:	25 %
Mid Tone:	50 %
3/4 Tone:	75 %
Color	
1/4 Tone:	40 %
Mid Tone:	63 %
3/4 Tone:	80 %
Cancel OK	

Clicking on the **Components...** button opens the **Ink Components Bias** dialog box. Numbers can be entered in the textboxes for **Gray** and **Color 1/4 Tone**, **Mid Tone** and **3/4 Tone** to adjust for impurities in the process inks.

7: The Image Menu



The **Image** menu contains commands that allow you to convert image types, view color channels, change the scale, resolution or size of a document, or rotate, stretch, skew, distort, or apply perspective to a selection or the entire document.

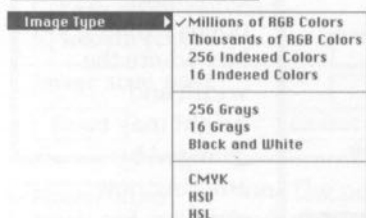
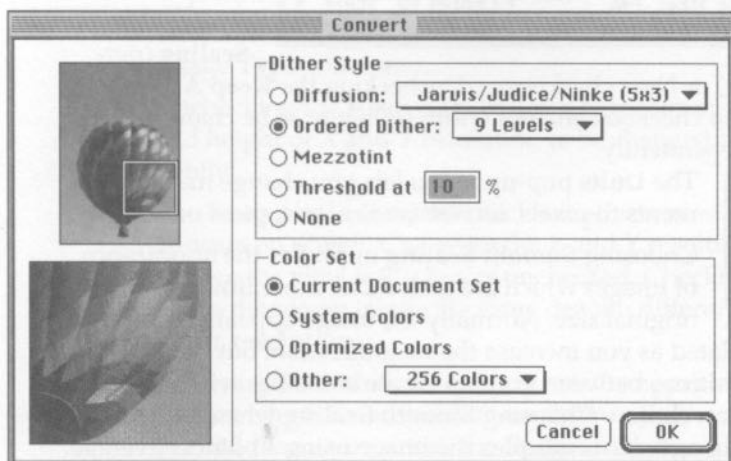


Image Type

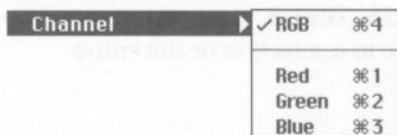
The **Image Type** command lets you change the color or gray levels of a document. The current image type is shown with a check mark in the menu.

When you convert to fewer color or gray levels, the **Convert** dialog box



opens, where dither styles and color sets can be chosen.

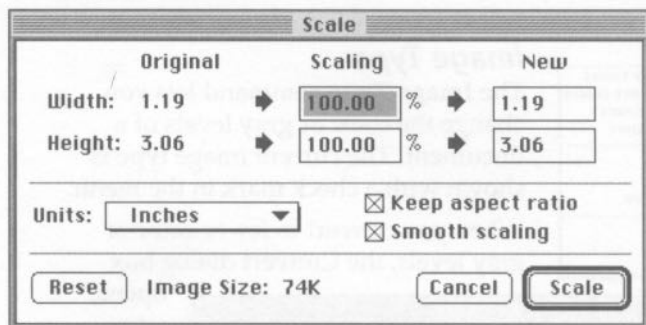
For a complete discussion of the options available in the **Convert** dialog, refer to the **Print...** command in **Chapter 5, The File Menu**.



Channel

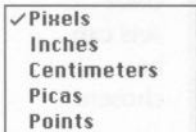
The **Channel** commands let you view each channel of a document individually. The channels available vary with the type of image (RGB, CMYK, etc.) Channels can be viewed in grayscale or in their respective colors if **Display color channels in color** is checked in the **Display Preferences** dialog box (**Edit** → **Preferences** → **Display...**).

Scale...



The **Scale...** command opens a dialog box where the width and height may be changed by entering new numbers for either in the **Scaling** (per-

cent) or **New** checkboxes. Unchecking the **Keep Aspect Ratio** checkbox enables width or height to be changed independently.



The **Units** pop-up menu lets you change measurements to pixels, inches, centimeters, picas or points.

Choosing **Smooth Scaling** improves the appearance of images which are scaled 2 or more times their original size. Normally the image appears more pixilated as you increase the magnification, but the transitions between gray levels are smoother with this option chosen. Choosing **Smooth Scaling** when reducing the image size resamples the image using a bilinear average.

Otherwise Color It! uses the nearest neighbor method to place the pixels in the rescaled image.

The **Reset** button returns the values in the **Scaling** boxes to their original settings.

Change Resolution...

Change Resolution

Size

Width: 7.39 Inches ▼

Height: 5.39

Resolution

H: 72.00 Pixels/Inch ▼

V: 72.00

☐ Convert to ▼

☒ Keep aspect ratio

☐ Keep pixels constant

☒ Smooth scaling

Image Size: 806K

Reset Cancel OK

The **Change Resolution...** command lets you change the both the physical size and the image resolution of the document.

Size: The **Width** and **Height** may be changed by entering new numbers in these textboxes. The **Units** pop-up menu lets you change measurements to pixels, inches, centimeters, picas or points.

Resolution: Entering numbers in the **X** or **Y** textboxes changes the image resolu-

✓ Pixels/Inch
Pixels/Cm

tion. The pop-up menu lets you choose **Pixels per Inch** or **Pixels per Centimeter**.

The **Convert To** pop-up menu offers the same options as the **Image Type** command.

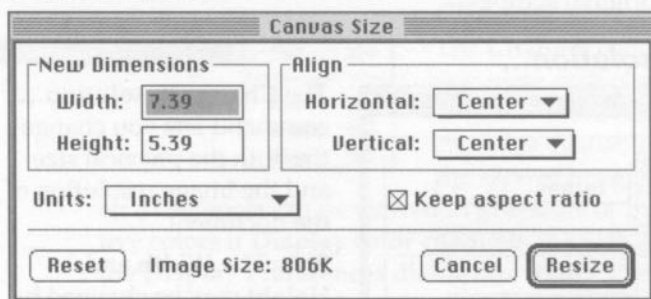
Unchecking the **Keep Aspect Ratio** checkbox enables width and height or **X** and **Y** resolution to be changed independently.

The **Keep pixels constant** checkbox affects how the image appears on screen. Changing the **X** and **Y** resolutions will change the view if this box is unchecked. Checking the box keeps the screen image the same despite differences in **X** and **Y** resolution.

Choosing **Smooth Scaling** improves the appearance of images which are scaled 2 or more times their original size. See the discussion under the **Scale...** command on the previous page.

The **Reset** button returns the values in the **Size** and **Resolution** textboxes to their original settings.

Canvas Size...



The **Canvas Size...** command lets you change the size of the document without changing

the size of the image. Enter numbers in the **Width** and **Height** textboxes for the new document dimensions (Unchecking the **Keep Aspect Ratio** checkbox enables width and height to be changed independently).

Left
✓ Center
Right

The **Align** pop-up menus lets you position the present image within the new document size.

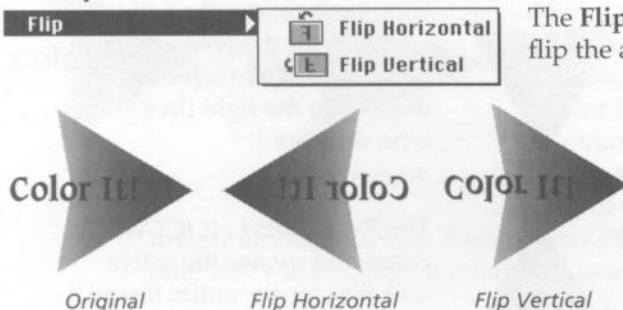
The **Units** pop-up menu lets you change measurements to pixels, inches, centimeters, picas or points.

The **Reset** button returns the values in the **Width** and **Height** and to their original settings.

Crop to Selection

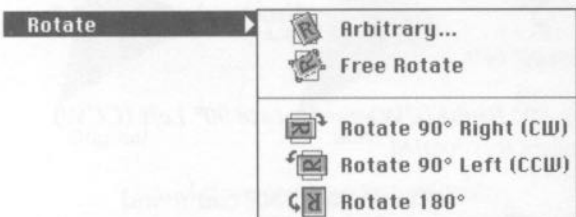
The **Crop to Selection** command deletes any of the image outside of the current selection. Only the portion of the image within the selection is left as the entire image.

Flip

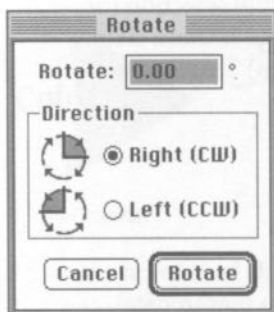


The **Flip** commands let you flip the active selection or entire document. **Flip Horizontal** flips the active selection horizontally; **Flip Vertical** flips the active selection vertically.

Rotate



The **Rotate** command displays a hierarchical menu with several commands for rotating the image for a document or selection.



The **Arbitrary...** command opens a dialog box that lets you rotate the selection or the entire document in 0.01 degree increments. Rotate in a right (clockwise) or left (counterclockwise) direction by choosing the appropriate radio button.

The **Free Rotate** command lets you rotate a selection by hand. **Color It!** places grow handles at the four corners of the selection. Click on one of the handles and drag to rotate the selection.





Original



Rotate 90° Right

The **Rotate 90° Right (CW)** command rotates the active selection (or the entire image if there is no active selection) 90 degrees to the right (in a clockwise direction).



Original



Rotate 90° Left

The **Rotate 90° Left (CCW)** command rotates the active selection (or the entire image if there is no active selection) 90 degrees to the left (in a counter-clockwise direction).

NOTE: Neither the **Rotate 90° Right (CW)** nor **Rotate 90° Left (CCW)** commands crop the image when it is rotated.



Original

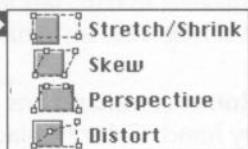


Rotate 180°

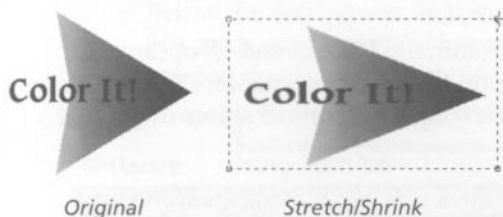
The **Rotate 180°** command rotates the active selection (or the entire image if there is no active selection) 180 degrees.

Effects

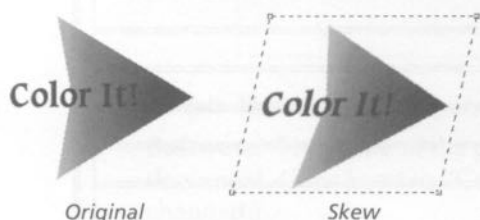
Effects



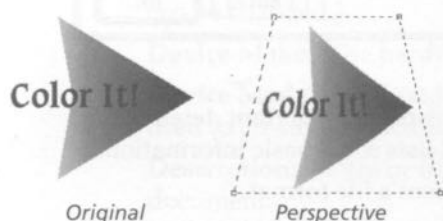
The **Effects** command displays a hierarchical menu with several commands for modifying an image for a document or selection.



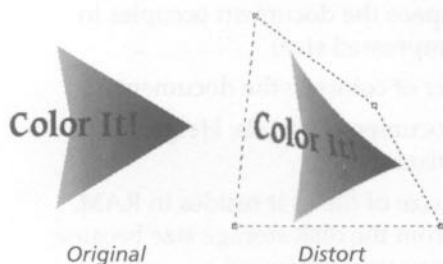
The **Stretch/Shrink** command lets you interactively scale an image. When you choose the command, Color It! places grow handles at the four corners of the selection. Click on one of the handles and drag to stretch or shrink the selection. Holding down the Shift key while dragging retains the image's proportions.



The **Skew** command lets you slant the active selection along either the horizontal or vertical axis. When you choose the command, Color It! places grow handles at the four corners of the selection. Click on one of the handles and drag to skew the selection.



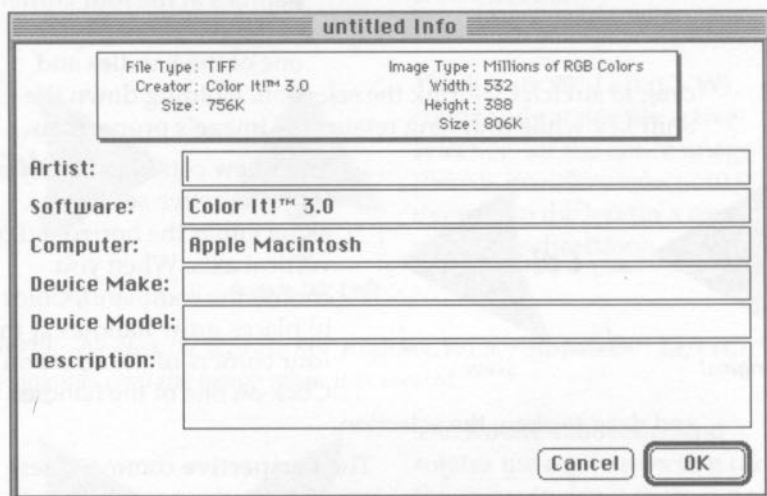
The **Perspective** command lets you change the perspective of the active selection. When you choose the command, Color It! places grow handles at the four corners of the selection. Click on one of the handles and drag to create either a horizontal or vertical perspective of the selection.



The **Distort** command lets you create a number of special effects. You can perform successive distortions on a selection without causing any degradation to the image. When you choose the command, Color It! places grow handles at the four corners of the selection. Click on one of the handles and drag to distort the image.

Optimize Colors

The **Optimize Colors** command [**Command-E**] optimizes images displayed on monitors with fewer colors than in the image—for example, viewing a millions of colors document on a 256 color screen.



Get Info...

The **Get Info...** dialog box displays important details about the document. The top area lists some basic information:

File Type shows the document's file format.

Creator shows the name (or creator identity) of the program which created the document.

Size is the amount of disk space the document occupies in kilobytes (K) (possibly a compressed size).

Image Type lists the number of colors in the document.

Width is the width of the document in pixels; **Height** is the height of the document in pixels.

The second **Size** shows the size of file as it resides in RAM. (The RAM size may differ from the disk storage size because documents in RAM are always uncompressed.)

Below the rectangular field in the **File Information** dialog box are a number of text boxes where information can be entered that is saved with the document:

Artist:	<input type="text"/>
Software:	<input type="text" value="Color It!™ 3.0"/>
Computer:	<input type="text" value="Apple Macintosh"/>
Device Make:	<input type="text"/>
Device Model:	<input type="text"/>
Description:	<input type="text"/>

Artist: The name of the person who created the document.

Software: The name of the program which created the document. (This is set as "Color It! 3.0" by default but can be changed.)

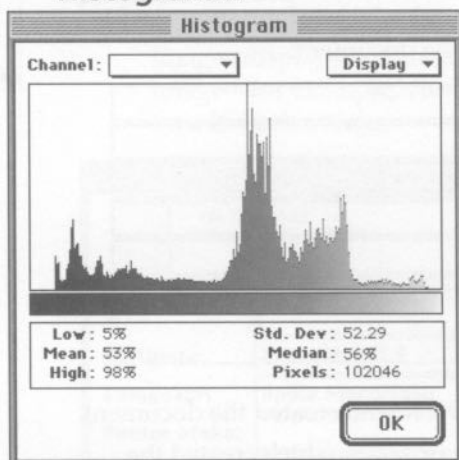
Computer: The type of computer which created the document. (This is set as "Apple Macintosh" by default but can be changed.)

Device Make: The hardware used to create the document.

Device Model: The model information about the hardware used to create the document.

Description: Notes or other personal comments about the document.

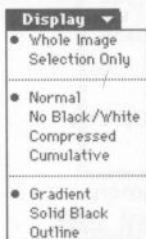
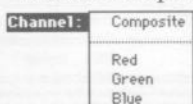
Histogram...



The **Histogram...** command opens a dialog box displaying the histogram for an image. A histogram displays the frequency distribution of the number of pixels in an image

at a specific color level.

The Channel pop-up lists the various channels that can be displayed. The channels available depend on the type of image—RGB, CMYK, etc.

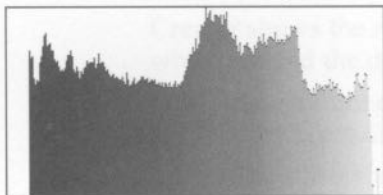


The **Display** pop-up menu adjusts the way the histogram is displayed. The selected options are marked with a bullet (•) in front of them.

The top portion of the pop-up lets you choose between the **Whole Image** or just the **Selection Only**.

Normal includes all the blacks, whites and colors in the image. **No Black/White** ignores all pixels at the first index (0) and the last index (255). Some filters group pixels at these extreme positions, so it is common for the large number of pixels at these locations to overshadow the others

in between. **Compressed** compresses the high peaks in the histogram, making the distribution of the other grays in the image easier to see. **Cumulative** sums the number of pixels in the image that are darker than a selected color level.



Compressed Histogram

The bottom portion of the pop-up menu controls the type of display for the histogram. **Gradient** displays gradient range that accurately depict the black, white and gray levels in the image. **Solid Black** fills the histogram area with black. **Outline** displays the histogram as a line.

8: The Selection Menu

Selection

Selection Type ▶
Document Mask ▶
Mask Operations ▶

Select All ⌘A
Select None ⌘D
Invert Selection

Grow Selection...
Shrink Selection...
Select Similar

Feather...
Border...
Smooth Edges...

Drop Shadow...
Extrude...

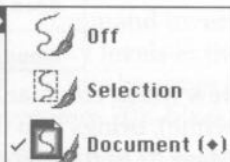
Hide Marquee ⌘H
Pick Up Selection

Use Selection as Mask

The **Selection** menu contains commands that let you create, save, open, and manipulate selections and masks; and perform special effects like Drop Shadow and Extrude.

Selection Type

Selection Type



The **Selection Type** hierarchical menu offers three choices for selections:

Off: The document has no selections or masks.

Selection: The document has a selection mask.

Document: The document has a separate document acting as a selection or mask.

Masks control how paint, paste, and filter operations affect a document. Color It! supports two types of masks: **Selection masks** and **Document masks**.

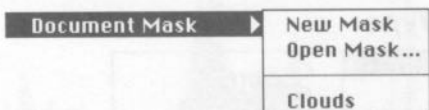
Selection masks are made with any of the selection tools, and temporarily protect portions of a document, similar to the way masking tape protects portions of a wall as you paint.

Document masks are used for special effects and blends. A document mask is a second document linked to the original. The gray levels in the document mask control how paste, paint or filter operations affect the original document. Pure white areas in the document mask act as if completely transparent—they reflect changes made to the original document completely. Pure black areas in the document mask are completely protected from changes in the original document. In gray areas of the document mask, the amount of change in the original document is directly related to the gray level in the document mask: the lighter the gray in an area of the

ion Type >
 ent Mask >
 Operations >
 All >
 Name >
 Selection >
 Selection... >
 Selection... >
 Similar >
 If... >
 If... >
 Edges... >
 Shadow... >
 de... >
 Marquee >
 Up Selection >
 Selection as Mask >

document mask, the greater the effect of changes in the original document.

Masks can be turned on and off by selecting the appropriate selection type under the **Selection Type** menu.



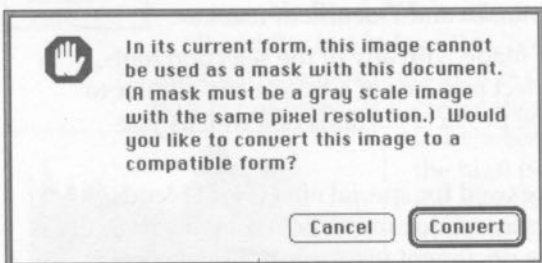
Document Mask

The **Document Mask** hierarchical menu has several options for masks:

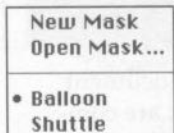
New Mask command creates a new blank document (white), brings it to the front and names it by adding (**Mask 2**) to the end of original document's name.

The **Open Mask...** command brings up a standard **Open** dialog box where you may choose an existing document to use as a mask.

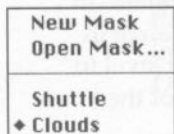
Any document open at the same time as the original document can be used as a document mask. To use an existing open document as a document mask, select it from the list at the bottom of the **Document Mask** menu. The selected document is linked to the original document as a document mask and is brought to the front.



A color document chosen as a mask must be converted to a grayscale document with the same resolution. An alert dialog opens to let you convert the document.



When the document mask is active, the original document appears in the **Document Mask** hierarchical menu with a bullet (•) in front of it.



When the original document is active, the current document mask appears in the **Document Mask** hierarchical menu with a diamond (◆) in front of it.

Mask Operations

Mask Operations

Invert Mask

Selection To Mask
Mask To Selection

Add Selection
Subtract Selection

Add Colors
Subtract Colors
Palette Colors To Mask

The Operations

command displays a hierarchical menu with commands for modifying masks.

The Invert Mask

command inverts all gray levels in the mask. White becomes black;

black becomes white; 30% black becomes 70% black, etc.

The **Selection To Mask** command converts an active selection to a mask. Anything inside of the selection is white (unprotected) in the mask; anything outside the selection becomes black (protected).

This command is very different from a **Selection** mask, which makes only a temporary mask in the original document. The **Selection To Mask** command creates a mask document which may be used over and over.

The **Mask To Selection** command takes the current mask and converts it to a selection in the original document. The gray levels of any of the document mask are retained in the the conversion to selections in the original document.

The **Add Selection** command adds the current selection filled with white to the mask document. This area is completely unprotected from any operations performed.

The **Subtract Selection** command adds the current selection filled with black to the mask document. This area is completely protected from any operations performed.

The **Add Colors** command adds all colors into the image that are within the document colors to the mask at 100% opacity so these gray levels are protected in the original document.

The **Subtract Colors** command subtracts all colors into the image that are within the document colors from the mask, making them 100% transparent.

The **Palette Colors To Mask** command moves all colors into the image that are within the document colors to the document mask and fills the document mask with black.

Select All

The **Select All** command [**Command-A**] makes the entire contents of a document the active selection. Double-clicking any selection tools also selects the entire document.

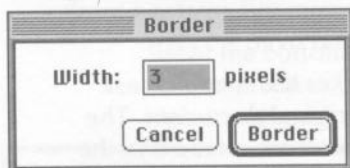
Select None

The **Select None** command [**Command-D**] deselects whatever is currently selected.

Invert Selection

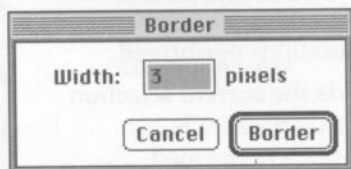
The **Invert Selection** command lets you select everything *except* the currently selected region. This command is very helpful for creating masks.

Grow Selection...



The **Grow Selection...** command opens a dialog box where you can set the number of pixels from 1 to 16 to increase the radius from the current selection.

Shrink Selection...

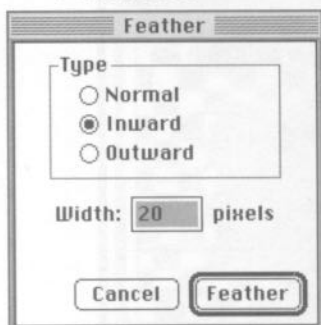


The **Shrink Selection...** command opens a dialog box where you can set the number of pixels 1 to 16 to decrease the radius from the current selection.

Select Similar

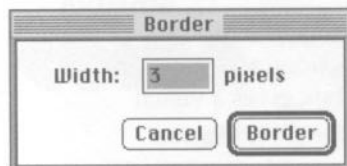
The **Select Similar** command selects all pixels in a document that have the same color values as those in the active selection.

Feather...



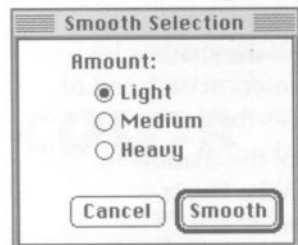
The **Feather...** command controls the blending between the active selection and the areas surrounding it. The greater the amount of feathering (from 1 to 64) entered in the dialog, the wider the area where the image blends into the background. The **Normal** type feathers half the width inside the selection edge and half outside. **Inward** and **Outward** types feather only on one side of the selection edge.

Border...

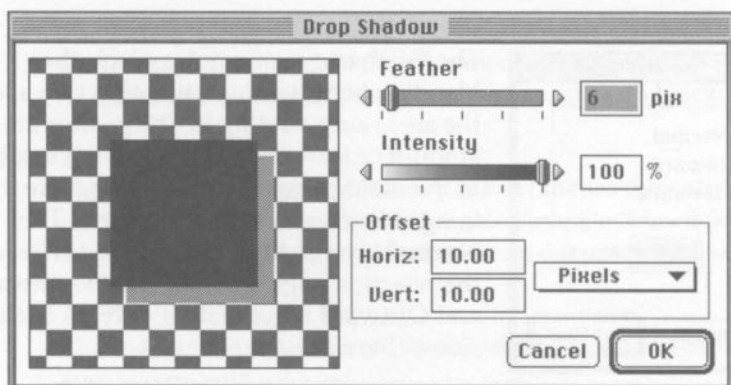


The **Border** command creates a feathered selection with the edge of the current selected area as its center. In this mode, the selection is feathered both inside and outside half the number of pixels entered in the **Width** textbox.

Smooth Edges...



The **Smooth Edges** command cleans up rough or jagged selections. It has three settings: **Light**, **Medium**, and **Heavy** which control the amount of smoothing.



Drop Shadow...

COLOR

The **Drop Shadow...** command simplifies creating shadows for selections and type. The left portion of the dialog box gives a visual reference to the shadow's positioning.

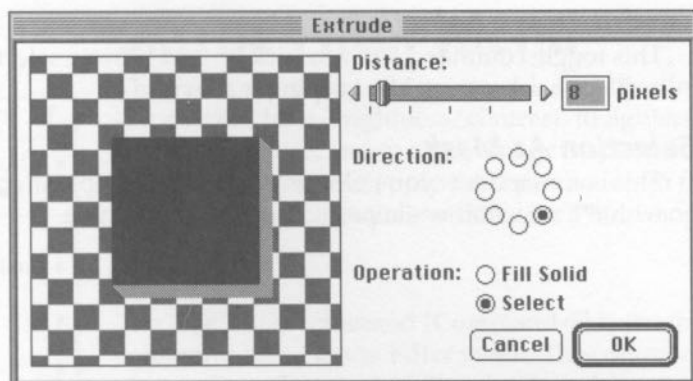
The **Feather** slider controls the amount of feathering of the shadow by moving the slider bar, clicking on the pointers at each end of the slider or entering a number of pixels in the textbox.

The **Intensity** slider controls the opacity of the shadow by moving the slider bar, clicking on the pointers at each end of the slider or entering a percentage in the textbox.

The **Offset** area controls the positioning of the shadow in relation to the selection. Enter numbers in the **Horiz** (Horizontal) and **Vert** (Vertical) textboxes.

- ✓ Pixels
- Inches
- Centmtrs
- Picas
- Points
- Percent

The **Units** pop-up lets you choose from pixels, inches, centimeters, picas, points or percent.



Extrude...



The **Extrude...** command simplifies creating 3D edges for selections and type. The left portion of the dialog box gives a visual reference to the extrusion's positioning.

The **Distance** slider controls the depth of the extrusion by moving the slider bar, clicking on the pointers at each end of the slider or entering a number of pixels in the textbox.

The **Direction** radio buttons control the angle of the extrusion. Click the button that corresponds to the direction you wish.



The **Operation** radio buttons let you choose between filling the extrusion area with a fill color (such as the type above), or making the extrusion an active selection after the operation is performed (such as the type at the left).

Hide Marquee

The **Hide Marquee** command [**Command-H**] hides the moving dotted line showing the edges of a selection without deselecting.

This toggle command lets you pick up and move a selection or place a selection while keeping it active.

Use Selection As Mask

This command lets you paint or perform other operations within a selection while protecting the outside area.

9: The Filter Menu

The **Filter** menu contains commands for adjusting color levels, tone, brightness/contrast; to lighten or darken an image; and to apply image maps and filters. It also lets you apply third party plug-in filters (such as those compatible with Adobe Photoshop™).

Last Filter

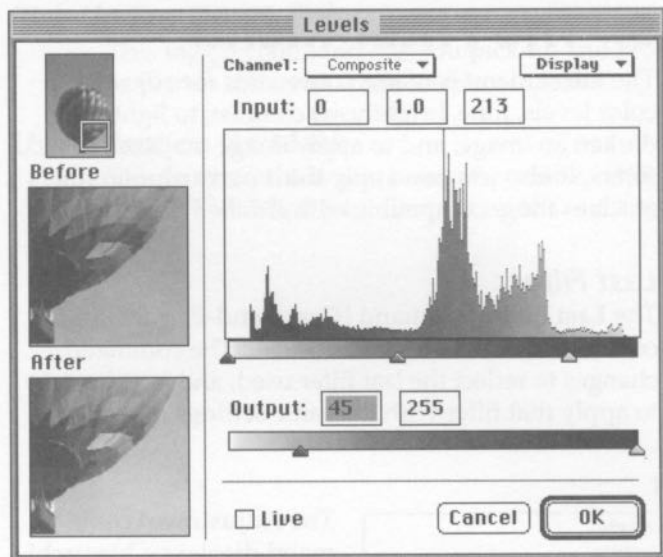
The **Last Filter** command [**Command-F**] is the first command listed in the **Filter** menu. The command changes to reflect the last filter used, and is a shortcut to apply that filter with the same settings once again.

Filter	
Last Filter	⌘F
Adjustment	▶
Image Map	▶
Blur	▶
Convolution	▶
Noise	▶
Sharpen	▶
Stylize	▶
Video	▶
Other	▶

Adjustment

Adjustment	
Levels...	
Curves...	
Auto Contrast	
Brightness/Contrast...	⌘B
Lighten/Darken...	⌘L
Brightness RGB...	
Contrast RGB...	

The **Adjustment** command displays a hierarchical menu with commands for adjusting the image for a document or selection.



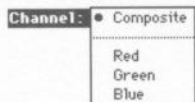
The **Levels...** command lets you adjust the brightness, contrast and gamma in an image. The command opens a dialog box containing a histogram of the

image. (A histogram displays the frequency distribution of the number of pixels in an image at a specific color level.

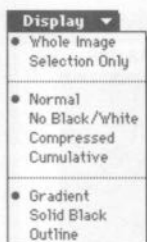
The three pointers on the histogram control the **Input** levels—shadows, Gamma (midtones), and highlights—and increase the contrast. Values can also be entered for each in the textboxes above.

The **Output** levels reduce the contrast. Values can be entered in the textboxes, or the two pointers on the **Output** bar can be moved.

The effect of the adjustments to the image are shown in the **After** image at the lower left. You can choose the portion of the image to be shown in the **Before** and **After** boxes by clicking and dragging the selection rectangle in the small image at the top left.



The **Channel** pop-up menu lets you select which channels to be displayed in the histogram (the channels will vary depending on the type of image—RGB, CMYK, etc.)



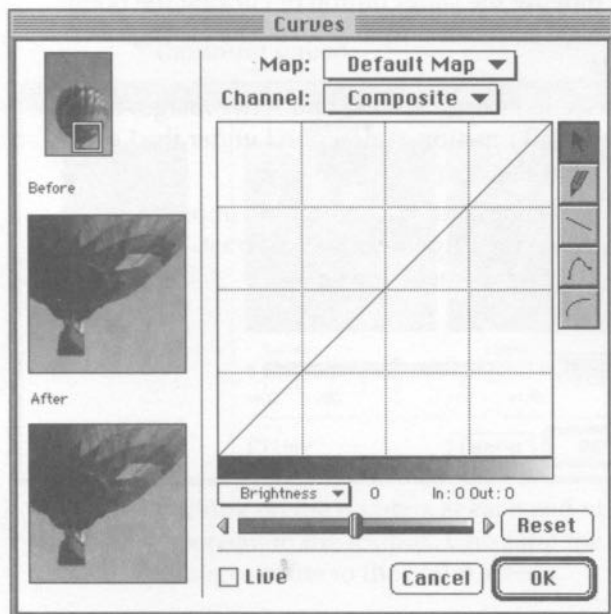
The **Display** pop-up menu adjusts the histogram display. Selected options are marked with a bullet (•).

Normal includes all the blacks, whites and colors in the image. **No Black/White** ignores all pixels at the first index (0) and the last index (255). Some filters group pixels at these extreme positions, so it is common for the large number of pixels at these locations to overshadow the others in between.

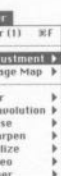
Compressed compresses the high peaks in the histogram, making the distribution of the other grays in the image easier to see. **Cumulative** sums the number of pixels in the image that are darker than a selected gray level.

The bottom portion of the pop-up menu controls the type of display for the histogram. **Gradient** displays gradient range that accurately depict the black, white and grays in the image. **Solid Black** fills the histogram area with black. **Outline** displays the histogram as a line.

Checking the **Live** checkbox applies changes to the entire screen.

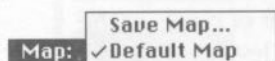


The **Curves...** command lets you adjust an image's brightness, contrast and gamma at any point along the gray scale. It opens a dialog box that displays an image map. The horizontal axis in the chart represents the colors in the original image (black to the left, white to the right). The vertical axis represents the

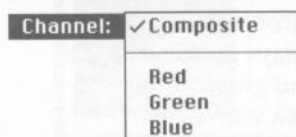


colors in the output image (black at the bottom, white at the top). The 45° line indicates the original and output images are the same.

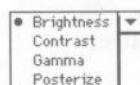
The tools are used to make adjustments in the curve. The **Pointer** tool selects a region of the map. The **Pencil** tool makes free-form modifications to the map. The **Line** tool (contrast) draws straight lines in the map. The **Curve** tool draws a 1.6 gamma curve in the map. Dragging horizontally produces a shallower curve; vertically produces a steeper curve.



The **Map** pop-up menu lets you open existing image maps and save new maps.



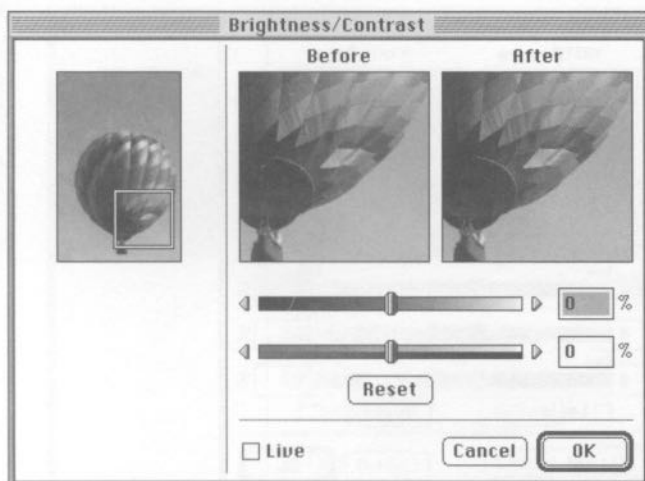
The **Channel** pop-up is identical to the pop-up described under the Levels command.



The **Slider** pop-up lets you adjust **Brightness**, **Contrast**, **Gamma** and **Posterization** of the image. Adjustments can be made by moving the slider button or clicking the pointers at each end. The **Reset** button returns the settings to their defaults.

The preview selection image, **Before** and **After** images and the **Live** checkbox all function as described under the Levels command earlier in this chapter.

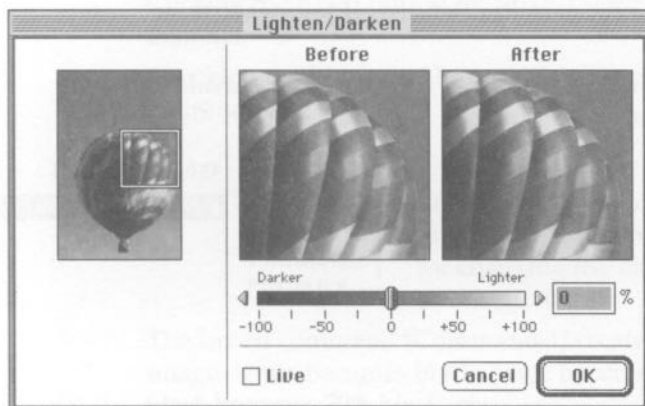
The **Auto Contrast** command is a shortcut to improve an image by optimizing the brightness and contrast. This may be the only contrast adjustment needed.



The **Brightness/Contrast...** command [**Command-B**] also lets you adjust the brightness and contrast of an image. The command opens a dialog box with sliders. The top slider adjusts **Brightness** in

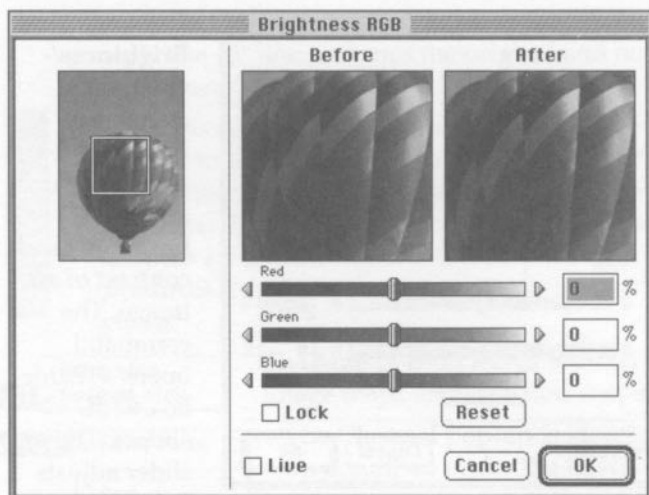
percentages from $\pm 100\%$. The bottom slider adjusts **Contrast** in percentages from $\pm 100\%$. Adjustments are made by moving the slider bar, clicking on the pointers at each end of the slider or entering a percent in the textbox.

Checking the **Live** checkbox applies any changes made to the entire screen.



The **Lighten/Darken...** command [**Command-L**] opens a dialog box to adjust the image levels. Vary the amount of lightening or darkening by moving the slider bar,

clicking on the pointers at each end of the slider or entering a percent in the textbox. Checking the **Live** checkbox applies changes made to the entire screen.

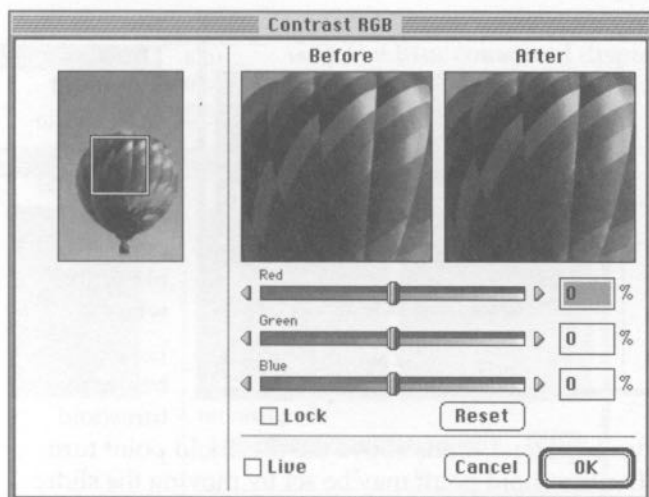


The **Brightness RGB ...** command opens a dialog box similar to **Brightness/Contrast**, but with individual sliders for red, green and blue. Adjustments are made by moving the slider bar, clicking on the pointers at each end of the slider or entering a percent in the textbox.

Checking the **Lock** checkbox links all sliders together.

Clicking the **Reset** button returns all settings to their defaults.

Checking the **Live** checkbox applies changes made to the entire screen.



The **Contrast RGB ...** command opens a dialog box similar to **Brightness RGB**, with individual sliders for red, green and blue. Adjustments are made by moving the slider bar, clicking on the pointers at each end of the slider or entering a percent in the textbox.

Checking the **Lock** checkbox links all sliders together.

Clicking the **Reset** button returns all settings to their defaults.

Checking the **Live** checkbox applies changes made to the entire screen.

Image Map

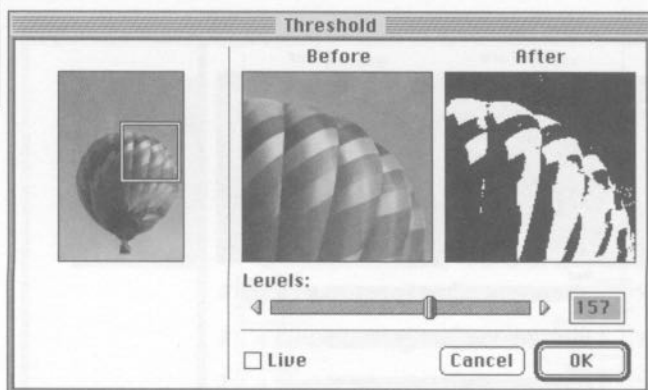
Image Map

Invert ⌘I
Equalize
Threshold...
Posterize...

The **Image Map** command displays a hierarchical menu with commands for changing the map for a document or selection.

The **Invert** command [**Command-I**] creates a negative of the image: white becomes black; black becomes white; 30% black becomes 70% black, etc.

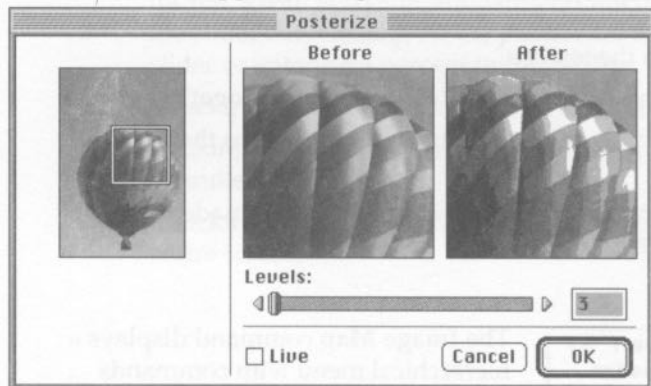
The **Equalize** command adjusts the distribution of the colors in the image to make all saturation levels move even.



The **Threshold...** command opens a dialog box to convert the image to only pure black and white.

Levels below the threshold

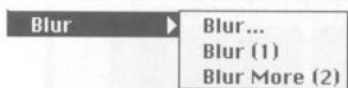
point turn black and levels above the threshold point turn white. The threshold point may be set by moving the slider bar, clicking on the pointers at each end of the slider or entering a percent in the textbox. Checking the **Live** checkbox applies changes made to the entire screen.



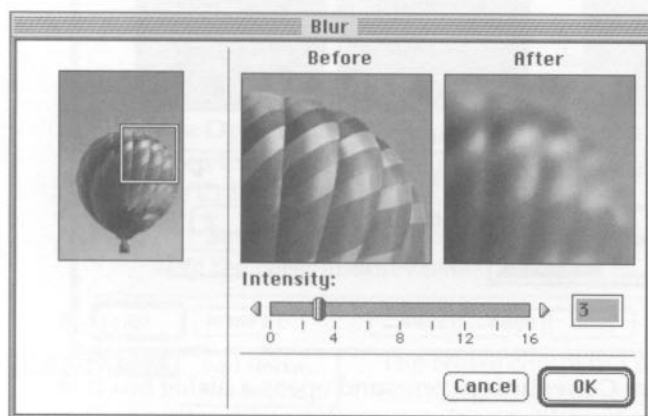
The **Posterize...** command allows you to create special effects by limiting the number of colors in the image. The number of levels is entered in the

text box or by moving the slider bar, clicking on the pointers at each end of the slider or entering a percent in the textbox. Checking the **Live** checkbox applies changes made to the entire screen.

Blur



The **Blur** command displays a hierarchical menu with several different blur commands.



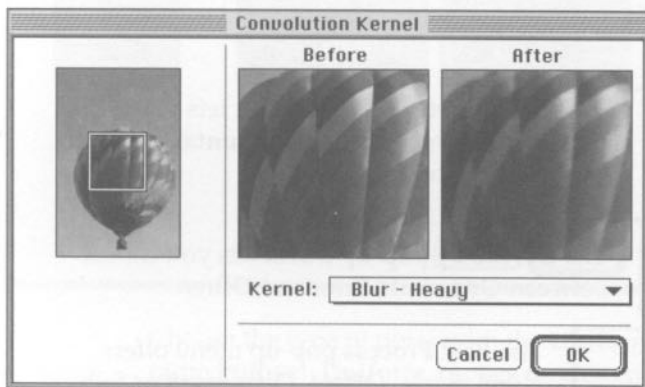
The first **Blur** command opens a dialog box where the image can be blurred by moving the slider bar, clicking on the pointers at each end of the slider or entering a number in the textbox.

The **Blur (1)** and **Blur More (2)** commands are pre-set and have no dialog box.

Convolution

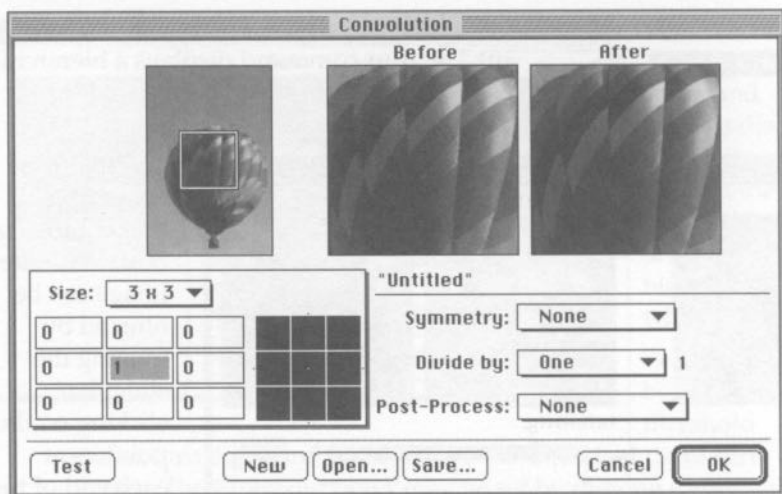


The **Convolution** command displays a hierarchical menu with two commands.



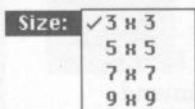
The **Kernel** command opens a dialog box with a pop-up menu of all the kernel filters available through the **Kernel** brush on the **Tools** palette. No sliders or controls are

featured, just the before and after view as shown.

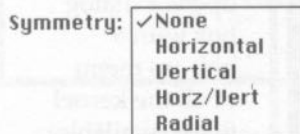


The **Custom Convolution** command opens a dialog box that lets you create and/or apply a convolution filter to a document or selection.

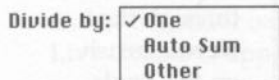
A convolution filter is an “area operator.” The filter looks at an area, performs a mathematical operation, and then makes a decision about how to change the center pixel (see **Appendix A, Filtering Fundamentals** for more information on convolutions.)



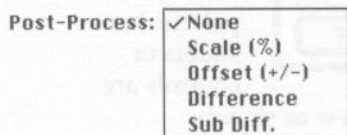
The **Size** pop-up lets you choose several choices of grids.



The **Symmetry** pop-up menu lets you choose between **None**, **Horizontal**, **Vertical**, **Horz/Vert**, or **Radial**.



The **Divide by** pop-up menu lets you choose between **One**, **Auto Sum** and **Other**.



The **Post Process** pop-up menu offers **None**, **Scale**, **Offset**, **Difference** or **Sub Diff** (subtract difference).

The center pixel cell in the grid is the point all convolution kernels calculate for. Select a grid cell by clicking on it and enter a number in the box.

The **Test** button lets you apply the convolution to the After image to see the effect.

The **New** button resets all cells in the grid (except the center) to zero.

The **Open** button opens a standard **Open** box that lets you open the existing kernels stored in the Convolution folder in the Color It! Stuff folder.

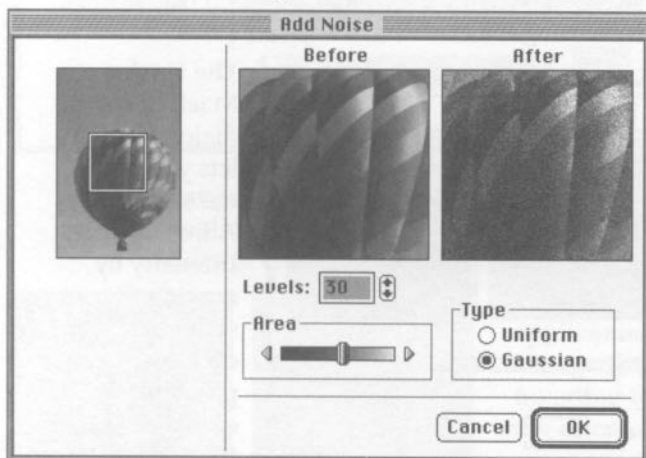
The **Save** button opens a standard **Save** box that lets you save the convolution kernel.

Noise

Noise

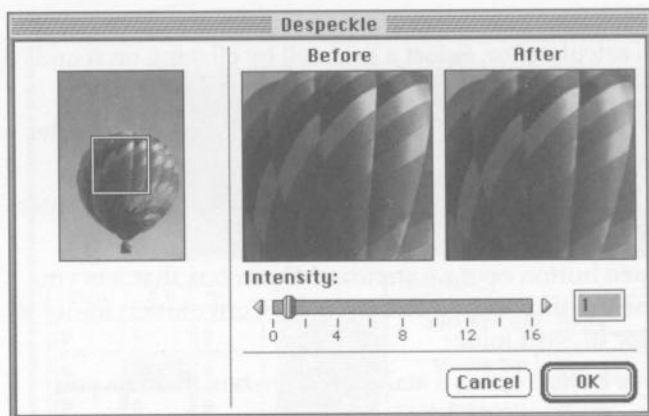
Add Noise...
Despeckle...

The **Noise** command displays a hierarchical menu with commands for adding or subtracting noise from an image. Noise is pixels of random colors scattered throughout an image.



The **Add Noise...** command opens a dialog box. Adjust the **Levels** (the harshness) by moving the slider bar, clicking on the pointers at each end or entering a number in the textbox.

Choose the type of noise with the **Uniform** or **Gaussian** radio buttons. **Uniform** applies random noise along a linear distribution; **Gaussian** selects the values along a Gaussian curve.



The **Despeckle...** command opens a dialog box used to reduce noise in an image. Adjust the **Intensity** by moving the slider bar, clicking

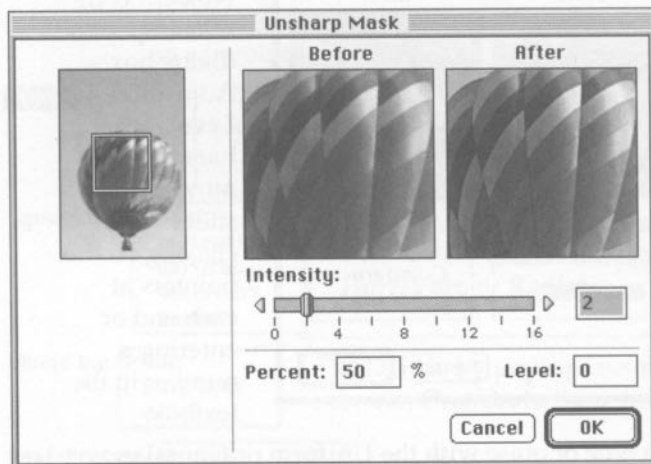
on the pointers at each end of the slider or entering a value between 1 and 16 in the text box.

Sharpen...

Sharpen

Unsharp Mask...
Sharpen (1)
Sharpen More (2)

The **Sharpen** command opens a hierarchical menu of commands that let you to sharpen fuzzy images by increasing the contrast of adjacent pixels.



The **Unsharp Mask** opens a dialog box that lets you adjust the sharpening. Adjust the **Intensity** by moving the slider bar, clicking on the pointers at each end of the slider or entering a value between 1 and

16 in the text box.

The **Percent** text box determines the amount of sharpening. Values above 100% magnify the intensity of the sharpening.

The **Level** text box sets how much contrast and difference must exist between the sharpening pixel and the original before replacing it.

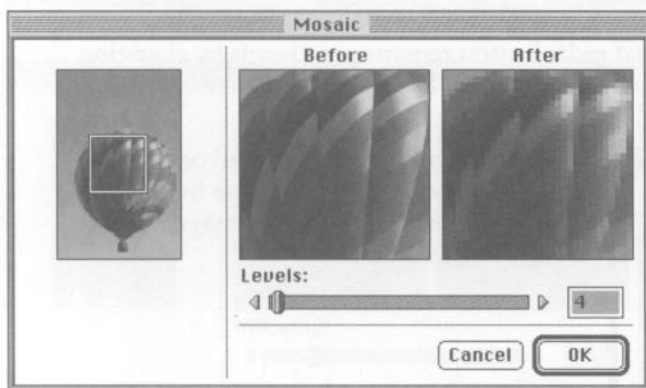
The **Sharpen (1)** and **Sharpen More (2)** commands are pre-set and have no dialog box.

Stylize

Stylize

Mosaic...
Solarize

The **Stylize** command opens a hierarchical menu with commands for changing the visual appearance of the image.



The **Mosaic** command opens a dialog box that lets you group pixels into mosaic squares. The filter averages the gray values of the pixels within the square and

changes them all to that value. Adjust the **Levels** by moving the slider bar, clicking on the pointers at each end of the slider or entering a value between 2 to 64 in the text box.



Original Image



Solarized

The **Solarize** command applies an image map that changes the image by inverting the upper 50% of the colors.

Video

Video

NTSC Video Safe...
De-Interlace...

The **Video** command opens a hierarchical menu with commands for adjusting

images for video use.



The **NTSC Video Safe...** command changes the image to eliminate extremely dark or light (saturated) colors which do not display well on standard NTSC video devices such as televisions and video recorders.

The **Compressed** radio button remaps gray levels from 0–255 to 12–243.

The **Cropped** radio button remaps gray levels by changing all levels below 12 to 12. All levels above 243 are changed to 243.



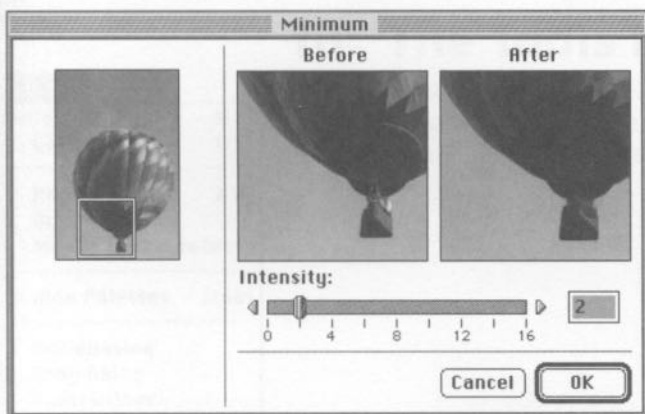
The **De-Interlace...** command opens a dialog box where you can choose from several methods for de-interlacing images from video devices.

Other

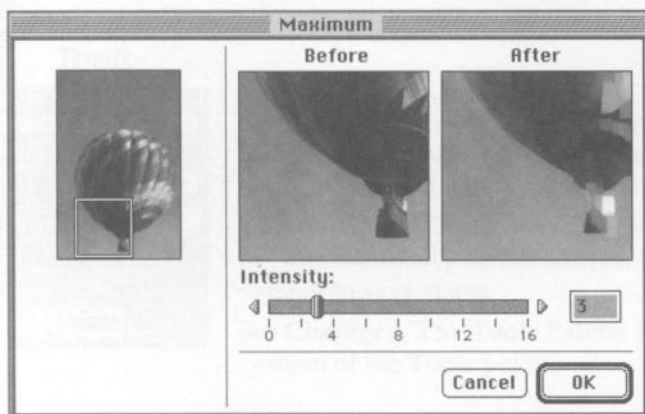
Other

Minimum...
Maximum...

The **Other** command opens a hierarchical menu with other commands for adjusting images.



value between 1 and 16 in the text box.



1 and 16 in the text box.

The **Minimum** command opens a dialog box where you can adjust the **Intensity** by moving the slider bar, clicking on the pointers at each end of the slider or entering a

The **Maximum** command opens a dialog box where you can adjust the **Intensity** by moving the slider bar, clicking on the pointers at each end of the slider or entering a value between

Third Party Plug-in Filters

Color It! supports third-party plug-in filters compatible with Adobe Photoshop™ and Digital Darkroom™. These filters must be put in the Plug-ins folder inside the Color It! Stuff folder. If Color It! is running, you must quit and restart the application for these plug-in filters to be available. The filters may appear in different locations on the **Filters** menu depending on how they were written.



10: The Tools Menu

The **Tools** menu lets you display or hide the different palettes, set the antialiasing and drag updates for the tools, and set the cursor style.

Tools	
✓Tools	⌘T
Colors	⌘Y
Paint Controls	⌘U
Brush Options	
Mouse Coordinates	
Hide Palettes	[tab]
Antialiasing	
Drag Delay	
Paint Dither	
Cursor	▶
Custom Selection...	

Tools



The **Tools** command [**Command-T**] is a toggle command that displays or hides the **Tools** palette. Like most commands in this menu, a check appears by the command when the palette is open.

Clicking on the **Zoom** box in the top right corner of the title bar of all palettes shrinks them to a reduced version to save space.

See **Chapter 2, The Tools Palette** for a thorough discussion of the **Tools** palette.

Colors

The **Colors** command [**Command-Y**] is a toggle command that displays or hides the **Colors** palette, which is used to select and edit colors and patterns. The number of colors available depends on the image type of the current document: Millions of colors, thousands of colors, 256 colors or grays, 16 colors or grays or black and white.

See **Chapter 3, The Colors Palette** for a complete discussion of the **Colors** palette.

Tools	
✓Tools	⌘T
Colors	⌘Y
Paint Controls	⌘U
Brush Options	
Mouse Coordinates	
Hide Palettes	[tab]
Antialiasing	
Drag Delay	
Paint Dither	
Cursor	▶

Paint Controls



The **Paint Controls** command [Command-U] is a toggle that displays or hides the **Paint Controls** palette.

See **Chapter 2, The Tools Palette** for a complete discussion of the **Paint Controls** palette.

Brush Options

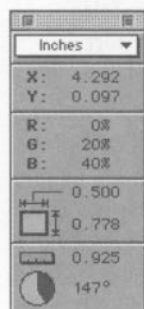


The **Brush Options** command is enabled when you select the *Brush*, *Air Brush*, *Blur*, *Sharpen*, *Stamp*, *Smudge*, *Lighten* or *Darken* tools from the **Tools** palette. Selecting the command opens the **Brush Options** palette, allowing you to set several controls for a tool at one time. The **Gradient**, **Spacing**, **Repeat**, and **Fade** are common to all brush tools. The slider and top option vary with the tool selected—**Opacity** when the *Brush* or *Stamp* tools are selected;

Pressure when *Smudge* is selected; **Flow** when *Air Brush* is selected; **Intensity** when the *Sharpen*, *Blur*, *Lighten* or *Darken* tools are selected.

See **Chapter 2, The Tools Palette** for a discussion of the **Brush Options** palette.

Mouse Coordinates



The **Mouse Coordinates** command is a toggle that displays or hides the **Mouse Coordinates** palette. Double-clicking on the *Pointer* tool also toggles this palette.

The pop-up menu lets you select measurement units in pixels, inches, centimeters, picas or points.

The **X** and **Y** numbers identify the cursor location, based on the ruler origin point (normally the upper left corner of the active window).

The second area indicates the percentages of colors at the cursor point. The colors shown depend on the type of image—RGB, CMYK, etc.

The third area indicates the width and height of any selections, measured in the chosen units.

The forth area indicates the straight-line distance from the point where the mouse button was held down to the current cursor position. The angle of this straight-line distance is also indicated, measured in the chosen units.

Show/Hide Palettes

The **Show Hide Palettes** command [Tab] is a toggle that removes and restores any open palettes from view without closing them.

Antialiasing

The **Antialiasing** command is a toggle that eliminates jagged edges of text or objects by blending the sharp contrasts between the different colors. It is available only when the *Shape Selection*, *Lasso*, *Magic Wand*, *Shape Object*, *Line*, *Paint Can*, *Text*, *Scissors* or *Bezier* tools are in use. When you select **Antialiasing** for a tool, a check mark appears next to the command in the **Tool** menu.

Drag Delay

The **Drag Delay** command is a toggle that controls when pastes, object and line screen redraws are updated as you move or draw them. The normal setting (with no check mark next to the command in the menu) has no delay. With large or complex objects, the screen redraws may be slow. Activating the command shows only an outline of an item as it is moved and redraws according to the Preference settings.

Paint Dither

The **Paint Dither** command is a toggle that indicates when a document has been dithered.

Cursor

Cursor

✓ Tool Icon
Crosshair

✓ Brush Size

The **Cursor** command displays a hierarchical menu where a cursor style can be selected. The command applies to all tools

except the *Hand*, *Magnify*, *Dropper*, and *Text* tools. Either **Tool Icon** or **Crosshair** views may be chosen.



The **Brush Size** is a toggle that displays an outline showing the size and shape of the current brush tool as it moves for finer control of brush stroke placement.

Custom Selection...

The **Custom Selection...** command opens a dialog box where a custom selection can be created. See **Chapter 2, The Tools Palette** for more information.

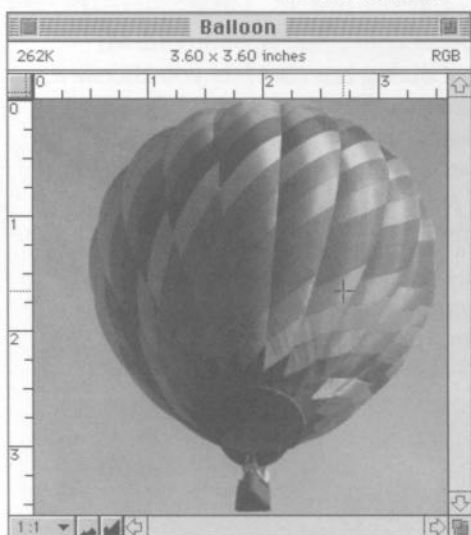
11: The Window Menu



The **Window** menu controls how documents are viewed. All open documents are listed at the bottom of the **Window** menu. The active document is designated with a check mark.

Show Rulers/Hide Rulers

The **Show Rulers/Hide Rulers** command is a toggle that displays or hides the screen rulers, displayed along the top and left side of the current window.

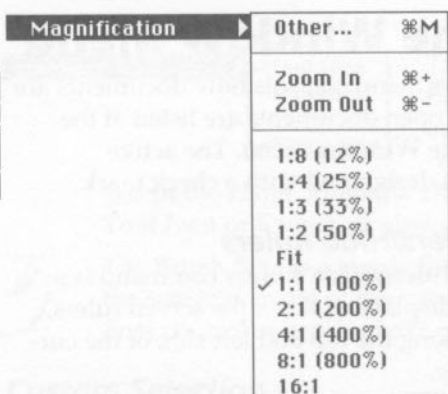


The exact horizontal and vertical location of the cursor is indicated as gray lines on the rulers.

The default location for the ruler origin (0,0) is the top left corner of the document. To change the origin, click in the box at the corner where the rulers meet and drag into the document. The new origin will be set where you release the mouse button. To restore the default ruler origin, double-click in the box.

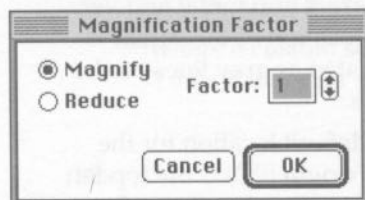
Inches are the default measurement units for the rulers.

Other units can be selected in either the **Mouse Coordinates** palette or with the **Rulers...** command in the **File** menu (**File** → **Preferences** → **Rulers...**).



Magnification

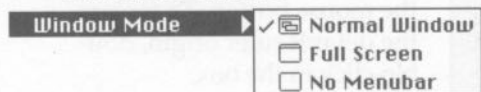
The **Magnification** menu controls the enlargement or reduction of the document view. It is similar to the pop-up menu at the bottom left corner of the document window.



The **Other** command [**Command-M**] opens a dialog box that lets you choose a custom magnification factor. Select a new value from 1 to 32 by typing a number or using the arrow buttons and select either the **Magnify** or **Reduce** buttons.

The **Zoom In** [**Command-+**] and **Zoom Out** [**Command--**] commands change the document view to the next magnification factor listed at the bottom of the menu.

Window Mode



Color it! supports three types of window modes—**Normal Window**, **Full Screen**, and **No Menubar**.

The default mode is **Normal Windows**, which displays all the standard Macintosh window elements as well as Color it!'s magnification pop-up and mask icon.

In **Full Screen** mode, the document fills the screen (except the menu bar) if the view is large enough. If the view of the document is not large enough, a solid color background fills the rest of the screen. The background color is chosen from the **Document Border** pop-up menu in the **Display Preferences** dialog box (**Edit**➤**Preferences**➤**Display...**).

The **No Menubar** mode is similar to the **Full Screen** mode except the menu bar is hidden as well. Although hidden, it will appear when the mouse button is held down as you click in the menu bar area at the top of the screen.

New View

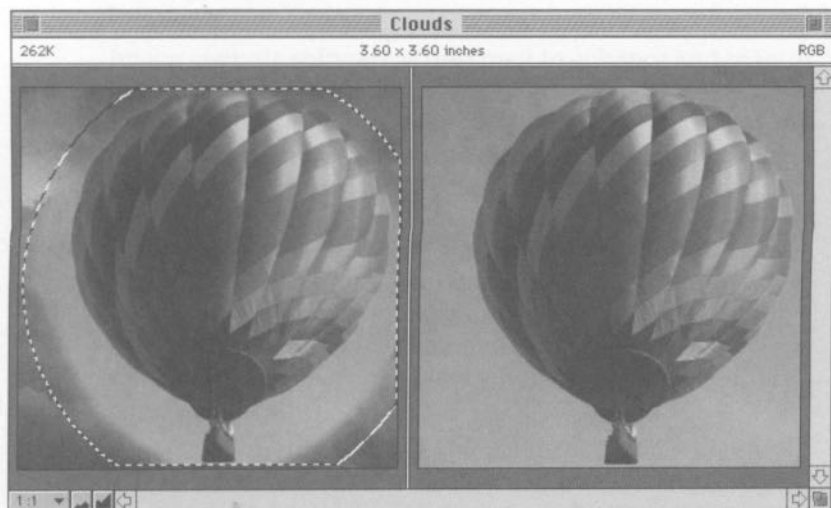
The **New View** command opens another view of the active document. This permits viewing the same document at different magnifications.

Split Screen

Split Screen	No Split Screen
	✓ Left and Right Top and Bottom
	✓ Clouds

The **Split Screen** command displays a hierarchical menu that allows you to view the active document in a window with a second document selected from the open document list.

When two documents are seen in a split screen view, the active document is in the left or top position, depending on whether you choose **Left and Right** or **Top and Bottom** from the menu. To return to a single document view, select the **No Split Screen** command.



In **Split Screen** mode, any paint operation performed in the right/bottom document window appears in the left/top document. This can be very useful when using Document masks, as documents in **Split Screen** mode are always perfectly aligned.

(See **Chapter 8, The Selection Menu** for more information about using masks.)

Display at Resolution

The **Display at Resolution** command displays the document at its true size (in a one-to-one ratio). Color It! displays documents either in 72dpi or at the document's resolution depending on the settings in the **Display Preferences** dialog box (**Edit** ➤ **Preferences** ➤ **Display...**). High resolution documents displayed at their resolution appear to be magnified (a 300dpi document appears 4 times larger on screen, for example).

Appendix A: Filtering Fundamentals

How digital images differ from photographs

Color photographs display an infinite number of shades, ranging from pure black to pure white with everything in between. These shades are continuously blended together without interruption. Unlike a human, a computer cannot work with continuous tone images. Digitizers and scanners are used to convert the grayscale information in a photograph to numbers. A digital image is created by placing an invisible grid over the photograph and reading the information about the brightness, contrast and color of the image at each grid location. The resulting numbers from each grid location are assigned to a pixel. Information from all the pixels in an image are grouped together to create a pixel matrix. This matrix contains information on:

- **Coordinate location**—defining the row and column (X, Y) of each pixel in the matrix.
- **Brightness information**—intensity information at a pixel location.

Image analysis software is designed to enhance and manipulate these pixel matrixes. These enhancements are made by changing the gray values of pixels in the image. The following sections contain a brief background on computer image enhancement terms and techniques.

Humans view grays differently than computers

Before you begin filtering an image, it is important to understand how the human eye sees gray levels. This may help you decide what type of filter to use. It may also explain some of the unexpected results you may get when painting on an image.

Our eyes naturally perform some filtering of an image to help us see details. When looking at a black to white edge, the eye emphasizes the transition to make it appear as sharp and crisp as possible. In effect, the eye creates its own edge

enhancement to sharpen the appearance of an image. As a result, it is not always necessary to use edge enhancement filters to sharpen an image. A contrast filter may give you the same results because your eye automatically sharpens the edges.

Our eyes do not view colors and intensities in a linear fashion. Our eyes have different sensitivities to different colors. Human eyes are far more sensitive to darker colors than lighter ones. You may be able to distinguish between two dark colors of a slightly different shade, while two light colors separated by the same difference in shade may appear to be the same color. Thus slightly darkening an image brings out details previously unseen. Scientists can also use the phenomenon to invert bright images to bring out details in the lighter area of the image.

The human eye also has the ability to adjust to the average intensity of a region. As a result, the brightness of an object depends upon the gray levels surrounding the area. For example, if a medium gray object is placed on a black background, it appears to be brighter than the same object on a white background. Because of this, filtering processes will generate different perceptual responses depending on the gray level of the background.

Histogram and Filtering Processes

In technical terms, a histogram displays the frequency distribution of the number of pixels in an image of a specific color. This is represented in a graph with the 256 gray levels displayed (8 bit images containing 256 shades of grays or colors) on the horizontal axis. The number of pixels in the image for each color is displayed on the vertical axis.

A histogram shows information on the number and types of colors in an image. The higher the peak, the more pixels in the image of that specific color. The width of the histogram shows the range of colors in the image. For example, if the histogram has a range of colors between index value 200 and 150, the image appears very washed out with low contrast. But a histogram with colors ranging from an index value of 0 to 255 appears more natural.

The distribution of color in an image also affects its appearance. For an image to appear natural, it is important that the curve be fairly smooth with no sharp or narrow peaks in the histogram.

When colors are not evenly distributed, the image may not have a natural appearance. One such case is for a high contrast image. The histogram of these images has two very large peaks (bimodal histogram): one centered around black and the other around white. These images are often described as being harsh in appearance. Features within the image appear as sharp black to white transitions.

Low contrast images compress the colors into a small range. These types of images are often described as being “washed out.” Since low contrast images often hide subtle details, stretching the histogram significantly improves the appearance of the image.

The location of the peaks in the histogram characterizes the overall tonal quality of the image. For example, if a histogram has one very large peak around an index value of 200, the image appears very bright. If the peak is shifted to an index value of 25, the image now becomes very dark. The sharpness of the peaks gives you a feel for the kind of edge detail in the image. An image with a histogram showing very broad and smooth peaks probably does not have very sharp details. As a result, when you smooth an image, removing edge details, the peaks of the histogram also become much smoother.

Histograms can immediately tell you whether an image is dark, light, low contrast or high contrast. By manipulating an image's histogram, you can correct many of the problems discussed above.

Effects of Filters

Through filtering operations, images can be changed to improve their appearance or enhanced to bring out hidden image features. All the filtering techniques described below are single pixel point processes. They perform mathematical operations on each pixel within the image. One by one each

pixel is chosen, a mathematical or logical operation performed, and the resulting value substituted back into the image. The following list describes which of Color It!'s filters manipulate the histogram:

Invert: Inverts all the gray levels in the image (blacks to whites, whites to blacks, etc.). In technical terms, the filter inverts the histogram along the horizontal axis.

Equalize: For low contrast images, the Equalize filter may give you the best results. The filter is especially suited to bring out details in a low contrast image. In technical terms the filter Equalizes the distribution of gray levels (i.e. broadens the peaks of a histogram).

Contrast: The contrast filter is the most commonly used filter for improving the appearance of an image. This filter gives low contrast, washed-out images new life. The filter linearly stretches or compresses a selected range of index values. A histogram stretch will expand the colors to cover the entire range of colors.

Gamma: The gamma filter is an all-purpose filter which is often used for improving the appearance of image. It should be your second choice of filters when trying to bring new life to a washed out image. A Gamma filter skews the color distribution. The direction the histogram is skewed depends upon the value chosen. Higher values lighten the image. Lower values darken the image.

Highlight/Shadow: The highlight and shadow options help you compensate for your printer's inability to print all colors. All printers have problems printing both the darkest and lightest shades in an image. Printers tend to force these shades either to pure black or pure white. The Highlight and Shadow option compresses the histogram and removes the colors the printer has problems with. Since the new range of colors is closer to the printer's range, the image looks much better when printed. While the screen appearance of the image seems to degrade, the final printout is far more natural looking. In technical terms, the filter compresses the histogram into a smaller range of colors (that is, creates a narrow peak in the histogram).

NOTE: Though the screen image may appear to degrade after a filter operation, the image will look fine when printed.

Neighborhood Processing

While single-point pixel processing can be used to control the tone of an image, neighborhood processing techniques are most often used to change the sharpness of an image. Filters can be developed to

- Sharpen edges—Enhance the sharp brightness transitions in an image (Laplacian, High Pass filters).
- Smooth images—Only show slow brightness transitions (Low Pass filters).
- Create line art—Only show the sharp transitions (Edge Detection filters).

How does Neighborhood Processing work?

Neighborhood processors differ from single point pixel processors because they use the information about adjoining pixels. Neighborhood filters perform mathematical calculations on the group of pixels surrounding the current pixel. By looking at this information, filters make decisions about how to change the appearance of the image. The mechanics of a convolution mask are rather simple. The following procedure outlines the calculation of a 3x3 convolution mask on an image. Each pixel in the image is evaluated with its eight nearest neighbors. These nine pixels use the convolution mask to produce a new value which is placed in the output image. In effect, the mask is placed over the nine input values, where each of the pixels is multiplied by a corresponding weighted coefficient in the mask, the values summed and the result placed in the output image.

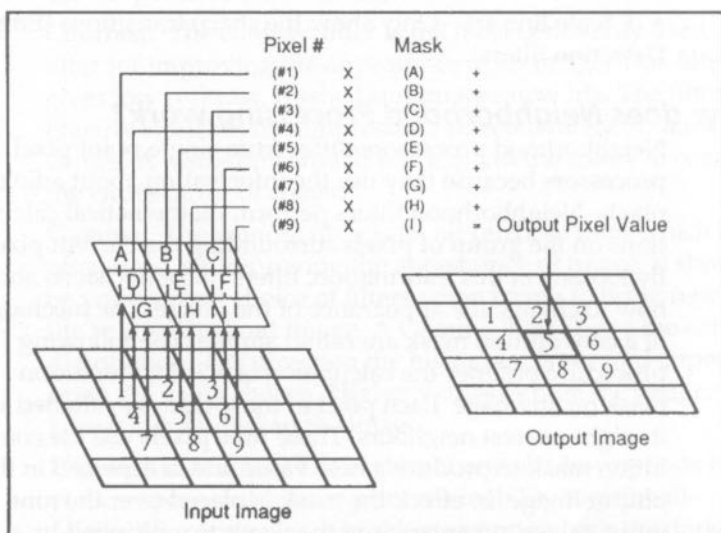
Mathematically, a *weighted average* of the neighborhood is calculated for each pixel in the image. The result of these calculations is then placed back into a new filtered image. The average is formed using a group of pixels, called a *kernel*, which surrounds and includes the center pixel. For a 3x3 kernel, the computer multiplies each of the nine pixels by a weighting factor (convolution coefficient) and then

adds the numbers together to generate the weighted average. By changing the weighting factors, certain pixels have a greater or lesser effect on the overall average.

NOTE: As the size of the kernel is increased, computational time increases dramatically.

The following list describes which Color It! filters do neighborhood processing:

Low Pass: This filter smooths, mellows or blurs the appearance of the image. A Low Pass filter removes the sharp white to black transitions in an image and replaces the transition with a blurred edge.



High Pass: This filter highlights the edges or transitions in an image (i.e. sharpens an image but also introduces noise).

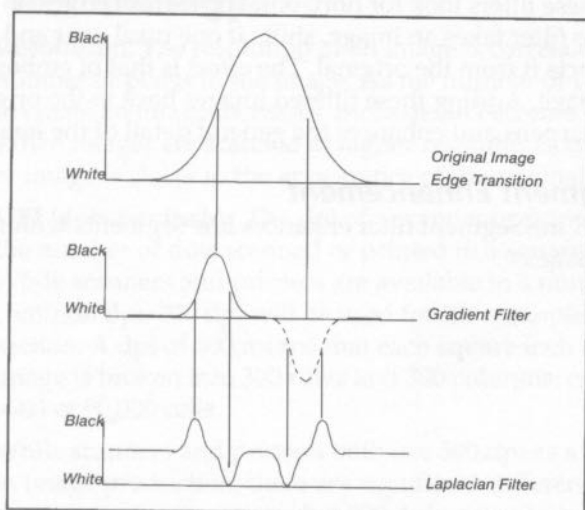
Edge Detection and Enhancement Filters

Edge detection filters reduce an image to display only its edge information. This information is used to generate special types of line art or special effects for desktop publishers. The following figure shows how an edge transition is displayed after doing a Gradient or Laplacian filter.

The following list briefly describes the Edge Detection filters available in Color It!.

Laplacian Edge Enhancement

The Laplacian filter enhances all edges regardless of their direction. The magnitude and direction of the color transition directly affect the color placed in the output image. Thus, edges appear as alternating dark gray or black and white pixels on a gray background. This filter is useful for



determining the noise in the image and is an excellent way to test a scanner. Adding these filtered images back to the original seldom give visually appealing results.

Gradient Filters, Stochastic Filters

These are like the Shadow/Dark Shadow filters discussed below. This class of filters looks for gray level edges in more than one compass direction at a time. After a Gradient or Stochastic filter is performed, the image is turned into a pseudo line art version of the original image. Adding these filtered images back to the original generates some visually interesting results.

Shadow/Dark Shadow Filters

These filters are designed to highlight one of eight compass directions: N, NE, E, SE, S, SW, W or NW. These filters create shadows next to objects in the image (i.e. an East mask will show shadows on the east side of objects).

Adding these filtered images back to the original produces a pseudo 3D effect.

Shift and Difference

These filters look for horizontal or vertical edges. In essence, the filter takes an image, shifts it one pixel over and subtracts it from the original. The effect is that of embossing the image. Adding these filtered images back to the original sharpens and enhances the general detail of the image.

Line Segment Enhancement

A Line Segment filter enhances line segments within the image.



Appendix B: Scanning and Printing

Scanners and printers play an important role in the quality of the image you create with Color It!. This section provides background information to help you improve the quality of your Color It! images.

Basic Terminology

Resolution: The resolution of an image is correlated to the number of pixels in the image. As the number of pixels used to create an image increases, more detail becomes apparent. When images are scanned at higher resolutions, the computer image is closer to the appearance of the original image.

DPI (dots per inch): The dpi of a scanner or printer refers to the number of dots scanned or printed in a square inch. While scanners and printers are available in a number of common dpi, 300 dpi will be used for the examples in this section. A dpi of 300 means that each square inch of an image is broken into 300 rows and 300 columns, creating a total of 90,000 cells.

While scanners and printers both use 300 dpi as a reference in image production, there are significant differences between an image scanned at 300 dpi and an image printed at 300 dpi. The reason for this is that a scanner records the information in each of the 90,000 possible cells as gradients from black to white (gray levels). A printer, however, reproduces each of the 90,000 cells as either black or white.

Gray Levels: The differences in the appearance between scanned and printed images can be varied by changing the scanner setting. The scanner setting limits the number of gray levels used to define an image. In black/white mode a scanner stores 2 gray levels (black and white). In 4-bit mode, a scanner stores 16 gray levels, and 8-bit mode stores 256 gray levels.

Halftones and Dithering: Because a scanner can store information in up to 256 different levels of gray and a printer can reproduce that information in only two levels of gray (black and white), halftones are used to improve the printed appearance of images created with many different levels of gray.

Traditional halftones are created by photographing an image through a special screen made up of tiny holes. Laser printers produce halftones using a process called dithering.

Dithering creates a halftone by grouping two or more dots together to form a halftone cell. The manner in which these dots are distributed is called an array (4x4 and 8x8 are common arrays). The percentage of black dots in any given cell determines the percentage of gray represented by that cell. By placing halftones cells at even intervals, the printer creates an illusion of shades of gray.

LPI (Lines Per Inch): Lpi refers to the number of halftone cells per inch, which is directly related to the quality of the halftone produced.

Newspapers generally use 65 or 85 line screens while magazines, which produce more realistic looking photographs, use 133 or 150 line screens.

The halftone screens used for computer images are a function of the array for each halftone cell. Increasing the size of an array enlarges a halftone cell and increase the number of gray levels in an image, providing better shading. Resolution, however, is reduced.

Scanning Fundamentals

Scanners and video digitizers convert images to numbers that the computer uses to recreate the image. The numbers that define the image for the computer are organized into cells called pixels. Each pixel contains information on the brightness, darkness or color.

There is a difference between images captured with a scanner and those captured with a video digitizer. A scanner captures the image in segments that are then combined to

recreate the image. A video digitizer captures the entire image as a whole.

Memory Requirements of Scans

While increased resolution may improve the clarity of an output image, it also increases the size of the image data file. For example, scanning a 4x5 image at 100 dpi generates data for 200,000 pixels ($[4 \times 100] \times [5 \times 100]$). Scanning that same image at 300 dpi generates data for 1,800,000 pixels ($[4 \times 300] \times [5 \times 300]$).

Although it's better to scan gray scale images at lower resolutions to keep the data file to a manageable size, once an image is scanned, lost image details can never be recovered. Factors to consider before choosing a scanning resolution are:

- The detail in the image.
- The resolution of the printer you are using.
- The final size of the image once it's printed.
- The distance the viewer will be from the image (lower resolutions can be used for images viewed from a greater distance).

Storage requirements are not simply a calculation of the number of pixels. The pixel depth, in bits per pixel, is also important. Pixel depth stores data on the tone (or color) of each pixel. The number of bits per pixel tells you the maximum number of shades of gray or color. For example, if you scan a photograph at 4 bits per pixel, the image is displayed as 16 shades of gray. If the original photo had more levels of gray, then the extra information would be lost in the scanning process. The following table shows the relationship between the number of shades of gray or color and the bits per pixel.

<i>Bits per pixel</i>	<i>Number of Colors</i>
1 (line art)	2
4	16
8	256
16	65,536
24	16,777,216

The larger the number of colors or grays in the scanned image, the closer you can reproduce the quality of the original. It also quickly increases the size of the file.

To calculate the final file size of a 4 x 5 image at a given bit depth, you must multiply the number of pixels by the number of bits. While this number is useful, it is often converted to more common units of kilobytes (k) or megabytes (mb). (Please see the following table for the conversions).

Common Conversions used in scanning

1 megabyte (mb)	1,000 K, 1,000,000 bytes, 8,000,000 bits
1 kilobyte (k)	1,000 bytes, 8,000 bits
1 byte	8 bits

The memory needed to store a 24-bit, 4 x 5 photo scanned at 300 dpi would be 5.4 megabytes. An 8-bit version of the same image would only need 675k. From the above calculations, it becomes obvious that as the scanning resolutions and bits per pixel increase, the computer storage increases rapidly. Files may become so large that just a few images may fill the entire hard drive. Another problem with these images is that they contain so many pixels, that doing an image enhancement filter may take minutes instead of seconds to complete.

Scanners

The current generation of scanners scan at rates between 50 and 1,200dpi for color or gray scale images as well as text. With the wide range of possible scan input, how do you calculate the best scan resolution?

A few helpful hints for scanning images.

Contrary to popular belief, higher scanning resolutions are not always better. If you are scanning color photographs, a high resolution may have little or no effect on the final printed image.

The scanning rate for a color image should not exceed twice the output screen frequency. If you use a 150 line halftone screen, it's pointless to scan the photo at more than 300 dpi. The printer will not use the extra information. For most printers, you may only want to scan the image at the next higher setting than the screen frequency you are using. For example, on a Personal LaserWriter™ where you use a 65 line screen you need only scan at 75 dpi. A spatial resolution greater than 150 dpi does you no good. The extra information will not be used by the printer. When using a high resolution imagesetter (>1,200 dpi), you should use a spatial resolution of 200-300 dpi (grayscale images). If the image is not very detailed, you will also be able to scan at a lower resolution and get acceptable results.

The number of gray levels or colors that the image is scanned at affects the output. You should generally scan the image at the highest possible bit depth. The more shades of gray or color you have, the closer the image matches the original. Higher bit depths give you more precise control over filtering and image manipulations. This rule also holds true for laser printers not capable of printing 256 levels of gray. The following table gives scanning recommendations.

<i>Image type</i>	<i>Bit depth</i>
line art, text	1
B&W photos, halftones	8
color photos	16, 24

Remember, the printer cannot produce more gray levels or colors than are in the original scanned image (if you scan at 64 gray levels, you can't print 256 gray levels).

Scanning categories

Placing a document in the scanner, setting a resolution, and scanning an image is easy. The challenge lies in producing top-quality scanned images that resemble the original as closely as possible and line art that is crisp and clean.

Images usually falls into one of three categories:

- 1.) Line art, including text and technical illustrations
- 2.) Gray scale/Color, such as black-and-white or color photographs
- 3.) Halftone images, which may appear in magazines or the newspaper

Scanning Line Art

Line art is the easiest type of image to scan because it contains limited gray levels. Though line art usually brings to mind images of schematic drawings, line art originals may also include solid shapes (such as a company logo), patterned backgrounds or text. When scanning these images it is important to make sure the original is as "clean" as possible. Flaws are faithfully reproduced during the scanning process.

Scans of images with flaws or originals printed on colored paper can improved by adjusting the scanning threshold. The threshold is the level at which the scanning software determines whether a pixel is black or white. Setting the threshold level lower results in a darker image because more pixels are recognized as black. A higher threshold results in a lighter image.

For line art, you get the best results if you scan the image at the same resolution as your printer. On a 300 dpi LaserWriter™, for instance, try to scan the image at 300 dpi.

Scanning Gray Scale/Color Images

Gray scale/color images are more difficult to scan. Most gray scale/color originals are photographs. Photographs with a good balance of grays/colors scan better than other photographs.

If the photograph you are scanning is imperfect, it is still possible to get good results. The Brightness and Contrast controls can be adjusted to compensate for such flaws in the original image as folds in the paper, streaks, tinted backgrounds or other background noise. The Brightness control makes your image lighter or darker. Setting the brightness too high washes out some detail in your image while setting it too low darkens features so much they may be unrecognizable.

For example, if you have an original picture of a group of people at a company picnic that is underexposed, increasing the brightness can make the scanned image lighter. This will wash out some of the detail in the photo, which can be corrected by increasing the contrast to sharpen the difference between dark and light elements in the photo.

Experiment with different settings to achieve the best possible scan.

Scanning Halftones

Most halftones are pictures that have been printed in a newspaper or magazine. Halftones present a problem when scanning because the halftone is a screened image. Scanning a halftone is, essentially, screening a screened image (i.e. using dots to create a representation of an image that is itself a dot representation of an original photograph). Since traditional halftones place the dots at some angular rotation, scanning the image (which creates a pixel map that is also a screen-like pattern) can create what is called a "moire" effect. (The interference pattern created at the intersections of the two screens.)

While it is best to avoid scanning halftones whenever possible, the quality of scanned halftones can be improved by using the following suggestions.

- Scan at a lower resolution than normal. The scanner may read a halftone dot pattern better at a lower resolution than it can at a higher resolution.
- Scan the original at an angle. Place the original on the scanning surface at different angles to reduce the moire effect.
- Use color halftones. If you have to must use a halftone, remember that color halftones scan better than black/white halftones. This is because color halftones have a more complex pattern of dots that causes less interference with the scanner pattern.

If none of these suggestions improve the moire pattern in the image you are trying to scan, try scanning the image at a much higher resolution and using the Resample feature in Color It!. This will average the values of a square group of pixels, which often reduces the moire effect.

Maximizing Halftone Resolution Output At 100%

The following formula calculates the maximum halftone resolution possible based on the maximum resolution (DPI) of your printer and the number of gray levels desired.

$$\text{Halftone Resolution (DPI)} = \frac{\text{Printer Resolution (DPI)}}{\sqrt{\text{Gray Level}}}$$

For example, if you have a 400-dpi printer and you want 64 levels of gray in your printed image, the maximum halftone resolution you can achieve is 50 lpi (400 divided by the square root of 64(8) equals 50). Here, you should scan at a resolution of 50 dpi or slightly higher.

Unless you use a high resolution output device such as a photo-typesetter, printing a halftone results in a trade-off between resolution and the number of gray levels.

Maximizing Halftone Resolution Enlarged Or Reduced For Output

If a halftone is printed in a size other than the original halftone, the effect on the resolution of the halftone must be considered when adjusting between resolution and gray levels. For example, if your printer's resolution is 300 dpi, a halftone with a resolution of 75 lpi produces 16 gray levels (300 divided by 75 equals 4—and 4 squared is 16).

Calibrating Your Printer

Calibration of printers can play a significant role in output image. It is possible to significantly improve your output results by calibrating the printer for both Error Diffusion output and normal PostScript™ output (Error Diffusion images are generally much blacker than normal PostScript™ images). There are a number of ways to calibrate a printer. When choosing a calibration method, remember that screen resolution affects the calibration curve.

The following methods may be used to calibrate a printer:

1) Gamma Adjustments: Create a new image with a gray scale gradient from black to white. Print this gradient out. The image should show a smooth transition from black to white. In many cases, this will not be the case. To correct for these effects, open the Levels dialog, adjust the Gamma, and then print the image a second time. If the image does not look right, undo the filter and repeat this procedure until your printout has the proper appearance. You must always undo your filter between each step since filters can be additively applied. If you did not do this, after a few attempts your calibration curve will be meaningless. When the printout looks right, save the curve.

2) Grayscale Image Adjustments: Do the above operation with a grayscale image. You will get best results if you first filter the file to get a good image on the screen.

Calibrating Scanners

Calibrating a scanner can also greatly improve the appearance of an image. By creating a custom calibration gray map for a scanner, you can automate process that requires 4 or more steps.

The following example will describe how to calibrate a scanner using a step wedge.

Calibration can be done manually, but for better results buy a 12-step calibrated grayscale step wedge. Step wedges have gray levels ranging from pure black to pure white. For best results scan the wedge at around 72 dpi. A 12 step wedge has the following densities:

Step	Value	Scanner Value
12	0	
11	23	
10	46	
9	70	
8	93	
7	116	
6	139	
5	162	
4	185	
3	209	
2	232	
1	255	

(Y value)

(X value)

1. Scan the wedge.
2. Use the Dropper tool and the Colors palette to click inside each step and read an average gray level (place the results in the Scanner Value column).

3. Once you have filled in the table, open the Image Maps palette.
4. Using the Line tool draw straight lines from $x=0$, $y=0$ to the x,y value for step 12.
5. Next draw a line from this point to the x,y of step 11. Repeat this for all steps. As you draw these connecting lines, you are creating a calibration curve for the scanner. When you have completed this curve save it as a calibration map.
6. To check your results, scan the wedge again, apply your new map, and check the values of the gray levels. The values from the scanner should now correspond closely to those of the step wedge. If they do, you have a correct map. Now whenever you scan a grayscale image, apply this map before you try any other filter.

Appendix C: Error Messages

memFullErr = -108

Problem: You'll encounter this error message if you do not have enough System memory available to complete an operation.

Solution: If you are running under MultiFinder or the System 7 Finder, you can solve this problem by increasing the program's partition size. Sometimes quitting the program and reloading can free up the memory.

outOfVDiskErr = -905

Problem: You'll encounter this error message if you do not have enough hard disk space for a virtual image.

Solution: You can solve this problem by clearing space on your hard disk for the virtual image. You can also set the minimum required free to a lower number in **Virtual Preferences**. If you have more than one hard disk attached or you have another partition, you can open the **Virtual Preferences** dialog and select a different drive or partition to store virtual images.

outOfVMemErr= -906

Problem: You'll encounter this error message if you do not have enough memory for a virtual image operation.

Solution: This is usually a result of fragmented memory, and you can solve the problem by quitting the program and relaunching it.

imgFileNotSupp = 1

Problem: Color It! doesn't support the format of the image file you are trying to open.

Solution: Open the image with the program you created it with and save it in a format that Color It! can read.

badPNTGFileErr = 2

Problem: The file has incomplete paint information.

Solution: The paint image is damaged or was saved incompletely, and Color It! cannot read it.

badTIFFData = 3

Problem: The file has incomplete TIFF Information.

Solution: The TIFF image is damaged or it was saved incompletely, and Color It! cannot read it.

badTIFFPack = 4

Problem: The TIFF image was saved with a compression type that Color It! does not support.

Solution: Open the image with the program that created it and save using a compression type that Color It! can read. Color It! supports PackBits compression types.

badTIFFPhoto = 5

Problem: The TIFF image was saved in a type that Color It! cannot read.

Solution: Open the image with the program that created it and save the it in a format that Color It! can read.

noTIFFImage = 6

Problem: The program didn't save the main TIFF image, that is, it only saved the image Mask.

Solution: Open the image with the program that created it and save the entire TIFF image.

badTIFFVers = 7

Problem: Color It! cannot read the TIFF version .

Solution: The file has been saved in a new TIFF version that Color It! cannot read. Open the file with the program that created it and save it in the older TIFF format.

pluginNotFound = 8

Problem: Color It! cannot find the plug-in module you have selected.

Solution: Locate the plug-in and place it in the "Scanners & Plug-ins" folder in the "Color It! Stuff" folder.

badPlugInVers = 9

Problem: The version of the plug-in is not supported.

Solution: This may happen if Photoshop and Digital Darkroom develop new formats for their plug-ins. Check to see if Color It! has been upgraded or use an older version of the plug-in.

badImageType = 10

Problem: Color It! does not support the plug-in's image type.

Solution: Open the plug-in and save the image in a format that Color It! can read.

blankResErr = 11

Problem: Color It! could not find a resource, so it created a NewHandle.

Solution: This is a serious problem; you should quit Color It! and relaunch it. If the error persists, call MicroFrontier.

pathTooLongErr = 12

Problem: The path name is longer than 255 characters. Usually this happens when a virtual image folder is inside several layers of folders.

Solution: Move the virtual image folder up a few levels or rename it with a shorter name.

badSplitDocErr = 13

Problem: Color It! couldn't find the split screen document.

Solution: Quit and relaunch Color It!.

ptsTooBigErr = 14

Problem: The points list is too long. You'll see this if you have drawn very complex shapes with the *Lasso*, *Magic Wand*, or *Shape* tools.

Solution: Draw or select with the tool again making simpler shapes.

noUndoBufErr = 15

Problem: The required undo buffer does not exist.

Solution: Clear some space on your disk.

noSelMaskErr = 16

Problem: Color It! couldn't get the required selection mask.

Solution: Clear some space on your disk.

noSelBitsErr = 17

Problem: Color It! couldn't expand selection to image form.

Solution: Clear some space on your disk.

badDithlmgErr = 18

Problem: The dither operation wasn't successful. Generally this happens when converting a gray-scale image to a black and white dither.

Solution: Retry the operation converting the image to a different type. If the problem persists, call MicroFrontier.

badEPSFVers = 19

Problem: Color It! cannot read the EPSF file.

Solution: You may see this error if you are using Photoshop. The file has been saved in a new EPSF version that Color It! cannot read. Open the file with the program that created it and save it in a format Color It! can read.

imgTooBigErr = 20

Problem: The image is too big. This usually happens after you scale an image or you anti-alias text.

Solution: Images cannot be larger than 16,383 pixels vertically and horizontally. Make the image a smaller size.

imgTooSmErr = 21

Problem: The image is too small.

Solution: The image is empty or is not one pixel wide. You must make it bigger.

badPIMsgErr = 22

Problem: Color It! cannot understand the plug-in message.

Solution: Reinstall the plug-in or contact the developer or MicroFrontier.

Color It!™ 3.0

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MicroFrontier



MicroFrontier, Inc.
3401 101st St., Suite E
Des Moines, Iowa 50322
(515) 270-8109