

HEWLETT-PACKARD

*Scan*

*ScanJet*  
Application Notes

## Introduction

### How Do I Use These Notes?

These application notes are designed to help you scan an image with Scanning Gallery, and then use desktop publishing software to place that image in a document. Written for users familiar with DOS and with Scanning Gallery, these notes provide only general instructions and hints for moving images from Scanning Gallery to several popular software packages. This folder also contains some information on specific topics, such as dithering and scaling.

If you want or need information that you can't find in this folder or in your ScanJet and software manuals, please consult your dealer, HP sales office, or software vendor.

### How Does My Software Package Use Scanning Gallery Images?

After you scan an image with Scanning Gallery, it's saved as a TIFF (Tag Image File Format) file. Using the **Convert To** function in Scanning Gallery, you can translate TIFF into the file format required by your software package, be it MS Paint, PC Paintbrush, or GEM.

As you become more familiar with Scanning Gallery, you'll find that the kind of image you scan and your particular software package requirements determine which Scanning Gallery features you select while scanning. Some Scanning Gallery features, such as Compress Image or Grayscale, may not be supported by all software packages.

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# Using Scanning Gallery with Ventura Publisher

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## Introduction

This note offers guidelines for using Ventura Publisher Scanning Gallery and the HP ScanJet Desktop Scanner.

Ventura Publisher supports two image file formats, PC Paintbrush and GEM. All image files, however, are eventually converted to the GEM file format by Ventura Publisher. So, when converting image files from TIFF (used by Scanning Gallery), choose the GEM image file format.

Ventura Publisher does not support the following Scanning Gallery features:

- Compressed Image (for documents with shades of gray)
- Grayscale

## Scanning

Use the tutorial provided in the *Scanning Gallery User's Guide* for step-by-step scanning instructions. To convert your image file from TIFF (used by Scanning Gallery), drag the File Menu and select **Convert To**. Point to the GEM file type and click. Write down the pathname of the new file you have created (it should have a **.img** extension). You will need need to recall the file specification (path and file name) when using Ventura Publisher.

## Scaling

To scale a dithered image, use the scaling feature provided in Scanning Gallery. If you scale a dithered image later (using the **Frame** menu) in Ventura Publisher, distortion may occur. (Scanning Gallery creates dithered images when you've selected **Original Includes Shades of Gray/Color** in the Final Scan dialog box.)

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## Placing Images Into Documents

Use the training exercises in the *Ventura Publisher Edition Training Guide* to learn how to use the tools and features in Ventura Publisher.

First, create a frame on your page for your picture in Ventura Publisher. Then, after scanning the image, convert it from TIFF to GEM format in Scanning Gallery. From the File menu in Ventura Publisher, select **Load Text/Picture**; then, from the Load/Text Picture box, select **Image, GEM,** and **OK**. From the Item selector box, select the filename of the file you converted in Scanning Gallery. Remember to scroll through the files – your file should have a **.img** extension. If your file is not listed, check the Directory line above the Item Selector box to make sure it shows the path of your file. To change the Directory line, click to the right of it. You should see an insertion point (a blinking vertical bar). Use the backspace key to remove the existing path and type the correct one. (An easier method may be to click on the **backup button**. See Chapter 2, *Using the Item Selector*, in the *Ventura Publisher Edition Training Guide* for more details. If you use the backup button, use the filename **C:\*.img** on the Directory line to help you find your image file.)

Edit and print your documents using Ventura Publisher and your computer system in the usual way.

*This application note offers suggestions for using Scanning Gallery with Ventura Publisher. If you have problems using ScanJet or Scanning Gallery, consult the ScanJet and Scanning Gallery User's Guides. If you have problems placing your scanned files in documents, refer to your Ventura manual. See your dealer if you continue to have problems.*

Ventura Publisher is a registered trademark of Xerox Corporation.

# Using Scanning Gallery with Spellbinder Desktop Publisher

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## Introduction

This note offers guidelines for using Spellbinder Desktop Publisher with Scanning Gallery and the HP ScanJet Desktop Scanner.

Spellbinder does not support the following Scanning Gallery features:

- Compressed Image (for documents with shades of gray)
- Grayscale

Use the tutorial provided in the *Scanning Gallery User's Guide* for more instructions on scanning.

## Scaling

To scale a dithered image, use the scaling feature provided in Scanning Gallery. If you scale a dithered image later using Spellbinder, distortion may occur. (Scanning Gallery creates dithered images when you've selected **Original Includes Shades of Gray/Color** in the Final Scan dialog box).

## Converting

Scanning Gallery uses a TIFF image file format. To use Spellbinder, you must convert images to a PC Paintbrush image file format. Use Scanning Gallery's **Convert to** function under the File menu in the Scanner window to convert from TIFF to PC Paintbrush image file format.

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## Placing Images Into Documents

To use an image file with Spellbinder, copy the file to the disc and subdirectory that Spellbinder uses. For example:

```
COPY C: \ SCANGAL \ Filename.PCX C: \ SPBINDER \  
Filename.PCX
```

(You may want to delete your original file after copying it.)

1. Display a document on your screen using Spellbinder. Using Edit mode, add a **.CHANGES** and **.END CHANGES** command at the beginning of the page where you are adding your image. For example:

```
.CHANGES  
.END CHANGES  
(text)
```

2. Using Edit mode, add the command **.DIAGRAM** with *page area coordinates* between the **CHANGES** and the **END CHANGES** commands. Then, after that line, add the corresponding command **.END DIAGRAM**. For example:

```
.CHANGES  
.DIAGRAM 175 200 200 95  
.END DIAGRAM  
.END CHANGES  
(text)
```

(Page area coordinates are described in hundredths of an inch.)

3. Now, add the command **PCPAINT** and the filename of the image with coordinates to the line after the **.DIAGRAM** command. For example:

```
.CHANGES  
.DIAGRAM 175 200 200 95 TEXT  
.PCPAINT Filename.PCX 0 0 100 100 50 50  
.END DIAGRAM  
.END CHANGES  
(text)
```

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The coordinates in the **PCPAINT** line are for points inside the diagram. The first two refer to the upper-left corner of the diagram, and the other four designate the size of the image inside the diagram. See Chapter 8, *Advanced Page Layout*, and Chapter 9, *Printing Graphics*, of the *Spellbinder Desktop Publisher User's Manual* for more detailed information.

Edit and print documents using Spellbinder and your computer system in the usual way.

*This application note offers suggestions for using ScanJet and Scanning Gallery with Spellbinder Desktop Publisher. If you have problems using ScanJet or Scanning Gallery, consult the ScanJet and Scanning Gallery User's Guides. If you have problems placing your scanned images in documents, refer to the Spellbinder manual for more information. See your dealer if you continue to have problems.*

Spellbinder is a registered trademark of Lexisoft, Inc.





# Using Scanning Gallery with PageMaker®

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## Introduction

This note offers guidelines for using PageMaker with Scanning Gallery and the HP ScanJet Desktop Scanner.

PageMaker supports TIFF, the file format used in Scanning Gallery. Image files created in Scanning Gallery end with the extension .TIF, so you can easily recognize them when placing images in PageMaker documents.

PageMaker, version 1.0A and later, supports most Scanning Gallery features, including Grayscale. PageMaker, version 1.0 or later, does not support Compressed Image (for documents with shades of gray).

## Scanning

Use the tutorial provided in the *Scanning Gallery User's Guide* for step-by-step scanning instructions.

## Scaling

To scale a dithered image, use the scaling feature provided in Scanning Gallery. If you scale a dithered image later using PageMaker, distortion may occur. (Scanning Gallery creates dithered images when you've selected **Original Includes Shades of Gray/Color** in the Final Scan dialog box.)

## Placing Images Into Documents

Use PMTutor, the tutorial provided with PageMaker, to become familiar with the tools and features in PageMaker.

Even though a TIFF file created in Scanning Gallery does not need to be converted to another file format, it *will* need to be located in an appropriate sub-directory when used with PageMaker. For example, when placing an image into

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a page, choose the **Place** selection from the **File** menu (see Lesson 4: Adding Text and Graphics of the *PageMaker User Manual* for details); if your scanned file is not listed in the selection box in the **Select File** screen, click on the rectangle box and an insertion point (a blinking vertical bar) appears. Now, type in the path name of the file you scanned. For example:

C: \ SCANGAL \ *Filename.TIF* or

C: \ SUBDIR \ *Filename.TIF*

Edit and print documents using PageMaker and your computer system in the usual way.

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## **NOTE**

When placing a dithered image file into a page, remember to avoid rescaling. Use your mouse pointer or arrow keys to set the left corner of your image where you want it on the page. Do not drag the pointer (because scaling will occur); instead, click to place your image into a page.

If you must rescale an image using PageMaker, consult the *PageMaker User Manual, Part 5: Working with Graphics, the section Adjusting Graphics*. Use the shift key and the mouse pointer to resize the image. To restore a distorted image, point to a handle on the image, press the **Shift** key, and click.

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*This application note offers suggestions for using Scanning Gallery with PageMaker. If you have problems using Scanjet or Scanning Gallery, consult the Scanjet and Scanning Gallery User's Guides. If you have problems placing your scanned files in documents, refer to your PageMaker manual for more information. See your dealer if you continue to have problems.*

PageMaker® is a registered trademark of Aldus Corporation.



# Using Scanning Gallery with Harvard Professional Publisher

## Introduction

This note offers guidelines for using Harvard Professional Publisher with Scanning Gallery and the HP ScanJet Desktop Scanner.

Harvard supports TIFF, the file format used in Scanning Gallery. Scanning Gallery files end with the extension .TIF, so you can easily recognize them when placing images in your Harvard documents.

Harvard does not support the following Scanning Gallery features:

- Compressed Image (for documents with shades of gray)
- Grayscale

## Scanning

Use the tutorial provided in the *Scanning Gallery User's Guide* for step-by-step scanning instructions. After scanning, write down the file specification (path and file name) of the scanned image; once in Harvard, you will need to recall it.

## Scaling

To scale a dithered image, use the scaling feature provided in Scanning Gallery. If you scale your image later using Harvard, distortion may occur. (Scanning Gallery creates dithered images when you've selected **Original Includes Shades of Gray/Color** in the Final Scan dialog box.)

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## Importing Image Files

To use an image file with Harvard, import your file using the main menu in Harvard. Refer to the Harvard manual for detailed instructions. From the main menu, select **IMPORT FILE**; then select file format **TIF**.

**Note:** make sure your file is in the same sub-directory as the document in which you'll place it. For example, you may need to use a command like this:

```
Copy C: \ SCANGAL \ Filename.TIF C: \ HPUB \  
SUBDIR \ Filename.TIF
```

(You may want to delete your original file after copying it.)

## Placing Images Into Documents

Using instructions in the Harvard manual, lay out a document and add your scanned image to it.

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### NOTE

When placing your scanned image onto a page, remember to avoid rescaling. Use your mouse pointer or arrow keys to set the left corner of your image where you want it on the page. Do not move the pointer (because scaling will occur); instead, press **ENTER** to place your image into a page. Pressing **ENTER** retains the dimensions you selected in Scanning Gallery.

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Edit and print your documents using Harvard Professional Publisher and your computer system in the usual way.

*This application note offers suggestions for using ScanJet and Scanning Gallery with Harvard Professional Publisher. If you have problems using ScanJet or Scanning Gallery, consult the ScanJet and Scanning Gallery User's Guides. If you have problems placing your scanned images in documents, refer to your Harvard manual for more information. See your dealer if you continue to have problems.*

Harvard Professional Publisher is a registered trademark of Software Publishing Company.

## Additional Suggestions

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### Tips for Better Image Quality

- The fewer times the scanning bar must stop, the better the image quality. This means that it is better to save an image in computer memory (a RAM disc) than it is to store it on a hard disc. Similarly, it is better to store an image on a hard disc than it is to store it on a flexible (floppy) disc.
- When your document is very thin or translucent, the scanner can detect images on the opposite side, and your image may show "ghosting" from the opposite side. Minimize this effect by placing a very dark or opaque paper on top of the document being scanned.
- In Scanning Gallery, you may set the intensity level to light, normal, or dark. If you're scanning line art, choose the dark setting. If you are dithering, the light setting provides the best results on HP LaserJet Series II printers, while the normal setting is best for HP LaserJets.
- If the printer leaves a ghost of a previous page on your printed image, print more than one copy of the picture.



# Dithering and Halftoning with Scanners

## What Is Dithering?

When you look at an area of closely-spaced dark dots on a white background, you perceive the area as gray. Your brain fills in and averages the black and white dots and transforms them into gray information. For example, glance at Figure 1 from a distance. It looks like a normal, continuous gray-tone image. When you look closely, however, you can see that it is composed of a series of closely-spaced black dots.

Most printers and computer displays support only two tone levels, black and white. Dithering is an image processing technique that allows printers and computer displays to produce documents that appear to have continuous shades of gray. In other words, dithering makes it possible for printers and displays to produce images that look like ordinary photographs.

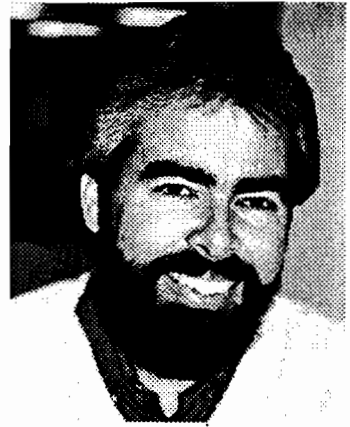


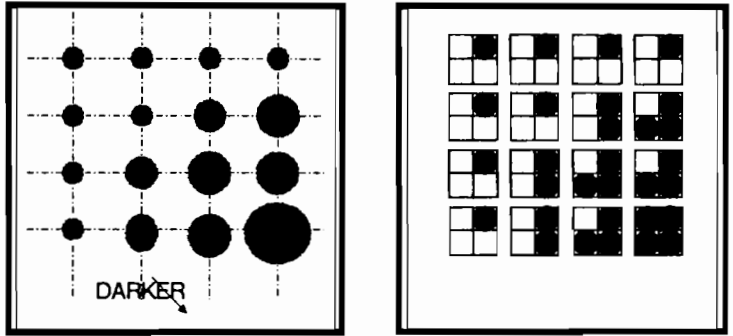
Figure 1. Dithered Photograph

## Halftoning and Dithering

Newspapers and magazines use halftoning to simulate shades of gray by varying the size of circular black dots on a fixed grid pattern. Dithering, a kind of halftoning, also simulates shades of gray--but by varying the patterns of identically shaped dots. These dots are called *pixels*, and each 8 X 8 grid of pixels is called a *tile*.



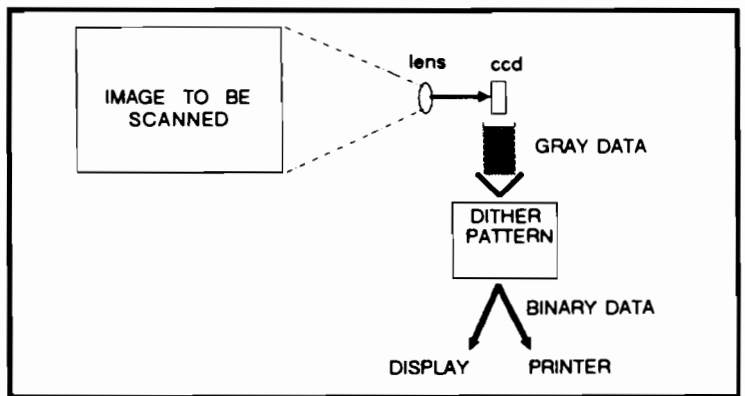
Figure 2 illustrates the two techniques.



**Figure 2. Halftone and Dither Techniques**

## How It Works

Producing an image requires two steps. First, the scanner converts an optical image into an array of gray pixels, or dots, by reflecting light off of the image into a CCD (charge-coupled device). The CCD is sensitive to light levels and converts the light into electronic signals that represent the different levels of light.



**Figure 3. Producing an Image**

Then, because today's computer monitors and printers cannot display gray tone, each tile (or 8 x 8 grid of gray pixels) must be transformed into a corresponding black and white tile. This transformation--dithering--varies the patterns of dots, approximating the original gray tone.

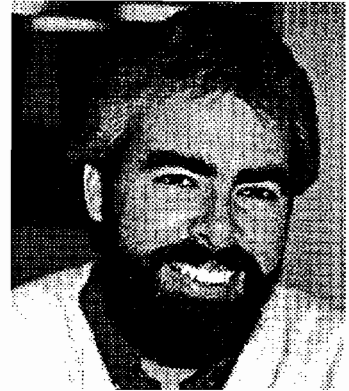
Figure 3 illustrates this transformation.

## Dithering Patterns

There are various dithering patterns, each producing a different effect. The HP ScanJet Desktop Scanner supports four different types of dither patterns: a Bayer pattern, a Vertical Line pattern, and two Fattig patterns. You may select these patterns in an applications program such as Scanworks® or Scanning Gallery.

## Dithering Side Effects

Dithering may have some adverse effects. If you scan and re-dither a dithered or halftoned picture, for example, you'll probably notice repeating interference patterns (called moire patterns) in the resulting image. See Figure 4.



**Figure 4. Dithering Side Effects**

To temper this effect, try different dithering patterns or resolutions. You may also try re-sizing the image. Or, if your original is dithered, you may try line-art (or binary) scanning; in other words, try re-scanning the image without dithering.

Image distortion may also occur if you size an image after it has been dithered. Sizing changes the appropriate spacing of the black and white pixels in each small dither pattern--

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resulting in distortion and poor image quality. To avoid this problem, size the image while performing the scan in applications such as Scanning Gallery or Scanworks®.

# Scanning Hints

## Introduction

This application note offers some guidelines on selecting Scanning Gallery settings and sizing scanned images.

## Line Art and Pictures

Drawings, graphs, and photos can be divided into two categories: **line art** and **pictures**.

**Line art** usually consists of lines and shapes that can be drawn by hand. Most graphs, line drawings, charts, text, newspapers pictures, and hand-drawn pictures fall into this category. See Figure 1.

**Pictures** are more complicated than line art they have different levels of shading. In this category are black and white photographs, color photographs, shaded drawings, and magazine pictures. See Figures 1 and 2.

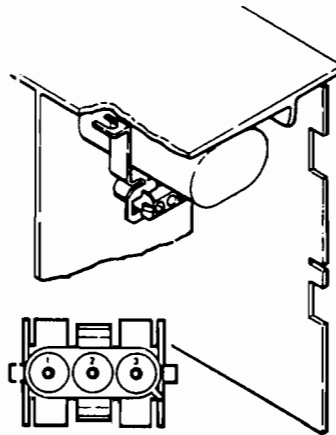


Figure 1. Line Art

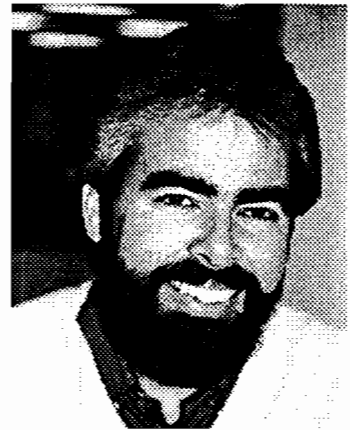


Figure 2. Picture

## When to Choose Dithering

*You should not dither line art.* In other words, do not select **Original Includes Shades of Gray/Color** while doing a Final Scan (an X should not appear in the box). You should, however, set the intensity control to dark for the best image quality.

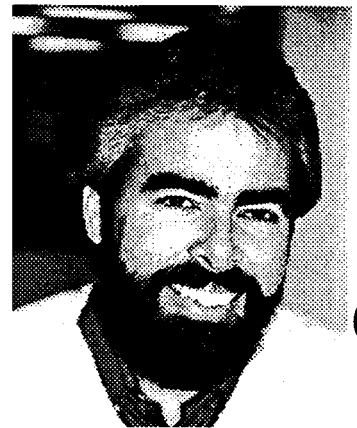
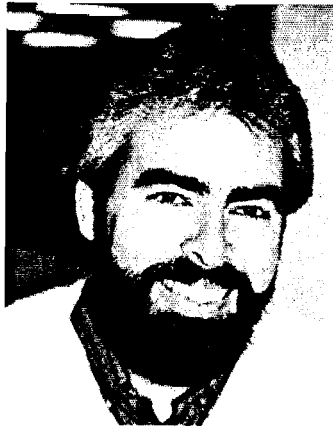
*You should dither pictures.* In other words, select **Original Includes Shades of Gray/Color** while doing a Final Scan (an X should appear in the box.) Also, select the appropriate dither pattern from the Shades of Gray/Color dialog box in the Settings menu.

## Selecting the Right Dither Pattern

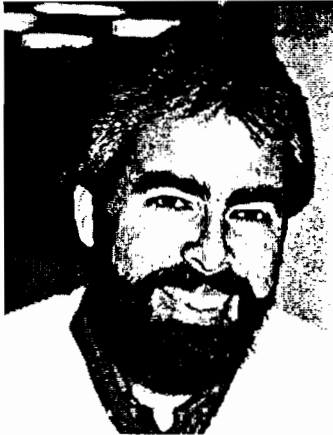
You can select four dither patterns in Scanning Gallery. Generally, the best dither pattern to use is "Coarse Fattening" (sometimes called an 8 X 8 fattening pattern). Coarse Fattening provides good tonal quality and photocopies well. The other dither patterns have different purposes, which are summarized below. You may want to experiment with these patterns to understand how they work.

**Fattening (or 4 X 4 fattening)** – provides a compromise between detail and good tonal reproduction.

**Coarse Fattening (or 8 X 8 fattening)** – provides the best blending of gray tones at the expense of detail.



***Bayer (or 4 X 4 bayer)*** – brings out the detail in a picture at the expense of good tonal reproduction. Use when working with very detailed drawings.



***Vertical Line Dither*** – provides emphasis of horizontal lines. Works very nicely with portraits and may also provide the best output on some HP LaserJet printers.



When you are working with dither patterns, experiment with light and dark settings to achieve optimum results.

## Sizing Line Art

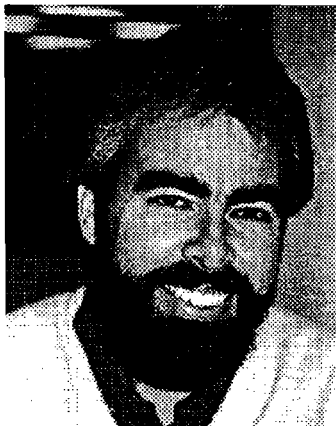
You can change the size of a line-art image in Scanning Gallery OR in your desktop publishing package, but it is easier to fine-tune the image in your package. First, get your image close to the desired size in Scanning Gallery; then, “fit” the image into your document using the publishing package.

If your package doesn’t have a scaling or sizing feature, size your line art in Scanning Gallery.

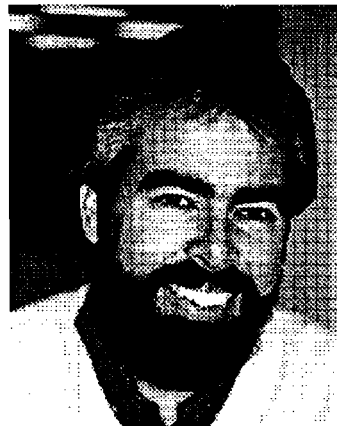
## Sizing Dithered Images

**Do not size dithered images in your desktop publishing package.** If you size a dithered image while in your package, you find that the image is distorted and much less

attractive. Figures 3 and 4 illustrate the consequences of sizing in a desktop publishing package. Figure 3 is the result of a small adjustment in size, and Figure 4 is the result of a large adjustment in size.



**Figure 3. Effect of Slight Adjustment**



**Figure 4. Effect of Significant Adjustment**

**Avoid distortion by sizing dithered images in Scanworks.** You may crop a dithered image (chop off the outside edges) in the desktop publishing package or in Scanworks without any adverse effects.

