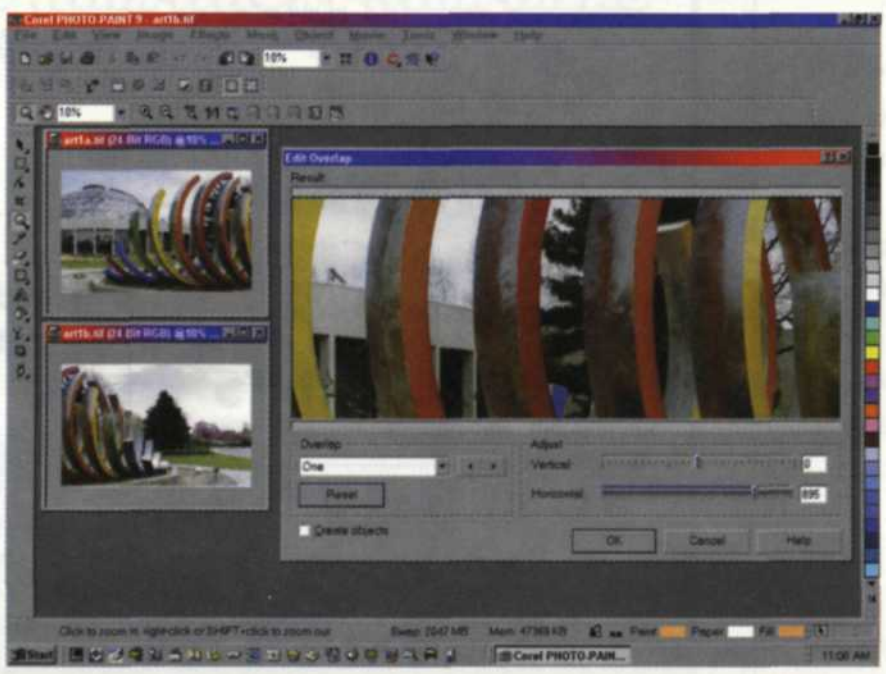
Scanning Large ARTWORK

A composited image, and (below) left- and right-side scans. Today, thanks to digital technology, digital labs can scan an image in sections, and then stitch them together.



Jack and Sue Drafahl

How is the photography of the surface of Mars similar to digital photo tasks performed on Earth? This almost sounds like the question of the century.

YOU MAY RECALL that the problem with photographing Mars was that scenes were too big to capture in one image. Pictures had to be sent back in pieces and then re-assembled using some very sophisticated software.

The software analyzed similarities in each image and blended them into one composite image. Today, thanks to variations of the Mars software, the digital photo lab can scan several sections of a large image and re-assemble them into one final image. Who says technology isn't great?

You might ask why you would even need to scan artwork or photos in sections. Not all photo labs can afford scanners to fit every size of artwork. If the scanner works for 95% of the lab's scan work, it is tough to justify buying a larger scanner just for that additional 5%.

So, what do you do, farm the work out to your competition? No, instead you install software on your editing systems that enables you to re-assemble scanned sections of oversized artwork.

There are two basic types of stitching software on the market today. The most popular is the panoramic software programs that allow you to shoot panoramic images on several film frames and then re-assemble them into one picture. Most of these products require a 30–50% overlap of image data.

When you start stitching the images, you are asked to if you want to warp and/or blend the images. Warping is designed to compensate for the distortion caused by the focal length of a lens. Blending is used to compensate for difference in contrast, density, and color balance.

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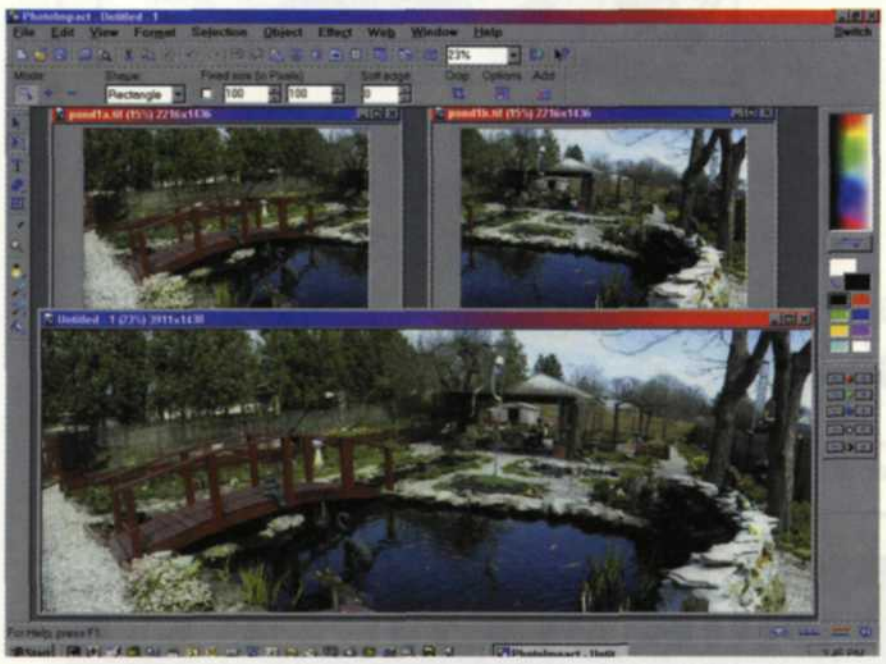
PhotoImpact 5 software used to 'stitch' oversized photos (Ulead Systems)



If you are shooting panoramas, you would use both these functions. If you are using this software in the photo lab to scan large originals, you would turn the warp function off. The scanner really does not have a focal length, so it needs no warping correction. You should leave the blending function turned on because scanned artwork may result in slight density changes when scanned in sections.

The second type of stitching software can be found as a function in some of the new photo editing software programs. Not all software products have it yet, but we think it will become standard in the future. Normally we can find almost any function in Adobe Photoshop, but in this case we did not, so we looked at some of its competitors.

Corel Corporation's Corel Paint 9 and Ulead System's PhotoImpact 5 both offered the stitch function, which worked very well. They did not have the warp function, required less overlap of image area and the stitching process was faster than with the Panoramic programs. You can set the range of horizontal and vertical shift of information overlap and they even offer a test function to preview the final stitch in low resolution.

In researching and testing stitching programs we found them all to be memory hogs. You have to remember that a stitching program holds memory for each part to be stitched, the final stitched image, *and* memory for temporary working files.

We were able to stitch images with 128MB of Ram, but did find that 256MB was more efficient. If you do run out of extended Ram, your system will go to a hard disk file, and then the process will take as long as it took the images to come back from Mars.

You should also restrict the use of your system memory. Close all other operating programs, and disable any programs used for quickstart. It will work best if you can get your system memory above 95%

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before starting the stitching program.

Scanning large artwork on flatbed scanners requires some additional considerations. Since the artwork extends beyond the scanner's surface, the scanner itself should not be close to any other device that would hamper placement of the artwork on the scanner.

If the cover easily removes, you should consider removing it for large artwork scans. Most scanners have the glass surface slightly recessed. For this reason, it is a good idea not to use the entire scan area, but come in at least 10–20%. If that means making addition scans, then you should. The image quality on many scanners tends to fall off as it reaches the very edge of the scanner.

Once you have set up a specific dpi and page size, leave it alone for the rest of the scans. You should also leave the cropping and scan placement alone during the remaining scans. This also improves the compatibility of each part during the stitching process. Care should be taken when placing the original in the scanner. If any weight is placed on top of the artwork to secure it in place, you may break the scanner glass or possibly damage the artwork.

You can even use some film scanners to scan panorama negatives. Film scanners that pull the film into the scanner are pretty much restricted to the film size intended. Those scanners that keep the film in view or allow placement of the film in the carrier can use this stitch process. We can't do the process with our Nikon 2000 scanner, but can with our older Nikon AF3510.

We load the long film image into the carrier so that the left half is scanned first. Then we switch the image to the right half, leaving all scan settings the same for the second half. It is important to turn of all automatic features and adjust the color and exposure manually. The image can then be re-assembled using the stitch program.

In preparing this article we tried digitizing even larger artwork using a digital camera. The best solution we found was to set up a digital camera on a copystand or tripod and move the art-

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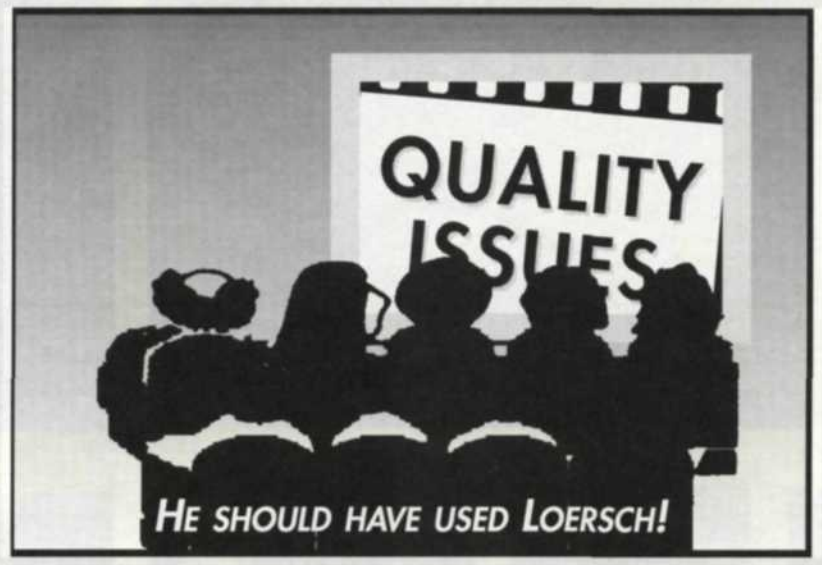

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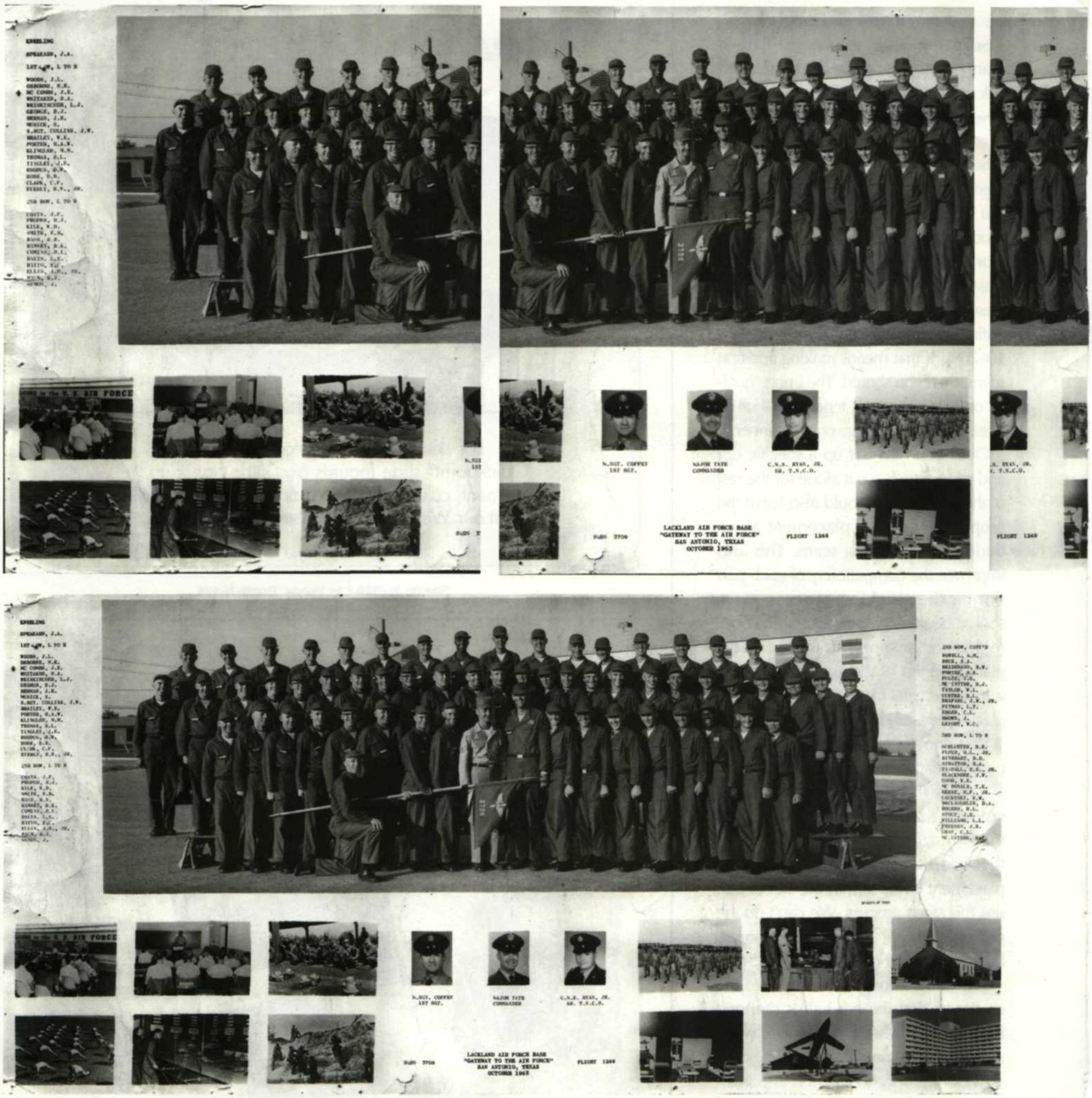

Final composite image compiled of the three scans above.

work past the camera. The problem was we had to ensure that the artwork moved in a straight line.

The solution was to use an easel or chalk board to hold the art and slide it along as you made each exposure. Preliminary testing indicated that you may have to use a small amount of warping in the stitching program to compensate for the focal length of the lens.

We tried PhotoVista from Live Picture and a newer one called COOL 360 from Ulead Systems. Both seemed to perform the tasks well. Even using a digital camera with a resolution of only 1200-1600 lines we were able to get some excellent quality digital images of large artwork. As digital cameras become better and higher

resolution, we see this application becoming even more viable.

Whatever method you use for digitizing sections of large artwork, remember that once you set up the parameters for the first section, maintain the same settings throughout the process. Not every stitch will be perfect, and you may need some time playing with the controls before you get it just right. As always, we always recommend that you practice with some samples before offering this service in your lab.

In researching the Web, we found many new panorama and stitching programs soon to be released. Stay tuned as we will be back later this year with a software update. Remember the old adage: A stitch in time....saves... uh....money...or something like that!

For further information check out these Web sites:

Ulead Systems at www.ulead.com
Live Pictures at www.livepicture.com
Corel Corporation at www.corel.com

Jack and Sue Drafahl are digital imaging experts and professional photographers based near Portland, Ore.

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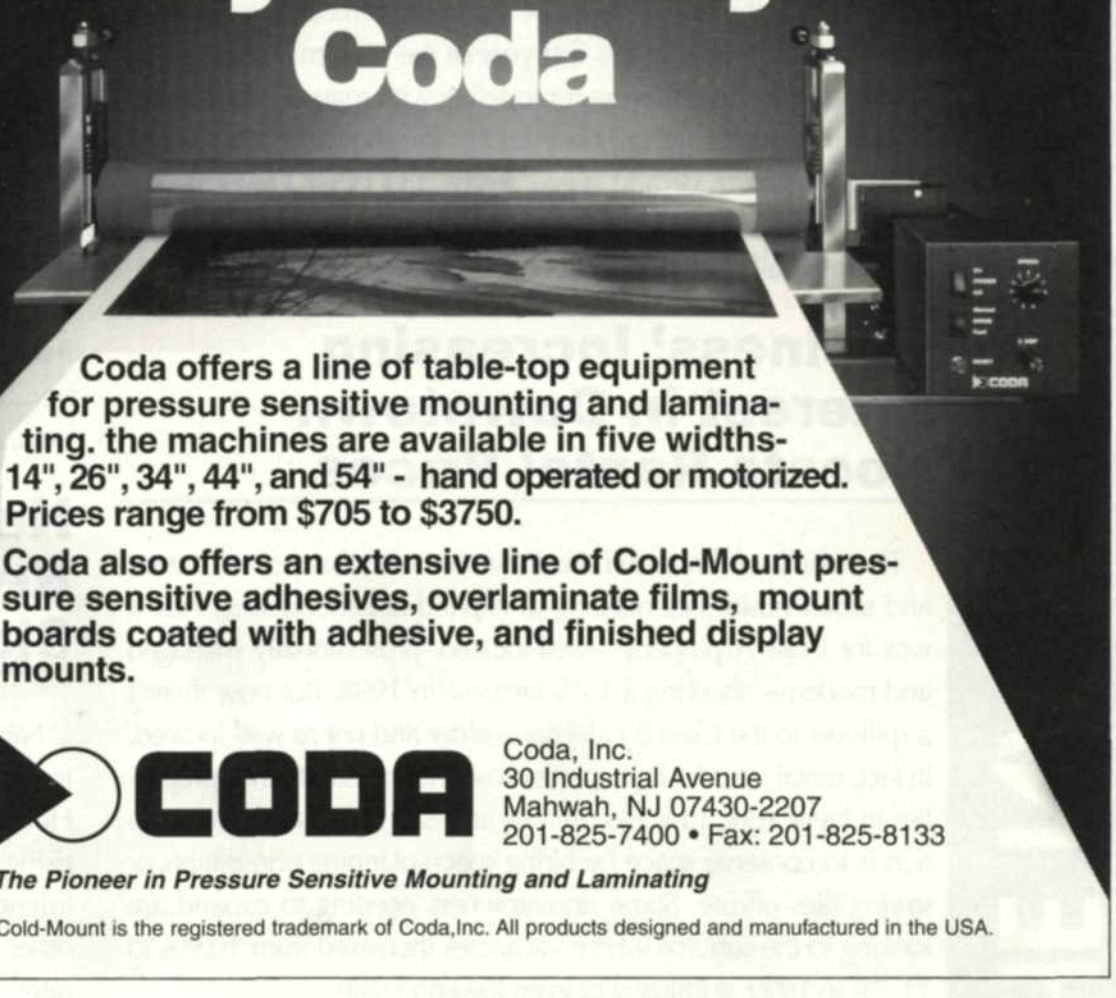

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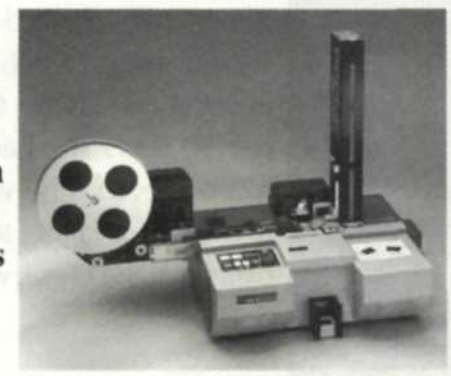

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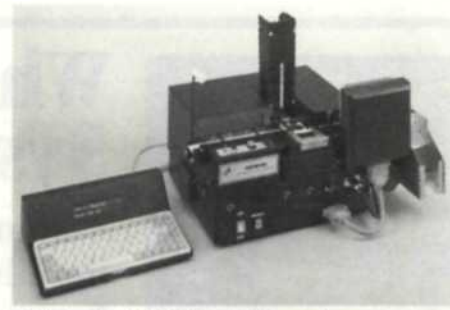

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