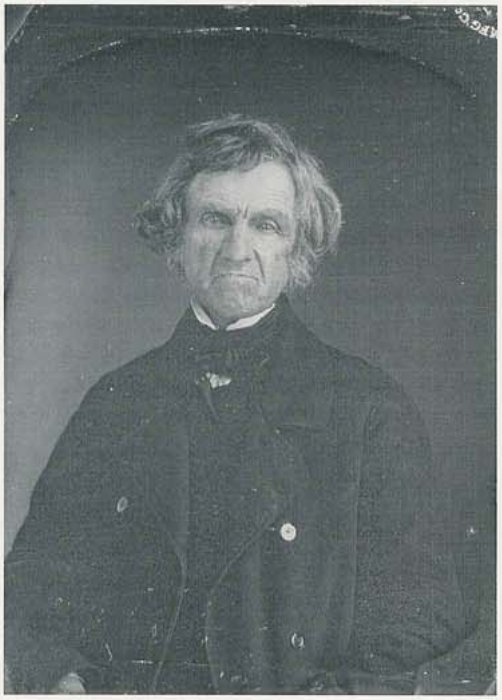
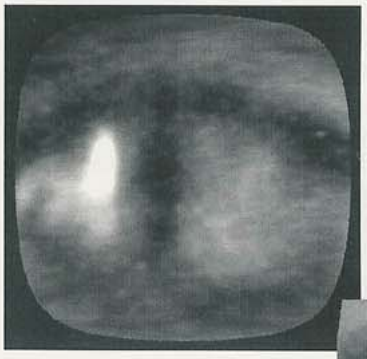
Daguerreian Glimpses

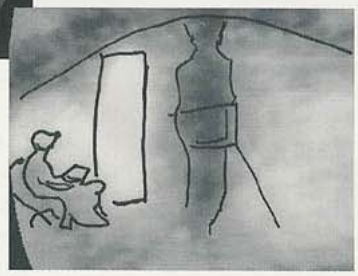
By Joe Bauman



My "Grumpy Grandpa" sixth-plate daguerreotype by an unknown maker. Above is Nishino's computer extraction from the reflection in the man's right eye.



I believe the extraction shows a woman seated in a chair, perhaps reading, a narrow window and a tall thin figure of a daguerreotypist, his head hidden by the subject's eyelid. A streak might represent a tripod leg but I can't be sure—they may simply be artifacts of scanning such a tiny image.



SHE FOUND AN EASY CHAIR BESIDE A WINDOW and slouched in it, keeping her bonnet on because she expected this to be a short wait. She liked the plush cushions and curving armrests, liked the bright light that streamed in and illuminated the studio. The daguerreotypist finished adjusting Grandpa in the headrest and walked back to his camera. He was going to have a time getting a pleasant view of Grandpa, she thought; he looked the original old man of the mountain with his frown and his hair bristling around his cheeks. The tall professor stood straight behind the instrument, checking the light and bending to peer through the camera. When he walked to Grandpa, she had a glimpse of the glass plate in the back of the camera, where he was standing on his head, and that made her giggle. The daguerreotypist turned Grandpa slightly, drawing an even more disagreeable expression from him. He walked back to the camera and stared through it again. He began adjusting his lens, reaching around to turn the knob at the bottom. But then he straightened and studied Grandpa. The old man stared back defiantly. Growing bored, she unfolded Grandpa's newspaper, which she was holding for him, and began to read: "From the north there is little of news. All the farmers are busy in getting in their crops; and the stories of short crops told rarely. In all the lake towns the grain markets are active, and we shall soon have the first of the new crop . . . ."

THE SCENE IS ONLY PARTLY FICTION. We know what a pickle Grandpa was, and we can deduce some aspects of the scene before him — the girl in the comfortable chair with its curving armrests, possibly her bonnet, the window with its brilliant glare of light, the tall, thin, daguerreotypist and, just maybe, the waiting girl's newspaper.

This is one of the first results of a breakthrough in computer graphics by a pair of Columbia University researchers, Ko Nishino, a research scientist, and Professor Shree K. Nayar. As Columbia explains it in a paper posted on the Internet, they "developed a novel computer algorithm for extracting detailed visual information from the appearance of an eye in an image."

The view that reflects from the cornea is distorted by the eye's curvature. But Nishino and Nayar worked out a method, using computer scans of photographs, that will remove the distortion. They can determine, in the words of Columbia's paper, "where a person is looking" and what he is looking at.

When they reconstruct the view, it is a wide-angle one, taking in as much as half of the scene in front of the subject. When the photograph's resolution is high enough, they can learn a great deal about the setting where the image was taken. Three-dimensional reconstructions can be made through the use of both eyes.

As early as the year following the announcement of the daguerreotype, one scientist realized that information about the outside scene might be recorded in the reflection of the eyes in one of these beautiful images.

Robert Taft, in his 1938 volume *Photography and the American Scene*, quotes a letter by the famous English scientist J. F. W. Herschel to John W. Draper, a daguerreian pioneer in New York City. Draper had sent Herschel a daguerreotype of his sister, Dorothy Catherine Draper, taken in the summer of 1840. The delighted Draper praised the view as the most satisfactory portrait he had ever seen, but then criticized the "considerable amount of aberration in the lenses. ... For instance the bright speck in each eye *ought*, if the figure were rigid and the camera perfect, to exhibit a picture of the external landscape as seen through the window of the apartment."

Then, perhaps remembering that Draper had said the exposure was 65 seconds, Herschel immediately added, "But this may be considered as too severe a test for a living figure."

As I discovered when attempting to scan in especially sharp daguerreotypes for Nishino to work his magic on, several factors play a role in determining whether a picture of the external landscape, or anything else, can be discerned in a daguerreian eye reflection. While daguerreotypes have exceptionally fine "grain," they do have a certain amount of clumping and unevenness under high magnification — some images are finer than others. The eye must be large enough on the plate to exhibit details. The lens must be a sharp one. The reflection itself must be focused, which is more likely if the lens is stopped down, giving a greater depth of field. Herschel was right in his concern about remaining steady, because if a subject's eyes shifted, the reflection would be blurred. If the person's iris was a complex jumble of lines, that added confusing streaks to the image. Lighting is crucial too, and that may be one of the biggest barriers to catching a look accidentally preserved in the eyes.

Daguerreotypes often have short dynamic range; that's obvious by the frequency that darker tones became a uniform black and bright areas overexposed and solarized. Complicating this, daguerreotypists naturally sought bright lighting from side windows, reflectors and, sometimes, skylights. The view looking toward the daguerreotypist is back-lit and bright, with brilliant windows or reflectors, while the daguerreotypist or his camera is dark.

In an interview, Nishino told me, "That's why you can only see the shadows of the people and the silhouettes."

But we did manage to extract several images that retained hints of the world seen by the person having a daguerreotype made. All are necessarily low resolution because the eyes make up only a tiny portion of the image.

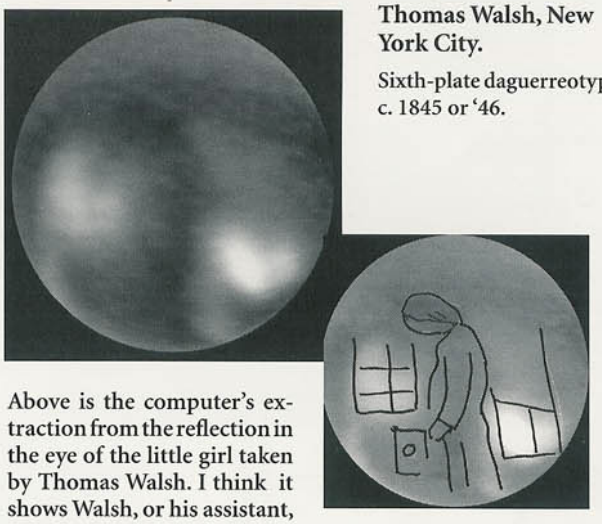
Window shades and the wooden mullions between panes of glass are visible. Through open windows one sometimes catches the vague form of trees, homes, a barn or (possibly) a horse.

FIGURE 1

Young Girl with Book.

Thomas Walsh, New York City.

Sixth-plate daguerreotype, c. 1845 or '46.



Above is the computer's extraction from the reflection in the eye of the little girl taken by Thomas Walsh. I think it shows Walsh, or his assistant, standing over the camera. A couple of windows and their mullions can be seen in the background.

You can see two white blobs that represent the vest and head of a daguerreotype operator, blurred because he was moving while his subject was held in the iron grip of the headrest.

And one of the reflections shows what may be an accidental self portrait of Thomas Walsh. If it's not he, it's one of his assistants.

According to John Craig's magnificent resource, *Craig's Daguerreian Registry*, Walsh worked in New York City from about 1844 to 1855, and later in Brooklyn. My sixth-plate of a little girl (fig. 1) is identified with his name and carries an address where he worked in 1845 and 1846; he moved to

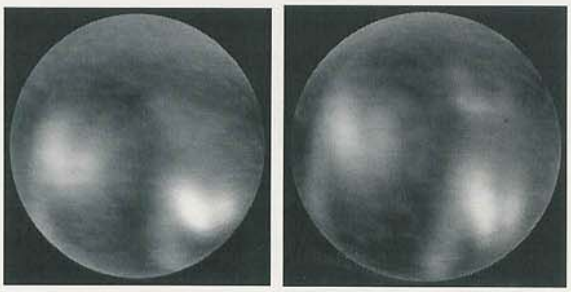


FIGURE 2

Showing the computer-rendering of the reflections in both of the young girl's eyes.

FIGURE 3

Unattributed.

Benjamin Titzel.

Sixth-plate daguerreotype.

Shown below is a close-up of his right eye.

another location in '46, according to New York directories I consulted.

In the view, the girl's eyes are mirrors. Both show the same reflection (fig. 2), and when we remove the distortion and study it, the views show a studio with a couple of large windows, one of which has a blind partly pulled. The daguerreotypist stands sidewards to the girl, to the right of the camera and leaning over it. The camera, of course, is pointed directly at the girl. The lens shows up as well as some motion, another disk-like object. Probably this is the lens cap, which the daguerreotypist has removed and is about to replace at the end of the exposure.

Nishino has posted several of the images he processed for us at his web site, **http://www.cs.columbia.edu/~kon/joe**. All are from my collection except for an exceptionally sharp one printed in this article, which was supplied by our Daguerreian Society President, Mark Johnson. Nishino says he would like to continue processing daguerreian scans, possibly with an image algorithm that will reduce noise.

As Nishino said, "I think it's really fascinating to see the opposite side of the world in the picture."

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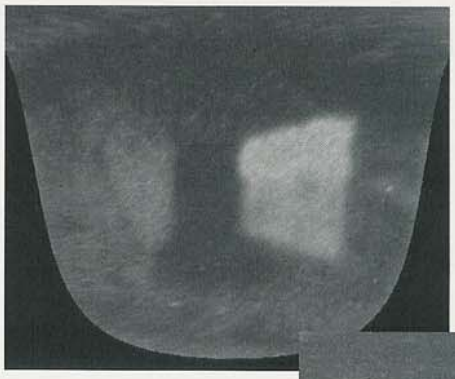

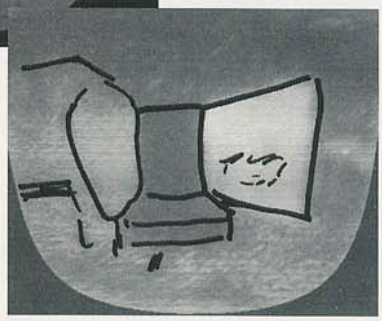

Above, Nishino's rendering of Figure 3's close-up. I think I see a daguerreotypist standing with his back to the sitter, elbow bent. The camera sits on a stand that juts out beyond the base of the camera.

Mark Johnson writes:

WHEN I HEARD FROM JOE BAUMAN regarding his article, I sent him a digital photograph taken of one of my sharpest daguerreotypes, a sixth-plate by an unknown photographer (fig. 3), who was from Pittsburgh I believe. I was surprised that I was able to get a close-up of Benjamin's eye by holding the camera's lens up to a stereo microscope's eyepiece and keep it steady for the half-second exposure.

I think the neatest part of the computer's rendering is the cityscape that can be seen through the window. Knowing that this was probably made on an upper floor of a com-

mercial building, I can almost see the upper stories and chimneys of the buildings across the street. Pretty neat!

I was interested to know the approximate distance from the sitter to the camera, and by association, to the daguerreotypist. I knew that a modern daguerreotypist might know best how to answer this question so I fired off an e-mail to Mike Robinson in Toronto, sending him scans of my image for the example. Mike's quick and professional response came back the next day.

Using the measure tool in Photoshop I was able to determine that the distance between the pupils of the sitter measures approximately .215 inches. If we take the average space between the pupils of an adult at approximately 2⅜ inch then the scale of reproduction is 11:1.

The next question is to consider what size lens would have likely been used to make this daguerreotype. The usual lens sizes were 1/4, 2/4 or 4/4 size.

The most likely lens used for this daguerreotype would be the quarter plate. A half-plate lens is unlikely but possible. Using a full-plate lens to make a sixth-plate image is really a stretch but I calculated the subject to camera distances for all three lens sizes.

The optical formula for scale of reproduction is image distance (center of lens to ground glass) divided by object (sitter to lens) distance.

The distance from the centre of a quarter-plate Voigtlander lens to the ground glass when focused on a portrait is 5.5 inches. Therefore the distance from the camera to the sitter if a quarter-plate lens was used would be five feet (5.5 x 11 = 60.5 inches).

The distance from the centre of a half-plate Voigtlander lens to the ground glass when focused on a portrait is 7.75 inches. Therefore the distance from the camera to the sitter if a half-plate lens was used would be 7.1 feet (7.75 x 11 = 85.25 inches).

The distance from the centre of a full-plate Voigtlander lens to the ground glass when focused on a portrait is 12 inches. Therefore the distance from the camera to the sitter if a full-plate lens was used would be 11 feet (12 x 11 = 132 inches).

I would like to thank Joe Bauman for informing our members on Ko Nishino and Shree Nayar's unique research tool and for providing them with scans so they could apply their unique technology to daguerreotypes. And thanks to Mike Robinson for answering my question. Those daguerreians were probably pretty darn close—almost close enough to see!