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East Side Co-op, Park Views, Includes Camera

By GRACE GLUECK

When he saw a camera obscura on the roof of a private museum in Kyoto in 1995, Charles Schwartz knew he had to have one. A photograph collector, dealer and photographer himself, he shares the field's growing interest in ancient devices and techniques.

He also knew it would be an ambitious undertaking, not for the faint of heart or pocketbook. But he had the will -- and the means, as a former partner in a family dairy business -- to make it happen. So now, poking through the roof of his staid apartment building on the Upper East Side is a jaunty turret that holds the telescopic lens and mirror of what surely is the only camera obscura of its size in Manhattan, and one of the very few private devices of its kind in the world.

A camera obscura (the name literally means "dark chamber") is a viewing apparatus used by scientists and artists for centuries. Mr. Schwartz's, built especially for photographic purposes, took three years and the combined efforts of a structural engineer, an architect and an optics specialist to complete. Also required were the services of expeditors who shepherded the project through the labyrinthine processes of the city's building

department, its Landmarks Commission and local preservation organizations to gain permission to build it atop a roof in a landmarked section of Manhattan.

Like any proper camera obscura, Mr. Schwartz's is a room -- call it the camera's body -- that can be darkened, with a lensed opening (housed in the turret) to the out of doors. Built atop the three-story penthouse where Mr. Schwartz lives with his wife, the artist Nancy Drosd, the architect-designed room is used as a workplace and storage area for Mr. Schwartz's collection of photographs. When he wants it to function as a camera, he pushes a button to close the blackout blinds, and several others to activate the imaging devices in the turret. "Imagine, while I'm working the camera, I'm actually sitting inside of it," he says.

The turret, the business end of the camera, is fitted with an optical glass viewer, an 8-inch lens and a 12-inch mirror, like a periscope's, that corrects the reversal of view made by the lens. When activated, the turret brings in a 15-degree slice of the outdoors. Its plane of sharp focus moves from infinity -- say, the stars -- down to 400 feet, at which it can pick out a piece of Fifth Avenue and Central Park. What it sees as it swivels about is conveyed indoors to the white Formica top of a round table 42 inches in diameter (which func-

tions like the back of a camera).

Any part of the view can be brought into sharp focus and, by placing a piece of photographic paper on the table, developed as a photograph. Different results, and better color control, can be obtained by photographing what's on the table with another camera containing film, in effect taking a picture of a picture.

Birds and planes streaking across a huge red sun, the pocked face of the moon, silhouetted tops of buildings, intricate patterns of trees and branches, pedestrians and views of Central Park are some of the subjects with which Mr. Schwartz has been experimenting. He uses the camera's compression of distances -- thanks to its 12 1/2-foot focal length, things far away seem almost as close as those in medium range -- to create novel effects. What has eluded him so far, he says, is photographing the split-second green flash that occurs at a particular angle of the sun's setting, mostly in the clear atmosphere of a winter's day.

"It's energizing to kind of invent camera obscura photography," he says. "It's about light -- the camera can catch reflections from the rising sun in the windows of buildings on the West Side -- and it's about compression. In the camera's eye, for instance, the Dakota appears to be right behind Belvedere Castle,

although in reality they're almost a half-mile apart. I see things you can't see with your naked eye or a normal camera lens."

One challenge posed by the device, however, is how to measure light. A conventional light meter reads direct light whereas the light inside a camera obscura is reflected light. By trial and error, Mr. Schwartz had to recalibrate his meter to reconcile inside light with outside light.

No one knows precisely how or when the camera obscura -- the forerunner of the modern photographic camera -- came into being, but everyone agrees that it is an ancient device. It arose from the discovery -- perhaps by the Chinese in the fifth century B.C. -- that a pinhole in a darkened room can project an outside view upside down on an opposite wall. Roger Bacon, the 13th-century optical scientist and philosopher, used the device to obtain a safe direct image of the sun. The first diagram of a camera obscura appeared in a 15th-century manuscript by Leonardo da Vinci, although he did not claim its invention.

The introduction of a lens, possibly in the 16th century, created a much brighter image so that the camera obscura became an aid to astronomy. Shortly thereafter artists began using it to facilitate drawing, with the subject posed outside and the reflected image traced on a piece of drawing paper. Eminent painters like Vermeer (1632-75) in the 17th century and Giovanni Antonio Canale, known as Canaletto (1697-1768), and Sir Joshua Reynolds (1723-1792) in the 18th century were thought to have worked with it.

As improved optics gradually brought the camera obscura down to comfortable carrying size for artists and other professionals (even spies), larger ones were still built for public entertainment. In the mid-19th century there was even one in Central Park. Today, the camera obscura, used mainly for panoramic viewing rather than photography, is more popular overseas, where a number exist, mostly in Great Britain but also in Spain, Germany, South Africa, Australia, New Zealand, Italy, Switzerland and Hungary. There are several in the United States, including a recent one at the Children's Museum in Portland, Me.

To build his own dream machine, Mr. Schwartz faced a number of challenges. To begin with, there was the basic question of whether the city's complex zoning code would allow for another room on the roof of his penthouse. A feasibility consultant, Lisa C. Westheimer, ascertained that it would. Then Matthys Levy, a consulting engineer, was asked to determine whether the room was structurally feasible. Yes, said Mr. Levy, if its weight was kept to a minimum. The board of the co-op building (with Mr. Schwartz as its president) accepted his proposal, with the agreement that he would pay additional maintenance for the room he was adding.

At Mr. Levy's recommendation, Gajinder Singh, an architect who designed university campuses as an associate of Edward Larrabee Barnes, was chosen to plan the structure, the smallest project he had ever undertaken. With these ducks in a row, Mr. Schwartz tackled the biggest obstacle -- how to connect with

someone who could make the working part of the camera itself. "You don't find that sort of thing in the Yellow Pages," Mr. Schwartz said.

Asking questions and visiting camera obscura sites in England and the United States, he finally came up with the name of George Keene, a specialist in optics and spacecraft design who had worked for Kodak and helped build orbiting satellites for NASA. Mr. Keene had already made a camera obscura for himself that he uses for celestial photography, and was willing to try his hand at another one. Much of the work was done in his machine shop in Los Angeles, with the lens, mirror and window custom-made by an optical grinder.

He worked hand-in-glove with Mr. Singh, the architect. From his point of view, Mr. Keene said, the special problems of the project were space limitations and the need to tailor it to his customer's photographic interests. "The most difficult part was the concept, inventing it and designing it and fitting it in with Charles's special needs. After the basic design I had to make an extra shuttering device, for instance." A particularly expensive item was the camera's special viewing window, a 14-by-18-inch piece of optical glass a half-inch thick, that took months to polish and had to be shipped in a large, costly wooden crate, although Mr. Keene hand-carried the lens and the big flat mirror on the airplane.

Mr. Singh said his challenge was "to create a pleasant office that converts to something very different, a camera." The roof of Mr. Schwartz's building was cluttered with ventilation pipes from apartments below, two air-conditioning condenser units

and a large skylight over fire stairs. The skylight had to be removed, with an equivalent area for glass and ventilation provided on the floor beneath, the pipes rerouted and the condenser units relocated.

“There were no previous drawings, so we had to keep inventing as we went along,” Mr. Singh said. “An important consideration was that the structure had to be very light so the roof would bear it. We decided to face the room with copper instead of masonry, which at first gave us trouble with the Landmarks Commission. They suggested stucco; no good for New York weather. But there was already copper on neighboring buildings, and we finally convinced them it would blend in very nicely.”

The entire project was finished last May, and Mr. Schwartz has since found that being possessed by a camera obscura, while thrilling, is not an easy life. “I spend 60 hours a week trying to make the best use of its uniqueness,” he said. And would he say how much the whole venture cost? “Let’s put it this way: I could have had a couple of Ferraris.”

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