

PHOTOGRAPHY AS SCIENCE

Camera obscura refers to the natural phenomenon of an image being produced on a surface opposite a pinhole that leads into a dark chamber. The image, often called a pinhole image, is inverted (upside down) and reversed (left to right). There is evidence of such images being made as far back as a few thousand years. But such images are temporary, lasting only as long as the light conditions that caused it to happen.

The burning question raised by making pinhole images was: How can we make it last? Can we somehow make it permanent? Can we “fix” it? Photography was the answer to this question, and science was the mechanism. Photography relies on the physics of light and the chemistry of substances to capture, transform, and preserve visual images. A camera refracts the incoming light waves to focus an image in a certain way and then records what it “sees,” and chemistry is (or was until digital photography) involved in every step.

Exposure requires photosensitive compounds that change when light strikes them. Different chemicals are needed to develop the image, then stop the process, and fix the image. Early books and articles about photography are almost solely devoted to discussions of the kinds of chemicals to use and the way to use them. The usefulness or creative aspects of photography were not yet under consideration.



View from the Window at Le Gras, 1827—the oldest surviving photograph was created by French inventor Nicéphore Niépce. It shows parts of buildings and the surrounding countryside of his estate as seen from a high window. It was made on a polished sheet of pewter, on which was applied a thin coating of bitumen dissolved in lavender oil. The bitumen hardened in the brightly lit areas, but in the dimly lit areas it remained soluble and could be washed away with a mixture of lavender oil and white petroleum. Over the next few years, Niépce and Louis Daguerre refined the process by altering the composition of the chemicals to produce better images.



Boulevard du Temple, 1837 or 1838—a photograph of a Parisian streetscape and one of the earliest surviving daguerreotype plates produced by Louis Daguerre. The process involved polishing a sheet of silver-plated copper to a mirror finish, treating it with iodine and bromine vapors in a lighttight box until the surface turned yellow, exposing it in a camera, and then placing the exposed plate over a source of heated mercury vapors until the image appeared.



The Boulevards at Paris, 1843—a photograph of a Parisian streetscape created using the calotype process that William Henry Fox Talbot developed. He soaked his paper in a weak solution of silver iodide instead of silver chloride, and his developing agent was gallic acid and silver nitrate; this allowed for a short exposure time.



The oldest preserved photographic portrait is attributed to Louis Daguerre and is entitled “M. Huet 1837”.



The Haystack, 1844—a photograph by William Henry Fox Talbot that was one of twenty-four calotype prints included in *The Pencil of Nature*, the first commercially published book to be illustrated with photographs. Talbot inserted the following notice into the book: “The plates of the present work are impressed by the agency of Light alone, without any aid whatever from the artist’s pencil. They are the sun-pictures themselves, and not, as some persons have imagined, engravings in imitation.”