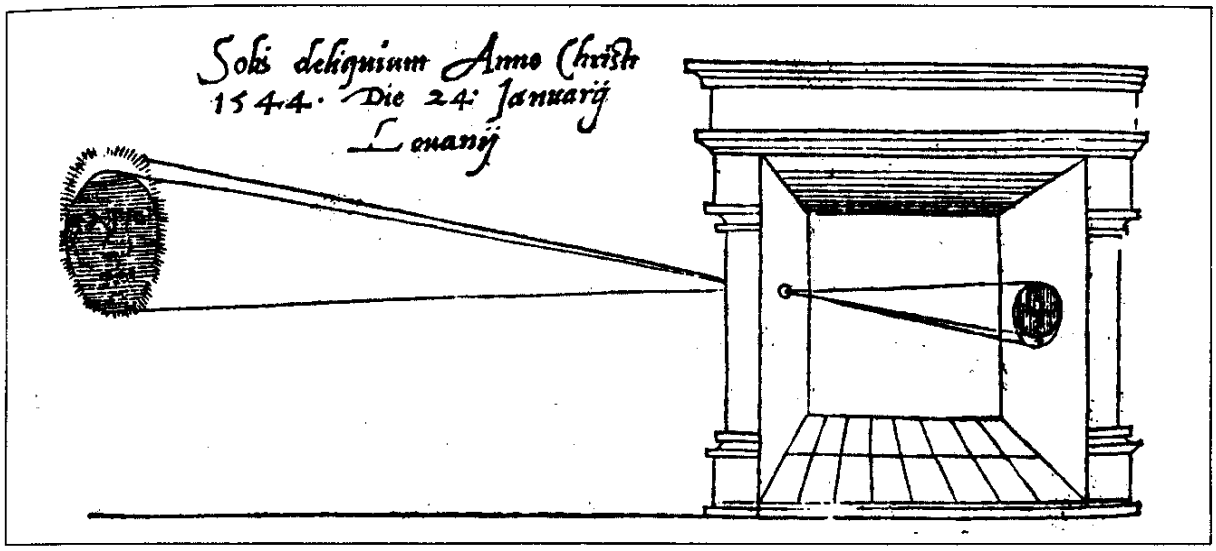


1.1 ATHANASIUS KIRCHER. Large Portable Camera Obscura, 1646. Engraving. Courtesy Gernsheim Collection, Humanities Research Center, University of Texas, Austin, TX.

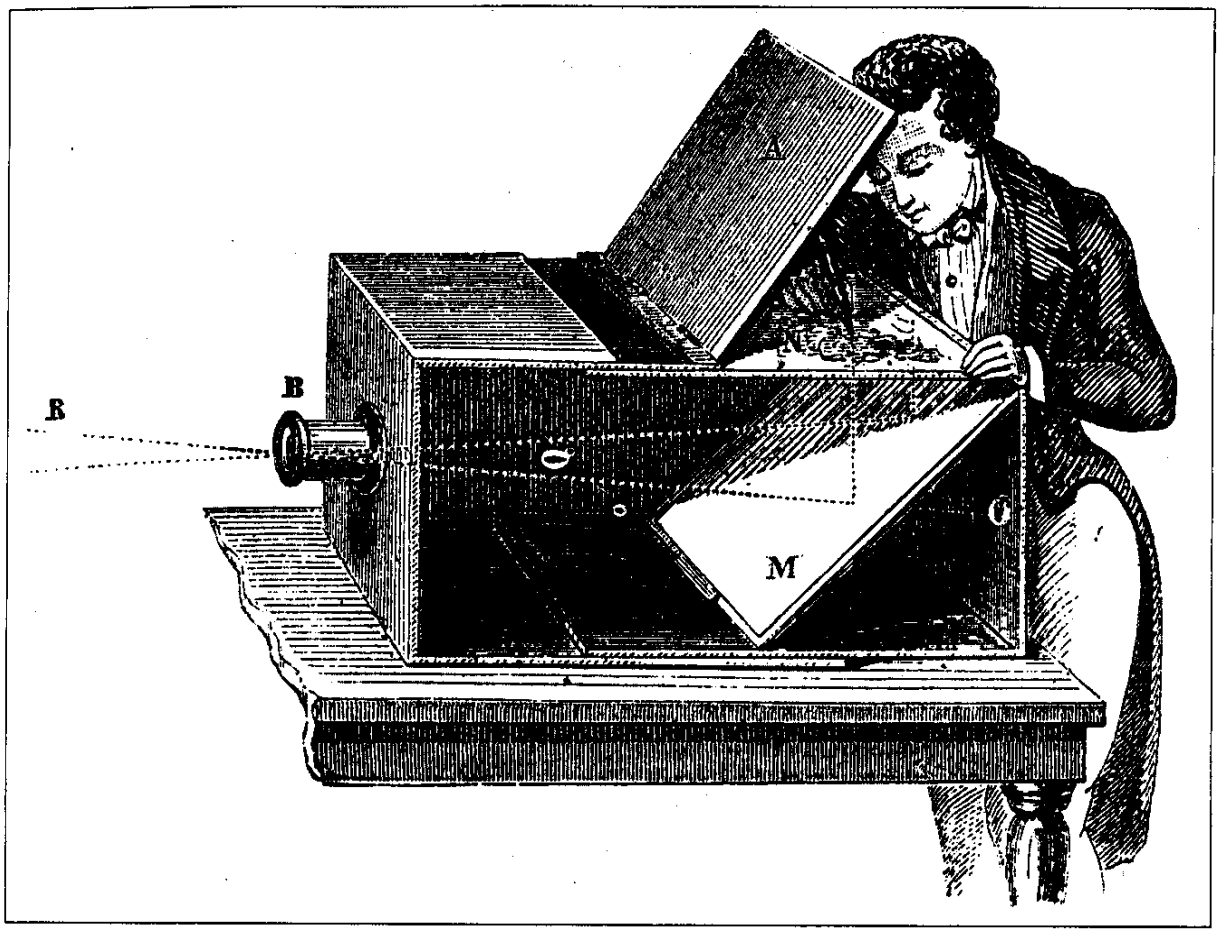
attaching a biconvex lens (a lens curved on both sides so it is thickest in the middle) to a camera obscura, making its image brighter and sharper. Daniele Barbaro's treatise, *La Practica della perspettiva* (1568), described how fitting a diaphragm to the biconvex lens allowed the amount of light passing through the lens to be controlled, enhancing *depth-of-field*, the range in front of and behind a focused subject in which detail appears sharp, and forming a sharper image. By 1611, Johannes Kepler had built a proto-portable camera: a human-size tent that could be dismantled and transported to make drawing easier. By the mid-seventeenth century, Kepler's camera had been modified and scaled down so one did not have to enter into the camera but could remain outside of it and view an image projected onto a translucent window, a forerunner to the first truly portable cameras.

By the end of the seventeenth century lens aberrations had been corrected to give better resolution. They were also made to produce images of different sizes based on the specific needs of portrait and landscape artists. Image size is proportional to a lens' *focal length*, the distance from the lens to the point of sharp focus. The longer the focal length, the greater the magnification of the image. Instruction manuals for matching lenses with cameras and situations appeared. The optics of the camera obscura were simultaneously ideal and natural, reflecting the empirical, scientific, and humanitarian trends of the Enlightenment. Drawing shifted from the private act of a highly trained individual, to a broader commercial enterprise that incorporated ideas of mass production and standardization as seen in rationalistic works such as Denis Diderot's *Encyclopédie*. By the close of the eighteenth century the camera had been tailored along the lines of Renaissance pictorial standards to help fulfill a cultural demand to make drawing easier and quicker.

Camera Vision

Although they were organized by machines—cameras—early photographs resembled drawings and paintings because they depicted the world according to linear perspective. The camera obscura was popular with artists because it automatically modified a scene by compressing form and emphasizing tonal mass according to pictorial standards. The camera was not designed as a radical device to unleash a new way of seeing, but evolved to produce a predefined look. The camera took into consideration formulas and procedures such as composition, angle and point of view, quality of light, and selection of subject matter. "What" was being represented remained unchanged. This does not diminish the camera's importance in defining an image. As with most inventions, unintentional side effects create unforeseen changes. As imagemakers became more sophisticated they routinely used specific cameras and lenses to shape an image, and critical viewers can often trace the connections between the camera/lens and the resulting picture.

Scholars have debated whether the idea of photography grew from a need for new images reflecting a profound cultural transformation, from a fabrication of Western pictorial traditions, from an increasing desire to make pictures of what is personally important, as an offshoot of the discoveries of chemists and opticians, or from a combination of these happenings. A discussion surrounding the rise of *camera vision*, how a camera visually organizes a scene, often focuses on Dutch painter Jan Vermeer [1632–1675]. Adroit artists like Vermeer,



1.2 ROBERT HOOKE. Portable camera obscura, 1694. Courtesy George Eastman House.

who most likely used a camera, did not need it to physically produce their pictures. The camera did act as a gathering device of fresh approaches for composing space, observing light, and portraying cultural models in innovative ways.[7] Vermeer's uncanny domestic interiors possess qualities now considered photographic: very tight use of space, "unbalanced" compositions, unexpected points of view, exact descriptions of light at specific times of day, concentration on what is happening on the edges of the frame, attention given to detail, use of points of focus, and representation, through stillness, of time.[8] Vermeer's work demonstrates how the camera doesn't merely capture nature or reflect existing beauty but originates entire new ways of visualizing the world.

The Demand for Picturemaking Systems

In the eighteenth century, a rising commercial class wanted to purchase the status of being commemorated in the same pictorial style as the rich. Inventors had commercial incentives to harness the camera to portrait making, as less training would decrease the cost of making a picture. Machine-based systems for producing multiple copies of objects were on the threshold of overtaking handmade methods. One such picturemaking machine was the *physionotrace*. Invented by Gilles Louis Chrétien in 1786, it combined two inexpensive methods of portraiture, the cutout silhouette and the engraving. An operator could trace a profile onto glass using a stylus connected to an engraving tool that duplicated the gestures of the stylus onto a copper plate at a reduced scale. A tracing could be done in about a minute, and multiple copies of the image could be made from the plate. Although it was not a camera, the physionotrace reduced portrait making to a mechanical operation that required moderate hand-eye coordination. It expanded the portrait market to the middle class while imitating the style of the miniaturist painters. The physionotrace satisfied a desire for an accurate visual description of one's presence and social status. The mechanical/scientific nature of the process gave the physionotrace a power of authenticity. This made it a prototype for an entity like photography, which possessed a key characteristic of what society wanted: a system for the multiple reproduction of a directly transcribed truth, to be developed.

The start of the nineteenth century saw the introduc-

1.6 THAUMATROPE. In *Philosophy in Sport made Science in Earnest* (1839) by John Ayrton. Courtesy George Eastman House.

structs and perception while retraining public expectations of how the world was represented. The kaleidoscope, invented by Sir David Brewster [1781–1868] in 1815, mechanically re-formed visual experience through repetition and symmetry. The kaleidoscope exemplifies how science and technology give a subject the appearance of simultaneously being repeated and fragmented, challenging the traditional narrative framework of the visual arts.[16]

The optical phenomenon of retinal *afterimage*, the presence of a visual sensation in the absence of a visual stimulus, as discussed by Goethe in the *Theory of Colors* (1810), began to affect how science observed the world.[17] Goethe stated that whatever a healthy eye saw was "optical truth," that there was no such thing as optical illusion. The eye was a model of autonomous vision: The optical experience is produced by and within the person. Goethe's theory challenged the Aristotelian truthfulness of optical perception by tethering the act of observation with the body, fusing time and vision.[18] Additional empirical studies of Goethe's ideas were carried out in Germany during the early 1820s by Jan Purkinje, who was able to time how long it took the eye to become fatigued and how long for the pupil to contract and dilate.

Such studies gave rise to scientific optical devices that were transformed into popular entertainment. The *thaumatrope*, or "wonder-turner," was manufactured in 1825 as an optical toy based on after-image research. It consisted of a disk, about two inches in diameter, with a drawing on each side and strings attached through holes drilled at opposite ends of the circle. One side of the disk might picture a bald-headed man, the other side a wig. When the disk was spun, the man would appear to have hair on his head. The wonder-turner proved that perception was not instantaneous and demonstrated the contrived and delusionary nature of image formation. Such devices demonstrated the fracture between perception and the subject being perceived.

Joseph Plateau's afterimage experiments in the late 1820s defined the theory of *persistence of vision*. The theory states that if several objects that differ sequentially in form and position are rapidly viewed one after another, the impression they produce on the retina is of a single object that's changing its form and position. Since an image impression lingers for a fraction of a second, individual images appear to be in continuous motion, as in a flip-book. Devices like this and the *zoetrope*, a rotating cylinder with slits, through which one or more people could see sequential, simulated action drawings of acrobats, boxers, dancers, and jugglers, permitted an immobile viewer to have a machine-generated visual experience unfold over time.

Images Through Light: A Struggle for Permanence

As a new scientific and technological order emerged in the nineteenth century, the old ways began to wobble and fail from the pressure of new experiences, and innovative theories were needed to contain them. The invention of photography resulted from the application of quantifiable knowledge to fulfill a capitalistic cultural demand for a practical, automatic picturemaking system, based on light and optics. Its invention marked

the establishment of aesthetic, professional, and social practices governing how these pictures would be made, used, understood, and accepted.

Joseph Nicéphore Niépce [1765–1833] developed the first system for making permanent images through the action of light. Niépce (pronounced Nee-epps) was enthralled with lithography, but he lacked the drawing skills the process required. Originally, Niépce sought to automatically transfer an image to a lithography stone without having to draw it. In 1814, Niépce and his elder brother, Claude, shifted direction and undertook experiments to "spontaneously" create original pictures through the camera instead of copying previous existing images. This makes Niépce the first to actively pursue a process of making a permanent camera image.

By 1816 the major technical elements for the invention of photography were present in Niépce's experiments. Niépce was able to precisely describe to his brother Claude his first photographic procedures, with the use of cameras, biconvex lens, and diaphragm. These experiments, on paper sensitized with "muriate d'argent" (silver chloride), were abandoned by Niépce only because he obtained negatives. Niépce could temporarily "fix" the prints by washing them and was able to send some of these "epreuves" (prints) to Claude. Photographic historian Andre Gunthert remarks: "What is a print on sensitized paper, from an outdoor view, realized into a camera obscura, that could be sent by post and observed by a distant viewer, some days later, if not a photographic picture?"[19] If we accept this proposal, then 1816 can mark the beginning of what people would call photography. In 1822, Niépce discovered that bitumen of Judea, a lithographer's material made from asphaltum (a natural tar pitch), was sensitive to light. Niépce knew bitumen of Judea was soluble in lavender oil and would harden when exposed to light. His vital discovery was that bitumen of Judea loses its solubility in lavender oil after exposure to light. Niépce was able to take a paper engraving, place it in contact with the treated lithography stone, and expose it to sunlight for about two hours. He then "developed" it in a solution of petroleum and lavender oil, realizing the cultural dream of an "automatic" picture (although it was not camera-based). Today we would say that Niépce made a latent (unseen) image, that when developed formed a negative (reversed) image of the original.

As early as 1824, Niépce used this process to make his first actual camera image from nature on a lithographer's stone, which he referred to as a *point de vue*. There is still disagreement among historians as to when Niépce first made a permanent view from nature with a camera. Some state it was as early as 1822, others say it was 1824, and still other groups claim it was 1826 or even 1827. A book written by Niépce's son Isidore in 1841 indicates 1824 was the first time Niépce "achieved definitive fixing of images from the camera obscura onto his screen. Although these marvelous products were still imperfect, the problem had been resolved."[20] This remains a fluid situation, based on evidence and semantics, and this date may change. Niépce refined the process, coating a piece of pewter with bitumen of Judea dissolved in lavender oil, placing the plate into his camera obscura, and making an extended daylight exposure.[21] The improvements resulted in what is believed to be the oldest surviving photographically based camera made picture. The image is difficult to recognize; nevertheless, this picture (see Figure 1.7) can still convey its original sense of magical wonderment. Niépce wrote to his brother Claude:

> I succeeded in obtaining a *point de vue*. . . . from my workroom in Gras using my C[amera] O[bscura] and my largest stone. The image of the objects is represented with a clarity, an astonishing fidelity, complete with myriad details and with nuances of extreme delicacy. To get the effect, one must look at the stone from an oblique angle . . . and I must say my dear friend, this effect is truly something magical.[22]

By the late 1820s, Niépce had revised his working techniques to use silver-surfaced copper plates to deliver a problematic, one-of-a-kind positive image that lacked a full tonal range, had excessive contrast, was hard to see, and required extensive time to make. Because Niépce's camera images were not able to withstand the chemical treatment he devised to produce prints in ink, a process he named *héliogravures*,[23] he reconceptualized them as unique images, which he called *héliographs*. However, Niépce realized his process needed crucial revisions to be productive.

In 1825 Daguerre wrote to Niépce proposing they collaborate.[24] Daguerre's enormous diorama paintings were made in a realistic picturesque style by Daguerre and the artist Jean Boulton and took an enormous amount of time to produce. An automatic picturemaking device would save the diorama's creators both time and money. In December of 1829 Niépce and Daguerre agreed to share all knowledge, honor, and profit from their collaboration. Daguerre's assets included funding for research, determination, energy, experience in gauging public taste, friends in prominent places, and credibility and recognition as an artist with public acclaim. The pair worked separately and corresponded in coded letters. In the summer of 1833, with success still eluding them, Niépce died of a stroke. His son, Isidore Niépce [1805–1868], replaced him in the partnership, but he did not offer much new research. Daguerre, with the benefit of Niépce's knowledge, continued on his own.

By 1831, Daguerre had been taking highly polished, silvered plates, sensitizing them in the dark with heated iodine crystals vapor (forming silver iodine), and immediately placing them in the camera and making one-hour exposures in bright sunlight. This process deliv-

1.7 JOSEPH NICÉPHORE NIÉPCE. *View from His Window at Le Gras,* ca. 1826–27. Heliograph. Courtesy Gernsheim Collection, Humanities Research Center, University of Texas, Austin, TX.

ered, without development, a highly detailed negative image. A breakthrough came in late 1834, when Daguerre sensitized the plates *after* the exposure with heated mercury vapor. Although Daguerre claimed he discovered the usefulness of mercury accidentally, chemical ingredients like mercury have their roots in alchemical texts. Mercury was considered to be the dissolver, the active principal of things, making it a logical choice for experiments.[25] A whitish amalgam of silver and mercury formed on the plate where it had been exposed to light, making a fragile but incredibly detailed, camera-recorded image. When the shiny, mirror-like surface reflected a dark background, the picture was positive. When the background was bright or light-colored the picture appeared as a washed-out negative image. The mercury development had the beneficial side effect of reducing exposures to 20 minutes in bright sunlight. By late 1837, Daguerre was able to make the image stable by treating it in a strong bath of sodium chloride (table salt).

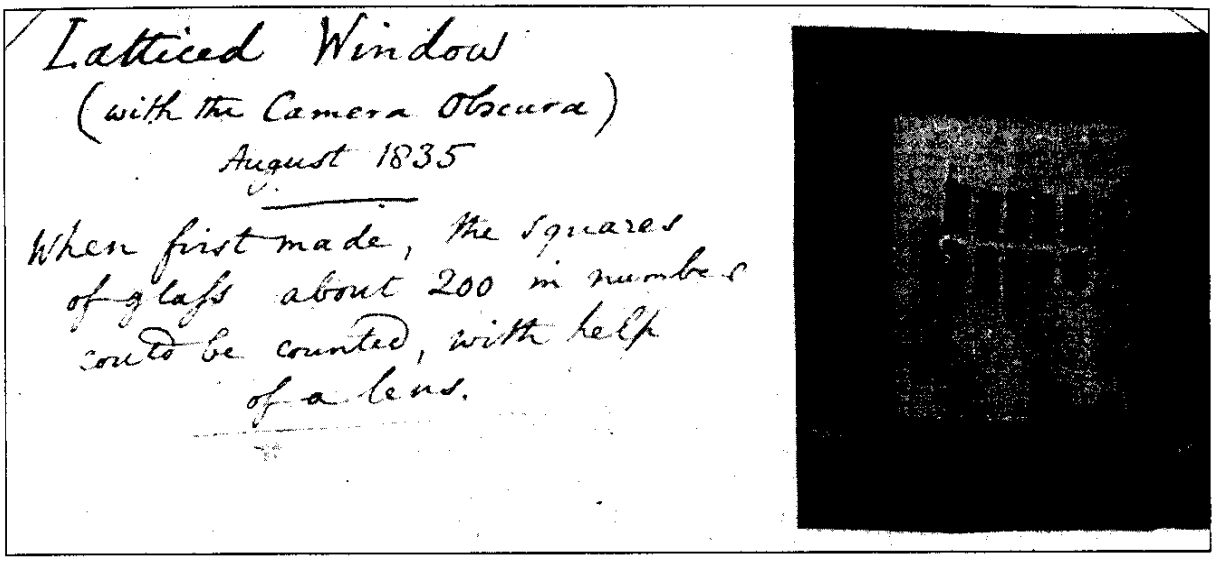
Daguerre and Isidore Niépce tried to market their secret process by subscription in 1838, which proved difficult; the effort was soon abandoned. Daguerre knew the acceptance of his invention depended not only on its merits but on shrewd promotion, and he recruited the ideal advocate, Count Francois Arago.[26] In January 1839, Arago put together a cunning accord with the French government that awarded lifetime pensions to Daguerre and Niépce. In return the French government would freely present the invention to the world (excluding France's arch-rival, England, where a licensing fee was required). The news of the invention, without any details, was out.

In February 1839, upon learning of the work, England's **Sir John Fredrick William Herschel** [1792–1871], an astronomer and chemist, informed Daguerre of his own discovery that hyposulphite of soda ("hypo") would "fix" his camera pictures and make them permanent. With this technical problem solved, Daguerre turned to the conceptual dilemma of whether his process actively made an image of nature or simply made it possible for nature to "imprint" an image of herself. Daguerre neatly addressed the issue by writing: ". . . the DAGUERREOTYPE is not merely an instrument which serves to draw Nature; on the contrary it is a chemical and physical process which gives her the power to reproduce herself."[27]

1.8 Attributed to LOUIS JACQUES MANDÉ DAGUERRE. Unidentified Man, 1837. 2¼ × 1¾ inches. Daguerreotype. Collection of Marc Pagneux, Paris. Courtesy Société Francaise de Photographie, Paris. This primitive, low-contrast daguerreotype, supposedly made two years before the official announcement of the daguerreotype process, could be the earliest example of a photographic portrait.[28] For reasons yet unknown, Daguerre kept his portrait experiments secret when he publicly announced his process and only referred to them in his private correspondence. While investigations and debate continue about the authenticity of this claim, it reveals that history is not a fixed entity but a changing and flowing process. It serves as a reminder that there is still much research to be done and that history is often filled with surprises.

On August 19, 1839, amid rhapsodic promises of "economic advantages, immense service to art, [and how it would] excel the works of the most accomplished painters, in fidelity of detail and true reproduction of the local atmosphere,"[29] Count Arago described Daguerre's process before an overflowing and electrified joint session of the Académie des Sciences and the Académie des Beaux-Arts. Despite the expensive equipment and supplies, "Daguerréotypomanie" struck with force, hitting educated, upper-class society and its growing voracity for realistic images.[30]

Daguerre published a manual and arranged for the manufacture and sale of lenses and wooden cameras, but his interest in daguerreotypes rapidly subsided and he made very few after 1839. Daguerre moved to the country, revamped his gardens, and made illusionist paintings. Was Daguerre exhausted, was he satisfied



1.9 WILLIAM HENRY FOX TALBOT. *Latticed Window at Lacock Abbey,* 1835. Photogenic drawing. Courtesy NMPFT/Science & Society Picture Library, London, England.

with his accomplishments? Did the fire of 1839 that destroyed his diorama along with most of his works and papers leave him unable to work, or did he not wish to compete with the rest of the world on improving his process? He died in 1851, in relative obscurity and without much money.

The news from across the Channel in January 1839 must have shocked **William Henry Fox Talbot** [1800–1877]. Talbot was an English gentleman (he inherited Lacock Abbey estate), scientist (he was elected to the Royal Society in 1832), and scholar (he earned a Master of Arts degree from Cambridge), who had independently devised a camera-based imaging process in 1834, using the light-sensitivity of silver salts. In Talbot's time, a well-educated person was expected to possess numerous skills, including the ability to draw. Talbot did not draw well and depended on optical devices for assistance. He later recounted his frustration with drawing, using the camera lucida and the camera obscura, during his honeymoon at picturesque Lake Como, Italy:

> And this led me to reflect on the inimitable beauty of the pictures of nature's paintings which the glass lens of the Camera throws upon the paper in its focus—fairy pictures, creatures of a moment, and destined as rapidly to fade away. . . . It was during these thoughts that the idea occurred to me . . . how charming it would be if it were possible to cause these natural images to imprint themselves durably, and remain fixed upon the paper![31]

In 1834, Talbot invented the *salted paper print*, a *printing-out process* that allowed him to make cameraless images of botanical specimens (see Figure 1.10), engravings, pieces of lace, and even solar photomicrographs.[32] For his first salted paper prints Talbot coated sheets of ordinary writing paper with sodium chloride, permitted them to dry, and then recoated them with silver nitrate, forming silver chloride. He had discovered that silver chloride was more sensitive to light than silver nitrate, which reduced exposure time. In Talbot's method the image and the paper became one, as there was no separation between the emulsion and its support.[33] In the printing-out process, the sensitized paper darkened swiftly when exposed to light. The image appeared spontaneously during exposure without chemical development. Once the image was complete, it was fixed, removing or inactivating the unexposed silver chloride. Talbot, like his predecessors, had difficulty fixing the image, eventually stabilizing prints with a strong solution of salt or potassium iodide. These images were negatives, and Talbot wanted direct positives. He solved the reversal problem by taking the negative image and reprinting it in direct contact with an unexposed, treated piece of paper, establishing a nascent negative/positive photographic method. Although he had a successful conceptual solution, Talbot's materials did not make a negative dense enough to produce a positive print with acceptable contrast and detail.

To increase the sensitivity of the paper, Talbot repeatedly brushed it with alternating coats of salted water and silver nitrate, then commenced to make his first camera negatives. Talbot used tiny cameras that his wife Constance, who also took and developed images, making her the first woman photographer,[34] referred to as "little mouse traps." These little instruments enabled the lens to focus the light onto a very small concentrated area, reducing exposure times to an hour or two. Talbot had set aside this work when the news of Daguerre's process jolted him back into action. In January 1839, Talbot hurriedly sent some of his work to England's Royal Society, stating:

> I obtained [with a tiny camera] very perfect, but extremely small [negative] pictures; such as without great stretch of the imagination might be supposed to be the work of some Lilliputian artist. They require indeed examination with a lens to discover all their minutiae. In the summer of 1835 I made in this way a great number of representations of my house in the country [Lacock Abbey]. . . . And this building I believe to be the first that was ever yet known *to have drawn its own picture.*[35]

Photogenic drawing, the term Talbot used to describe this early salted paper process, is the archetype for the silver printing-out papers of the nineteenth century. As it incorporated the textural imprint of the paper into the picture, it produced a broad tonal range that favored volume and shape over detail. Talbot's exposure times were excessive and the process appeared overly complex, involving a second series of steps to produce a finished image. The photogenic drawings also did not compete with the verisimilitude of the daguerreotype. When the two processes were first compared, the future seemed to lie with the daguerreotype; it met the aesthetic expectations of how a picture was supposed to look by supplying an easily recognizable trace of the subject.

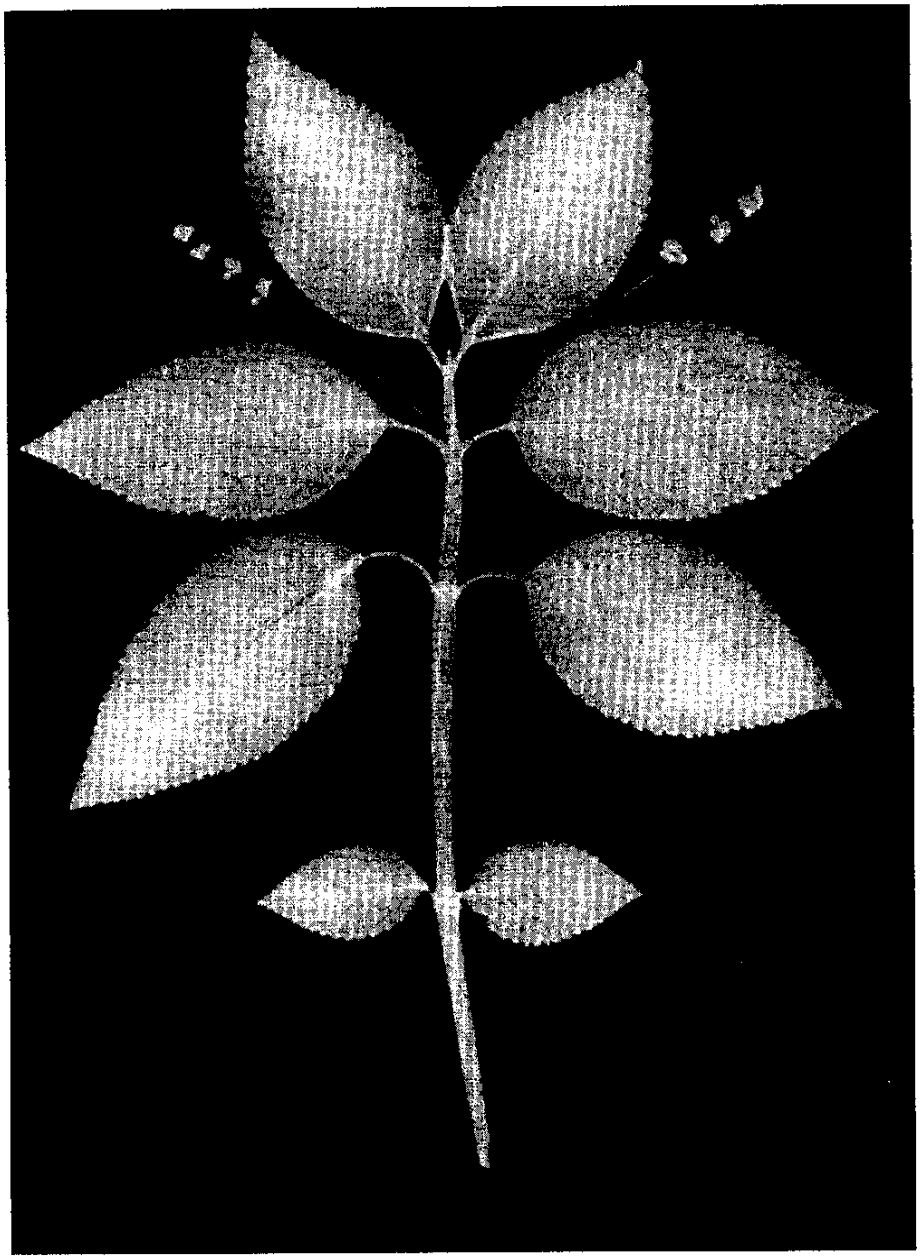
Daguerre, who came from the tradition of optical entertainment, was an experienced businessman who knew how to commercially promote his process. Talbot was a scientist and an intellectual with interests in astronomy, linguistics, literature, mathematics, and optics. His earliest photography publication, *Some Account of the Art of Photogenic Drawing* (January 1839),[36] indicates an awareness that the temporal premise of his process was different from other tracing methods; it brought together transitory and permanent elements. Talbot wrote that it took no more time or effort to record a simple subject than it did a complex subject. For Talbot photography's purpose was to depict a subject in a fixed compositional order from a lived moment, making time itself the ultimate subject of all photographs.

Talbot's regard for learning led him to devise a new procedure, *iodized paper*,[37] for making negatives. Talbot's breakthrough came accidentally. Having made an exposure that revealed no visible image, Talbot set it aside. When he looked at it later, an image had been formed. Talbot deduced that the gallic acid he brushed the paper with prior to exposure had acted as a developer, causing an invisible latent image (encoded by light) to appear. Talbot called his new method *calotype*, from the Greek words *kalos* and *tupos*, meaning "beautiful print." Calotype involved taking an exposed sheet of iodized paper into the darkroom and brushing it with gallic acid until a potent negative was developed. This negative was contact-printed onto unexposed, salted paper in sunlight to form a positive. The procedure formalized photography as a two-step process beginning with one tonally reversed (negative) image from which an infinite number of tonally correct positive copies could be produced. This concept formed the foundation for the silver-based photographic system still in use today: A camera with a lens was used to record an unseen image on light-sensitive material and chemically developed out to make a photograph.

Herschel had discovered in 1819 that hyposulphite of soda would dissolve silver salts. Learning of the work of Daguerre and Talbot, Herschel launched his own research into the light-sensitive properties of various silver halides and other chemicals. He made a negative image on paper, through a telescope, which he made permanent by treating with hypo. By freely sharing this information with the early pioneers, Herschel provided the missing link in all their processes, of how to make images permanent. Herschel, with a volatile, soaring imagination, is an ideal of learning: He set aside nationalism; openly shared knowledge; did not patent his findings; and did not commercially exploit his discoveries. Although Herschel never considered himself a photographer, his contributions shaped the founding concepts of photographic practice. He helped to establish basic terminology by consistently using the broader terms "photography" and "to photograph,"[38] instead of the individualistic descriptions of heliography and photogenic drawing, creating a sense of unity where there had been none. Herschel also introduced the terms "negative" and "positive" (based on the study of magnetism with which Talbot was also familiar) and "emulsion," helping institute a common nomenclature.

In 1839, Herschel told Talbot that waxing the paper negative after processing would make it more transparent and easier to print.[39] By the end of 1839, Herschel had invented a method of sensitizing a glass plate with silver halides and proceeded to photograph his father's telescope, making the first glass-plate negative, from which he made prints on paper. Next, he invented a method of making direct positive images on paper. Then, he prefigured the ambrotype by demonstrating how his glass negative could be backed with black opaque material to produce a positive image. He discovered silver bromide was the most light-sensitive of the known silver halides, pointing the direction for reduced exposure times that would make portraiture practical. He was able to record, but not fix, a natural color image of the spectrum, without the use of dyes or colorants, on silver chloride material, promoting the possibility of full-color photographs.

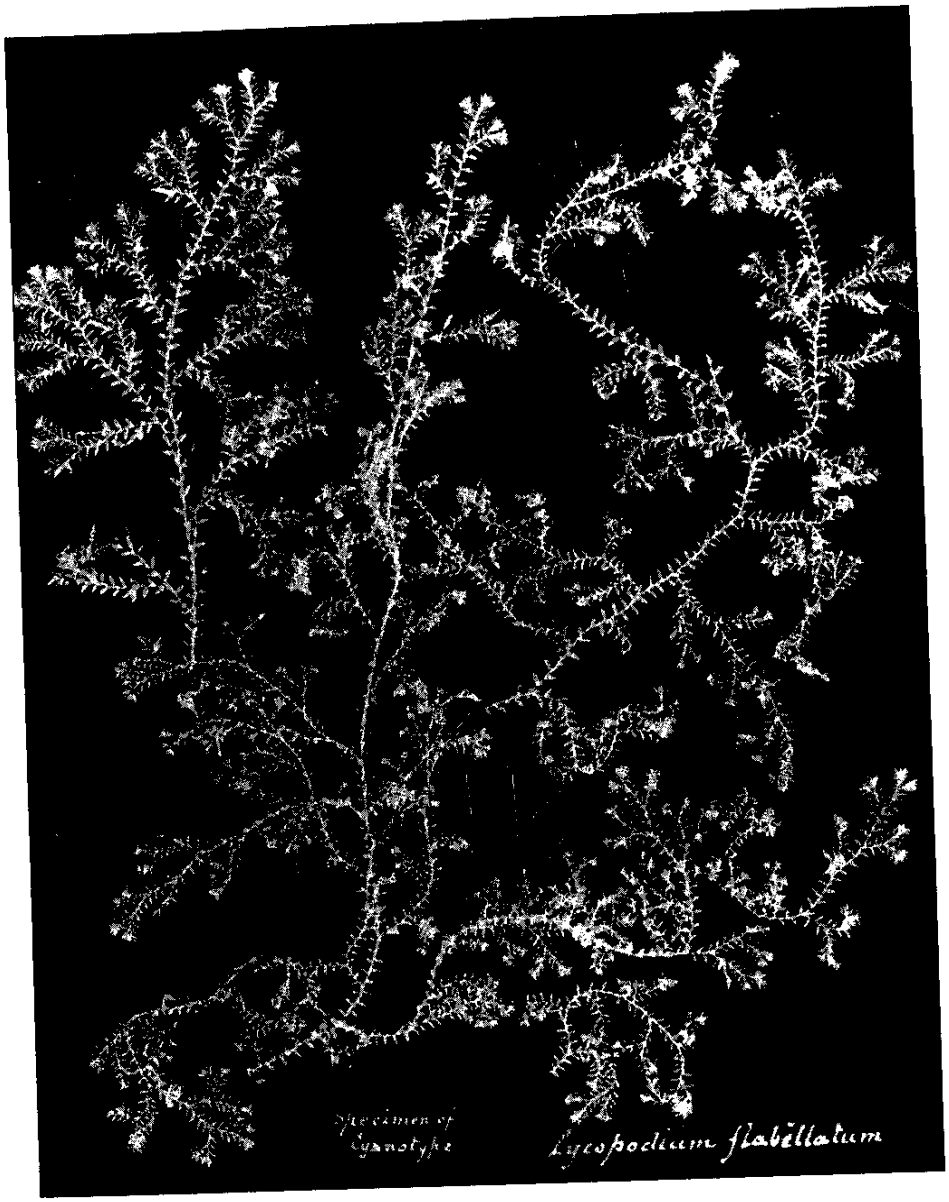
In 1842, Herschel invented the *anthotype*, a paper process sensitized with various plant juices that formed the final image by removing the unwanted parts of the emulsion through a bleach-out method, a forerunner of the silver-dye-destruction processes, such as ILFOCHROME, often used to make prints from transparencies. He rounded out the year with the *cyanotype* (blueprint) process, which he devised to make fast



1.10 WILLIAM HENRY FOX TALBOT. *Botanical Specimen,* 1839. Photogenic drawing. Courtesy University of Leiden, print room. The Netherlands.

copies of his notes, foreshadowing the electrostatic copier. In the cyanotype process iron salts were absorbed into the paper that was exposed to sunlight in contact with a negative or a drawing on tracing paper, producing an image in Prussian Blue which was fixed by washing in water (see Mungo Ponton's shadowgraphs on page 19). Cyanotype was used by amateurs after the introduction of small, flexible, roll film cameras, adopted by shipbuilders to copy their working plans, and used to copy line-based documents. In 1853 Herschel described methods to reduce images to microscopic size for easier storage and preservation and then enlarge them again when needed.

Anna Atkins's [1799–1871] *British Algae: Cyanotype Impressions*, privately published and distributed, was the first book to be printed and fully illustrated by Herschel's cyanotype.[40] Her effort was the earliest to use photo-based technology for producing cameraless photo-based pictures for scientific investigation, "predating by several months any of Talbot's commercially published camera-based photographic books."[41] Although artistic expression was not her main intent, the works show a strong aesthetic sense

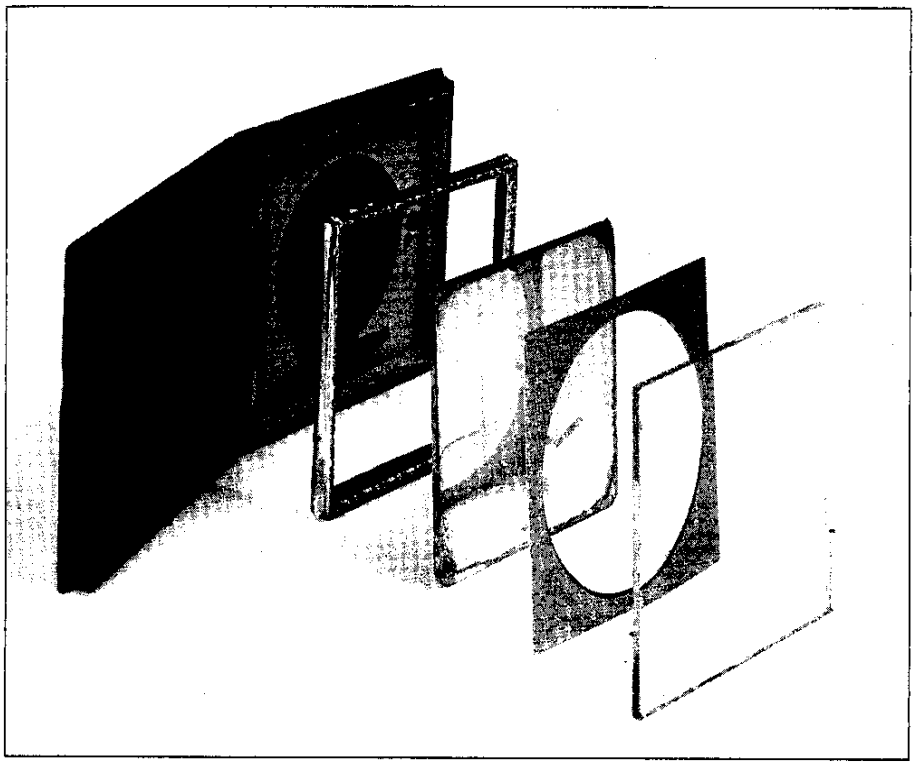


1.11 ANNA ATKINS. *Lycopodium Flagellatum* (Algae), 1840s–50s. Cyanotype. Courtesy Gernsheim Collection, Humanities Research Center, University of Texas, Austin, TX.

for translating three-dimensional forms into two-dimensional space. Her influence was limited to a tiny audience, due to the book's subject matter and the restricted means of production. In the introduction to her book, Atkins described her intent: "the difficulty of making accurate drawing of objects as minute as the Algae and Conferva, has induced me to avail myself to Sir John Herschel's beautiful process of Cyanotype, to obtain impressions of the plants themselves, which I have much pleasure in offering to my botanical friends."[42]

Other Distinct Originators

Niépce, Daguerre, and Talbot were not alone in their quest to make pictures directly by the action of light. In March 1839, **Hippolyte Bayard** [1801–1887], a French civil servant, independently obtained his first direct positives on paper in the camera. In May he showed examples to Count Arago, unaware that Arago was championing Daguerre's cause. Arago pressured Bayard not to publish, thus guaranteeing that Daguerre's process would receive all the attention. Bayard exhibited 30 pictures in Paris in June 1839 and was presented with a small cash award by the French government. However, by the time Bayard made the details of his process public, in February 1840, it was old news.[43] Bayard expressed his disappointment with a mini-series of self-



2.2 Construction of a daguerreotype: hinged, velvet-lined case, plate, frame, matte, and glass. Courtesy George Eastman House.

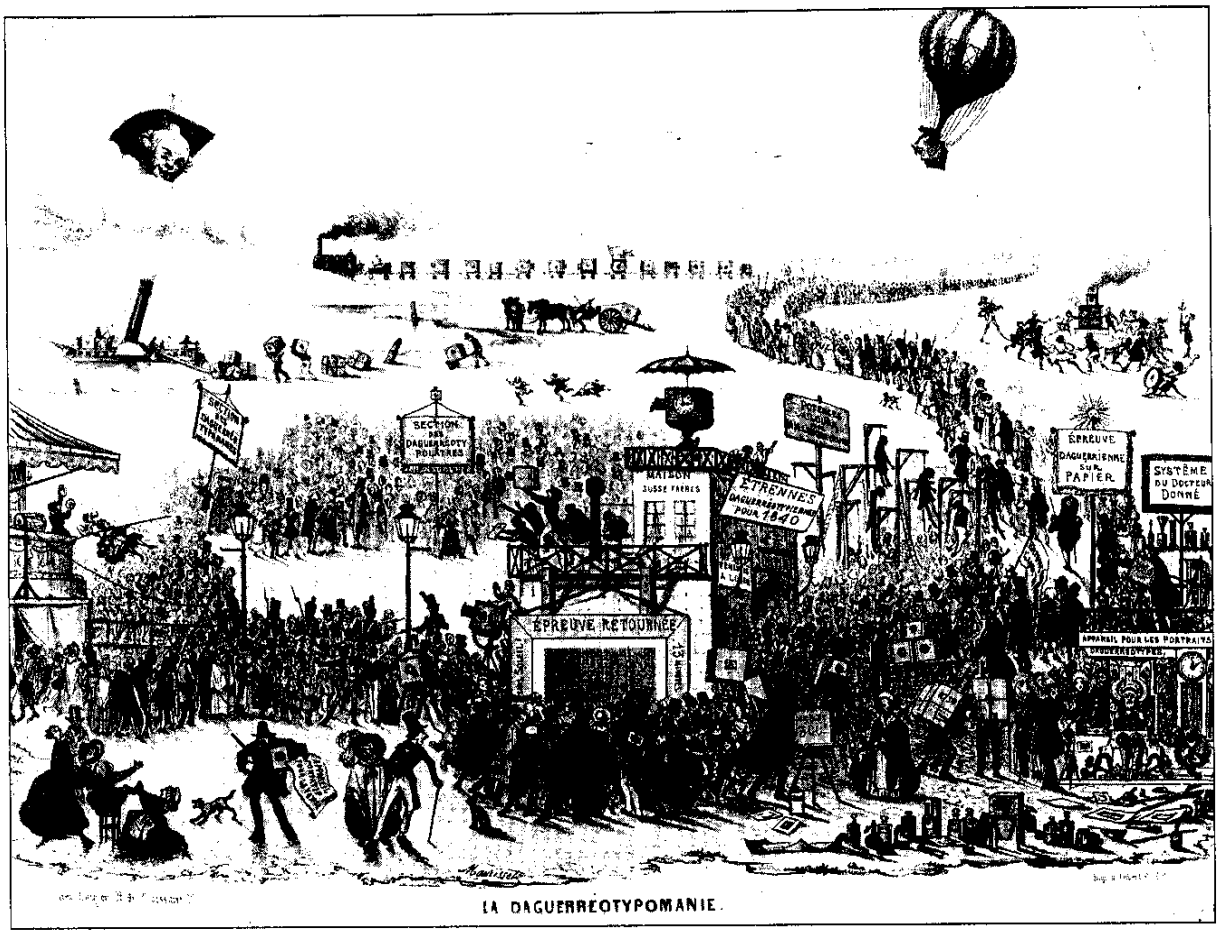
What Is a Daguerreotype?

In the winter of 1838–39, American inventor and painter **Samuel F. B. Morse** [1791–1872] was in Paris to demonstrate his electric telegraph and arranged a meeting with Daguerre.[1] After seeing Daguerre's process Morse wrote to his brother that daguerreotypes "resemble aquatint engraving; for they are in simple chiarooscuro [sic], and not in colors, but the exquisite minuteness of the delineation cannot be conceived. No painting or engraving ever approached it. . . . The impressions of interior views are Rembrandt perfected."[2]

The daguerreotype is a physical container of information, having the properties of both a two-dimensional image and a three-dimensional object. The daguerreotype does not look or feel like a photograph, nor is it made like a photograph. Its image rests on highly polished copper plate and its brilliant mirror-like silver surface provides unparalleled visual depth—this attribute also makes viewing problematic. A daguerreotype must be viewed from a specific angle or its image will appear as a negative, that is, tonally reversed. Above all, each image is unique. The daguerreotype's greatest technical advantage is its ability to render incredible detail. Its shimmering surface is physically luxurious; and it can beautify an ordinary subject by anointing it with a sense of visual splendor. As the image can seem to rise from the surface, the daguerreotype can give a sense of a subject's three-dimensionality. The daguerreotype's subtle perfection and ephemeral personality, its sparkling, gemlike quality, lend it a sense of magical realism.

A daguerreotype's mirrored surface includes a viewer in the image. One can adjust the viewing distance so that the viewer's face and the face of the sitter in the portrait synchronize. As the eyes of viewer and subject overlap, one can experience a sense of traveling backward and forward in time and space. The daguerreotype's delicate surface is protected in a small, closed case, making the viewing experience intimate and private. Designed to be held in one's hand, not seen on a wall, a daguerreotype can create a beguiling sense of tension as it flickers between the positive and the negative surface image. It can simultaneously convey two views of a person, providing an extra dimension into the character of the sitter.

Details of the daguerreotype process spread swiftly after Arago's public announcement, but its long exposure times meant that its finest initial



2.3 THÉODORE MAURISSET. *Fantasies: La Daguerreotypomanie*, December 1839. 9⅝ × 14⅛ inches. Hand-colored lithograph. Courtesy George Eastman House.

subjects were immobile. Daguerreotyping was not a spontaneous act. A daguerreotype was planned and *made* rather than casually *taken*. Early daguerreotypes recorded premeditated poses constructed over many minutes of exposure time. This built-in sense of time was evident in the daguerreotype and encouraged viewers to linger, to study, and to think about the image.

The daguerreotype immediately revealed the potential for photographic processes to replace hand-done procedures carried out by skilled artisans. Within days of its public announcement, *Le Lithographe* printed a lithograph of the Cathedral of Notre Dame in Paris drawn from a daguerreotype view, forging a new alliance between photography and printmaking. Young America was especially eager for views of historical European sites, and an immediate market developed for cultural icons. Daguerreotype views of famous places in Europe, the Middle East, and America were traced and transferred onto copper plates by the *aquatint process*[3] and published in Paris between 1841 and 1843 as *Excursions Daguerriennes: Vues et Monuments les plus remarquables du globe*. Within a few years, most major natural formations, such as Niagara Falls, and man-made monuments, including the Kremlin, had been daguerreotyped.

The Daguerreotype Comes to America

On September 20, 1839, Daguerre's instruction manual for his process arrived in the United States, and a week later Samuel Morse exhibited his own view of New York's Unitarian Church (now lost). Within two weeks the first American portraits, with the sitter's eyes shut to diminish movement caused by blinking during the long exposures, had been made. John W. Draper [1811–1882], a chemistry professor at New York University, dusted his sister's face with white flour (to increase light reflectance and reduce the exposure time), made her daguerreotype, and sent it to Sir John Herschel in England. Draper wrote: "I believe I was the

2.10 JOHN PLUMBE, JR. *Portrait of a Man Reading a Newspaper*, ca. 1842. Sixth plate daguerreotype. Courtesy J. Paul Getty Museum, Los Angeles.

dio makes it difficult to determine who was responsible for many aesthetic and technical improvements. A side effect of this method of working was to rupture the concept of a single author who directed, supervised, and took credit for the work produced in a studio setting.

Under a skylight studio referred to as the "operating room," the Southworth and Hawes group created bold and direct portraits of Boston's cultural élite (see Figure 2.11.) Ignoring stereotypical poses, they demonstrated how a daguerreian portrait could be more than a detailed physiographic map and could speak in its own physically rich and often sensual language. Southworth commented:

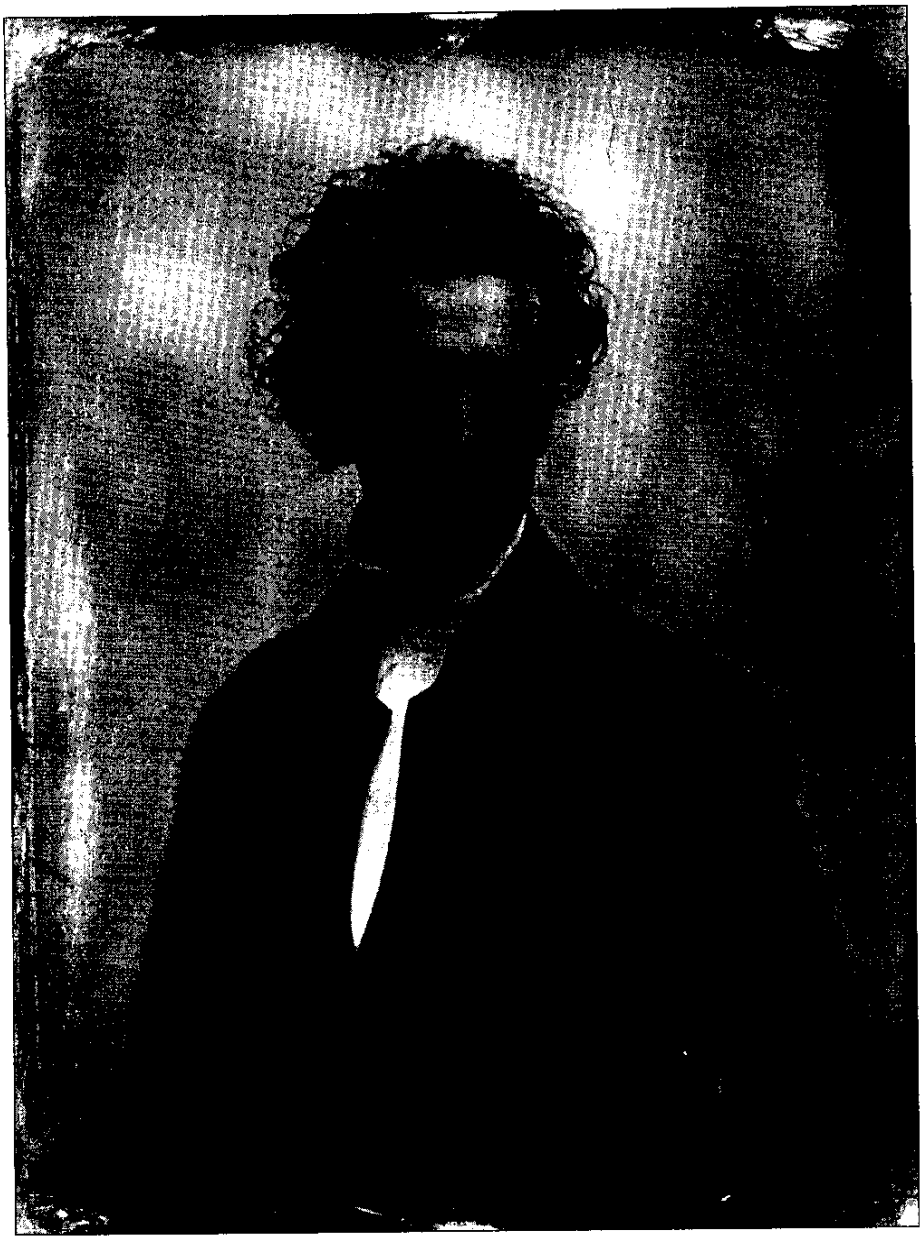
> It is required of and should be the aim of the artist-photographer to produce in the likeness the best possible character and finest expression of which that particular face or figure could ever have been capable. But in the result there is to be no departure from truth in the delineation and representation of beauty, and expression, and character.[20]

Mathew B. Brady [1823–1896] helped pioneer the celebrity portrait. He opened his first Daguerrean Miniature Gallery in New York in 1844 and became an expert at utilizing daguerreotypes in public relations. Brady sent his daguerreian celebrity portraits and the interior views of his fashionable gallery to the new picture papers, where they were converted into wood-engraved illustrations for publication. This free publicity not only promoted his portrait business but signaled the role daguerreotypes would play in the budding mass communications arena by increasing the number and type of images in public circulation. Brady undertook his first historical project in 1845 by making daguerreotypes of American public figures and having a selection of images reproduced in *Frank Leslie's Illustrated Newspaper* so they could be seen by a wide audience. In 1850 Brady continued to unite portraiture, history, and publishing through his *Gallery of Illustrious Americans*, a collection of 12 lithographs, based on his portraits, that included Daniel Webster, John Calhoun, Henry Clay (see Figure 2.12), and John James Audubon. *Humphrey's Journal of the Daguerreotype*, June 15, 1853, describes the atmosphere of manufactured elegance at Brady's Broadway studio where, for a modest fee, one could fabricate a vision:

> The floors are carpeted with superior velvet tapestry, highly colored. . . . The walls are covered with satin and gold paper. The ceiling frescoed, and in the center is suspended a six-light gilt and enameled chandelier. . . . The harmony is not the least disturbed by the superb rosewood furniture—tête-à-têtes, reception and easy chairs, and marble-top tables, all of which are multiplied by mirrors from ceiling to floor. Suspended on the walls, we find Daguerreotypes of Presidents, Generals, Kings, Queens, Noblemen—and *more nobler men*—men and women of all nations and professions.

The Art of the Daguerreian Portrait

Before the daguerreotype most portraiture was done by artists specializing in hand-size miniatures. Many artists, afraid the daguerreotype would destroy their livelihood, mocked the new form as third rate and its practitioners as untalented. This fear voiced itself in one of photography's most frequently quoted aphorisms, that of the artist Paul Delaroche who has been



2.11 SOUTHWORTH AND HAWES. *Rollin Heber Neal* (Pastor of the First Baptist Church, Boston), ca. 1850. 8½ × 6½ inches. Whole plate daguerreotype. Courtesy George Eastman House.

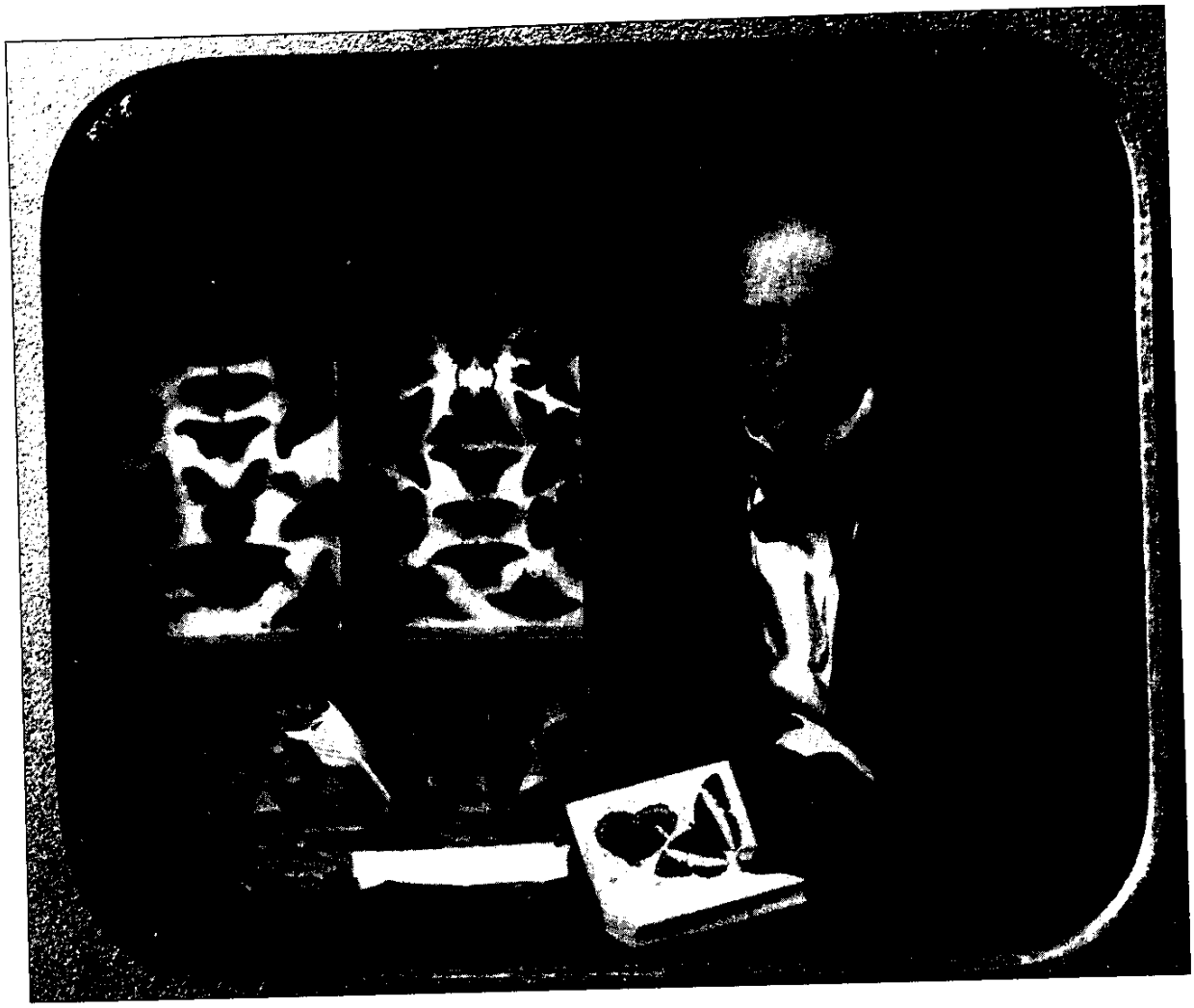
misquoted in numerous texts as stating upon seeing his first daguerreotype that painting was "dead."[21] J. J. J. Grandville's *Scenes from the Private and Public Life of Animals* (1842) lampooned this anxious outlook with the tale of a budding portrait painter turned daguerreotypist. The story tells of a talented monkey studying painting in Paris, who discovers that creativity, rather than imitation, is needed to be an artist. To overcome his lack of imagination, the monkey buys a daguerreotype outfit and returns to his native Brazil to open the first daguerreian portrait gallery. He becomes fashionable when all of the jungle society come to have their pictures made. At the pinnacle of success, he is ruined by the narcissism of a king and in despair throws himself into the Amazon River.

Despite the mockery, portrait miniaturists saw their sales plummet. Some, such as Carl Stelzner [1805–1894] of Germany, became daguerreotypists; the French painter J. Mansion joined Antoine Claudet's London studio, where he colored and retouched daguerreotypes. Many artists who continued to make miniatures incorporated the photographic process into their working methods. Instead of drawing a portrait by

2.12 MATHEW B. BRADY GALLERY. *Henry Clay*, before 1852. Copy on a collodion plate of a daguerreotype. Courtesy The Library of Congress, Washington, D.C.

hand, they painted directly on top of a daguerreotype image. Other portrait painters used daguerreotypes in lieu of their subject to lessen the misery of having a person sit for a portrait, but by 1860, miniature painting was defunct.

Since there was no formal school or aesthetic of photography, the "art" was passed from one practitioner to the next. As the primary studio agenda was to make money, technique rather than aesthetics was stressed. Individuals like Morse were important because they taught others, including Southworth, Brady, and Edward Anthony, who then played key roles in establishing an American photographic practice. Sophisticated studios, especially Brady's, wanted to fashion poses that revealed more than the outer facade of a sitter. Brady and other studio owners looked for inspiration in such publications as Johann Kaspar Lavater's *Essays on Physiognomy* (1789), which encouraged artists to discover "the interior of Man by his exterior—of perceiving by certain natural signs, what does not immediately attract the senses."[22]



2.13 UNKNOWN PHOTOGRAPHER. *Butterfly Collector*, ca. 1850. 2¾ × 3¼ inches. Sixth plate daguerreotype. Courtesy George Eastman House.

Most mass market studios, like Plumbe's, combined capitalism and democratic experience: Everyone got the same product, leading the public to think the photographic process was *automatic*. An operator's job was simply to allow each sitter's portrait to be directly recorded by the action of light, giving authorship to the sitter and not the operator. Such daguerreotype studios chronicled ordinary faces, which added up to a synthesized national personality. After viewing hundreds of daguerreian portraits one is struck by the plain ordinariness of the sitter's faces rather than their exceptional beauty. A new portrait genre appeared emphasizing everydayness as its theme, with tradespeople such as cobblers and seamstresses commemorating their labors and the middle class often showing off their possessions (see Figure 2.13).

Daguerreian Portrait Galleries and Picture Factories

In 1853, it was estimated that 1,000 New Yorkers, including women and children, were working in the photographic trade. There were only a few women operators, but many were engaged behind the scenes, especially in hand-coloring plates. Thirty-seven of New York's reported 86 daguerreian studios were located on a single stretch of Broadway. People strolling down Broadway would have seen studio banners and display cases tempting them to walk up the stairs to have their portrait made. Many of the galleries followed the lead of Edward Anthony's *National Daguerreotype Miniature Gallery* and displayed celebrity portraits, to give people the chance to see popular figures—and to encourage them to buy a duplicate portrait or have one made of themselves (see Fig-

CHAPTER THREE

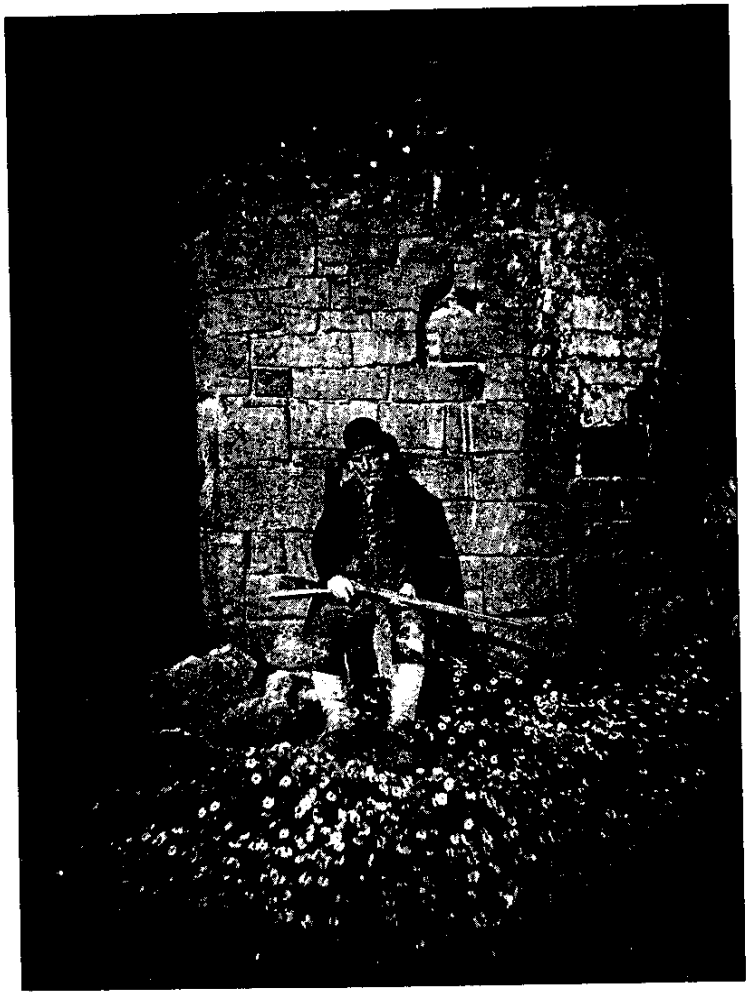
Calotype Rising

The Arrival of Photography

The Calotype

The introduction and acceptance of new mechanically-based devices of visual representation, began to alter the viewing content and expectations of imagemakers and the public. Lithography, mezzotint,[1] and wood engraving fueled the remunerative market for the mass production of prints. Daguerre's one-step, direct-positive image-making method was an ideal fit for these visual conceptions. The possibility that Talbot's two-step, negative/positive print system was a more advantageous process was not at first seriously considered. Daguerre's necromancy had mesmerized viewers with its detailed, miniature, monochrome reflections of the world. Even Talbot's friend Herschel stated that "Certainly they [daguerreotypes] surpass anything I could have conceived as within the bounds of reasonable expectation."[2] Daguerre also held the economic and political advantage, as the British government offered Talbot neither a pension nor honors

T. B. JOHNSON.
Wattie Mure, ca. 1855. 7 × 5 5/16 inches. Salted paper print.
Courtesy George Eastman House.



3.1 WILLIAM HENRY FOX TALBOT (or one of his circle). *The Game Keeper,* ca. 1843. 7⅛ × 5¾ inches. Salted paper print from a waxed calotype negative. Although this image has been attributed to Talbot, ascertaining the identity of who actually made many early photographs can be difficult. Dr. Larry Schaaf, a Talbot scholar who has cataloged some 15,000 Talbot and Talbot-related photographs, doubts that this image was made by Talbot.[3] Regardless of who made this image, its distinctive format and style (not present in Talbot's known work) reveals the versatility of the calotype process and how well it could be used to produce artistic *effect.* Courtesy Smithsonian Institution, National Museum of American History, Division of Photographic History, photo no. 81–10262.

for his discovery. Talbot had to advocate his own cause, patenting his process in February 1841 and demanding a high license fee, which added to its production cost. His patents not only proved unprofitable, but they also had the deleterious side effect of inhibiting the growth of photography in England by confining its commercial use to those few with capital to invest.[4] Later in 1841, Talbot contracted with Antoine Claudet, who had opened a London daguerreotype studio in June, to offer calotype portraits, but his success was negligible. The calotype process was extremely slow, impure chemicals gave uncertain results, prints often faded, and the highly visible paper fibers produced a soft and grainy look that many found objectionable. The process was considered unreliable, and as a consequence nobody wanted calotype portraits. Nevertheless, the limitations of the daguerreotype, especially in terms of reproducibility, started to become apparent. Upon reconsideration, people realized that Talbot's linkage of light and paper furnished a conceptual and technical vault that united printmaking and science. This in turn provided an engine for mass-produced pictures that Europeans had been developing since the Renaissance, making art more "accurate" and accessible and causing the daguerreotype to finally become obsolete.

The initially perceived "faults" of Talbot's negative/positive system gave it a versatility that proved to be its strength. The calotype's visual softness neutralizes singular detail in favor of the universal. Its matte surface image, with a limited tonal range, makes contrast and mass, and not sharp line, the major visual impulse. In nineteenth-century academic art theory, the intense detail of the daguerreotype was considered detrimental to *effect.* The calotype excelled in *effect,* the emotional atmosphere created by the artist's handling of *tonal masses* (colored areas) as distinguished from linear elements. As photographers considered the artistic potential of their medium, they adopted these painterly concepts, considering photographic detail a mechanical imprint, and tonality as the hand of artistry.

The calotype's flexibility allowed photographers to manipulate the image before a print was produced. Albumen and iodizing solutions were applied to the paper before exposure to increase its light sensitivity. Waxing the negative with beeswax made the paper more transparent and increased visual detail. Retouching was common; pencil, graphite, and watercolor were used to remove surface defects, to add highlights, and to create points of visual emphasis. India-ink was commonly applied to black out the sky portion of a negative so it would print as a clear blank space. Long exposures did not stop movement, and blurry clouds and/or dense and uneven skies gave a mottled effect. Blacking out the sky also hid the imperfections of the paper matrix that

3.2. WILLIAM HENRY FOX TALBOT. *The Open Door,* 1843. Salted paper print from a calotype negative. Plate VI of *The Pencil of Nature* (London, 1844–46). Courtesy Science Museum and Society Picture Library, London, England.

were visible in areas that had a uniform appearance. India-ink was also used to eliminate some parts of the camera-made image and to add others, such as mountains on a flat horizon.

The calotype was grounded in the Romantic aesthetics of its generation, which was at its zenith in 1800, the year of Talbot's birth. Romanticism prized emotional experience; it was a reaction against the established state, Church, and rational Enlightenment thought and a manifestation of the political spirit of the American and French revolutions.[5] The pictorial concepts of the beautiful and the sublime grew to include the picturesque landscape.

The *sublime,* like a storm on the ocean, can trace its origins to awe, terror, and vastness, while the *beautiful,* a calm harbor sunset, situates its lineage within the organization of society, making them opposite concepts that cannot commingle. Characteristics of the sublime include astonishment, darkness, infinity, solitude, and vastness. It features intense directional light and a dynamic interaction between highlights and shadows. The beautiful is less powerful, being delicate, rounded, smooth, and well-proportioned, and favors a soft, diffused light. It was admirable, but it was not capable of arousing great passion.

The Romantic ideal emphasized the *picturesque* and featured rushing brooks, overgrown foliage, and tumbledown structures. It began in England during the late eighteenth century as a method for examining nature and as a guide for making gardens. It provided a construct for seeing what in nature would make a good picture and gave viewers a prescribed route through the picture. Detail and texture were of prime importance, and people were often incorporated into a picture as a pictorial device to help viewers negotiate the space and find their place in nature. Talbot's *Sun Pictures in Scotland* (1845) are a pictorial tribute to Sir Walter Scott's Romantic concepts of the gothic and picturesque, featuring disintegrating structures, dramatic use of light emphasizing highlight and shadow areas, secluded settings, and serpentine, undisturbed vistas. Their warm, luxurious tones and soft delineation of form naturally express Romantic pictorialism.

3.3 Talbot's photographic printing establishment at Reading, ca. 1845. Courtesy Gernsheim Collection, Humanities Research Center, University of Texas, Austin, TX.

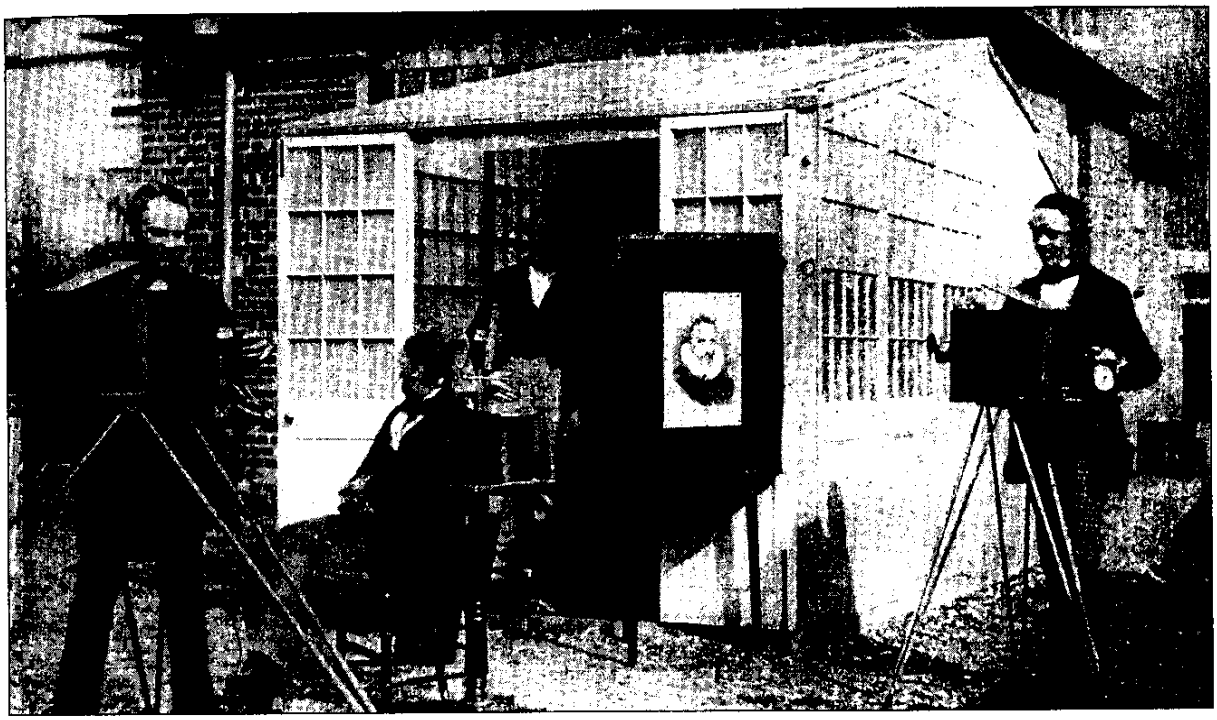
Early Calotype Activity

Talbot photographed the daily activities of his estate, family, and servants, providing a model for future backyard snapshooters. During his travels in Britain and Europe during the early 1840s, Talbot made as many as twenty calotypes a day, showing his enthusiasm as well as the ease with which calotypes could be made. The negative material could be prepared the evening before, freeing the calotypist from needing a darkroom for every exposure. While traveling on business, Talbot would develop his paper negatives each evening and mail the results to Lacock Abbey. There they were printed by Constance Talbot, making her the first woman photographic processor, and Nicolaas Henneman, Talbot's Dutch valet, photographic assistant, and business manager.

Talbot's *The Pencil of Nature* was the first book to be fully illustrated by calotypes (earlier he had issued a pamphlet with a calotype on the cover).[6] It was published by subscription, with fewer than 300 copies released in six installments between June 1844 and April 1846. *The Pencil of Nature* realized Talbot's dream of "every man being his own printer and publisher" and of "poor authors [making] facsimiles of their works in their own handwriting."[7] *The Pencil of Nature*, the progenitor of the photographically illustrated book, promoted Talbot's calotype and provided the first commentary by the inventor of photography on the aesthetics of the medium. The introduction to *The Pencil of Nature* traces the invention of the process, and the succeeding twenty-four sections illustrate and discuss its possible applications, including artistic expression, documentary uses, art duplication, scientific illustration, and study and teaching assistance. The book's calotypes feature architectural studies, still-life compositions, and works of art alongside a page or two of text discussing the purpose of each image, setting a precedent, derived from printmaking, for pairing photographic images with words. Talbot chose not to make only a picture book, but used words to provide the image with a directed context, indicating an awareness of how an image's meaning can be affected by the text accompanying it.

Talbot's image selections illustrate his belief that subject matter is "subordinate to the exploration of space and light."[8] Three plates show that the calotype excelled in such explorations while securing the ethereal nuances of light reflected by objects. In the two plates of *The Bust of Patroclus*, Talbot shows the medium's pictorial possibilities and creative control involving choice of angle of view, type of light, and scale. In the text to *The Open Door* (see Figure 3.2), Talbot compares vernacular photographic realism, the forerunner of the snapshot, to Dutch genre painting, and reveals his allegiance to the Romantic picturesque landscape conventions:

> We have sufficient authority in the Dutch school of art for taking as subjects of representation scenes of daily and familiar occurrence. A painter's eye will often be arrested where ordi-



nary people see nothing remarkable. A casual gleam of sunshine, or a shadow thrown across his path, a time-withered oak, or a moss-covered stone may awaken a train of thoughts and feelings, and picturesque imaginings.[9]

Other pictures reveal the calotype's ability to trap "a multitude of minute details which add to the truth and reality of the representation,"[10] that may have even gone unobserved by the photographer. His book also foreshadows the future strength of photographic image-making in its ability to produce multiple (positive) prints from a camera-made matrix (negative).

Talbot founded his own photographic printing factory (the first photo finishing lab), The Talbotype Establishment, in Reading in the fall of 1843. It was a multipurpose facility, producing prints for books and reproducing prints of art objects and valuable documents that were sold through retail outlets. Here paper negatives were placed in contact frames with unexposed silver chloride printing-out paper and exposed, for a couple of minutes to over an hour, in direct sunlight until an image appeared. Afterwards the prints were fixed, washed, and dried. As production procedures were refined, Talbot was able to make thousands of original prints, which were tipped-in (pasted) to illustrate *The Pencil of Nature*.

Here one could also have a portrait made, take lessons, purchase a license to practice, buy equipment and materials, and make arrangements to use the printing and distribution network. These services, plus systematic distribution methods, created standards of practice, bringing together aesthetic ideas and technical inventions that had defied standardization.

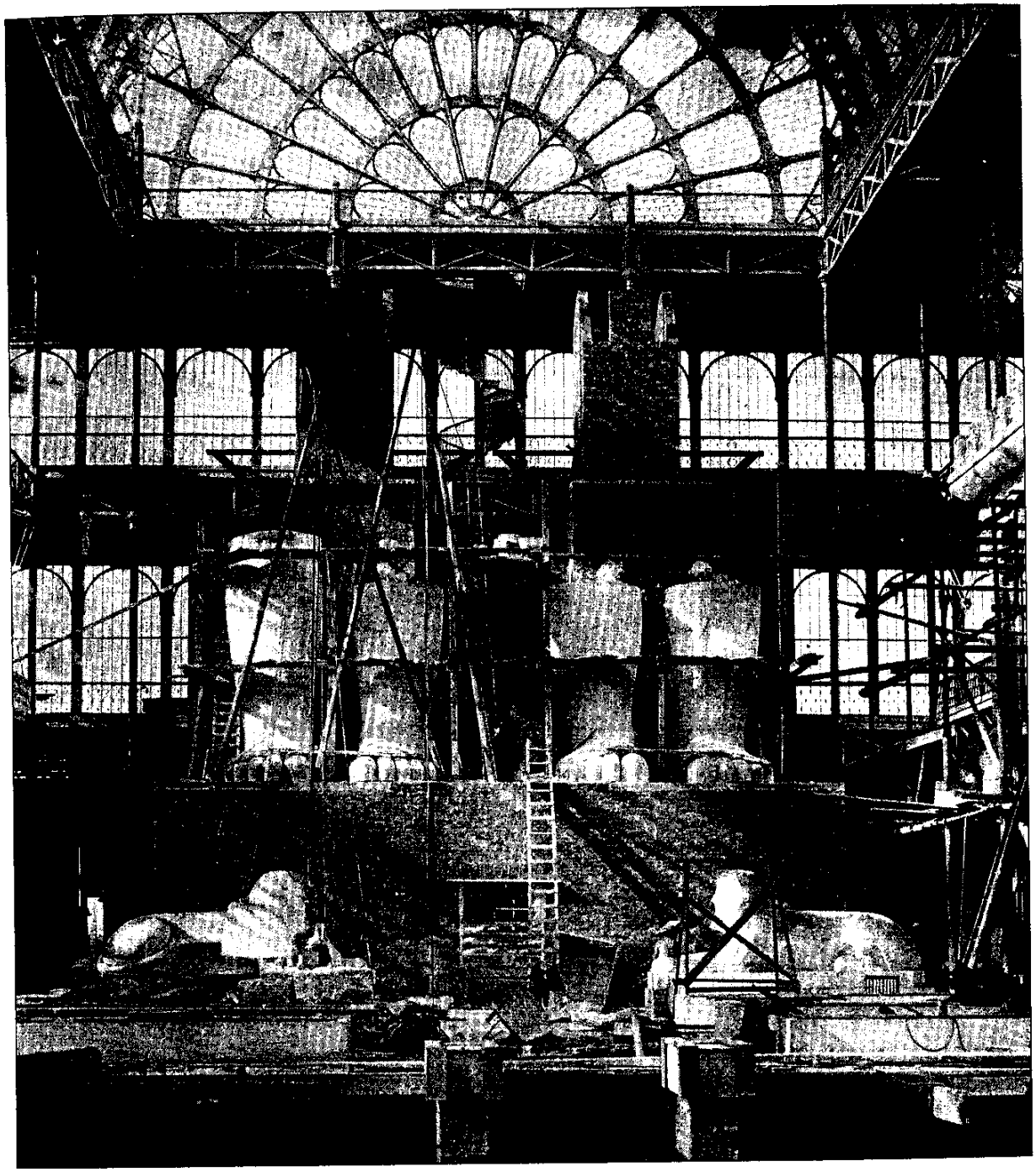
However, the high cost of producing a limited edition calotype album or book doomed the calotype in the new, congested domain of commercial printmaking.[11] The search for a photo-based process capable of reproducing editions of hand-created art at affordable prices led to the invention of numerous processes, the first being the *cliché-verre*. The cliché-verre was devised shortly after Talbot announced his method by three English artists and engravers, John and William Havell and J. T. Wilmore, who exhibited prints from their method in March 1839. The cliché-verre combines the handwork of drawing with the action of light-sensitive photographic materials to make an image. Originally a piece of glass was covered with a dark varnish and permitted to dry. A needle was utilized to etch through the varnish to the glass. The glass was used as a negative and was contact-printed onto photographic paper. The process was later modified by Adalbert Cuvelier, using the wet-plate process.

High costs and technical difficulties prevented Talbot from receiving any economic benefits from his discoveries. The first prosperous artistic and economic fusion of the calotype was achieved through the collaboration of painter **David Octavius Hill** [1802– 1870] and chemist **Robert Adamson** [1821–1848] in Scotland, where Talbot did not patent his method. Hill was commissioned to paint a portrait of the Church of Scotland's members, but he did not know how to obtain the likeness of these 474 people who would be in Edinburgh only for a brief period. Sir David Brewster introduced Hill to young Adamson, who was instructing Brewster in the calotype process. The intersection of diverse ages, backgrounds,

3.4 DAVID OCTAVIUS HILL AND ROBERT ADAMSON. *Lady Elizabeth Eastlake* (Miss Rigby), ca. 1845. 7⅞ × 6 inches. Salted paper print from a calotype negative. Courtesy George Eastman House.

and interests produced a blend of aesthetic and technological abilities that made Hill and Adamson's calotype portrait studies for Hill's painting among the finest ever done. Hill's giant painting, *Disruption,* not completed until 1866, used the eye of the camera to replace the eye and hand of the artist in making preparatory sketches for a major painting. But its unprocessed agglomeration of figures reflects the difficulty of translating the unique physical effects of the photographic medium into paint.

Their calotype portraits, made under Hill's direction, reflect the artistic and stylistic concerns of Dutch genre and Scottish portrait painting. Generally, the compositions are direct and simple, with each person posed alone, outside, in daylight.[12] Hill diffused the deep shadows that the summer sunlight produced by bouncing light into the scene with a concave mirror, which made for dramatic *chiaroscuro* lighting (a pictorial treatment favoring the play between light and shadow). Hill and Adamson understood that the calotype was matchless at revealing a subject's interaction with the surrounding space and that the lack of specific detail could amplify a subject's specific characteristics. In a letter written in 1848 Hill said:



3.5 PHILIP H. DELAMOTTE. *Building Up the Colossi of Aboo Simbel* (London, 1855). Salted paper print from a calotype negative. Plate #95, Volume II of Photographic Views of the Progress of the Crystal Palace, Sydenham. Courtesy Collection of the Juliette K. and Leonard S. Rakow Research Library of the Corning Museum of Glass, Corning, NY.

The rough surface, and unequal texture throughout of the paper is the main cause of the Calotype failing in details, before the process of Daguerreotypy—and this is the very life of it. They look like the imperfect work of a man—and not the much diminished perfect work of God.[13]

Hill and Adamson expanded their efforts and soon were doing general portraiture in their outdoor studio and among the monuments of the Greyfriars cemetery, producing some 1,500 works. They also flawlessly

3.6 SIR WILLIAM JOHN NEWTON. *Burnham Beeches,* ca. 1855. 6⅝ × 8 13/16 inches. From Album: Pictures of the Photographic Exchange Club. Albumen silver print from calotype negative. Courtesy George Eastman House.

composed a series of seemingly casual portraits of the fishing people in nearby Newhaven before Adamson suddenly died in 1848.

In the George Eastman House collection of Hill and Adamson's work, the fingerprints of the creators can be seen along the edges of many of their prints, along with the watermark of the J. Whatman "Turkey Mill" paper.[14] The softness of the calotype, juxtaposed with the hard-line quality of the daguerreotype, invites a subjective reading of the image. Since the calotype portrait is two-dimensional, one does not have the sensation of merging with the subject in the picture that is possible with a three-dimensional daguerreotype. A viewer becomes detached, more of a witness than an active participant. Hill and Adamson made the calotype's suppression of detail an asset. There is a feeling of intimacy and subtle beauty in their tight expressionistic compositions, along with an overwhelming sense of atmosphere as light itself becomes a subject. Hill and Adamson realized that the person in front of the lens was not always the only subject of the picture.[15] They knew that good photographs were the result of conscientious photographers, of what modern photographers call *previsualization,* the awareness that one cannot just point the camera at a subject and expect a miraculous representation to come forth. A good calotype was the result of controlling the process, being acutely aware of the light, constructing a vision, and knowing how it would look photographed. Hill and Adamson understood the subjective nature and the limitations of the calotype. While their images are dependent on established styles, their thoughtful, shadowy pictures are alive and speak directly of the inner, as opposed to the outer, characteristics of their subjects.

London's Crystal Palace Exhibition of 1851 featured the international splendors of artistic, scientific, and technical progress (see Figure 3.5). It included about 700 camera images from six countries, which proved jarring to the small British photographic community. The Americans took the top honors in daguerreotypes, and the French were making such high-quality calotypes that Hill and Adamson received only an honorable mention. This was intolerable to Britain's gentlemen-amateur calotypists, many of whom knew Talbot. In 1852, the presidents

3.7 THOMAS KEITH. *Edinburgh: Skyline and Rooftops*, ca. 1856. Salted paper print from calotype negative. Courtesy Gernsheim Collection, Humanities Research Center, University of Texas, Austin, TX.

of the Royal Academy and the Royal Society, Sir Charles Eastlake and Lord Rosse, sent Talbot a letter affably stating that "the French are unquestionably making more rapid process than we are [and] some judicious alteration of the patent restrictions would give great satisfaction, and be the means of rapidly improving this beautiful art."[16] Talbot, realizing that even his friends no longer supported his efforts to profit from his calotype process, relaxed his rights over amateur work. However, he continued to retain patent rights in professional portraiture.

A massive four-volume series of books printed at the conclusion of the Exhibition summarized the best of everything shown.[17] These volumes reveal the Victorian appetite for identifying, categorizing, and labeling all the new products of the industrial age. They also make clear the underlying belief that society could be made better by enlightened technical advancement. This optimistic 'can-do, we are right, and we will make the world better' British attitude is exemplified in the series' factual celebration of the new machine-based culture in which the camera now played a major role as an automatic conveyor of the type and style of information that was in demand. The volumes included salted paper prints of the products that were deemed truly worthy by the Victorians: large blocks of coal (which had been placed outside the exhibit hall and numbered); marine and locomotive engines; a turbine; a steam hammer; an electro-magnetic apparatus; an Indian Rubber boat and pontoons; and a model house for working-class families promoted by Prince Albert (the photograph is credited to the prince, an amateur photographer) to "place within the reach . . . those comforts most conducive to health, to habits of cleanliness and decency, hitherto been enjoyed as luxuries only by the few."[18]

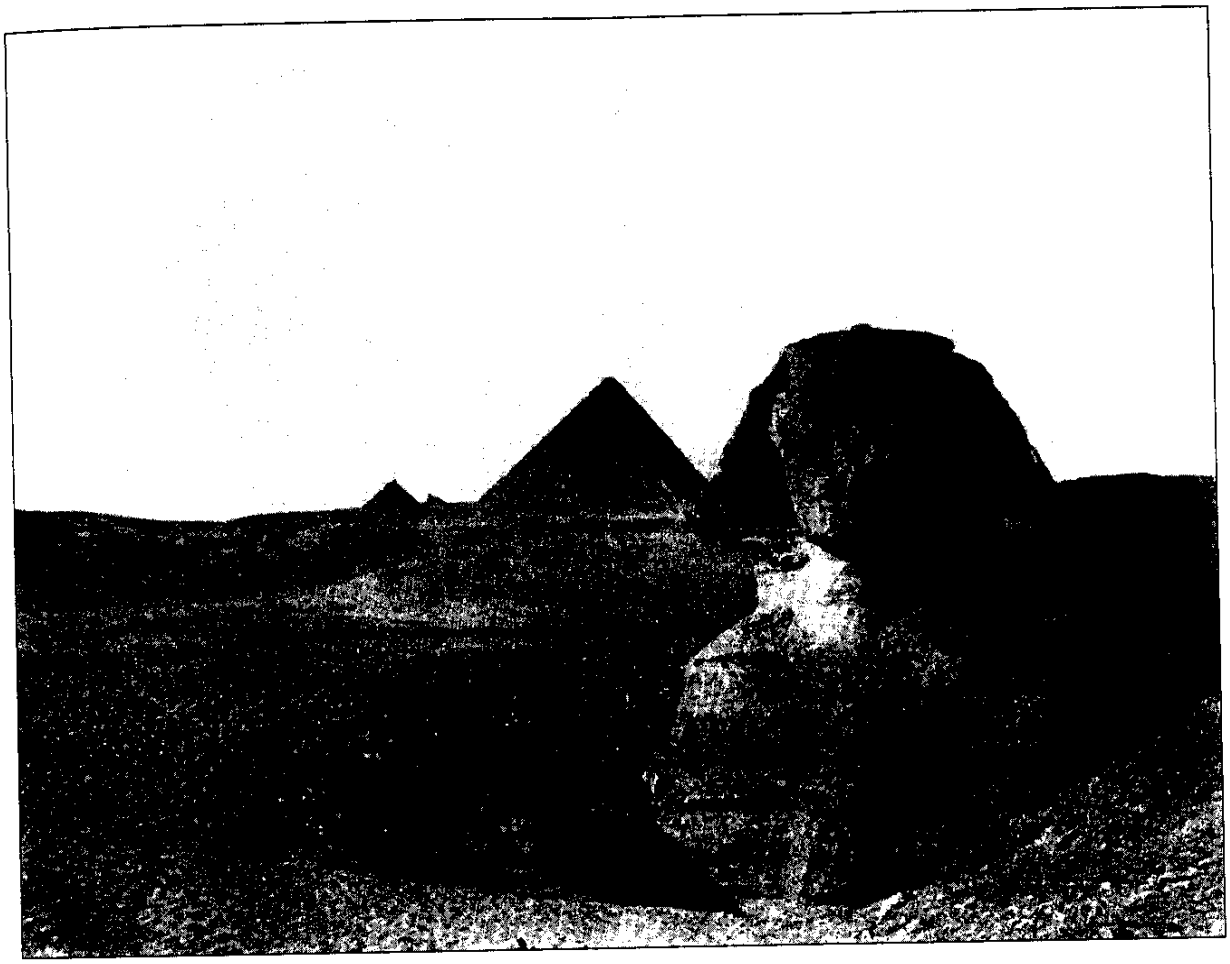
Finally able to make calotypes without a license, British calotypists experienced a brief (1852–1857) golden period. In January 1853 the Photographic Society of London (called the Royal Photographic Society of Great Britain after 1894) was created with Sir Eastlake as president.[19] The Photographic Society commenced publishing the *Journal of the Photographic Society* in March 1853 to facilitate the exchange of information.

A paper, "Upon Photography in an Artistic View," was presented at the group's first meeting by **Sir William Newton** [1787–1869] and published in the *Journal of the*

3.8 UNKNOWN PHOTOGRAPHER. Unidentified Landscape, ca. 1851–55. 10 × 7⅝ inches. From: Blanquart-Evrard/Cahier 5 No. 11. Salted paper print. Courtesy George Eastman House.

Photographic Society (see Figure 3.6). It touched off a tempest that has never completely settled.[20] Newton, a miniaturist painter who took up photography, advised photographers making photographs intended as studies for painting to put their subject "a little *out of focus,* thereby giving a greater breadth of effect, and consequently more *suggestive* of the true character of nature." Newton also advocated the process of altering the negative "by a chemical or other process" to achieve a "picturesque effect," emphasizing areas of light and shade while downplaying detail or to make up for defects that occurred in the process. Newton did say that "When photography is applied to buildings for *architectural* purposes, then every effort should be exerted to get all the detail as sharp and clean as possible." However, his interest lay in how photography could best serve the painter by "applying photography as an assistant to the Fine Arts," not in how it might function as an independent art.

Newton's paper set the terms of the ongoing debate between those who believe that photography's heart lies in its ability to provide "exactitude of delineation which completely sets at nought the exertions of *manual* ingenuity," and those who believe that artistic effect takes precedence over precision. As in the parlor game of "telephone," Newton's statements became distorted as they were repeated. Over time people allied "artis-



3.9 MAXIME DU CAMP. *Egypte Moyenne, Le Sphinx,* from album *Egypte, Nubie, Palestine et Syrie,* 1852. 6 3/16 × 8 1/8 inches. Salted paper print (Blanquart-Evrard). Courtesy George Eastman House.

tic" photographs with unsharp photographs, forgetting that Newton was only referring to photographs made for use by artists. At a later meeting Newton reiterated, to no effect, his belief that when making "record" photographs the focus should be as sharp as possible.

Newton's paper also opened the continuing discussion on the qualities a photograph must have to be considered art. One side, the realists, claimed then as now that photography's intrinsic quality is its ability to provide a precise representation of reality. They believe that this straightforward, objective characteristic makes photography a unique art form, and that it should be held sacred. The other side, the expressionists, believe the photographic process to be a series of manipulations of reality, postulating that additional reworking is justified to introduce the imagemaker's subjective concerns and to remove the photograph from the realm of mechanical reproduction. As the medium grew these questions would expand into a larger controversy as to whether photography was capable of being an independent art form.

Thomas Keith [1827–1885], an Edinburgh physician, was an upper-class amateur who practiced the waxed-paper calotype from 1851–56. Keith was a friend of Hill's who admired and collected some of his calotypes. Keith made penetrating factual architectural studies of the Edinburgh environs (see Figure 3.7), including the Greyfriars Cemetery. He was fastidious in his materials preparation and only made images before seven in the morning or after four in the afternoon, when atmospheric pollution (caused by burning coal and wood) was minimal and the angle of light was low enough to best reveal surface detail and texture. His city views revel in an atmopshere of Romanticism and ignore the new machine age constructs, lamenting the loss of a place that has been altered by the effects of industrialization.

Calotypists Establish a Practice

The calotype was widely and richly practiced in France. Without Talbot's patent restrictions the calotype was cheaper to make, easier to use, and provided countless positive prints, giving daguerreotypists

CHAPTER FOUR

Pictures on Glass

The Wet-Plate Process

The Albumen Process

The 1840s saw the cornerstones of modernity, capitalism and science, applied to photography, as inventors searched for a low-cost, easy-to-use process that would combine the detail of the daguerreotype with the reproducibility of the calotype. Activity centered on making glass negatives, as it was an ideal emulsion support base, cheaper than a silvered plate, and free from the drawbacks of the paper process. The chief obstacle in devising an efficient glass process was finding a way to keep the silver salts from dissolving or floating off the glass during processing. In 1847 Claude Félix Abel Niépce de Saint-Victor, a cousin of Nicéphore Niépce, discovered that albumen (egg white) provided an excellent binder for silver salts on glass plates. This breakthrough blended the desired attributes of the daguerreotype and the calotype, but the process's five-minute minimum sunlight exposure time was not conducive to making portraits.

UNKNOWN PHOTOGRAPHER (Manila). *(Anthropological Cabinet of Natives)* ca. 1873. 4 × 2½ inches. Carte-de-visite. Courtesy George Eastman House.

4.1 FREDERICK SCOTT ARCHER. Sparrow's House, Ipswich, Suffock, 1857. 8½ × 6⅞ inches. Albumen print. Courtesy George Eastman House.

In 1849 **Frederick Scott Archer** [1813–1857], who had learned the calotype process as a visual aid for his portrait bust business, turned his "attention to collodion as a substitute for paper, with the hope that by its means a surer and more delicate medium might be produced to work upon than paper was ever likely to be."[1] Archer coated a glass plate with iodized collodion and exposed it while it was wet. This proved to be the recipe for success, as previous investigators had used collodion as a dry base to which iodide of silver was applied.[2] The so-called collodion process provided a finely detailed negative, one that was endlessly reproducible and required less exposure time than Niépce's method.

Archer did not patent his method, but Talbot claimed that Archer's process, wherein a latent image was imprinted on a light-sensitive surface that had to be developed out and fixed, was an infringement on his own calotype patent. Talbot announced that he would prosecute any commercial portrait photographers who used the collodion process without his license. In December 1853, Silvester Laroche resisted an injunction issued by Talbot against his Oxford Street studio. The case went to trial and on December 20, 1854, a jury declared Laroche not guilty, freeing England at last from Talbot's threats and patents. Talbot did not appeal or renew his calotype patent (Daguerre's English patent had expired in 1853), allowing England's professional photographers to use any process without paying a licensing fee.

The *collodion process* became known as the wet-plate process because all the procedures had to be carried out while the plate was damp, since the ether in the collodion rapidly evaporated. The coating procedure required speed, on-the-spot darkroom access, and the ability to follow preparation directions that read like a cookbook. Before making an exposure it was necessary to pour the collodion, with potassium iodide, a mixture of alcohol, ether, and nitrated cellulose (known as guncotton due to its explosive nature), onto a clean prepared glass plate under darkroom conditions (see Figure 4.2). The photographer had to tilt the plate back and forth to ensure an even coat or the pour marks would be visible in the negative. Next, the plate was dipped into a sensitizing bath of silver nitrate and immediately placed into the camera and exposed (sensitivity dropped greatly as the collodion dried). As soon as the exposure was made, the plate was developed in pyrogallic acid and fixed with sodium hyposulphite (hypo).

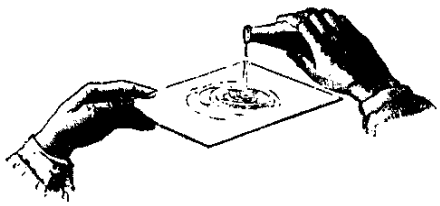
Photographers were willing to put up with these difficulties as the collodion's increased light sensitivity meant that small, highly detailed portraits could be made in as little as two seconds. Also, glass plate negatives printed faster than paper negatives, prints could be produced more quickly and cheaply. Collodion's raw materials were inexpensive and once mastered tended to be more constant and predictable than the paper processes. By 1855 the majority of commercial photographers had added collodion to their repertoire. Collodion ushered in a period of growth and good fortune for the budding commercial photographic community. It would eventually dethrone the albumen, calotype, and daguerreotype processes and reign until the introduction of the gelatin dry plate in the 1880s.

The New Transparent Look

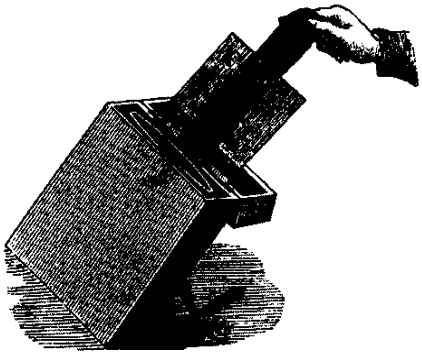
The introduction of the collodion process solved a series of technical problems and heralded a new aesthetic ideal as well. Photographers had been dissatisfied with "the imperfections of paper photography" and wanted a negative capable of delivering "fineness of surface [and] transparency."[3] They desired a negative/positive process capable of rendering a consistent tonal range with ample density and detail in the highlight and shadow areas. Collodion's transparent glass support solved these difficulties and resolved the aesthetic concerns of clarity, chiaroscuro, and resolution, signaling the demise of what D. O. Hill saw as the artistic virtues of the calotype—its rough and unequal texture.

"Transparency" referred to a direct translation of reality in which subjects were not "suggested," as in the calotype, but were clearly stated and defined without

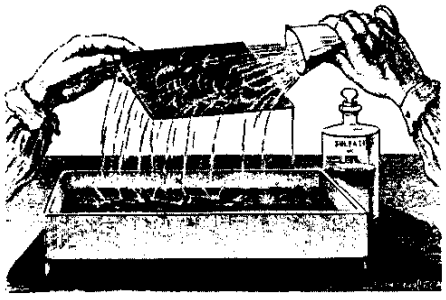
Polishing the plate



Coating the plate



Sensitizing the plate



Developing the plate

4.2 Preparing and processing a collodion wet-plate. From Gaston Tissandier, *A History and Handbook of Photography* edited by John Thomson, 1878.

overt intervention, as in the daguerreotype. *Naturalism* began to be the benchmark of photographic practice. Its goal was not to interpret or interact but to concretely represent the world, naturally, with previously unmatched depth of clarity, capable of preserving enormous amounts of visual information. The glass support of the collodion replaced the obscure shadow areas of the calotype with a clear, distinct, and unobstructed view. The idea of naturalism would lead to a decline in retouching the negative for serious artistic effect, and indirectly supported the notion that photography was an authorless process in which the subject imposed its presence onto a plate. Such an uncompromised *natural* image was thought to be "truer," easier to see and understand than anything previously obtainable.

A new printing paper was essential to retain the detail and sharpness of the glass negative. The first practical *albumen paper,* with a smooth and glossy surface, was designed by Blanquart-Evrard in 1850 and rapidly supplanted the matte surface of the calotype, remaining in use until the end of the nineteenth century. Photographers could make their own albumen paper. According to J. Towler's 1864 edition of *The Silver Sunbeam,* one was supposed to use only fresh eggs and then get "the white of egg, entirely freed from the germ and yolk, and beat the egg up well with a wooden spatula until it is completely converted into froth. This operation must be performed in a place as perfectly free from dust as possible; and then the albuminous mixture is covered with a clean sheet of paper and put aside to settle for a number of hours." Fortunately, albumen paper could be purchased already prepared, spawning the beginning of the manufacture of presensitized paper.

The laborious steps in the albumen paper process included beating the mass of egg white; allowing it to froth in earthenware vats; fermenting it in tall glass jars; filtering it, beating it again, refiltering it, and salting it with chlorides; and dying it pink, mauve, or blue. Then paper, such as Rives B. F. K., was floated by hand in the mixture. Next, the paper was dried and stored for three to six months, so the albumen could completely harden, and then it was coated again and hung up to dry in the reverse direction to equalize the unevenness of the first coating.

Albumen paper gave a new look and consistency to photographic printmaking, allowing *editions,* where the first to the last images all look the same, to be produced. Such consistency had not been possible with the calotype, where differences in the surface and texture of the paper support and the hand-applied emulsion produced noticeable changes when multiple prints were made. This new found consistency diminished the distinctive differences of the individual print, causing it to lose its uniqueness and reducing its market value as an artistic object. People did not give the photographic print the

4.3 UNKNOWN ARTIST. *Traveling photographer's collodion wet-plate darkroom tent,* ca. 1865. Courtesy Gernsheim Collection. Humanities Research Center, University of Texas, Austin, TX.

respect they had given the daguerreotype. A damaged albumen print was not considered a catastrophe, as another print could be made; replaceability was a major attribute of the paper print.

This idea of the replaceability of photographs was encouraged as the photograph became synonymous with other machine-produced objects of the industrial culture. Photography became commercially viable, as more of its components could be carried out by a division of labor that allowed a few skilled managers to control an operation of unskilled employees. Assembly-line production attitudes and techniques replaced those of a personally crafted object. By 1894, the Dresden Albumenizing Company's staff of 180 opened 60,000 eggs daily for the production of double-albumenized paper.[4] Repeatability had substituted for the calotype's distinctive atmosphere and character, as easy replication became the order of photographic business by the end of the 1850s.

The collodion process produced a tremendous demand for albumen paper. The new paper not only provided more detail than a salted paper print, but it changed the surface look of the paper photograph. The albumen's glossy surface sheen gave photo-based images a novel appearance. This glossiness was considered very modern and machine-like and was accepted as part of the new system of representation. It also further removed the photographic print from traditional printmaking, where shininess was an undesirable characteristic. In collodion's early days, practitioners diluted their albumen with salt water to reduce the gloss to a luster. As the wet plate's popularity grew, photographers used undiluted albumen to reveal the abundant detail of their glass negatives, raise the contrast level, and provide a greater luster to the print. By the 1860s double-coating of the paper with albumen became a standard practice, giving prints a truly glossy appearance.

The base color of the paper, once the dominion of each photographer, became standardized as commercially prepared papers, with a limited range of colors, achieved market domination. These new surface changes provided unmistakable evidence that the image originated from a photo-based process. Albumen prints were *gold-toned* to make the print more stable and alter their intense red-brick color to a more acceptable warm purplish-brown or even a blue-black hue.

The Ambrotype

The rapid commercial adoption of the collodion process and the immediate invention of a series of spin-off processes—the ambrotype, the tintype, and the carte-de-visite—insured collodion's rapid domination of the field. The *ambrotype* was a collodion, positive-looking image on glass that when first introduced was

4.7 ANDRÉ DISDÉRI. *Paul Legrand (clown in white face)*, CA 1860–65 Uncut carte-de-visite, 7⅞ × 9½ inches. Albumen print. Courtesy George Eastman House.

or the glass depth of the ambrotype to enhance contrast. However, what the tintype lacked in aesthetic qualities it made up in social significance: Citizens could have their likeness recorded for as little as twenty-five cents, further democratizing the process of commemoration. The tintype's universal affordability also spoke to the nineteenth-century American notion that societal position was not solely predetermined by one's birth status, visually denoting the American Dream of possible upward mobility. Democracy not only gave the industrial classes a taste for the arts and letters, it also brought a technological spirit to the arts.

The tintype's lower price, its practitioners' lack of formal artistic training, and its immediacy reduced the specialness surrounding the act of having a picture made. Pictures became less serious, more spur-of-the-moment affairs. The idea of casual pictures for amusement started when tintypists introduced humorous background scenes of painted canvas with cutouts through which sitters could insert their heads. People's "camera attitude" shifted as they played and acted informally for the camera. This type of unpremeditated silliness and lack of respect had not been previously pictured. Discounting any technical limitations due to long exposures, smiles had been considered inappropriate for an occasion that was seen as making a social statement about the sitter. The spontaneous tintype spirit of picturing the vernacular was the precursor of the snapshot sensibility.

The Carte-de-Visite and the Photo Album

The third spin-off from collodion was the *carte-de-visite*, or visiting card. A number of photographers claimed credit for introducing the carte-de-visite, but the idea was patented by **André Disdéri** [1819–1890] and introduced to the public in Paris in 1854.

The concept of using photographs on documents such as licenses, passports, permits, and visiting cards was proposed by Louis Dodero of Marseilles in 1851.

The carte-de-visite, or *carte*, was a 2¼ × 3½-inch photograph, usually a full- or bust-length portrait, attached to a 2½ × 4-inch paper card. A number of exposures were made with a multilens camera on a single collodion wet-plate and were contact-printed onto albumen paper. Individual exposures were cut apart and mounted on cards. The multilens, referred to as *tubes*, could be uncovered (there were no shutters), making it possible to vary the poses on the plate. The intent was to take the time and expense needed to make one print and divide it by many prints, reducing the cost of each print. Numbers were the deciding factors; the more cartes people had made, the greater the photographer's profit. Enhanced savings were also realized since retouching was not needed, as many defects were not noticeable in the small prints, and the processing procedures could still be performed by unskilled labor. Daguerreotypists like Abraham Bogardus initially dismissed the carte. Bogardus recalled his first impressions of the carte as "a little thing; a man standing by a fluted column, full length, the head about twice the size of the head of a pin. I laughed at that, little thinking I should at a day not far distant be making them at the rate of a thousand a day."[7]

After a slow start the carte became a hit in May 1859 when Napoleon III, leading his army out of Paris on a military campaign against Austria, stopped to have a publicity portrait made at Disdéri's studio. It proved a successful public relations tactic for both men as people flocked to have their carte made at the same place as the emperor. Disdéri became a celebrity and was appointed Court Photographer. In 1860 Disdéri redecorated his studio, the "Palace of Photography," in the ornate Second Empire style with portraits of della Porta, Niépce, Daguerre, and Talbot along with allegorical statues signifying Chemistry, Painting, Physics, and Sculpture. The Apotheosis of Light was painted on the ceiling. By 1861 Disdéri was reported to be the richest photographer in the world, eventually opening branch studios in London, Madrid, and Toulon. His Paris studio had a staff of 90, could make thousands of prints a day, and promised 48-hour delivery.

The carte did not become chic in England until August 1860, when **John Jabez Edwin Mayall** [1810–1901], an expatriate American daguerreotypist who had become one of London's most elegant photographers, published his *Royal Album*, consisting of fourteen carte portraits of the royal family (see Figure 4.8). Hundreds of thousands of cartes of Queen Victoria and Prince Albert were sold, leading to an explosion of celebrity photographs. Photographers courted personalities to sit for them, often paying a fee to the sitter and/or royalties based on sales. The practice of collecting and exchanging photographs and placing them in embellished, manufactured albums began with the *Royal Album* cartes. Mayall's carte business reportedly generated more income than any other English photographer's, with his studio turning out half a million cartes a year. Mayall also patented the *Ivorytype* in 1855, a method in which a photographic image was printed on artificial ivory that had been sensitized with either albumen or collodion. This imitation effect was popular as it played off the association of ivory as a valuable object reserved for the power elite.

The royal family itself was keen on photography. Queen Victoria was said to have over 100 photo albums, many arranged and inscribed by Prince Albert. The Queen enjoyed giving and sending photographs. The royal family not only consented to the sale of their cartes but commissioned numerous portraits, bought (collected) contemporary photographs, were patrons of The Photographic Society, and even had a darkroom installed at Windsor Castle for their private use, increasing interest in photography and giving it status and credibility.

The carte was a formula picture; no particular effort was made to reveal the sitter's character. Even though posing equipment was still required, shorter exposure times allowed more naturalistic styles to evolve, and people appeared less rigid and stern. In various poses controlled by the photographer, from vignetted heads whose undefined edges merged into the background to full-length images, the sitter could look either directly at the camera or gaze off to one side. The backgrounds could be neutral, or they could be elaborate painted settings. Most scenes included props, such as fancy upholstered chairs, balustrades, columns, drapery, and furniture. People often wore clothes or held objects that revealed their status or their aspirations. Cartes were personal, handheld portraits made to be preserved in albums and stir memories: "This is what I look like, this is what I do, this is who I am."

Cartes of current events, politicians, royalty, actors, and people in the news were widely circulated. In 1861, The Chicago & Milwaukee Railroad Co. issued identity cartes for their season-ticket holders. Abraham Lincoln credited his election to his Cooper Union speech and to his carte made by Mathew Brady. Stage figures, such as Jenny Lind, became cult personalities in the United States through the publicity supplied by their cartes. Besides celebrities there was a market among the educated for cartes of authors, such as Charles Dickens, George Sand, and Victor Hugo. In addition, leaders of reform movements, including the American abolitionists Frederick Douglass and Harriet Beecher Stowe, were in demand.

Cartes catered to the armchair traveler with views of moated castles and foreign lands, to the sophisticated with works of art, to the believers of "Manifest Destiny" with bare-breasted female natives who could be both ogled and looked down on, and to the morose with

4.8 JOHN MAYALL. *Death of Prince Albert* (Montage of Royal Album). 4 × 2½ inches. Carte-de-visite. Courtesy George Eastman House.

"freaks of nature" like the woman with no arms who could write with her feet (see chapter opener). Cartes provided the realistic images the public now expected at affordable prices and furthered the picturing of more diverse subjects.

As the carte could be carried around and handed to others, text, both printed and handwritten, was often added to supply the appropriate context. The public, accustomed to mechanical reproductions with accompanying text, readily accepted this practice. Typically, the front of the carte had the photographer's signature

4.9 J. E. Whitney Studio, St. Paul, MN. *Cut Nose,* 1862. Carte-de-visite. If the information on this carte is true, it raises a macabre point about social behavior—why would a person purchase an image of a murderer? Today electronic media has taken this phenomena to levels unimaginable in the nineteenth century with videos like the Lives of Serial Killers and websites that contain outright lies about history and promote hate against minority groups. Courtesy Visual Studies Workshop, Rochester, NY.

printed below the image and a caption below the picture. Many had advertisements printed on the backside of the carte. Typically, the photographer's and publisher's name and address were given. The backnotes reminded the public that the carte was reproducible with pronouncements such as: "Negatives preserved, Duplicates can be had at any time." A carte of three small children stated that

> The copies are sold in furtherance of the National Sabbath School effort to found in Pennsylvania an Asylum for dependent Orphans of Soldiers; in memorial of our Perpetuated Union. This picture is private property, and can not be copied without wronging the Soldier's Orphans for whom it is published.

J. E. Whitney's *Cut Nose* carte shows how words attached to a picture not only supply meaning but raise critical issues concerning accuracy. Photographers strategically titled their cartes. As allegorical subjects gained popularity in the mid-1850s, many photographers titled their portraits with the names of Greek deities so that viewers could bring their formal knowledge to bear. Such practice was exclusionary, closing out the less educated. Photographers who did not wish for this type of interchange or who wanted to be more ambiguous and less directional referred to their work as "untitled." Such an open-ended viewing situation made it the viewer's responsibility to supply the meaning.

As cartes were not deemed inviolable objects, the public joined the titling process, adding inscriptions to the backside, or verso, of the cartes. A carte of a dapper young man asked: "Please acknowledge the receipt of this by returning one of yours. J. Crane." A middle-aged man thought his image was worth many cartes: "Aunt Susan, you must be sure and send me some of *all* of you as soon as you can. Me." Others provided factual information about the sitter: "Ma when 16." Others offered commentary: "The arch traitor Jeff Davis." A woman in a long dress, holding a straw hat, wondered whether it was really possible to be known through one's carte. On the verso she wrote: "Do you know me?" A piercing example of the reality of war can be seen in a Civil War portrait album that contains brief penciled comments recording each person's name and what happened to him: "killed at . . . , wounded at . . . , lost leg, died of wound, eye shot out at . . . , lost arm." A portrait of four soldiers in uniform, with devil-may-care looks, was inscribed: "All killed in battle."

4.10 UNKNOWN PHOTOGRAPHER. *Portrait of Four Civil War Soldiers.* 4 × 2½ inches. Carte-de-visite. The juxtaposition of the faces in the portrait and the description of what became of them provokes feelings of melancholia and loss. Through the play between pictures and words, the horrors of war and life exist not on a battlefield, but in the mind of the viewer.
Courtesy George Eastman House.

The Cabinet Photograph: The Picture Gets Bigger

The carte fad peaked about 1866, and as the fad began to decline photographers such as Edward Wilson bemoaned the change and searched for something else to reinvigorate declining sales:

> The adoption of a new size is what is wanted. In our experience, we have found that fashion rules in photography as well as in mantua-making and millinery, and if photographers

4.18 ANTOINE CLAUDET. *Portrait of Claudet Family,* ca. 1855. 3 3/16 × 7 inches. Daguerreotype stereo view with applied color. Courtesy George Eastman House.

as a long, i.e. horizontal, rectangle, or as a tall, i.e. vertical, rectangle . . . or whether some special scientific purpose may not be better served by extracting one little subject . . . and making a very highly magnified picture of that one item.[17]

The Stereoscope

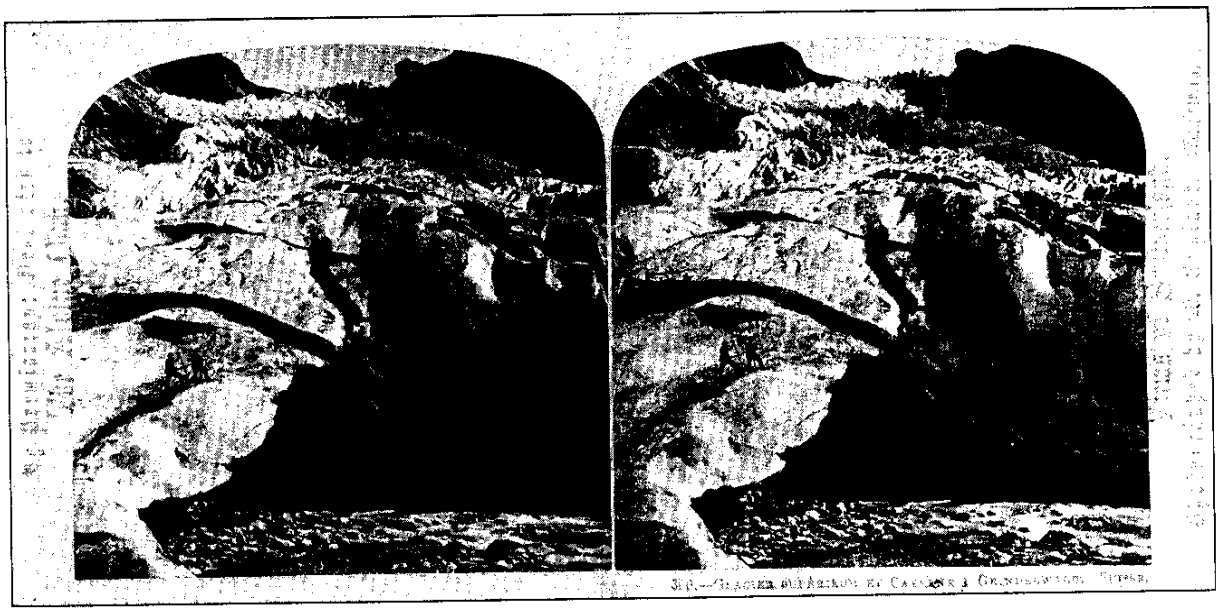
The phenomenon of stereo, based on *binocular vision*—the fusion by the brain of the two slightly dissimilar images as seen by our eyes (the distance between our eyes is about 2½ inches) into a single image—was observed as early as 280 B.C.E. by Euclid. In his *Treatise on Painting,* Leonardo calls attention to the topic and regrets that painting cannot render volume as persuasively as the eye can perceive it. Regardless of how well chiaroscuro and perspective are used to create the illusion of depth, they rarely overcome the obstacle of surface flatness. The invention of photography offered a practical way to create and view convincing stereo scenes.

In 1832, Sir **Charles Wheatstone's** [1802–1875] experiments led to the discovery that the illusion of depth could be created by looking at two slightly different drawings of a subject side by side through a binocular device (see Figure 4.17). Wheatstone built a device, which he called a *stereoscope,* that allowed only the right eye to view the right image and the left eye the left image. When the brain combined the two separate images, a person got the visual sensation of 3-D.

When Daguerre and Talbot announced their new methods in 1839, Wheatstone had stereographs made in both daguerreotypes and calotypes. The daguerreotypes produced reflections, and the calotype proved too slow for portraits and did not hold up well under close inspection. Stereo pictures designed for Wheatstone's elaborate and expensive reflecting stereoscope were sold in London during the 1840s, but did not receive much notice.

However, the process was nurtured by Sir David Brewster's [1781–1868] *refracting stereoscope,* a greatly simplified version of Wheatstone's cumbersome design, which Brewster first exhibited in 1849. It duplicated the 2½ inch separation between the eyes by placing a pair of lenses, side by side, in a small box with a small door on the side to admit light (the center points of the two pictures were also 2½ inches apart). A slot on the bottom allowed the insertion of a mounted pair of stereoscopic pictures. The base was made of frosted glass to allow the viewing of transparencies by refracted light. During the Great Exhibition of 1851 Queen Victoria became captivated by this stereoscope. When a special one was made for her, 250,000 stereoscopes and millions of stereo cards were sold in London and Paris within three months. Due to this royal boost, London's top daguerreotypists, Beard, W. E. Kilburn [n.d, active 1825–1871], T. R. Williams [1825–1871], Mayall, and Claudet, began hotly making stereoscopic views at the Crystal Palace site of the exhibition.

The meteoric rise of stereoscopic views touched off lawsuits and feuds. Jules Duboscq, the optician who made Brewster's device, patented the stereoscope in 1852 and seized the stereo apparatuses and images of



4.19 WILLIAM ENGLAND. *Views of Switzerland #30: Glacier Supérieur et Caverne à Grindenwald, Suisse.* 3 3/16 × 7 inches. Albumen stereo card. The transparency of the albumen-on-glass process further spread the authority of photography by allowing simultaneous group viewing by means of magic-lantern and stereoscopic slides.[18] Courtesy George Eastman House.

his chief competitors until his patent was declared void in 1857. Brewster published *The Stereoscope* (1856) and followed that with a series of letters to the London *Times*, in which he challenged Wheatstone's claim to have invented the stereoscope and contradicted as well his claim of having discovered the principle on which the stereoscope effect works (Brewster's claims were all unfounded).

Claudet, using two cameras set up side by side, was able to make successful group portraits and became a devotee to the process. Claudet patented a folding pocket stereoscope designed for daguerreotypes in 1853 and an improved viewer in 1855, one with the lenses set in adjustable tubes and a giant stereoscope capable of holding 100 stereoscopic slides for viewing. Claudet also experimented with "moving photographic figures" that linked the zoetrope with the stereoscope to create three-dimensional moving pictures. The quality of his own work set significant standards for others to follow.

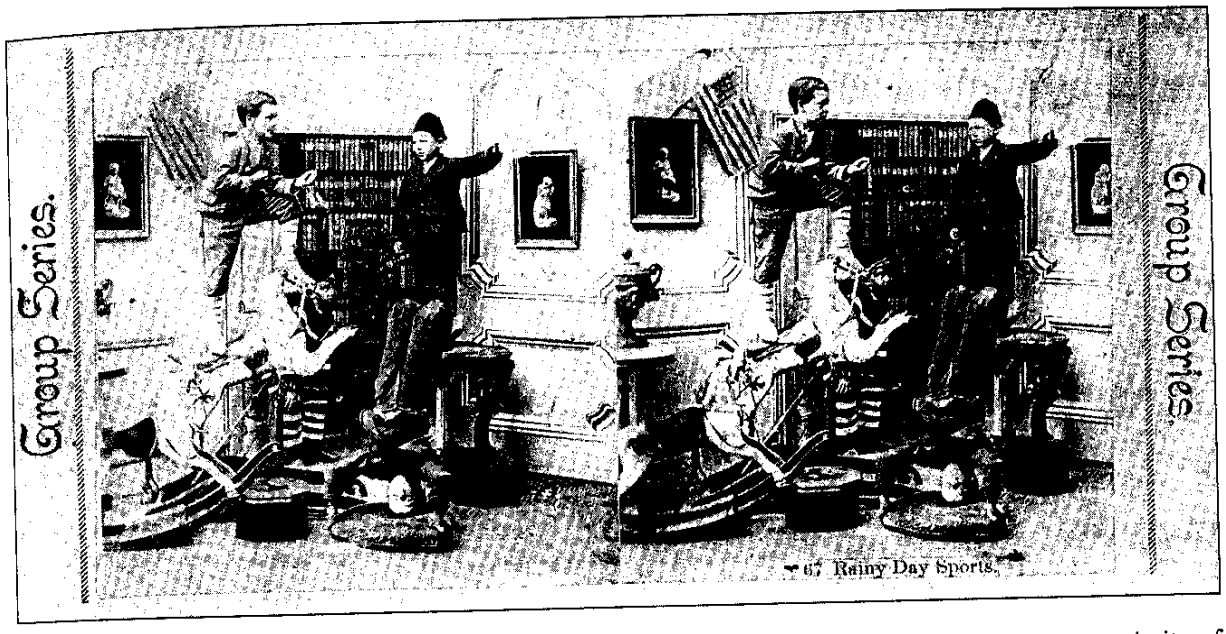
The Stereo Craze

By 1856 the London Stereoscopic Company, whose motto was "No home without a stereoscope," had sold an estimated 500,000 inexpensive stereo viewers. The ease of reproducing collodion images insured cheap paper stereo cards. Mass production allowed the "optical wonder of the age" to find its way into middle and upper economic level homes, and made the stereo craze photography's biggest nineteenth-century bonanza, remaining enormously popular until 1910. The company's staff of photographers, under the guidance of William England [n.d.–d. 1896], traveled the world and compiled a stock of 100,000 views.

The stereograph was introduced to America by the Langenheim Brothers. In 1854 the brothers' American Stereoscopic Company began to sell scenic stereo views (on glass as transparencies and on paper as card-mounted prints) of American scenery recorded as *hyalotypes*. Hyalotypes (from the Greek *hualos*, meaning glass) were clones of Niépce de Saint-Victor's process that used albumen to bind a silver salt emulsion to a glass plate. They were almost identical to John Adams Whipple's previously patented crystalotype albumen plates. The brothers used the hyalotypes to produce magic lantern slides, making the first photographically based images designed for projection. This forerunner of the present-day slide show proved so profitable that by the start of the Civil War all their efforts were directed at producing glass lantern slides.

Stereo pictures became a sensation because they provided affordable home entertainment. Their small size (3½ × 7 inches) made them convenient to handle, and there was a magical quality to the illusion. No matter how often one looked at them, a sense of wonderment remained as the two flat images came together and offered a visual sense of depth that transcended the physical size of the picture. Stereo cards made it possible to be amused, to travel, and to expand one's knowledge without leaving home. Claudet wrote:

> It [the stereo card] introduces to us scenes known only from imperfect relations of travelers, it leads us before the ruins of antique architecture, illustrating the historical records of



4.20 UNKNOWN PHOTOGRAPHER. *Rainy Day Sports.* 3 3/16 × 7 inches. Albumen stereo card. As the stereo craze spread, it crossed class and cultural boundaries. Even the ruling elite were caught up with recording daily life. The February 19, 1886, issue of *The British Journal of Photography* reported that "When the [Russian] Czar catches sight of his aunt, or a courtier, a fowl, a sentinel, or a baby, he has out his [stereo] photographic apparatus in a moment. The Nihilists will soon be frightened to come near him." Courtesy George Eastman House.

> former and lost civilizations; the genius, taste and power of past ages, with which we have become familiarized as if we had visited them. By our fireside we have the advantage of examining them, without being exposed to the fatigue, privation, and risks of the daring and enterprising artists who, for our gratification and instruction, have traversed lands and seas, crossed rivers and valleys, ascended rocks and mountains with their heavy and cumbrous photographic baggage.[19]

The American physician and writer, **Oliver Wendell Holmes** [1809–1894], was frustrated by Brewster's viewing device, which gave him headaches. In 1861 Holmes and Joseph L. Bates designed a hand-held viewer with a sliding T-bar that allowed the viewing distance to be individually adjusted. The Holmes-Bates Stereoscope made viewing of paper stereo cards less strenuous, and was lighter weight, easier to handle, and less expensive than any previous device. Since neither man patented the improvement, their device became the standard viewing appliance, adding to the growing popularity of stereoscopic work.

Photographers courted the mass market by making pictures of scenes people wanted in the style people recognized and understood. Although the viewing experience of the stereoscope was radical, the subject matter was conservative and did not push the boundaries of the visually acceptable. The vast majority of stereo work recorded views or group scenes, as individual portraits did not provide a dramatic sense of visual depth; views offered a distinct foreground, middleground, and background, enhancing the three-dimensional effect. Also, although an individual might order a dozen stereo portraits, a photographer could sell more copies of a single view. Printed text was often linked with a card to anchor the image's context according to the maker's wishes.

Many of the top photographers did not respect the stereo card. It was small, and its illusion of depth was considered too close to reality to be aesthetically gratifying. Serious photographers were brought up with the notion that picturemaking was a matter of translating three-dimensional space to a flat surface. Many considered stereo a betrayal of this tradition and stereo photographers charlatans. As a consequence, top photographers only took stereo views after they had made their "real" picture, with a monocular camera, and they only did it to enhance their profits. Photographer J. Craig Annan [1864–1946] offered this criticism:

> The stereoscopic effect is an endeavor to imitate nature, while the object of an ordinary photograph, or drawing is only to reproduce an impression of nature. The failure of the stereoscope in its greater aim is more marked than the less ambitious but more practical endeavor to reproduce on a flat surface an impression of what we see.[20]

Photographers worked by visiting a locale and making stereo views of the important structures. The majority of stereo cards are direct, straight-forward tracings of the world that reflect the viewer's expectation for an informational map, rather than artistic expression. The stereo image's small size did not require retouching, and no effort was expended to discover the unique qualities of one town's courthouse over the

next. The way to make money was to rapidly cover a market and move on to the next before the competition got there. Except for photographers who published their own stereo cards, most stereo cards did not carry a credit line. A typical stereo card had the publisher's name, address, name of the series, sometimes the photographer's name, and possibly a caption printed on the front. Occasionally the backside provided a printed list of other available views. Stereo views were mainly printed on albumenized paper; hand-coloring was prevalent. Unlike cartes, stereo cards were rarely personalized with greeting, messages, and inscriptions.

The stereo card became the home encyclopedia for the eye, providing an authoritative and comprehensive reference of facts that was a consummate manifestation of the empiricism of the Enlightenment. In the Age of Reason, the empirical mindset depended on direct experience and/or observation. The camera, with its seemingly neutral recording, could represent the naive, ideal, and rational. If an encyclopedia is a source where data is collected, then anyone with a camera could collect evidence. The concept that one could be educated through the use of photographs and that history could be recorded and learned by means of photography got a lift from the stereo card.

Since each stereo image was no bigger than 3 × 3 inches the lens for the stereo camera could be of a shorter (wide angle) *focal length* than the lenses used in portrait work. The focal length of a lens establishes its angle of view, magnification, and the exact point at which a sharp image of a distant object will be formed. Think of the light that forms an image as a lever bar. As the light passes through the lens it rotates in a circular motion until a complete image is formed. If there is movement at one end of this imaginary lever bar, the image being formed at the other end will also move. The shorter the arm of the lever bar behind the lens, whose distance is set by the focal length of the lens, the less an image will move.

A short focal length lens reduces the amount of perceptible movement, permitting live-action scenes to be recorded without ghostly blurs while delivering a sharp image at larger apertures, thereby reducing exposure time. It offers more depth of field at any given aperture than a longer focal length lens, adding visual information to the view. Instantaneous stereo cards freed photographers from the anchor of static subject matter and permitted the picturing of transitory moments.

Stereo cards may not have been noted for artistic effect, but they did provide a plenitude of representations, and people clamored to see anything they couldn't see for themselves. Holmes proposed creating a comprehensive stereographic library, "where all men can find the special forms they particularly desire to see as artists, or as scholars, or as mechanics, or in any other capacity."[21] E. & H. T. Anthony of New York met the demand by issuing metropolitan views of Broadway, the elevated railroad, Coney Island, and the Vanderbilt mansions, as well as a series on Niagara Falls. Travel views promoted tourism, which further increased the demand for pictures. Comic, idealized, and sentimental images of domestic life, like *The Happy Homes of England* series, became common fare. Religious edification was met with *Scenes in the Life of Christ,* twenty different cards portraying Christ under a giant halo, being beaten by Roman soldiers. Everyday activities—men drinking beer, families having dinner, a hometown band playing—appeared as a presnapshot innovation.

The financial crash of 1873 put many photographers out of business and caused others to cease making new views. Pirating views was a common way to cut expenses, but it also lowered quality, which disrupted the stereo illusion. The 1880s saw Underwood and Underwood deploying college students door-to-door selling cards. Mass production and marketing doomed the small independent operators, allowing corporate publishers to gain control over how and what was pictured. In the 1920s, by concentrating on the educational sector, Keystone View Company dominated the market. Keystone survived the Great Depression of the 1930s, the rise of pictorial magazines, and the expansion of motion pictures and radio, and continued making stereo views until 1964, when it succumbed to color television. Inexpensive plastic View-Master 3D viewers and their companion Stereo Reels, featuring 14 color transparencies (that provide 7 separate views) in a circular paper mount that rotates through the viewer by pushing a finger operated lever, can still be found at major tourist destinations and toy stores.[22]

The popularity of stereo cards, made possible by the collodion process, demonstrated that people not only wanted images of themselves and their loved ones but also of their world. This reveals what most people considered the primary function of the typical nineteenth century photographer: To find and record people and scenes from the flow of real-world time for future contemplation. This photographic act of remembrance evolved into an *aesthetic of finding.* The influence of this ritual can later be seen in the rethinking of the definition of art that inspired artists to incorporate actual objects and representations into their work. It also affected ordinary people who developed an appetite for collecting items from the material world. This desire for visual information, and the profits that could potentially be made by supplying it, led photographers into situations that had previously been thought unpictureable.

CHAPTER SIX

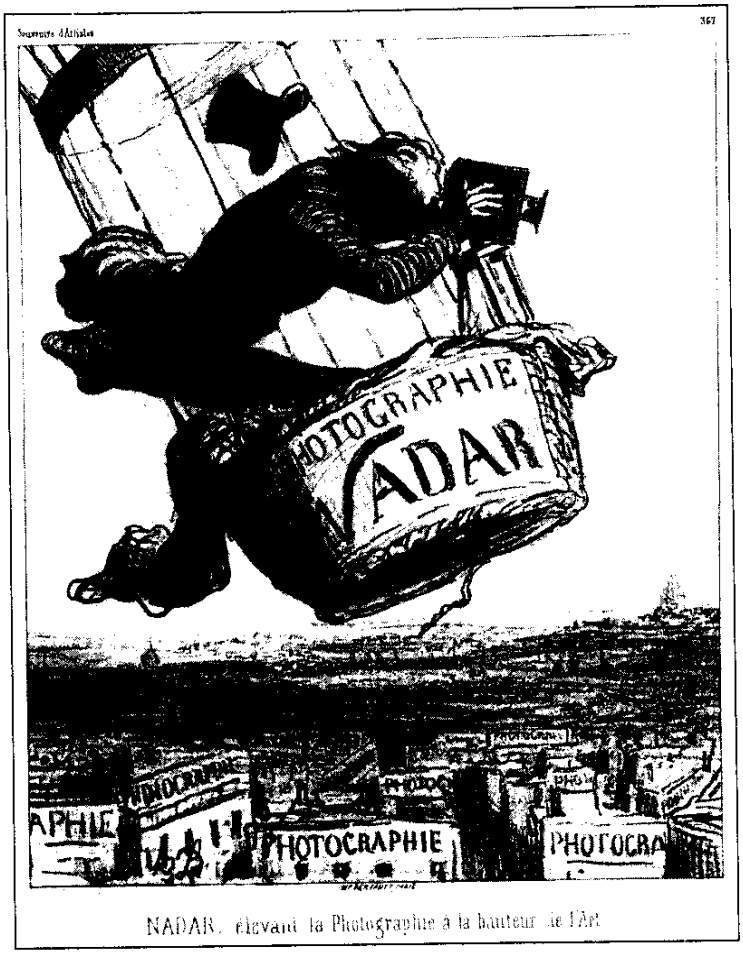
A New Medium of Communication

Art or Industry?

The introduction of the wet-plate process and the relaxation of Talbot's patent restrictions led to an explosive increase in the number of people making their living in photography.[2] During the 1850s, some of England's most notable photographers, including Roger Fenton, Robert Howlett, and Henry Peach Robinson, abandoned their amateur status and turned professional. Photography had become a business with a widening division of purpose between amateurs and professionals. The professionals were motivated by market forces to produce salable products. The amateurs pursued their personal inclinations and claimed the moral high ground of art, beauty, and truth, relegating the professionals to the corner of crass commercialism. The professionals perceived the amateurs as elitists who ignored the basic photographic needs of the majority of people. Amateur groups, such as the Royal Photographic Society of London,

JULIA MARGARET CAMERON. *Sir John Herschel,* 1867. 12 × 9½ inches. Albumen silver print. Courtesy George Eastman House.

"When I have such men before my camera my whole soul has endeavored to do its duty towards them in recording faithfully the greatness of the inner as well as the features of the outer man. The photograph thus taken has been almost the embodiment of prayer."[1]



6.1 HONORÉ DAUMIER. *Nadar Raising Photography to the Height of Art,* 1862. 5 3/16 × 4 inches. Lithograph. Courtesy George Eastman House.

championed their role as keepers-of-the-flame whose duty was to pursue photography for the sake of photography. The publication of Sir William Newton's article, "Upon Photography in an Artistic View" (1853), brought to a boil the issues surrounding the purpose of photography (see Chapter 3). Was photography the handmaiden of art or could it be an art unto itself? Was it a technical process or did it possess its own syntax that set it apart from other mediums? Was photography's purpose to objectively reproduce what was before the camera or could it be controlled for artistic concerns?

Some well-educated people viewed photography as an upstart whose popularity and commercialization threatened the position of high art. They believed photographers were failed artists who were mere slaves to reproducing the natural appearance of their subjects, and doubted whether the process could be manipulated to create works based on inner feelings and thoughts. Charles Baudelaire [1821–1867], the French symbolist poet who claimed to hate having his picture made (but had it made anyway by a number of photographers), summed up this position in a diatribe on the role of photography in the arts and society and the public's lack of imagination—its failure to critically think and question the world in which it lives—a situation that he blamed on the ascendance of science and mechanical inventions. Baudelaire wrote:

> Since photography gives us every guarantee of exactitude that we could desire (they really believe that, the mad fools!), then photography and Art are the same thing. From that moment our squalid society rushed, Narcissus to a man, to gaze at its trivial image on a scrap of metal. As the photographic industry was the refuge of every would-be painter, every painter too ill-endowed or too lazy to complete his studies, this universal infatuation bore not only the mark of a blindness, an imbecility, but had also the air of a vengeance. . . . It is time, then, for it to return to its true duty, which is to be the servant of the sciences and the arts—but a very humble servant, like printing or shorthand which have neither created nor supplemented literature. . . . let it be the secretary and clerk of whoever needs an absolute factual exactitude in his profession. . . . But if it be allowed to encroach upon the domain of the impalpable and the imaginary, upon anything whose value depends solely upon the addition of something of a man's soul, then it will be so much the worse for us![3]

Not everyone thought photography was bound up by its technical limits. **Lady Elizabeth Eastlake** [1809–1893], married to Sir Charles Eastlake [1793–1865], the Director of the National Gallery of Art in London and first president of the Photographic Society of London, published an early, unsigned history of photography, offering an astute appraisal of the medium's position in relation to art. After indexing photography's inadequacies when compared with painting, she dismissed the position taken by critics like Baudelaire as "mistaken" and described photography's future as an autonomous "new medium of communication," Eastlake wrote:

> The broader the ground which the machine may occupy, the higher will that of the intelligent agent be found to stand. If, therefore, the time should ever come when art is sought, as it ought to be, mainly for its own sake, our artists and our patrons will be of a far more elevated order than now: and if anything can bring about so desirable a climax, it will be the introduction of Photography.[4]

A turning point in photography's quest to be recognized as an independent medium occurred in 1861 when the French studio of Mayer and Pierson accused another studio, Betbeder and Schwabbe, of unauthorized copying, claiming their celebrity photographs were protected under French copyright laws that

6.2 EUGÈNE DURIEU. *Reclining Nude,* ca, 1855. 6⅞ × 9⅝ inches. Salted paper print. Some painters, including Dante Gabriel Rossetti, made use of photography without publicly acknowledging its influence.[5] Others, such as Eugène Delacroix [1798–1863], saw photography as advantageous to drawing and painting. Delacroix was a leader of the *Romantic Movement* that rejected classical formalism and emphasized artistic imagination featuring the dramatic, emotional, and personal, often through the use of historic and/or exotic subject matter. Delacroix posed nude models for Eugène Durieu to photograph and then enthusiastically used these photographs as source material. Delacroix claimed that looking at photographs provided him a greater understanding about the human body than the inventions of any "scribbler."[6] Courtesy George Eastman House.

applied to the arts. To be covered under these laws, photography had to first be declared an art. In early 1862, the court ruled against Mayer and Pierson. Later that year, however, the court declared on appeal that photography was indeed an art and entitled to legal protection. After the second decision, the artist and social satirist Honoré Daumier released *Nadar Raising Photography to the Height of Art,* a lithograph featuring Nadar in his balloon, taking pictures above Paris, in which every building was labeled with the word "Photography" (see Figure 6.1). A group of artists, fearful of the effects this decision would have on their profession, signed a petition objecting to the appeal court's decision, which the court rejected. Photography was held to be the product of thought and spirit, of taste and intelligence, and to bear the imprint of the individual personality; therefore, it could legally be considered a legitimate art. Mayer and Pierson published *La photographie* (1862), a book on aesthetics and technique that proclaimed the importance of the photograph. That same year André Disderi brought out *L'Art de la Photographie,* in which he discussed the artistic controls available to photographers and compared his studio methods to those of contemporary painters, proclaiming the camera could be controlled like a painter's brush. The joining of photographic form to the arts was officially underway.

As Lady Eastlake noted, one of the major obstacles blocking the recognition of photography as art was the wet plate's insensitivity to all parts of the spectrum except blue and ultraviolet radiation, which

6.3 WILLIAM LAKE PRICE. *Don Quixote in His Study,* ca. 1855. Albumen silver print. The simplest way for photography to appear artistic was to take on the trappings of painting. William Lake Price [1810–1896], a watercolor painter, took this literal approach by dressing up his subjects in the style of the Royal Academicians. The problem with this imitative manner is that it did not go past the surface appearance and explore photography's innate language. Courtesy Gernsheim Collection, Humanities Research Center, University of Texas at Austin.

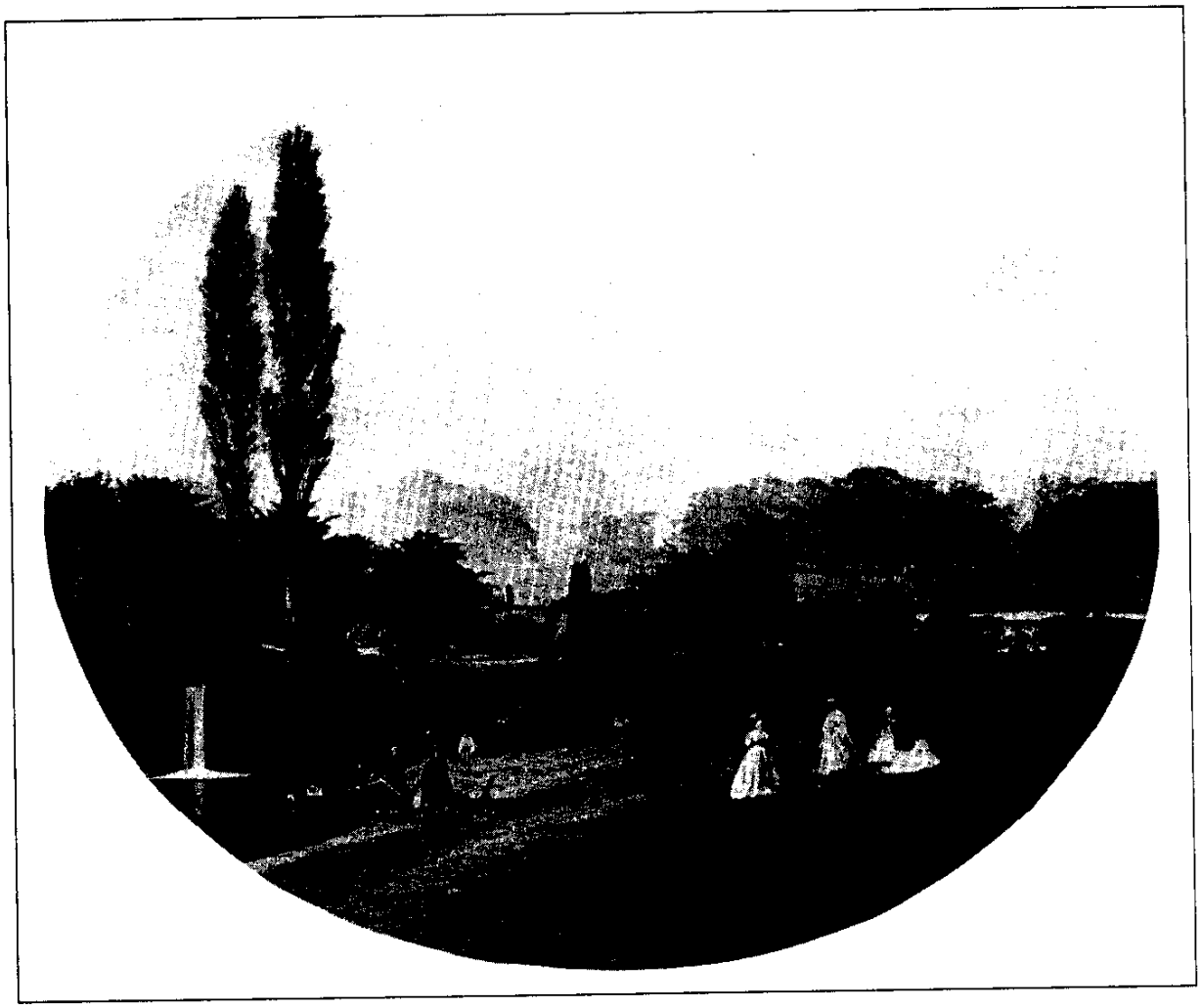
gave colors an inaccurate translation into black-and-white tones.[7] Red or green subjects were not properly recorded and appeared in prints as black. Exposures, calculated to record detail in the land, overexposed the sky. The amount of overexposure was not even and produced areas of low density in the negative. When the negative was printed these sections appeared gray and mottled, an effect not suitable for picturesque landscapes.

There were two ways to correct the problem. The first was to outline the horizon area of a negative with opaque paint and cut a mat to cover the sky portion of the negative. This resulted in a print with an open, solid white sky that was still unpicturesque. The artistic solution was to make a *combination print* that was complicated, time-consuming, and expensive. It involved making two separate negatives, one for the ground and a second for the sky. After processing they were masked, with the land's features printed in from the first negative and the sky's from the second. Landscape photographers often made a stock collection of sky negatives, which were used in printing future views. Gustave Le Gray's seascapes were considered spectac-

6.4 UNKNOWN PHOTOGRAPHER. *Untitled,* [Girl in a black dress holding a small white dog], ca. 1850s. Calotype. Courtesy George Eastman House.

ular for not only stopping the action of waves but for their dramatic cloud formations, achieved from separately made cloud negatives. Le Gray's work demonstrated that photographers could translate feelings into their work and control their medium just as other artists did. Oscar G. Rejlander's allegorical work, *Two Ways of Life* (see Figure 6.9), so clearly verified the artistic potential of combination printing that it became an accepted practice.

The practice of hand-applying color overcame photography's lack of color. Alfred H. Wall promoted the practice in his *Manual of artistic colouring as applied to photographs* (1861). Wall, a former miniature and portrait painter, said that painting over a photograph was no more unacceptable than painters such as Leonardo and Titian painting over the *abbozzo.*[8] Wall complained that artists repudiated colored photographs because they were not paintings and that photographers rejected them because they were not true photographs. He saw no reason for censuring work that combined "the truth of the one with the loveliness of the other." Composite and hand-colored images took time and deft handwork. The additional time was seen as a way to make photography less mechanical and more artistic. This in turn increased a photograph's value and encouraged photographers to portray subjects previously reserved for painters.



6.5 UNKNOWN PHOTOGRAPHER (British). *Windsor Park, Virginia Waters*. ca. 1865. 8 5/16 × 10 1/16 inches. Albumen silver print. The orderly picturing of nature was a prominent topic in Exchange Club work. *Windsor Park, Virginia Waters* shows an idyllic English country scene. The elegant suburban park presents life as a "view." The river, the waterfalls, the lawn, the boat, and the stylishly dressed women give the impression that nature has been subdued. The tall, sharply focused trees on the left side of the composition are juxtaposed against the blurry trees in the background. The calm hills offer a sense of aerial perspective. The lavish presentation of lights and darks, the balance between spacious effect and detail, provide the sense of a romantic painting. Courtesy George Eastman House.

Discovering a Photographic Language

During the mid-nineteenth century *realism* became a force in the arts.[9] Realism sought to counter the idealized subject matter of Romantic and Neoclassical painting with direct and frank views of everyday life. The first Realist exhibition was organized by Gustave Courbet [1819–1877], who used the camera for nude studies in paintings, in protest against the rejection of his works by the Academy. As the public became acquainted with photography's veracity and ability to give significance to everyday experiences, their expectations about how reality should be represented and what subjects were worthy of depiction changed. Confusingly, photographs were considered more artistic when they looked less photographic, and retouching methods were developed that made a photograph resemble a painting. Paintings, on the other hand, were thought to be more artistic if they featured

6.6 LADY CLEMENTINA HAWARDEN.
Photographic Study, early 1860s. 7⅞ × 5⅝ inches. Albumen silver print. Courtesy Gilman Paper Company Collection, N.Y.

"photographic" detail. This paradox resulted in neither medium being valued for its own inherent characteristics.

To enhance the artistic value of their work, educated photographers looked to the painterly style of the *symbolic, narrative allegory,* the figurative treatment of one subject under the appearance of another. Their subjects often appeared as representations of abstract moral and/or spiritual qualities, related as a fable or parable. The *Pre-Raphaelites,* a brotherhood of English painters and poets founded by Dante Gabriel Rossetti in 1848 to protest the low standards of British art, reacted against the material world of industrializing England and embraced the beauty and simplicity of the medieval world through symbolism; they were a major influence on photographers with artistic aspirations. This initial process of imitating accepted artistic styles put photographers on track to discovering their medium's own bona fide artistic characteristics.

Amateur calotypists realized that the calotype's inherent "imperfections" also provided a key to unlock its innate strengths. This reinforced the discoveries of Hill

6.7 LADY FILMER. *Untitled*, circa 1864. 11¼ × 9 inches. Watercolor with collaged photographs. Courtesy University Art Museum, University of New Mexico, Albuquerque, NM.

and Adamson's genre work that connected a subject with the space around it and amplified its distinct identity. With the inclination, time, and resources to experiment, amateur calotypists saw that the beauty and power of their calotypes came from their broad, soft, grainy portrayals, where the human figure can be perceived as form and mass. The professionals favored the detail that the wet-plate system offered even though it required methodical planning that discouraged spontaneity. The calotypist could make a negative in ten minutes, whereas the wet-plate maker needed an hour, reducing the likelihood the wet-plate photographer would serendipitously make pictures. A wet plate was also more expensive, and if a plate did not deliver the expected result, a photographer would scrape the emulsion off and reuse the glass. Calotypists, in contrast, were stuck with their mistakes because the paper negative was not reusable, which gave them time to reflect on these accidental happenings. Many such accidental negatives were printed to see what the photographic process had revealed. These fresh and unique camera-regulated ways of seeing that also incorporated unexpected, chance occurrences into the visual outcome, offered an alternative to natural vision and Renaissance models for portraying the world.

A homemade portrait album from the 1850s by an unidentified photographer (probably English) shows us the family pictures of a well-to-do amateur who seemed

6.8 LEWIS CARROLL. *Irene MacDonald*, 1863. Albumen silver print. 5⅝ × 7½ inches Courtesy Gernsheim Collection, Humanities Research Center, University of Texas at Austin.

aware of posing strategies used by other calotypists, including Talbot. Mixed in with the formalistic concerns of composition and light is an unmistakable *snapshot impulse*. We see what has become the traditional snapshot subject matter of family and home: a slightly blurry, smiling little girl with her doll, looking directly into the camera; a mother and her baby; a mother with her son and his grandmother; a close-up portrait of the family dog; a group portrait of mother, father, and six children. One photograph (see Figure 6.4) is of a girl in a black dress holding her small, moving white dog, which has turned into a multiplasmic ghost. Such early family albums capture and relay a sense of everydayness and commemorate these previously undepicted scenes.

The structure already existed in Europe for clubs of upper-class amateurs that provided a sense of community, organization, and common purpose. (American photographers had to rely on photographic magazines to communicate as photo clubs did not evolve in the States until the advent of the hand camera in the 1880s.) The British *Exchange Club* membership featured prominent practitioners such as Roger Fenton, Oscar Rejlander, William Lake Price, and William Newton, and women such as Lady Caroline Nevill, Lady Augusta Mostyn, and Mary E. Lynn. A jury would select picturesque landscapes, still lifes, genre scenes, exotic foreign subjects, historic sites, and allegorical compositions from the membership for an annual album.[10] To meet the increasing demand to learn photography, King's College, the University of London, became the first site of higher learning to offer photography in December 1856. By the start of the 1860s, there were at least twenty-four different photographic societies in Great Britain. Some, such as the Amateur Photographic Association (1861–1905), mounted exhibits of up to a thousand photographs. The images, often in ornate frames, were squeezed onto the wall from the floor to the ceiling, forcing viewers to assume an "all fours" position to see some of the pictures. This dense-pack style of presentation continued through the end of the century.

Amateurs pushed the boundaries of accepted practice and explored a more personal style of expression than the commercial studios. Rejecting the genteel and preordained poses of the commercial studio in favor of a more active image, they pictured a wider range of

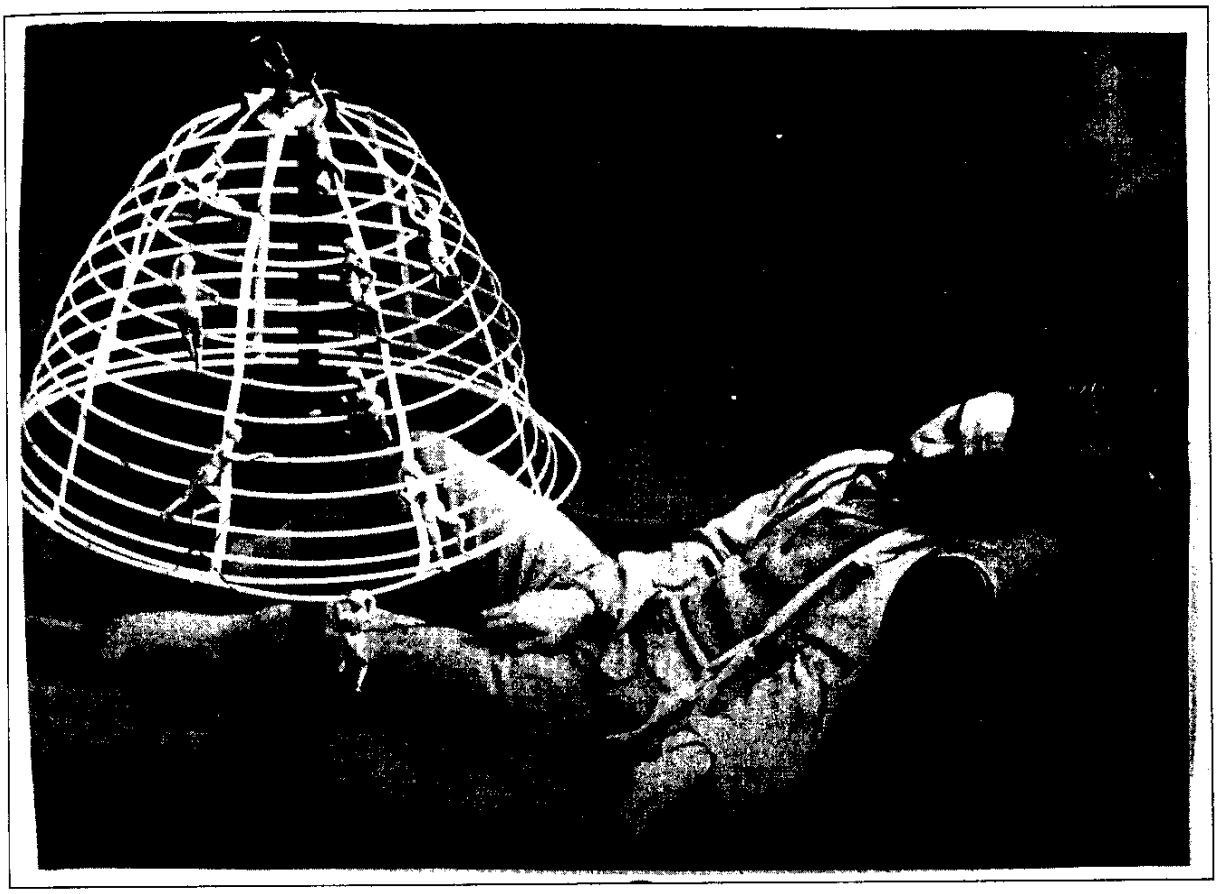
6.9 OSCAR G. REJLANDER. *Two Ways of Life,* 1857. 16 × 31 inches. Albumen silver print. Courtesy Royal Photographic Society, Bath, England.

facial expressions and postures. One such amateur, **Lady Clementina Hawarden** [1822–1865], working with family and friends, provides glimpses into the dynamics of the intimate female world of the well-to-do Victorians where passion is kept hidden. Through the languor that surrounds Hawarden's restrained subjects, viewers search the frame for a trace of desire.

Another amateur, **Lady Filmer** [1840–1903], made early collages that combined carte-de-visite portraits with watercolor designs of butterflies and floral arrangements (see Figure 6.7). These pieces, with their occasional sexual allusions, reveal a pre-Freudian spirit of *unconscious association,* aspects of mental life not subject to recall at will, that could only be expressed in pictures—the language for such a discussion did not exist at the time. Photographic montage allowed people of various levels of artistic skill to take everyday events and reorient them in time and space. This positioned photography as a medium that invited artists to delve in the free association, cut and paste world of dreams, enabling the unconscious, repressed residue of socially unacceptable desires and experiences to come to conscious recognition.

Lewis Carroll, the pseudonym of Reverend Charles Lutwidge Dodgson [1832–1898], began making photographs in 1856 that mirror the concerns he wrote about in his Victorian fantasy novels *Alice's Adventures in Wonderland* (1865) and *Through the Looking Glass* (1872). Carroll's adroitness in the company of prepubescent girls enabled him to compose images revealing their natural sense of dexterity and intuitive spontaneity. Influenced by the Pre-Raphaelites ideals of feminine innocence and virgin beauty, Carroll's images probed beneath the surface of the sitter, and have come to play a role in creating our conception of Victorian childhood. Carroll's preference for moralizing works also led him to endow his childhood sitters with his own adult, melancholic emotional and sexual dilemmas (see Figure 6.8). Criticized for photographing young girls in the nude (Victorians rarely made the distinction between poetic representations and pornography), Carroll destroyed those negatives that he said "so utterly defied convention."

Oscar Gustave Rejlander [1813–1875] learned the basics of photography one afternoon in 1853 in order to make studies for his paintings. Within two years he had opened a photographic portrait studio. In 1857 the influential Manchester Art Treasures Exhibition allowed photographs to be displayed alongside painting, drawing, sculpture, and engraving for the first time, signaling an acceptance of artistic photographs. This was a breakthrough, as photography was often shown in segregated categories under industrial, scientific, and technical headings. Victorians regarded the camera as a machine, with its own diagnostic and interpretive capabilities, and its practitioners as scientists and technicians first, artists second (if artists at all). As the standards for artistic photography were based on painting, the sharp, mechanical literalness of the photograph was considered a hindrance in achieving high art. To overcome this obstacle photographers began to use second-rate optics, smear their lens, or kick the tripod during exposure to suppress photographic sharpness. Finally, in order to compete with allegorical painting, photographers' work



6.10 OSCAR G. REJLANDER. *The Bachelor's Dream*, 1860. 5 5/16 × 7 7/16 inches. Albumen silver print. Is this image a parody of the hoop craze, a moralistic allegory on the fruitlessness of striving, or is it a pre-Freudian blending of the masculine and feminine selves? Could the climbing figures represent the different levels of the mind? Are the two upside-down figures celebrating, or have they "fallen" after reaching the pinnacle? Do we climb to the top only to discover that "it" can't be understood with the rational mind?
Courtesy George Eastman House.

had to be morally uplifting and instructive. This was accomplished by constructing complex *tableaux*, an arrangement of persons and/or objects to form a scene. This style of working allowed photographers to overcome photography's mechanical status and circumvent the technical limits of the wet plate. Rejlander set out to create a photograph requiring "the same operations of mind, the same artistic treatment and careful manipulation"[11] as works done in crayon or paint.

Rejlander produced an elaborate allegorical piece contrasting Philosophy and Science. *The Two Ways of Life* is a marvel of combination printing. During a six-week period Rejlander did sketches, hired models, and made thirty separate negatives which he masked, printed on two pieces of paper, and connected. This work was rephotographed, and editions were reproduced. The photograph's unusually large size, 16 × 31 inches, made people stop and notice, enabling it to hold its own on a gallery wall. *The Two Ways* represents "a venerable sage introducing two young men into life—the one, calm and placid, turns towards Religion, Charity and Industry, and the other virtues, while the other rushes madly from his guide into the pleasures of the world, typified by various figures, representing Gambling, Wine, Licentiousness and other vices; ending in Suicide, Insanity and Death. The center of the picture, in front, between two parties, is a splendid figure symbolizing Repentance, with the emblem of Hope."[12]

Two Ways did not sell well and provoked debate on the ethics of combining negatives to manufacture an image that never existed, marking an early instance of critical thinking about the medium. The picture's detractors claimed it was a violation of the "true nature" of photography; works of "high art" could not be accomplished by "mechanical contrivances."[13] In the Victorian age, when piano legs were costumed with pantaloons, the photographic nudity of *Two Ways* was shocking.[14] The process of combination printing led to the first photographic montages designed for a public audience, providing a

6.11 R. C. LUCAS. *A Necromancer,* from *Studies of Expression.* Albumen silver print. Following the lead of British artist and sculptor R. C. Lucas who made a series of role-playing self-portraits, Rejlander used himself to catalog human emotional responses before the camera in *Studies of Expression* (1865). These became well-known when they appeared as illustrations in Charles Darwin's *The Expression of the Emotions in Man and Animals* (1872). Rejlander also made children's portraits, attracting the notice of Lewis Carroll and Julia Margaret Cameron. Courtesy George Eastman House.

refreshing set of representational possibilities. Since it questioned established viewing rules, many felt threatened and rejected the new way of picturemaking. The concept that art was a matter of ideas and not limited to specific practices was given voice by the French naturalist Louis Figuier, who believed photography could improve artistic eloquence and public taste, and that "what makes an artist is not the process but the feeling."[15]

Photography as a fine art also faced resistance from art dealers who saw photography as a threat to their investments and sought to keep photographs out of their galleries. Rejlander complained that "picture-dealers are, or have been, from interested motives, the greatest opponents to photography."[16] But even as photography was being denounced, the very fact that important minds, such as Baudelaire's, were critically discussing the medium increased its credibility, importance, and visibility. The rise of photography as an art form would transform art's traditional function of portraying reality. This encouraged artists to explore new directions that eventually included *abstraction,* in which the concept of art as imitation of nature was abandoned. Rejlander's efforts have been criticized as being "imitations," yet they were a necessary step in expanding the boundaries of photographic practice, inspiring others to enlarge photography's dialogue and role. The artistic criticism and financial hardships took their toll on Rejlander, however, who only made a few more combination prints; none of them approached the polemic nature and scale of *The Two Ways.*

Rejlander produced numerous formula-driven portraits, but he also created other images that broke with accepted working practice. *Hard Times* (1860) made conscious use of double exposure, converting an error into an authentic photographic form, one not based on painting's prescriptions. In *The Bachelor's Dream* (Figure 6.10), which resembles no other photograph from that time, Rejlander grapples with visualizing a mental impression by incorporating the fashionable woman's skirt hoop into the composition. Its phantomlike qualities blend fantasy and reality, raising questions and providing no answers. The photograph invites viewers to interpret it, challenging the audience to think about and question whether photography can convey complex intellectual thoughts.

Henry Peach Robinson [1830–1901] was a painter who took up photography in 1852 and opened a photographic portrait studio five years later. Rejlander's *The Two Ways of Life* inspired Robinson to undertake combination printing. In 1858, Robinson exhibited *Fading Away* (see Figure 6.12), made from five negatives, showing a young girl on her deathbed with her grieving mother, sister, and fiancé. By Victorian standards this sorrowful scene was scandalously morbid as it did not conform to accepted ideas about what photography

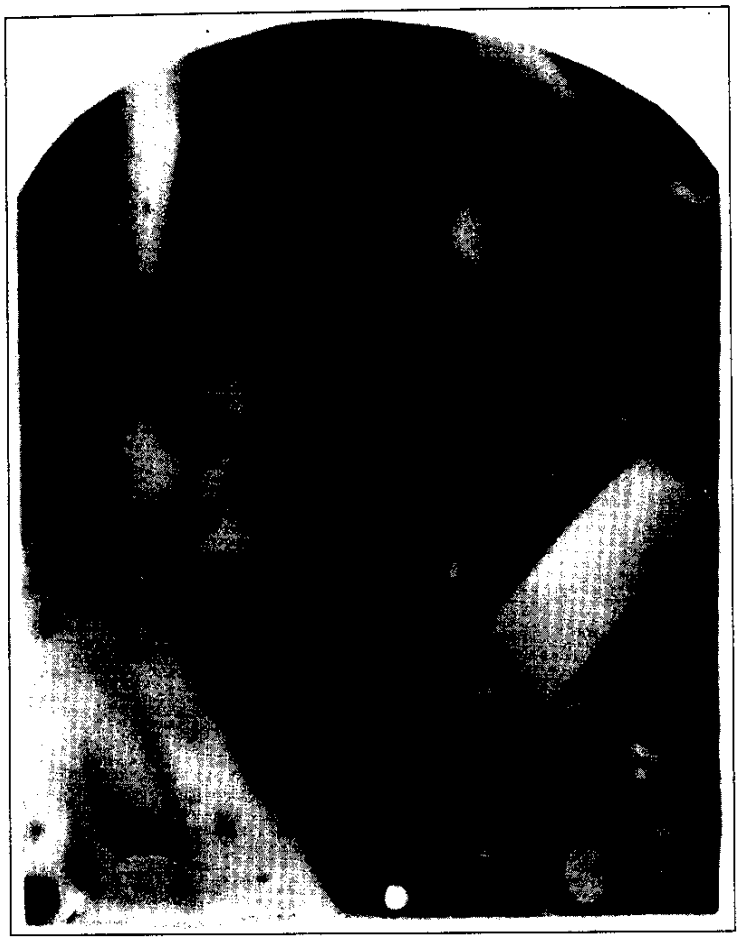
6.12 HENRY PEACH ROBINSON. *Fading Away*, 1858. 9⅝ × 15⅜ inches. Albumen silver print. Courtesy George Eastman House.

should picture. Far more distressful scenes were painted, but because *Fading Away* was a photograph people perceived it as a literal representation. In an age when death was not hidden away, most people were familiar with such scenes. After Robinson revealed that his primary model "was a fine healthy girl of about fourteen, and the picture was done to see how near death she could be made to look,"[17] the work was criticized for being manufactured.

The combination prints of Rejlander and Robinson challenged the belief that painters alone had the right to create scenes while photographers could never be more than mere mechanical extensions of their equipment. For photography to make its way in the art world it had to debunk such limiting ideas. Robinson championed combination printing as Prince Albert purchased *Fading Away* and gave Robinson a standing order for every pictorial image he created. Once audiences overcame the shock of the combination print, they accepted it, realizing that Robinson's fundamental ideology embraced their notions of art. This made Robinson the most popular, emulated, and well-to-do photographer of the second half of the nineteenth century. Robinson's books and articles energetically articulated his position and influenced the development of future photographers. His *Pictorial Effect in Photography* (1869), which advocated the basic canons of painting, "composition and chiaroscuro," as the "guiding laws" of an art photograph,[18] was the most widely read photography textbook of the nineteenth century.[19]

Robinson sought methods for uniting the rational with the subjective, to allow photographers to achieve the picturesque. He believed that combination printing gave "much greater liberty to the photographer and much greater facilities for representing the nature of nature."[20] Critics were outraged by Robinson's constructed images for violating their sense of photographic veracity. Combination printing was acceptable in landscapes as the public was conditioned by painting to expect idealized renditions, but when it came to portraying humans viewers associated photography with unarranged truth. Robinson was able to expand photography's reach and get the public to embrace his combinations as expressing the accepted allegorical ideals and standards of the day. Robinson's work possesses a duality common to educated practitioners born before the invention of photography who thought like painters. Although Robinson's representations broke no new ground, he showed that photography could achieve the same artistic goals as painting, thus allowing the next generation to explore photography's own morphology.

In the short term his work had the opposite effect. Robinson's allegorical ideas, magical theatrical techniques, and moralizing sentiment were so successful that they dominated photographic discourse and stifled other ways of thinking photographically until the 1880s. Robinson's striving for a literary image,



6.13 JULIA MARGARET CAMERON. *Kathy Kuhn and Her Father,* 1864, from the *Watts Album.* 8⅛ × 6⅜ inches. Albumen silver print. Nathan Lyons observed that Cameron's "portraits represent a radical departure in thinking about photographic portraiture. . . .The work possessed movement, a type of direct confrontation, and a scale of the head within the frame that had nothing to do with other works being made photographically at that time. Her excitement about what she saw on the ground-glass did not depend upon the subject she was photographing, but on her subjective response."[21] Courtesy George Eastman House.

reminiscent of nineteenth-century painting, has been in critical eclipse for most of the twentieth century. Yet today Robinson's practices look like progenitors of the postmodern photographers who stage tableaux before the camera and digitally manipulate their materials.

Julia Margaret Cameron [1815–1879] lived in India as a member of the socially privileged British-Indian colonial system before returning with her family to England in 1848, where their home became a meeting place for people in arts and letters. When Cameron was forty-nine, her daughter gave her a camera and she taught herself the collodion process. Her goal was to make romantic, allegorical photographs capable of expressing the ideals of the Pre-Raphaelites, who saw evil in industrialization and wanted the return of heroes who believed in God, honor, and morality. Cameron wrote: "My aspirations are to ennoble Photography and to secure for it the character and uses of High Art by combining the real & Ideal and sacrificing nothing of Truth by all possible devotion to Poetry and beauty."[22] Toward these ends, Cameron turned a coal-house into a darkroom; a glass-roofed chicken-house became her studio, where maids and family modeled. Cameron's status as an aristocratic amateur, who did not have to make a living with her photography, enabled her to embark on series of portraits that were uniquely photographic in nature. Cameron tossed aside many standard working practices in order to photographically record the spiritual essence of her sitter. The spontaneous quality of her earliest work, such as *Kathy Kuhn and Her Father,* reveals a proto-snapshot sensibility.

Cameron brought her camera close to her subjects, fashioning a close-up portrait that brought to the forefront the subject's distinctive intellectual and psychological qualities. Her head portraits (see chapter opener) were made on large plates (about 11 × 14 inches) with a giant 30-inch focal length lens! They were so unusual Cameron would sometimes write below the print: "From Life Not Enlarged." Cameron's use of directional light rendered the features and modeling of each sitter. Although Cameron's exposures averaged about five minutes, she did not use a headrest, instead allowing the sitter's natural motion to add spiritual life to the picture. The idea that the blur could be used as a strategy was a conceptual break from the portrait ideal in which a sitter was rendered absolutely still and part of the viewing pleasure was in examining idiosyncratic detail. Cameron played down photographic veracity in favor of a subjective response that included bodily sensations, merging the rational and immaterial levels of reality.

Cameron's most innovative work involved capturing a sitter's spiritual qualities. Her blurry image of Herschel (see chapter opener), with its competing areas of light and dark and its tracts of absolute black, is more about atmosphere than it is a portrait of a man. The head, surrounded by darkness, radiates a metaphysical endowment as exactitude loses all consequence. Cameron was not ignorant of standard methods, but she chose to go her own way, making what others considered blunders part of her style. Cameron's *Sappho* (circa 1866) had a big crack in the lower left portion of plate, and rather than discarding it she printed it.[23] Casting against

6.14 UNKNOWN PHOTOGRAPHER. *The Ghost of Milton.* 3½ × 7 inches. Albumen silver stereograph. Ghosts were created when a veiled figure entered the scene for a portion of the exposure, producing a transparent phantom. To maintain believability, less scrupulous operators concealed their methods from the public and used ploys such as: a plate with a previously recorded ghost image, a transparency of a ghost image placed in front of the lens, a miniature ghost transparency placed behind the lens, or a ghost image reflected into the lens during exposure. Courtesy George Eastman House.

type and selecting a heavy featured, middle-aged woman for Sappho, Cameron's rendition of the Greek lyrical poet from the island of Lesbos also succeeds. Rather than concealing the nature of the photographic process, Cameron exults in it, even allowing processing drips to remain visible in the final image, thereby establishing a direct visual connection between the process and the product. She let the viewers know that what she accomplished was done through the agency of photography, paving the way for the formation of an inherent, rather than imitative, photographic language.

Cameron also disobeyed the rules of focus to create fresh visual forms and points of emphasis. She was influenced by the photographic work of the English painter David Wilkie Wynfield, with whom she took photography lessons, who pictured his friends dressed-up in Renaissance costumes. A critic had this to say about Wynfield's work and its relationship to the boundaries of photographic portrayal:

> A photographer's grand aim is get everything into an "artificial focus," which is widely different from that of the human eye. . . . Mr. Wynfield—has actually produced a set of photographs which are intentionally and confessedly "out of focus" . . . they ought to revolutionize photographic portraiture.[24]

The issue of focus was critical in defining serious nineteenth-century artistic practice. During the 1860s, Cameron's work helped establish the issue of selective focus as a criterion of peerless practice. The making of "out of focus" photographs was considered an expressive remedy that shifted the artificial, machine-focus of a camera towards a more natural vision. Cameron stated that "my first successes in my out-of-focus pictures were a fluke. That is to say, that when focusing and coming to something which, to my eye, was very beautiful, I stopped there instead of screwing on the lens to the more definite focus which all other photographers insist upon."[25] As the aesthetics of practice changed in the early 1870s, coming to rely on the transparent exactitude of the wet-plate as the photographic standard, Cameron shifted too and made "in focus" pictures.

Cameron's roots were those of a family photographer who celebrated the lives and values of those closest to her, establishing transcendental principles still being pictured by millions of family snapshooters. Inspired by her friendship with allegorical artist George Watts, Cameron's idealized, mythical pieces picture women in marriage and motherhood, and illustrious women from history, literature, and religion. Cameron was the first photographer to stress the power and significance of women's roles.[26]

Americans and the Art of Nature

Americans approached the spiritual image not through the religious icons of Italian master painters but through nature, in an optimistic movement known as *transcendentalism.* Espoused by Thomas Carlyle, Ralph Waldo Emerson, and Henry David Thoreau in the mid-1800s,