

Payam Noor University

**A Brief Story of Photography:**  
English for Academic Purposes in Photography

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امروز کتابخوانی و علم‌آموزی نه تنها یک وظیفه‌ی ملی، که یک واجب دینی است!

### مقام معظم رهبری

در عصر حاضر یکی از شاخصه‌های ارزیابی رشد، توسعه و پیشرفت فرهنگی هر کشوری میزان تولید کتاب، مطالعه و کتاب‌خوانی مردم آن مرز و بوم است. ایران اسلامی نیز از دیرباز تاکنون با داشتن تمدنی چندهزارساله و مراکز متعدد علمی، فرهنگی، کتابخانه‌های معتبر، علما و دانشمندان بزرگ با آثار ارزشمند تاریخی، سرآمد دولت‌ها و ملت‌های دیگر بوده و در عرصه فرهنگ و تمدن جهانی به‌سان خورشیدی تابناک همچنان می‌درخشد و با فرزندان نیک‌نهاد خویش هنرنمایی می‌کند. چه کسی است که در دنیا با دانشمندان فرزانه و نام‌آور ایرانی همچون ابوعلی سینا، ابوریحان بیرونی، فارابی، خوارزمی و ... همچنین شاعران برجسته‌ای نظیر فردوسی، سعدی، مولوی، حافظ و ... آشنا نباشد و در مقابل عظمت آنها سر تعظیم فرود نیاورد. تمامی این افتخارات ارزشمند، برگرفته از میزان عشق و علاقه فراوان ملت ما به فراگیری علم و دانش از طریق خواندن و مطالعه منابع و کتاب‌های گوناگون است. به شکرانه الهی، تاریخ و گذشته ما، همیشه درخشان و پر بار است. ولی اکنون در این زمینه در چه جایگاهی قرار داریم؟ آمار و ارقام ارائه‌شده از سوی مجامع و سازمان‌های فرهنگی در مورد سرانه مطالعه هر ایرانی، برایمان چندان امیدوارکننده نمی‌باشد.

کتاب، دروازه‌ای به سوی گستره دانش و معرفت است و کتاب خوب، یکی از بهترین ابزارهای کمال بشری است. همه دستاوردهای بشر در سراسر عمر جهان، تا آنجا که قابل کتابت بوده است، در میان دست‌نوشته‌هایی است که انسان‌ها پدید آورده و می‌آورند. در این مجموعه بی‌نظیر، تعالیم الهی، درس‌های پیامبران به بشر، و همچنین علوم مختلفی است که سعادت بشر بدون آگاهی از آنها امکان‌پذیر نیست. کسی که با دنیای زیبا و زندگی‌بخش کتاب ارتباط ندارد بی‌شک از مهم‌ترین دستاورد انسانی و نیز از بیشترین معارف الهی و بشری محروم است. با این دیدگاه، به‌روشنی می‌توان ارزش و مفهوم رمزی عمیق در این حقیقت تاریخی را دریافت که اولین خطاب خداوند متعال به پیامبر گرامی اسلام (ص) این است که «بخوان!» و در اولین سوره‌ای که بر آن فرستاده عظیم‌الشان خداوند، فرود آمده، نام «قلم» به تجلیل یاد

شده است: «إِقْرَأْ وَرَبُّكَ الْأَكْرَمُ. الَّذِي عَلَّمَ بِالْقَلَمِ» در اهمیت عنصر کتاب برای تکامل جامعه انسانی، همین بس که تمامی ادیان آسمانی و رجال بزرگ تاریخ بشری، از طریق کتاب جاودانه مانده‌اند.

دانشگاه پیام‌نور با گستره جغرافیایی ایران شمول خود با هدف آموزش برای همه، همه‌جا و همه‌وقت، به‌عنوان دانشگاهی کتاب‌محور در نظام آموزش عالی کشورمان، افتخار دارد جایگاه اندیشه‌سازی و خردورزی بخش عظیمی از جوانان جویای علم این مرز و بوم باشد. تلاش فراوانی در ایام طولانی فعالیت این دانشگاه انجام پذیرفته تا با بهره‌گیری از تجربه‌های گرانقدر استادان و صاحب‌نظران برجسته کشورمان، کتاب‌ها و منابع آموزشی درسی شاخص و خودآموز تولید شود. در آینده هم، این مهم با هدف ارتقای سطح علمی، روزآمدی و توجه بیشتر به نیازهای مخاطبان دانشگاه پیام‌نور با جدیت ادامه خواهد داشت. به‌طور قطع استفاده از نظرات استادان، صاحب‌نظران و دانشجویان محترم، ما را در انجام این وظیفه مهم و خطیر یاری‌رسان خواهد بود. پیشاپیش از تمامی عزیزانی که با نقد، تصحیح و پیشنهادهای خود ما را در انجام این وظیفه خطیر یاری می‌رسانند، سپاسگزاری می‌نماییم. لازم است از تمامی اندیشمندانی که تاکنون دانشگاه پیام‌نور را منزلگه اندیشه‌سازی خود دانسته و ما را در تولید کتاب و محتوای آموزشی درسی یاری نموده‌اند، صمیمانه قدردانی گردد. موفقیت و بهروزی تمامی دانشجویان و دانش‌پژوهان عزیز آرزوی همیشگی ما است.

دانشگاه پیام‌نور

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## **Preface**

In today's interconnected world, the ability to communicate in an international language is crucial for opening new horizons and opportunities. Mastery of it not only facilitates global communication but also allows individuals to engage in international discourse and connect with diverse audiences. This book is written in English to serve as a valuable resource for photography students, aiming to bridge the gap between language and the art of photography.

Understanding the history and story of photography is a vital tool for unlocking our perceptual windows to the present world of photography. By exploring the rich historical context and evolution of photography, readers can gain insights into how visual communication has shaped and continues to influence our world. We have crafted this book to intertwine language skills with photographic knowledge, equipping our readers with the tools necessary to navigate and succeed in the global field of photography. As you delve into these pages, we invite you to see this book not only as a historical account but as a stepping stone toward broader photographic endeavors and international engagement.

**Siamak Rahimi – Meysam Sadeghpour**  
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## **Introduction**

Photography, an art form and technological marvel, has indelibly shaped our world. It has become an intrinsic part of our lives, a universal language that transcends cultural and linguistic barriers. From capturing fleeting moments of personal significance to documenting historical events and sparking social change, photography's impact is undeniable. —A Brief Story of Photography,” by Siamak Rahimi and Meysam Sadeghpour, delves into the fascinating history of this medium, tracing its evolution from its nascent stages to its current ubiquitous presence.

This book is not merely a dry recitation of dates and inventions. It is a narrative that explores the human desire to capture and preserve moments in time, a desire that has driven innovation and artistic expression for centuries. The authors weave a compelling story of how photography emerged from the confluence of scientific curiosity, artistic vision, and technological ingenuity. They explore the early experiments with light-sensitive materials, the development of the camera obscura, and the groundbreaking innovations that led to the first permanent photographic images.

The journey begins with pioneers like Nicéphore Niépce, whose blurry —View from the Window at Le Gras” (circa 1826) stands as a testament to the relentless pursuit of capturing reality. This image, considered the world's first photograph, marked the beginning of a revolution in visual representation. The authors then introduce Louis Daguerre, whose daguerreotypes, with their exquisite detail and mirror-like surfaces, captivated the world. Daguerre's process, which produced unique, non-

reproducible images on silver-plated copper sheets, became wildly popular and sparked a global fascination with photography.

We learn about William Henry Fox Talbot and his calotype process, which, though less visually stunning than the daguerreotype, introduced the crucial concept of the negative-positive process, paving the way for modern photography. Talbot's innovation allowed for the reproduction of multiple prints from a single negative, a breakthrough that would prove instrumental in the widespread adoption of photography.

—A Brief Story of Photography” meticulously examines the technical advancements that have shaped the medium. The authors explain the intricacies of the collodion process, developed by Frederick Scott Archer in 1851, which, despite its cumbersome nature, significantly improved the quality and accessibility of photography. This wet-plate process combined the detail of the daguerreotype with the reproducibility of the calotype, marking a significant step forward in photographic technology.

They discuss the rise of the ambrotype, tintype, and carte-de-visite, each of which played a unique role in democratizing photography and making it a part of everyday life. The ambrotype, a positive image on glass, offered a less expensive alternative to the daguerreotype. The tintype, an image on a thin sheet of iron, was even more affordable and durable, making photography accessible to a broader audience. The carte-de-visite, a small paper photograph mounted on a card, became a popular format for portraiture and sparked a collecting craze in the 1860s.

The book also explores the emergence of stereography, a precursor to 3D imaging, which offered viewers a glimpse into a world that seemed to come alive before their eyes. By presenting two slightly offset images side by side and viewing them through a special device, stereographs created the illusion of depth, providing a novel and immersive visual experience.

The authors do not limit their focus to the technical aspects of photography. They also delve into the social and cultural impact of the medium. They discuss how photography has been used to document wars, expose social injustices, and celebrate the beauty of the natural world. From Roger Fenton's images of the Crimean War to Jacob Riis's exposés of New York City slums, photography has played a crucial role in shaping public opinion and driving social reform.

They highlight the work of photographers who have pushed the

boundaries of the medium, using it to express their unique artistic visions and challenge conventional notions of representation. The book explores the contributions of pioneers like Julia Margaret Cameron, whose soft-focus portraits defied the sharp realism favored by her contemporaries, and Eadweard Muybridge, whose motion studies revolutionized our understanding of animal locomotion and laid the groundwork for the development of cinema.

—A Brief Story of Photography” is more than just a history book; it is a celebration of the power of images. It explores how photography has shaped our understanding of the world and our place within it. From family snapshots to iconic news photographs, images have the power to evoke emotions, trigger memories, and shape our collective consciousness. The book examines how photographs have influenced fields as diverse as science, art, journalism, and advertising, fundamentally altering the way we perceive and interact with the world around us.

It is a testament to the human ingenuity and artistic spirit that have driven the evolution of this remarkable medium. As you embark on this journey through the history of photography, prepare to be amazed by the ingenuity of its pioneers, the artistry of its practitioners, and the enduring power of the photographic image. This book will not only enrich your understanding of photography but also inspire you to see the world through a different lens.

The narrative continues with the evolution of the camera itself, from the rudimentary —“mousetraps” used by Talbot to the increasingly sophisticated devices that emerged in the latter half of the 19th century. The authors explain the development of key features such as the lens, the iris diaphragm, the shutter, and the viewfinder, each of which contributed to the camera’s ability to capture images with greater precision and control. They trace the progression from bulky, stationary cameras to more portable models, culminating in the introduction of the Kodak Brownie in 1900, which truly brought photography to the masses.

The rise of portrait photography is also examined in detail. The authors discuss the challenges faced by early portrait photographers, who had to contend with long exposure times and the limitations of early photographic processes. They highlight the work of photographers like Mathew B. Brady, whose portraits of prominent figures such as Abraham Lincoln offer a glimpse into the past. Brady’s Civil War photographs, in particular, brought

the harsh realities of conflict into American homes for the first time, forever  
. changing the public's perception of war

The book also explores the democratization of portraiture through the  
likes introduction of more affordable and accessible photographic technique  
peopled the ambrotype, tintype, and carte-de-visite. These innovations allow  
previously from all walks of life to have their likenesses captured, a privileg  
zation of reserved for the wealthy elite. The authors discuss how this democrat  
sentation portraiture contributed to changing notions of identity and self-repr  
. in the 19th century

As photography became more accessible, it also began to play a more  
cuss the significant role in documenting the world around us. The authors di  
aphers reemergence of landscape photography, highlighting the work of photog  
ure the two who ventured into the American West and other remote regions to cap  
ists like the grandeur of the natural world. They examine the contributions of ar  
f Carleton Watkins and William Henry Jackson, whose majestic images o  
of the Yosemite and Yellowstone played a crucial role in the establishment  
. National Park system

They also explore the rise of documentary photography, which used the  
ro camera to record social conditions, expose injustices, and advocate f  
ine, H change. The book delves into the work of social reformers like Lewis  
ited n whose photographs of child laborers helped change labor laws in the U  
e States, and Dorothea Lange, whose images of migrant workers during th  
in the Great Depression became iconic representations of American resilience  
. face of hardship

The development of photojournalism is another key theme explored in —A  
Brief Story of Photography.” The authors discuss how photography became  
an increasingly important tool for news reporting, bringing distant events into  
the homes of ordinary people. They highlight the work of photojournalists  
who have risked their lives to document wars, natural disasters, and other  
significant events. From Robert Capa's D-Day landing photographs to Nick  
Ut's Pulitzer Prize-winning image of a napalm attack in Vietnam, these  
powerful images have shaped public opinion and influenced the course of  
. history

The book concludes by examining the ongoing evolution of photography  
ogy on the in the digital age. The authors discuss the impact of digital techno  
. medium, exploring the new possibilities it has created for image capture

manipulation, and dissemination. They examine how digital cameras and smartphones have made photography more accessible than ever before, leading to an unprecedented proliferation of images in our daily lives.

They also address the challenges posed by the digital revolution, including issues of authenticity, copyright, and the proliferation of images in the online world. The authors explore how digital manipulation techniques have blurred the line between photography and other forms of visual art, raising questions about the nature of photographic truth in the 21st century.

—A Brief Story of Photography” offers a comprehensive and engaging account of the history of this remarkable medium. It is a book that will appeal to anyone interested in photography, art, history, or technology. By tracing the evolution of photography from its earliest beginnings to its current digital incarnation, the authors provide a fascinating glimpse into the ways in which this medium has shaped our world and our understanding of it.

It is a story of human ingenuity, artistic vision, and the enduring power of the photographic image. From the first grainy heliographs to the high-resolution digital images of today, photography has continually evolved, adapting to new technologies and societal needs. Yet through all these changes, its fundamental power to capture, preserve, and communicate has remained constant.

As readers journey through the pages of this book, they will gain a deeper appreciation for the art and science of photography. They will come to understand how this medium has not only recorded history but has also played an active role in shaping it. Whether you're a professional photographer, an amateur enthusiast, or simply someone who appreciates the power of images, —A Brief Story of Photography” offers a rich and rewarding exploration of this endlessly fascinating medium.



# Chapter 1

## Onsets



**Frederick Fargo Church. George Eastman with a Kodak Camera on Board the S. S. Gallia, 1890.**

In 1888, George Eastman revolutionized photography by inventing a small, easy-to-use camera, which made it possible for everyone to capture pictures. As proof of its success, Eastman himself demonstrated the camera aboard an ocean liner, showcasing its efficiency and convenience.

## 2 A Brief Story of Photography

Photography is a truly miraculous invention that has allowed us to capture and preserve moments in time that would otherwise be lost forever. From the image of our beloved mother as a child to a historic event captured as it happened to a breathtakingly beautiful piece of art, photographs have the power to evoke emotions and transport us to different times and places.

When photography first emerged in the 19th century, people were awestruck by the fact that they could finally see and even own an exact likeness of themselves, their loved ones, and even their favorite celebrities. But what's even more remarkable is how quickly the medium of photography evolved. In just half a century, photographers went from merely capturing likenesses to documenting places and events around the world, and even creating works of art that were celebrated for their beauty and creativity. Today, photography continues to be a vital tool for capturing and sharing moments that matter. Whether we're taking snapshots with our smartphones or producing works of art with high-end cameras, we owe a debt of gratitude to the pioneers who paved the way for this incredible technology.

Photography has evolved significantly over the years, but it all started with two major forms - the daguerreotype and the calotype, also known as the talbotype. These two forms made their debut in 1839 and 1841, respectively. However, before these, an earlier attempt was made to record a permanent image in a camera. In 1827, Joseph Nicéphore Niépce, French engineer and experimenter, managed to produce a small, permanent positive image on a metal plate. The image was crude and required an eight-hour exposure, and his method did not use light-sensitive silver compounds, which are the basis of photography. Consequently, it wasn't practical.



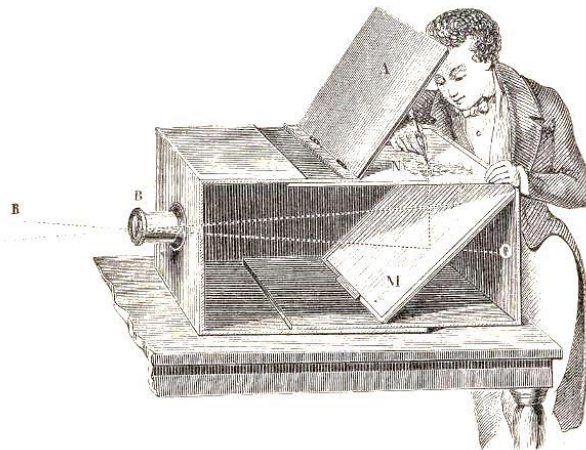
**Nicéphore Niépce. View from his window at Le Gras, about 1827.**

Although the process used by Niépce to take the world's first photograph from his home window was lengthy and complicated, it remains a widely regarded achievement in the field of photography.

The daguerreotype derived its name from its inventor, Louis Jacques Mande Daguerre, a Frenchman. He announced his achievement in January 1839 but only showed it to small invited audiences until August of the same year when he gave a public demonstration of the procedures. The calotype, on the other hand, was invented by an Englishman, William Henry Fox Talbot, who showed some images and explained a preliminary version of his process just three weeks after Daguerre made his accomplishment known. However, he did not perfect it and released the details for another year and a half.

The calotype had greater significance in the future development of photography, but the daguerreotype produced more aesthetically pleasing and technically flawless images and was the predominant method for the first 15 years of the medium. Consequently, Daguerre, for his invention of the first practical method of recording images in a camera, is acknowledged as the father of photography.

The invention of photography, which essentially means "writing with light", required two crucial elements. Firstly, an optical and mechanical device was needed to form a clear and accurate image of the subject. Secondly, a reliable chemical process was required to make sure that the image was permanently recorded. It's worth noting that the principles of optics for creating a visual image have been known for thousands of years. By the mid-16th century, early forms of cameras called *camera obscura* were already in use. These devices were essentially dark rooms with a small hole that formed an upside-down and left-right reversed image of the outside view on the opposite wall. By the late 17th century, a portable box-shaped camera obscura with an image-forming lens had been perfected, and it became a common tool for artists to trace images of real-life scenes and objects.



### The Camera Obscura

The camera obscura was an essential optical tool that enabled the birth of photography. It was made by installing a lens at one end of a long wooden box, and a mirror placed inside the box at a 45-degree angle reflected the image from the lens upwards to a sheet of glass placed flush with the top of the box. The image formed by the lens was upside down and reversed left for right, but the mirror reflection corrected the orientation. To use the camera obscura, an artist would place a thin piece of paper on the glass to view or trace the image, while cloth baffles on each side of the lid over the glass blocked stray light that could wash out the projected image.

It's worth noting that the camera had already been in existence for at least 250 years before a chemical procedure for recording its images permanently on a surface was invented. Eventually, Daguerre and Talbot experimented with light-sensitive silver compounds to solve the image-recording problem, but their results and methods were very different. Nonetheless, their contributions laid the foundation for the modern-day photography we know and love.

Louis Daguerre is credited with developing the first practical method of photography. To create a photograph, he used a highly polished, silver-plated sheet of copper. He treated the silver surface with fumes from heated crystals of iodine to make it light-sensitive, a process known as sensitization. Once sensitized, he exposed the plate to a focused image in a camera obscura, which produced an invisible *latent image* on the plate.

To make the latent image visible, Daguerre performed a process known as *development*. He treated the silver plate with fumes from heated mercury, which brought out the very light and middle-tone areas of the image in proportion to their brightness in the scene. This resulted in a *direct positive* image, not a negative, which was a significant development in photography.

To make the picture permanent, Daguerre bathed the plate in a solution of hyposulfite of soda, a fixing chemical that made the unexposed and undeveloped parts of the plate no longer light-sensitive. This process, called *fixing*, made the image permanent and prevented any further changes to the plate. The same fixing chemical is still used today with both black-and-white and color films and prints and is now named sodium thiosulfate but is still called "hypo" by many photographers.

Finally, Daguerre washed the plate in water to remove any remaining chemicals and completed the process. The resulting image was a beautiful

and permanent record of the scene that was captured in the camera obscura. Daguerre's innovation revolutionized the field of photography and paved the way for the development of modern cameras and film.

Daguerreotypes were typically 8.25 by 10.8 centimeters in size, although larger sizes were also made. However, larger silver plates were quite expensive, so smaller sizes were more common. Despite their small size, the images produced by daguerreotypes were incredibly detailed and delicate. In fact, one early observer noted that they were "as delicate as the pattern on a butterfly's wing". To protect the image, a brass mat with a cutout was used to reveal the image. This mat was placed over the plate, and a glass cover was added on top. These components were held together with a thin brass frame around the edges. Finally, the packet was placed into a small book-like case with velvet or silk padding in the hinged cover.

The surface of a daguerreotype was mirror-like and had to be held at an angle away from direct light. This allowed it to reflect something dark and reveal its lustrous silvery and white tones, which shone as if they were light themselves. The result was an incredibly detailed image that revealed the most delicate changes in brightness and shade. People were amazed by the reality and clarity of these images, which had none of the sand-particle pattern, called graininess, sometimes seen in prints enlarged from small negatives today. When viewed through a magnifying glass, daguerreotypes revealed even more detail. The leaves on individual distant trees and the tiles on a roof several blocks away were clear and sharp, making them all the more impressive to behold.

Daguerre, a man who never shied away from self-promotion, named the photographs produced by his revolutionary process "*daguerreotypes*". The French government immediately recognized the value of his invention and paid him several thousand francs, along with a lifetime pension, to acquire the rights to it. The intention was to offer the process to the world for free as a demonstration of France's scientific superiority. In August 1839, Daguerre himself presented a public demonstration of the process, attended by the

**William Henry Fox Talbot. Leaves of  
Orchid, 1839.**

Prior to his invention of the calotype process, Talbot conducted extensive experimentation with photogenic drawings. He achieved this by placing objects such as orchid leaves on a sheet of paper soaked in silver nitrate or chloride. The image would appear on the paper after being exposed to sunlight for a duration of 10 to 30 minutes.



entire French legislature, scientists, dignitaries, hundreds of ordinary citizens, and newspaper reporters from major cities worldwide. This was the first time the revolutionary photographic technique had been shown to the public. In addition, Daguerre published a manual on the process, which was the first book on photographic technique ever written.

Daguerre's improved box-size camera obscura, which he patented, revolutionized the process of taking daguerreotypes. The lens was covered by a thin metal plate that could be pivoted out of the way to allow light to pass through. The shutter, which opened and shut the lens, was operated manually, and no mechanism was required as exposure times ranged from 20 to 45 minutes or even longer, depending on the time of day and season. By 1841, a variety of daguerreotype cameras were being produced in France, Germany, Austria, and the United States. As the daguerreotype process required a direct positive, a separate plate had to be exposed for each copy of a picture.

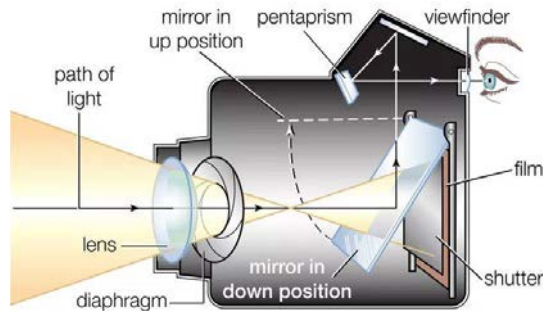
William Henry Fox Talbot's photographic process, the *calotype*, was a revolutionary invention that allowed the creation of duplicate copies or prints. While other experimenters had been unable to obtain satisfactory results and considered the negative image as a mistake, Talbot's great insight was to recognize that it was just an intermediate step. By exposing another piece of sensitized material to this "mistake," the lights and darks could be reversed again to their normal appearance. This *negative-positive* process became the foundation for every improved photographic method that followed.

Talbot was highly selective when it came to his choice of writing paper. He opted for 100 percent cotton *rag* paper, which was far superior to metal plates. This type of paper did not wrinkle or disintegrate when dampened like wood-pulp papers did. To make it light-sensitive, he treated the paper with a potent solution of silver nitrate, potassium iodide, and Gallic acid. He then exposed the damp paper in a camera obscura to develop the latent image with a solution of silver nitrate and Gallic acid. To make the developed negative image into a positive print, Talbot placed the negative against a similarly sensitized paper and exposed the sandwich to sunlight. Once the image's tones were right, he fixed the paper in a hypo solution so that light would no longer affect it and washed it in water. Finally, Talbot mounted the thin paper on a card or thicker paper for support.

The resulting image of a calotype print was distinctly different from a daguerreotype. Unlike modern prints that exhibit shades of gray and black, calotypes were characterized by warm brown tones. The image was not as sharp and detailed as that of a daguerreotype because the image was formed in the fibers of the paper and not on a smooth surface. Additionally, the fibers of the paper negatively interfered with the exposing light, resulting in a softer, less detailed image. However, this softness in detail gave the calotype print an overall appearance similar to a fine engraving or etching, which many early photographers found aesthetically pleasing.

## The Camera

Throughout the history of photography, a plethora of camera types have been developed, each with its unique features and functions. Despite the differences, several fundamental features are common to most cameras, which include:



- (A) A lightproof chamber that prevents light from entering except for the light passing through the lens and reaching the glass plate or film on which the image is recorded.
- (B) A lens that captures light from the subject or scene and focuses it onto the plate or film inside. The lens is made of shaped pieces of optical glass or plastic, which work together to create a clear and detailed image.
- (C) An iris diaphragm, which is a set of curved blades located inside the lens that form an adjustable-size hole called an aperture. The size of the aperture can be altered to regulate the amount of light passing through the lens, which is one of the two ways to control the amount of exposure the film receives. The lens is usually marked with various aperture sizes, which are indicated by a series of f-numbers or “—f stops.” Each larger aperture setting doubles the amount of light transmitted, while each smaller aperture cuts it in half.
- (D) A shutter that opens and closes to regulate the duration of time the image from the lens exposes the film. The shutter can either be a set of spring-driven blades, like an iris diaphragm built into the lens, or a curtain or set of blades located just in front of the film. The speed at which the shutter opens and closes, usually a fraction of a second, is controlled by a setting ring on the lens or a dial on the camera body or by internal circuitry in cameras with automatic exposure control. The