Photographic Processes

Image	Caption
	Daguerreotype Praia Grande Bay, Macau, 1844. By Alphonse Eugène Jules Itier This is one of the earliest known photographs taken in China, using the first ever publicised photographic process, daguerreotype. The daguerreotype, named after its inventor and announced in 1839, was the first photographic process to become widely used. This photographic process is different from film photography we are all familiar with. In film photography, countless photographs can be printed from one negative, whereas with the daguerreotype process, the image is formed on a sliver-coated copper plate and no plastic films are involved. Since the photograph cannot be reproduced, the final image product is unique. The photographer was Alphonse Eugène Jules Itier of France, who came to China with the French mission in 1844. Besides taking photographs of the representatives of China and France signing the unequal Treaty of Whampoa, Itier also photographed scenery and people in Macau and Guangzhou. (Reference no.: 691-IC1)
	Daguerreotype Portrait of a seated woman holding a fan, 1850s. The daguerreotype, named after its inventor and announced in 1839, was the first photographic process to become widely used. This photographic process is different from film photography we are all familiar with. In film photography, countless photographs can be printed from one negative, whereas with the daguerreotype process, the image is formed on a sliver-coated copper plate and no plastic films are involved. Since the photograph cannot be reproduced, the final image product is unique. In China, the daguerreotype was replaced by new photographic

	processes before it was able to spread. Therefore, existing daguerreotypes related to China or Chinese people were mostly taken in Guangdong, Hong Kong, Macau and abroad in the early 1850s. (Reference no.: 855-IC165 / DSC_1748)
	Daguerreotype Half-length portrait of a woman, 1850s. Before colour photography was invented, one way to add colour to photographs was to colour them manually. In this photograph, for example, the woman's cheeks are painted red. (Reference no.: 1068-PAG103.G.1.1)
 	Ambrotypes Portrait of a seated woman, 1850s. (Upper photo) Working by the river, 1860s. (Lower photo) The ambrotype process was primarily used from 1854 to the 1860s. In this process, glass plates, which are easier to handle, replace the copper plates used for daguerreotypes. Collodion emulsion is applied to a glass plate. While taking the photograph, the image is intentionally underexposed; and when developing the photograph, the time is reduced on purpose. These procedures result in an underexposed glass negative. After washing and drying, the glass negative is placed on black paper or velvet and the negative image appears positive. The ambrotype process also produces a single image that cannot be reproduced, meaning the photograph is unique. (Reference no.: Upper photo 852-IC162.G.1 / Lower photo 692-IC2.G.1)

	Albumen print Small boat near Dongting Mountain, Suzhou, 1850s. By William Jocelyn The paper is first coated with a solution of salt and egg white, and then immersed in silver nitrate. The egg white fills the gaps between the paper fibres, allowing the salt and silver nitrate photographic emulsion to spread evenly on the paper. This results in a photograph displaying a clearer image. Albumen print remained popular from its introduction in 1851 to the 1900s. (Reference no.: AC35.33)
	Wet-plate collodion process Chongyang Stream, Fujian, 1870s. By Afong Photo Studio, Hong Kong The wet-plate collodion process was widely used from 1851 to the 1880s. In a dark room, a collodion solution mixed with potassium iodide is poured on to a glass plate. The plate is carefully tilted to spread the solution evenly. Next, the plate is immersed in silver nitrate solution, such that a photographic emulsion primarily consisting of silver iodide is formed in the collodion. After this type of negative is put in the camera, the photograph must be taken before the collodion dries – thus the name “wet-plate collodion process”. When working outdoors, photographers using this process had to set up a darkroom on site to prepare and develop the negatives. They had to carry a lot of equipment, such as photographic emulsion, developer, fixer, glass plates and a darkroom tent, to the location. When Scottish photographer John Thomson took photographs in China, he hired eight workers to carry the cumbersome equipment. There is a tent on the boat in the left part of this photograph. It was a temporary outdoor darkroom used by the photographer to prepare glass negatives before shooting and develop them afterwards. (Reference no.: AC4.42)

	Wet plate collodion process Longevity Hill, Qingyiyuan (Garden of Clear Ripples), Beijing, 1875. By Thomas Child The wet-plate collodion process was widely used from 1851 to the 1880s. In a dark room, a collodion solution mixed with potassium iodide is poured on to a glass plate. The plate is carefully tilted to spread the solution evenly. Next, the plate is immersed in silver nitrate solution, such that a photographic emulsion primarily consisting of silver iodide is formed in the collodion. After this type of negative is put in the camera, the photograph must be taken before the collodion dries – thus the name "wet-plate collodion process". This photograph of the Longevity Hill was taken from the icy Kunming Lake. There are visible water stains on the photo, indicating the collodion solution is unevenly spread on the glass plate. The extremely low temperature had caused the collodion on the glass plate to freeze, resulting in this effect. (Reference no.: AC9.A.22)
	Gelatin dry plate process Public garden in Shanghai, 1890s. In the 1870s, the gelatin dry plate process was introduced. The process uses gelatin instead of collodion, whereas silver bromide, with higher photosensitivity, replaces silver iodide. The negatives could be pre-made in a factory, and photographers could insert them into the camera and capture images directly. When shooting outdoors, photographers no longer had to carry a darkroom tent and chemicals with them. Their burden was greatly reduced, whereas the shorter exposure time meant the process could be applied to more settings. Take this picture as an example: since the amount of light reflected by the sky and the ground is different, the exposure time required by the photographic emulsion is also different. If the exposure time of the ground is adopted, the sky would be overexposed;

	otherwise, the ground would be too dark. Yet, after the gelatin dry plate process with higher photosensitivity emerged, the clouds in the sky and the scenery on the ground can be clearly captured without the need for double exposure. (Reference no.: 1160-SHA25.S.1)
	Gum bichromate process Flat-bottomed boats near southeast corner tower, Beijing, 1902. Irrespective of whether wet or dry processes were used, the photographer would end up with a glass negative that could be used to produce photographs of different styles through different development techniques. For example, platinum prints, or platinotypes, have a light golden tone, whereas cyanotypes are characterised by a blue hue. This photograph was developed using the gum bichromate process, which produces a sepia tone. (Reference no.: 1047.6)
 	POP images Young men play chess and the zither, 1900s. (Upper photo) Women rowing a boat in posed photograph taken in a studio, 1900s. (Lower photo) In 1891, Ilford Company launched a type of photographic paper coated with gelatin and photographic emulsion. The image products are characterised by a sepia tone, whereas the paper has a thin, glossy layer of gelatin. This factory-made photo paper greatly reduced the workload of photographers, who could now develop photographs directly from the negatives. This type of photo paper is known as “printing-out paper”, POP in short. Both photographs on display here were developed with POP. (Reference no.: Upper photo 723-IC.P.33 / Lower photo 755-IC.P.65)

	Gelatin silver print Road to Nankou, Beijing, 1899. POP is easy to use and only requires short exposure time, but if the photographs are not stored at the right temperature and humidity, the gelatin layer supporting the image easily breaks off from the paper base. In later times, the composition of gelatin was improved, so it could be bound more firmly to the paper base without affecting the tone of the image. This was the basis of the future black and white photographic paper. (Reference no.: 1082-PEK6.S.1)
	Photographers surrounded by onlookers, 1900s. In 1888, Eastman Kodak Company introduced the Kodak camera. Small enough to be carried around, the camera was an epoch-making product in the history of photography. This photograph, taken during the Eight-Nation Alliance's siege of Beijing, shows a German military officer taking a shot of another photographer using a small camera produced by Kodak. The scene has attracted many onlookers. (Reference no.: 905.88)
 	Glass lantern slides Yu Garden, Shanghai, 1858. (Upper photo) Archway in the Confucian Temple, Tianjin, 1860. (Middle photo) After Beijing was occupied by the Anglo-French forces, two French soldiers stand on the city wall near Andingmen, 1860. (Lower photo) All by Charles Dupin Not only can glass negatives be used to develop photographs with positive images on paper, but the images can also be developed on glass. Positive images developed on glass are namely slides. Here on display is photograph taken by Colonel Charles Dupin of the French army during the Second Opium War. (Reference no.: Upper photo 589-GLC.G.1.2 / Middle photo 592-

	GLC.G.4.2 / Lower photo 594-GLC.G.6.2)
	Hand-coloured photograph Half-length portrait of a woman, 1870s. By Baron Raimund von Stillfried-Rathenitz Before colour photographic processes were widely used, photographs were coloured by hand to show the colours of the world. (Reference no.: 1058-PAG95.S.1)
	Hand-coloured photograph Portrait of a seated woman, 1870s. By William Saunders This photo shows detailed colouring – not only are the clothes and skin coloured, but every button is painted gold. (Reference no.: 1069-PAG104.S.1 / DSC_1716)
	Hand-coloured photograph Portrait of a seated woman, 1900s. In this photograph, only the woman's cheeks and lips are coloured. Since the furniture, the woman’s clothes and the background are not coloured, the beauty and charm of the subject are highlighted. (Reference no.: AC51-198)

Coloured glass slides
Government official in Hubei, 1870s. (Upper photo)
Tea-picking women in Huangyadong, Hubei, 1870s. (Middle photo)
Portrait of a man standing, 1870s. (Lower photo)

Before colour photographic processes were widely used, photographs were coloured by hand to show the colours of the world.

(Reference no.: Upper photo GC9.G.3 / Middle photo GC9.G.2 / Lower photo GC9.G.4)

Glass stereoscopic photographs
Yu Garden, Shanghai, 1857.
By Louis Legrand

Stereoscopic photographs, popular from the 1850s to the early 20th century, were made by taking two photographs with a twin-lens stereo camera. After printing the photos, they were mounted side by side. When viewed with a special stereograph viewer, the two photos would be combined to create a three-dimensional effect.

(Reference no.: Upper photo SC3.1 / Lower photo SC3.2)

 	Stereoscopic albumen print (Upper photo) Stereoscopic gelatin silver print (Lower photo) Eight-Nation Alliance's occupation of Tianjin, 1900. By James Ricalton These two stereoscopic photographs were made from the same negative, but using different processes – albumen print shown in upper photo and gelatin silver print shown in lower photo – to produce different effects. The photograph shows the aftermath of the Eight-Nation Alliance's capture of Tianjin. According to the photographer's notes, the deceased in the foreground of the photo were Boxers. (Reference no.: Upper photo SC6.S.12 / Lower photo SC5.59.1)
  	Tinted stereoscopic photographs Four Chinese persons, 1870s. (Upper photo) Pavilion in Yu Garden, Shanghai, 1860. (Middle photo) By Charles Dupin Looking at the photographer, 1870s. (Lower photo) The colours of this type of stereoscopic photograph are only visible under light. The window style cardboard frame holds an unmounted albumen print and a layer of transparent tissue. As there is no support and protection, it is difficult to preserve the photo. (Reference no.: Upper photo SC14.1 / Middle photo SC14.7 / Lower photo SC14.3)
	Stereograph viewer Different forms of stereoscopic photographs require different viewers. This type of handy stereograph viewers are easy to carry around and is suitable for viewing stereoscopic photos attached to cardboard. (Reference no.: 1943-1136)

Cartes de visite
Man returning from the wet market in posed studio photograph, 1868.
By Pun Lun Photo Studio, Hong Kong

In 1854, a French photographer invented a camera that could capture eight images on a standard-sized glass negative. As each photo is the size of a calling card, they were also known as cartes de visite (French for calling cards), or CDV. The cartes de visite were ideal gifts for friends and family and sparked a social trend of exchanging them.

There is a stand behind the man in the photograph. With the old photographic processes, relatively long exposure time was required. In order to obtain a clear image, the subject had to remain still before exposure was finished. Therefore, this type of stand was used to support the subject.

(Reference no.: 352-CDV.S.83.1)

Cartes de visite
Man holding a sickle spear in posed studio photograph, 1870s.
By F. Schoenke Photo Studio, Fuzhou

In 1854, a French photographer invented a camera that could capture eight images on a standard-sized glass negative. As each photo is the size of a calling card, they were also known as cartes de visite (French for calling cards), or CDV. The cartes de visite were ideal gifts for friends and family and sparked a social trend of exchanging them.

F. Schoenke, who took this photograph, was the first known person to open a photo studio in Fuzhou, where he was active from 1862 to 1889.

(Reference no.: 331-CDV.S.64.1)

	Cartes de visite Man in costume, 1880s. By Kung Tai Photo Studio, Shanghai In 1854, a French photographer invented a camera that could capture eight images on a standard-sized glass negative. As each photo is the size of a calling card, they were also known as cartes de visite (French for calling cards), or CDV. The cartes de visite were ideal gifts for friends and family and sparked a social trend of exchanging them. (Reference no.: 304-CDV.S.40.1)
	Cartes de visite Seated portrait of Bin Chun, 1866. By McLean & Co Photo Studio, London In 1854, a French photographer invented a camera that could capture eight images on a standard-sized glass negative. As each photo is the size of a calling card, they were also known as cartes de visite (French for calling cards), or CDV. The cartes de visite were ideal gifts for friends and family and sparked a social trend of exchanging them. In 1866, the Qing government sent its first study mission abroad. This is a portrait of Bin Chun, the leader of the mission. (Reference no.: 419-CDV.S.139.1)

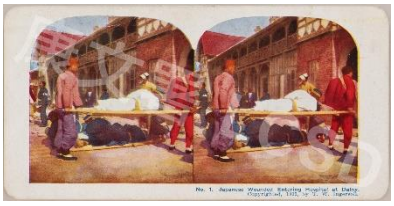
	Cartes de visite Portrait of a young man, 1870s. By T. Suzuki Photo Studio, Shanghai In 1854, a French photographer invented a camera that could capture eight images on a standard-sized glass negative. As each photo is the size of a calling card, they were also known as cartes de visite (French for calling cards), or CDV. The cartes de visite were ideal gifts for friends and family and sparked a social trend of exchanging them. To create this type of portrait with vague borders, the photographer has to make a mask after taking the photograph: A clean glass plate and the negative are stacked together and red paint is applied to the area surrounding the portrait until the borders gradually change. Subsequently, photographs with this kind of effect can be developed. Producing these photographs requires more skilful photographers. (Reference no.: 323-CDV.S.59.1)
	Cartes de visite Member of the Chinese delegation for the 1867 Paris Exposition, 1867. By Bertall & Cie Photo Studio, Paris In 1854, a French photographer invented a camera that could capture eight images on a standard-sized glass negative. As each photo is the size of a calling card, they were also known as cartes de visite (French for calling cards), or CDV. The cartes de visite were ideal gifts for friends and family and sparked a social trend of exchanging them. (Reference no.: 341-CDV.S.74.1)

	Cabinet card Dressed-up woman, 1900s. Another kind of photograph emerged around the same time as the carte de visite. Usually depicting family and beloved pets, the photographs are slightly larger than cartes de visite and are mounted on cardboard. As they were displayed in the cupboard, they were called cabinet cards. (Reference no.: 189-CC.S.6)
	Cabinet card Portrait of Yu Geng, 1902. Another kind of photograph emerged around the same time as the carte de visite. Usually depicting family and beloved pets, the photographs are slightly larger than cartes de visite and are mounted on cardboard. As they were displayed in the cupboard, they were called cabinet cards. This photograph, taken in Paris, shows Qing minister to France, Yu Geng. (Reference no.: 212-CC.S.32.1)
	Cabinet card Portrait of a seated woman, 1900s. By Wo Cheung Photo Studio, Hong Kong Another kind of photograph emerged around the same time as the carte de visite. Usually depicting family and beloved pets, the photographs are slightly larger than cartes de visite and are mounted on cardboard. As they were displayed in the cupboard, they were called cabinet cards. This is an exquisite cabinet card. The flowers on the border of the woman's front-flap are individually coloured. (Reference no.: GC31.S.4)

	Cabinet card Seated portrait of a government official, 1890s. By W, Tai Fong Photo Studio, Jinan Another kind of photograph emerged around the same time as the carte de visite. Usually depicting family and beloved pets, the photographs are slightly larger than cartes de visite and are mounted on cardboard. As they were displayed in the cupboard, they were called cabinet cards. This photo studio, run by Wen Zhangwen, relocated from Guangzhou to Jinan. During the Republican period, the studio was moved once again to Beijing. It was namely Tai Fong Photo Studio, where many high-ranking officials of the Beiyang government had their portraits taken. (Reference no.: 184-CC.S.1)
	Cabinet card Portrait of a foreign woman, 1860s. By Saunders Photo Studio, Shanghai Another kind of photograph emerged around the same time as the carte de visite. Usually depicting family and beloved pets, the photographs are slightly larger than cartes de visite and are mounted on cardboard. As they were displayed in the cupboard, they were called cabinet cards. Saunders Photo Studio was the most important photo studio in Shanghai during the 19th century. Its customers did not only include foreign nationals, but also Chinese people. The photographers would design different settings and use different props for different subjects. In this portrait of a foreign woman, Western-style furniture and props are used. (Reference no.: 227-CC.S.47.1)

	Cabinet card Portrait of a young woman, 1900s. By Lai Koog Photo Studio, Hankou Another kind of photograph emerged around the same time as the carte de visite. Usually depicting family and beloved pets, the photographs are slightly larger than cartes de visite and are mounted on cardboard. As they were displayed in the cupboard, they were called cabinet cards. Around 1900, crossdressing images were popular in economically advanced cities including Shanghai, Hankou, Tianjin and Beijing. Women dressed themselves up as men in front of the camera, and the photographs carried their longing for equal social status as men. For example, Qiu Jin had taken a portrait cross-dressed as a man. (Reference no.: 260-CC.S.78)
	Publications in early time *The China Magazine*, 1860s. This magazine, with original photographs affixed to the pages, was founded in Hong Kong in 1868 by Charles Langdon Davies of Britain. It is the first magazine in China to use original photos. Many of the renowned foreign photographers working in China had published their photos in this magazine, often exclusively. It continued to circulate until 1870. (Reference no.: MC2.A.3 / DSC_9437)

	Publications in early time *The Far East*, 1870s. The journal was founded in Japan in 1870 by John Reddie Black of Britian, and subsequently moved to Shanghai. Like The China Magazine, original photographs were mounted on the pages of this extremely popular journal. It was in circulation until 1878. Some 700 original photos, taken by more than 20 photographers in China and Japan, had been published. (Reference no.: MC1.117 / DSC_1773)
	Woodburytype Portrait of Guo Songtao, 1870s. By Lock & Whitefield Invented in 1864, the Woodburytype process is an early image printing method capable of rendering effects very similar to photographs. The process involves developing an image on a layer of gelatin and then making an uneven relief surface on the gelatin by etching to produce a printing plate. During printing, the deeper relief, which corresponds to darker areas of the image, collects more ink, while the shallower sections for the brighter areas collect less ink. In this way, an image with continuous light and dark tones is produced. (Reference no.: 1002-PAG43.S.1)
	Collotype Baoyun Bronze Pavilion, Qingyiyuan (Garden of Limpid Ripples), Beijing, 1871. By John Thomson The collotype process involves developing an image on a glass plate and immersing the fixed photograph on the glass plate in an acid solution. The darker areas of the photograph would be corroded more, and when the printing plate is finished, the areas would hold more ink. In this way, images with more depth and layers are produced. Compared with the Woodburytype, glass is stronger and more durable than gelatin.

	(Reference no.: AC13.A.48 / E2008.1061)
	Screen printing Qianmen Street, Beijing, 1898. By Yamamoto Sanshichiro This process involves placing a mesh over the image and using dots of different densities and sizes to achieve continuity of light and dark tones in the image product. The process is thus called screen printing. (Reference no.: BC2.1)
	Chromolithography Wounded Japanese soldiers are carried into a hospital in Dalian during the Russo-Japanese War, 1905. By T.W. Ingersoll This stereoscopic photograph taken during the Russo-Japanese War was produced using the chromolithography process, which does not involve the photochemical reaction in traditional photo development. Productivity is greatly improved, making possible faster and more widespread dissemination of images. (Reference no.: 1136.S.1.1)