

Glossary of techniques and terms

Albumen print

Albumen printing paper was introduced by Louis-Désiré Blanquart-Evrard in a communication to the Académie des Sciences, Paris, on 27 May 1850, and it remained in general use until about 1895. It could be bought partly prepared, i.e. coated with a thin film of white of egg and was then sensitized with silver nitrate solution by the photographer. Toning with chloride of gold checked fading and produced a sepia effect (see Howlett), avoiding the unattractive reddening to which the paper was prone.

Ambrotype

The ambrotype process was patented in the USA by James Ambrose Cutting in 1854. The images obtained were known as collodion positives in the UK. The technique involved placing a glass collodion negative in front of a black background to produce a positive image.

Autochrome

The brand name of the first commercially marketed photographic colour process. Introduced in 1907 by the French inventors and manufacturers, Auguste and Louis Lumière, it was used until the early 1930s. In the autochrome process, starch grains dyed in the three additive primary colours (green, blue and red) were dusted onto a glass plate, flattened under pressure and coated with panchromatic emulsion. The coloured grains acted as filters, allowing some colours to be registered on the panchromatic film. After exposure, the film was developed as a black-and-white negative, and then treated chemically to produce a coloured positive. The image appeared to be in full colour when transmitted onto a screen or seen against the light. The network of starch grains in all autochromes ensured that the images looked grainy, like pointillist paintings (see Gimpel and Warburg).

Autotype see Carbon print

Blueprint see Cyanotype

Bromide print

Bromide paper (coated with a gelatin and silver bromide emulsion and silver iodide) superseded albumen paper; it was first introduced in the 1870s for both negatives and for positive copies. As negative paper it was cheaper than glass plates, and for positives it was a faster process altogether. It did not, however, become popular immediately on its introduction. It produced black and grey tones (see Bull and Sutcliffe).

Bromoil print

This technique depends on the fact that gelatin mixed with potassium bichromate (now called potassium dichromate) absorbs less water when exposed to light than when unexposed. Oil-based ink applied to this surface adheres better to the drier areas. The technique was perfected by G.F. Rawlings in 1904 and introduced to the public in 1907. Prepared gelatin emulsions were applied to silver bromide papers, and after exposure to the negative inks were applied using rollers and brushes. The photographer exercised control, both in terms of choice of pigments and of tones, and was thus able to manipulate the look of the print (see Dührkoop), to a degree which the 'straight' photographers of the 1920s found unacceptable.

Cabinet photograph

A standard size of photograph, almost always a portrait, which was popular from the mid-1860s to about 1900. Cabinet photographs were usually mounted on a piece of card embossed with the photographer's name and with an elaborately designed advertisement for his studio on the back.

Calotype

Also known as a Talbotype. The main advantage of William Fox Talbot's calotype process, which was patented in 1841, was that it allowed multiple prints to be taken from a single negative. The calotype negative was based on fine writing paper coated with a solution of silver nitrate and potassium iodide, which was dried and brushed with solutions of silver nitrate and gallic acid. The negative was developed in a solution of gallo-nitrate of silver, rinsed and fixed. The whole process had to be carried out on the same day. The negative was then waxed, for the sake of translucency and to reduce printing time (see Régnault). The principal improvement in this process was the waxed-paper negative.

Camera obscura

The precursor of the hand-held camera. A darkened room into which light is admitted through a convex lens set in a small aperture. Inverted images are projected onto a flat surface opposite the aperture.

Carbon print

Photography has always set its sights on permanence, and the carbon print (see Cameron and Rejlander) was an early answer to the problem. The process, introduced by Joseph Swan in 1864, made use of carbon tissue, which was a film of gelatin with finely powdered carbon. The tissue was sensitized with bichromate and exposed under a positive transparency. After development in water, the carbon tissue with its image was transferred onto a sheet of paper and the original backing removed. Positive carbon prints exhibited very few signs of aging and a delicate tonal range. They are also known as autotypes.

Carbro print

A subtractive colour process popular in the 1920s and 1930s (see Murray and Outerbridge) and similar to Vivex. Three negatives were exposed, to differentiate red (magenta), blue (cyan) and yellow. Exposures were made through an automatic repeating back camera, operated by clockwork. Negatives were exposed behind coloured filters.

Carte de visite

A type of print very popular in the 1860s until it was replaced by the larger cabinet photograph. *Cartes de visite* are about the same size as a visiting card and were the first mass-produced photographs of famous people. Large quantities showing such figures as Queen Victoria and Napoleon III were issued and collected in albums.

Chlorobromide print

Chlorobromide paper (paper coated with a gelatin emulsion containing silver bromide and silver chloride) was invented by Dr J.M. Eder of Vienna and announced in 1883. Faster than chloride paper, which was invented at the same time, it was used for contact copying under artificial light. Originally called 'gaslight' paper because it could be developed under gaslight in a darkroom, it was remarkably cheap. Its tones were warm black and brown (see Drtikol and Wilding).

Cibachrome

Cibachromes (see Boonstra and Kaila) are made from colour transparencies. The paper used has three silver-halide emulsion layers, each one of which is dedicated to one primary colour with its complementary. In the printing process, dyes are destroyed by chemical bleaching, leaving only those colours which make up the final image. Cibachrome is an Ilford product, marketed from 1963 onwards.

Collotype

Potassium bichromate loses its solubility in water in proportion to its exposure to light. The French inventor, Alphonse Louis Poitevin, noticed this property and put it to use in photographic printing for reproduction. In his collotype process, a sheet of stone or glass was coated with the bichromate, exposed under a positive transparency and washed in water. Areas exposed to light became hard. Thus, after washing and drying, the exposed plate could be inked like a lithographic surface.

Combination print

A print consisting of two or more images printed onto the same sheet of paper. The technique was widely used in the 1850s for adding details and building up images. Oscar Rejlander was a renowned exponent, sometimes using as many as thirty negatives to produce imaginary scenes.

C-type print

The C-type process was introduced in the 1950s for printing from colour negatives. C-type paper is coated with three emulsion layers sensitized to primary colours and protected by filters. The images are made from cyan, magenta and yellow dyes. C-type prints are also known as dye coupler prints.

Cyanotype

A photographic printing process based on iron salts which produces prints with a bright blue background. These prints are notable for being perhaps the most chemically stable of all early processes. Their chief commercial use has long been for engineers or architects.

Daguerreotype

This was the first commercial photographic process. It was made public by Louis-Jacques-Mandé Daguerre in 1839. Daguerreotypes were unique images fixed on silver-coated copper plates (see Daguerre and Southworth & Hawes). The silver surface was treated with iodine and bromine vapours, to create a light-sensitive halide. After an exposure of several minutes' duration in a camera, the plate was developed over a dish of heated mercury, to bring out the latent image, which was then fixed in a bath of sodium thiosulfate. Daguerreotypes were reversed images. Positives, they could not be multiplied, and they also had to be protected by a cover glass from oxidation and abrasion. Early exposure times were of fifteen to twenty minutes, although that time was reduced in 1840-1 to make the process suitable for portraiture. The process was abandoned during the 1850s, with the introduction of the wet-collodion process, although it remained popular in the USA until the mid-1860s.

Diorama

A miniature three-dimensional scene reproduced with the aid of lights and colours.

Direct positive print

In 1840 Hippolyte Bayard announced his method for making direct positive images on paper to the Académie des Sciences in Paris. His technique involved taking silver chloride paper, blackening it in light, soaking it in potassium iodide and then exposing it in a camera obscura. The paper was then washed in hyposulfite of soda and dried. Bayard intended this process to be an alternative to Fox Talbot's negative process, but the images (like daguerreotypes) were unique and required exposures of around twelve minutes in the camera.

Duotone

A printing process in which a **halftone** image is passed through the press twice, often using black ink first and then another colour.

Dye coupler print see C-type print

Dye transfer print

A complex form of early colour printing in which a colour transparency was photographed three times, in each case through a different filter. These new negatives were used to prepare further surfaces sensitive to the three subtractive primary colours: cyan, magenta and yellow. The dyes from these surfaces were then transferred one at a time onto gelatin-coated paper, producing very stable results (see Edgerton and Tingaud). The process was introduced by the Jos Pé Company in 1925.

Ektachrome

In 1946 Eastman Kodak began to produce a reversible film incorporating chromogenic couplers. It was very close to Agfacolour, which had been produced for the first time in 1936.

Ektacolor print

A **C-type print** made on Ektacolor paper (see diCorcia and Prince).

Ermanox

A lightweight camera introduced in 1925, the same year as the **Leica**. Its large aperture lens, which was the fastest available, was the f.2 Ernostar, which became the f.1.8. The camera held 4.5 x 6 cm-glass plates and made it possible for the first time to take candid pictures indoors by available light. It was the Ermanox which permitted photographers to shoot the indoor and night-time photo-stories on metropolitan topics which were such a feature of the illustrated magazines of the 1930s.

F-stop

A number that expresses relative aperture, representing the focal length of the lens divided by the diameter of the aperture. (The higher the f-stop number, the smaller the aperture.) A series of f-stop numbers appears around the aperture ring on all lenses.

Film negative

The first film negative was introduced as early as 1886. It was a sensitized gelatin emulsion backed by paper which was soaked off during processing. Paper-backed gelatin film was quite fragile. In the 1890s cellulose nitrate grew in popularity as a film base, and it became the main film-based negative of the inter-war years. It was highly inflammable and therefore a danger in stores and archives. Safety film was introduced in 1937, at first on a diacetate base and from 1947 on a triacetate base.

Fixing

The process of making an image permanent by washing away unaffected silver halides using **hypo** (sodium thiosulfate). The image is thus made insensitive to further exposure to light.

Flashlight photography

Burning magnesium ribbons were first used as a source of light in photography in the 1860s. Magnesium made it possible to take pictures in mines, caves and ancient Egyptian tombs. In 1887 Dr Adolf Miethe and Johannes Gaedicke in Berlin developed the first 'flashlight' powder by mixing powdered magnesium with an oxidizing agent. In 1925 Dr Paul Vierkotter patented a flash bulb

with aluminium foil, and in 1929 Harold Edgerton, Kenneth Germeshausen and Herbert Grier developed high-speed electronic strobe lighting. Flash dramatized reportage photography from the 1930s to the 1960s, showing city life in particular as expressive and fantastic.

Fresson print

A proprietary direct carbon process invented by Théodore Henri Fresson around 1899 and still used by his descendants. It was favoured by the great Spanish documentarist Ortiz Echagüe.

Gelatin dry-plate process

In 1871 Dr Richard Leach Maddox announced the invention of an emulsion of silver and bromide which could be heated to increase its sensitivity to light and used for coating glass plates. From 1889 onwards, this emulsion was also applied to celluloid roll film. By 1878 rapid gelatin dry plates were being manufactured on a large scale. Exposures were ten to twenty times faster than with those made using the **wet-collodion process**. Dry gelatin plates revolutionized photography, mainly because of their speed, but also because they could be processed at any time after exposure if carefully packed and stored.

Gelatin silver print

The standard contemporary monochrome print. The paper (first introduced in 1882) is treated with the same gelatin silver emulsion used in the **gelatin dry-plate process**. By 1895 the gelatin silver print had replaced the **albumen print**.

Glass negative

Albumen-on-glass negatives were introduced in 1848 by Niépce de Saint-Victor, and communicated to the Académie des Sciences, Paris, on 12 June 1848. This process provided finer detail than the **calotype**. Glass plates, which could be prepared in advance and developed up to two weeks after exposure, were coated with a thin layer of white of egg containing a solution of potassium iodide. When dry, they were sensitized with an acid solution of nitrate of silver. The latent image was developed with gallic acid. This was a slow process, with between five and fifteen minutes of exposure time, and although useless for portraiture it gave good results with landscape and architecture. The perfect transparency of the medium gave very fine detail. It was superseded by the much faster **wet-collodion process**.

Gum bichromate print

This process had been experimented with in the 1850s, but it was only in the mid-1890s that it became popular amongst artist-photographers (see Hofmeister). The technique made use of the fact that gum bichromate hardens on exposure to light. The paper was coated with light-sensitive, pigmented gum arabic. The emulsion, sensitized by the addition of ammonium or potassium dichromate, was brushed onto paper and dried. Exposure to light through a negative hardened the surface of the print to different degrees, and this variously porous surface could then be brushed or abraded by the photographer. The process could be repeated with different pigments.

Halftone

The photomechanical printing process which made the widespread dissemination of photographs possible. The process involves photographing an image through a fine screen to break it up into dots. The dot-pattern image is then chemically etched onto a printing plate which is inked to transfer the image to paper.

Heliogravure

Nicéphore Niépce invented heliography in the 1820s. A French landowner with interests in lithography, Niépce wanted to fix the images of the **camera obscura** chemically. In 1826 he managed to obtain a faint 'heliogravure' or 'sun drawing' on a pewter plate coated with bitumen of Judaea, a light-sensitive substance. The first heliogravure took eight hours to obtain in full sunlight. Niépce's intention was to etch and to ink his heliogravures and then to print from them onto paper.

Hypo

A professional abbreviation for sodium hyposulfite (now called sodium thiosulfate), which was originally used in the 1840s to increase the clarity and permanence of negatives.

Iris print

A computer-printed colour image (see Krims).

Isochromatic plate see Orthochromatic plate

Kodachrome

Invented by Leopold Mannes and Leopold Godowsky and then acquired and perfected by Eastman Kodak during the 1950s, Kodachrome was the first commercially successful integral tripack colour process. It made use of dyes incorporated into silver-gelatin emulsions. In processing the silver elements are dissolved, leaving a print made up of dyes suspended in gelatin.

Lantern slide

An image on glass, used in early slide projectors to project photographs to audiences.

Leica

Travellers, like theatre and sports photographers, all preferred the Leica, the first lightweight camera to use 36mm film. It was invented by Oscar Barnack, who from 1911 worked for the Leitz organization in Wetzlar, Germany. The Leitz company manufactured cine cameras and it was Barnack's idea to make a miniature camera to test exposure times. The trial camera took 36mm cine film and proved so successful in its own right that it was developed by the Leitz company as a separate product, going on sale in 1925. Ten years later it had conquered the world of photography, with total sales of around 180,000 units.

Oil print

This process was introduced in the early years of the twentieth century and was much used by fine-art photographers until about 1914 (see Demachy). Paper coated with bichromated gelatin was exposed under a negative and then immersed in water and dried. This treatment made the surface of the print relatively porous and thus receptive to coloured oil pigments, applied by hand.

Orthochromatic plate

An early type of plate (introduced in the 1870s) that was treated with emulsion sensitive to blue and green light only. Also known as an isochromatic plate.

Panchromatic plate

A plate or film that is sensitive to all the colours of the spectrum. It was first brought into use in the 1910s.

Photogram

A photographic image which has been produced without a camera. It was achieved by placing an object on a sensitized surface (paper or film) and then exposing it to the light (see Moholy-Nagy). Sometimes known as a 'Schadograph' or 'Rayograph' after Christian Schäd and Man Ray, who used this technique in the 1930s.

Photogravure

This mechanical printing process was invented by the Viennese Karel Klič in 1879. It made use of a copper plate to which resin dust had been applied through heat. Carbon tissue printed under a diapositive was transferred to the grained copper plate and washed to remove the soluble areas of the carbon image. The plate was then etched in proportion to the tones of the picture, with the deeper shadowed areas holding the most ink. It was widely used from the mid-1890s and was favoured by, among others, Peter Henry Emerson and Alfred Stieglitz for the reproduction of photographs.

Photomontage

The technique of combining one or more photographs (or portions of them) to produce an image not found in reality (see Berman and Heinecken).

Pin-hole camera

The most basic form of camera possible, in which light is introduced into a darkened box via a tiny aperture. Pin-hole images, uncorrected by a lens, look distorted when registered on film (see Fuss). The pictorialist George Davison used a pin-hole camera in the 1890s, and their use has been revived in the 1980s and 1990s.

Platinum print

Also known as a platinotype. Platinum paper was invented and patented by William Willis in 1873, and from 1879 was marketed by the Willis Platinotype Company of London. Papers were prepared with light-sensitive iron salts and platinous potassium chloride. After exposure through a negative, the paper was developed in potassium oxalate, which caused a reduction of the platinum salt to pure platinum. Platinum prints were more permanent than those which depended on silver, and their tonal range was very beautiful and subtle (see Emerson and Modotti). The cost of platinum made the paper prohibitively expensive and production of the paper was finally discontinued in 1936.

Polaroid

An instant photography technique devised by Dr Edwin H. Land whereby synthesized colour dyes pass from a negative onto the surface of a sealed film unit, producing a positive image in about one minute. Dr Land first introduced his technique in 1948 but it was not until the SX-70 Polaroid Land camera came in in 1972 that the process really caught on. It is now used by many distinguished photographers (see Cosindas and Samaras).

Printing-out paper

Introduced in the early 1880s, this was twice as fast as albumen paper and superior in permanence. Printing-out papers began to become popular in the 1890s. These papers did not need to be developed to make the image visible. Printed-out images darken by themselves during exposure and as they darken so light-sensitive chemicals underneath are protected. They are useful for printing negatives of high contrast and have a delicate tonal range. In the 1920s printing-out paper was replaced by developing paper which needed chemical development and which had a pale silvery tone characteristic of modern gelatin silver papers.

Rayograph see Photogram

R-type print

A colour print made from a positive transparency.

Sabattier effect see Solarization

Salted-paper print

The salted-paper print or salt print was announced by Fox Talbot in 1839. In this process a positive print was made without an emulsion or coating on the surface of the paper. Instead, light-sensitive salts were soaked into the paper, which was then sensitized with silver nitrate and exposed to daylight under a negative, with the two held together in a printing frame. The finely divided silver particles on the surface of these prints were sensitive both to atmospheric pollutants and to humidity, and susceptible to fading. They were sometimes coated with a layer of varnish or albumen. Originally paper and negative were held together until an image of sufficient density was produced; then the paper was washed and the image fixed (see Hill & Adamson and Le Secq). The French inventor, Louis-Désiré Blanquart-Evrard, speeded up the process by developing the image in *hypo* baths before fixing.

Schadograph see Photogram

Silver print see Gelatin silver print

Solarization

This phenomenon is also known as the Sabattier effect in honour of Armand Sabattier, the Frenchman who discovered it in 1860. The term describes the partial reversal of tones on film or photographic paper if it is re-exposed to light during development. The phenomenon was observed in 1929 by Man Ray and Lee Miller, who then put it to use in their own photography.

Stereoscope

A binocular device which creates the illusion of three dimensions. It was developed by Sir Charles Wheatstone in 1838 and became popular with the invention of photography. Stereoscope photographs were taken with one exposure through a double-lens camera.

Talbotype see Calotype

Vivex print

A subtractive colour process similar to the carbro process. Vivex negatives were specially processed by the manufacturers. Three separate positives were then prepared and superimposed to produce a richly coloured, permanent colour picture. Vivex was an expensive process, used most notably by Madame Yevonde in portraiture in Britain.

Waxed-paper negative

A modification of the *calotype* process, introduced in 1851 by Gustave Le Gray. The paper was waxed at the start of the process. This made for better detailing and meant that the paper could be prepared up to ten days in advance of use and developed several days after exposure. Fox Talbot himself improved the process in 1843 through an after-treatment of the negative with sodium thiosulfate (*hypo*), which intensified or developed a latent image in the negative. This reduced exposure times.

Wet-collodion process

This process was announced by Frederick Scott Archer in 1851 and had supplanted all other processes by 1860. It was fast, and also the first in England to be free from patent restrictions. Collodion is gun cotton dissolved in ether, which creates a membrane transparent to the touch. To this was added potassium iodide. The mixture was spread on a glass plate and then sensitized in a bath of nitrate of silver and exposed in a camera while still moist. As the plates dried, sensitivity decreased. Plates had to be developed immediately after exposure with either pyrogallie acid or ferrous sulphate and then fixed with sodium thiosulfate or potassium cyanide. Travelling photographers who used this process needed to take with them a dark tent and developing outfit. Exposures were from ten seconds to one and a half minutes. Pre-prepared dry collodion plates were introduced during the 1850s and 1860s, but they were much slower than wet collodion, which remained in general use until about 1880, when it was replaced by the faster and more convenient **gelatin dry-plate process**. Variants included the collodio-albumen process, in which collodion plates were coated with iodized albumen, and a second silver nitrate bath before drying for later use. In the syrup collodion process, prepared plates were kept moist and sensitive beneath a coating of honey and distilled water.

Woodburytype

A (now obsolete) printing process in which a negative was exposed to bichromated gelatin to create a relief mould. In printing, the deepest parts of the mould produced the darkest areas of the print (see Carjat). The process was invented by the Englishman Walter Woodbury in 1865.