

Photography

- The word photography comes from the Greek, which actually means writing or drawing with light
- . Light travels outwards in all directions from any light source, whether a candle, a light bulb or the sun.
- When light strikes an object it is reflected back and we are then able to see it.
- The speed of light is constant but when light rays reach a lens they slow down, bend and become refracted.
- The camera lens receives rays of light from every point of the subject in front of it.
- It refracts them so that they collectively converge creating an upside down, back-to-front image.

“Photograph” originally meant “A picture drawn with light and shadow”.

At the very start, people had to use wet photographic plates instead of film, so that the light exposure time was long and the setting of the apparatus took a lot of time and trouble. Also the black and white nature of the film made it look like a picture.

HISTORY

- The earliest cameras: The first camera known to history is the camera obscura. Conceptual descriptions of camera obscura can be found in Chinese texts from 400 B.C. and in the writings of Aristotle, around 330 B.C. A camera obscura does not take photographs, but rather it focuses light through a lens (technically a small hole) and projects it onto a screen. Pinhole cameras are close variants on the camera obscura. These devices serve as precursors to everything from still photography to movie cameras and motion picture projectors.

- the first photographic camera was invented in 1816 by Frenchman Joseph Nicéphore Niépce. Niépce developed photographic images onto paper lined with silver chloride which would produce a negative of the image.
- Daguerreotypes: Louis Daguerre created a more practical camera model in 1829. Images taken by Daguerre's camera were known as daguerreotypes. The daguerreotype process involves coating a copper plate with silver, sensitizing it in iodine, then developing it over hot mercury vapour leaving behind a fixed camera image.
- A Calotype is an early form of photo camera developed by Henry Fox Talbot in 1839. Talbot's design used writing paper soaked in table salt and then brushed lightly with silver nitrate (which was called a "film"). Capturing images due to chemical reactions, the paper could then be "waxed" to save the image.
- The first mass marketed camera was a daguerreotype camera produced by Alphonse Giroux in 1839.
- The mirror camera: The problem with Daguerre's camera system was that images faded quickly. This was remedied by American inventor Alexander S. Wolcott, who created the mirror camera. This camera produced a positive image instead of a negative one with reversed colors.
- Thomas Sutton developed the first camera to use single-lens reflex (SLR) technology in 1861. A single-lens reflex camera (SLR) is a camera that typically uses a mirror and prism system that permits the photographer to view through the lens and see exactly what will be captured.
- The first movie camera was invented in 1882 by Étienne-Jules Marey, a French inventor. Called the "chronophotographic gun," it took 12 images a second and exposed them on a single curved plate. a movie camera is a regular photographic camera that can take repeated images at a high rate. The most famous

early movie camera was the “Kinetograph,” a device created by engineer William It was powered by an electric motor, used celluloid film, and ran at 20 to 40 frames per second.

- Kodak: American entrepreneur George Eastman created the first camera that used a single roll of paper (and then celluloid) film, called “The Kodak” in 1888. The Kodak camera could capture negative pictures much like the Calotype. These pictures, however, were sharp like daguerreotypes, and you could measure exposure time in fractions of a second. The film would need to remain in the dark box camera, which would be sent in its entirety back to Eastman’s company for the images to be processed. The first Kodak camera had a roll that could hold 100 pictures.
- Instantaneous exposures: Then, in 1871, Richard Leach Maddox invented a gelatin dry plate that produced instantaneous exposures—functioning as a sort of precursor to the Polaroid cameras of the twentieth century.
- 35mm, or 135 Film was introduced by the Kodak camera company in 1934. This film was 35mm wide, with each “frame” having a height of 24mm for a 1:1.5 ratio. Oskar Barnack, a German inventor and photographer, is generally credited for the advent of 35mm film cameras, beginning with the Leica, which he created for the Leitz corporation. However, Kodak would quickly become the leading provider of photographic film for the world's 35mm cameras, with other companies like Fujifilm later providing robust competition.
- Rolleiflex, twin-lens reflex roll-film camera introduced by the German firm Franke & Heidecke in 1928. It had two lenses of identical focal length—one transmitting the image to the film and the other functioning as a viewfinder and part of the focusing mechanism.

- The first color photograph was created in 1961 by Thomas Sutton (the inventor of the single-lens reflex camera). He made the photograph by using three separate monochrome plates. (Red, Green & Blue) [2] In 1948, Edwin Land invented Polaroid Camera /The instant camera can produce the photograph within the device.
- Digital SLR camera: Steven Sasson invented the self-contained digital camera at Kodak in 1975. A digital single-lens reflex camera (DSLR or digital SLR) is a type of camera that allows you to see the exact image you're shooting directly through the viewfinder, allowing you to visualize and capture your scenes better. It delivers high-end image quality.
- Mirrorless camera: In 2004, Epson released the first mirrorless camera, a type of camera that works without a reflex mirror. Light passes through the lens directly to the digital sensor, which then displays your image on the camera's LCD screen, allowing you to adjust settings and preview your image before its shot. While previously not considered an interchangeable lens camera, modifications and advancements have paved the way for more mirrorless lenses, bringing this camera to the forefront of customizable photography.

PHOTOGRAPHY

Making photographic records or imaging for microanalysis of various kinds of evidential objects through various techniques is a challenge in forensic science. Be it a small part of a human hair/ fiber or a cleverly forged document involves the use of photomicrography, macro-photography and other techniques like using oblique light, transmitted light etc. Before going in depth of the techniques, let us learn the definitions of Microphotography and Photomicrography

1) Photomicrography - "The recording by taking pictures of an image created by a microscope; i.e. photography through a microscope. This should not to be confused with microphotography."

- A micrograph or photomicrograph is a photograph or digital image taken through a microscope to show a magnified image of an object.
- Photomicrography is the practice or art of using microscopes to make photographs.
- It may be performed simply by connecting a camera to a microscope, thereby enabling the user to take photographs at reasonably high magnification.
- A micrograph contains extensive details of microstructure.
- An electron micrograph is a micrograph prepared using an electron microscope.
- Photomicrography is extensively used in forensic labs and other fields which require study of minute particulars.
- In the 19th and 20th centuries, photomicrographs, also called micrographs, were formed by linking or bring into line a film camera with a microscope, a complex procedure.
- Digital technology had permitted the two devices to be by electronic means synched in order to view live images in real time.

2) Macro-photography is the form of photography, known to be the photography of small objects.

The fine details noticed in a macro photograph can deliver extraordinary information.

- Macro photography is extreme close-up photography, usually of very small subjects and living organisms like insects, in which the size of the subject in the photograph is greater than life size (though macrophotography also refers to the art of making very large photographs).
- Macro photography is all about showcasing a subject larger than it is in real life — an extreme close-up of something small. A macro lens is capable of reproduction ratios of at least 1:1.
- A closeup of a blown fuse can give clues as to how the fuse blew.
- Alternatively, clean round ends on the separated fusible link would specify a longer and less severe condition.