



*Photograph by Ted V. Tamburo*

**1840**

### Daguerreotype Era Begins

The daguerreotype process becomes more popular, leading to shots such as this one, taken around 1850 from the second-story window of a daguerreotypist's shop in lower Manhattan at the foot of the Brooklyn Bridge.



*Photograph by Roger Fenton*

## 1847

### First Photos of War

In 1847, during the Mexican-American War, daguerreotypist Charles J. Betts follows the American Army to Veracruz, Mexico, and, according to an advertisement, offers to photograph "the dead and wounded." Dozens of anonymous daguerreotypes are also taken of troop movements and American officers. The first official war photos, though, are of the Crimean War from 1855 to 1856. The British government sends several photographers to document the war, but because of his meticulous preparations, Roger Fenton, a British solicitor turned noted photographer, is the only one to get good results. He and his assistants take some 350 images, mainly portraits.

# 1850

## First Positive Photographic Prints on Paper

In 1850, Frenchman Louis Désiré Blanquart-Evrard invents a type of photographic paper using table salt, albumen (egg whites), and silver nitrate. The paper creates an exposure in a relatively short time (minutes to hours) and produces a positive image without the need for development. Relatively easy to mass produce, Blanquart-Evrard's paper makes photography accessible to amateurs.



*Photograph by James L. Amos*

## 1851

### Wet Plate Process Invented

In 1851, English inventor Frederick Scott Archer discovers that collodion, a viscous liquid used during the Crimean War to cover soldiers' wounds, is ideal for adhering light-sensitive material to glass. The process is rather exacting, since plates had to be sensitized, exposed, and developed while they remained wet, hence the name wet-plate process. But its faster exposure speeds and sharp images make it attractive to amateur photographers, and its invention is seen as a watershed event in photographic history.



*Photograph by James Wallace Blackwell*

## 1858

### First Bird's-Eye View Photos

Felix Tournachon, better known by the nom de plume Nadar, combines his interests in aeronautics, journalism, and photography and becomes the first to capture an aerial photograph in a tethered balloon over Paris in 1858. The photo, however, is eventually lost.

The first surviving aerial photo to be preserved, seen here, was taken in 1860 by American photographer James Wallace Black. Black ascends 1,200 feet (366 meters) over Boston in a tethered hot-air balloon and takes several aerial photos of the city. One comes out, which he names, "Boston as the Eagle and the Wild Goose See It."



*Photograph by James Clerk Maxwell*

**1861**

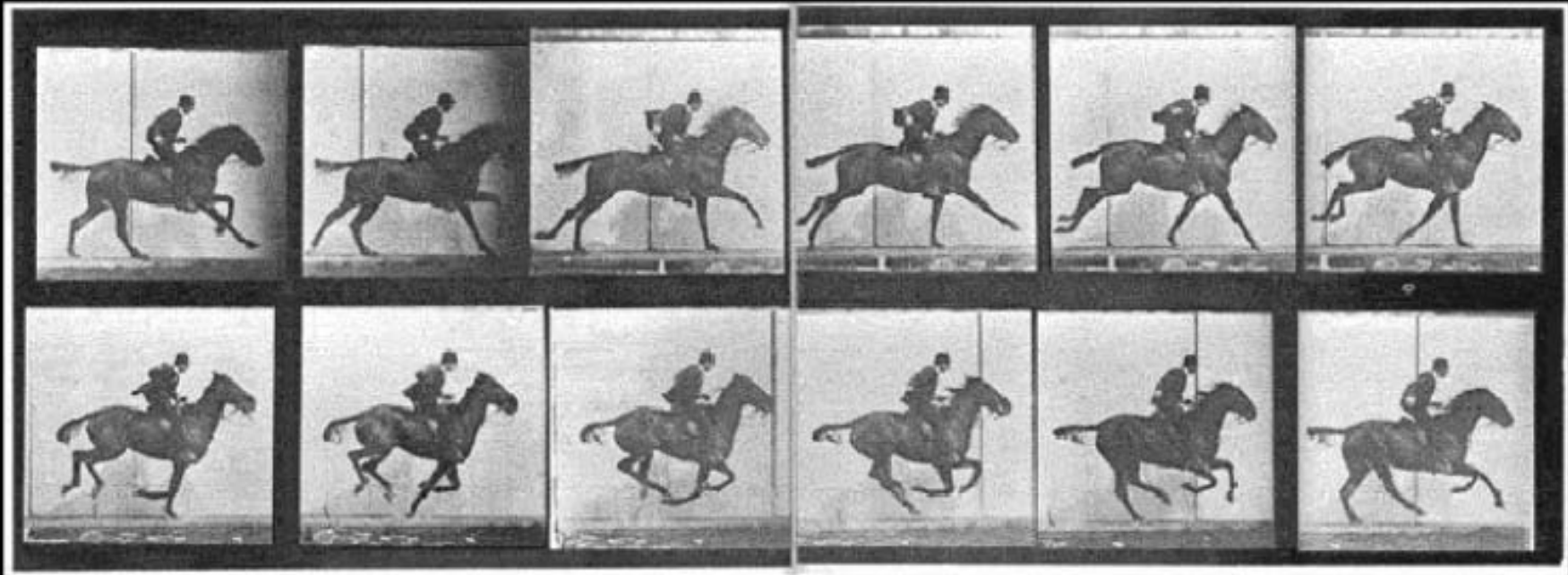
### First Color Photo

The enormously influential Scottish physicist James Clerk Maxwell creates a rudimentary color image by superimposing onto a single screen three black-and-white images each passed through three filters,—red, green, and blue. His photo of a multicolored ribbon is the first to prove the efficacy of the three-color method, until then just a theory, and sets the stage for further color innovation, particularly by the Lumière brothers in France.

# 1871

## Dry Plate Process Invented

English inventor R.L. Maddox, seeking to develop a less cumbersome process than the prevailing wet-plate collodion method, experiments successfully with silver bromide and gelatin to produce a dry plate. Later enhancements of this technique produce plates that are extremely sensitive to light and can be made in advance and developed well after a photo is exposed. The more forgiving process further opens photography to amateurs.



*Photograph by Eadweard Muybridge*

**1877**

### First Action Photos

English photographer Eadweard Muybridge, using new emulsions that allow nearly instantaneous photography, begins taking photograph sequences that capture animals and humans in motion. His 1878 photo series of a galloping horse, created with 12 cameras each outfitted with a trip wire, helps settle a disagreement over whether at any time in a horse's gait all four hooves leave the ground. (They do.) It also causes a popular stir about the potential of cameras to study movement. Muybridge goes on to create hundreds of image sequences with humans and animals as subjects. These photo series are linked to the earliest beginnings of cinematography.



# 1880

## Eastman Dry Plate Company Established

In 1879, American entrepreneur George Eastman invents and patents a coating machine for mass-producing gelatin dry plates. Using a secondhand engine bought for \$125, he begins commercial production of the plates in 1880. In 1881, Eastman and a family friend form the Eastman Dry Plate Company, which eventually leads to the ascendancy of the Eastman-Kodak Company.

# 1888

## First Kodak Camera Released

Under the marketing slogan "You press the button, we do the rest," George Eastman releases the Kodak camera in 1888. This simple device comes preloaded with a hundred photos worth of rolled film. Users send the whole camera to the company, where the film is developed, prints made, new film inserted, and the camera returned.

Despite much speculation, the word "Kodak" has no significance or meaning. Eastman simply invented a word that began and ended with his favorite letter, *k*.

# 1889

## Introduction of Nitrocellulate Film Photography

In 1889 the Eastman Dry Plate and Film Company introduces nitrocellulose, the first flexible and transparent film. The film's ease of use helped Eastman-Kodak make photography more accessible to amateurs. However, it had the drawback of being extremely flammable and prone to deteriorating over time.

# 1900

## Kodak Brownie Box Camera With Roll Film Introduced

In 1900, Kodak introduces the Brownie, a simple box camera that sells for a dollar. Named for a popular cartoon series and aggressively marketed to amateurs, including children, the revolutionary camera flies off shelves, selling 100,000 units in the first year.



Photograph by William Chapin

**1910**

Hand-Colored Photos Published in *National Geographic*

In its November 1910 issue, *National Geographic* publishes William W. Chapin's "Scenes from Korea and China," 24 pages of hand-tinted photographs. It is the largest collection of color photographs ever published in a magazine to date.



Photograph by Paul G. Guillumette

## 1914

### First Natural Color Photograph in *National Geographic*

The July 1914 issue of *National Geographic* features its first Autochrome, or natural-color photograph: an image of a flower garden at the World's Fair in Ghent, Belgium. The magazine had been using hand-colored images since November 1910. Invented by two brothers, Auguste and Louis Lumière of France, the Autochrome ("self-coloring") process was first marketed in 1907. In April 1916, *National Geographic* becomes one of the first American publications to run a series of Autochrome color photographs.



*Photograph by Charles Martin*

## 1926

### First Underwater Photos

Ichthyologist William Longley and National Geographic staff photographer Charles Martin use an Autochrome camera and a raft full of explosive magnesium flash powder to illuminate the shallows of Florida's Dry Tortugas and make the first undersea color photographs. The photos, which show reef scenes with fish, are published in the January 1927 *National Geographic*.

# 1931

## Electric Flash Invented and Patented

In 1931 American engineer Harold Edgerton invents the stroboscopic light. The device is powerful, fast, and reusable, giving it broad applications not only for photography, but for science as well. Edgerton's invention allows him to take clear photographs of fast-moving subjects, and his stop-motion images, the first of their kind, captivate viewers.



# 1934

## "Safety Film" Widely Used

Though cellulose acetate, or safety film, was first invented in 1909, it isn't until the mid-1930s that technological advances allow it to supplant the widely used, and highly flammable, nitrate films.



*Photograph by Robin Siegel*

## 1936

### Kodachrome Developed

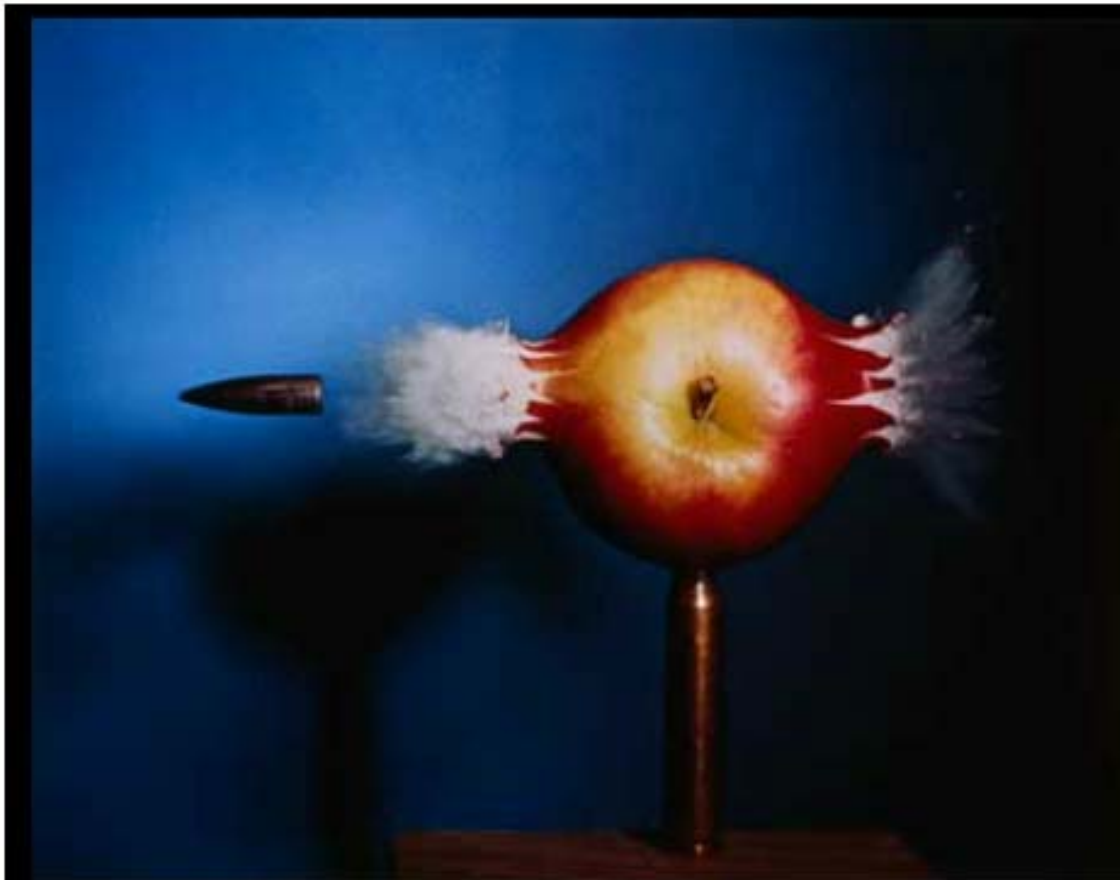
In 1936, Kodak releases Kodachrome in 35-mm for still photography. Kodachrome becomes the first commercially successful amateur color film. For most of the 20th century, Kodachrome is the film industry standard.

In 1937, National Geographic pioneers the use of 35-mm Kodachrome film and methods to engrave and print from it. It is many years before the rest of the publishing industry follows.

# 1938

## First Photocopying Technique Patented

In September 1938, American physicist Chester Carlson applies for a patent on his electrophotography process, which transfers images to paper using a sulfur-coated plate and lycopodium powder. The process would later be dubbed xerography, from the Greek *xero*, meaning "dry," and *graphy*, meaning "writing." In 1947, a small photo-paper company named Haloid would win the right to develop a xerographic machine. The company would later change its name to the now familiar Xerox.



*Photograph by Dr. Harold E. Edgerton*

## 1940

### First High-Speed Photography Images

Dr. Harold "Doc" Edgerton, a professor of electrical engineering at the Massachusetts Institute of Technology, works with National Geographic to perfect high-speed stroboscopic photography, freezing on film the rapid movements of nature that elude the eye. *National Geographic* publishes several of the images, including bullets frozen in mid-flight and stilled hummingbird wings. Nicknamed "Papa Flash," Edgerton's techniques are later used to illuminate the ocean's deepest abysses.

## 1946

### First Photo Taken From Space

Researchers with the Johns Hopkins University Applied Physics Laboratory strap a 35-millimeter camera to a German V-2 missile and launch it into space. The camera snaps a picture every second and a half as the rocket ascends to 65 miles (105 kilometers) above the surface. The camera falls back to Earth and slams into the ground, but the film, contained in a steel cassette, is unharmed. The developed photos are the first ever to show Earth from space. Hundreds of newspapers and magazine run the photos.



*Photograph courtesy White Sands Missile Range*



*Photograph by Polaroid Corp.*

## 1947

### Polaroid Camera Invented

Prompted by his three-year-old daughter, who wanted to know why she couldn't immediately see a picture he'd taken of her, inventor/entrepreneur Edwin H. Land begins work in 1944 on self-developing film. In 1947, he demonstrates his results at an Optical Society of America conference, and the following year, his Polaroid Instant Camera is released to the public.



*Photograph by Bates Littlehales*

## 1960

### **OceanEye Invented**

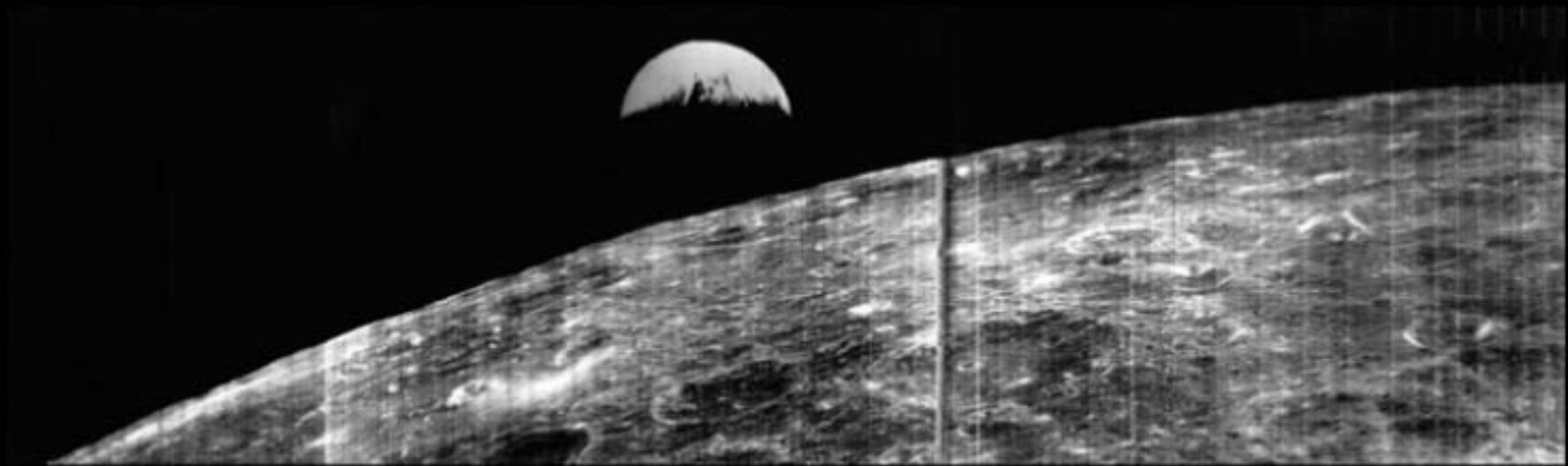
*National Geographic* photographer Bates Littlehales works with the National Geographic photo lab and the Photogrammetry Corporation to design an underwater camera housing for shooting wide-angle photos. The result, dubbed OceanEye, allows photographers to take wide shots as well as close-ups without the distortion caused by water and thus, revolutionizes underwater photography.

# 1963

## Polaroid Releases First Color Instant Film

In 1963 Polaroid introduces Polacolor, the first instant camera film that produces color photos. This same year Kodak releases its Instamatic camera, with easy-to-use cartridge film. By 1970, more than 50 million Instamatics have been produced.





*Photograph by NASA/Lunar Orbiter 1*

**1966**

### First View of Earth From the Moon

This photo reveals the first view of Earth from the moon, taken by Lunar Orbiter 1 on August 23, 1966. Shot from a distance of about 236,000 miles (380,000 kilometers), this image shows half of Earth, from Istanbul to Cape Town and areas east, shrouded in night.



*Photograph by James Blair*

**1969**

### **First Photojournalistic Images in *National Geographic***

In 1969, *National Geographic* photographer James Blair begins photographing for an assignment about pollution in the United States. The article, published in the December 1970 issue, marks the first time the magazine features unsettling, photojournalistic images. "Landscape photography is not just about making pretty pictures," Blair later says. "It can also serve a purpose."



**1972**

**"Blue Marble" Earth Photo Taken**

This famous "Blue Marble" shot represents the first photograph in which Earth is in full view. The picture was taken on December 7, 1972, as the Apollo 17 crew left Earth's orbit for the moon. With the sun at their backs, the crew had a perfectly lit view of the blue planet.

*Photograph by NASA*



*Photograph by David Duprey/AP Photo*

## 1975

### First Digital Camera Invented

In 1975, Steven Sasson, an electrical engineer working for Kodak, finishes work on the world's first digital camera. The device, about the size of a toaster, uses a new electronic sensor called a charge coupled device, or CCD, and a recording cassette. The first picture is of a lab technician, who after seeing her garbled image on a TV screen, tells Sasson that his invention "needs more work."



*Photograph by NASA/Camera 2 on Viking 1*

**1976**

### First Shot of Surface of Mars

On July 20, 1976, spacecraft Viking 1 captured this, the first photograph ever taken of the surface of Mars. The photo shows one of three dust-covered footpads of the craft resting on Mars's dry, rock-littered surface. Cameras strapped on either side of Viking 1's lander helped scientists calculate distances on the surprisingly Earthlike surface of the red planet.

# 1990

## Adobe Photoshop Released

In February of 1990, Adobe Systems releases its first digital image-editing software package, Photoshop 1.0. The original program, developed by brothers John and Thomas Knoll, is compatible only with Apple Macintosh computers. A Windows version is released in 1992.



*Photograph courtesy Eastman Kodak Company*

## 1991

### First Commercial Digital Still Camera

Kodak releases the first commercially available, professional digital camera in 1991. This device, extremely expensive and marketed to professional photographers, uses a Nikon F-3 camera body fitted with a digital sensor. Over the next five years, several companies come out with more affordable models, and today, the market is overwhelmed with thousands of digital still camera models.



*Photograph by Joel Sartore*

## 1991

### Crittercam Makes Debut

Conceived by National Geographic filmmaker/inventor Greg Marshall in 1986, Crittercam makes its debut in 1991. Safely worn by wildlife, the thermos-size device collects video, sound, and environmental data, giving scientists a rare animal's-eye look at the natural world. The first animal to carry a Crittercam is a Hawaiian monk seal.



# 1992

## Web Photo Standards Established

In 1992, the Joint Photographic Experts Group (JPEG), a collaboration of three leading standards organizations, releases its guidelines for compressing images for storage and transmission over the Internet. The format, which aims to display an image within one second using a 64-kilobit/sec ISDN line, becomes the international standard for viewing images on the Web.

# 2000

## First Camera Phone

In 2000, Japanese electronics firm Sharp introduces its J-SH04, or J-Phone, the first mobile phone to feature an integrated image sensor for taking digital photos. Image resolution is a modest 0.1 megapixels, but the feature helps increase Sharp's share of the mobile phone market and sets the stage for the widespread "citizen photojournalism" of today.

# 2004

## Kodak Ceases Production of Film Cameras

In 2003, U.S. consumers buy more digital cameras than film cameras for the first time. In January 2004, Kodak, the company that brought photography to the masses with its one-dollar Brownie camera, announces it will no longer sell 35-mm film cameras.

# 2009

## Kodak Ceases Production of Kodachrome Film

In June 2009, faced with precipitously declining sales due first to easier-to-develop films and later to the ascendancy of digital photography, Kodak announces it will no longer make Kodachrome film. Introduced in 1936, some of the 20th century's most memorable images were shot using Kodachrome, including National Geographic photographer Steve McCurry's 1985 photo of a red-scarved Afghan refugee with piercing green eyes.