THE HISTORY OF CINEMATOGRAPHY

PART ONE – THE BIRTH OF AN ART FORM

Human fascination with the concept of communicating with light and shadows has its roots in antiquity. Aristotle described how sunlight passing through a small hole projected an inverted image on the wall of a darkened room. That is the oldest known reference to the camera obscura.

Gemma Frisius, a Dutchman, published a book containing a drawing of a camera obscura in 1545. Thirteen years later, Giovanni Battista della Porta, in Italy, wrote a book called "Magia Naturalis" that described the use of a camera obscura with lenses and concave mirrors to project a tableau in a darkened room. They might has well have been drawing pictures in sand, because the images were impermanent.

The roots of modern photography trace back to 1816, when Nicephore Niepce, a French lithographer, experimented with recording images on metal plates coated with a sensitized material. In 1827, he aimed a homemade camera out a window and recorded a picture on a pewter plate coated with a light-sensitive chemical emulsion.

Niepce subsequently collaborated with Louis Jacques Mande Daguerre in the development of the world's first practical photographic system. They recorded clear, sharp images on silverized copper plates in Daguerre's studio in 1837. Niepce gave his invention to the French government, which put it into the public domain.

An Englishman named William Henry Fox Talbot invented the first process for making positive prints from negative images during the 1830s. Another Englishman, Richard Leach Maddox, discovered that the silver

halide crystal is an incredibly efficient repository for capturing light. His 1871 discovery was a crucial building block for modern photography.

The oldest recorded attempt at motion picture photography was made by an Englishman named Eadweard Muybridge. He was a vagabond photographer who had migrated to California. In 1872, California Governor Leland Stanford hired Muybridge to help him win a bet by proving that there were times in a horse race when all four of the animal's feet are off the ground. Five years later, Muybridge set 24 cameras up in a row along a race track. He attached a string to each camera shutter, and stretched the strings across the track.

Muybridge chalked lines and numbers on a board behind the track to measure progress. As Stanford's horse raced on the track, it tripped the wires and recorded 24 photographs that proved that all four of the horse's feet were off the ground at the same time.

Stanford won his bet, and Muybridge continued experimenting. During the early 1880s, he traveled to Paris to demonstrate his multiple camera system for other photographers and scientists. One of his hosts was Etienne-Jules Marey, who was experimenting with the use of a single camera for recording images in motion.

The camera had a long barrel that served as a lens, and a circular chamber containing a single glass photographic plate. It took Marey a second to record 12 images around the edge of the glass plate. He called his invention chronophotography. Marey recorded moving images of men running and jumping, fencers, horses trotting, gulls flying and cats falling. They were permanent records of one to two seconds of motion.

Meanwhile, across the ocean in New Jersey, Thomas Alva Edison had invented a system that recorded and played back music using wax

cylinders. After his invention became popular in consumer households, Edison got an idea for building and selling a device to consumers that displayed moving images to accompany the music.

In 1885, at his research laboratory in Menlo Park, New Jersey, he assigned W.K.L. Dickson the task of finding a way to record moving images on the edges of records. It proved to be a daunting task.

This is where George Eastman entered the picture. Eastman became interested in still photography in 1877, when he was a 25-year-old bank clerk in Rochester, New York. Photography was a cumbersome process. The photographer had to spread a chemical emulsion on a glass plate in a pitch black area and take the picture before the emulsion dried.

In 1880, Eastman leased space in a Rochester building and began manufacturing dry plates, which maintained their sensitivity to light. Eastman Dry Plates played a major role in popularizing photography, but the former bank clerk was determined to make it easier to take pictures.

In 1887, the Reverend Hannibal Goodwin, in England, invented and patented a way to coat a light-sensitive photographic emulsion on a cellulose nitrate base. The base was strong, transparent and thin enough to perfect a process for manufacturing film on a flexible base.

Eastman purchased the right to use that patent in 1888. The Kodak Brownie snapshot camera was introduced the following year. It was pre-loaded with enough film to take 100 pictures. An ad campaign promoted photography as a hobby for every man, woman and child. The ad said, “You push the button, and we do the rest.” After all the pictures were taken, the camera was mailed to Kodak, which processed the film and returned prints to the photographer with a reloaded camera.

After Dickson saw the Kodak Brownie camera at a meeting of an amateur photographers' club in New Jersey, he traveled to Rochester and met with Eastman, who agreed to provide the film needed for an experimental motion picture camera. Dickson wrote to Edison stating, "Eureka, this is it!" Edison replied, "Now, work like hell!"

Edison set a deadline. He wanted to display experimental films in a motion picture projector at a world's fair in Chicago in 1894. The film in the Kodak snapshot camera was a 25-foot roll, 70 mm wide. Dickson cut it down the middle, and spliced it into 50 foot long reels.

He developed the Kinetograph camera and Kinetoscope projector, which Edison patented in the United States in 1891. Edison opened the Black Maria Studio in Orange, New Jersey, the following year, and told Dickson to begin producing motion pictures to showcase at the Chicago exposition.

The Black Maria Studio got its name because it resembled the shape of a horse-drawn police cart. The roof could be removed to let daylight in, and the studio was on a turntable that could be revolved to follow the sun. Dickson installed a trolley track at the Black Maria Studio that enabled him to move the camera further away from and closer to his subjects for more intimate shots. That was an early, intuitive step towards making cinematography an interpretive art.

On May 20, 1891, Edison demonstrated the projector for the first time when delegates from the National Federation of Women's Clubs visited the company's research laboratory in Menlo Park, New Jersey. A reporter for The New York Sun wrote, "The women saw a small pine box with a peephole about an inch in diameter. One by one, they looked

through the peephole and saw moving images of a man, smiling, waving, taking off his hat and bowing with naturalness and grace."

Record of a Sneeze, shot by Dickson, is oldest motion picture on record at the Library of Congress. The title of the 1893 film is literal. It shows Fred Ott, a mechanic who worked for Edison, sneezing.

Edison patented the sprocket drive technology developed by Dickson, who also designed, built and operated the film processor and printer. The Kinetoscope was a sensation at the 1894 Chicago Exposition. That same year, Edison made a business deal with Norman Charles Raff, who organized The Kinetoscope Company and sold territorial rights to entrepreneurs who wanted to operate peep show parlors. Within a few years more than 1,000 parlors were operating in the U.S. and Canada.