

AHST 4342-501 (27532)

History of Media and New Media Art

Spring 2018

Dr. Charissa N. Terranova

University of Texas at Dallas

Arts & Humanities

T-Th 1:00-2:15

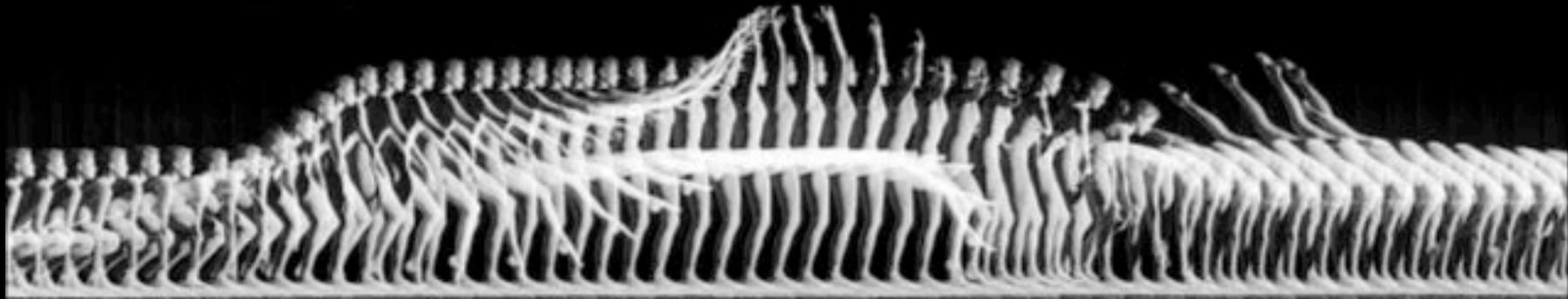
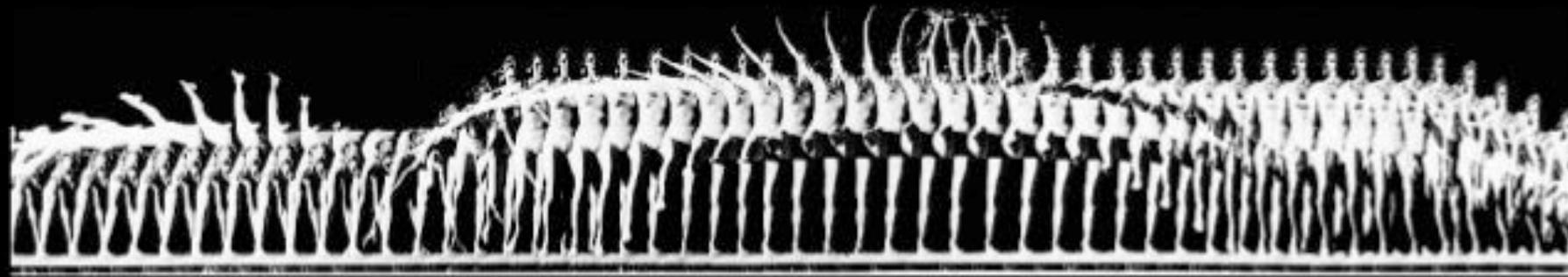
Tuesday 02/01/18

Discussion

Chronophotography: Capturing Time and Movement in Image

Chronophotography

Chronophotography originated as a Victorian application of science (the study of movement), and art (photography).



Photographs by Andrew Davidhazy



Sir Charles Wheatstone, stereoscope, 1840



Carleton E. Watkins, Mariposa Trail, Yosemite Valley,
Mariposa County, Cal, From the "Best General View,"
1865-66

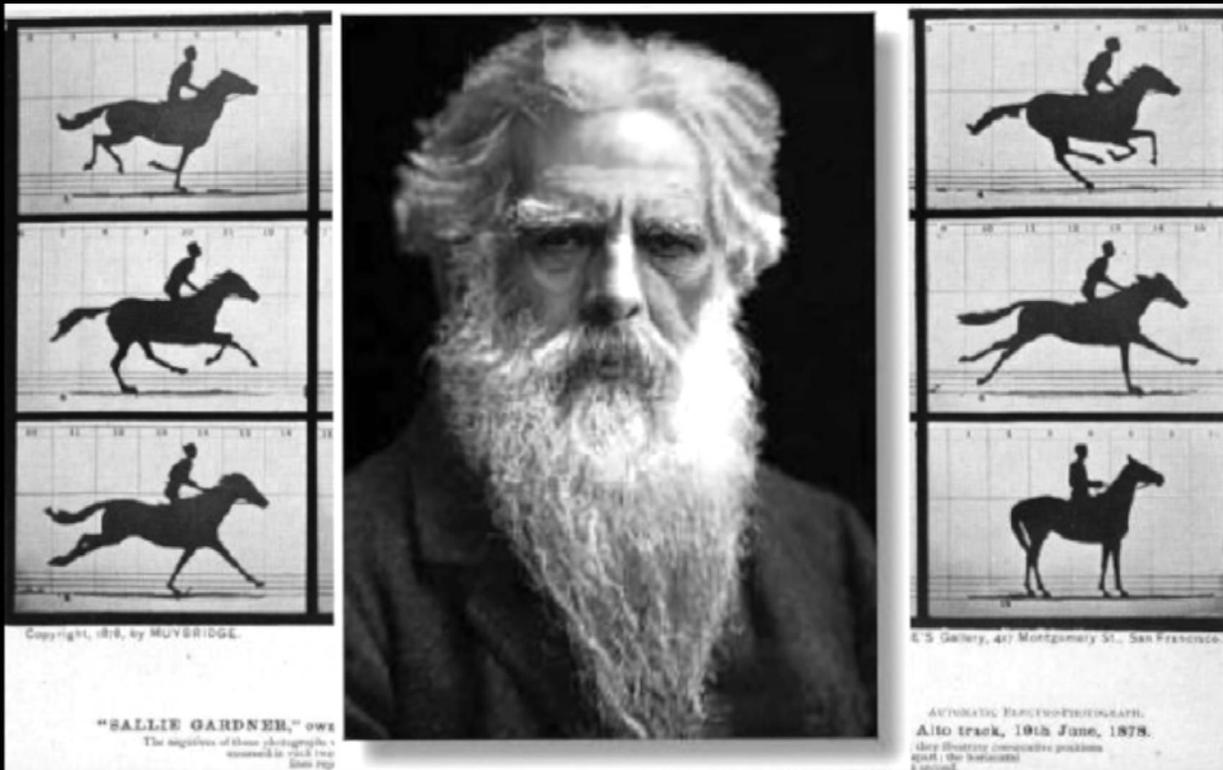




Carleton Watkins, Stereoview of Cathedral Rocks at Yosemite, 1967

"The controlled grandeur of his views of the sublime is encoded not only with classical ideals of simplicity, geometry, and measure but also with a perception of the West as the **primordial theatre** of an authentically American place" (The Waking Dream, Gilman Paper Company Collection, p. 124). These photographs helped clinch the notion that Yosemite was a relic of Eden in North America.

<https://www.donaldheald.com/pages/books/27829/carleton-e-watkins-photographer/collection-of-56-stereoscopic-photographic-views-from-watkins-pacific-coast-series-principally>



Prior to his accident Muybridge was a good businessman, genial and pleasant in nature; but after the accident he was irritable, eccentric, a risk-taker and subject to emotional outbursts. The emotional changes that followed Muybridge's head injury are familiar to neurologists. Damage to the anterior part of the frontal lobe, known as the orbitofrontal cortex, disrupts the control and regulation of emotions. In modern times, damage to this region is a common consequence of severe automobile accidents.

-- Arthur P. Shimamura, *Muybridge in Motion: Travels in Art, Psychology and Neurology*

Eadweard Muybridge (1830-1904), born Edward James Muggeridge in Kingston on Thames in county of Surrey

aka "Helios"

Student question:

Was Eadweard Muybridge's perspective on the West distinctive only because of his position as a foreigner?

VALLEY OF THE ROSEMITE.

Illustrated by MUYBRIDGE,

Published by BRADLEY & RULOFSON.



Illustrated by MUYBRIDGE,

VALLEY OF THE ROSEMITE.

Published by BRADLEY & RULOFSON.

1315—Yowiye, "Nevada Fall," 600 feet high.

Eadweard Muybridge, Yowiye, 'Nevada Fall,' 600 feet high, c.1872



Carleton Watkins, Piwyac, or the Vernal Fall and Mt. Broderick, 300 feet, Yosemite Valley, Mariposa County, Cal. 1861



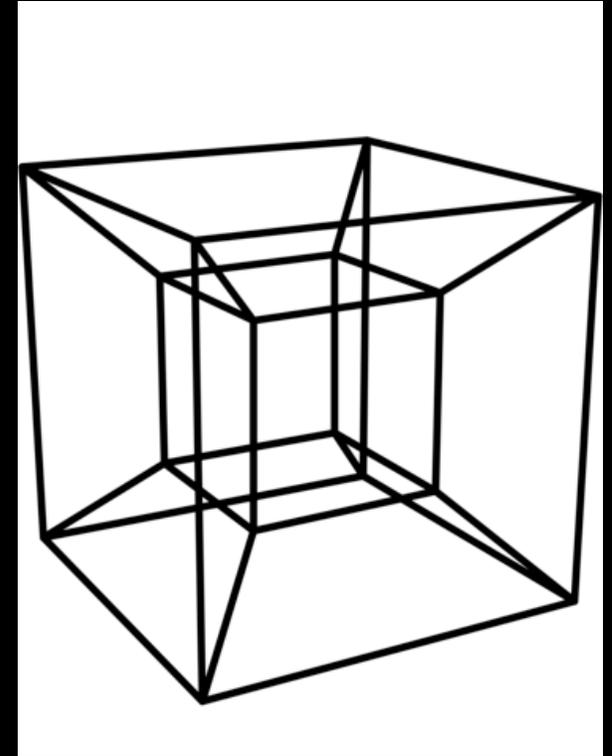
Eadweard Muybridge, Yowiye, 'Nevada Fall,' 600 feet high, c.1872

How, according to Latsis, are they distinct?

cataract versus tesseract



Edward Muybridge, Base at Yosemite Lower Falls, Yosemite Valley, California, 1868



The tesseract is the hypercube also called the 8-cell or octachoron. It is the four-dimensional analog of the cube; the tesseract is to the cube as the cube is to the square. In Madeleine L'Engle's novel *A Wrinkle in Time*, the characters in the story travel through time and space using tesseracts. The book actually uses the idea of a tesseract to represent a fifth dimension rather than a four-dimensional object (and also uses the word "tesser" to refer to movement from one three dimensional space/world to another).

He concerns himself not with how exposure times can help with photographic accuracy, sharpness, and picturesque value but with conveying as direct an image as possible of the passage of time, even if that means including indistinct volumes of white matter in his otherwise stunningly composed pictures. He therefore accepted the structural limitations of his medium (the extent of exposure times, the sensitivity of the collodion plate, and so on) and used them to suggest something that lies (just) beyond the impression that the photographic image can capture: a *continuum* of time in which the arrested moment is but a single instant. In this sense, the waterfalls in his images can be characterized as *condensed chronophotographs*, that is to say time-lapse images of water falling that have been compressed into a single image rather than a succession of exposures, leaving an overexposed area on the emulsion as a trace of that mobility, which other photographers would be keen to dismiss as an imperfection. This is what Frampton means when he substitutes the spatial *cata*-ract with the temporal *tesse*-ract, the four-dimensional model of a cube that is often used to represent time alongside the three dimensions. (Latsis, 16-17)

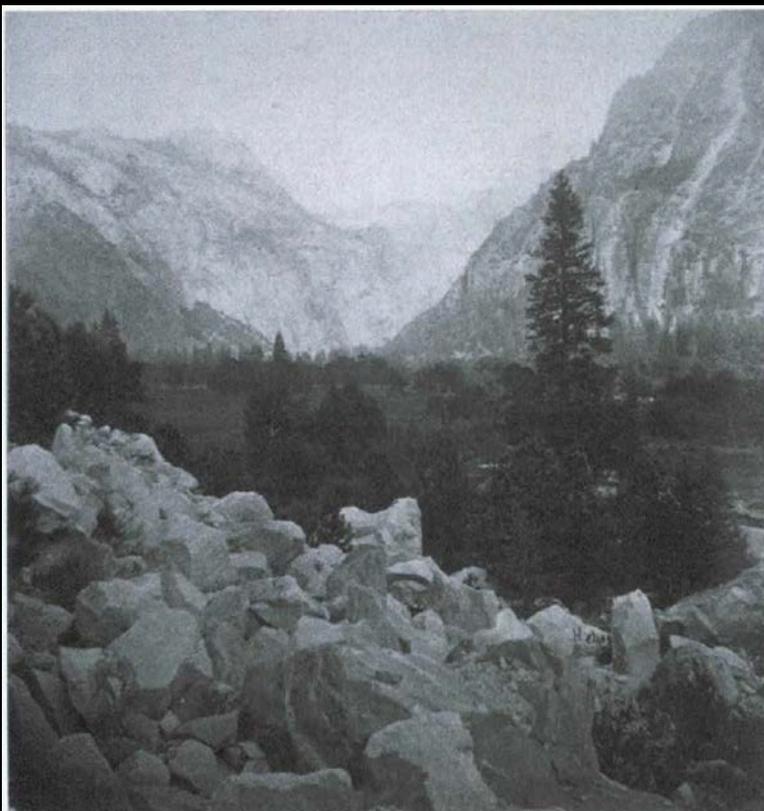
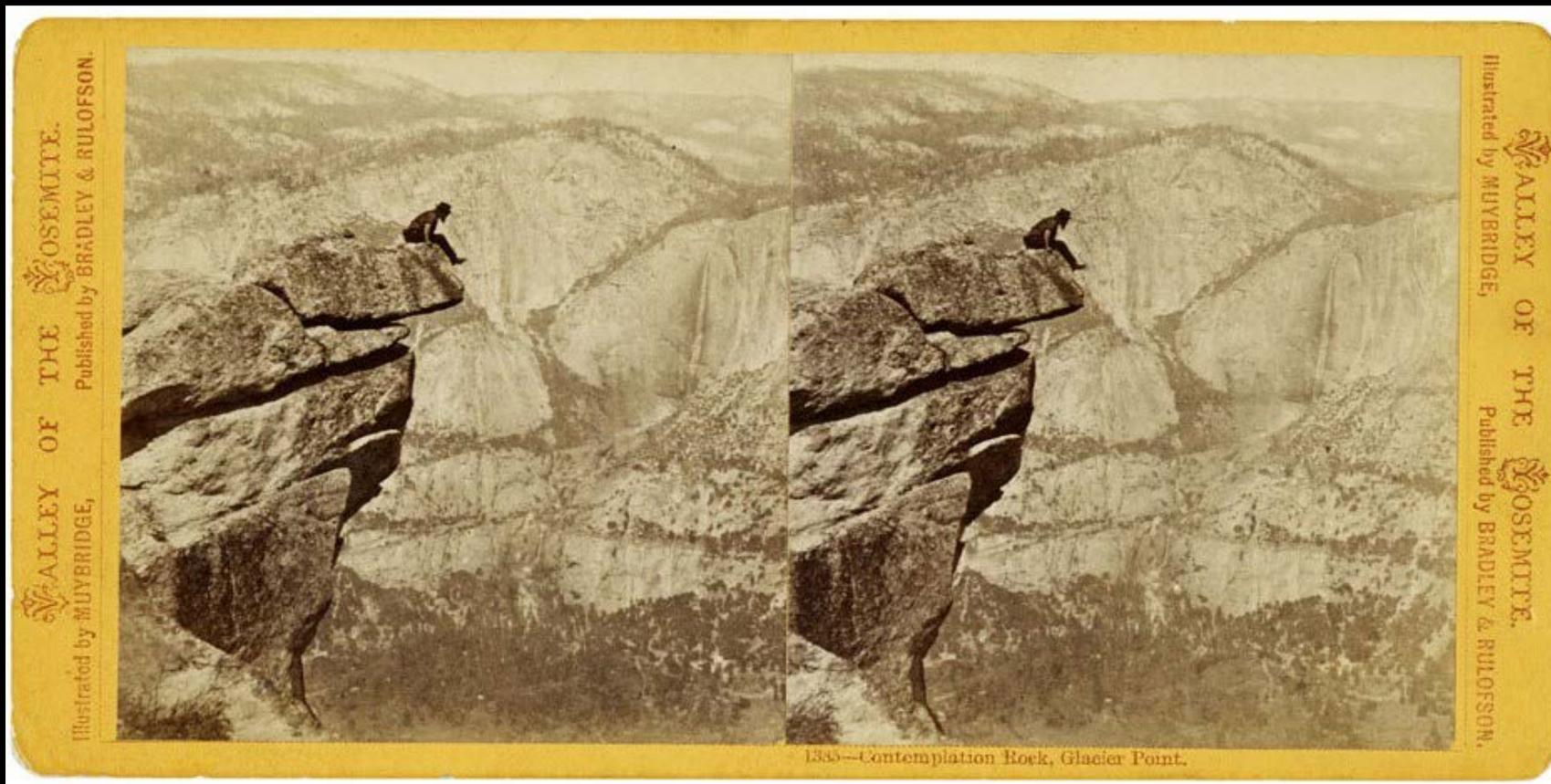


Fig. 5: Muybridge, *The Valley from the Base of Pompompalos* (one half of a stereograph), 1872. (Lone Mountain College Collection of Stereographs by Eadweard Muybridge, 1867-1880, Bancroft Library, UC Berkeley)



Muybridge, Contemplation Rock, Glacier Point, 1872

VIEWS OF THE PACIFIC COAST,
HELIOS,
Cosmopolitan Gallery of Photographic Art,
415 Montgomery St. San Francisco.



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CALIFORNIA.—Yosemite Valley.

Entered according to Act of Congress, 1868, by EDW. J. MUYBRIDGE, in the Clerk's
Office of District Court, U.S., District California.

Muybridge, Granitic fissure in Eagle Rock, 1000 feet deep, Yosemite Valley, California, 1868

Student question:

Did Muybridge's photos single-handedly spark the Yosemite National Park tourist movement?

Student question:

How much credit and praise does Muybridge deserve for inventing the roots of cinema even though he didn't intend to do so?

UNION PACIFIC RAILROAD.

Illustrated by MUYBRIDGE,

Published by BRADLEY & RULOESON



825 -- Beacon Rock, near Castle Rock Station, Echo Canyon, after a Snow Storm.

UNION PACIFIC RAILROAD.

Published by BRADLEY & RULOESON.

Illustrated by MUYBRIDGE,

Muybridge, Beacon Rocks, Near Castle Rock Station, Echo Canyon, After A Snow Storm, 1868



Caspar David Friedrich, *The Abbey in the Oakwood*, 1809-10



Caspar David Friedrich, *The Sea of Ice*, 1823-24

- Romanticism
- Sublime
- Incommensurable nature



A Modoc warrior is pictured in a stereoscopic series of photographs titled "The Modoc War" by Muybridge, 1870

THE MODOC WAR.
Published by BRADLEY & RULOFSON.
Illustrated by MUYBRIDGE.



Illustrated by MUYBRIDGE.
THE MODOC WAR.
Published by BRADLEY & RULOFSON.

1625—One Eyed Dixie and other Modoc Squaws.

A Modoc people are pictured in the same stereoscopic series of photographs titled "The Modoc War" by Muybridge, 1870

THE INDIANS OF CALIFORNIA.

Published by BRADLEY & RULOFSON.

Illustrated by MUYBRIDGE,



Illustrated by MUYBRIDGE,

THE INDIANS OF CALIFORNIA.

Published by BRADLEY & RULOFSON.

1585--Bath House in the Yosemite.

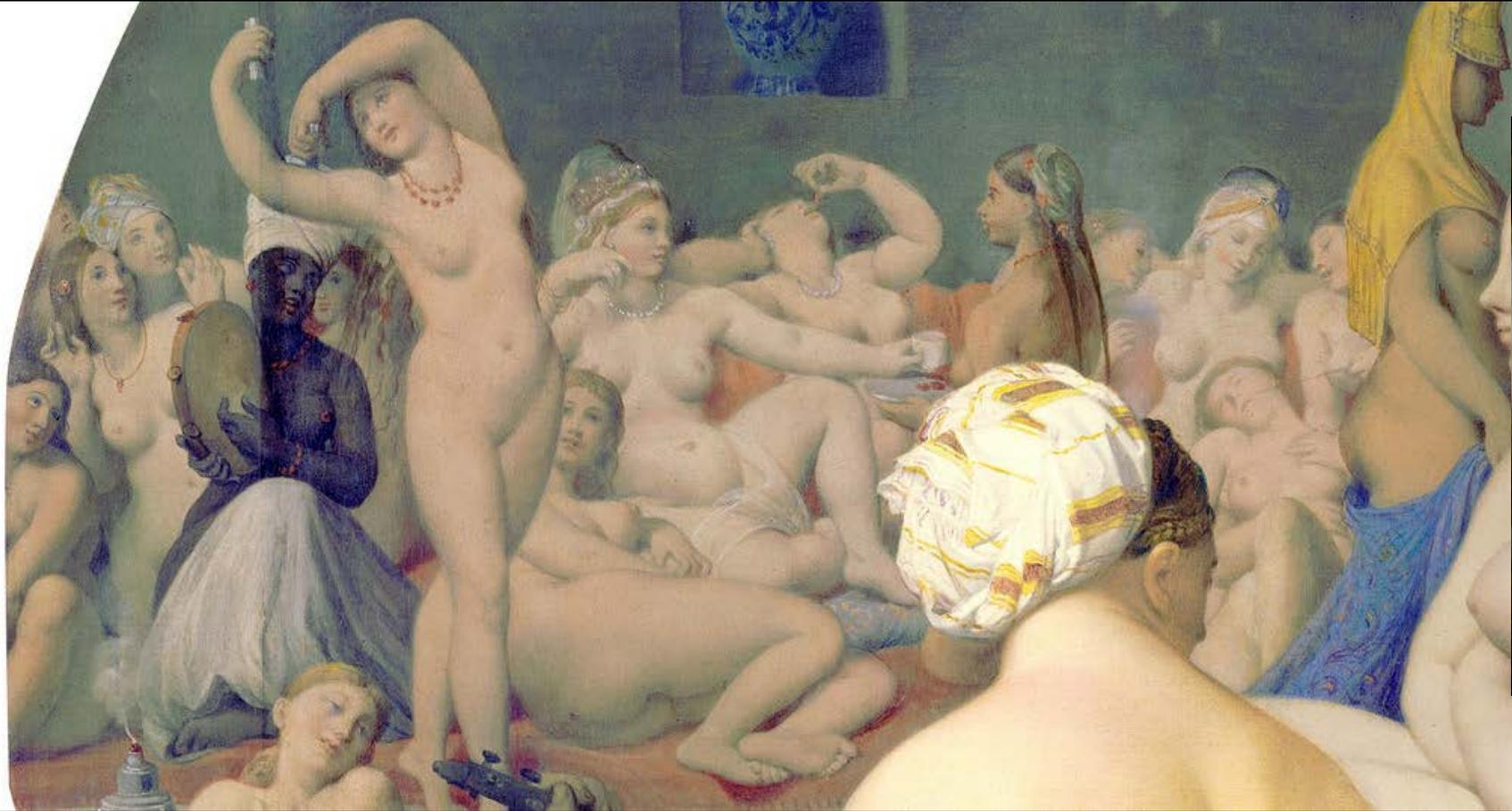
Muybridge, Bath House in the Yosemite, 1870

Are Muybridge's photographs of Native Americans 'othering'? Do they exoticize -- make humans into spectacles of aesthetic delectation? Is it a form of 'Orientalism'?



Orientalist painting, representing "the Middle East", was a genre of Academic art in the 19th century.

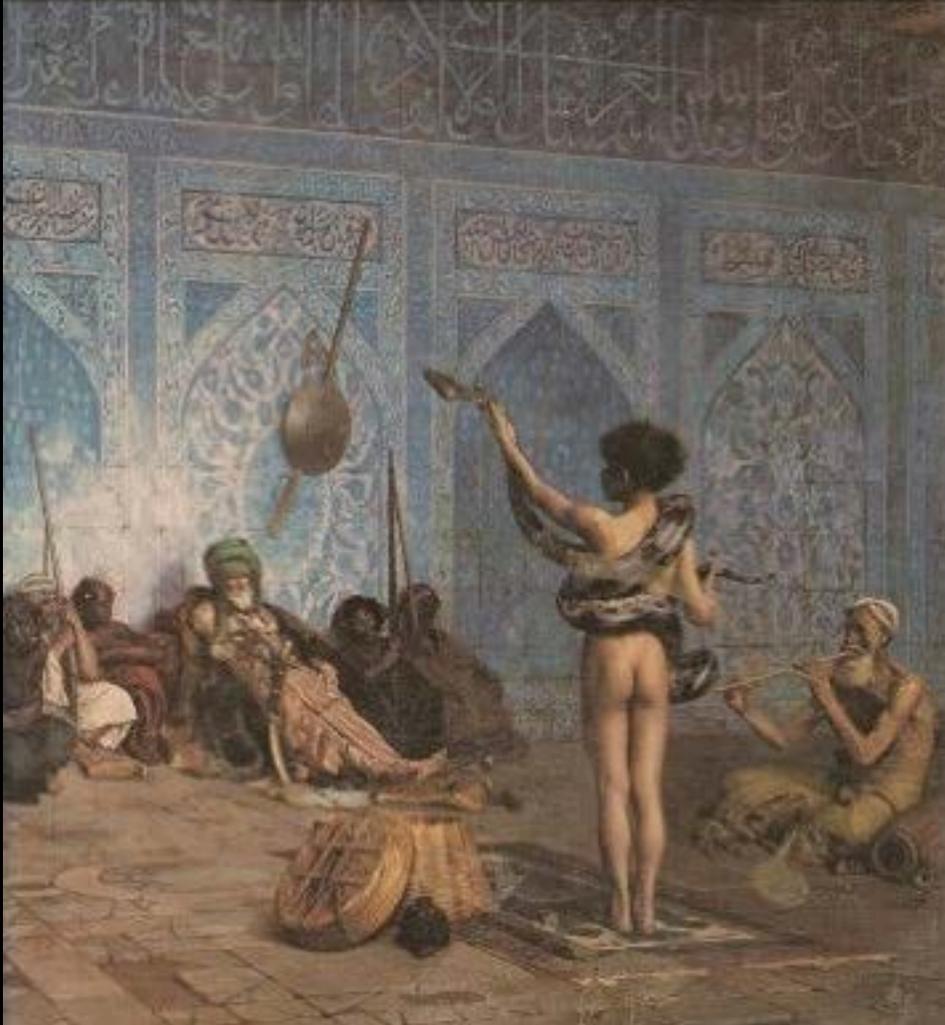
Jean-Auguste-Dominique Ingres, The Turkish Bath (Le Bain Turc), 1863



**Orientalism
Stereotypes**

ORIENTALISM

EDWARD W. SAID



Orientalism

- In particular, Orientalist painting, representing "the Middle East", was a genre of Academic art in the 19th century.
- ***Orientalism*** is a 1978 book by Edward W. Said which studies the cultural representations that are the bases of Orientalism, which Said defined as the West's patronizing representations of "The East" — the societies and peoples who inhabit the places of Asia, North Africa, and the Middle East. According to Said, orientalism (the Western scholarship about the Eastern World) is inextricably tied to the imperialist societies who produced it, which makes much Orientalist work inherently political and servile to power



Lake Atitlan - Guatemala

MUYBRIDGE, Photo.

San Francisco

Eadweard Muybridge, Lake Atitlan, Guatemala, 1875, published 1877



Eadweard Muybridge, Lake Amatitlán, Guatemala, 1875, published 1877

Frustrated by “the medium’s limitations, in 1869 [Muybridge] patented a camera sky shade so that he could expose his film separately for the sky and the subject below” gaining the definition between land and sky.

<https://www.theguardian.com/artanddesign/2010/sep/04/eadweard-muybridge-exhibition-rebecca-solnit>

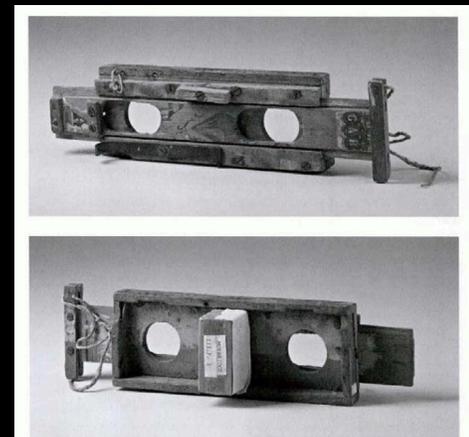
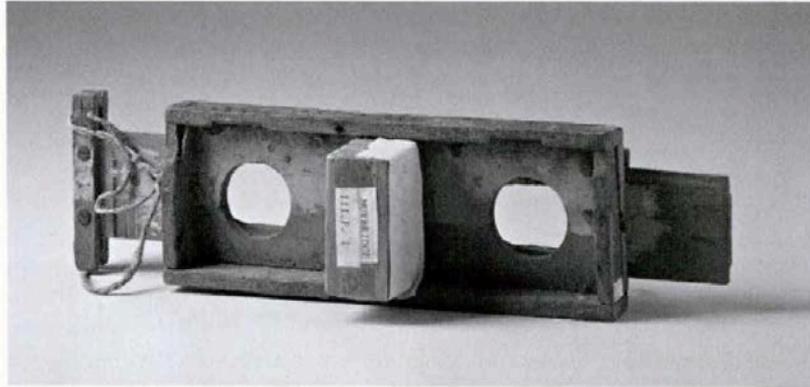


Fig 10.1 and 10.2; Muybridge, Stereoscopic Lateral “Sky-Shade” (recto and verso), Accession number 2014.40, Cantor Arts Center, Stanford Museum Collections, Stanford University



Figs 10.1 and 10.2: Muybridge. *Stereoscopic Lateral "Sky-Shade"* (recto and verso). Accession number 2014.40, Cantor Arts Center, Stanford Museum Collections, Stanford University

Sky-shade (1869) chrono-collages (Latsis, 19)



Single journey with multiple outcomes; the same picture from different albums.

The same picture from different albums, with varying cloud combinations. Eadward Muybridge, *San Benito, Mexico, from the Steamer Honduras*. Triptych by Byron Wolfe, 2010. [Department of Special Collections, Stanford University Libraries; Niagara University Special Collections; Boston Athenaeum]

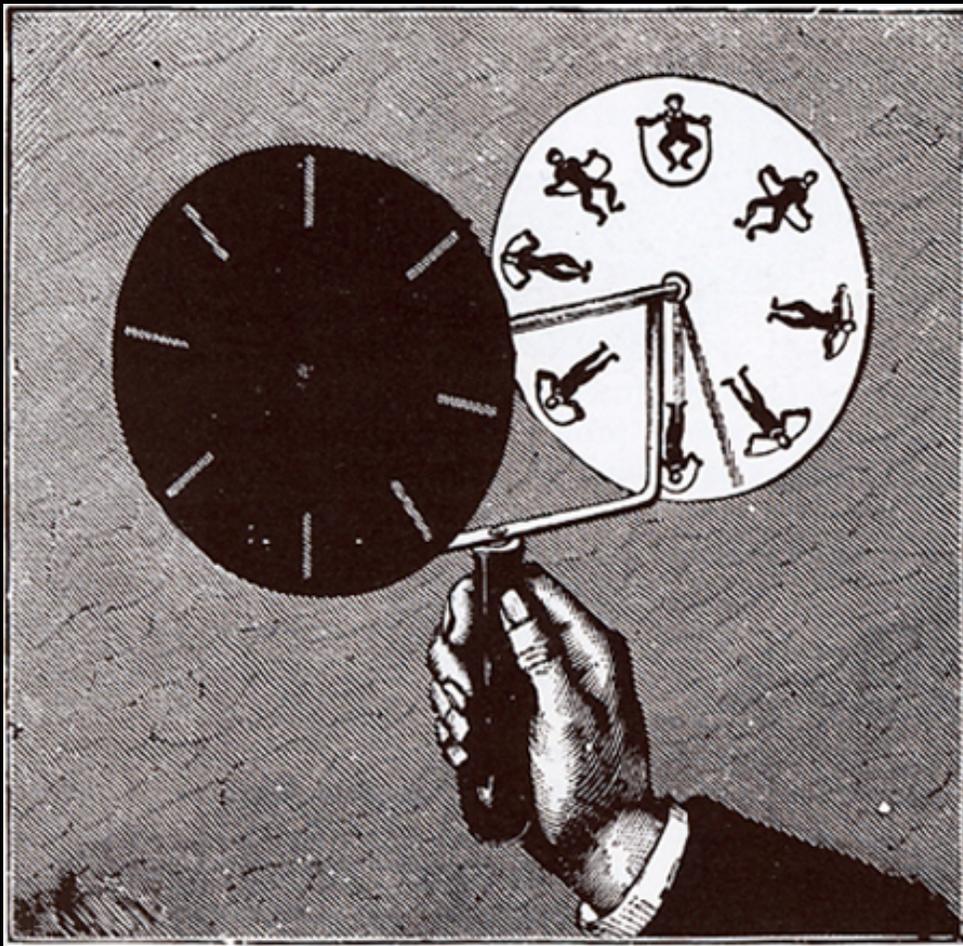
Student question:
Why do we insist on editing natural scenes in
photographs?

Student writing:

If photography is meant to present the truth of nature in front of us, why does it frequently have to be altered in order to be photographed? One answer is undeniably an art form and, as such, has artists behind it who wish to create something meaningful. Another possibly truer and more unpleasant answer is that society does not want to see imperfect images of the world around it; society wants to see an idealized depiction to match its often unrealistic concept?

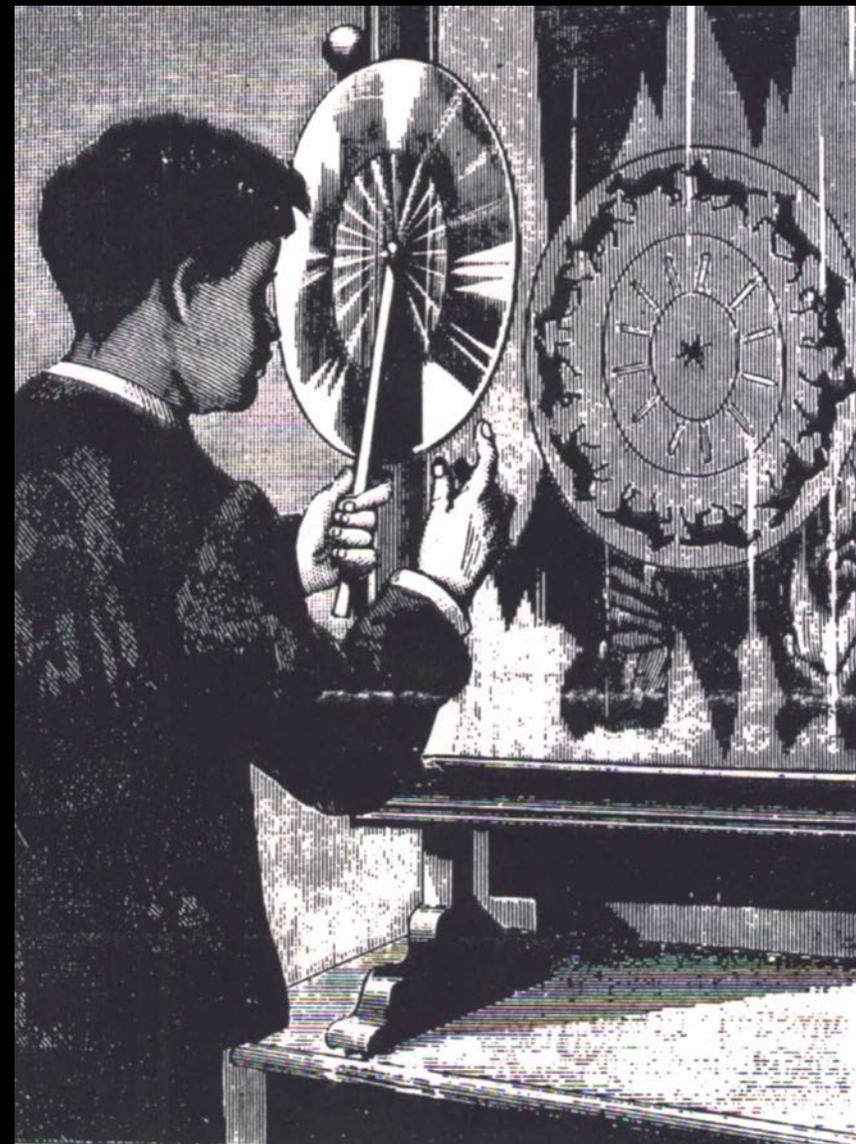
Professor question:

“Society” is invoked here in the universal sense. Are all societies this way?



Joseph Plateau and Simon von Stampfer,
Phenakistoscope, 1832

The word "phenakistoscope" comes from Greek roots meaning "optical deceiver" or "to cheat", as it deceives the eye by making the pictures look like an animation.





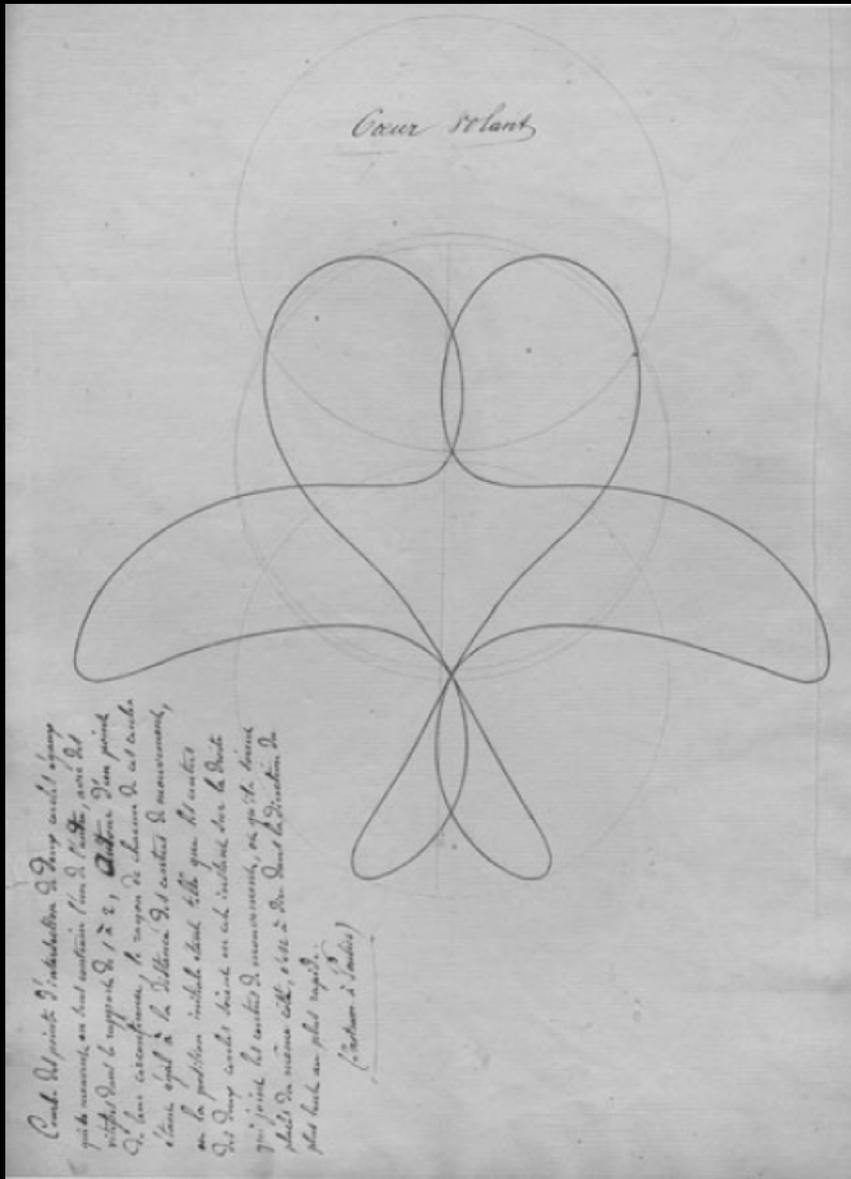


Left: Plateau, Portrait of
mentor Adolphe
Quetelet [1796-1874]

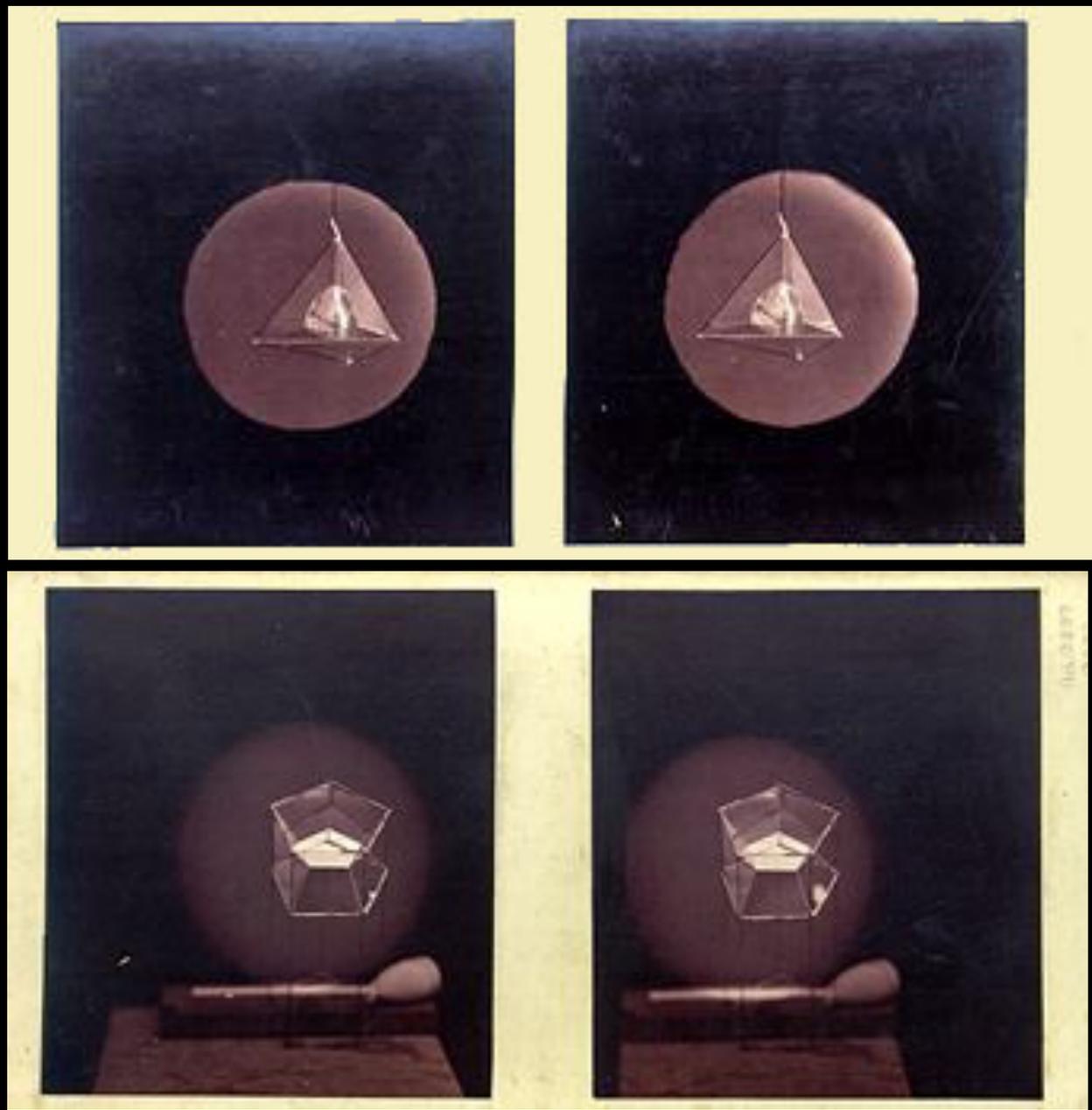
Center: Plateau,
Anorthoscopic disks, c.
1830

Right: Plateau,
Phenakistoscope disk, c.
1829

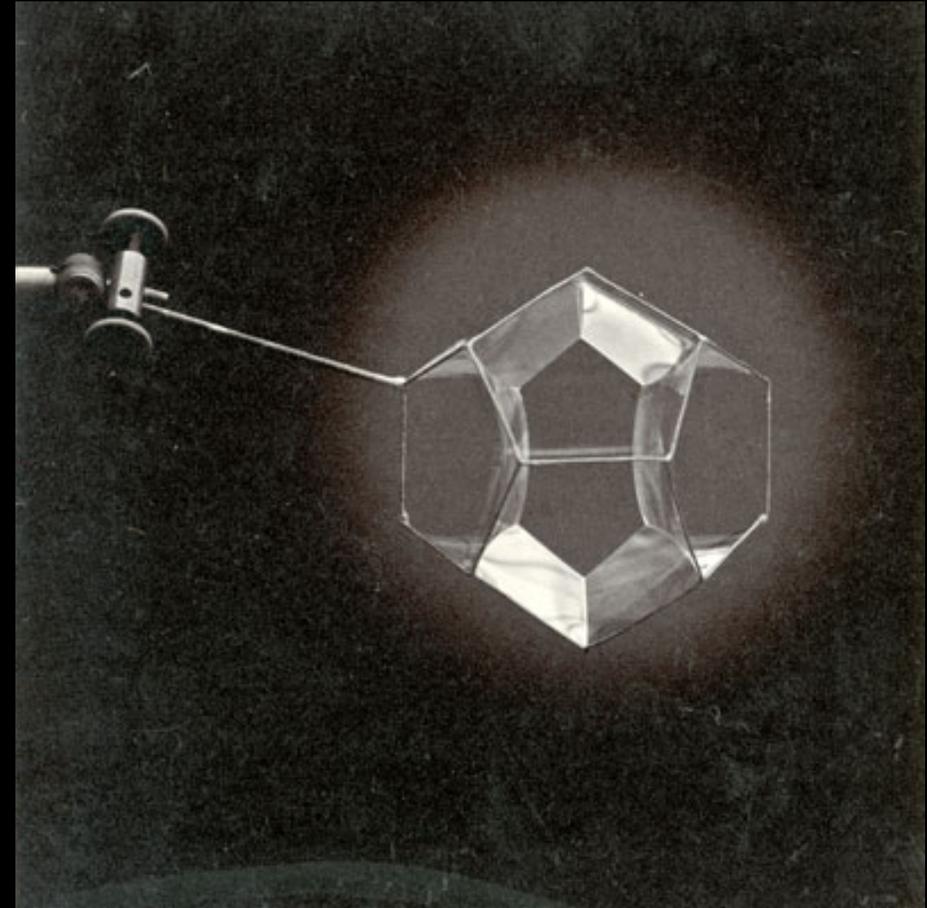




Left: Plateau, Flying Heart (Coeur volant), the locus of two identical circles rotating in opposite directions about a certain point on their circumference, determined by Plateau solely through mathematical analysis in 1828
 Right: Stereo pictures of laminar soap films formed on the wire shapes by Plateau, Photo A.L. Neyt, Ghent, about 1880. Collection J. Plateau, Ghent



After submersion in "liquide glycérique", the figures in the stereoscopic images at top show a shape reminiscent of the calyx of a tulip.



Wire figures for the study of soap films; Museum for the History of Sciences, Ghent
For his research concerning the laws governing the formation of laminar soap films Plateau has some 80 wire figures made.

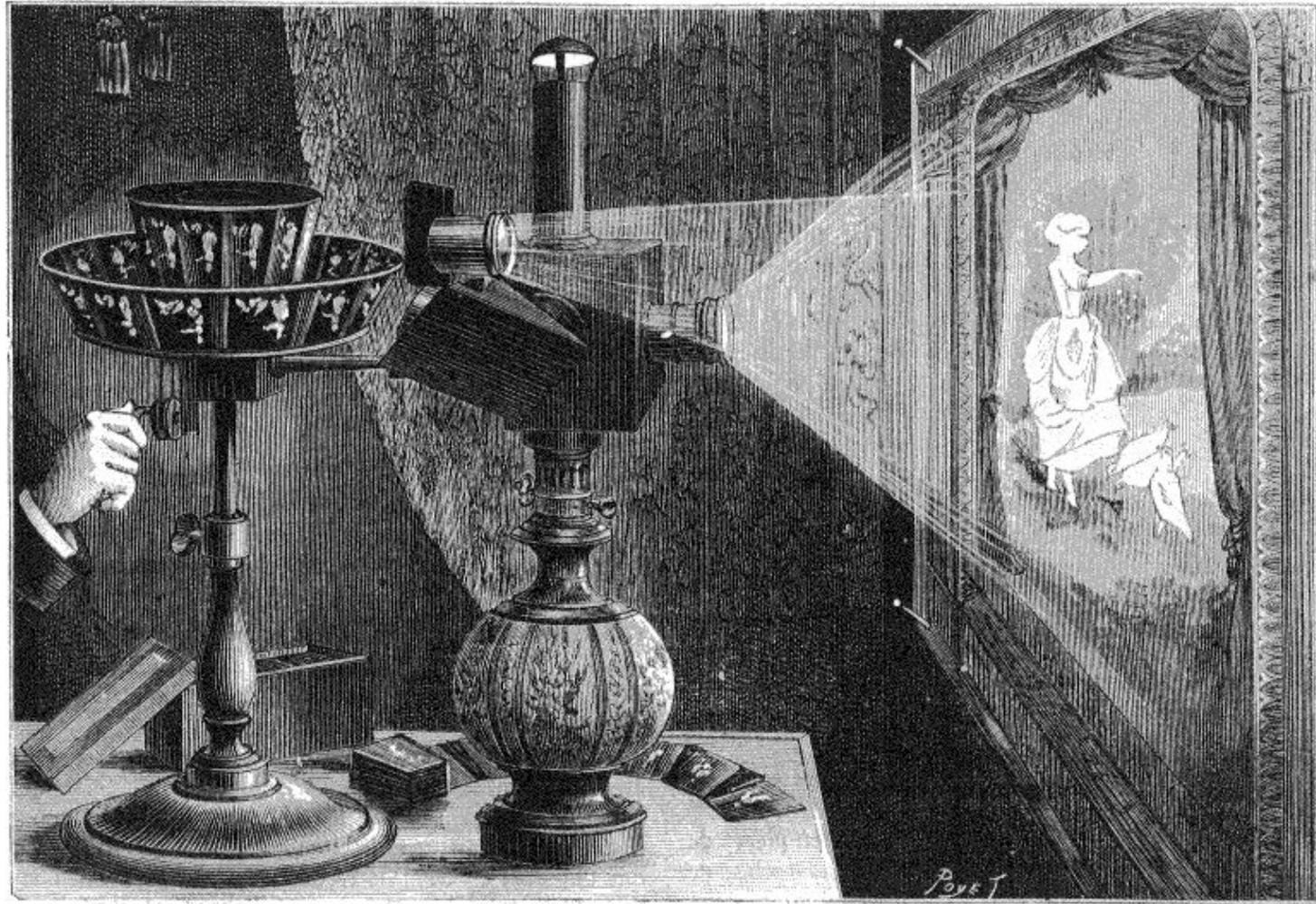
The term zoetrope is from the Greek words zoe, "life" and trope, "turn". It may be taken to mean "wheel of life" or "living wheel."



William George Horner, Zoetrope (aka Daedaleum), 1833



Charles-Emile Reynaud, Praxinoscope, 1877



Nouveau praxinoscope à projection de M. Reynaud.

Charles Emile Raynaud, Praxinoscope, 1877 -- THEATRE OPTIQUE



Evolution of the Nickelodeon

Hermann Casler, Mutoscope, 1890-95

Flipped pictures while cranked

Persistence of Vision

A metaphor used to describe our ability to see continuously while blinking. Whenever light strikes the retina, the brain retains the impression of that light for about a 10th to a 15th of a second (depending on the brightness of the image, retinal field of view, and color) after the source of that light is removed from sight. This is due to a prolonged chemical reaction. As a result, the eye cannot clearly distinguish changes in light that occur faster than this retention period. The changes either go unnoticed or they appear to be one continuous picture to the human observer.

When we go to the movies, we know that a motion picture creates an illusion of a constantly lit screen by flashing individual photographs in rapid succession. Even though the movie screen appears to be constantly lit, it is in fact dark part of the time. It was the flickering image on the screen that gave rise to the term *flicks* in the early days of movies. Today's motion pictures flash images on the screen at 24 frames per second (or 48, in that each frame is flashed twice) for a flicker-free picture. You may remember making little "flipbooks" as a child. They worked on this same principle: the more images per second, the smoother the picture.

As Thom Andersen asserts without naming it, for the principle of persistence of vision to be in operation, there needs to be a mechanism for the segmentation of an action into a series of images that are discreet yet close enough visually to (re)create the illusion of motion. This in turn can be translated into the problem of *intermittency*: the precise regulation of the intervals of light and (imperceptible) darkness that characterize every projection. (Latsis, 21)

How do we understand vision with respect to sound, smell, touch, and taste?

How is it anthropocentric to give primacy to vision?

PHYSIOLOGIE MÉDICALE
DE LA
CIRCULATION DU SANG

BASÉE
SUR L'ÉTUDE GRAPHIQUE DES MOUVEMENTS DU CŒUR
ET DU POULS ARTÉRIEL

AVEC
APPLICATION AUX MALADIES DE L'APPAREIL CIRCULATOIRE

PAR
LE D^r E. J. MAREY

Ancien interne des hôpitaux de Paris, lauréat de l'Institut et de la Faculté de médecine,
Membre des Sociétés anatomique, de biologie, philomatique, etc.

Avec 235 figures.

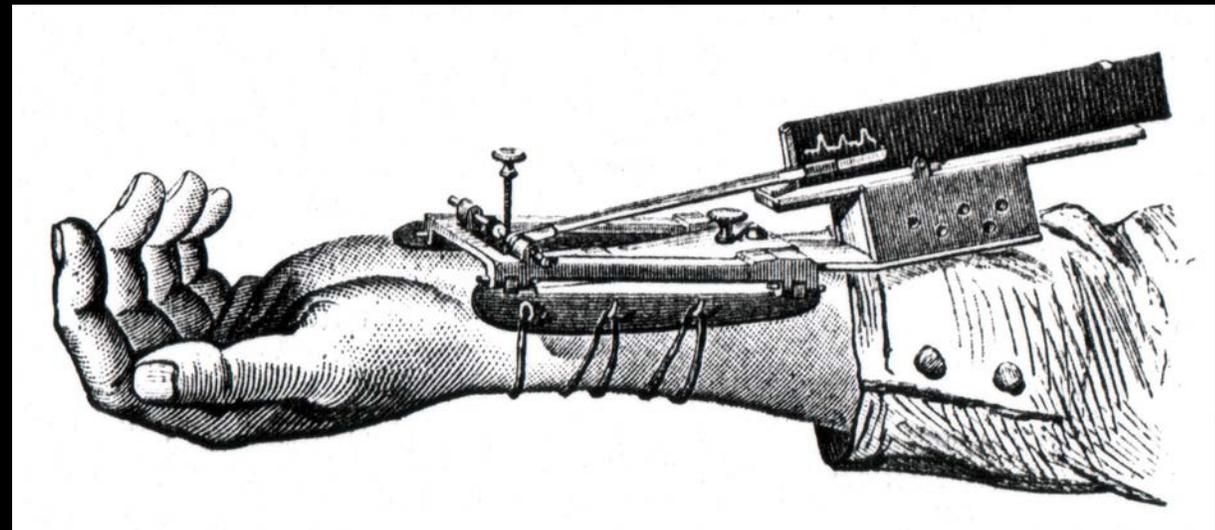
PARIS
ADRIEN DELAHAYE, LIBRAIRE-ÉDITEUR
PLACE DE L'ÉCOLE-DE-MÉDECINE

1863

Tous droits réservés.

Left: Étienne-Jules Marey, *Medical Physiology
of Blood Circulation*, 1863

Below: Étienne-Jules Marey, *Marey
Sphygmograph*, 1860

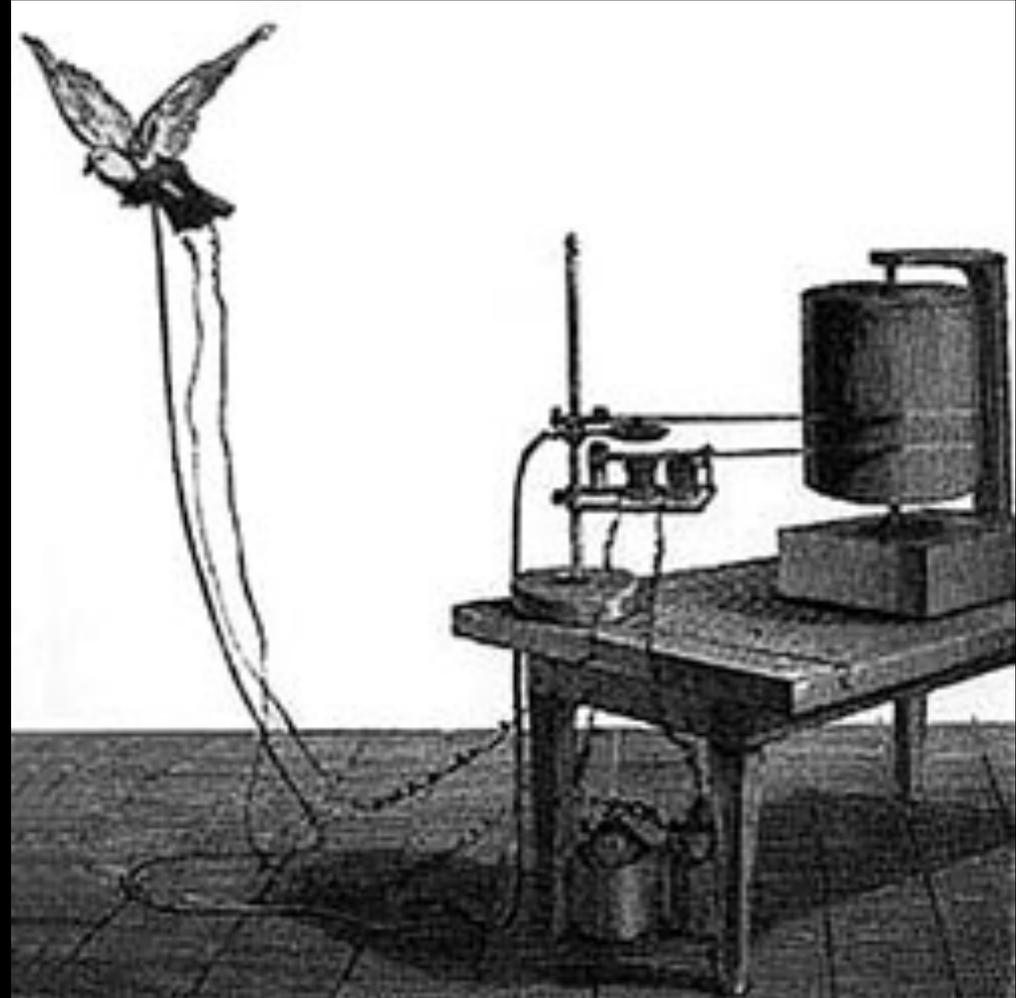


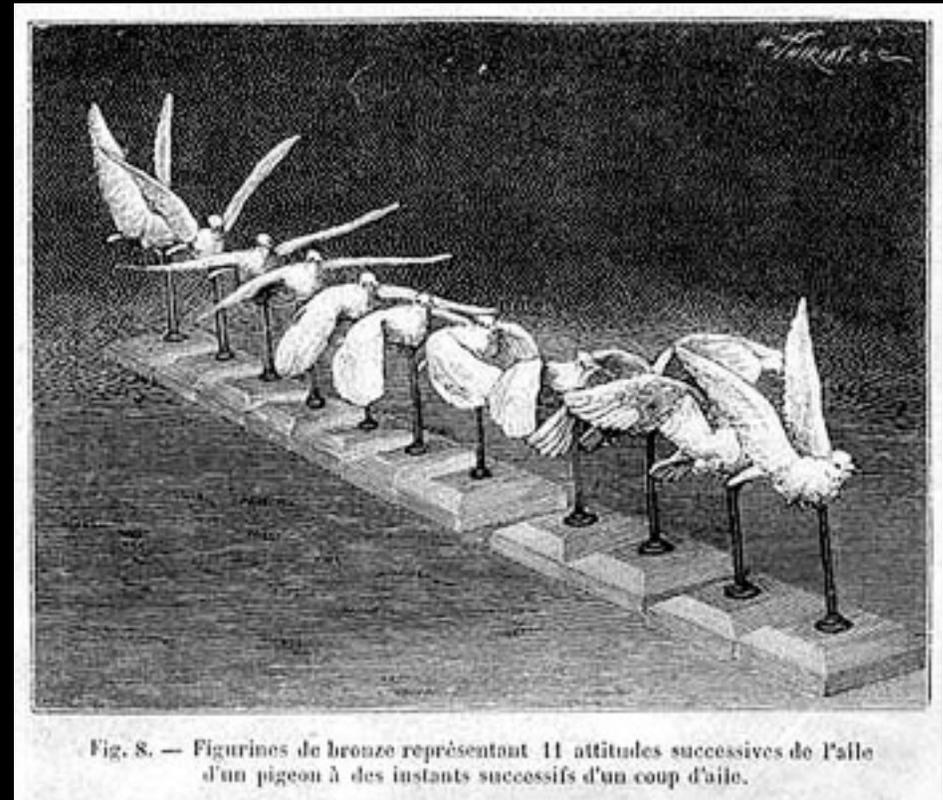
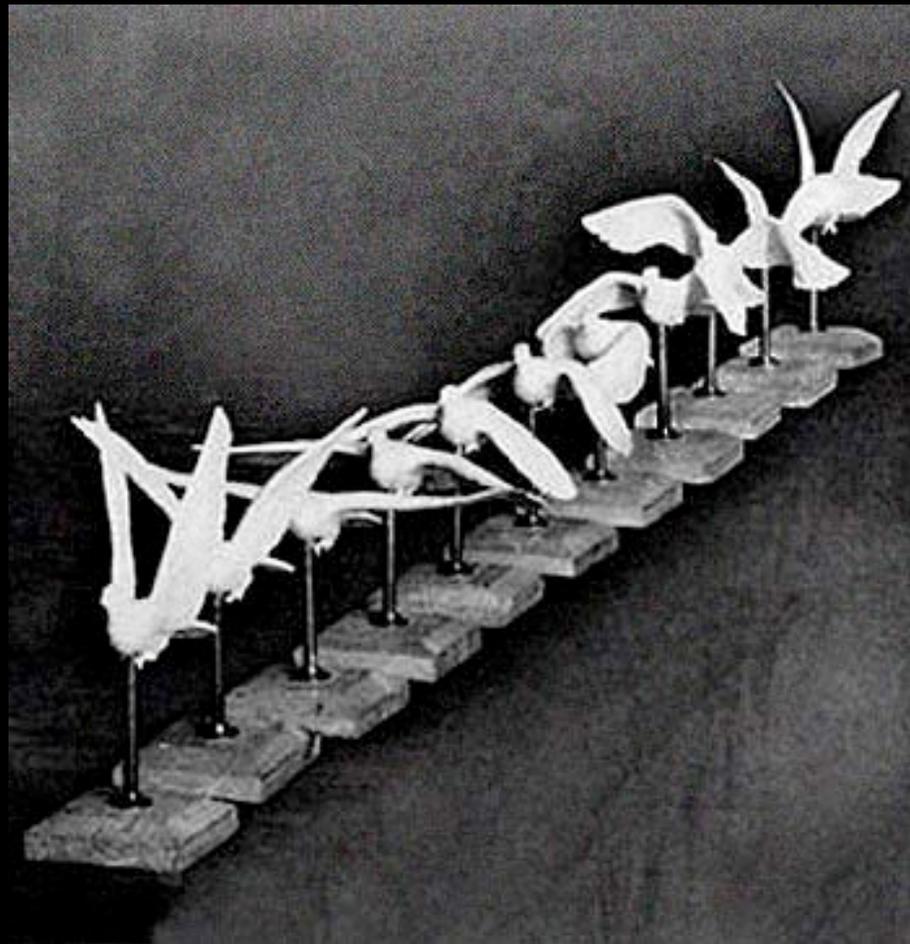


Left: Étienne-Jules Marey, insect flight machine, 1869

Right: Étienne-Jules Marey, air pantographe, 1870

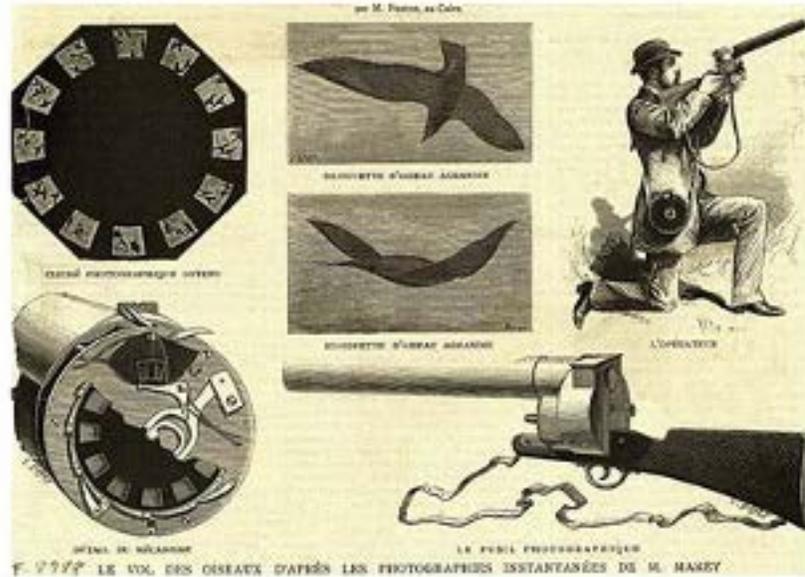
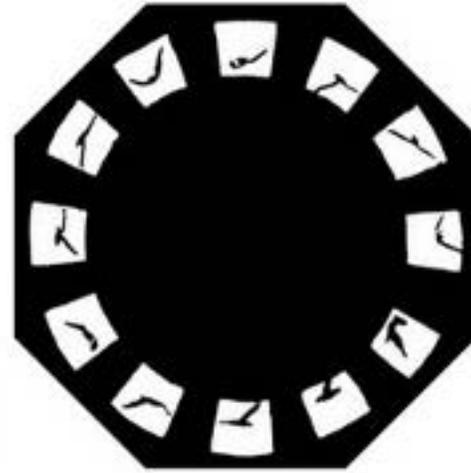
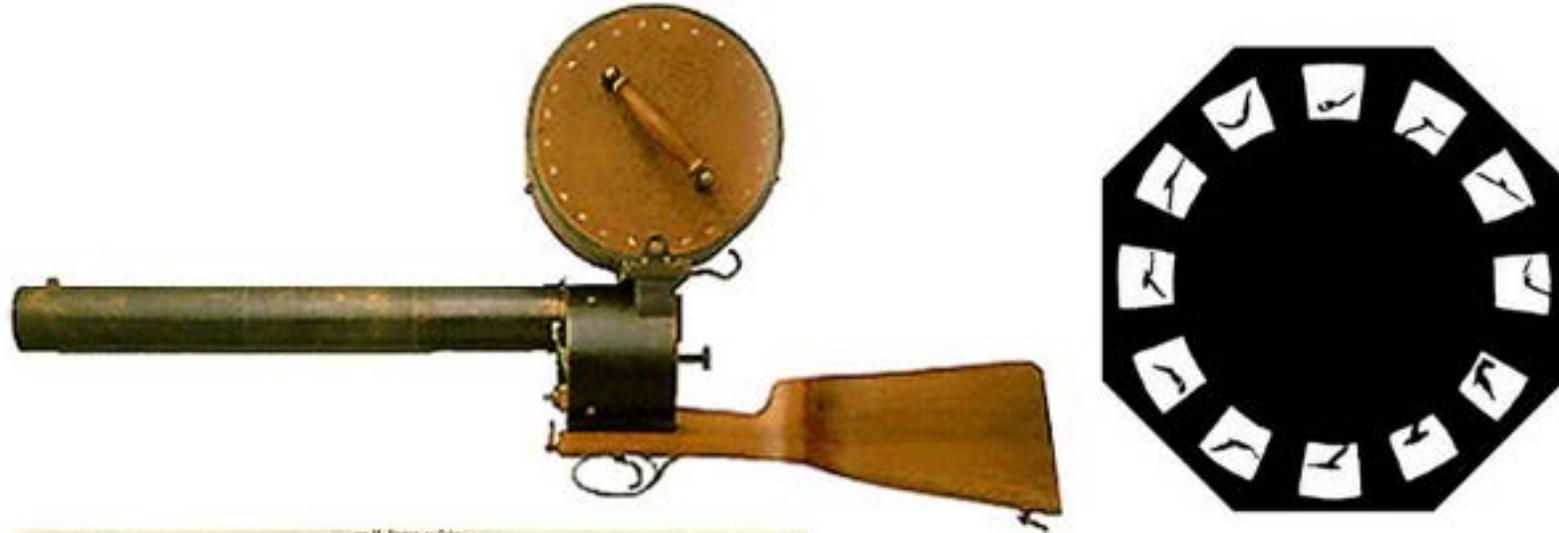
During the 1860s Marey threw himself into the study of flight, first of insects and then birds. His aim was to understand how a wing interacted with the air to cause the animal to move. In 1869, Marey constructed a special machine to demonstrate the flight of an insect and the figure-eight shape produced by its wings during flight. It featured an artificial insect, with a body formed by a drum containing compressed air, that could move up, down, and diagonally. Marey next developed the "air pantographe," a device used to study a live bird in flight. The device consisted of a large rotating arm on which he could a live, instrumented bird. The bird was fitted with a small corset and carried a small piece of wood on its back, which in turn was attached to the actual "pantographe."



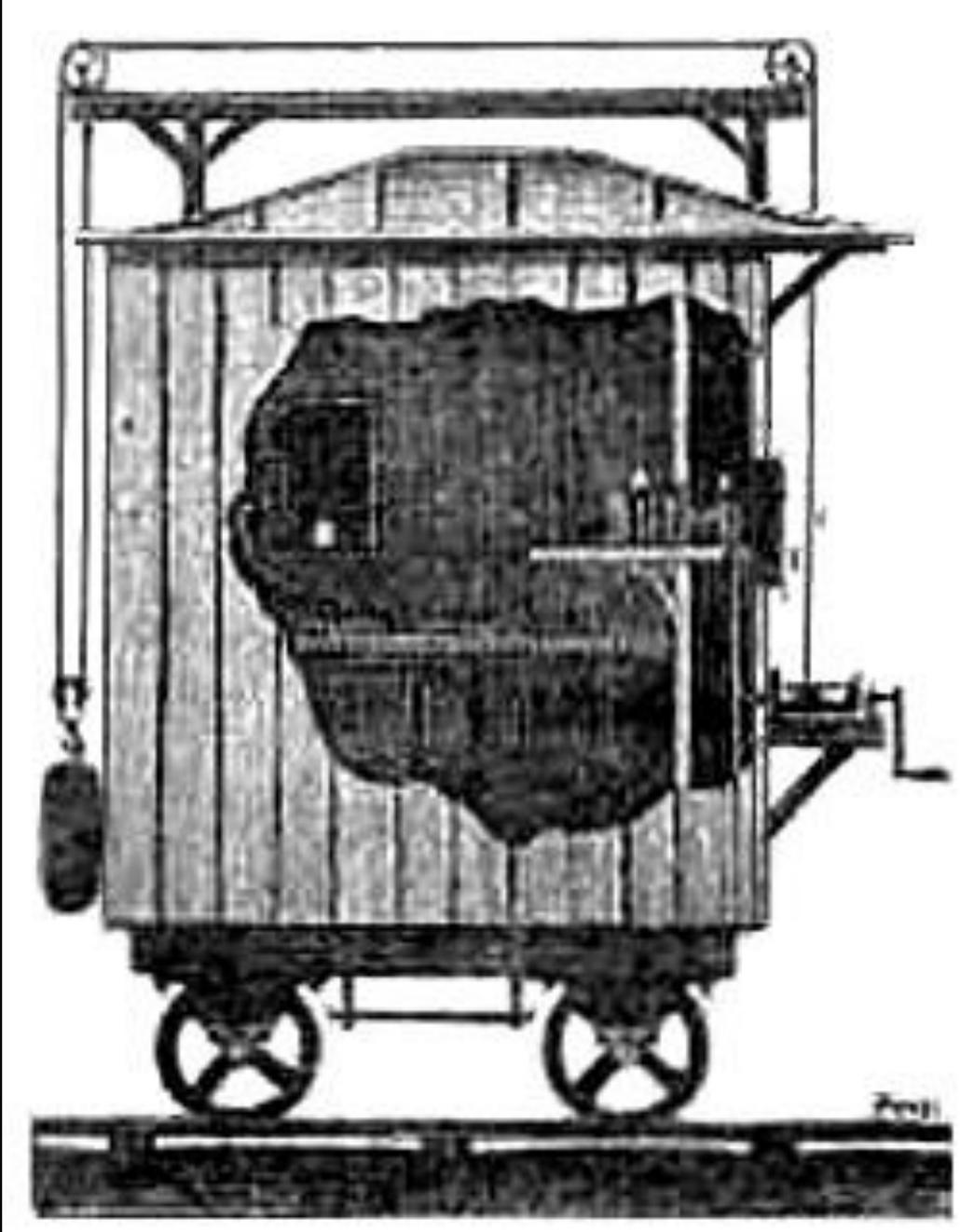


Étienne-Jules Marey, Sculptures of birds in flight, 1887-1890

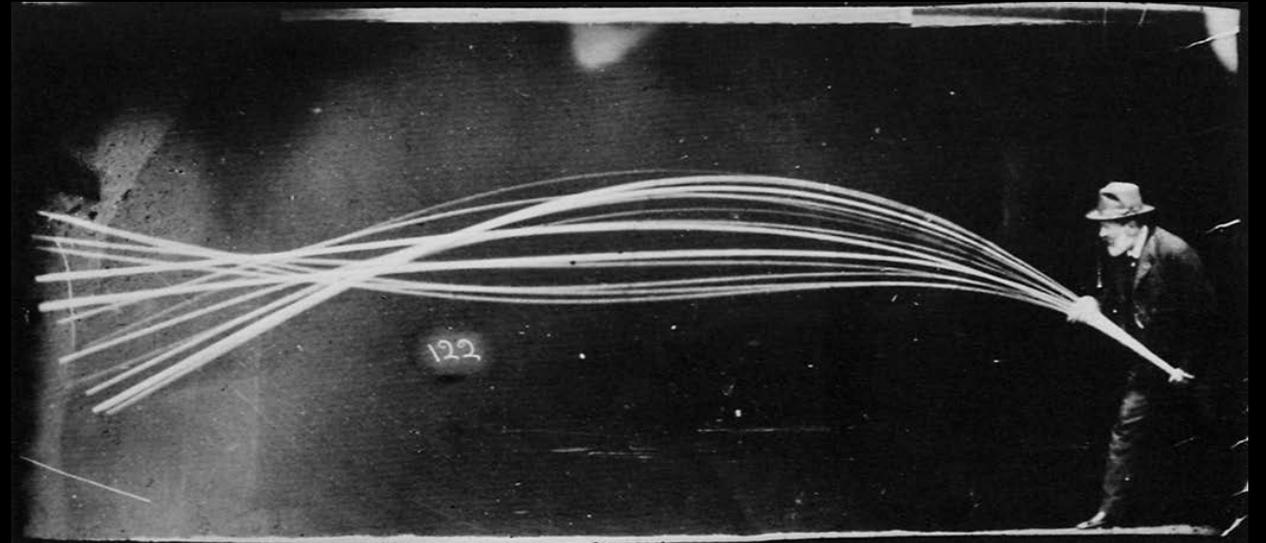
Étienne-Jules Marey, Chronophotographic Camera Gun, 1882



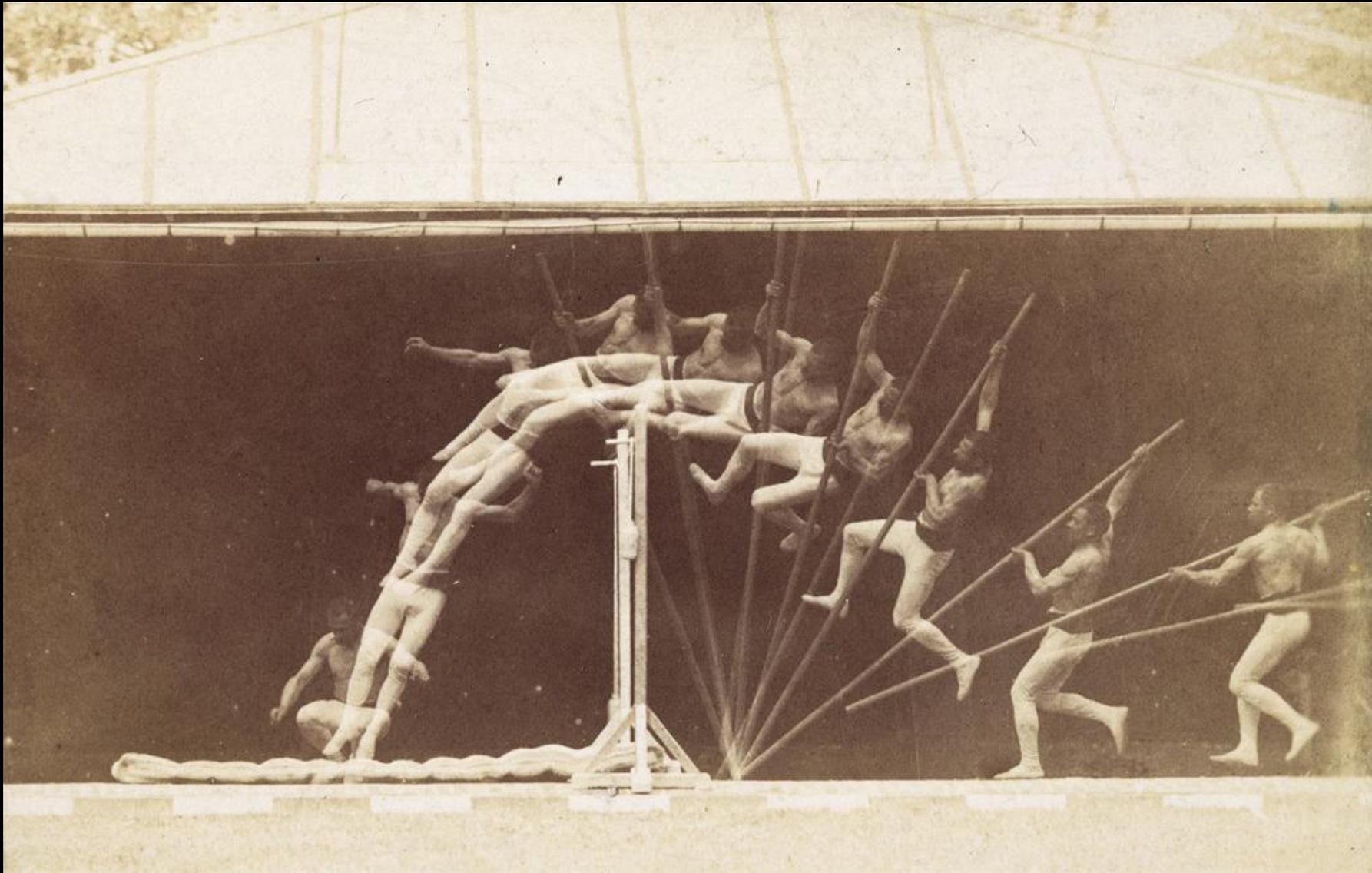
The "fusil photographique" ("photographic gun"), which was capable of taking twelve exposures per second. The images, each about the size of a postage stamp, were arranged around the edge of a revolving circular photographic plate. Equipped with a sight and clock mechanism, he was able to use the device to photograph live birds in free flight.



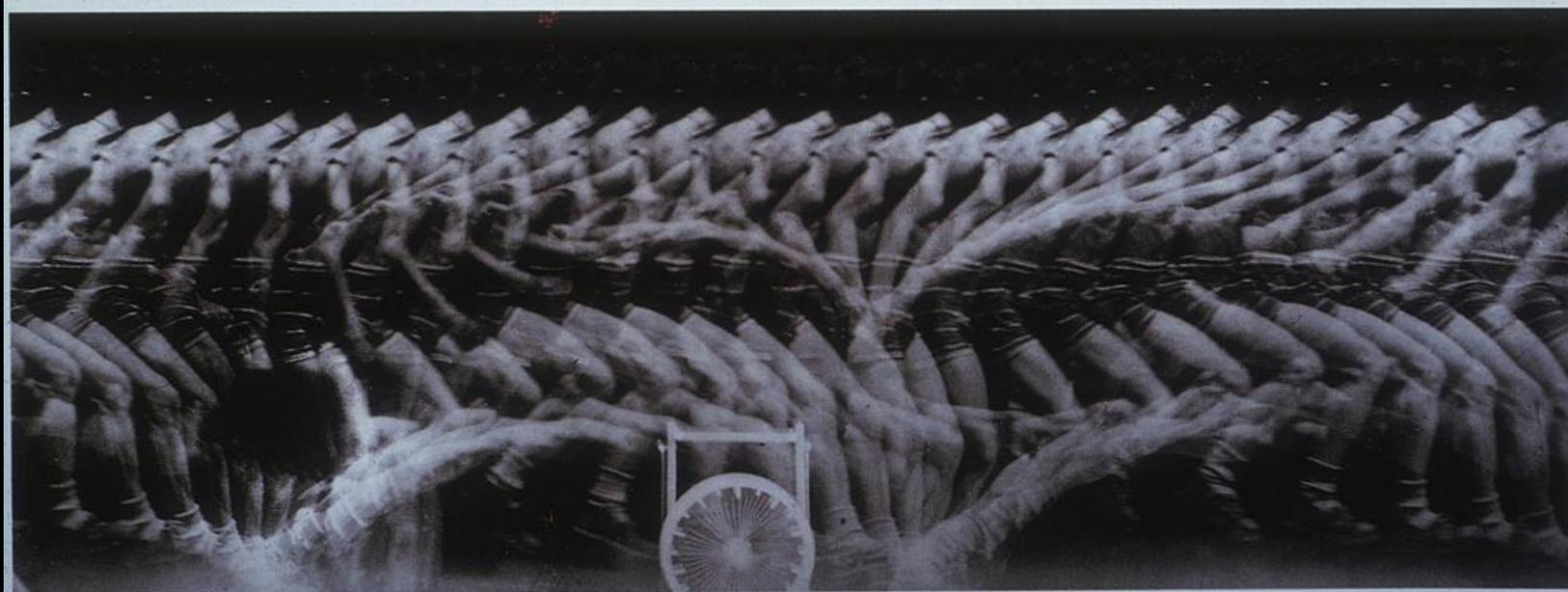
Étienne-Jules Marey, camera for chronophotography in box on wheels, c. 1885



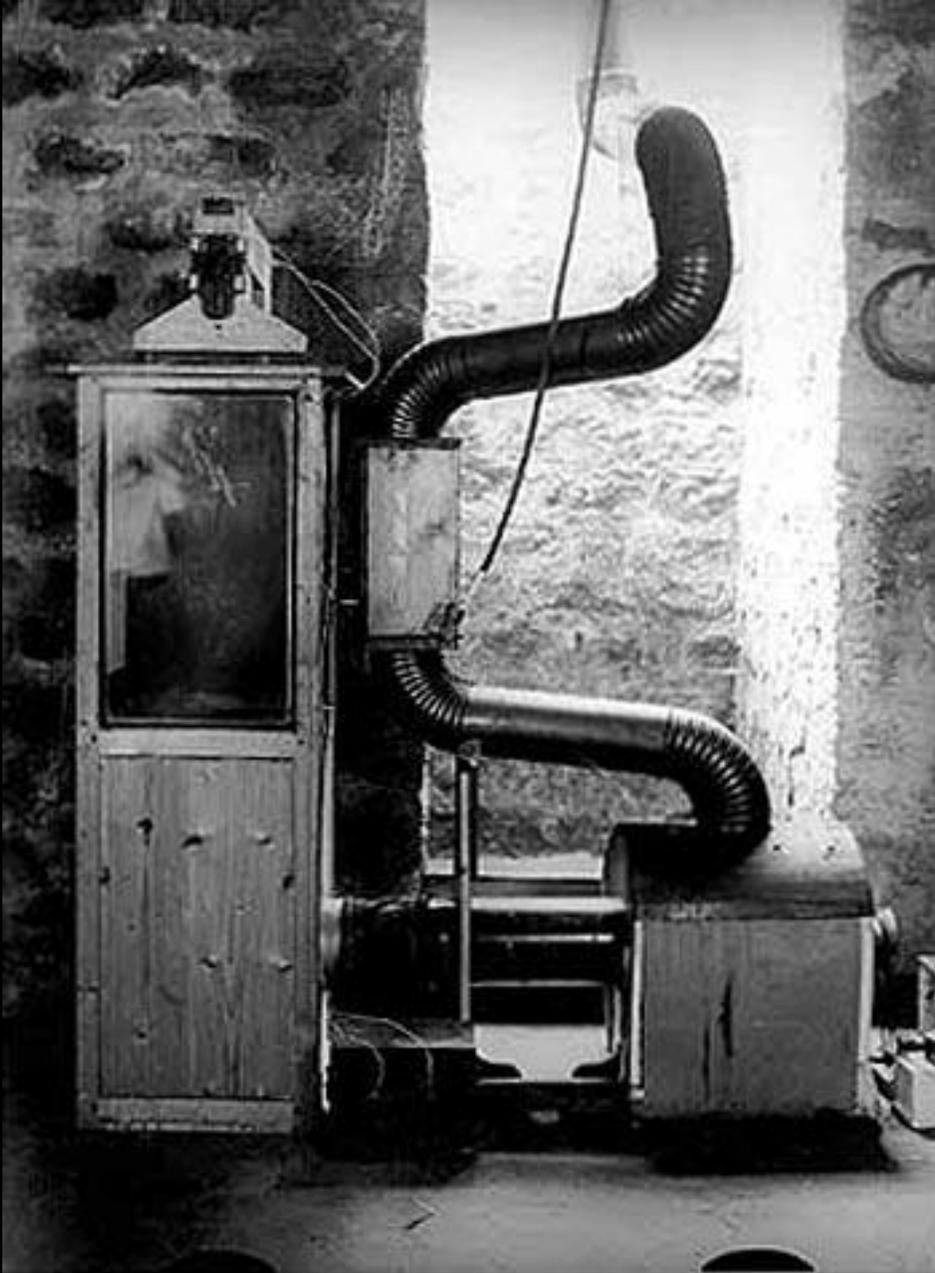
Marey shaking a flexible rod (1886)



Etienne Jules Marey, Chronophotographic Study of Man Vaulting, 1890-91

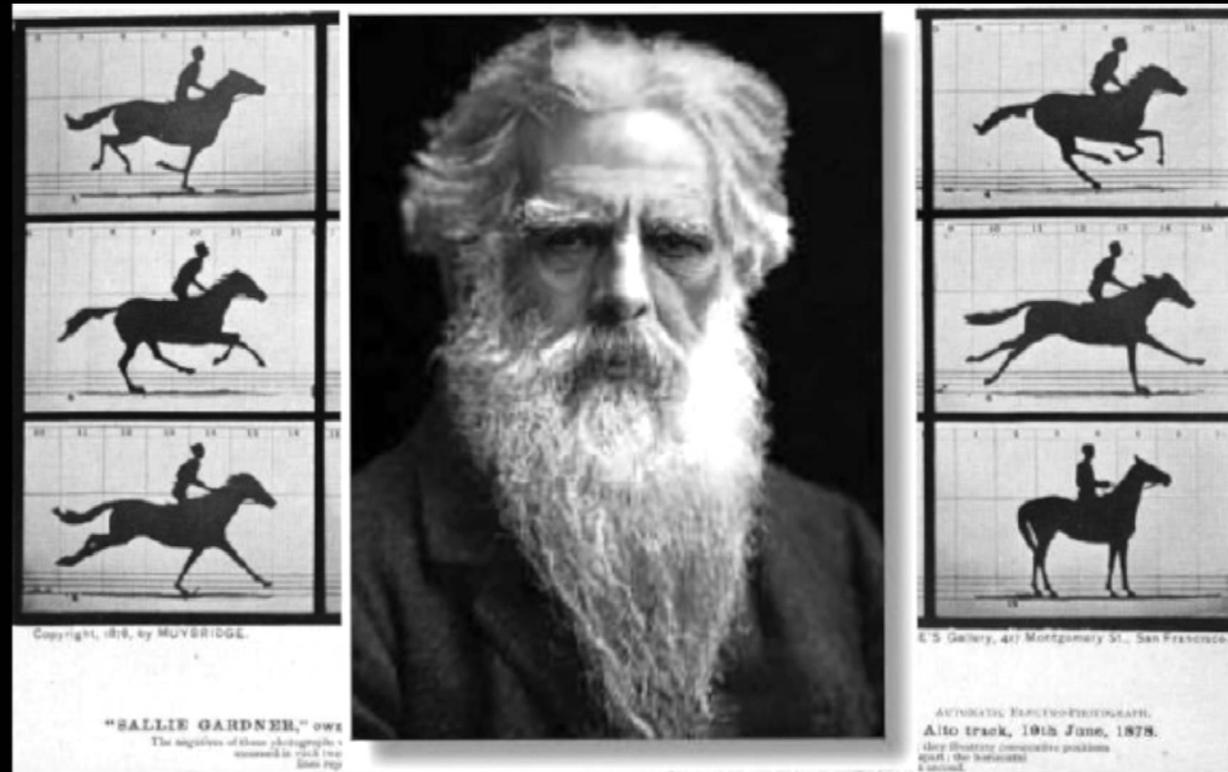


Etienne Jules Marey, Study of Lateral Walking and Running, 1886



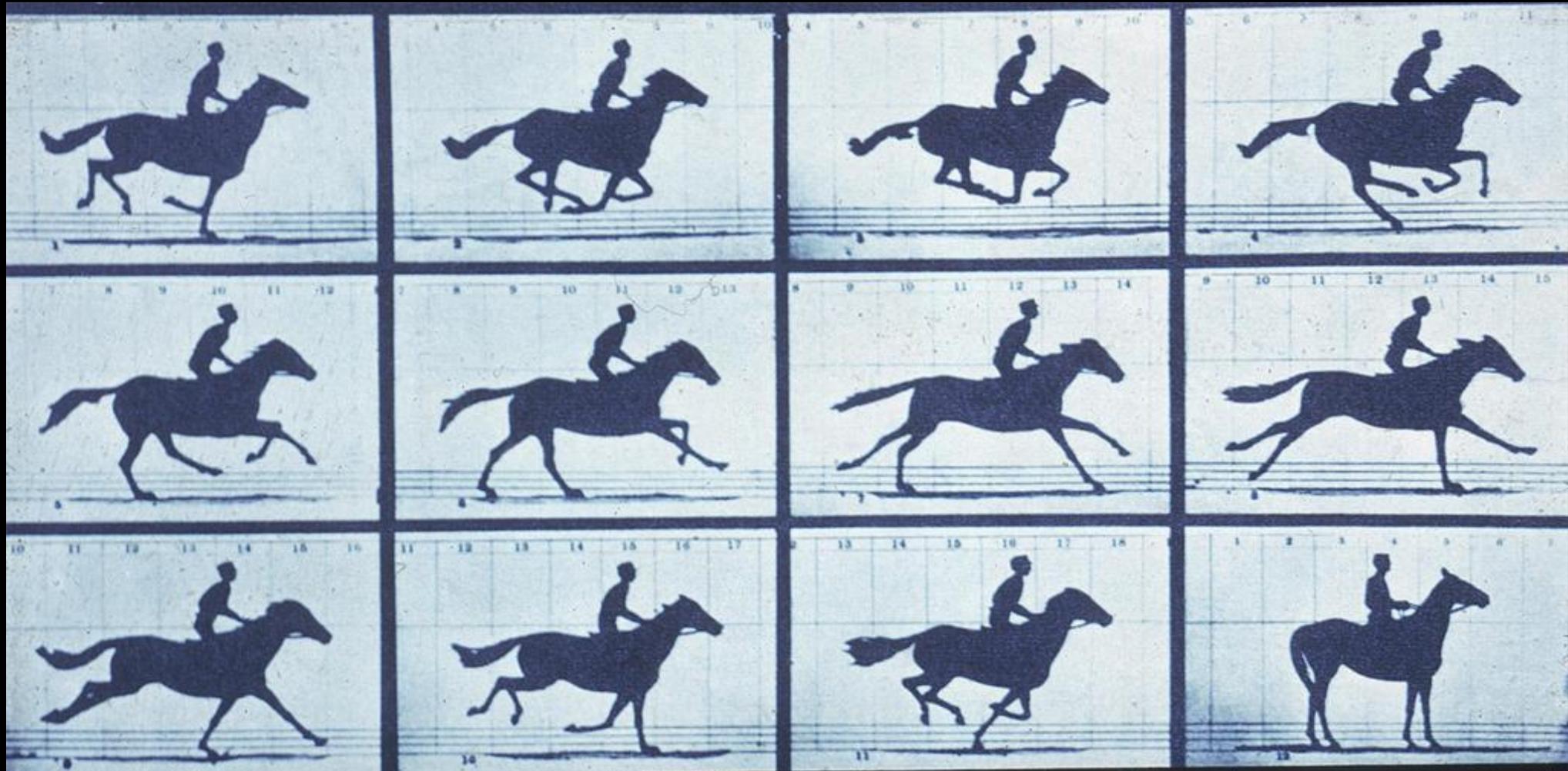
In 1901, Marey built a machine capable of producing 58 separate smoke trails. A chronographic camera was placed in front of a box closed by a transparent glass sheet. The smoke trails passed in front of a black velvet background, and were illuminated by a magnesium flash while instantaneous images were taken of the smoke trails. An obstacle could be placed in the middle of the trails, allowing the viewer to observe how different shapes affected the air flow.

Étienne-Jules Marey, machine for studying smoke trails and image of smoke trails, 1901



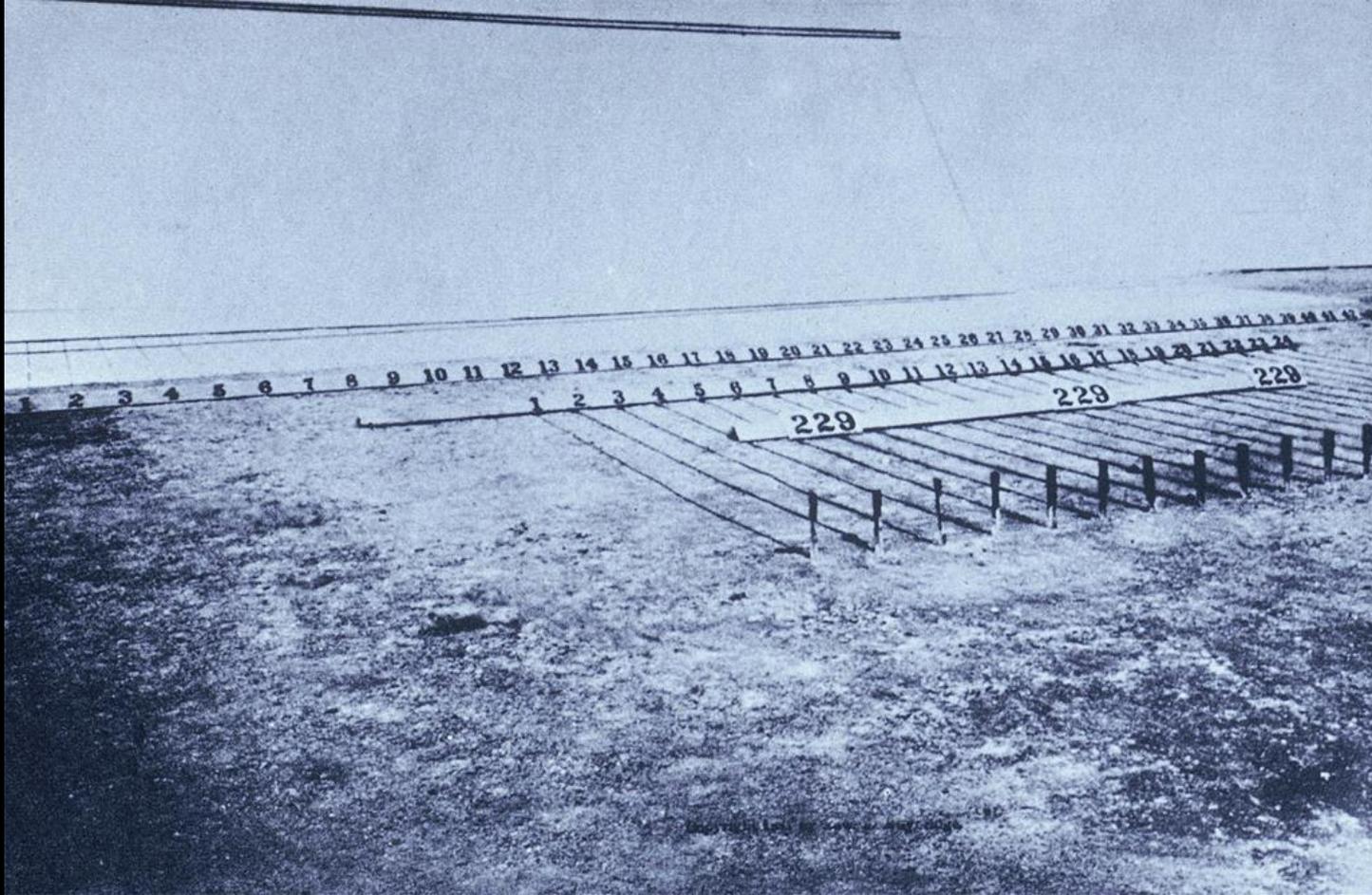
Eadweard Muybridge (1830-1904), born Edward James Muggeridge

aka "Helios"



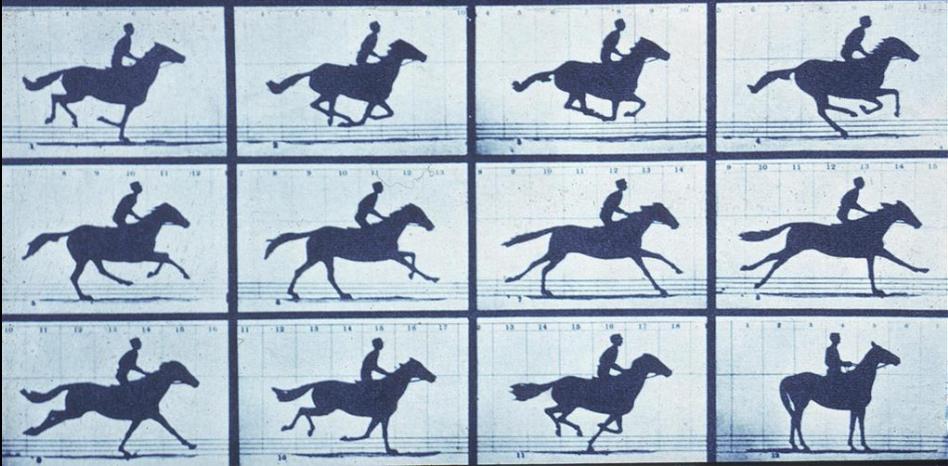
Eadweard J. Muybridge, Galloping horse (Sallie Gardner running), 1878

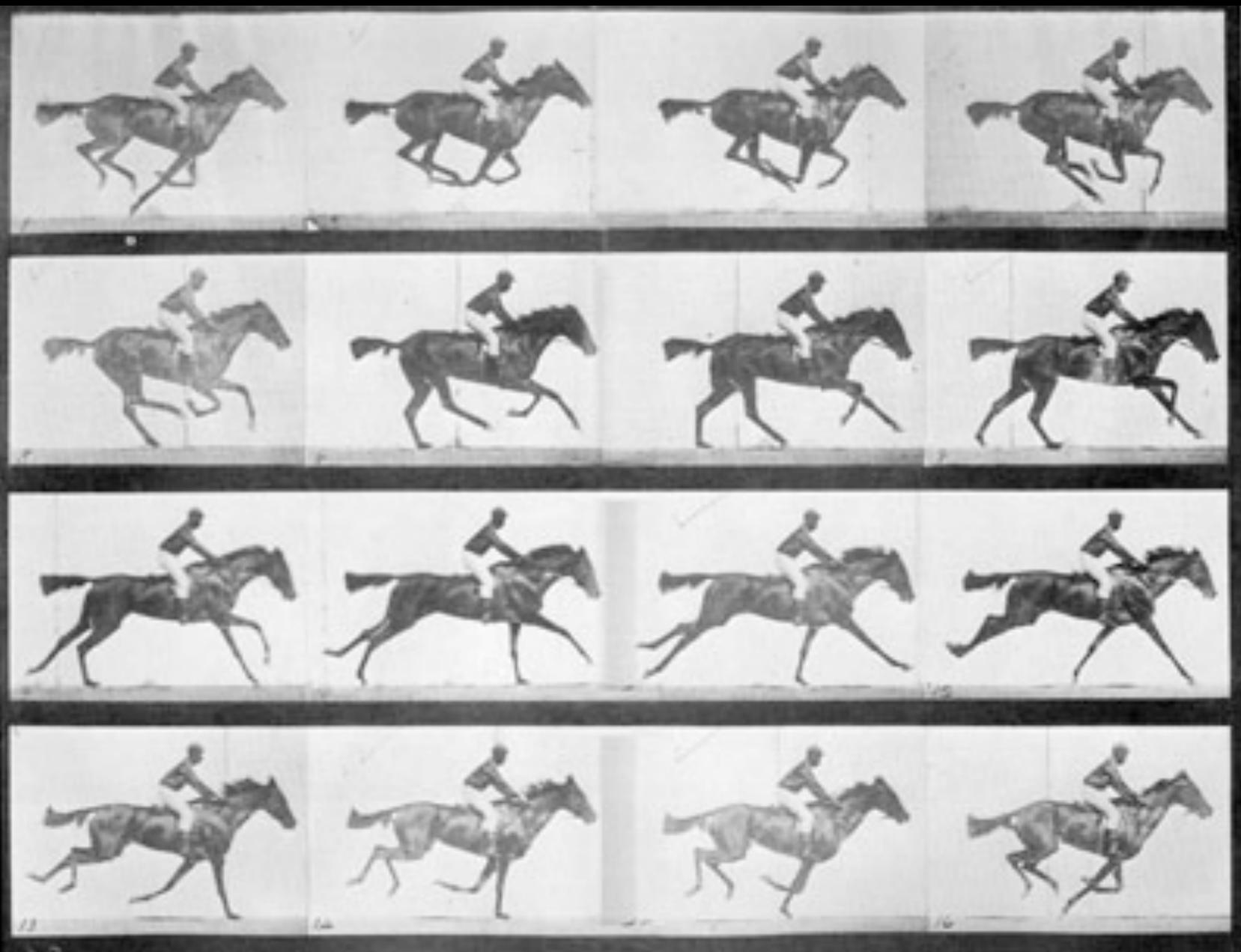


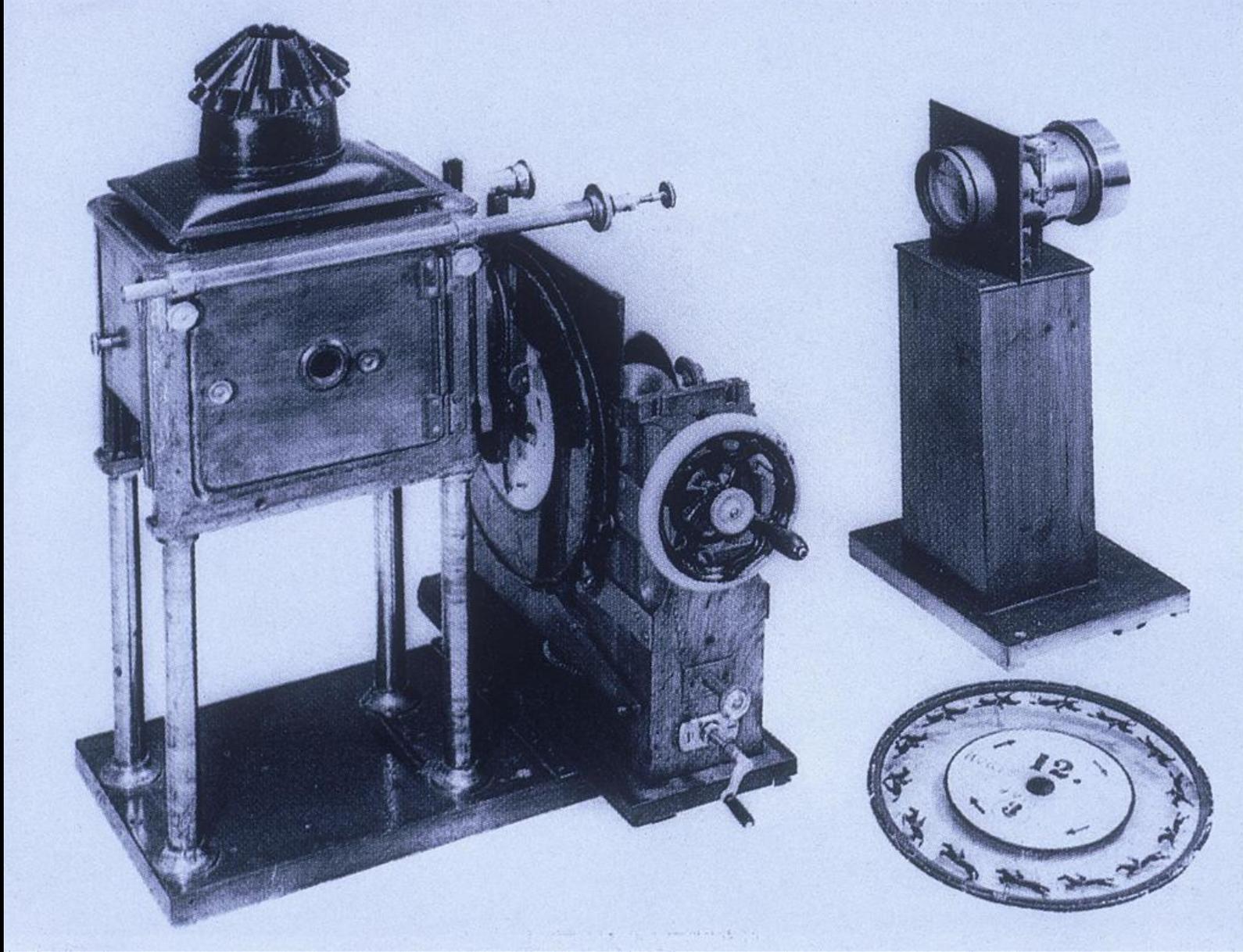


Locomotion of a horse and
“unsupported transit”

Muybridge's Stanford photographic facility, 1863





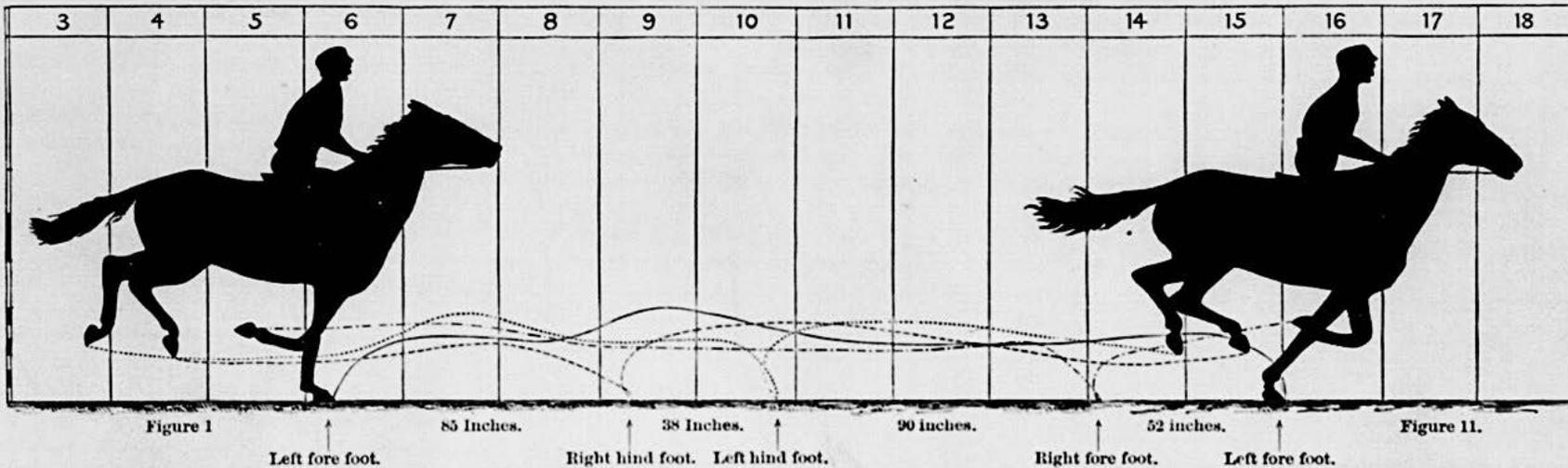


Eadward J. Muybridge, Zoopraxiscope, c. 1870 – first movie projector
The zoopraxiscope projected images from rotating glass disks in rapid succession to give the impression of motion.

As Thom Andersen asserts without naming it, for the principle of persistence of vision to be in operation, there needs to be a mechanism for the segmentation of an action into a series of images that are discreet yet close enough visually to (re)create the illusion of motion. This in turn can be translated into the problem of *intermittency*: the precise regulation of the intervals of light and (imperceptible) darkness that characterize every projection. It is for the purposes of regulating these intervals that Muybridge added the second disc [to his zoopraxiscope] in front of the original one that Étienne-Jules Marey had already been using, so that when the two move at the precise speed relative to each other (albeit in opposite directions), there is a stable interval of time for each successive frame to be projected onto the wall. The zoopraxiscope is thus the synthetic counterpart to the contemporaneous analytical experiments in motion imaging and thus continues the dialectical synthesis and analysis that...was already present in the treatment of the movement of water and the delineation of space in the Yosemite photographs and stereographs. (Latsis, 21-22)

"SALLIE GARDNER," owned by LELAND STANFORD; running at a 1.40 gait over the Palo Alto track, 19th June, 1878.

DIAGRAM OF FOOT MOVEMENTS.



Copyrighted 1879, by MUYBRIDGE.

The above diagram is projected from a series of electro-photographs, executed by instructions of GOVERNOR STANFORD, and illustrates the course traversed by the feet of the mare SALLIE GARDNER, during a single complete stride.

The mare being thorough bred, one of the fastest runners on the coast, and noted for her graceful form and superb gait, the successive positions assumed by her during the stride, may be accepted as representative in their character.

During certain portions of this stride, the feet of the mare were moving with a velocity equivalent to more than 100 lineal feet in a second of time, or nearly three-fourths of an inch, during an exposure of the two-thousandth part of a second. To enhance the usefulness of the photo-

graphs, the indistinctness of their outline resulting from this rapid motion, has been corrected, with care to preserve their actual positions. Photographs from the original untouched negatives are curious for comparison, and can be obtained at the same rate, if required. Hereafter the exposures will be reduced to the five thousandth part of a second, thus limiting any movement to one-fourth of an inch.

In future experiments it will be interesting to observe, to what extent, a knowledge of the foot movements of a colt, as illustrated by electro-photography, can be availed of to determine his probable speed at a more advanced age.

MUYBRIDGE,

LANDSCAPE AND ANIMAL PHOTOGRAPHER,

THE MORSE GALLERY, 417 Montgomery Street, San Francisco, California.

OFFICIAL PHOTOGRAPHER U. S. GOV'T.

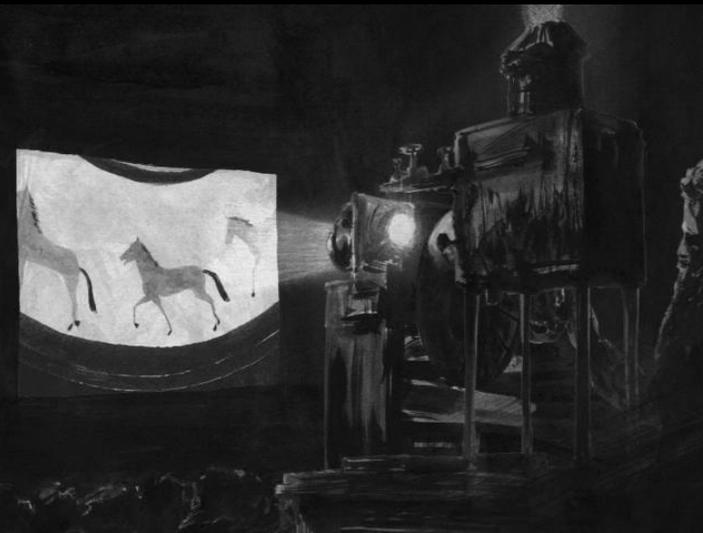
GRAND PRIZE MEDALIST, VIENNA, 1873.

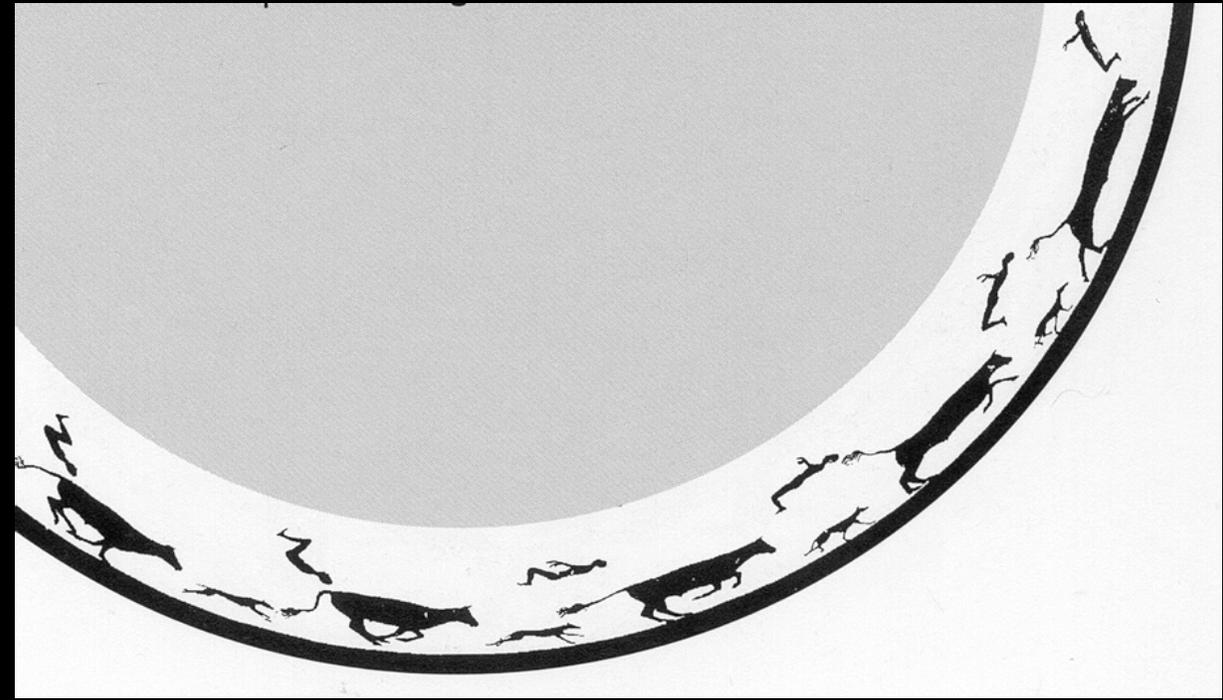
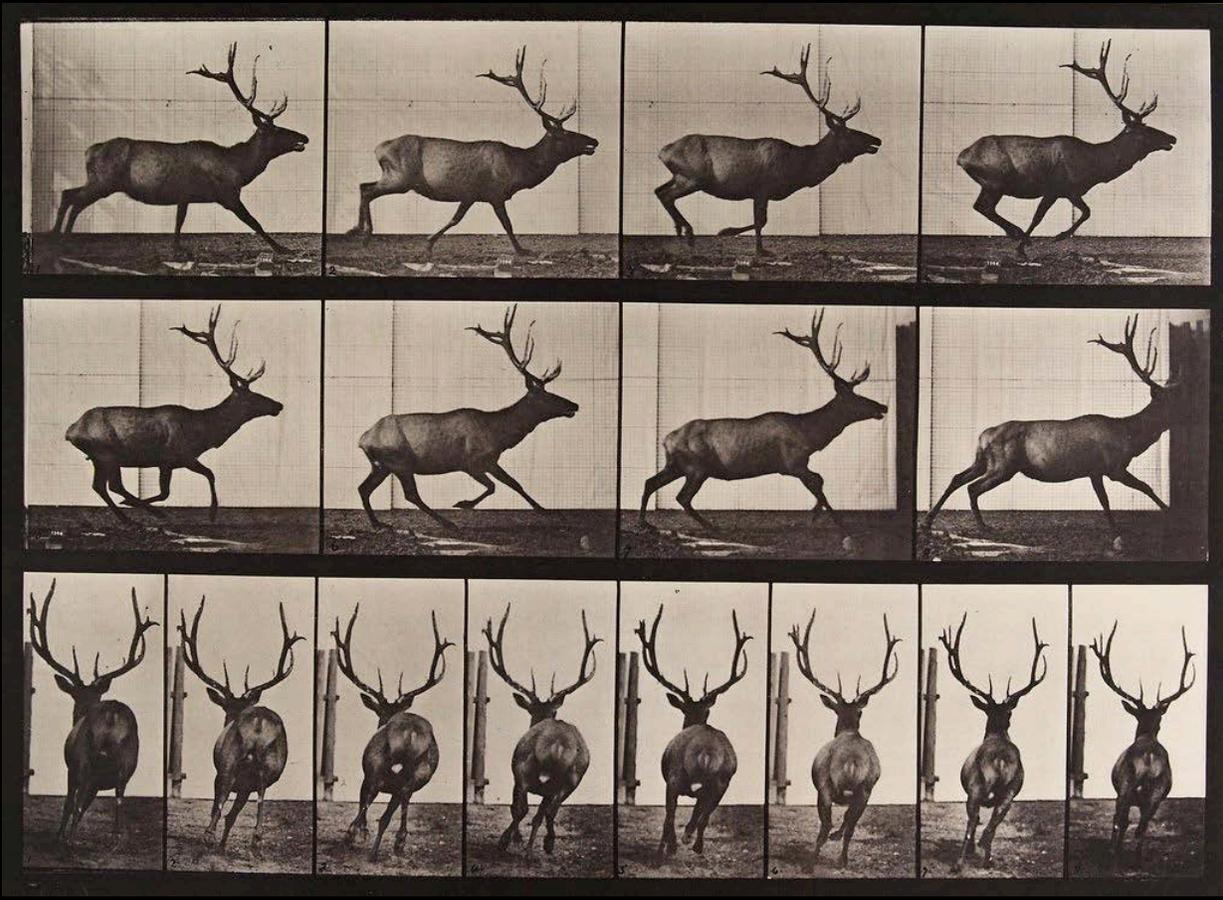
INVENTOR AND PATENTEE IN THE UNITED STATES, ENGLAND, FRANCE, ETC.

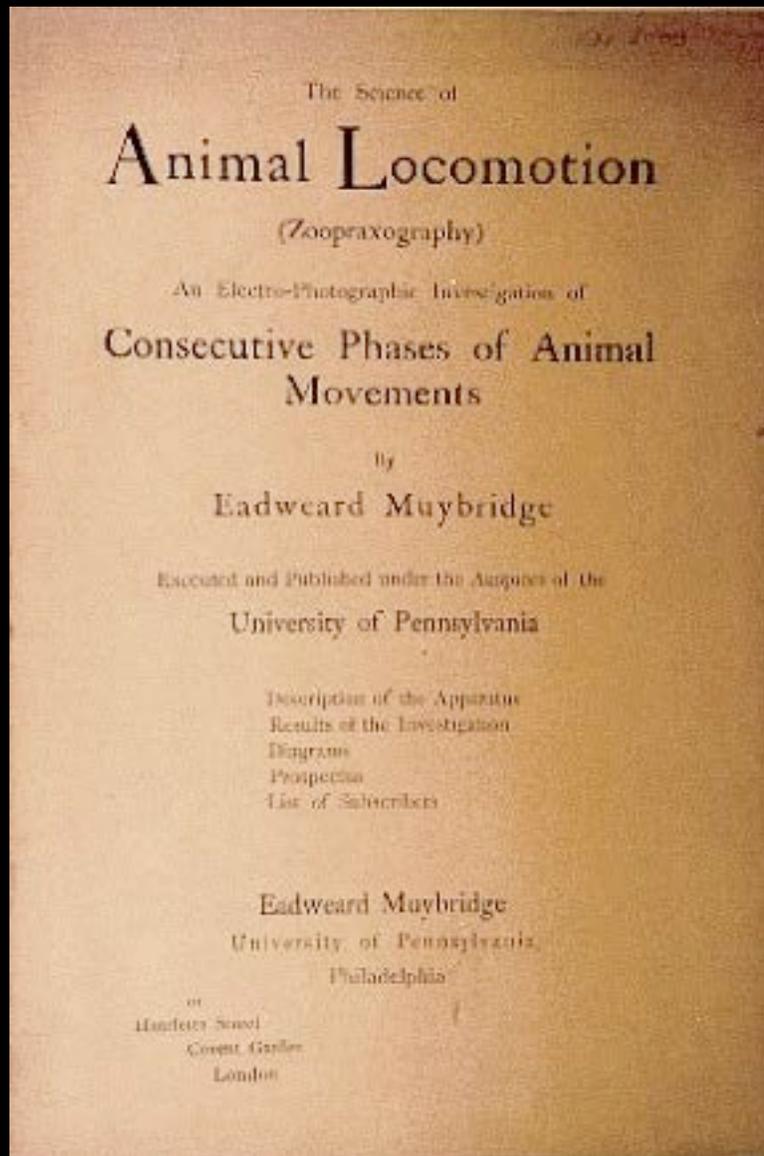
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The following photographs are now published: "Occident" trotting at a 2:20 gait, 12 positions. "Edgington" trotting at a 2:24 gait, 12 positions. "Edgington" trotting at an 8 minute gait, 8 positions. "Edgington" walking at a 15 minute gait, 6 positions. "Mahomet" cantering, 6 positions. "Sallie Gardner" running at a 1:40 gait, 11 positions. Each series is mounted on a card, and illustrates a single stride. They will be sent to any part of the world in registered letter, free of postage, upon receipt of \$1.50 for each series.

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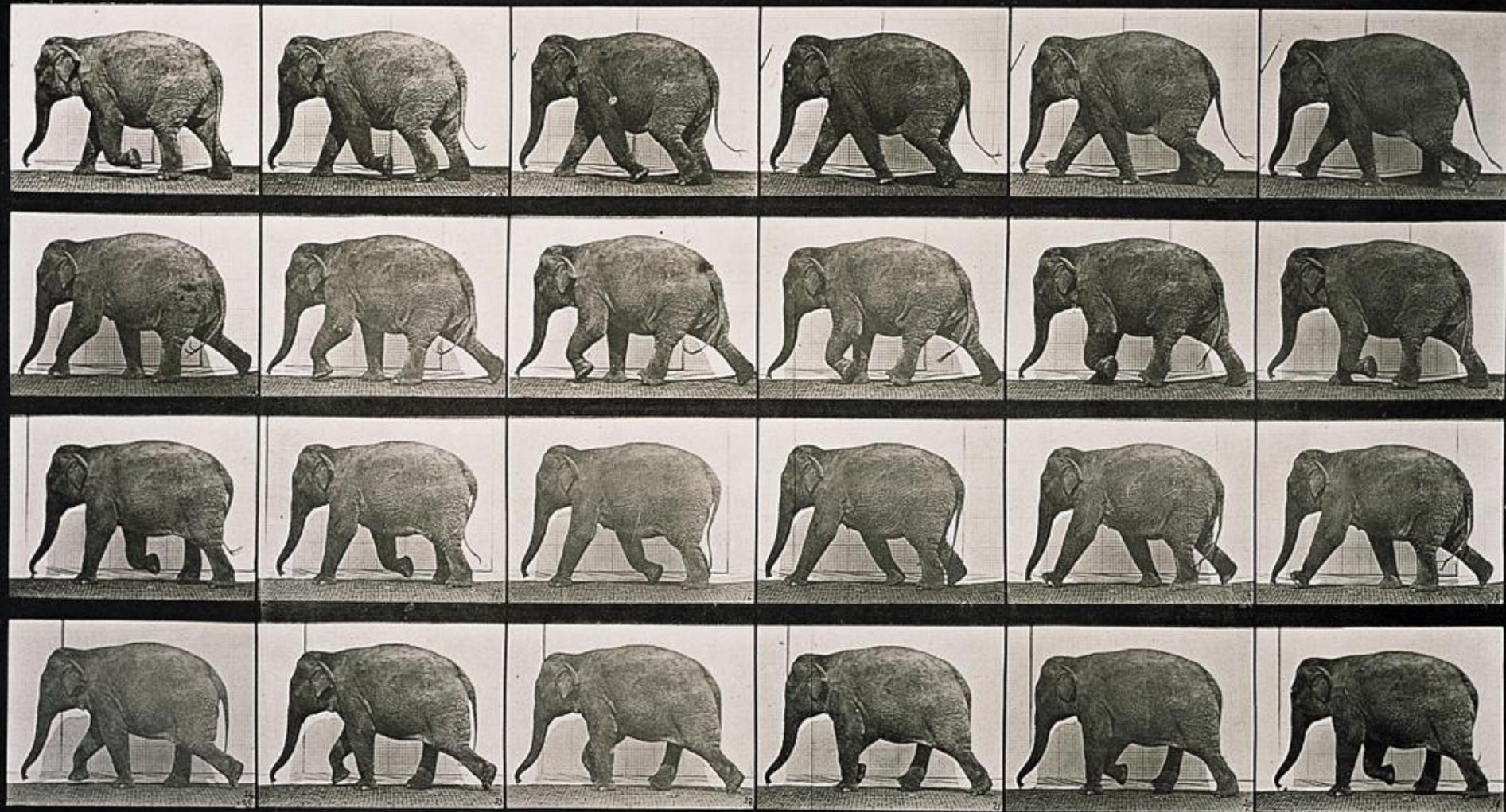






Muybridge lectures at World's
Columbian Exposition (World's Fair,
Chicago) in Zoopraxographical-
Athenaeum Hall, 1893

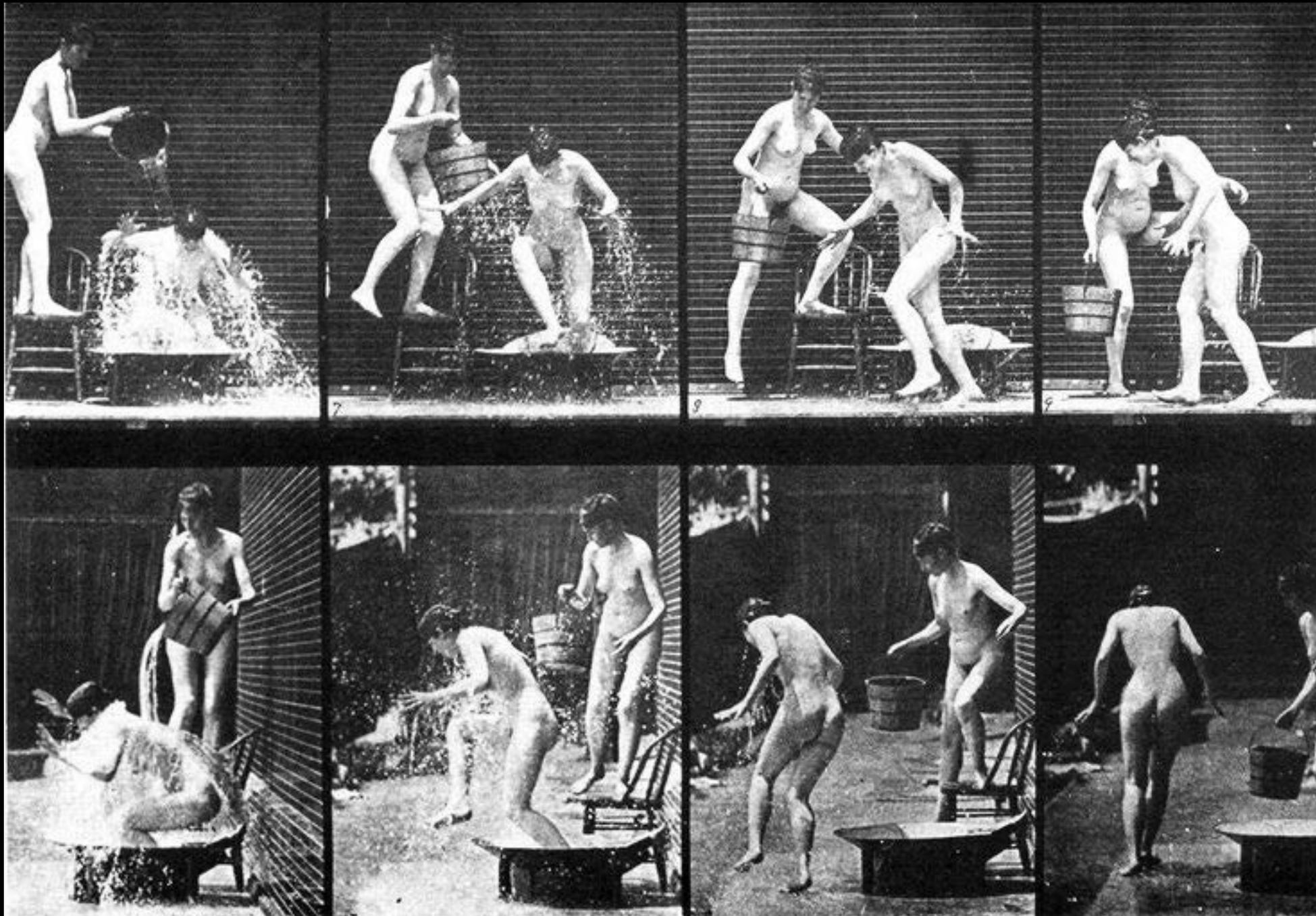




Eadweard J. Muybridge, Elephant Walking, 1884-87



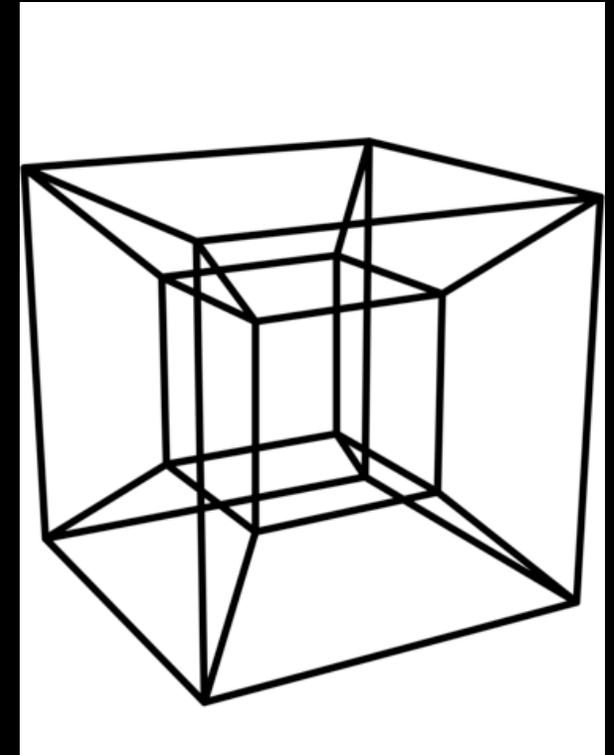
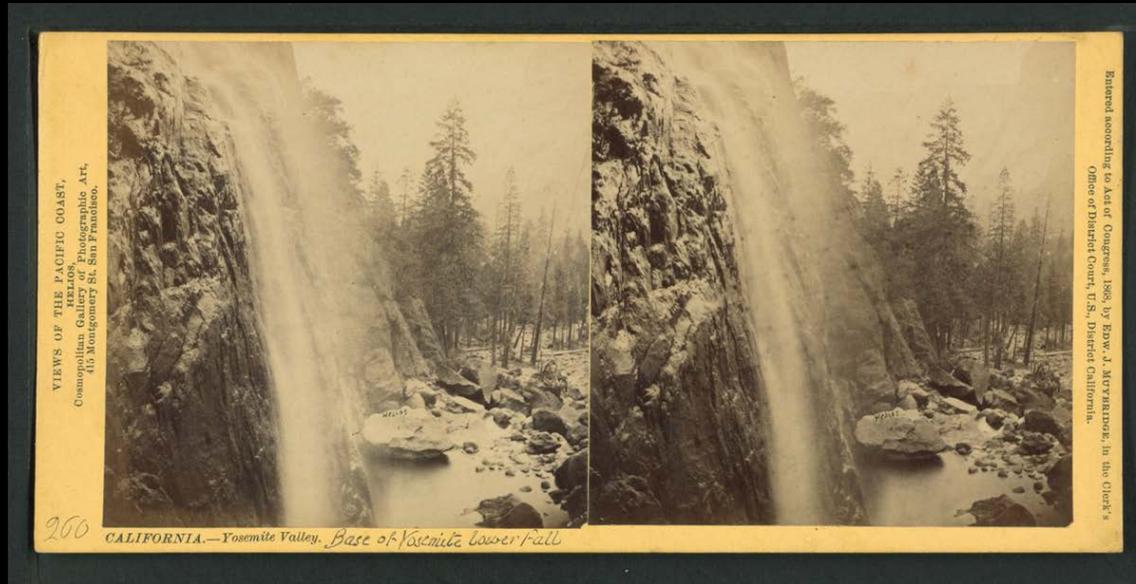
Eadweard J. Muybridge, Two Models, 8 Drinking from Water-Jar on the Shoulder of 1, 1885



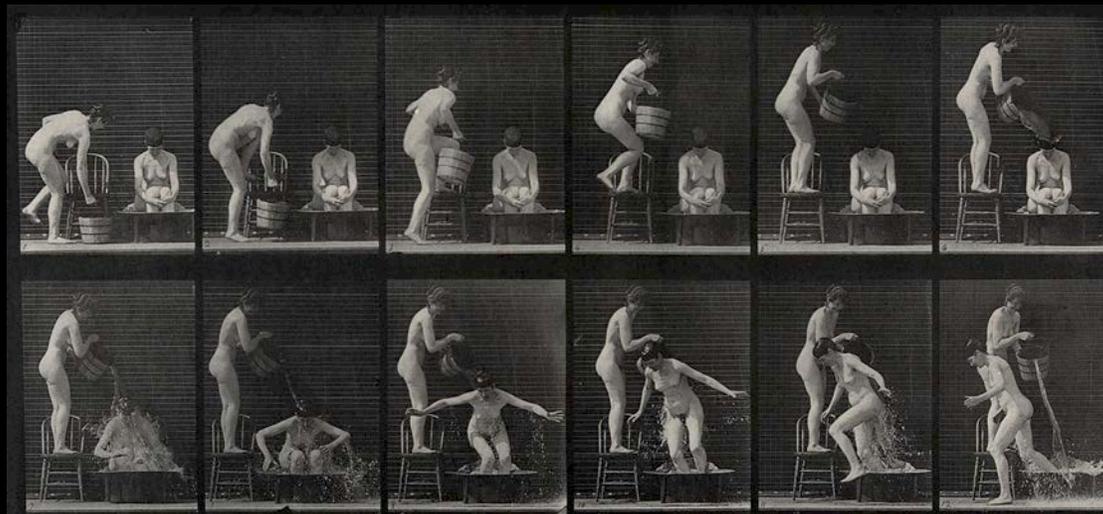
Eadward
Muybridge,
Woman pouring a
bucket of water
over another
woman, 1884-85

cataract versus tesseract

Eadweard Muybridge, Base at Yosemite Lower Falls, Yosemite Valley, California, 1868



Eadweard Muybridge,
Woman pouring a bucket of
water over another woman,
1884-85



The tesseract is the hypercube also called the 8-cell or octachoron. It is the four-dimensional analog of the cube; the tesseract is to the cube as the cube is to the square. In Madeleine L'Engle's novel *A Wrinkle in Time*, the characters in the story travel through time and space using tesseracts. The book actually uses the idea of a tesseract to represent a fifth dimension rather than a four-dimensional object (and also uses the word "tesser" to refer to movement from one three dimensional space/world to another).