VPAS 7380.001 (87906)
Charles Darwin and the Evolution of Beauty
M-W 4-6:45

Fall 2020
Dr. Charissa N. Terranova
University of Texas at Dallas
Arts & Humanities

Office Hours: Online by appointment
Contact: terranova@utdallas.edu
www.charissaterranova.com

Wednesday October 21
Animals and Emotions

Wednesday October 21 Animals and Emotions

- Charles Darwin, *The Expression of the Emotions in Man and Animals* (1872)
  Chapter I Principles of Expression
  Chapter IV Means of Expression in Animals
  Chapter V Special Expressions of Animals
  Chapter VI Special Expressions of Man: Suffering and Weeping
  Chapter XIV Concluding Remarks and Summary

- Optional extra reading: Julia Voss, *Darwin's Pictures: Views of Evolutionary Theory, 1837-1874* (2010) 181-248.

Monday November 2

- Phillip Prodger's *Darwin's Camera: Art and Photography in the Theory of Evolution*
  Preface xi-xx
  Introduction xxi-xxv
  Chapter 1 3-20
  Chapter 3 35-50

Wednesday November 4 Individual Online Meetings with Professor

Wednesday November 11 Vital Forms

- Jennifer Johung, *Vital Forms: Biological Art, Architecture, & the Dependencies of Life* (2019) 1-78.

Wednesday November 18 Student Presentations

Wednesday November 25 Student Presentations

Emotions, Science, and Photography in the Victorian Age

- Charles Darwin – English, Natural Sciences
- Duchenne de Boulogne – French, Neurology and Electrophysiology
- Paul Richer – French, Anatomy, Physiology, Sculpture and Anatomical Art
- Albert Londe – French, Medical Research, Photography, Chronophotography
- Jean-Martin Charcot – French, Neurologist, Professor of Anatomical Pathology
- Étienne-Jules Marey – French, Chronophotography, and Physiology
- Oscar Rejlander – Swedish, Victorian Art Photography
- Eadweard Muybridge – English, Photography, Chronophotography, Cinema
- Francis Galton – English statistician, polymath, sociologist, psychologist, anthropologist, eugenicist, tropical explorer, geographer, inventor, meteorologist, proto-geneticist, and psychometrician – Darwin's half cousin

History of Emotions and Emotion Studies

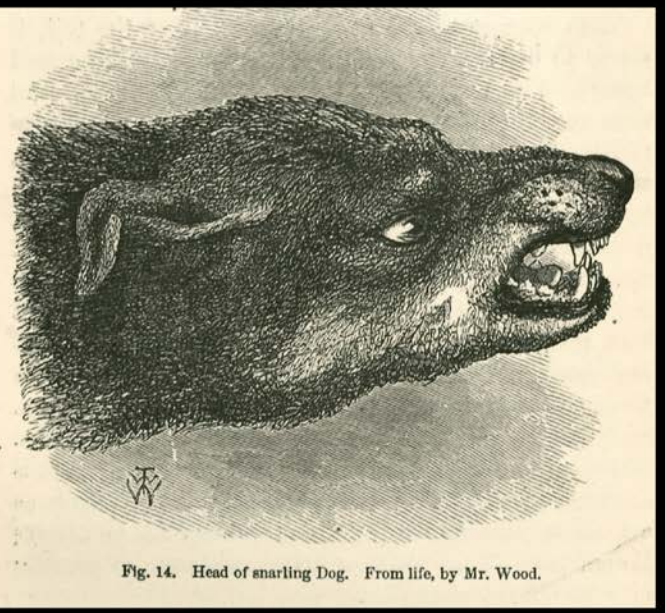


Fig. 14. Head of snarling Dog. From life, by Mr. Wood.

Fig. 15. Cat terrified at a dog. From life, by Mr. Wood.

Fig. 8. The same caressing his master. By Mr. A. May.

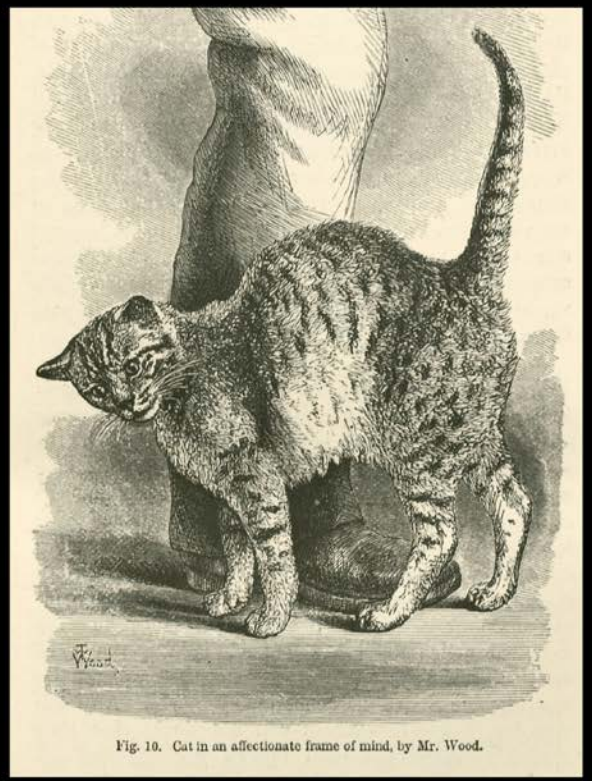
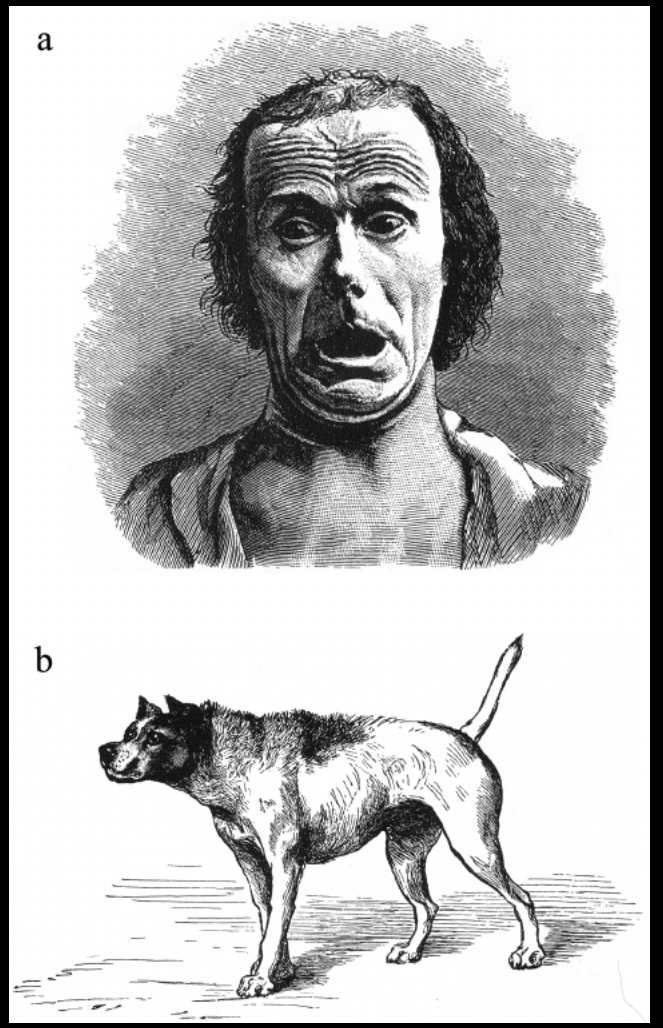


Fig. 10. Cat in an affectionate frame of mind, by Mr. Wood.



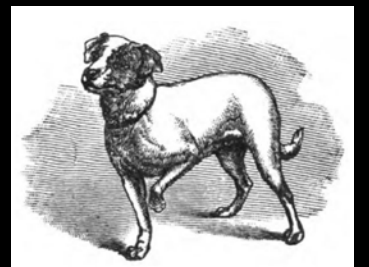
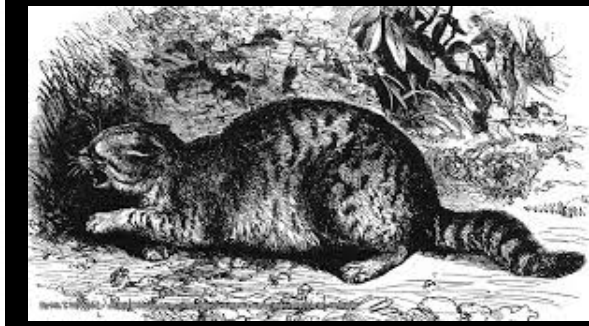


Fig. 4.—Small dog watching a cat on a table. From a photograph taken by Mr. Rejlander.



Time, the camera, and scientific study of emotions …

The study of Expression is difficult, owing to the movements being often extremely slight, and of a fleeting nature. A difference may be clearly perceived, and yet it may be impossible, at least I have found it so, to state in what the difference consists. When we witness any deep emotion, our sympathy is so strongly excited, that close observation is forgotten or rendered almost impossible; of which fact I have had many curious proofs. Our imagination is another and still more serious source of error; for if from the nature of the circumstances we expect to see any expression, we readily imagine its presence. Notwithstanding Dr. Duchenne's great experience, he for a long time fancied, as he states, that several muscles contracted under certain emotions, whereas he ultimately convinced himself that the movement was confined to a single muscle.

Darwin, *The Expression of the Emotions in Man and Animals,* 13

http://darwin-online.org.uk/content/frameset?itemID=F1142&viewtype=text&pageseq=1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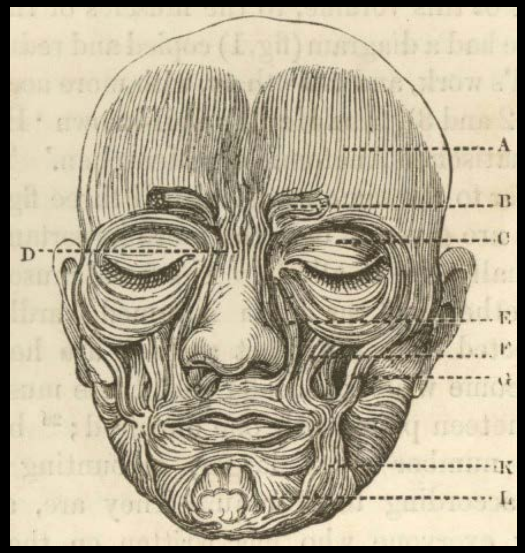
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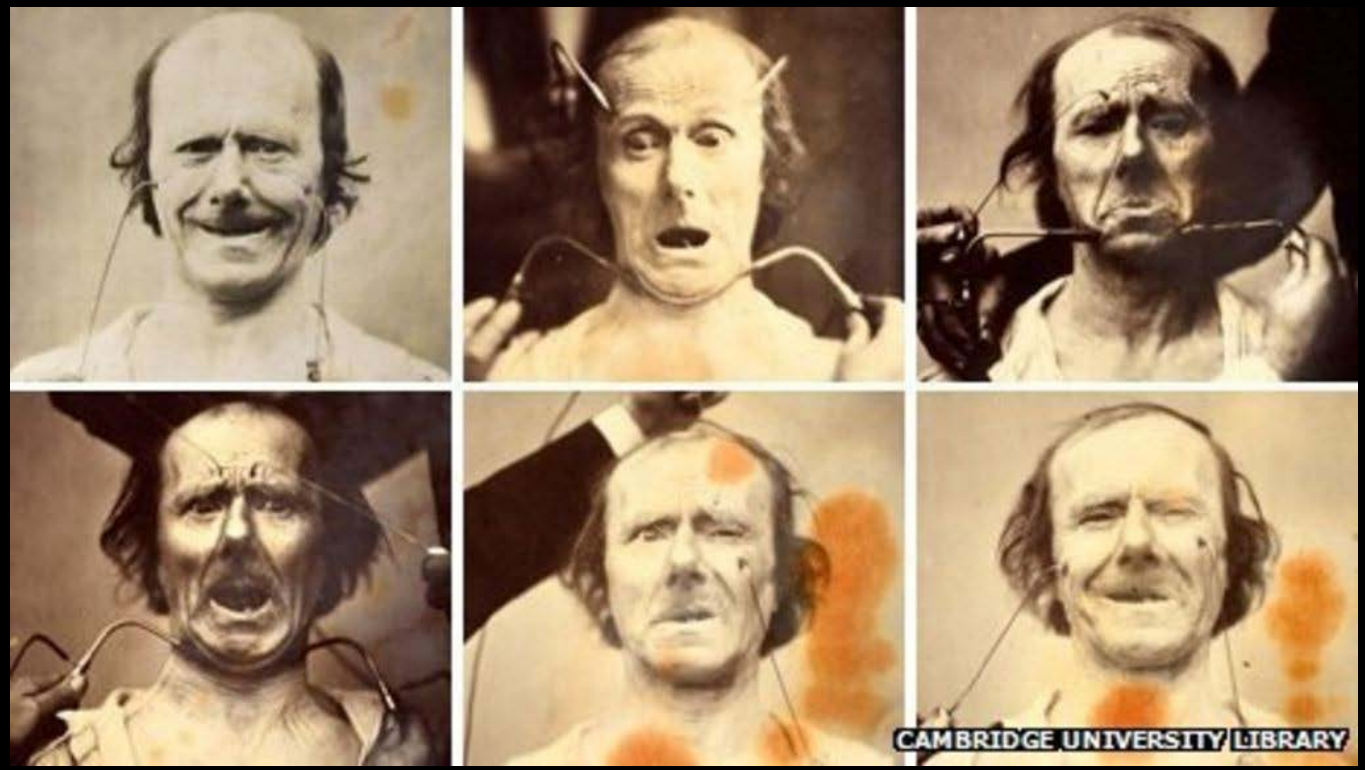
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In 1862, the physician Duchenne de Boulogne illustrated his *Mécanisme de la physionomie humaine* with photographs that reproduced the electrical experiments he had carried out on the faces of different patients. The aim of these localized faradizations was to determine the specific muscles involved in the expression of the passions.

Beatriz Pichel, “From facial expressions to bodily gestures: Passions, photography and movement in French 19th-century sciences” (2015)

Faradization – to treat (an organ or part) with faradic or electric currents

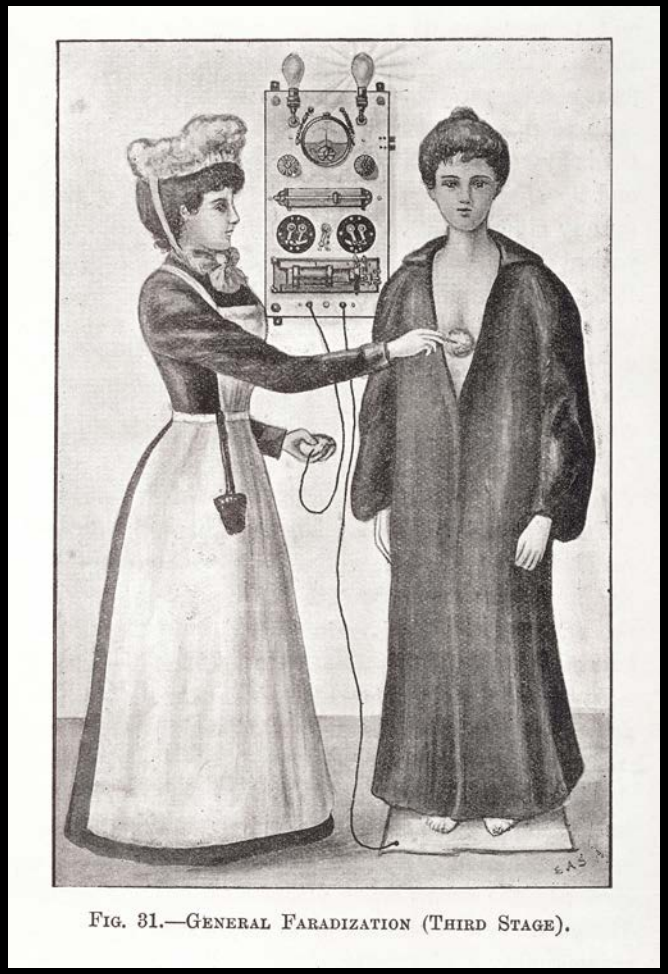

Fig. 31.—General Faradization (Third Stage).

The second and third stage of General Faradization. Female Nurse applying electrical current, faradic current, to a female patient via an electrical vibrator, or bipolar electrodes of Apostoli.

Fig. 29.—General Faradization (Second Stage).

George Adams demonstrates his electrotherapy machine to a woman and her daughter. Line engraving by J. Lodge, 1799, after T. Milne. Wellcome Library, London.

Vibrate Your Body And Make it Well

You have no *right* to be sick. Pain, suffering and disease are unnatural, they are *wrong*. It is your *duty* to be well. Don't try to *stand* pain—*CURE IT*. No matter what ails you—even if others have told you that your case was *incurable—DON'T GIVE UP HOPE*. The great natural forces, *Vibration and Electricity*, are curing more people today *than all the drugs and doctors in the world put together*.

THE WHITE CROSS ELECTRIC VIBRATOR contains *both* of these great natural curative agents. It gives you your choice of Vibration, *Faradic* and *Galvanic* Electricity, either separately or in combination, just as you wish. It relieves pain *instantly*, and its *cures are permanent*.

VIBRATION FOR THE RACKING BACKACHE OF WOMEN

Curing Stomach Trouble with Vibration.

The White Cross Electric Vibrator goes the *cause* of disease. It sends the rich, red blood leaping and coursing through your veins and arteries *straight to where the disease begins*. It tones up your nerves and muscles and every vital cell. It makes you *fairly tingle with the joy of living*.

Don't neglect the FIRST symptoms. If you feel "run down," "out of condition," if you just feel "out of sorts" generally, *something is wrong*. The most serious diseases creep upon you unawares. *The White Cross Electric Vibrator* fills your body *so full* of vigorous, robust health that pain and disease cannot find a foothold.

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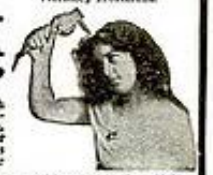
FREE BOOK "Health and Beauty"



Making the Hair Beautiful with Vibration.

SEND TODAY for the magnificent free book, "Health and Beauty." This valuable work tells you all about the human body in health and disease *in terms so plain, so clear*, that anyone can *understand*. It tells you how you *can get* well and *keep* well, no matter what your trouble is. This book was not written for surgeons and physicians, but for you. Every page, every line, is thrillingly interesting.

Besides, this book tells you all about the wonderful *White Cross Electric Vibrator*—what it has done for thousands of others and what it will do for you. It tells you about the *very special offers* which we are making, *for just a short time*, on this wonder-working instrument, and how you can get a *White Cross Electric Vibrator* on a *genuine free trial*. Your name and address brings this interesting book by return mail. Sign the coupon and mail it to us *at once*.

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Headache	*Nervous Debility*
Catarrh	*Bright's Disease*
Insomnia	*Heart Trouble*
Toothache	*Deafness*
Indigestion	*Stomach Trouble*
Rheumatism	*Scalp Disease*
Neuralgia	*Constipation*
Earache	*Lumbago*

All these and dozens of other chronic and acute diseases instantly relieved and permanently cured by Vibration and Electricity. Get our wonderful free book, "Health and Beauty." THEN you will know.

Vibrating Chair Free

With the *White Cross Electric Vibrator*, you can transform any ordinary household chair into a Vibrating Chair, equal *in every respect* to those used in the big hospitals and sanitariums. You can give yourself the same treatments, including the *famous Swedish Movement* treatments, that specialists and sanitariums charge $2.00 to $5.00 a piece for. This is only one of the many marvelous things that can be done with the *White Cross Electric Vibrator* exclusively.

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DON'T DELAY A MINUTE. Whether you are sick or well, you should send for this book *anyway*. You cannot tell when you *may* need it and need it badly. When you do there will be no time to send for it. Learn *today* what vibration will do for you—for all your loved ones. Learn all about its wonderful health-giving powers. Learn how you can save all doctor bills and cure yourself right at home without expense.

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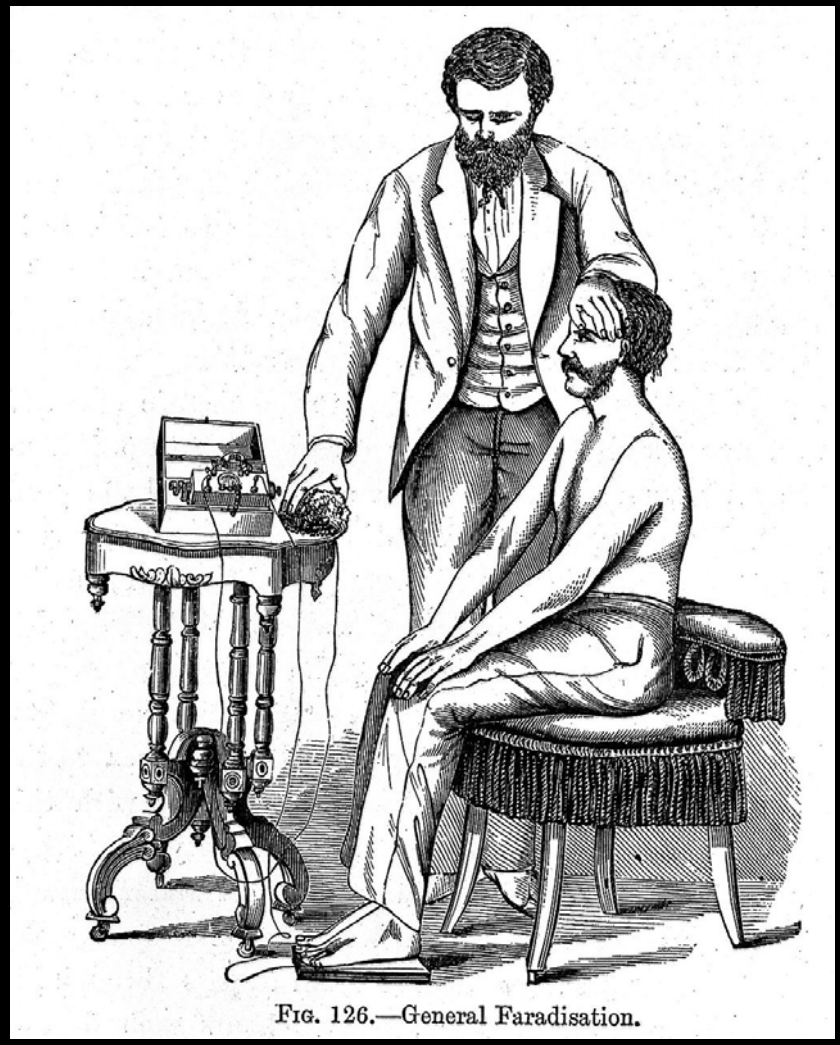
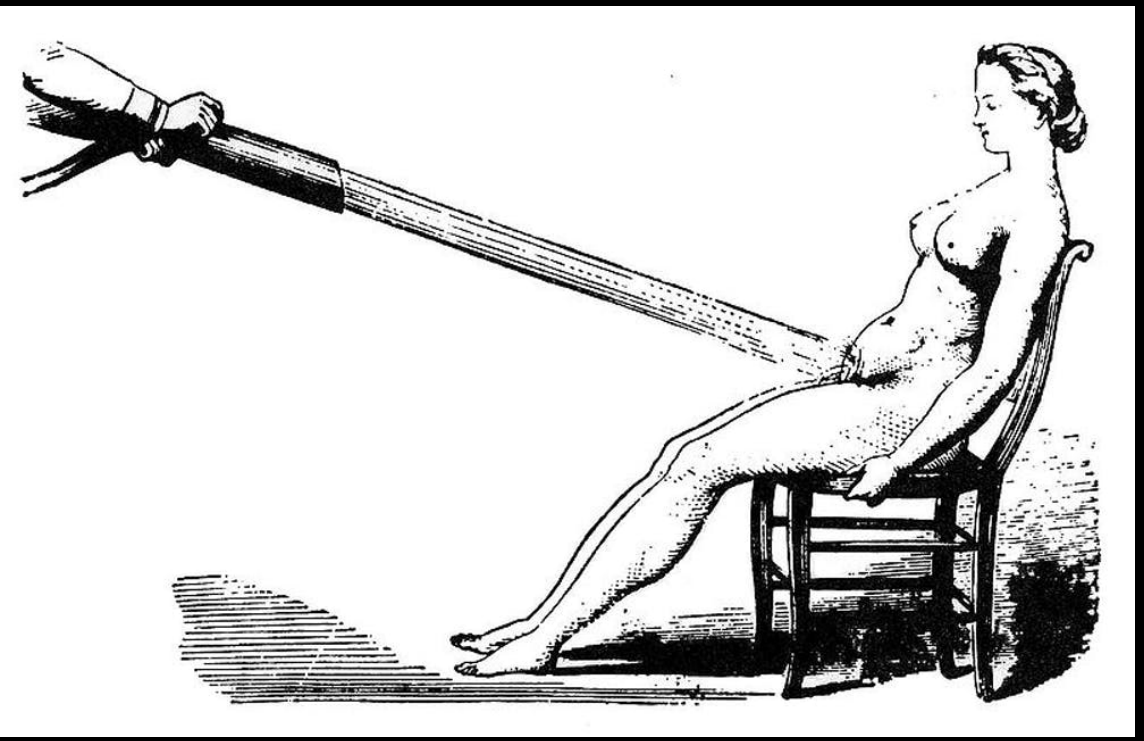


FIG. 126.—General Faradisation.

Left: 1909 cosmetic electrotherapy advert reads: The White Cross Electric Vibrator [..] gives you your choice of Vibration, Faradic and Galvanic Electricity [..] tones up your nerves and muscles"

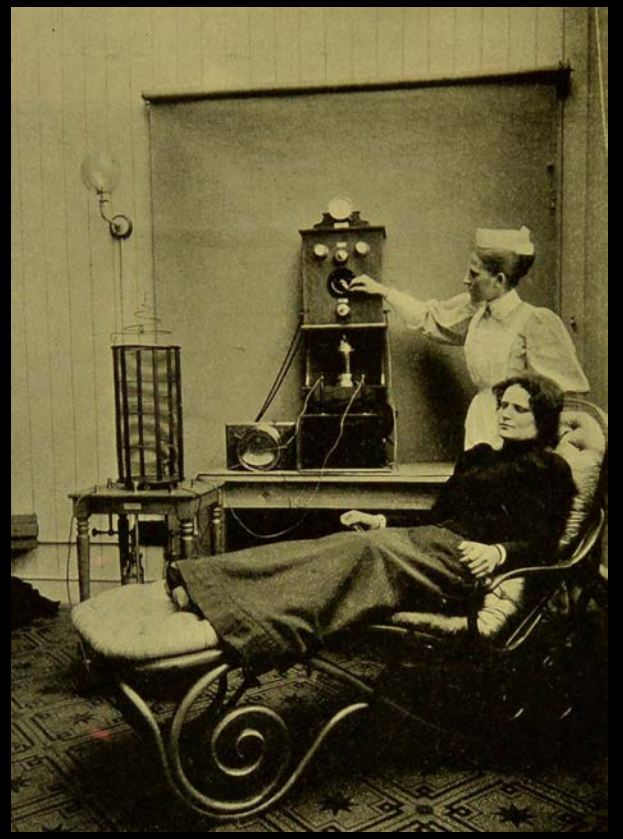
Hysteria and Vibrators



French pelvic douche of about 1860 from Fleury, reproduced from Siegfried Giedion, Mechanization Takes Command (New York: Oxford University Press, 1948)

Hysteria: a psychological disorder (not now regarded as a single definite condition) whose symptoms include conversion of psychological stress into physical symptoms (somatization), selective amnesia, shallow volatile emotions, and overdramatic or attention-seeking behavior. The term has a controversial history as it was formerly regarded as a disease specific to women. The word originates from the Greek word for uterus, hystera

Right: This couch, featured in an 1899 manual of therapeutic electricity, delivered high frequency currents to the patient. Image credit: Wellcome Library.



There is absolutely no evidence that Victorian doctors used vibrators to stimulate orgasm in women as a medical technique, asserts the paper, written by two historians at Georgia Tech. “Manual massage of female genitals,” they write, “was never a routine medical treatment for hysteria.”

“A Failure of Academic Quality Control: The Technology of Orgasm” (2016) by Hallie Lieberman and Eric Schatzberg
Vs.
The Technology of Orgasm by Rachel Maines (1999)

- Photographs documenting the three series of experiments on the neuromuscular hyperexcitability of hysterical subjects under hypnosis carried out by Charcot and Richer

- The first series of experiments was published between 1881 and 1882. Charcot and Richer reinterpreted Duchenne's work by pressing the muscles of the face of different female patients with a small piece of wood. The facial contractions achieved through this pressure demonstrated that, in a state of hypnosis, the excitability of the muscles increased so much that localized faradizations were unnecessary to stimulate them. Therefore, these experiments lacked the electrical component of Duchenne's project, but shared with it a common interest in the anatomical origin of expressions, as well as the use of photography to document it

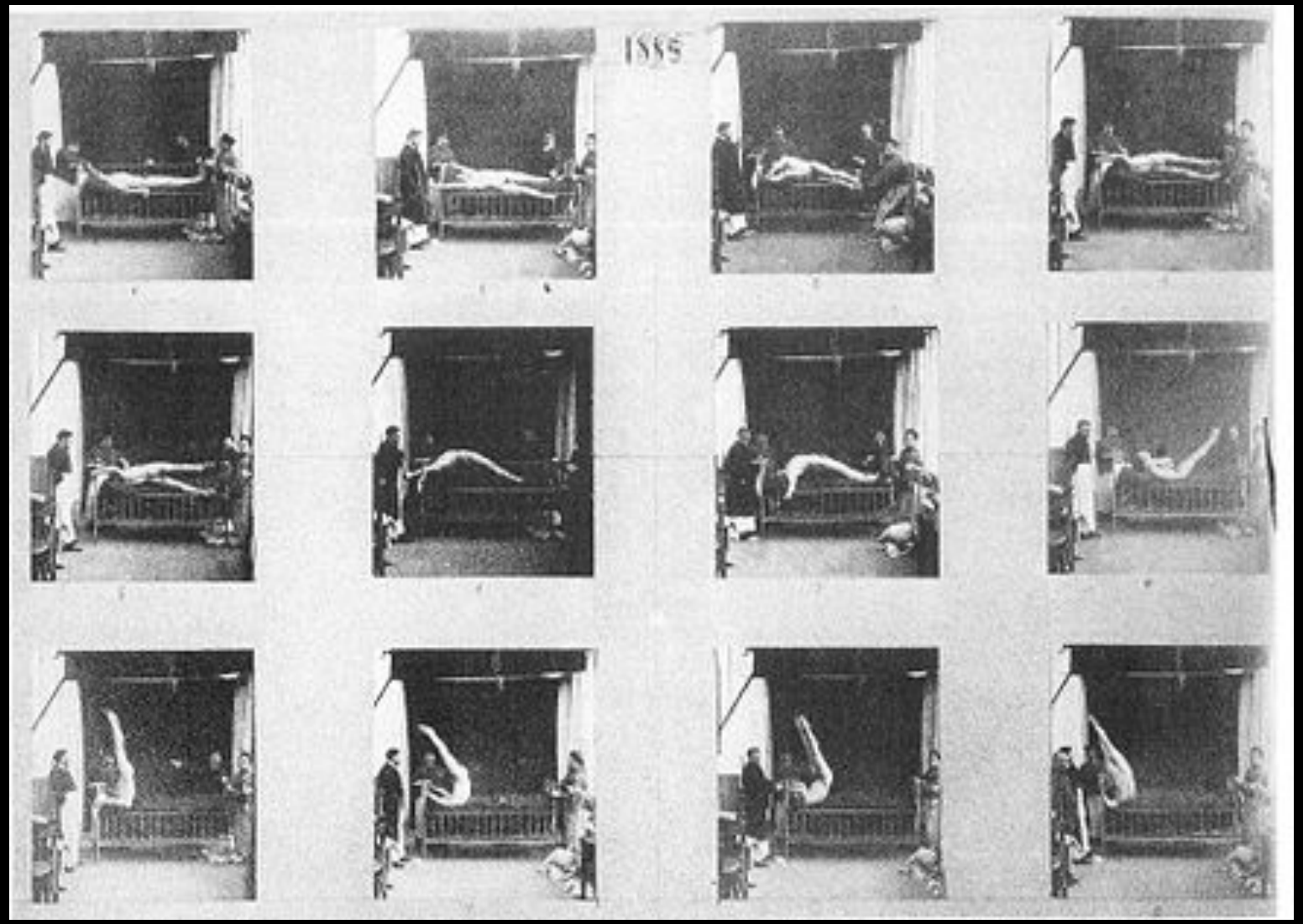
Beatriz Pichel, "From facial expressions to bodily gestures: Passions, photography and movement in French 19th-century sciences" (2015)

See also Georges Didi-Huberman, *Invention of Hysteria: Charcot and the Photographic Iconography of Salpêtière* (2003) PDF of book: https://monoskop.org/images/4/43/Didi_Huberman_Georges_Invention_of_Hysteria_2003.pdf

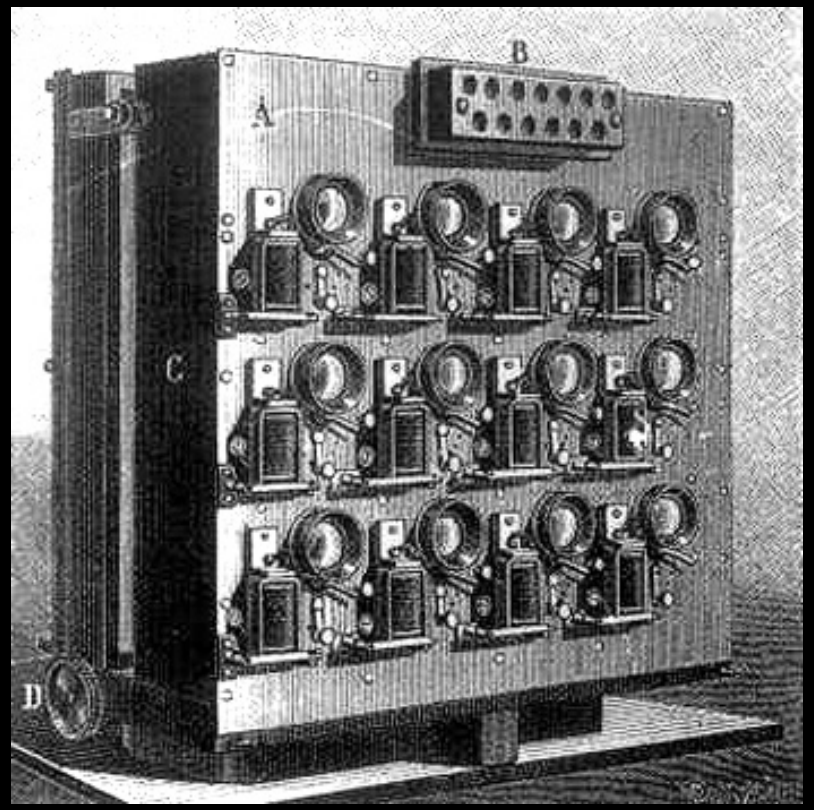
Faradization des muscles du menton. Albert Londe, *c*. 1885. École Nationale des Beaux Arts, Paris. Reproduced with permission of ENSBA, Paris.

Albert Londe recognized in 1884 the difficulty of capturing these expressions, and particularly the nuances of intensity. Interestingly, Londe insisted that artists would have not been able to copy them because these poses only lasted for a very short period of time. Once again, photography was presented as the most suitable technology for the reproduction of expressions because of the adequacy of its exposure time to the duration of the gestures, as well as the higher sensibility of the emulsions of the plate. In this case, Londe had used the stereoscopic camera he had built, which allowed him to take two images in the same plate in only one second, indoors and under bad weather conditions. These photographs were then mounted as single pictures on sheets that grouped the experiments according to the group of facial muscles that had been stimulated. The disposition of the portraits became a rhetorical device intended to show that applying different degrees of electricity led to correlative qualitative differences in the expression, as can be seen in the figure to the left.

Beatriz Pichel, “From facial expressions to bodily gestures: Passions, photography and movement in French 19th-century sciences” (2015)



Chronophotographic image by Londe of what was described as an attack of hysteria



Étienne-Jules Marey, Albert Londe's twelve lens camera, 1893

Planche XXIV

CATALEPSIE

Catalepsy: a medical condition characterized by a trance or seizure with a loss of sensation and consciousness accompanied by rigidity of the body.

BIBLIOTHÈQUE DE LA NATURE

LA

PHOTOGRAPHIE MODERNE

— PRATIQUE ET APPLICATIONS —

PAR

ALBERT LONDE

DIRECTEUR DU SERVICE PHOTOGRAPHIQUE A L'HOSPICE DE LA SALPÊTRIÈRE,
VICE-PRÉSIDENT DE LA SOCIÉTÉ D'EXCURSIONS DES AMATEURS DE PHOTOGRAPHIE,
MEMBRE DE LA SOCIÉTÉ FRANÇAISE DE PHOTOGRAPHIE

Avec figures dans le texte

ET PLANCHES SPÉCIMENS DE PROCÉDÉS DE REPRODUCTION

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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 Dr 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, philomathique, etc.

Avec 235 figures.

PARIS

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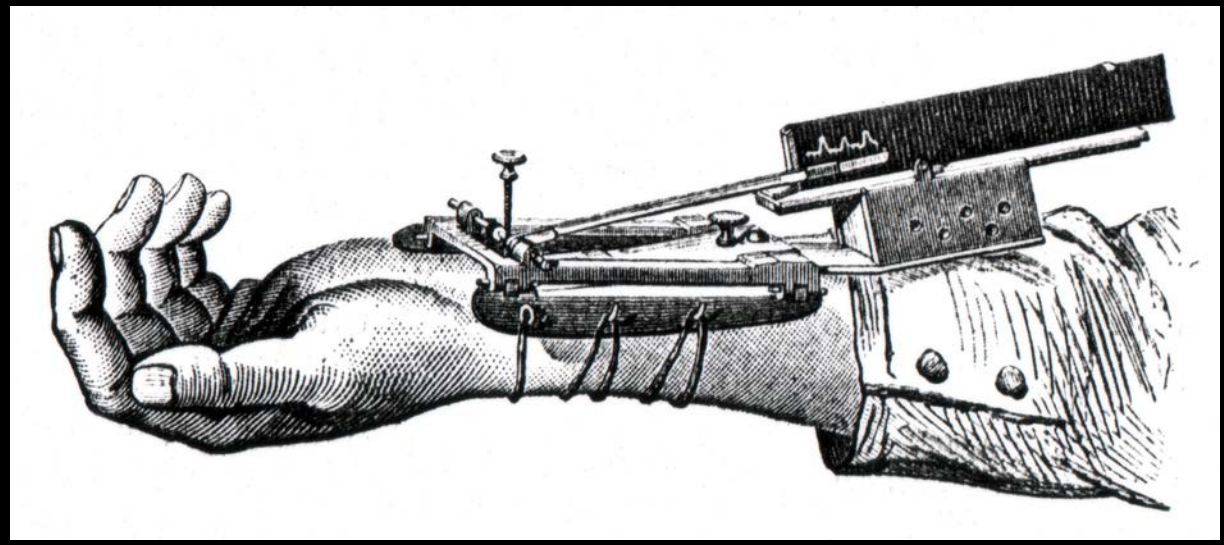
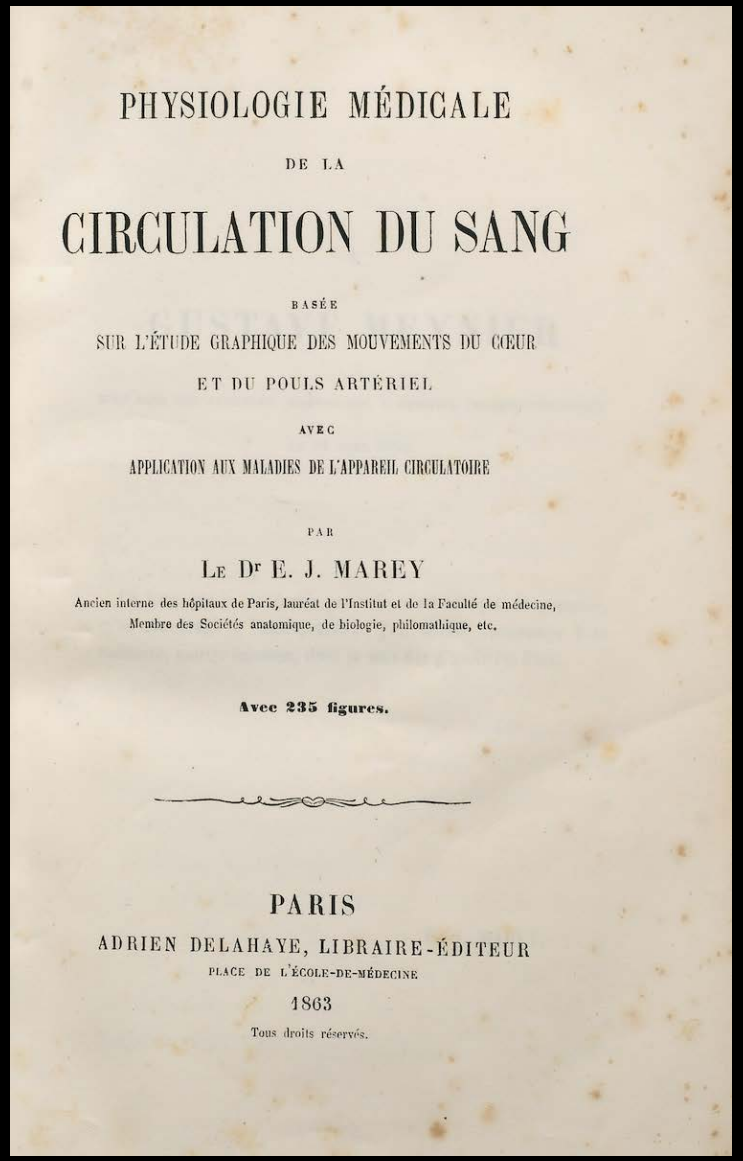
PLACE DE L'ÉCOLE-DE-MÉDECINE

1863

Left: Étienne-Jules Marey, *Medical Physiology of Blood Circulation*, 1863
Below: Étienne-Jules Marey, Marey Sphygmograph, 1860





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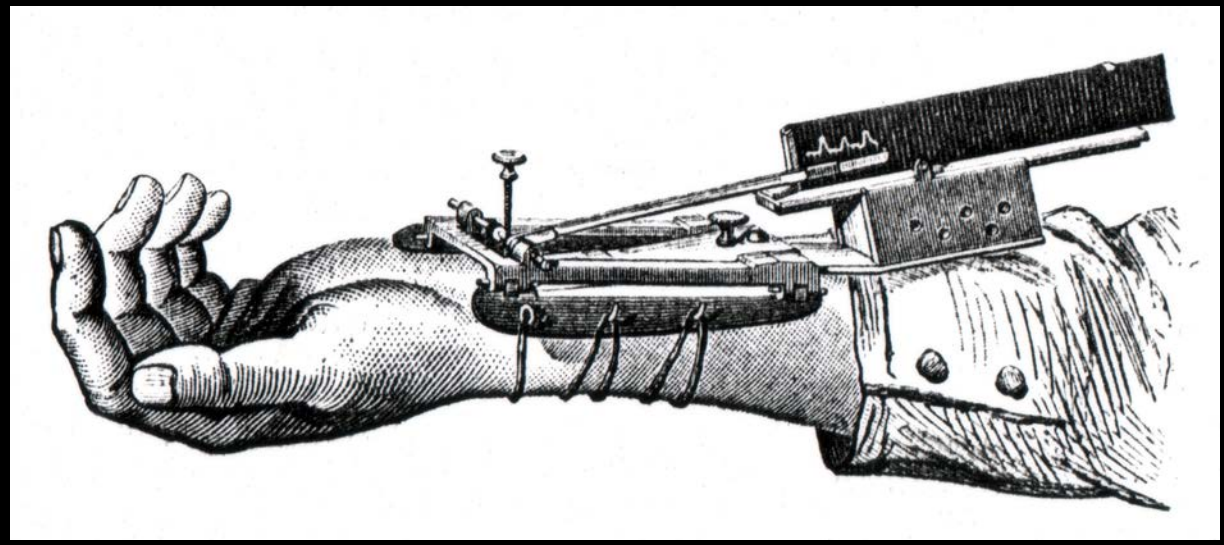
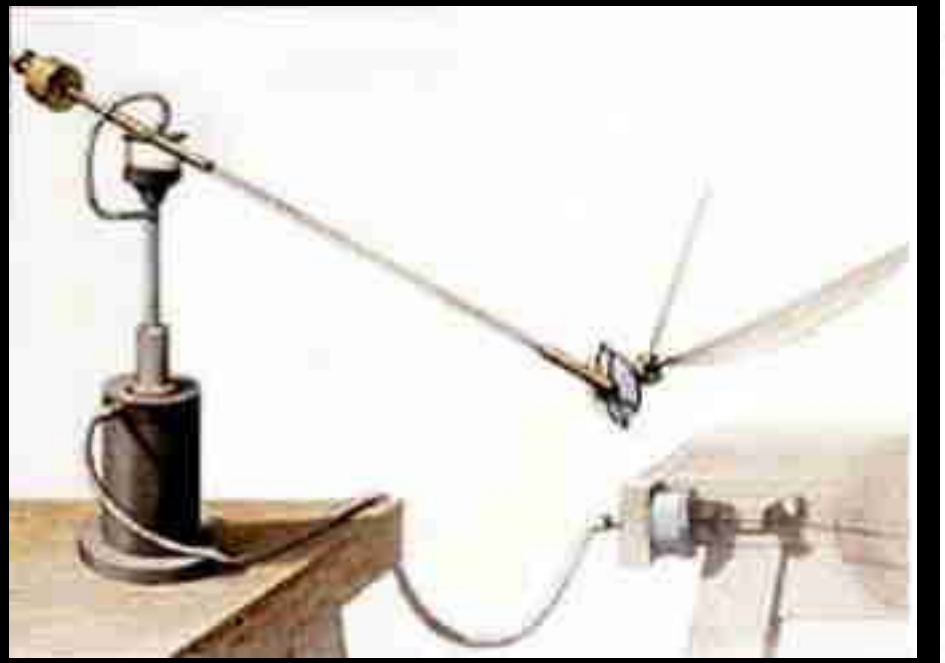
PLACE DE L'ÉCOLE-DE-MÉDECINE

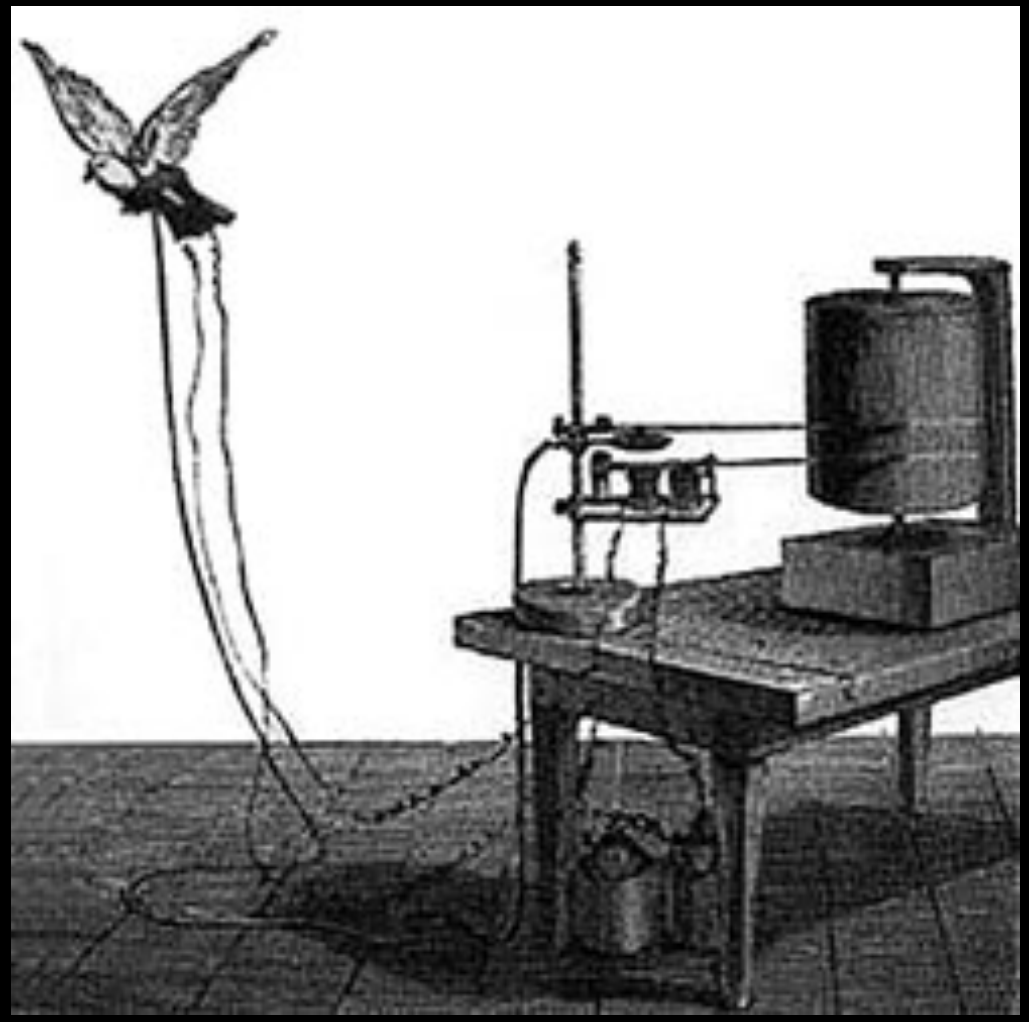
1863

Left: Étienne-Jules Marey, *Medical Physiology of Blood Circulation*, 1863
Right: Étienne-Jules Marey, Marey Sphygmograph, 1860

Marey's (1830-1904) interests within the burgeoning world of photography cast a wide net in terms of "mobility." Dr. Marey was a pioneer of blood pressure measurement and other physiological studies. He started by studying how blood moves in the body. Then he shifted to analyzing heartbeats, respiration, muscles (myography), and movement of the body. The first machine that could produce a paper record of blood pressure was introduced in 1847. Many other "sphygmographs" soon followed. In 1860, Marey described his own sphygmograph.

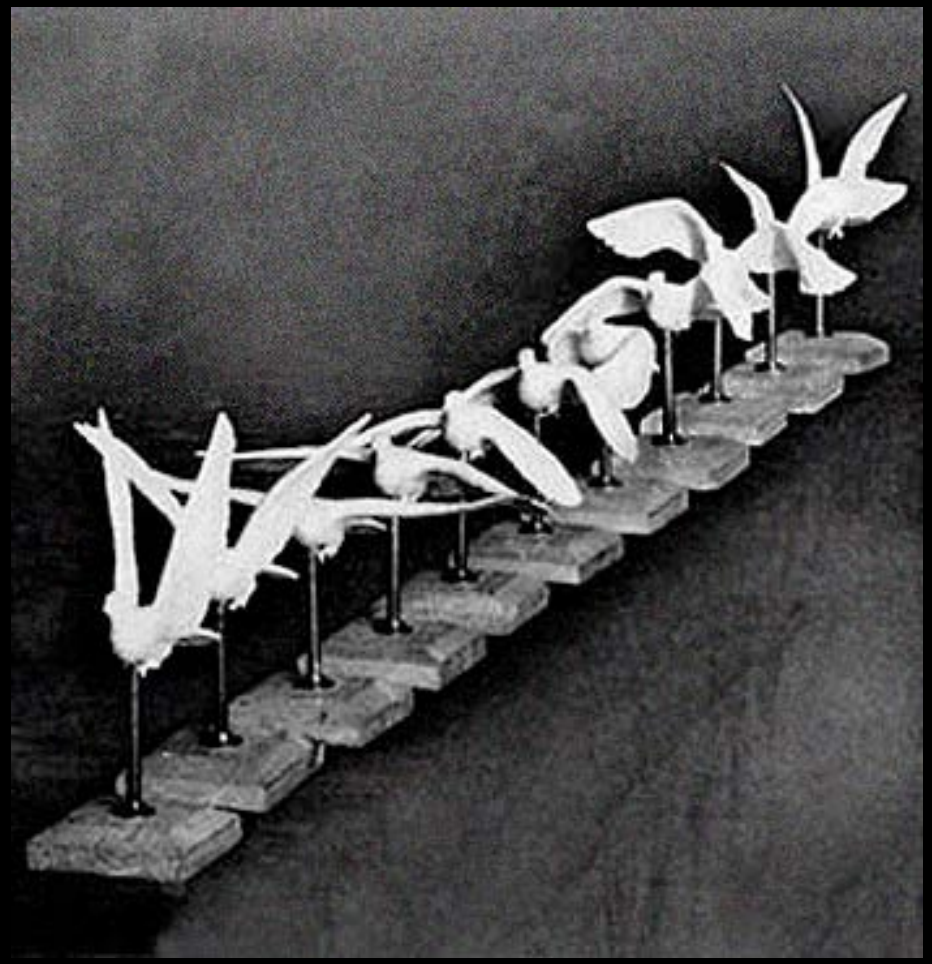






Left: Étienne-Jules Marey, insect flight machine, 1869
Right: Étienne-Jules Marey, air pantographe, 1870

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."



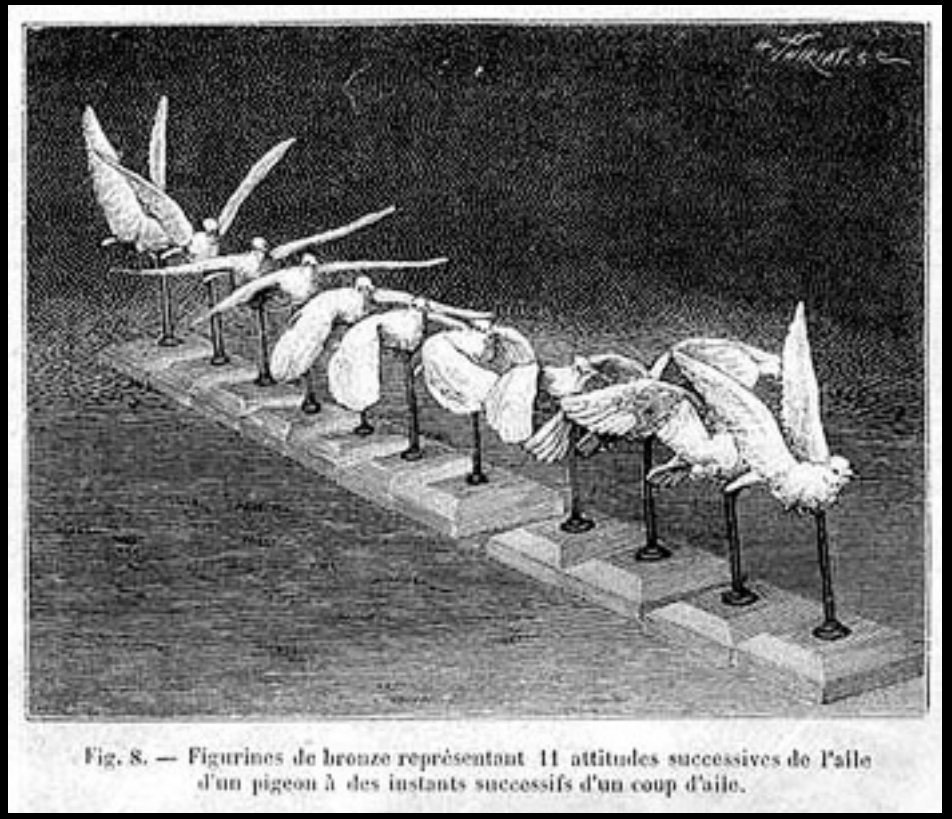
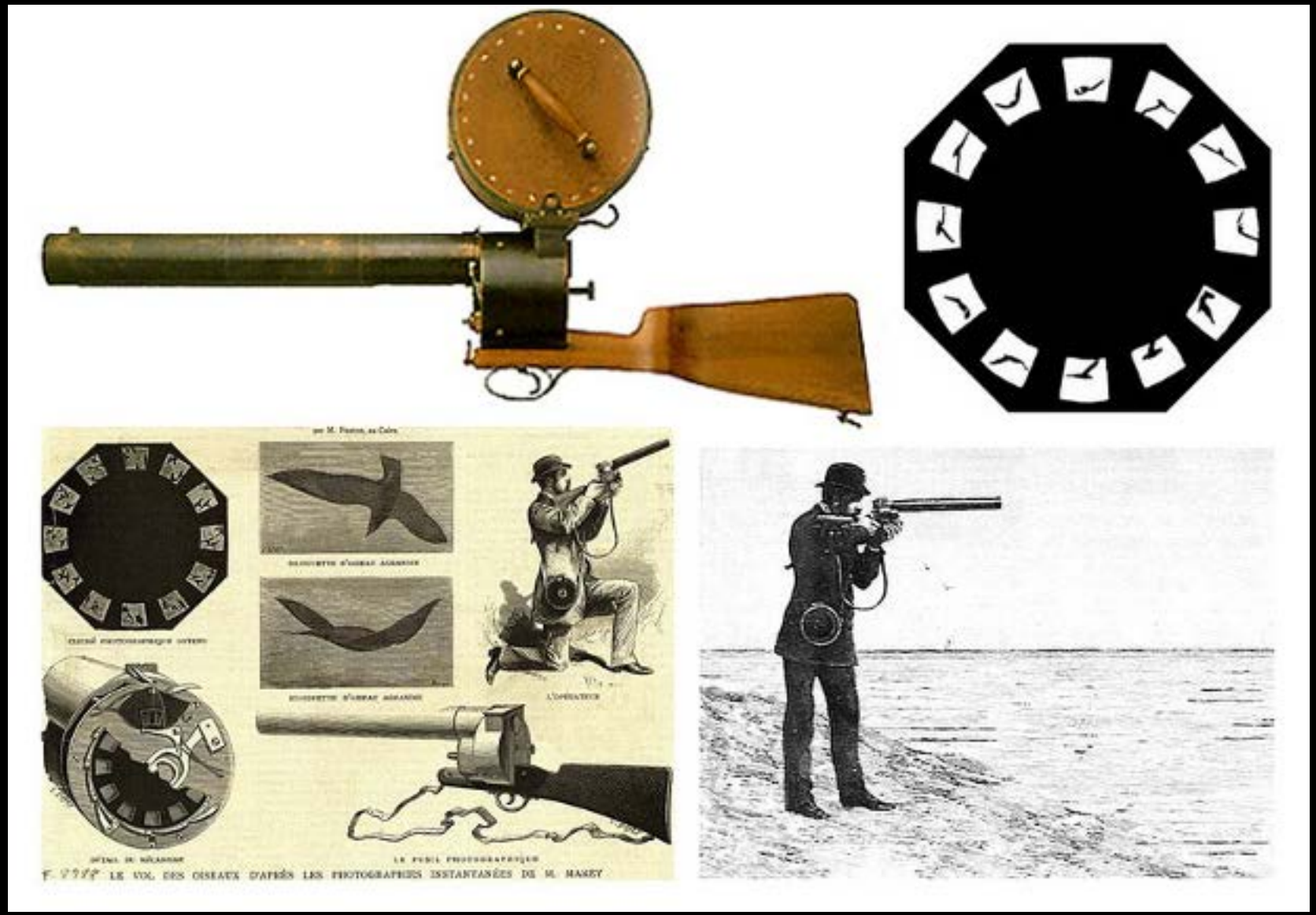


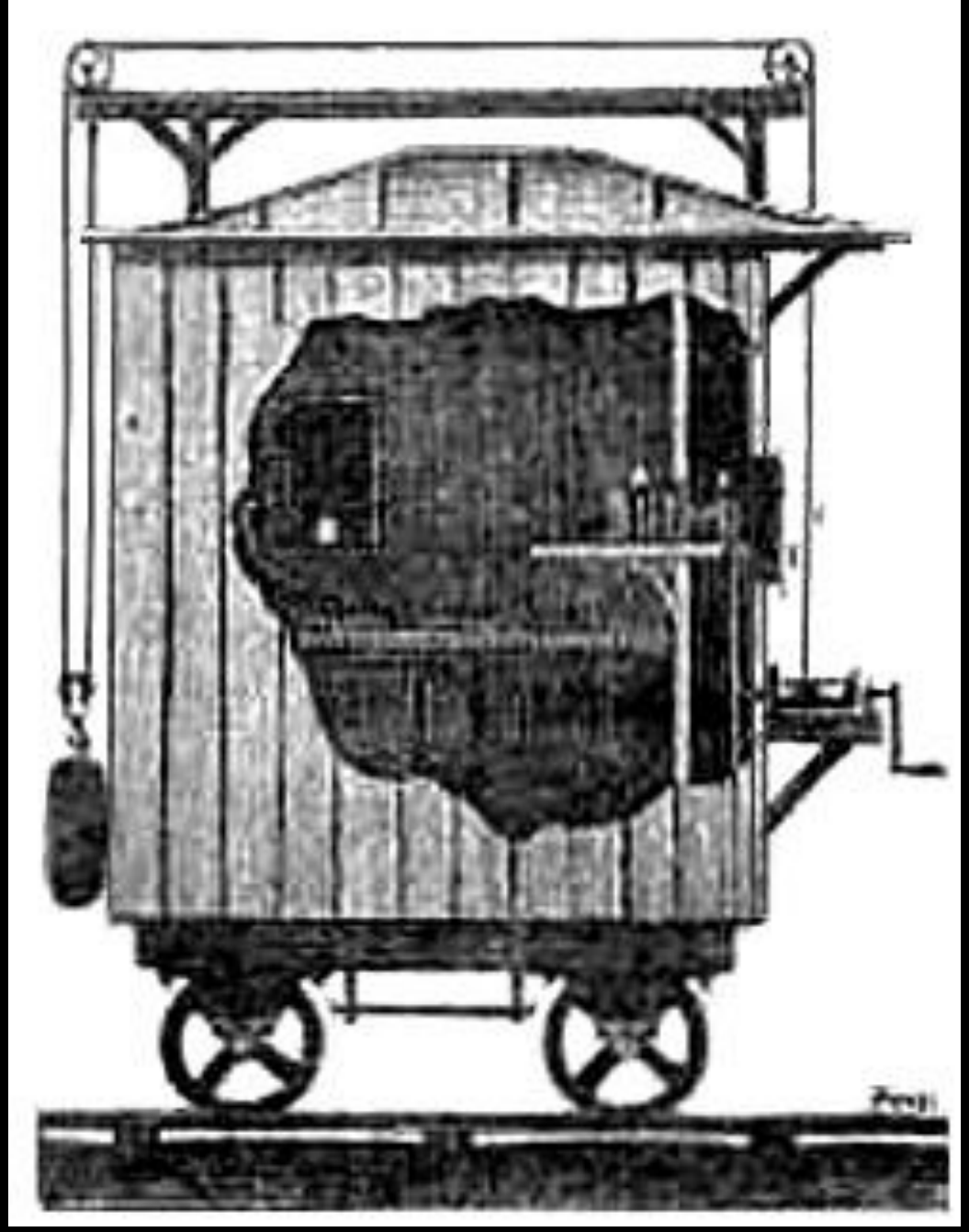
Fig. 8. — Figurines de bronze représentant 11 attitudes successives de l'aile d'un pigeon à des instants successifs d'un coup d'aile.

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

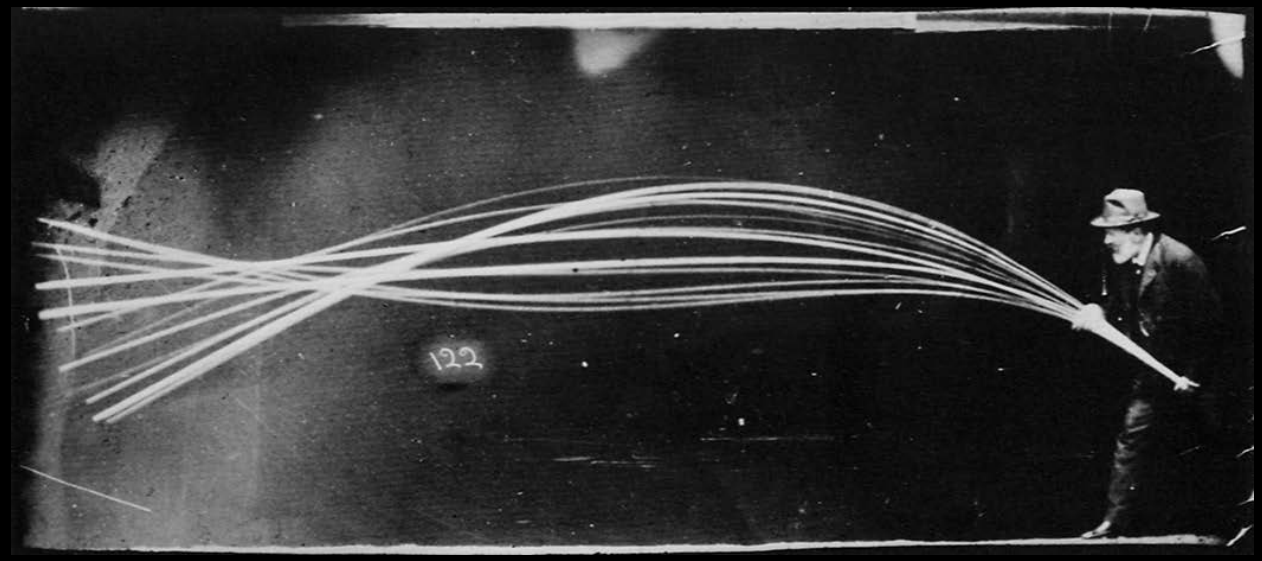


Étienne-Jules Marey, Chronophotographic Camera Gun, 1882

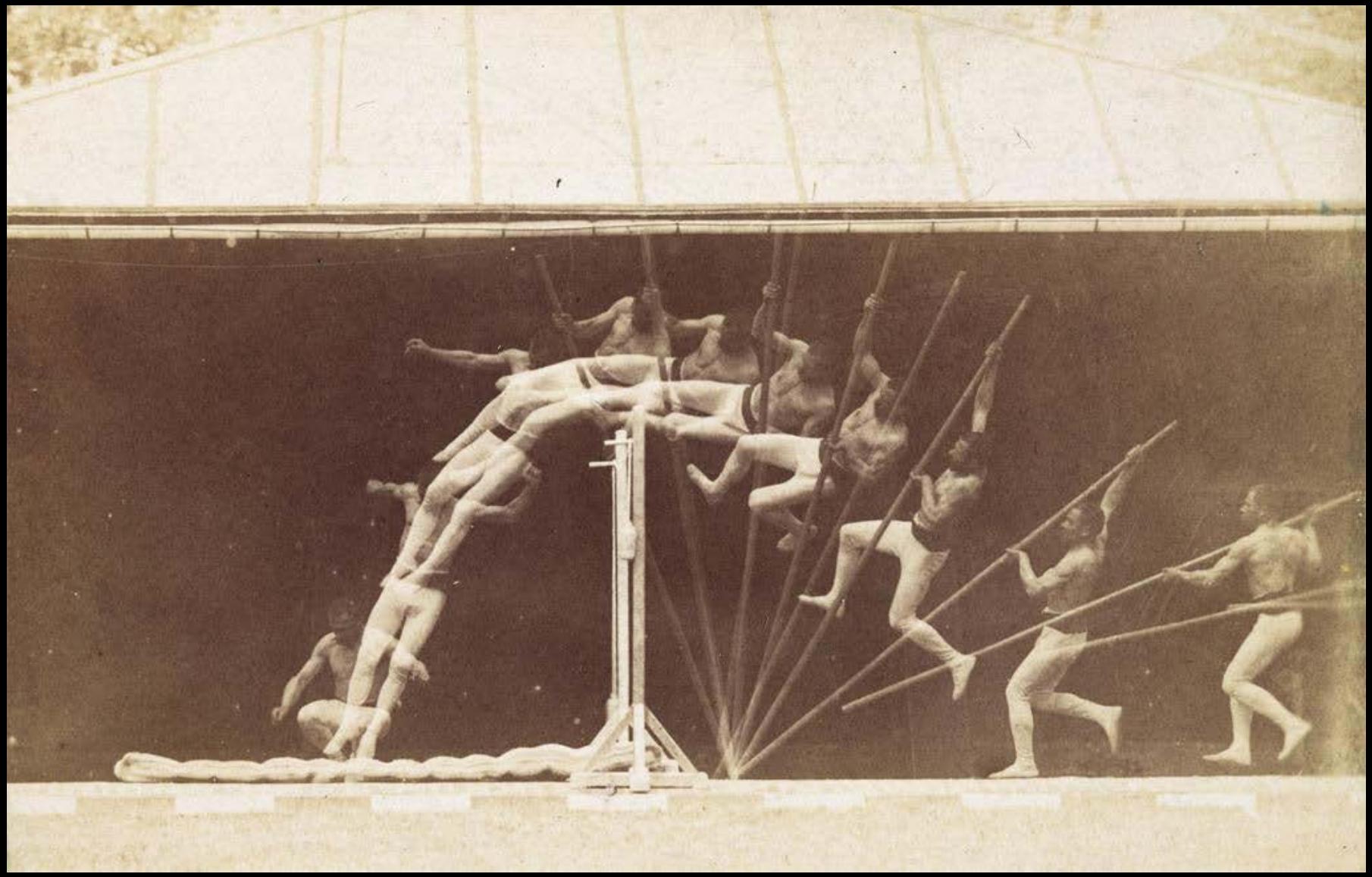
The "fusil photographique" ("photographic gun"), which was capable of taking twelve exposures per second. The images, each about the size of a postage stamp, were arranged around the edge of a revolving circular photographic plate. Equipped with a sight and clock mechanism, he was able to use the device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



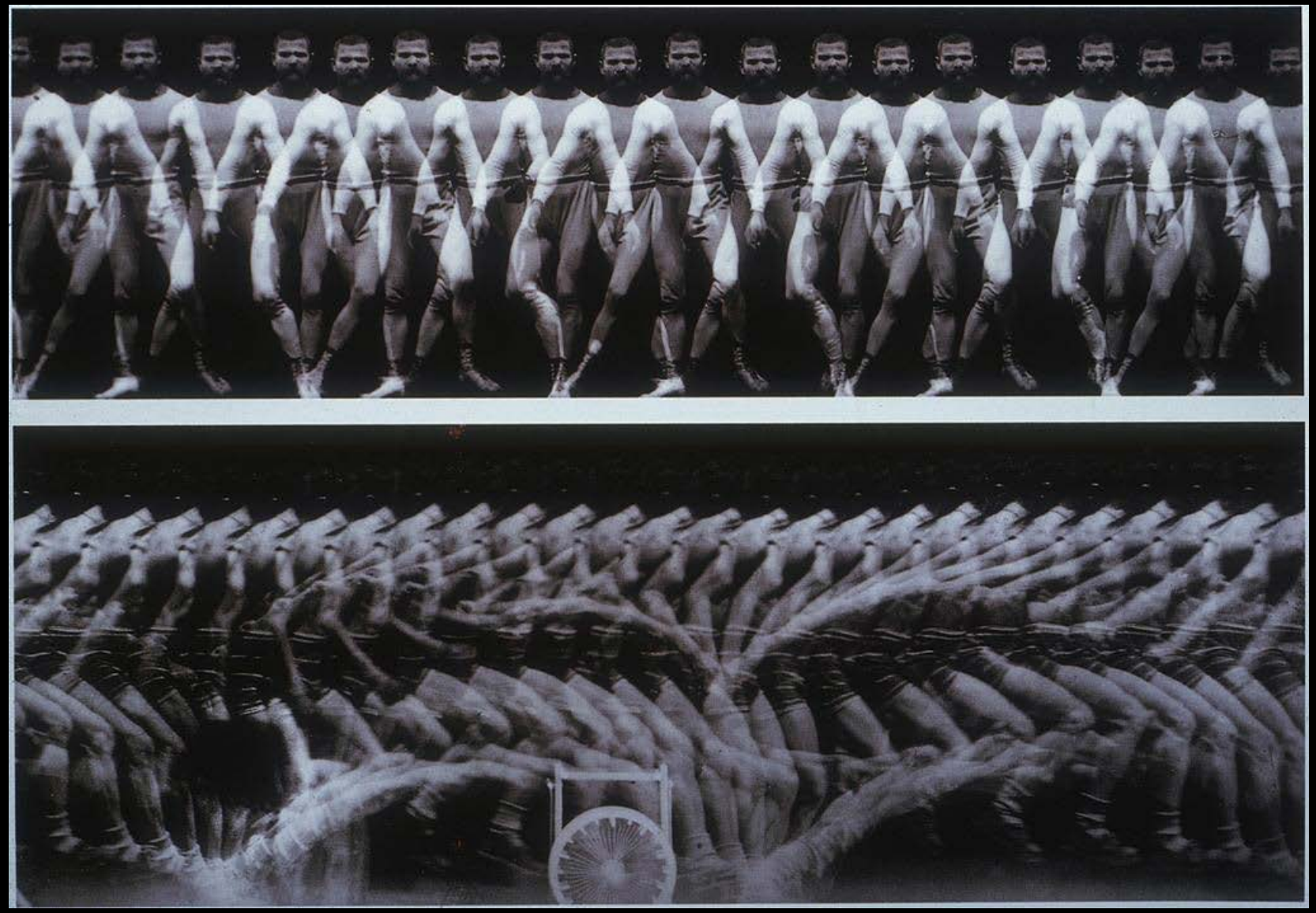
Étienne-Jules Marey, camera for chronophotography in box on wheels, c. 1885



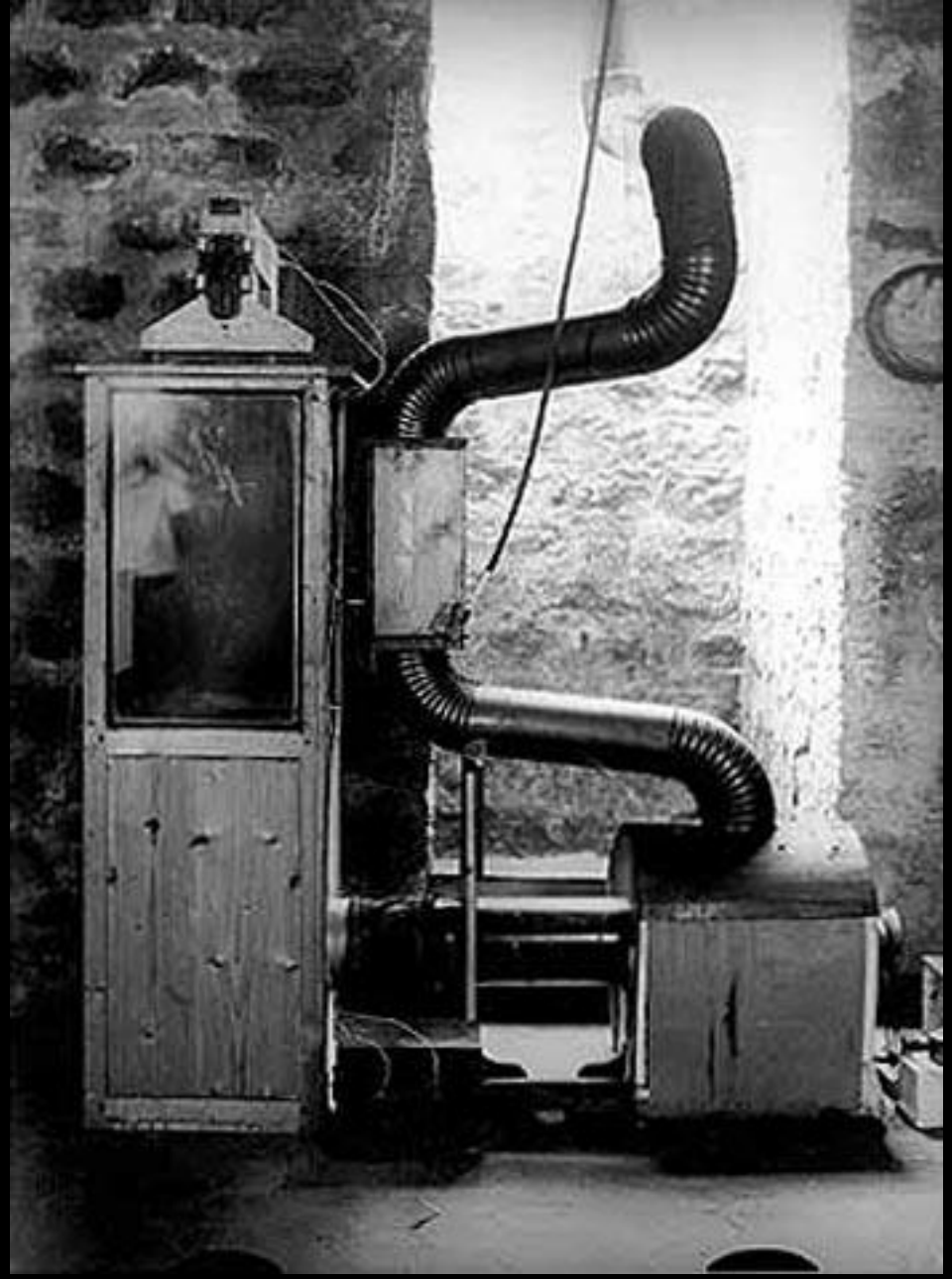
Marey shaking a flexible rod (1886)



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

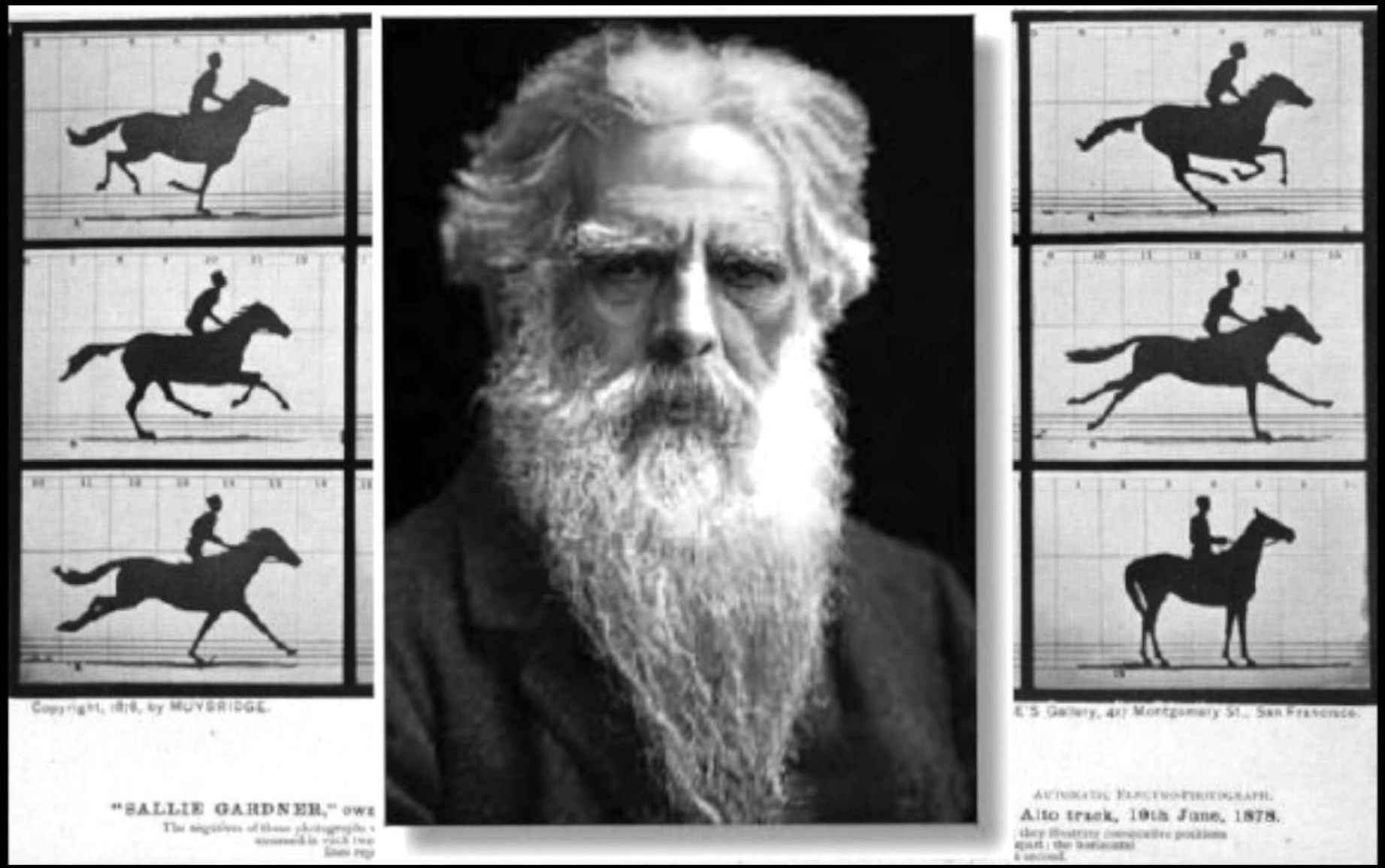


Etienne Jules Marey, Study of Lateral Walking and Running, 1886



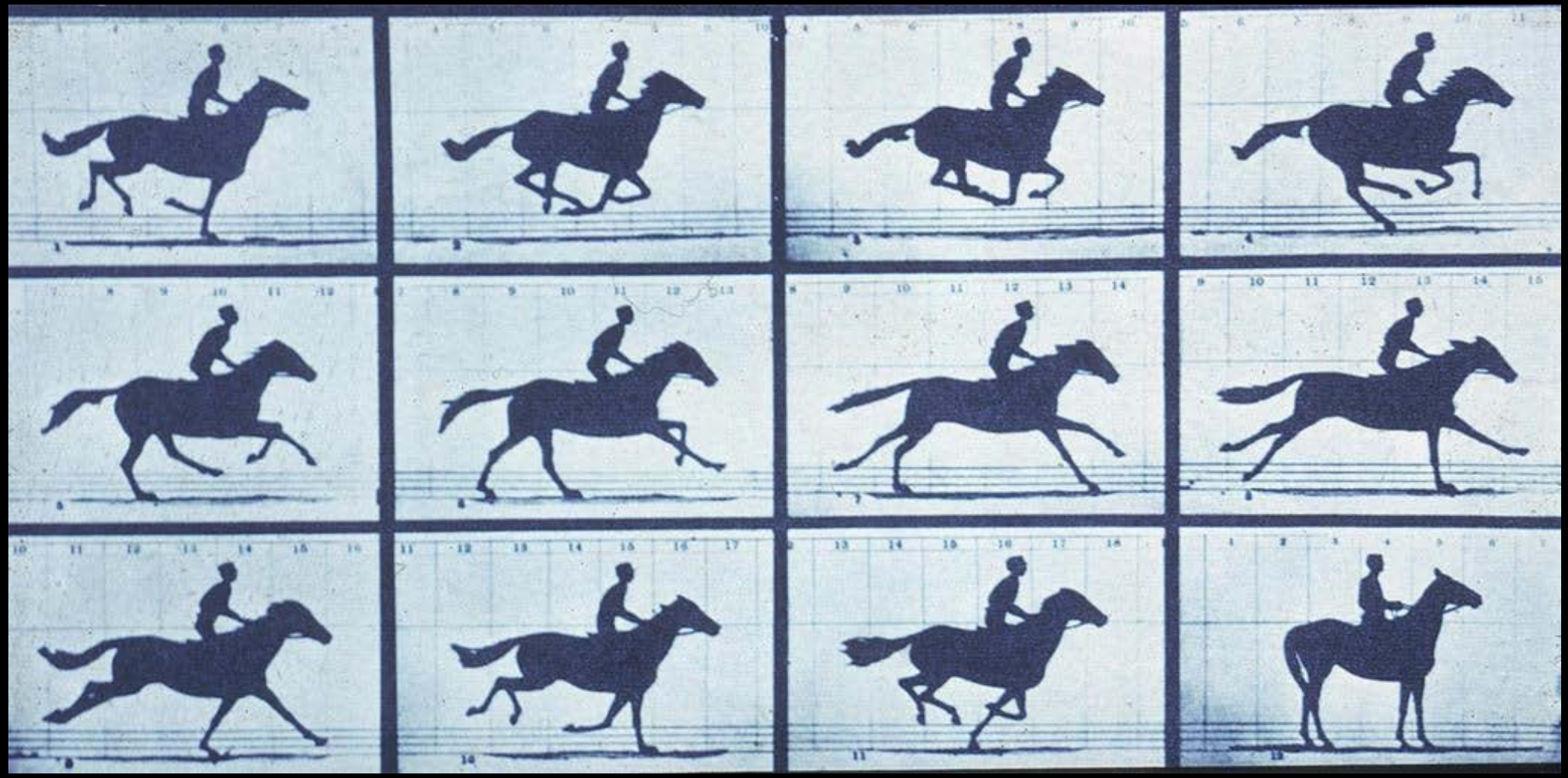
In 1901, Marey built a machine capable of producing 58 separate smoke trails. A chronographic camera was placed in front of a box closed by a transparent glass sheet. The smoke trails passed in front of a black velvet background, and were illuminated by a magnesium flash while instantaneous images were 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

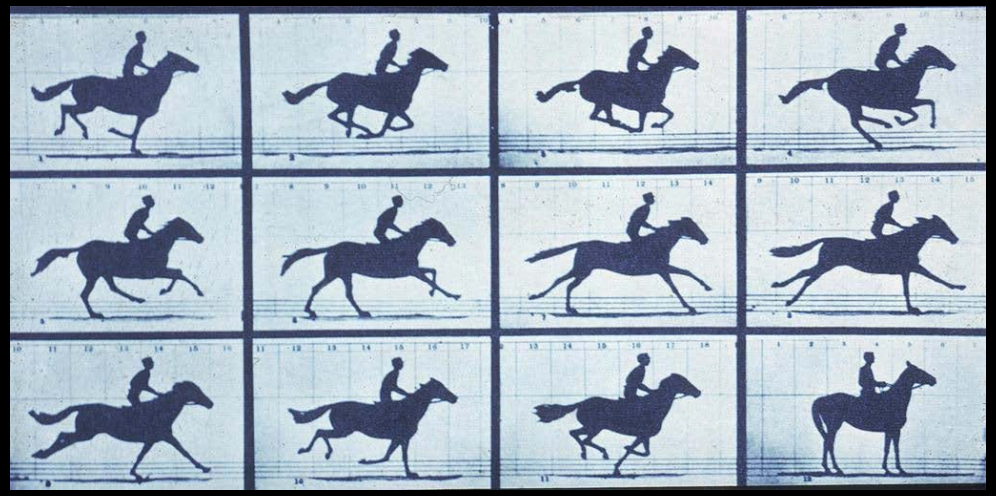


Eadweard Muybridge (1830-1904), born Edward James Muggeridge

aka “Helios”

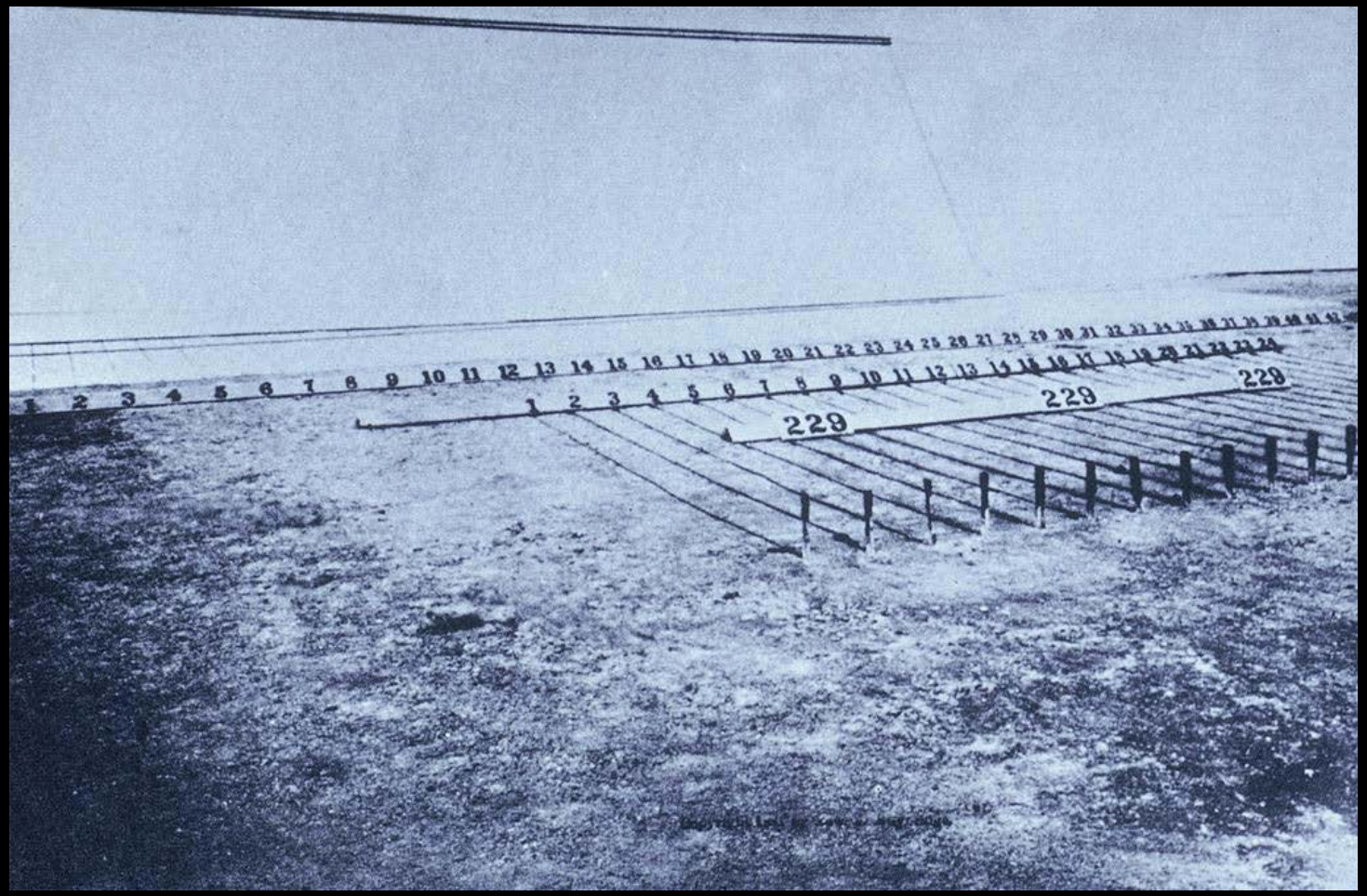


Eadweard J. Muybridge, Galloping horse (Sallie Gardner running), 1878



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

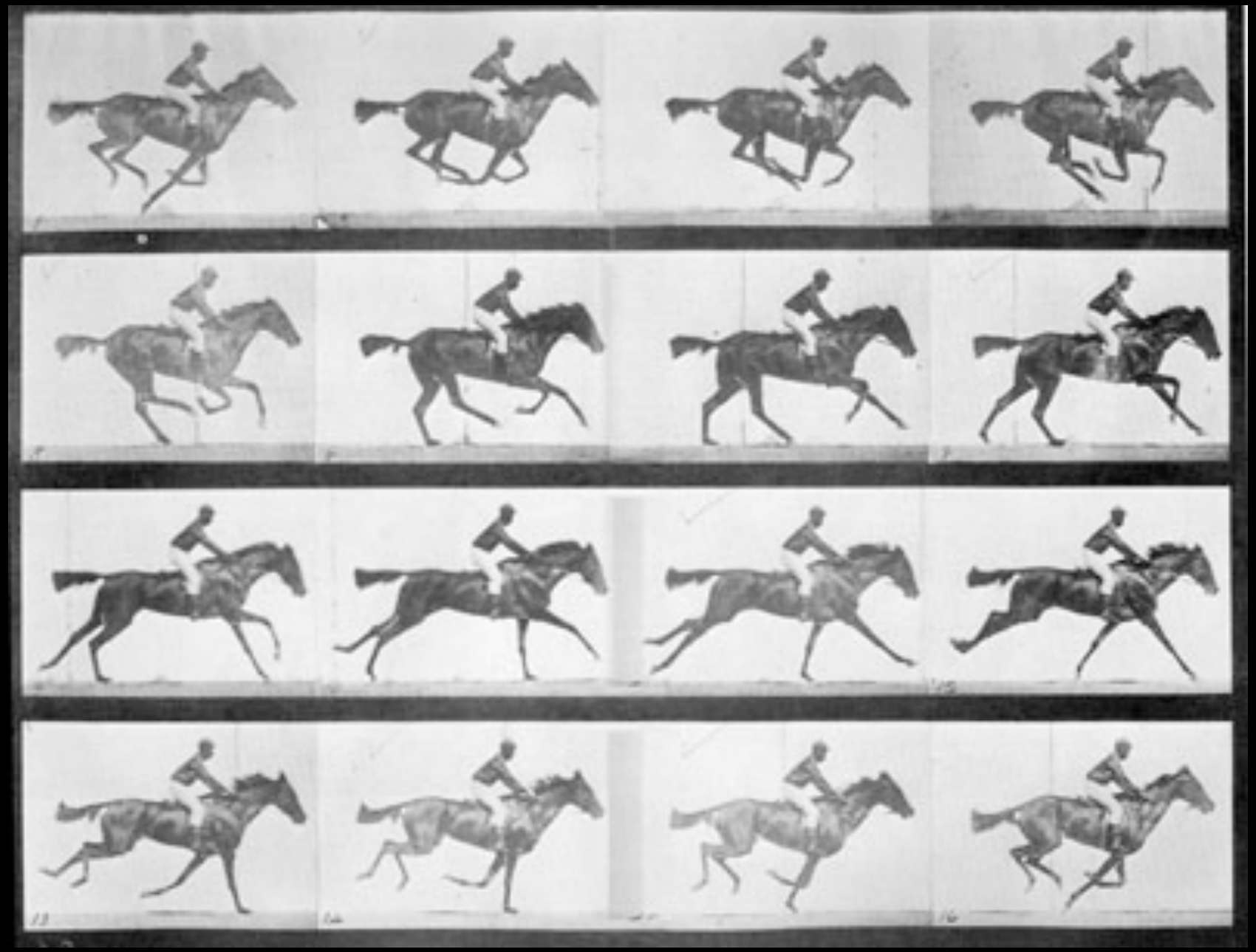
In 1872, former Governor of California Leland Stanford, a businessman and race-horse owner, had taken a position on a popularly-debated question of the day: whether all four of a horse's hooves left the ground at the same time during a gallop. Stanford sided with this assertion, called "unsupported transit", and took it upon himself to prove it scientifically. (Though legend also includes a wager of up to $25,000, there is no evidence of this.) Stanford sought out Muybridge and hired him to settle the question. To prove Stanford's claim, Muybridge developed a scheme for instantaneous motion picture capture.

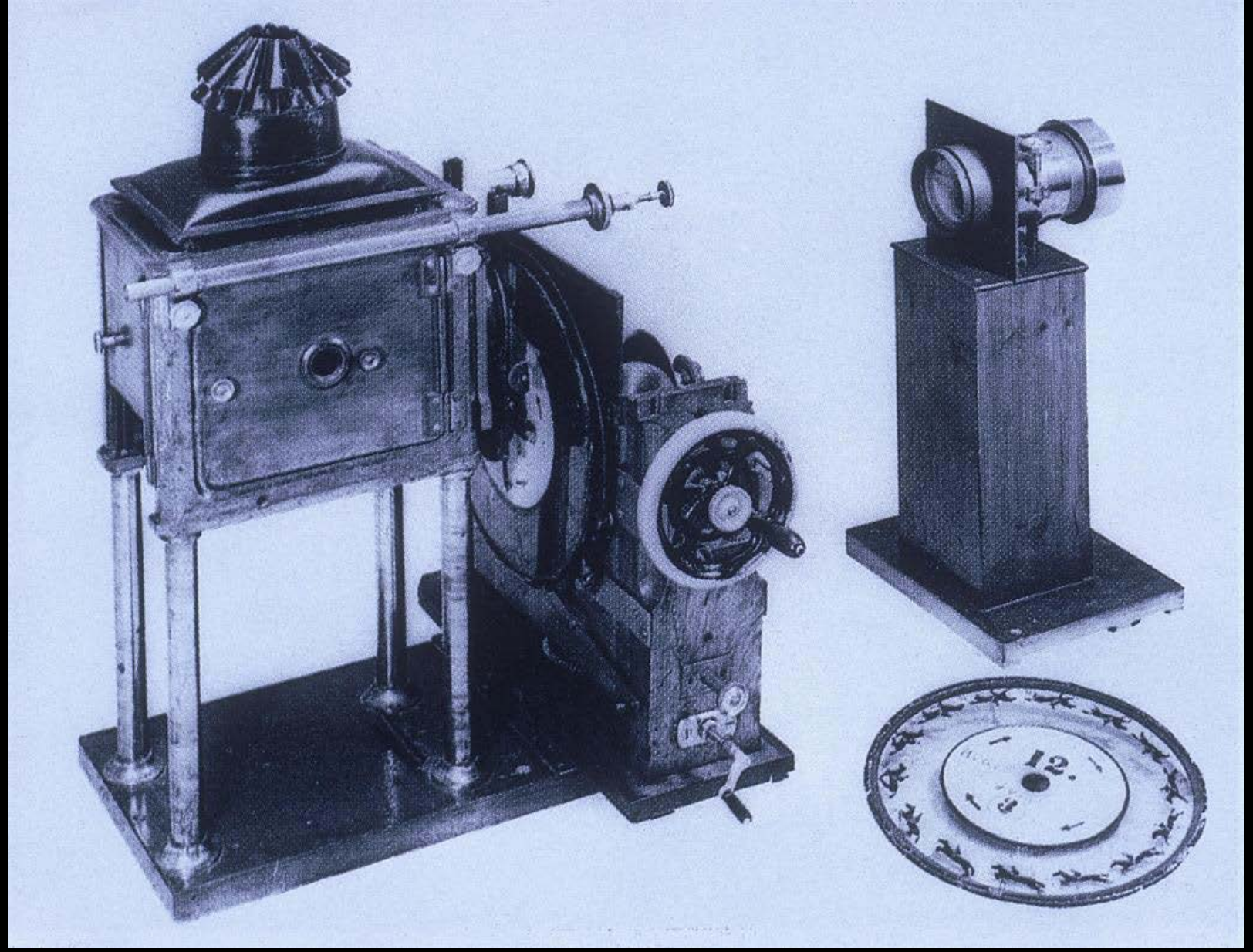


Muybridge's Stanford photographic facility, 1863

Locomotion of a horse and
“unsupported transit”

Muybridge's technology involved chemical formulas for photographic processing and an electrical trigger created by the chief engineer for the Southern Pacific Railroad, John D. Isaacs. In 1877, Muybridge settled Stanford's question with a single photographic negative showing Stanford's racehorse Occident airborne in the midst of a gallop. This negative was lost, but it survives through woodcuts made at the time. By 1878, spurred on by Stanford to expand the experiment, Muybridge had successfully photographed a horse in fast motion using a series of twenty-four cameras. The first experience successfully took place on June 11 with the press present. Muybridge used a series of 12 stereoscopic cameras, 21 inches apart to cover the 20 feet taken by one horse stride, taking pictures at one thousandth of a second. The cameras were arranged parallel to the track, with trip-wires attached to each camera shutter triggered by the horse's hooves.





Eadweard 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.

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

DIAGRAM OF FOOT MOVEMENTS.

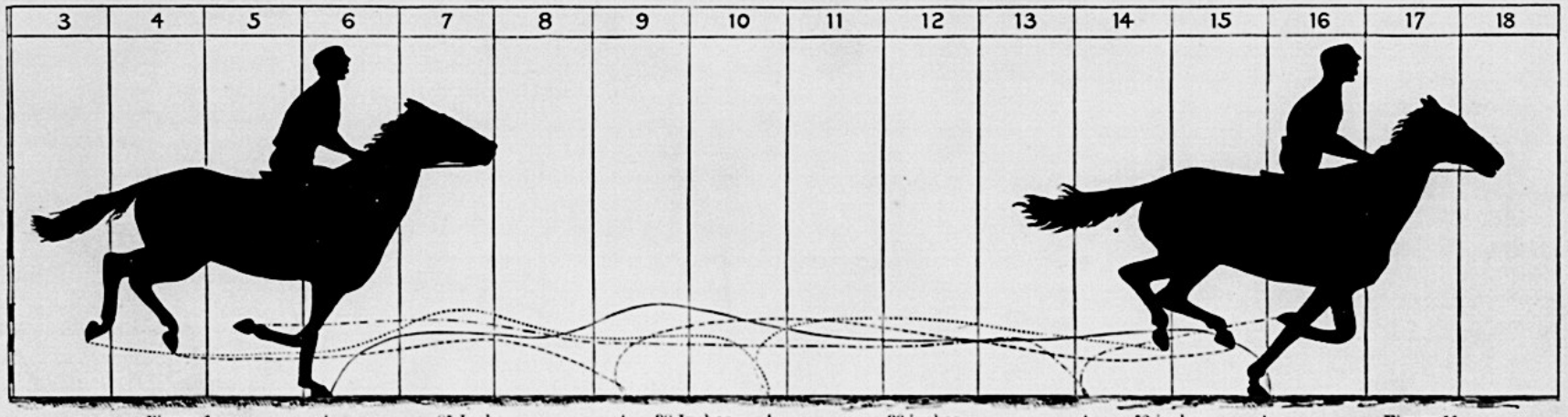


Figure 1 — 85 Inches. — 38 Inches. — 90 inches. — 52 inches. — Figure 11.

Left fore foot. Right hind foot. Left hind foot. Right fore foot. Left fore foot.

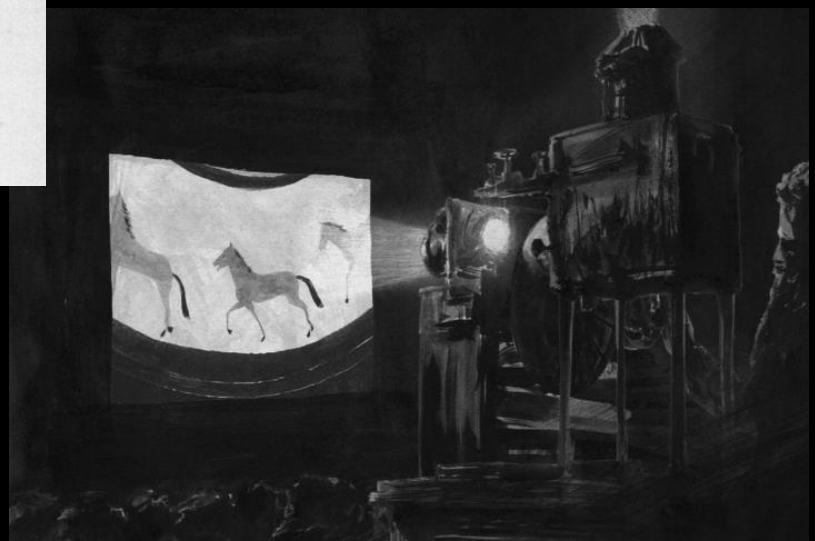
Copyrighted 1879, by MUYBRIDGE. Vertical lines 27 inches apart. Total length of stride, 265 inches.

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.

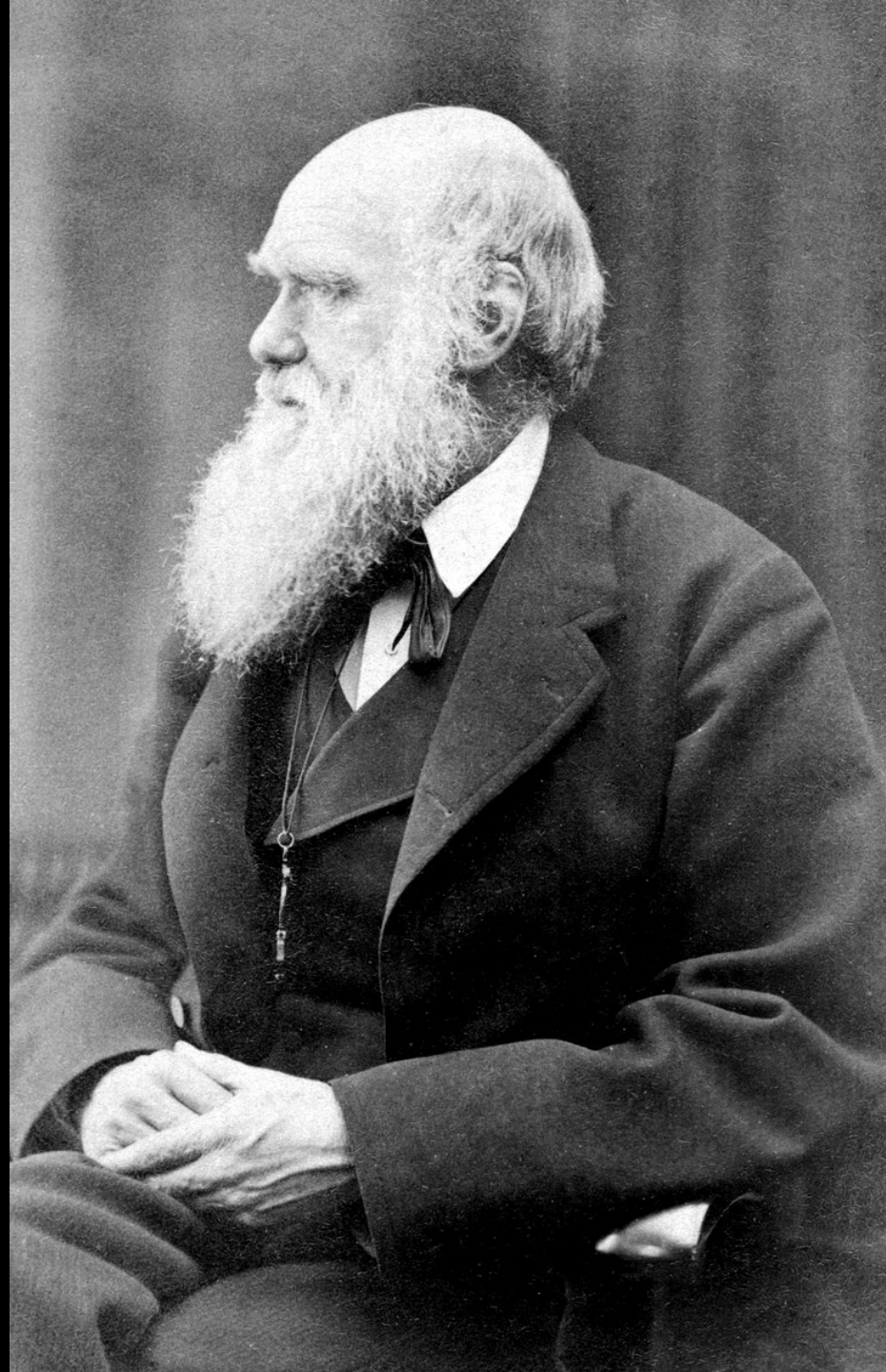
During certain portions of this stride, the feet of the mare were moving with a velocity equivalent to more than 100 lineal feet in a second of time, or nearly three-fourths of an inch, during an exposure of the two-thousandth part of a second. To enhance the usefulness of the photographs, the indistinctness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

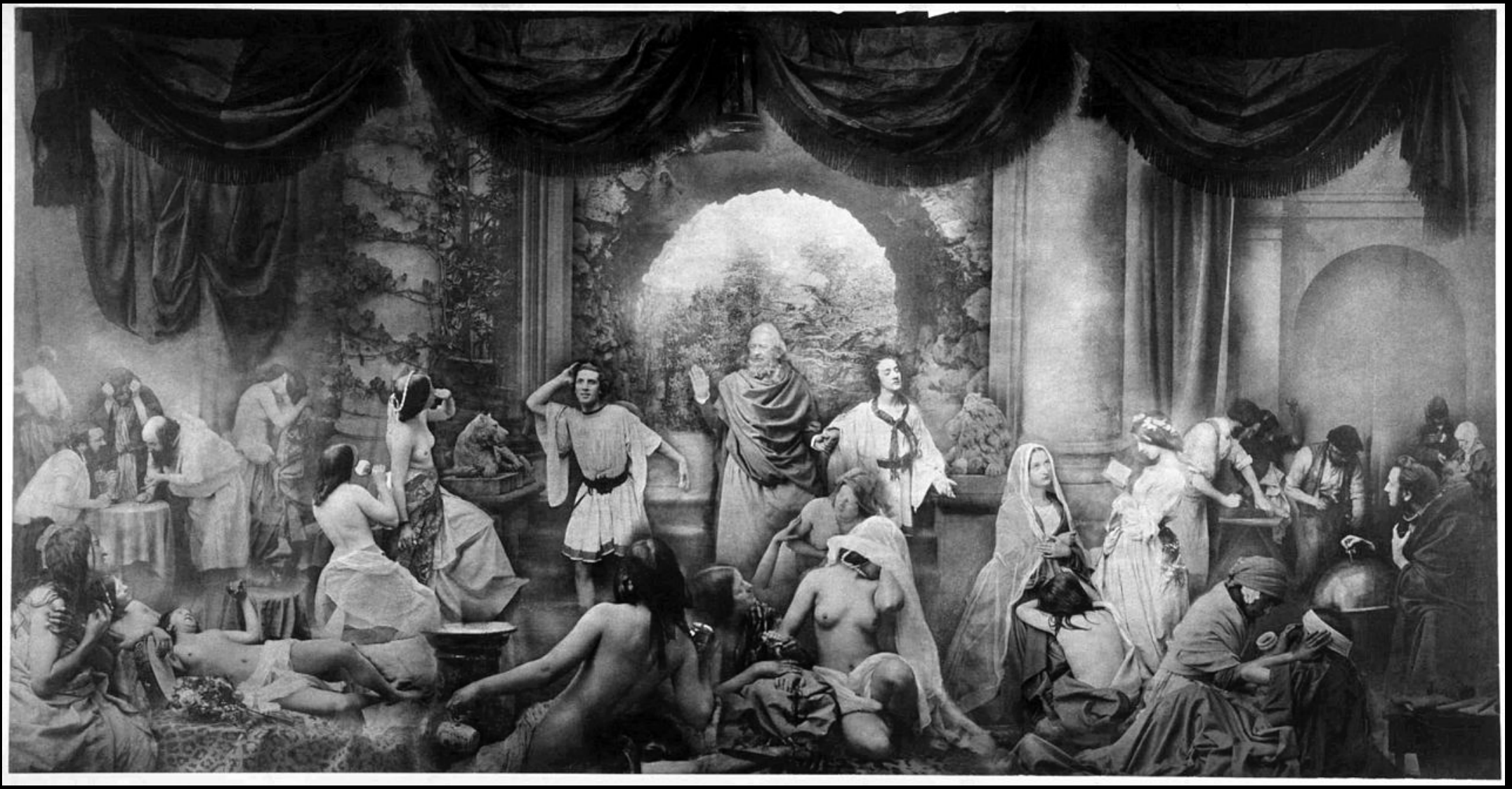


Left: A page of photographs by Oscar Rejlander from the Darwin Archive, 1871-1872. Albumen prints.

Right: Charles Darwin photograph by Oscar Rejlander, circa 1871



Victorian Composite Photography

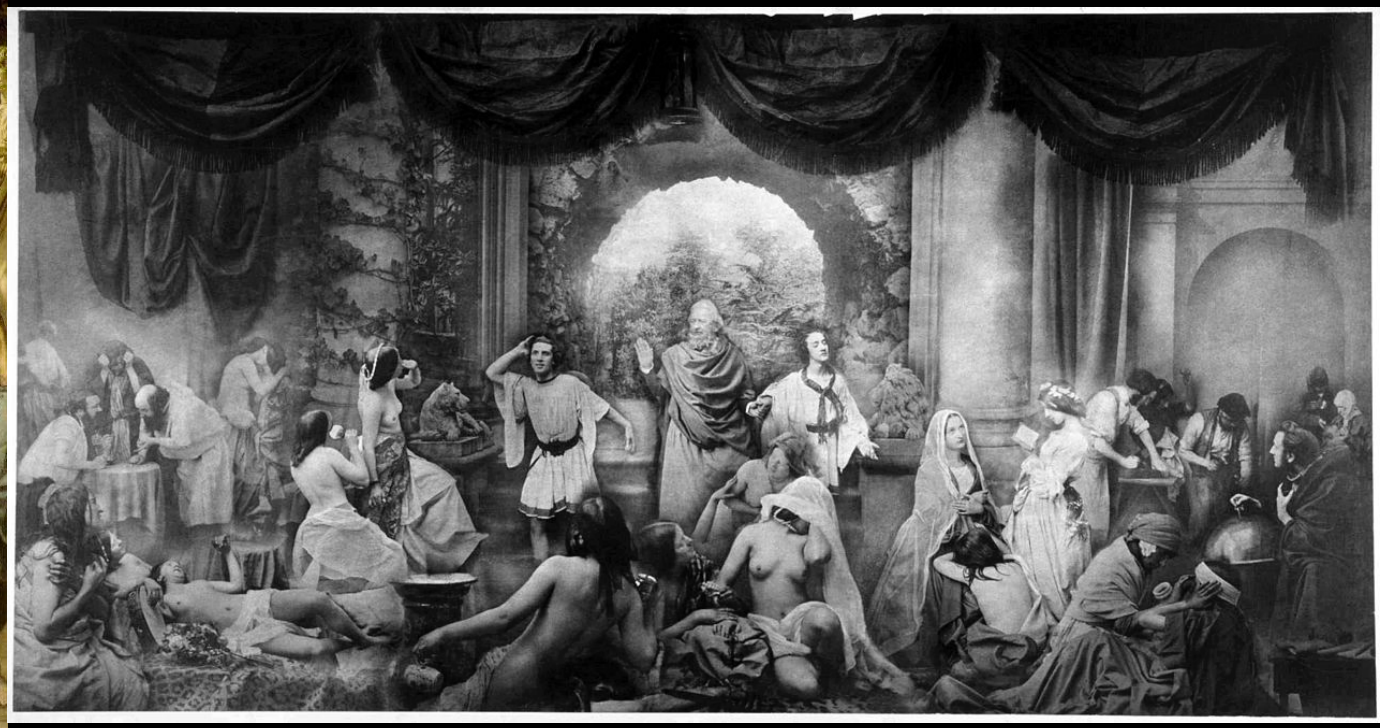


Oscar Gustave Rejlander, Two Ways of Life, 1857

In 1857 he made his best-known allegorical work, The Two Ways of Life. This was a seamlessly montaged combination print made of thirty-two images in about six weeks. First exhibited at the Manchester Art Treasures Exhibition of 1857, the work shows two youths being offered guidance by a patriarch. Each youth looks toward a section of a stage-like tableaux vivant - one youth is shown the virtuous pleasures and the other the sinful pleasures.

classical artistic medium

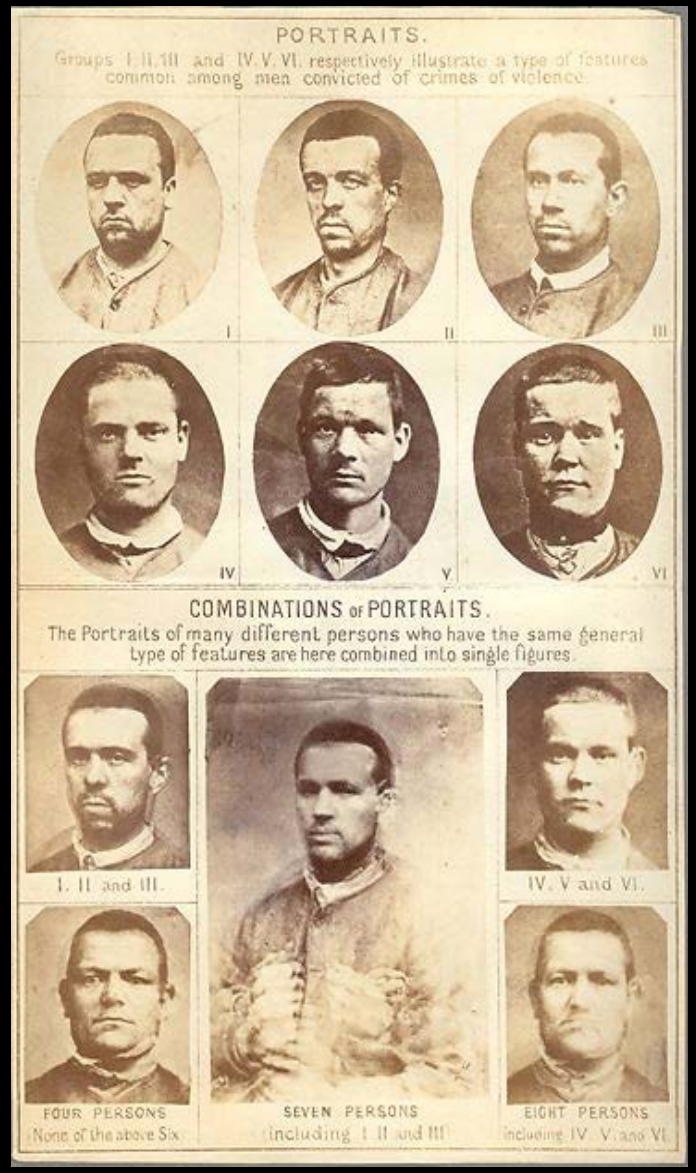
Thomas Couture, The Romans of the Decadence, 1847



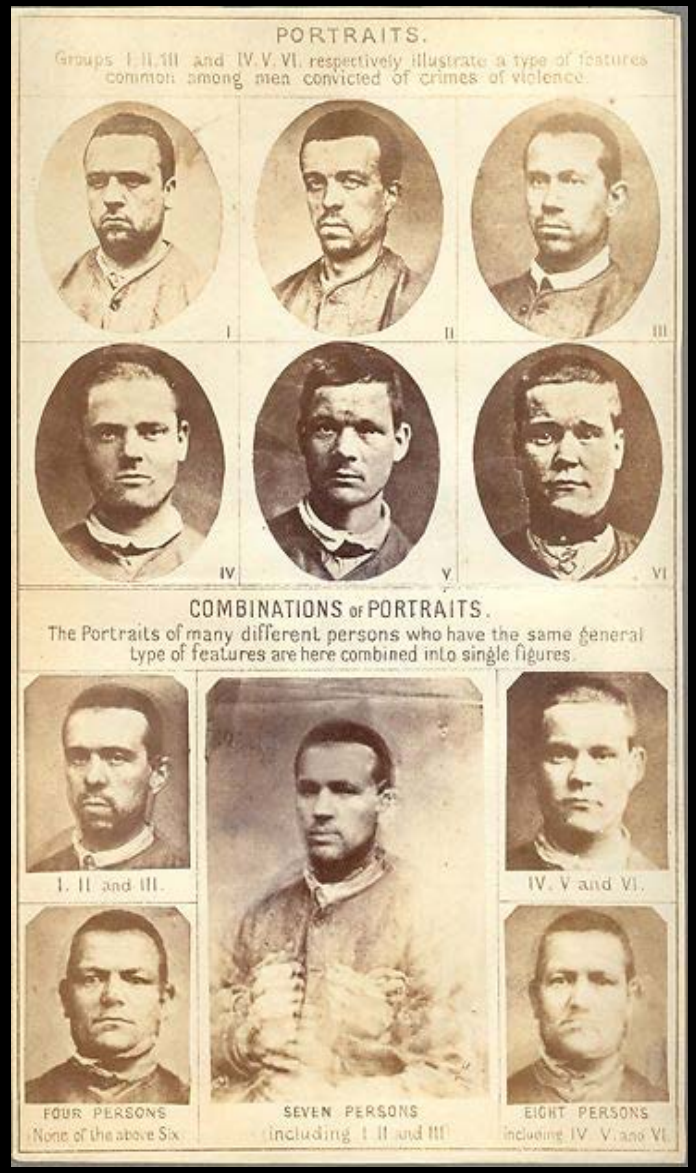
Oscar Gustave Rejlander, Two Ways of Life, 1857


The Head of John the Baptist on a Charger.
Oby. Rylander

Francis Galton and Composite Photography



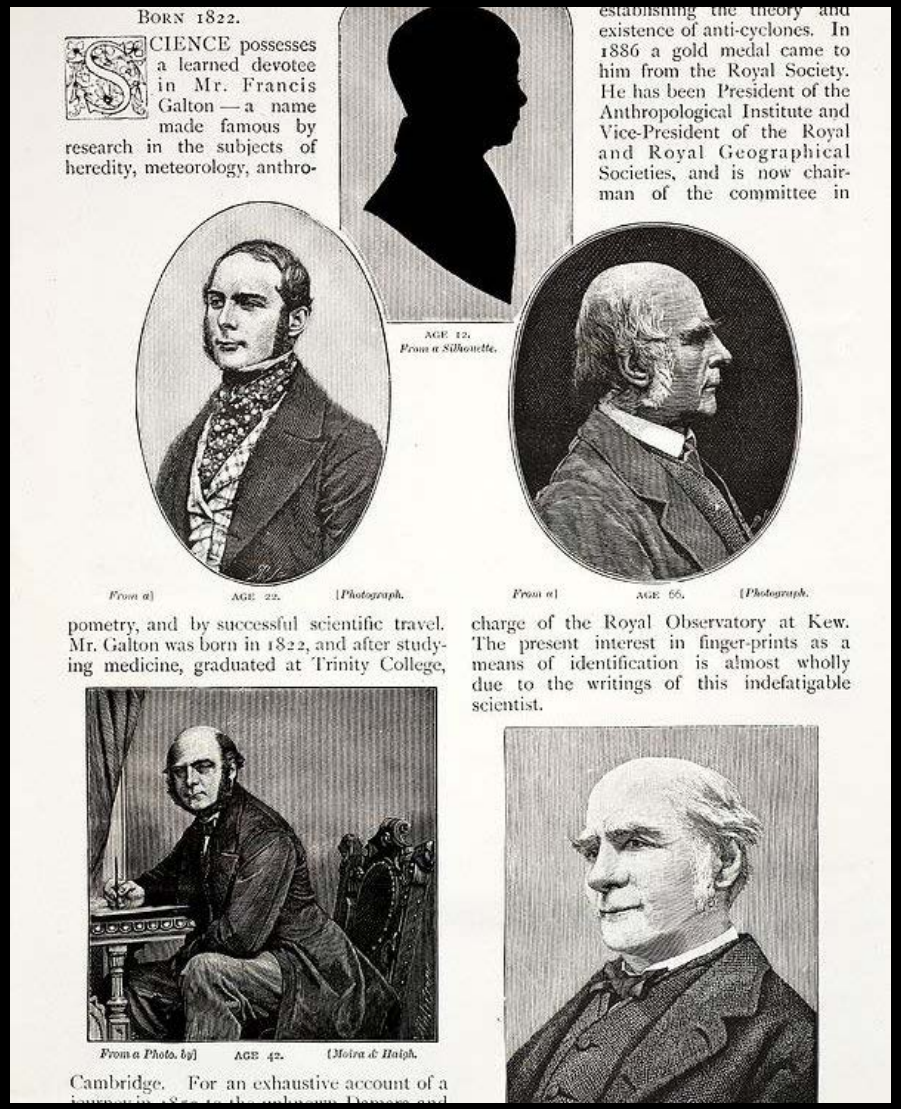
Francis Galton and Composite Photography



Notorious for his ideas about improving the genetic composition of the human population—a field of study he called “eugenics”—Galton devised the technique of composite portraiture as a tool for visualizing different human “types.” He first applied the method to portraits of convicts to determine whether specific facial features could be associated with distinct types of criminality. He later went on to create composite photographs of other segments of the population whose members were considered feeble or socially inferior, including the mentally ill, tuberculosis patients, and Jews. Later, he turned to the “healthy and talented” classes—Anglican ministers, Westminster schoolboys, doctors, scientists, and Royal Engineers.

https://www.metmuseum.org/art/collection/search/301897

Francis Galton, Composite Portraits of Criminal Types, 1877



BORN 1822.

SCIENCE possesses a learned devotee in Mr. Francis Galton — a name made famous by research in the subjects of heredity, meteorology, anthropometry, and by successful scientific travel. Mr. Galton was born in 1822, and after studying medicine, graduated at Trinity College, Cambridge. For an exhaustive account of a

AGE 12. From a Silhouette.

From a] AGE 22. [Photograph.

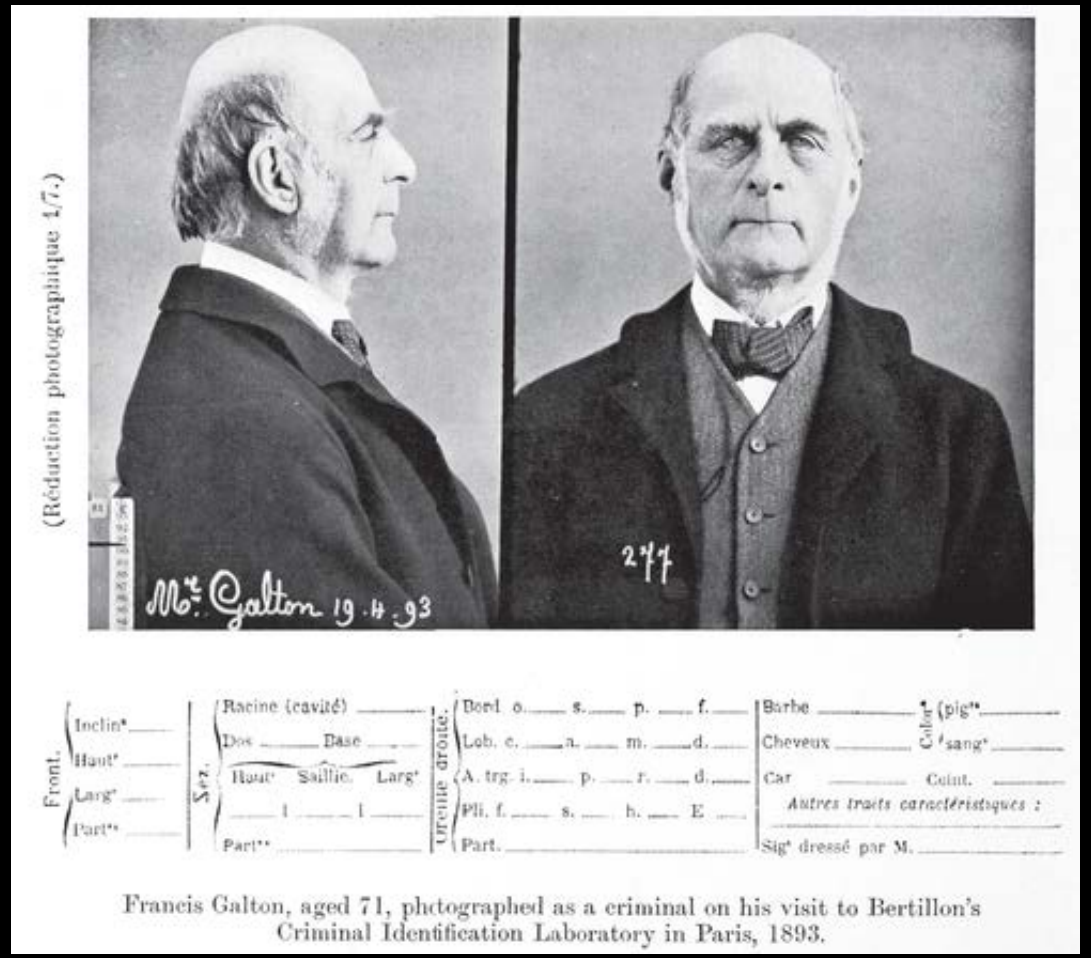
From a] AGE 66. [Photograph.

From a Photo. by] AGE 42. [Moira & Haigh.

establishing the theory and existence of anti-cyclones. In 1886 a gold medal came to him from the Royal Society. He has been President of the Anthropological Institute and Vice-President of the Royal and Royal Geographical Societies, and is now chairman of the committee in charge of the Royal Observatory at Kew. The present interest in finger-prints as a means of identification is almost wholly due to the writings of this indefatigable scientist.

1897 Francis Galton British Eugenics poster by Paul D Stewart.

- In 1865, Darwin's half-cousin Sir Francis Galton published "Hereditary Talent and Character"
- one could apply the principle of artificial selection to humans just as one could in domestic animals, thereby exaggerating desirable human traits over several generations
- Galton coined the term "eugenics, in 1883, bringing together the Greek "eu" meaning "good" or "well" and "genics" meaning "born"
- In order to curtail the genetic pollution created by "inferior" genes, some governments made laws authorizing the forcible sterilization of the "insane, idiotic, imbecile, feebleminded or epileptic," as well as individuals with criminal or promiscuous inclinations
- hundreds of thousands of people were forced or coerced into sterilization worldwide, over 65,000 of them in the country which pioneered the eugenic effort: the USA



Francis Galton, aged 71, photographed as a criminal on his visit to Bertillon's Criminal Identification Laboratory in Paris, 1893.

An anthropometry photograph of Francis Galton at age 71, taken during a visit to Alphonse Bertillon's Criminal Identification Laboratory in Paris in 1893. Bertillon originated the criminal identification programme of face-on and profile photographs together with key biometric measurements. Galton, meanwhile, studied fingerprints and published two major works on the subject.