

Sciences of walking: a history of locomotion research

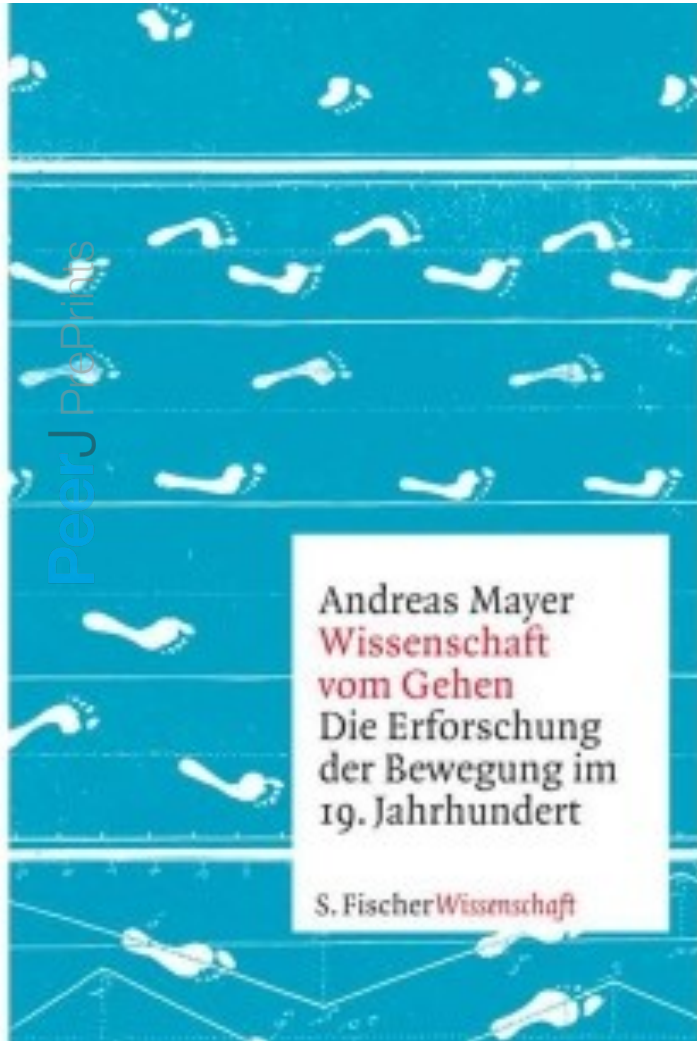
Most people consider walking to be a natural and self-evident activity of everyday life. However, this familiarity turns out to be fragile in the face of the question "Do you *know* how you walk?" The mechanism of walking has puzzled scientists, doctors and writers for a long time. In my book *Wissenschaft vom Gehen* (Fischer, 2013), I have tried to provide a historical account of those forms of investigations of the human gait, some of the famous, others marginal and largely forgotten, that emerged at the intersection of a variety of disciplines (physiology, neurology, orthopedic surgery, anthropology, psychiatry) since the late 18th century. In my paper, I retrace - in five steps - the historical career of the sciences of walking throughout the 19th century.

Sciences of Walking: A History of Locomotion Research

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Andreas Mayer
Centre Alexandre Koyré
Histoire des Sciences et des Techniques
Paris, CNRS-EHESS

« From Gait Labs to the Real World », 2nd Winter Symposium of the Human Motion Project

March 6, 2015, Munich



Five Steps Towards a History of the Sciences of Walking

- 1. Preconditions: Practical Knowledge of Walking in C18
- 2. Observers of Movement: Theories of Walking in the French 'Science of Man'
- 3. Mechanics of the Human Walking Apparatus: Physiological Experiments on the Gait
- 4. Graphic Methods and Locomotion Systems: E-J. Marey's Physiological Gait Lab
- 5. Conclusion: The Centipede's Dilemma

1. Preconditions: Practical Knowledge of Walking in C18

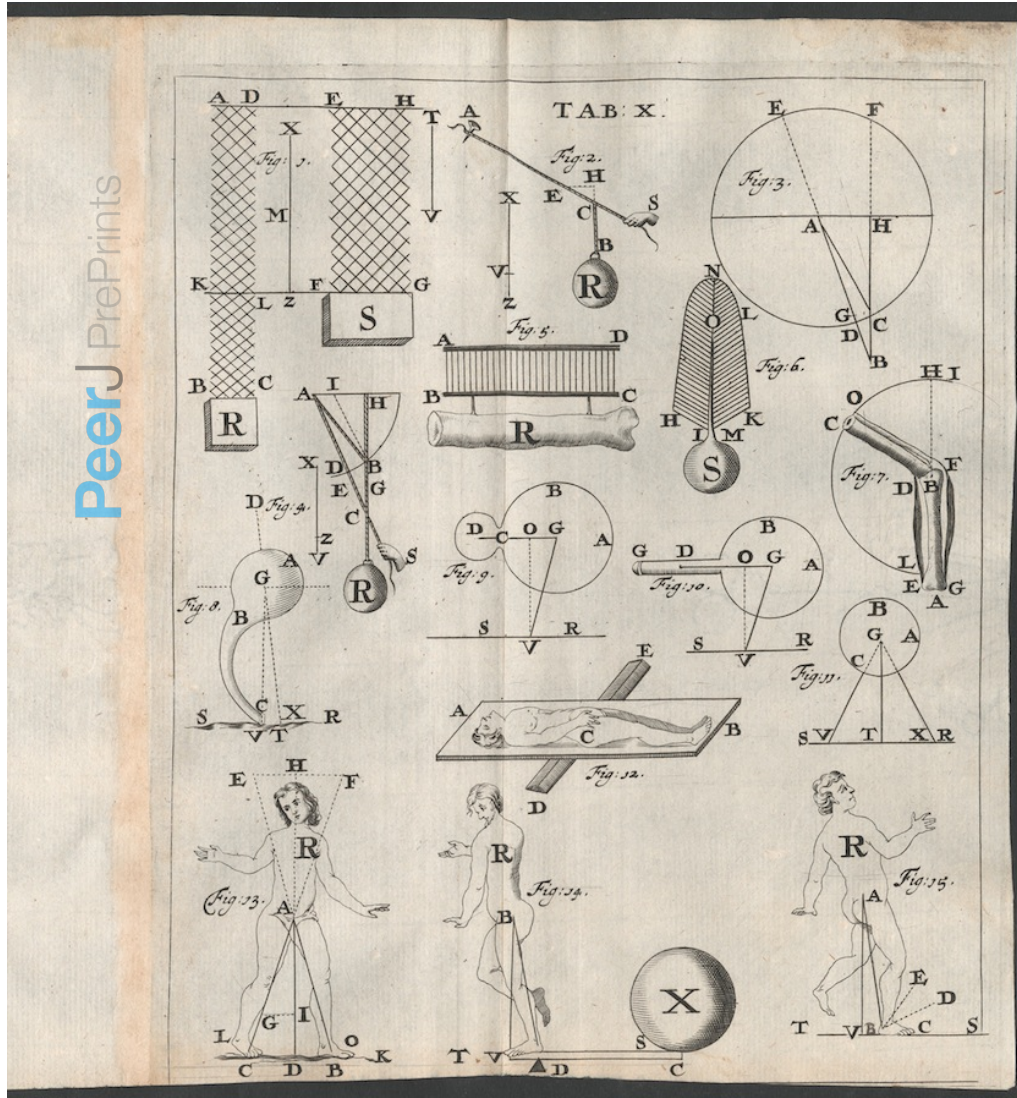
- 1) The Power of Walking: Foot Travel vs. Carriages
- 2) Philanthropic Education and Gymnastics
- 3) Military Marching and Tactical Spaces

J. K. Lavater: Fragments of Physiognomy (1778)

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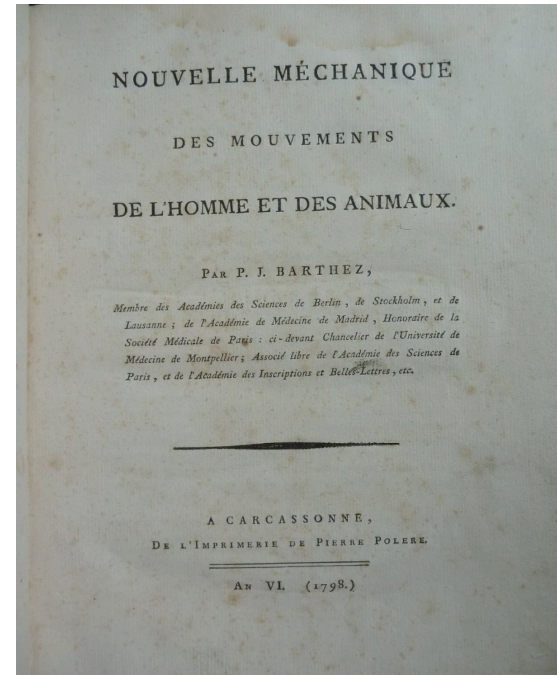


G.A Borelli: *De motu animalium* (1680-81)



2. Observers of Movement: Theories of Walking in the French 'Science of Man'

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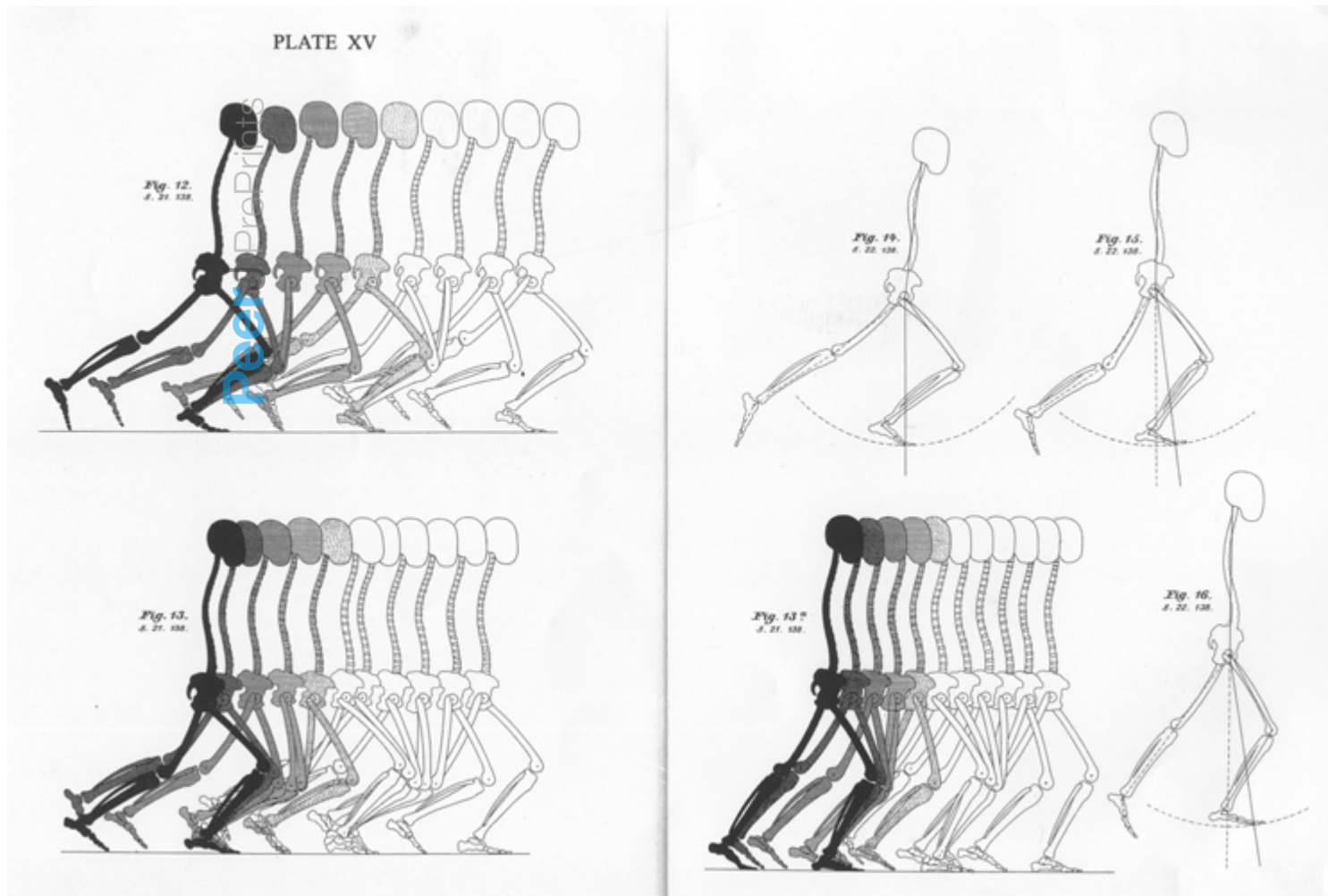


- Paul Joseph Barthez: *Nouvelle Mécanique des mouvements de l'homme et des animaux* (1798)

Walking as « Thinking in Action »

- „Is it not truly extraordinary to realise that ever since man has walked, no-one has ever asked why he walks, how he walks, whether he walks, whether he might walk better, what he achieves by walking, whether he might not have the means to regulate, change or analyse his walk: questions that bear on all the systems of philosophy, psychology and politics with which the world has been preoccupied?“
- Honoré de Balzac (1833), *Théorie de la démarche*

3. Mechanics of the Human Walking Apparatus: Physiological Experiments on the Gait



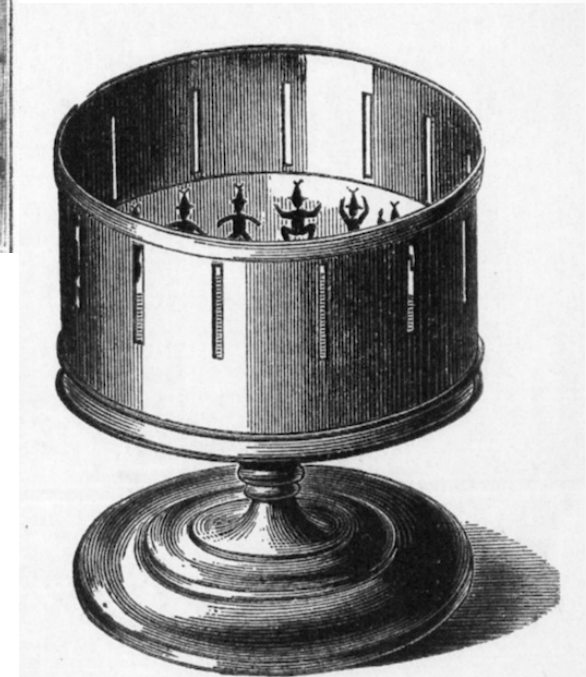
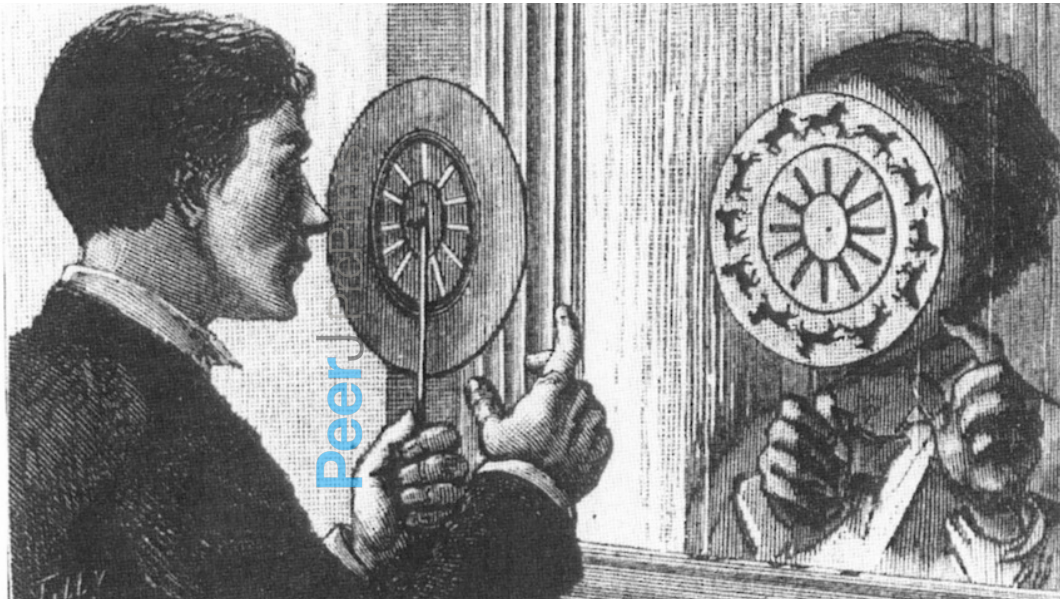
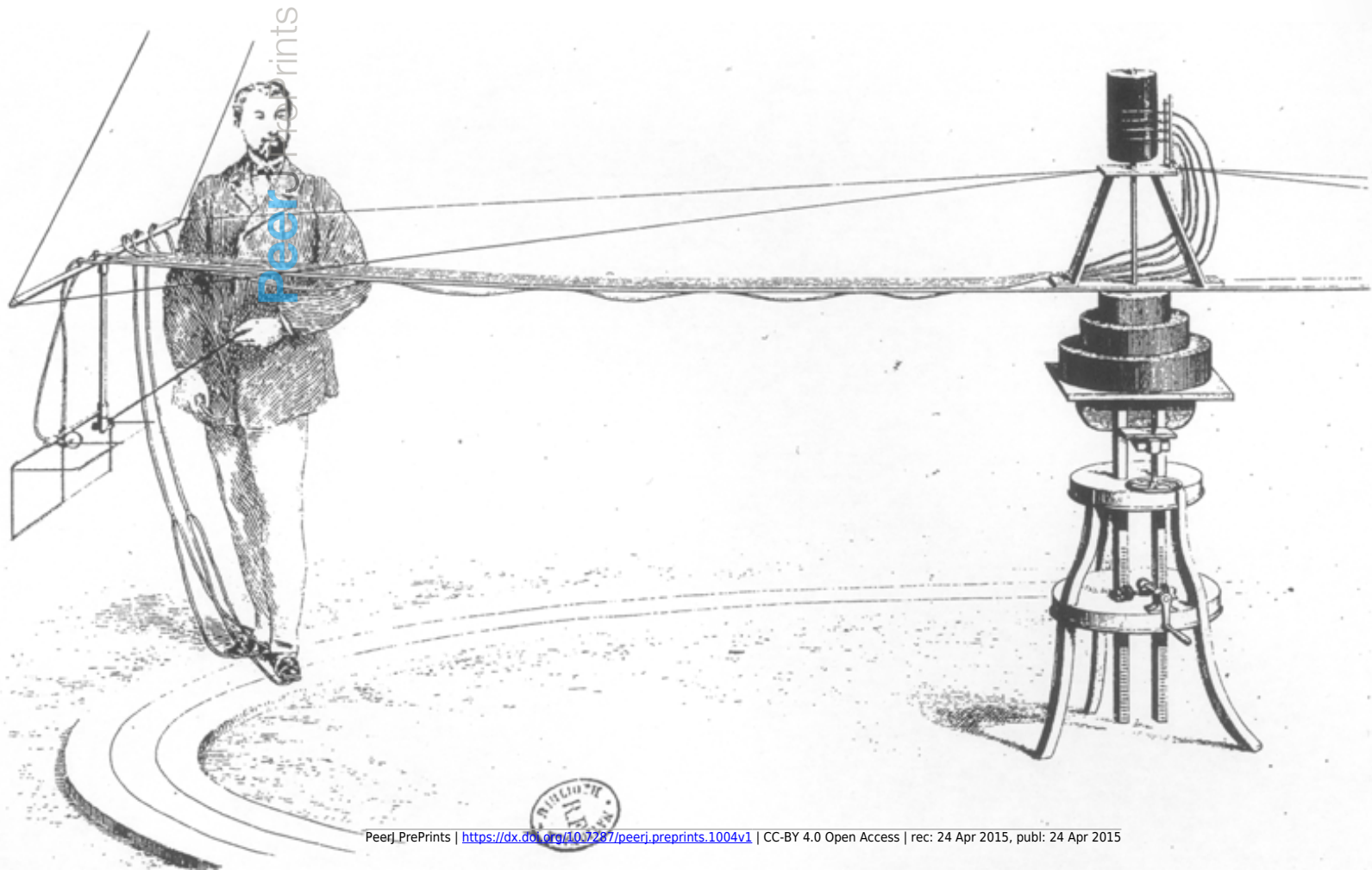


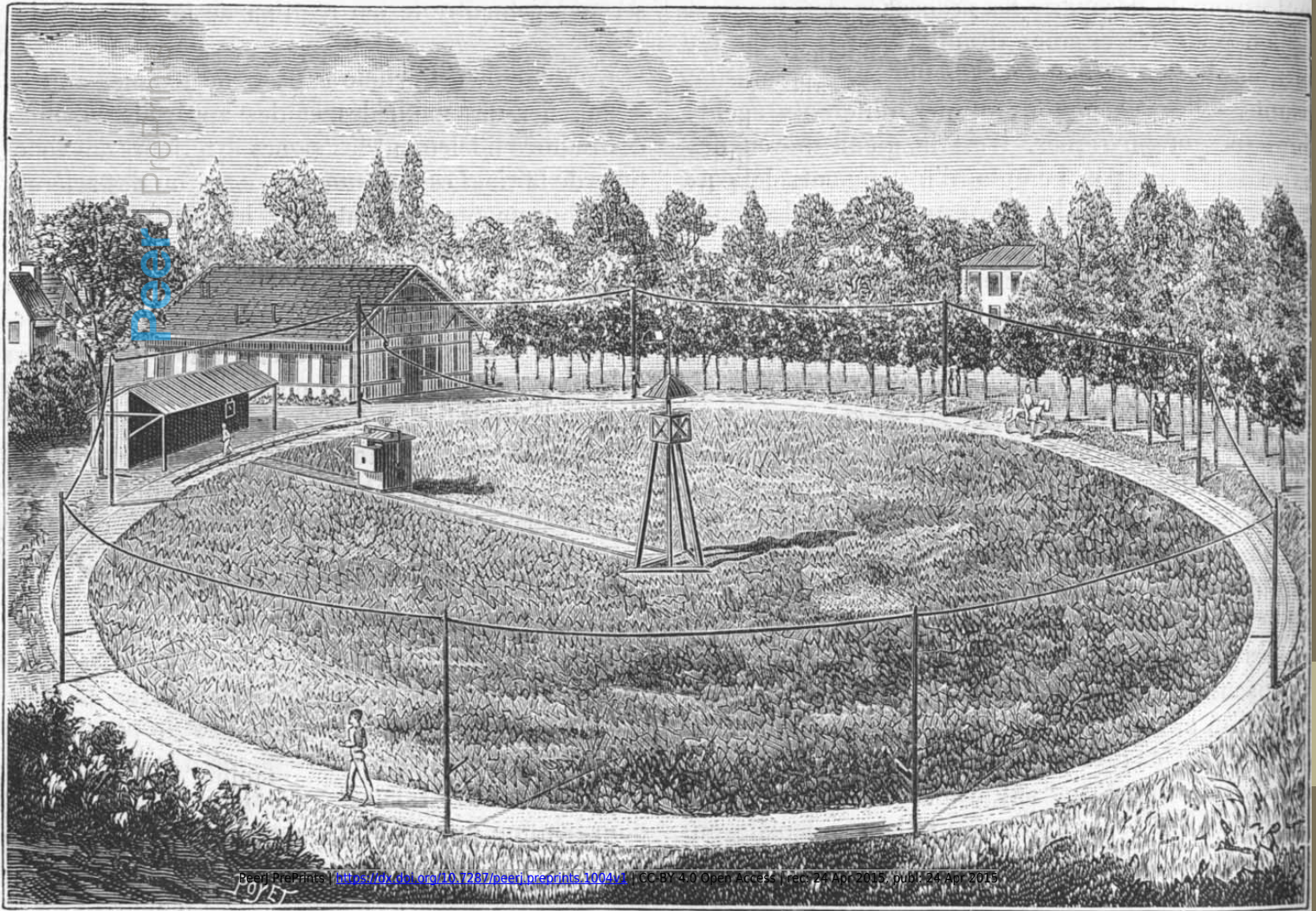
Fig. 771.
Amerikanischer Wundercylinder.

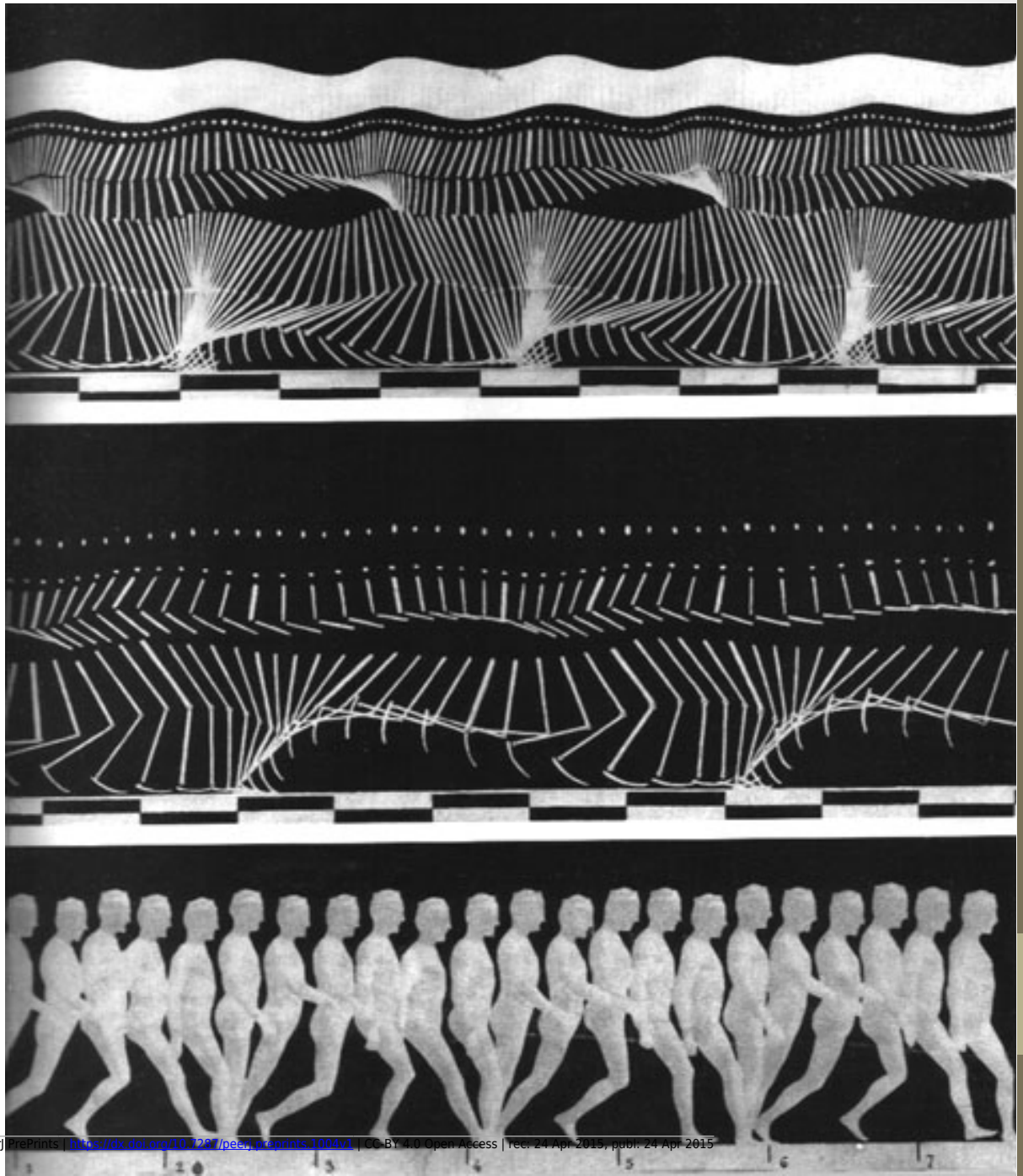
4. Graphic Methods and Locomotion Systems: E-J. Marey's Physiological Gait Lab



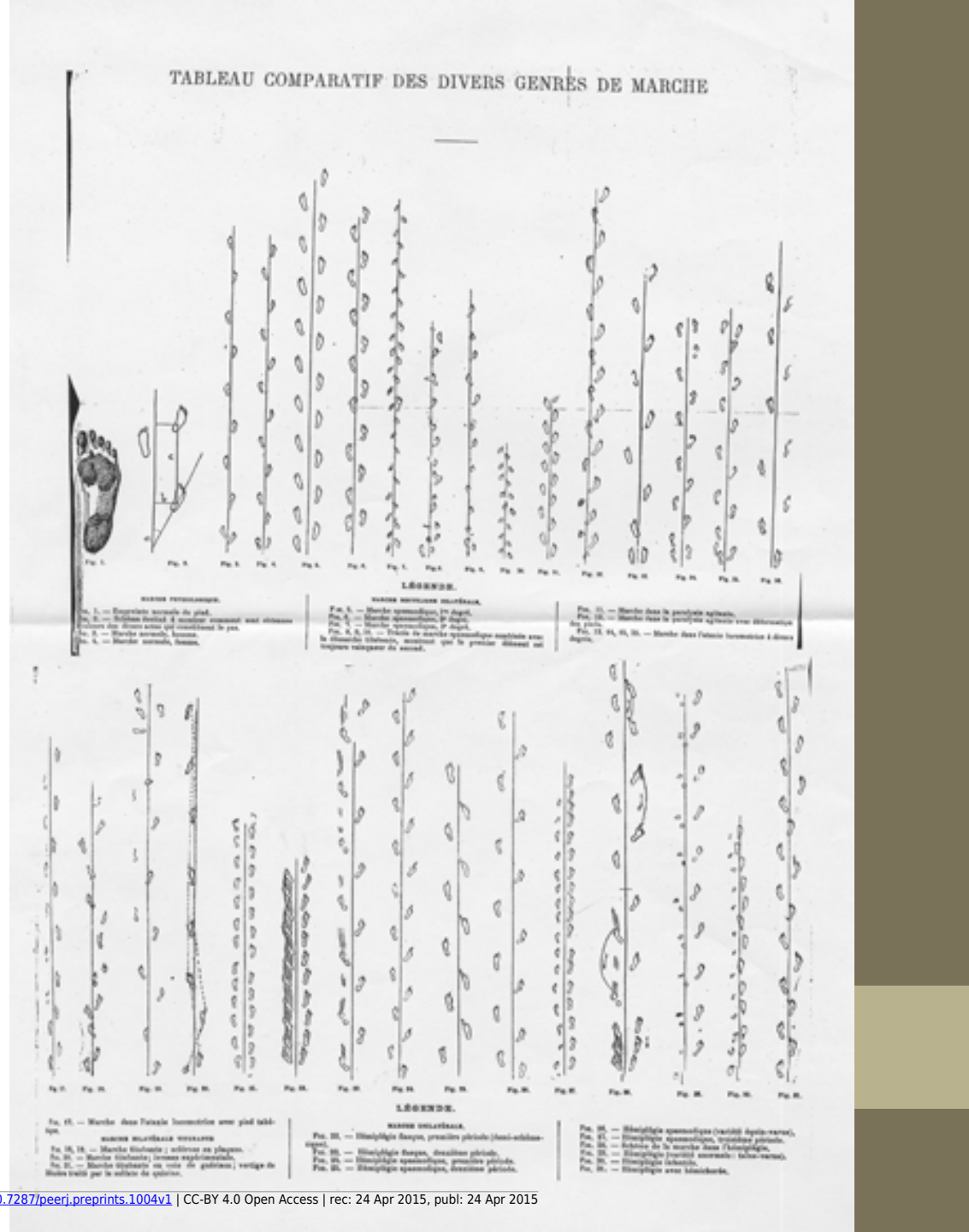


The Physiological Station, Parc des Princes (1883)





Georges Gilles de la Tourette:
Etudes cliniques & physiologiques sur la marche
 (Paris 1885)



5. Conclusion: The Centipede's Dilemma

A centipede was happy – quite!
Until a toad in fun
Said, "Pray, which leg moves after which? »
This raised her doubts to such a pitch,
She fell exhausted in the ditch
Not knowing how to run.

Anonymous, *The Centipede's Dilemma*