



**Stuart S. Sumida / Kathleen Devlin
Biology 342**

Locomotion: High Speed Gaits in Mammalian Herbivores

RUNNING GAITS

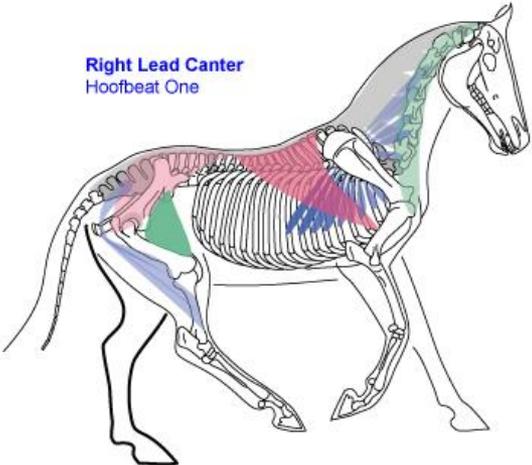
- In four-legged mammals, a running gait is one where some part of the step cycle is spent in suspension – with all four limbs out of contact with the ground
- The most standard high-speed gait in dogs is the rotary gallop.
- The canter is an asymmetrical and infrequently used gait in dogs. When used it is often as a transition from the gallop as the animal is slowing down. It is also sometimes used when playing and the impression of speed is combined with interaction with other animals.

CANTER

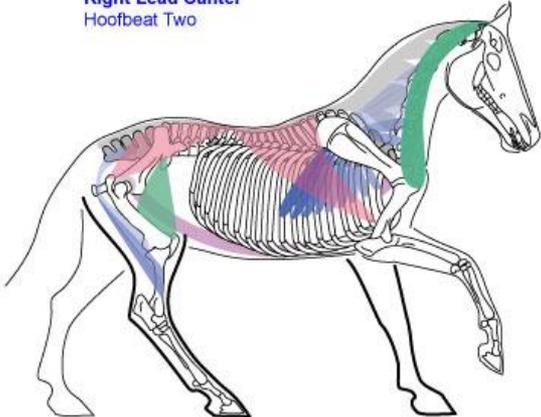
- The canter is a 3 beat gait. The beat sequence begins with a rear leg, moves to the paired diagonals and then finally the front leg diagonal to the hind leg in the first beat. The animal is then briefly suspended before the sequence is repeated.
- If the right hind leg strikes the ground it is referred to as a left lead will if the left hind leg strikes the ground first it is a right lead.
- The canter is an infrequently used gait in dogs. When used it is often as a transition from the gallop as the animal is slowing down. It is also sometimes used when playing and the impression of speed is combined with interaction with other animals.

CANTER (in a horse)

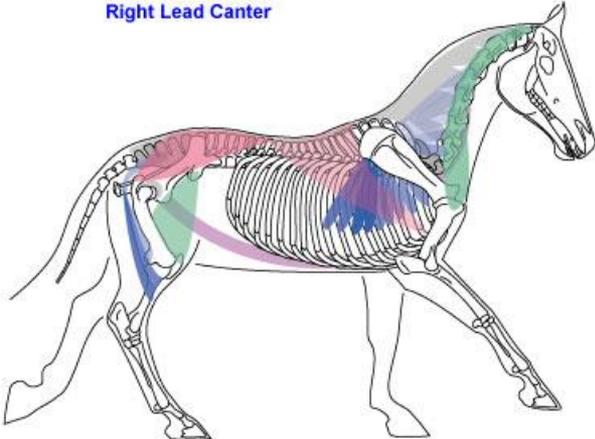
Right Lead Canter
Hoofbeat One



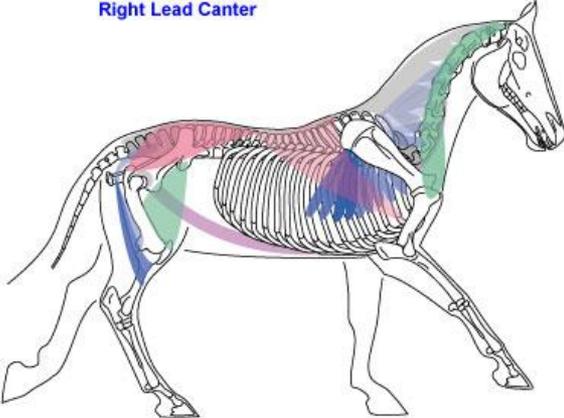
Right Lead Canter
Hoofbeat Two



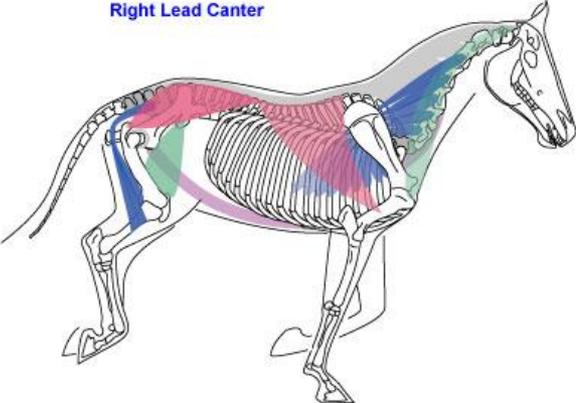
Right Lead Canter



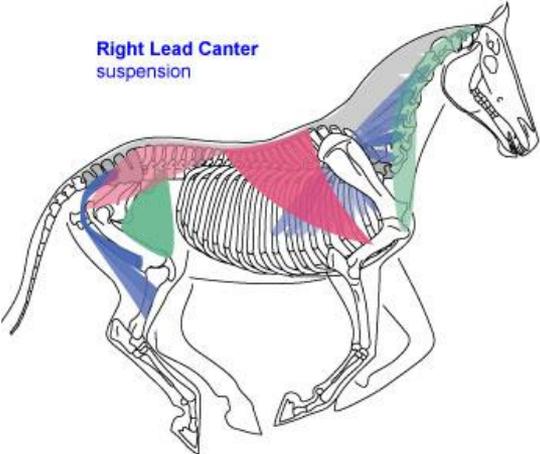
Right Lead Canter



Right Lead Canter



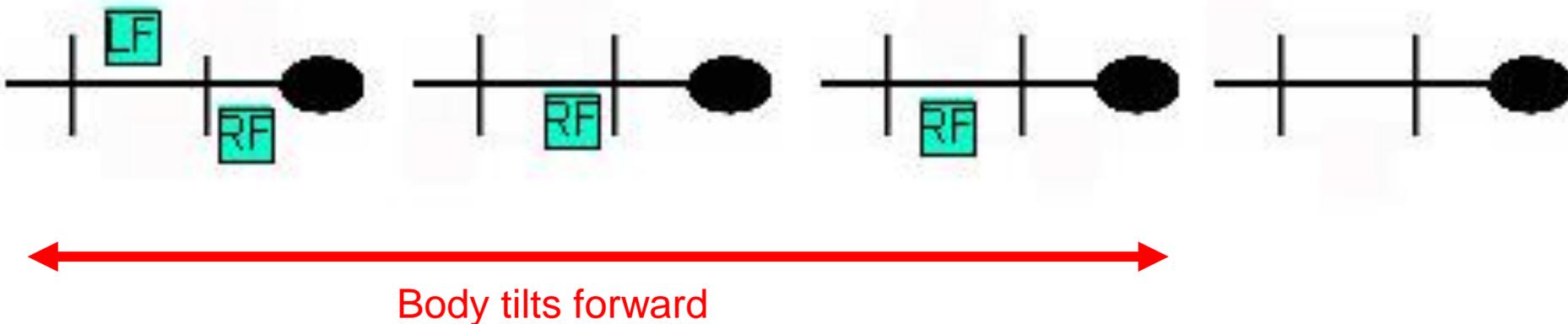
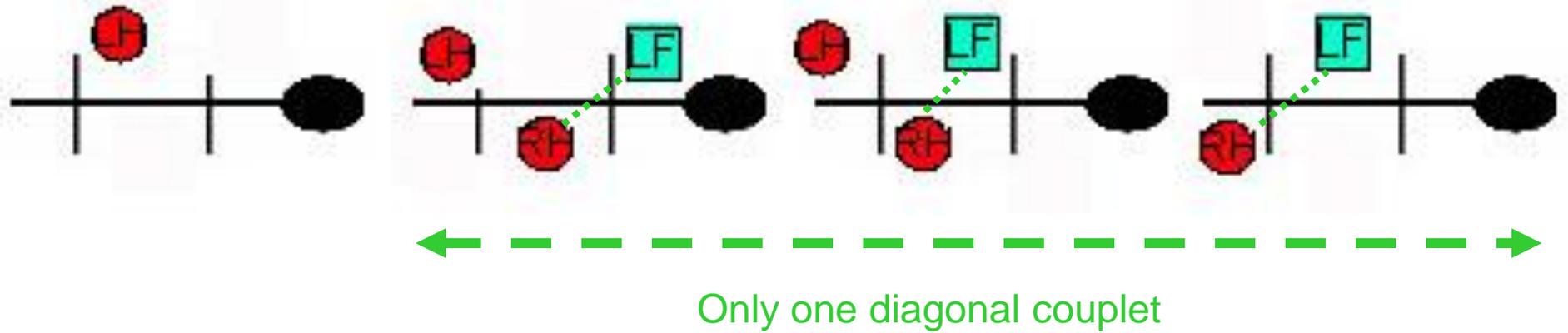
Right Lead Canter
suspension

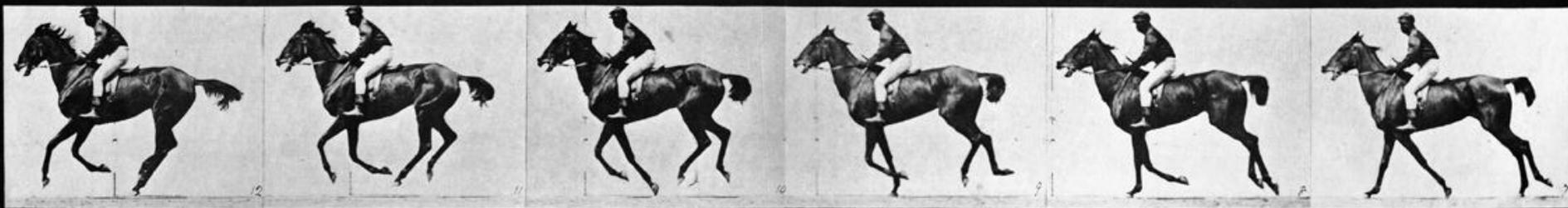
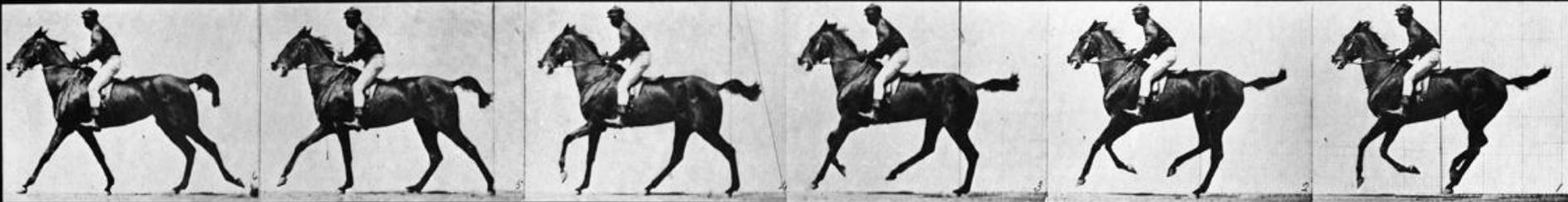


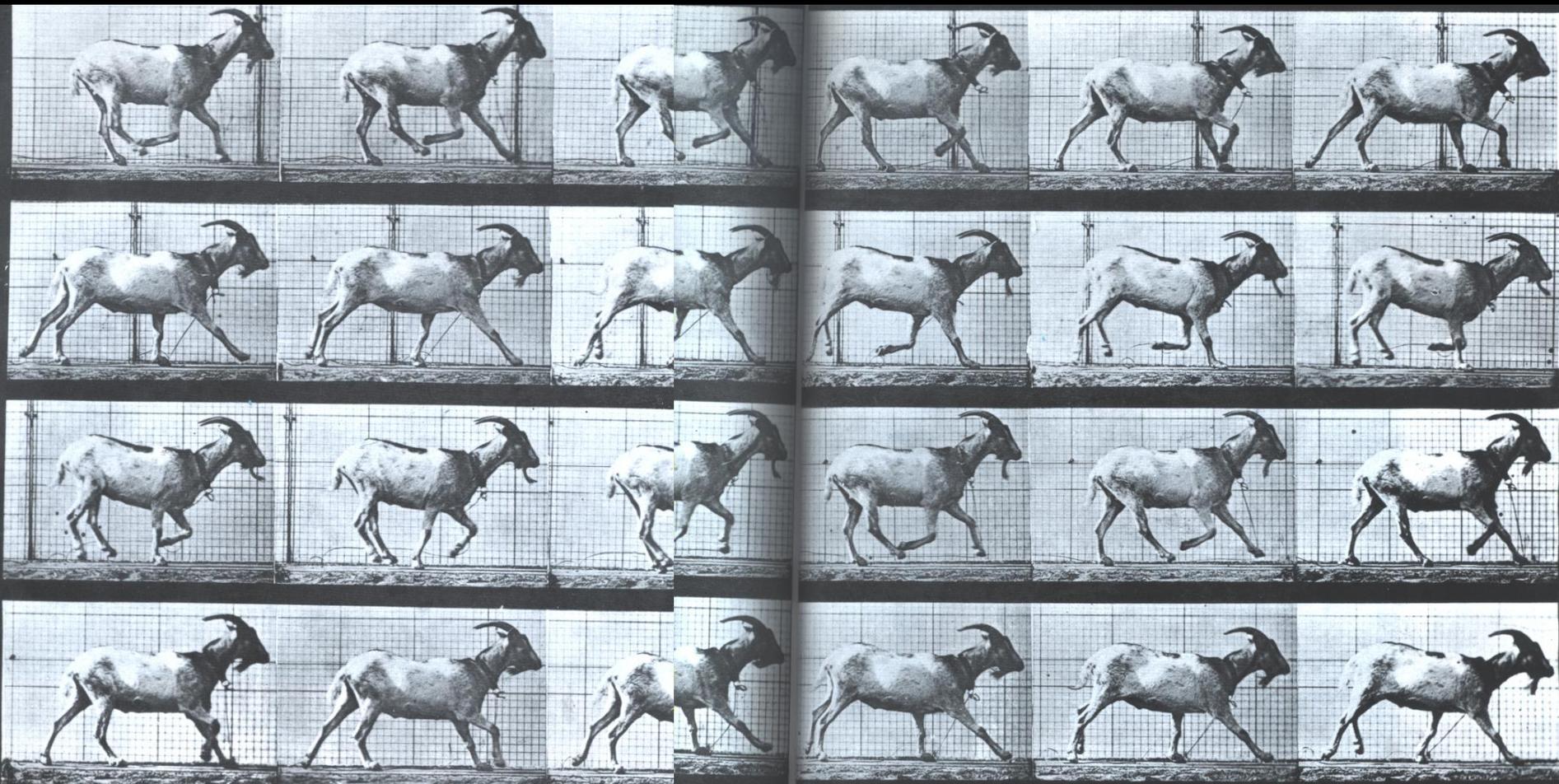


CANTER

The canter is a 3 beat gait. The beat sequence begins with a rear leg, moves to the paired diagonals and then finally the front leg diagonal to the hind leg in the first beat. The animal is then briefly suspended before the sequence is repeated.

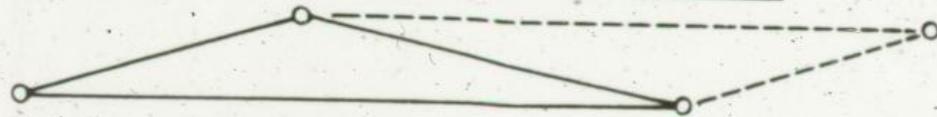
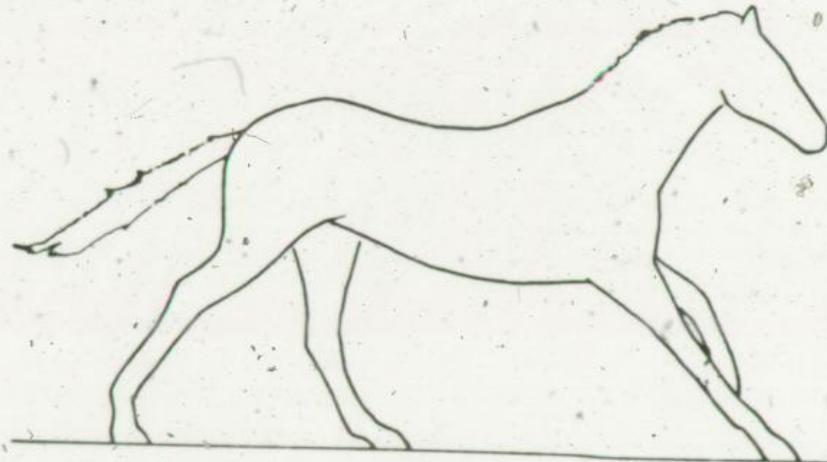




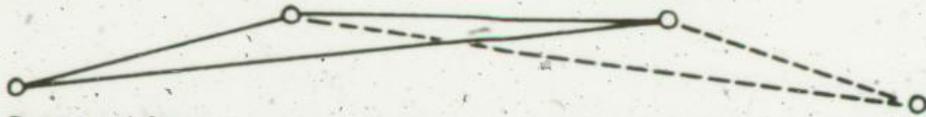
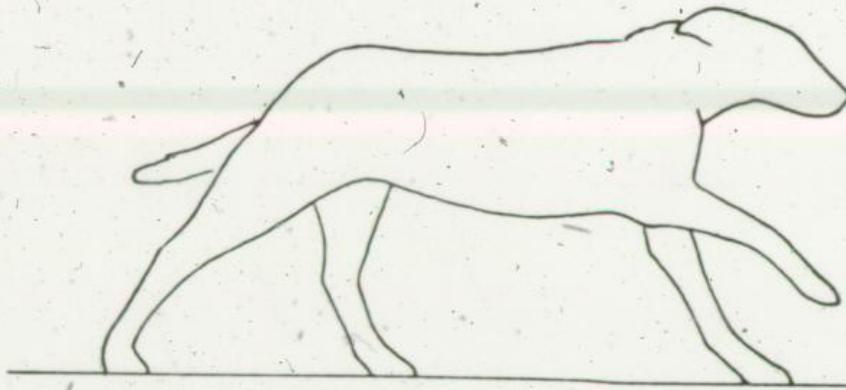


GALLOP

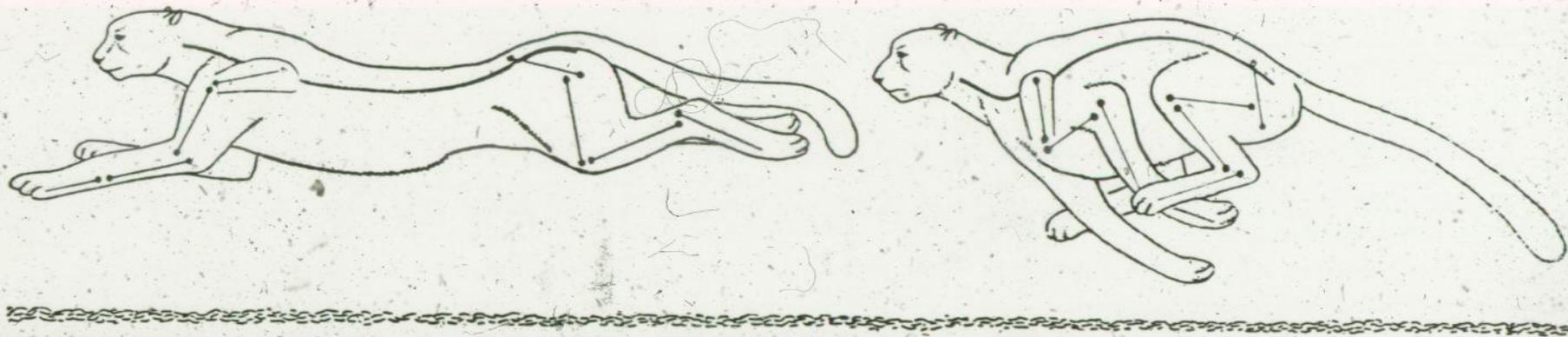
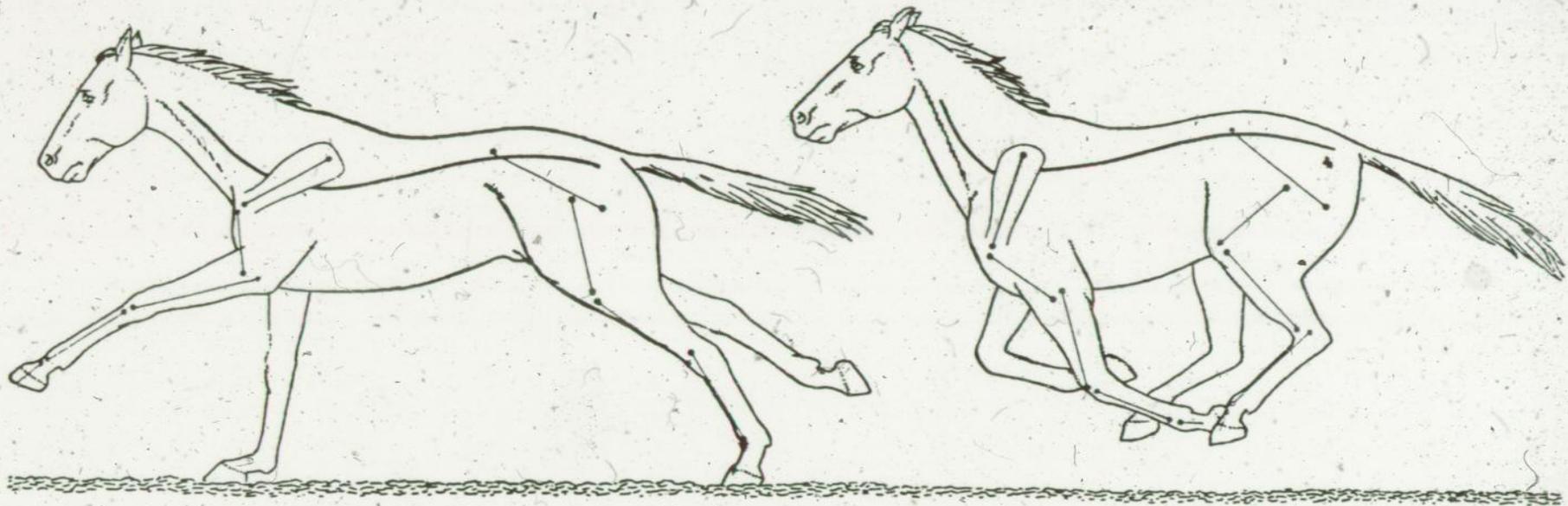
- In four-legged mammals, the highest speed gait is the gallop. It is a four-beat gait, with each limb contacting independent of the other three.
- In horses, the gallop usually has only a single suspension, or floating phase, with the limbs gathered underneath only, and not when extended forward and back.
- The footfall sequence tends to be: right hind, left hind, right, front, left front. (Or left hind, right hind, left front, right front.)

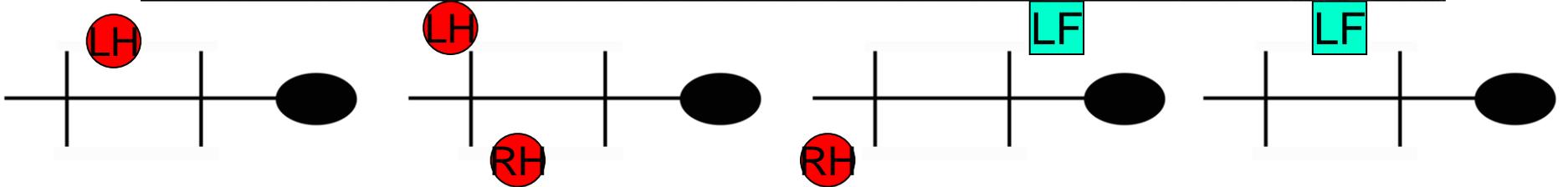
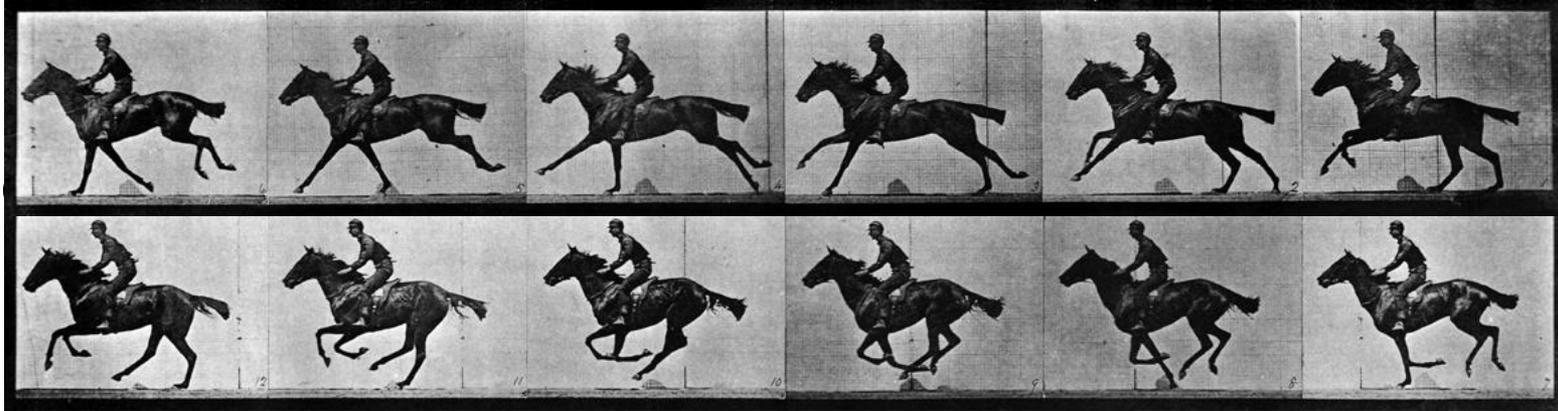


Transverse gallop

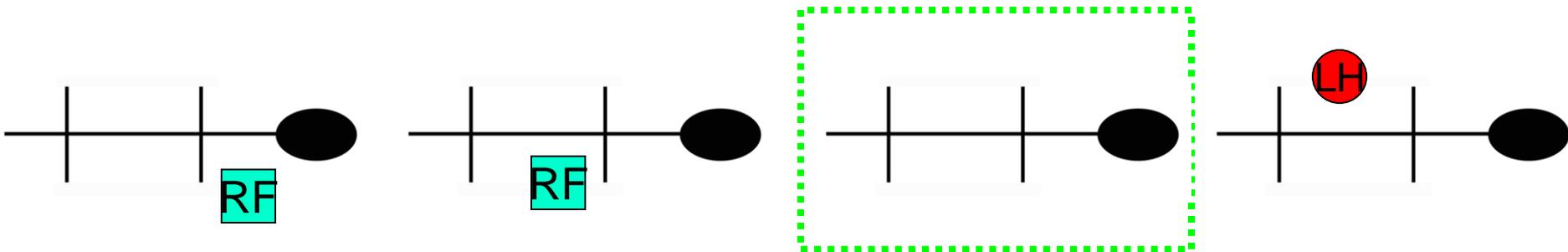


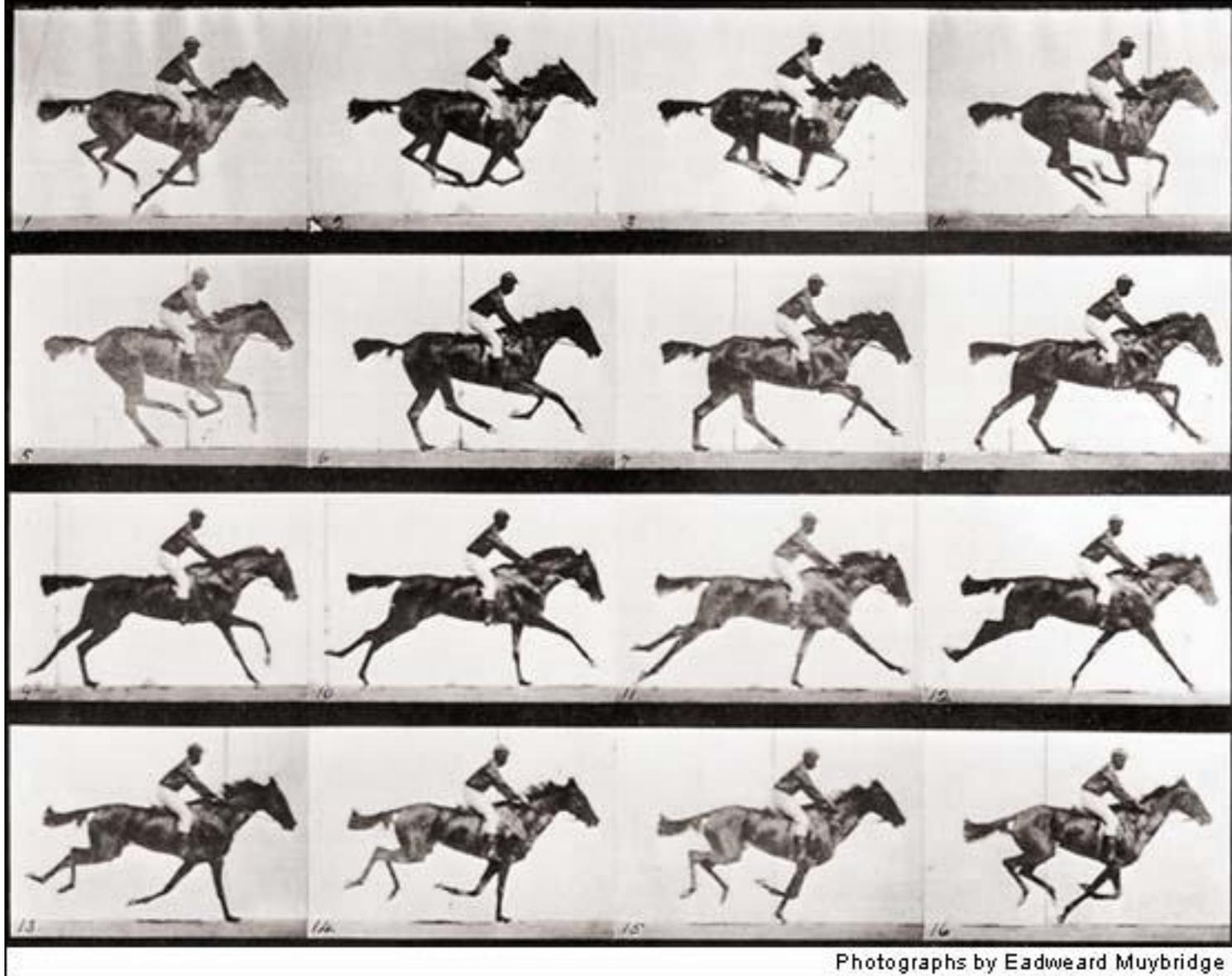
Rotary gallop





Equine Transverse Gallop with **GATHERED** floating phase.





Photographs by Eadweard Muybridge



SECOND HIND
FIRST HIND
FIRST FRONT
SECOND FRONT



ONE STRIDE



SECOND HIND
FIRST HIND
FIRST FRONT

TIME (SECONDS)

1

2

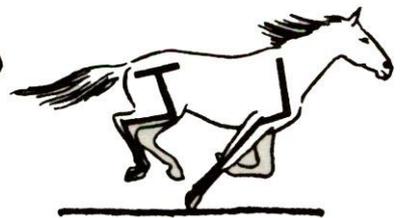
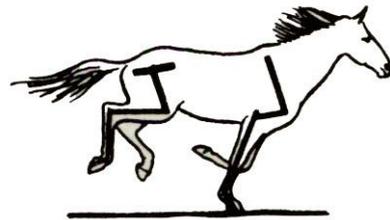
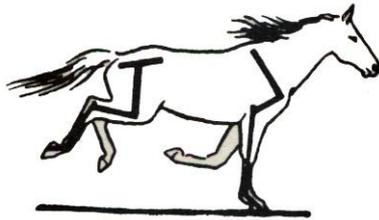
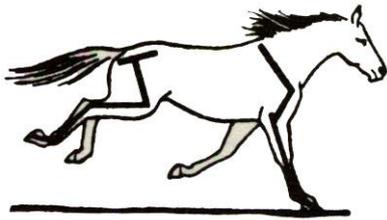
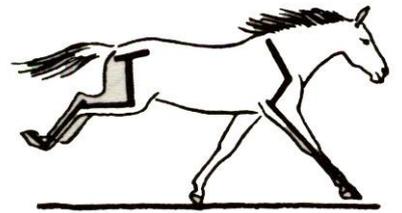
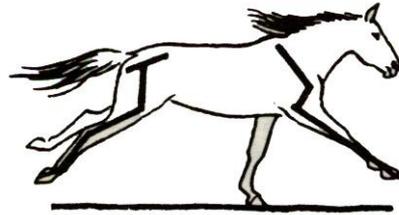
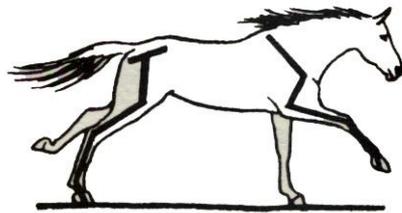
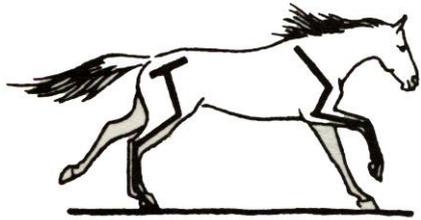
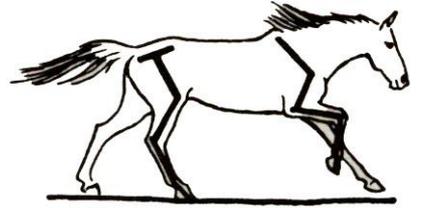
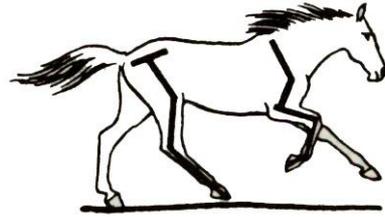
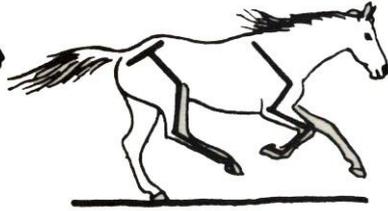
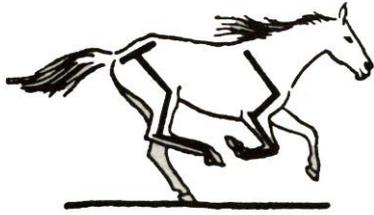
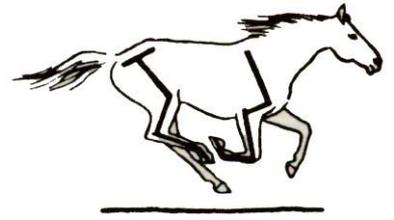
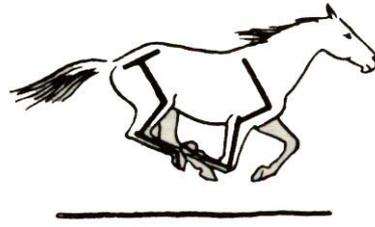
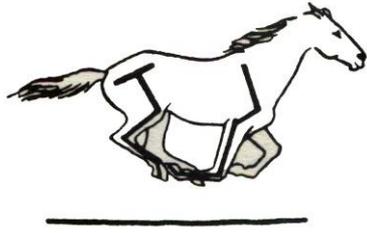
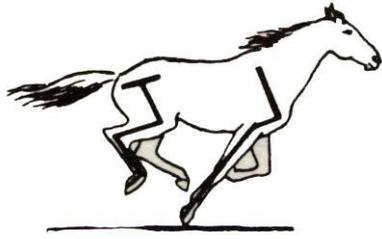


SECOND FRONT

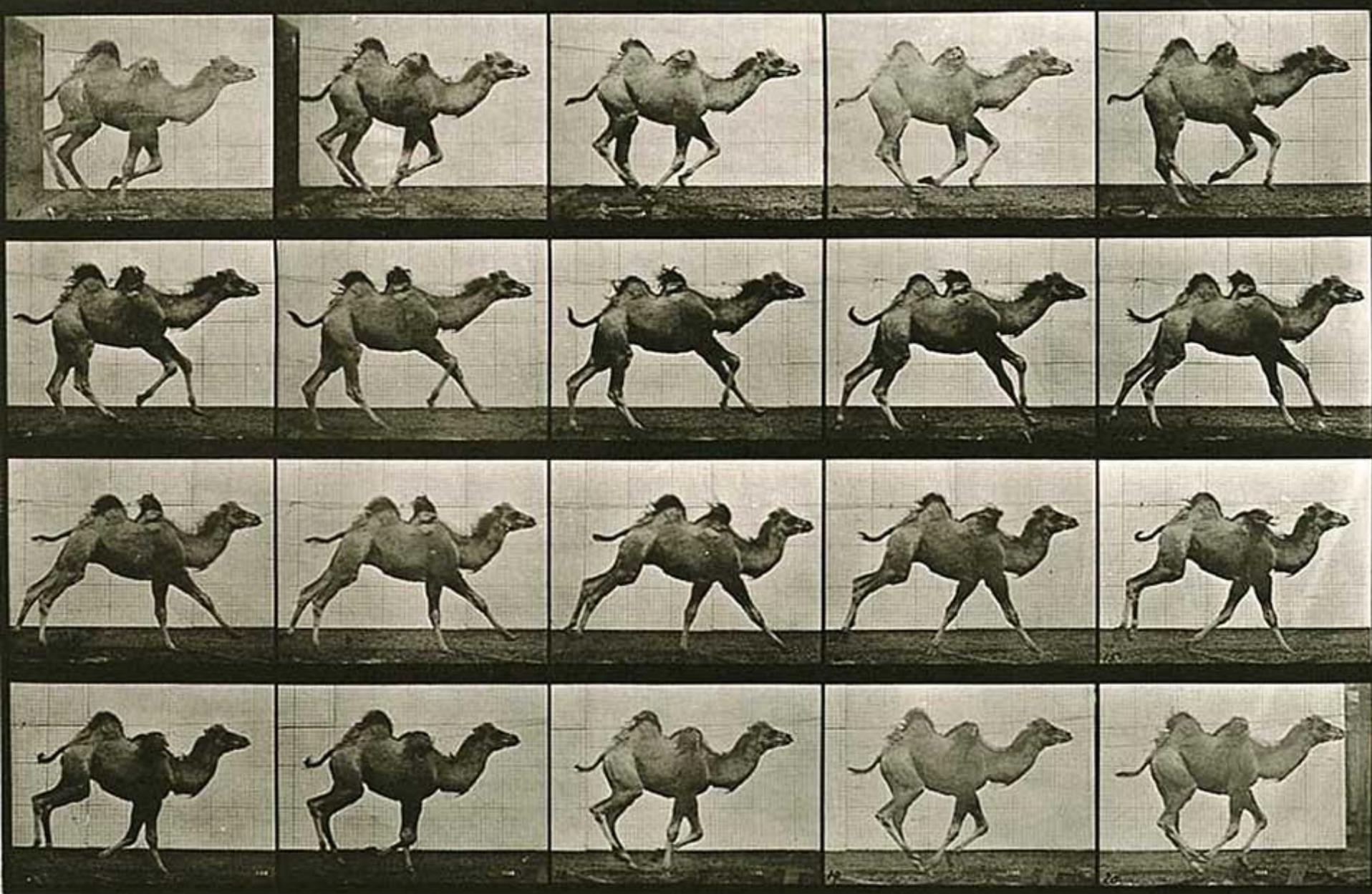
ONE STRIDE

3

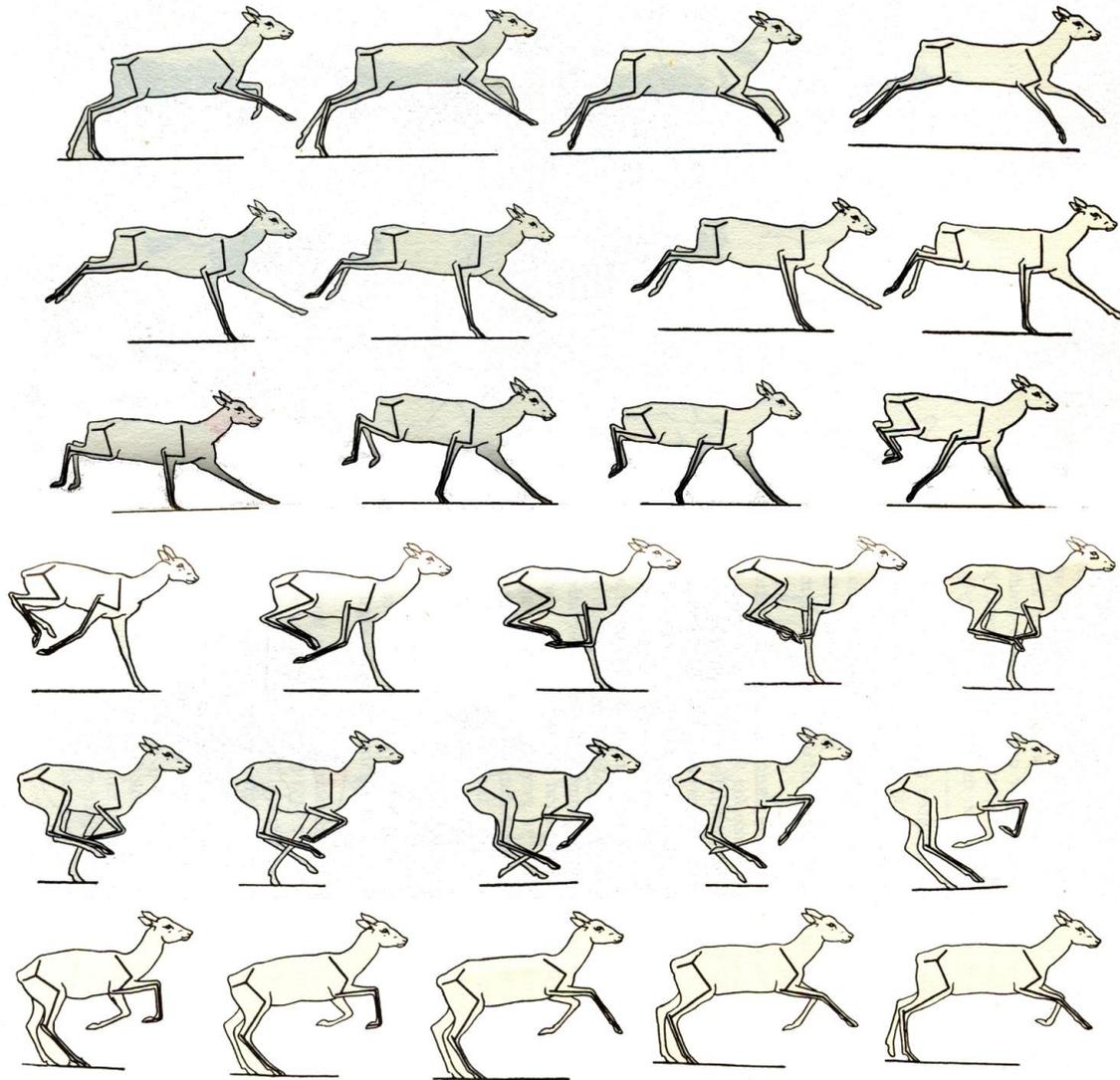
4







Bactrian camel in transverse gallop



Small to medium size herbivores (such as deer) sometimes engage in a rotary gallop.

