

the trunk, is, on the other hand, better adapted to give it those impulses which are to effect its progressive movements. The nature of those movements, and the order in which they succeed each other, are different according to the peculiar mode of progression which the animal practises, the degree of speed it is desirous of exerting, and the particular end it has in view. The paces of a quadruped usually distinguished, are the walk, the trot, the gallop, the amble, and the bound.

In slow walking, only one foot is raised from the ground at the same moment, so that three points of support always exist for sustaining the weight of the body. If the centre of gravity be situated, as it generally is, nearly over the middle of the quadrangular base formed by the feet, while they rest upon the ground, the first effort to advance which the quadruped makes, propels the centre of gravity forwards. This it accomplishes by pressing one of its hind legs against the ground, which leg, being thus fixed by the resistance it there meets with, becomes the fulcrum of the first movements. The extensor muscles of the limb are now exerted in giving the body an impulse forwards. As soon as this impulse has been given, the muscles which had been in action are relaxed, and the leg is raised from the ground, brought forwards, and laid down close to the fore foot of the same side. This fore foot is next raised and advanced, and then the same succession of actions takes place with the hind and the fore foot of the other side.

An attentive examination of the conditions of these successive positions will show that, amidst all the changes which take place in the points of support, the stability of the body is constantly preserved. It is an elementary proposition in mechanics that all that is necessary for ensuring the support of a body on any given base, is that the vertical line drawn from the centre of gravity shall fall within that base. When the animal is standing, the feet form a quadrilateral base, and the centre of gravity is in a vertical line passing either through the centre of the base, or, as, for the reasons