THE TROT.

THE TROT. 

The trot is a system of progress in which each pair of diagonal feet are alternately lifted with more or less synchronism, thrust forward, and again placed on the ground; the body of the animal making a transit, without support, twice during each stride.

In this gait there is no inflexible rule as to whether a fore-foot or its diagonal hind-foot, in their respective steps, is first in being lifted and placed on the ground; it is, however, usual for a horse, especially when trotting fast, to give precedence to a fore-foot.

A good example of this gait is given in series 28—a stride by a celebrated trotter, photographed at Palo Alto in 1879.

In phase 1 • is about to follow the example of the other three feet, and will presently leave the horse without support until 4, when ▲ is found preparing for immediate contact, to be followed without much delay by ◆. 5 and 6 show the right fore-leg in a nearly vertical position, with △ elevated nearly to its shoulder. ▲ and ◆ render combined support until a period that occurs between 8 and 9, when ▲ is lifted, and leaves ◆ exercising its final propulsive force. Two steps, or one-half of the stride, have now been made. The remaining two steps are executed in practically the same manner; the stride is completed in 18, where the limbs occupy
almost precisely the same relative positions in which we found them in 1. The two remaining phases commence another stride.

As no chronograph was used in the investigation of 1879, the time made in a mile, or fraction of a mile, was kept by a stop-watch. The stride illustrated was one of three hundred and ten, or thereabouts, made by the horse around a mile track in two minutes and sixteen seconds. A mile has been trotted over in several seconds less time, but the series fairly represents the stride of a first-class trotting horse at the height of his speed.

The length of the stride is readily measured. The lines on the track were twelve inches apart; they show the distance to have been approximately two hundred and four inches, sixty-six of which were made without contact with the ground. Some horses making a stride of not much greater length have been photographed, with the result of showing the transit, without support, to be fully one-half the length of the stride; this, of itself, is, however, no evidence of a more rapid motion than when the feet are on the ground for a longer period.

In the analyzed stride the sequence of phases are—

For the purpose of instituting a comparison between the strides of a trot made under different conditions, this same horse was saddled, and went around the track with a jockey on his back. The time was three seconds more, the stride nine inches less, and the distance over which the horse was carried by its momentum, free from contact, was reduced by twenty-four inches.

As the consecutive phases recorded above are not invariably followed, even by the same horse, in consequence, perhaps, of inequalities on the surface of the track, or from some other cause, it will be a safer plan to give a broader significance to a stride of the trot, and to represent it with a more elastic diagram.

For general purposes this definition is perhaps sufficiently exact.

Series 29 is of a good, well-trained horse, going at a moderate speed, with an easy stride.

Series 30 is an example of a stride free from the restrictions of harness or a rider.

Series 33 determines that, no matter how heavily built a horse may be, or how slowly he is trotting, the legs relinquish the support of the body twice during each stride; the feet may be merely dragged over the surface, but for a time they are practically inert. This occurs in the
trot of all animals; it is demonstrated by the ox, wapiti, eland, fallow-deer, dog, and the cat, in their respective seriates.

On p. 119 are four phases selected from the stride of a high-stepping trotter, which demonstrates in a decidedly pronounced manner the usual sequence of foot-fallings; the high action, however, is not conducive to speed, as much time and labour is wasted in unnecessary exertion.

About a century ago Garrard, an artist of note, painted a picture of the Duke of Hamilton riding a horse, trotting, entirely clear of the ground. The phase seems to have been an innovation that was not acceptable either to other artists or to the public.

We have seen, in the Preface, that so recently as twenty-five years ago, it was the common opinion of those who were supposed to have studied the motion of a horse, that while trotting he always had at least one foot in contact with the ground.

The Romans were familiar with this pace; but as they were accustomed to the amble, they did not appreciate it. They called a trotting horse a “succusator,” or shaker; a negative evidence that a racking horse was unknown to them.

References to the trot are frequent in English poetry. Chaucer alludes to it in “The Merchant’s Tale;” and Spenser, in “Faerie Queene,” iv. 8, says—

“Whose steadey hand was faine his steede to gude,
And all the way from trotting hard to spare:
So was his toyle the more, the more that was his care.”

Sir Philip Sidney, “Arcadia,” ii.: “I flatly ran away from him toward my horse, who trotting after the company . . .”

The gait was evidently not a favourite one of Shakespeare’s; in a metaphor, “As You Like It,” iii. 2, Rosalind says, “Time . . . trots hard.”

Swift, on the contrary, causes Gulliver, in “A Voyage to the Houyhnhnms,” x., to look upon their “gait and gesture . . . with delight,” and took it “as a great compliment” when his friends, on his return, told him that he “trotted like a horse.”

Scott, in nearly all his romances, speaks of the motion, with high, round, full, hard, reasonable, rapid, stumbling, or other prefix.
ONE STRIDE IN EIGHTEEN PHASES.

Enlarged from a Photograph on Paper, Printed in 1879.

Horse "Edgington."

Length of stride: 204 inches (5.15 metres).
Approximate time of stride: 0.44 second.
Free from contact with the ground: 66 inches (1.65 metres).
Strides to a mile: 310.

This series was photographed at Palo Alto, 1879, is absolutely free from "retouching," and was synthetically reproduced, and exhibited by projection with the Zoopraxiscope at San Francisco, 1880; at Paris, 1881; and at the Royal Institution and Royal Academy of Arts, London, 1887.
THE TROT.

ONE STRIDE IN EIGHTEEN PHASES.

Horse "Daisy."

Length of stride: 118 inches (296 metres).

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A HALF-STRIDE IN NINE PHASES, PHOTOGRAPHED SYNCHRONOUSLY FROM TWO POINTS OF VIEW.

Horse "Eagle."


Approximate time of complete stride: .65 second.
THE TROT.

SOME PHASES OF THE TROT FROM SERIES 30.

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ONE STRIDE, PHOTOGRAPHED SYNCHRONOUSLY FROM TWO POINTS OF VIEW.

Horse "Beauty."

Length of stride: 112 inches (2.80 metres).

Time-intervals: .052 second.

Approximate time of stride: .35 second.
THE TROT.

ONE STRIDE, PHOTOGRAPHED SYNCHRONOUSLY FROM TWO POINTS OF VIEW.

Horse "Ellenrae."

Time-intervals: 0.06 second.

Approximate time of stride: 0.46 second.

A HALF-STRIDE IN NINE PHASES, PHOTOGRAPHED SYNCHRONOUSLY FROM TWO POINTS OF VIEW.

Horse "Duel."

Time-intervals: 0.056 second.

Approximate time of stride: 0.95 second.
THE TROT.

SOME PHASES IN THE MOTION OF A HORSE TROTTING AT A HIGH RATE OF SPEED.

SOME PHASES IN THE MOTION OF A HORSE TROTTING SLOWLY.
ONE STRIDE IN FIFTEEN PHASES.

The Ox.

Length of stride: 104 inches (2.60 metres).

Time-intervals: 0.56 second.

Approximate time of stride: 78 second.
THE TROT.

A HALF-STRIDE IN THIRTEEN PHASES.

The Wapiti, or Elk.

Length of complete stride: 14 3 inches (3.50 metres).

Time-intervals: 0.33 second.

Approximate time of complete stride: 0.33 second.
THE TROT.

A HALF-STRIDE IN UNEQUAL PHASES.

The Iberian.
THE TROT.

ONE STRIDE IN TEN PHASES.

The Fallow Deer.

Time-intervals: 0.069 second.
Approximate time of stride: 0.62 second.
THE TROT.

ONE STRIDE, PHOTOGRAPHED SYNCHRONOUSLY FROM TWO POINTS OF VIEW.

*The Dog (Muttif)*.

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AN IRREGULAR STRIDE.
The Dog (Mutiff).

Length of stride: 52 inches (1.30 metres).
Time-intervals: 0.10 second.
Approximate time of completed movement: 1.21 seconds.

ONE STRIDE IN TEN PHASES.
The Cat.
Time-intervals: 0.035 second.