

wide publicity which the story has attained. We do not know what object there is in foisting upon the public a story which is in such a high degree improbable. We do not need to go beyond the patent itself and its very narrow claim to discover the falsity of the rumor. The principle upon which the engine is operated is by no means new, while the claim confines the design to minute details of construction. If, as it is claimed, an English syndicate has purchased the patent at a price of some \$7,000,000, is it not likely that before investing so vast a sum the patent itself would have been submitted to rigid examination as to scope and validity? We believe, therefore, that the story can be regarded in no other light than a hoax, and it is the object of the SCIENTIFIC AMERICAN to try and arrive at the truth of such matters. We desire simply to direct the attention of anyone who may be sufficiently interested in the story to examine into the merits of the case, and we believe that they will be satisfied with us that the whole matter is founded on baseless rumor.

THE TRAINING OF HORSES.

A military bicycle and athletic tournament in aid of a fund to endow hospital beds for the National Guardsmen of New York and vicinity was held in the Madison Square Garden, New York City, from January 11 to 16,

be trained indoors, in armories or riding academies. The artificial gaits of the saddle horse are simply natural gaits which have been improved by a greater freedom in the movements of the shoulders and greater flexibility of the joints. A distinction is usually made between military and school trained horses and hunting and racing horses, as the latter receive their training out of doors and not under cover. The military horse must not only have a good temper, be obedient, speedy and quick to turn, but must be also accustomed to firing, music, flags, and, in fact, must not be afraid of anything. On the other hand, a horse trained in a riding school must be proficient in the acquired gaits by which the riding masters try to improve the natural gait. This teaching comprises maneuvers of two kinds. The first includes those in which the horse does not lift his feet any higher than in his natural gait, and the second in which both fore feet or all the feet are raised from the ground simultaneously. Our engraving shows a number of steps which are obtained by fancy training, both as taught by the riding schools and by the military trainers.

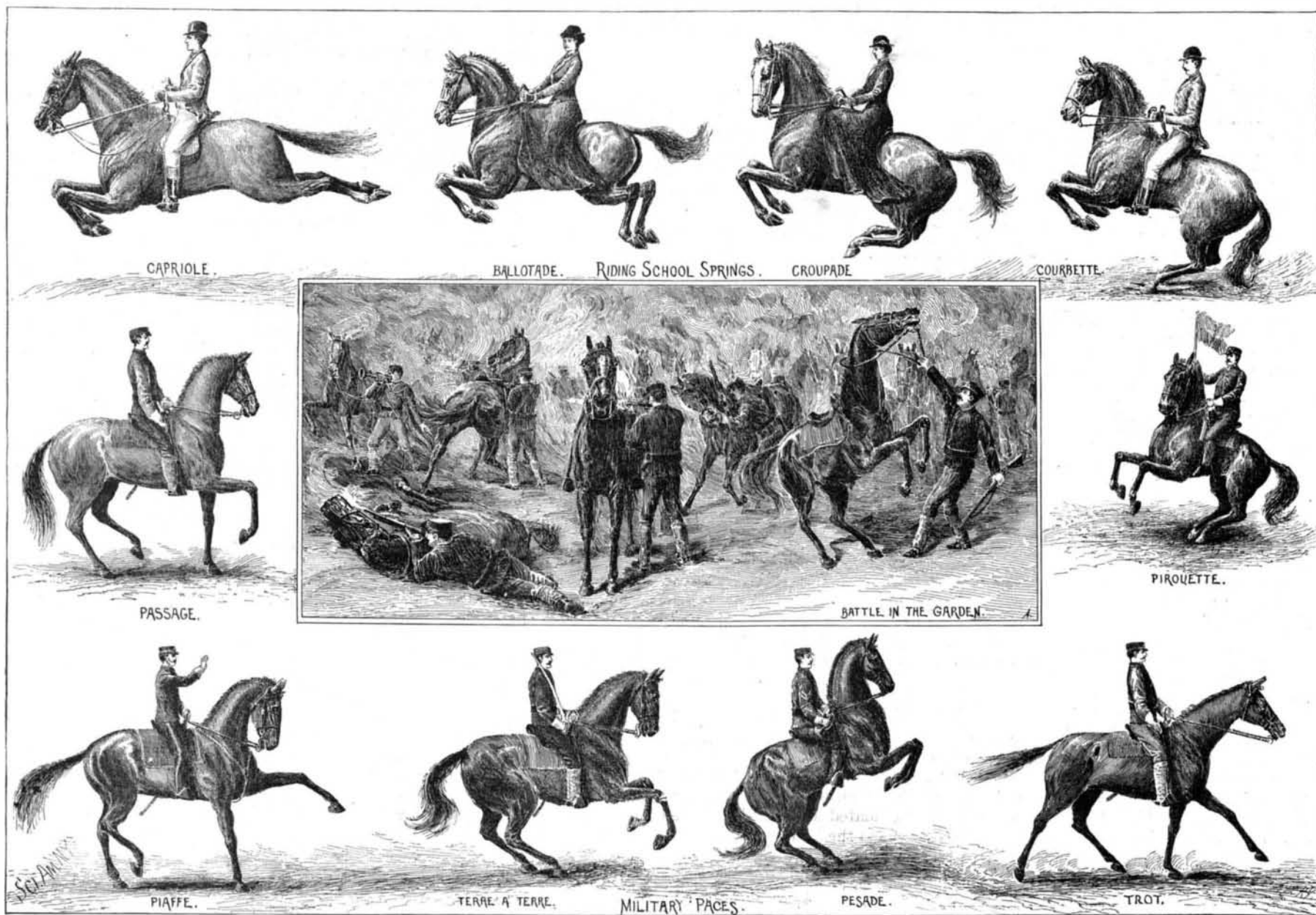
The "piaffe," shown in the lower left hand corner of our engraving, is the trot without movement, the animal lifting diagonally opposite feet simultaneously as in trotting; holding them in the air a moment and then putting them down into the same footprints with-

euvers, be held perpendicular to the surface of the ground. The "pesade" is the first movement of the spring and jump. If, when the forward part of the horse's body begins to descend, he makes a short spring forward, then the term "courbette" is employed. In the "pirouette" or wheel, the horse turns in a circle, the diameter of which is nearly equal to the length of his body, the hind feet serving as the turning point around which he moves. The smaller the circle and the fewer the steps, the better. In this exercise the number of the steps taken by the hind feet must equal those taken by the fore feet.

The "croupade" is the first of three springs which belong distinctly to the riding school. In the riding school jumps the horse must land on his hind feet at all jumps, while in the military spring all four feet must touch the ground simultaneously, and in the hunting spring, the fore feet must land first.

In the "croupade" the horse raises the fore part of his body, and before it falls raises his hind feet, drawing them under his body, so that when they touch the ground again they have moved forward only about a foot. The higher the speed, the better the legs can be drawn under the body, and the nearer the line of the back approaches the horizontal, the more perfect the maneuver.

The "ballotade" and the "capriole" differ in the



GREAT MILITARY TOURNAMENT RECENTLY HELD AT MADISON SQUARE GARDEN, NEW YORK.

and was attended by thousands of spectators. Great enthusiasm was shown at each performance when the military part of the programme was reached. By special permission, detachments of the regular artillery, cavalry and infantry, United States Army, gave exhibitions in which the skill of the soldiers was almost matched by the wonderful training and instinct of the horses. The drilling of Captain Dodd's Troop F, Third United States Cavalry, was especially fine, and General Miles says that the Cossacks, the Uhlans and Arabs can do no better. Captain Dodd found himself on a lonely post on the plains and set himself to the task of bringing men and horses to a perfect state of discipline. He did not allow the slightest approach to harshness toward the horses on the part of the men, and the great docility and perfection of drill has been brought about by kindness. The horses seemed to enter thoroughly into the spirit of the drill, and in the mock battles and the various evolutions they riveted the attention of the audience. The recent tournament will, it is thought, do much toward interesting people, not only in the regular army but in the training of horses as well. The exhibition of the cavalry troops, National Guard State of New York, was also very successful and showed what might be done where the horses necessarily had to

out any sideways movement. The fore leg is raised until the thigh is almost horizontal, but the hind leg cannot be raised as high, owing to the formation of the joint. The piaffe is the expression of impatience by an eager animal unable to advance. This trot is a very effective one in processions.

The "passage," or Spanish step, is the piaffe in motion, a restrained trot, the name coming from the Italian word "promenade." The more regular and shorter the horse's step, the longer the foot is held in the air, the more perfect the results obtained. In this gait the step is much shorter than the ordinary gait, the ground covered by each forward movement being only about a foot. This enables the horse to make a slow oblique advance. Both the piaffe and the passage are especially useful for increasing the freedom of the movement of the shoulders of the horse.

The "terre-a-terre" is a gallop in two time, the fore and hind feet rising and falling alternately. This motion is the original of the toy rocking horse.

The "pesade" movement is the raising of the fore part of the body of the horse with the fore legs drawn under to such a height that the line of the back will form an angle of 45° with the ground. The body of the rider must, in this position, as in all of the man-

position of the hind feet, the horse alighting upon them in both jumps. In the "ballotade" the position of the fore legs is almost the same as that of the hind legs. In this exercise the horse does not draw his hind legs under him, but raises them so that the shoes show at the rear as if ready for a blow. The "capriole" is the highest and most complete of the riding school springs. When the horse has raised his fore and hind feet equally high and his back is almost horizontal, he thrusts his hind legs out with all the power at his command.

From the foregoing it will be understood that the three riding school springs are distinguished from one another by the position of the hind legs. In the "croupade" the legs are drawn under the animal's body, in the "ballotade" he raises his hind feet so that the shoes are shown as if ready for a blow, and in the "capriole" the hind feet are thrown out.

GREECE has determined to have Olympic games at Athens every four years. The stadium is to be completed in Pentelic marble, M. Averoff, of Alexandria, who gave a million drachmæ to have the race course put in order, having promised to give half a million drachmæ (\$100,000) a year for the purpose.