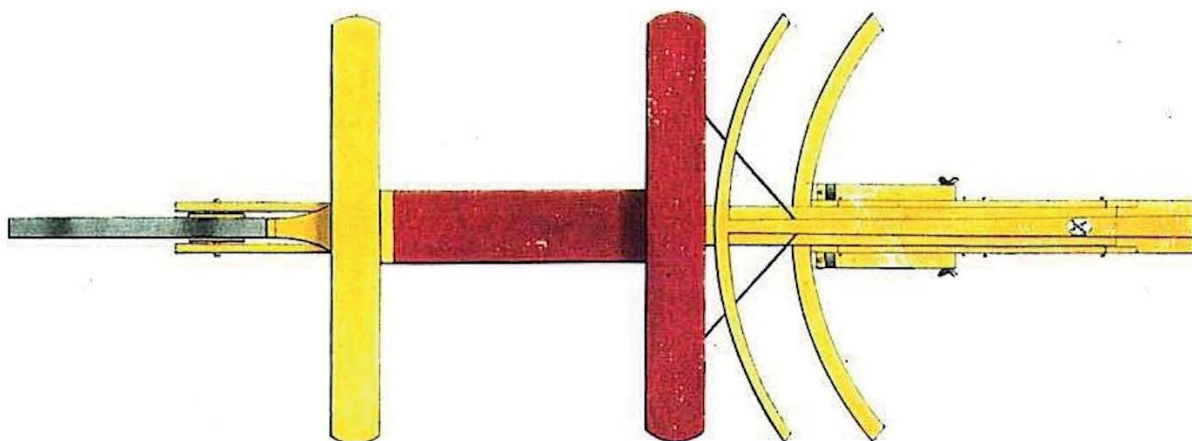


COLOURED PLATE
showing staff
messenger from
Drais's description
(1817)



Feature

THE FIRST BICYCLE

THE BIG BANG OF MECHANISED PERSONAL MOBILITY HAPPENED 200 YEARS AGO IN THE FORESTS OF GERMANY. HISTORIAN **HANS-ERHARD LESSING** TAKES UP THE STORY



annheim on Rhine, before Whitsun, 1817. After the local cartwright's apprentice brought the news that the paint on

the newly ordered two-wheeled carriage had dried, the household of judge Wilhelm von Drais bustled with activity. With the help of the family's coachman, the judge's son, 32-year-old Baron Karl Drais, collected the vehicle, which he had designed – not bad for someone who'd spent only three terms at the technologically-oriented Heidelberg university. In the evening, he oiled its hubs while his four sisters looked on.

Early next morning, he mounted the two-wheeler and started to speed it forward through the empty streets of the city. Its iron hoop tyres rattled over the cobblestones, creating tiny sparks with every little bounce. He headed for the high road to the former summer residence of the Electors Palatine, the local rulers, at Schwetzingen: as a civil servant, he knew the route well from many rides on his official horse. But now horse fodder had become rare and expensive due to the catastrophic crop failure the previous year.

Earlier than usual, he reached the former relay station halfway to Schwetzingen, where he turned around and rolled homeward. Back home, he found he had covered eight miles in less than an hour. This same distance would have taken him four hours by mail coach. The local gazette didn't report this event on 12 June 1817, which supports the view that Drais didn't seek publicity for his initial spin. Also unreported was his mountain ride six weeks later, from a 700-foot-high hill, four miles down to the spa town of Baden-Baden. But this time, he placed a lengthy advert in the Spa

Weekly. In it he referred to his invention, with some self-effacing irony, as LODA: an acronym from the French *la locomotion* and *le dada* (hobby-horse).

IT STARTED ON FOUR WHEELS

Due to strict censorship of any news relating to the food shortages of 1816/17, no editor or printer would have let Drais write that his machine was meant to replace the endangered saddle-horse, lest the complete print run be confiscated by the censor. The authorities didn't like news of hunger riots to be spread. In fact, Drais's interest in land transport had started back in 1812, when a series of bad harvests began raising the price of oats and hay. (The 1810s were the coldest decade on record, partly as a result

of the Tambora volcanic eruption of 1815.) Drais commissioned a four-wheeled wagon called the Fahrmaschine ('driving machine') powered by a treadmill between the rear wheels. The drive system was later changed to a crankshaft, trodden by the feet of one passenger sitting on a suspended saddle.

The Fahrmaschine didn't raise any interest among the princes, and a disappointed Drais temporarily deserted land transport. However, when the catastrophic crop failure occurred in 1816, he returned to human-powered vehicles and invented a two-wheeler later to be known as the Laufmaschine ('running machine').

Necessity was the mother of invention, and contemporaries confirmed Drais's reasons for building it. For example, the diplomat Comte de Ségur wrote an article in *Journal de Paris*



Riding school of manufacturer Anton Burg & Sohn in Vienna 1818

entitled 'Draisiennes', reporting his long stroll to see these machines, which were meant to replace the luxury of horses and to lower the price of oats and hay. The German press adopted the term Draisine for the two-wheeler.

DRAISINE TECHNOLOGY

From August 1817 onwards, the news from Baden-Baden's Spa Weekly was syndicated by all German newspapers, reaching the United Kingdom in October and the United States the following month. Drais published a printed description of his Laufmaschine, including a plate showing the elevation and ground plan. But how did he make the transition from his four-wheeled driving machine to the two-wheeled running machine? Since he kept no diary, we don't know. We only have his statement in the Spa Weekly: 'The idea has been taken from ice-skating.' Indeed, his insight that balancing on two wheels in-line should be feasible at all was demonstrated by ice-skaters balancing on one skate only.

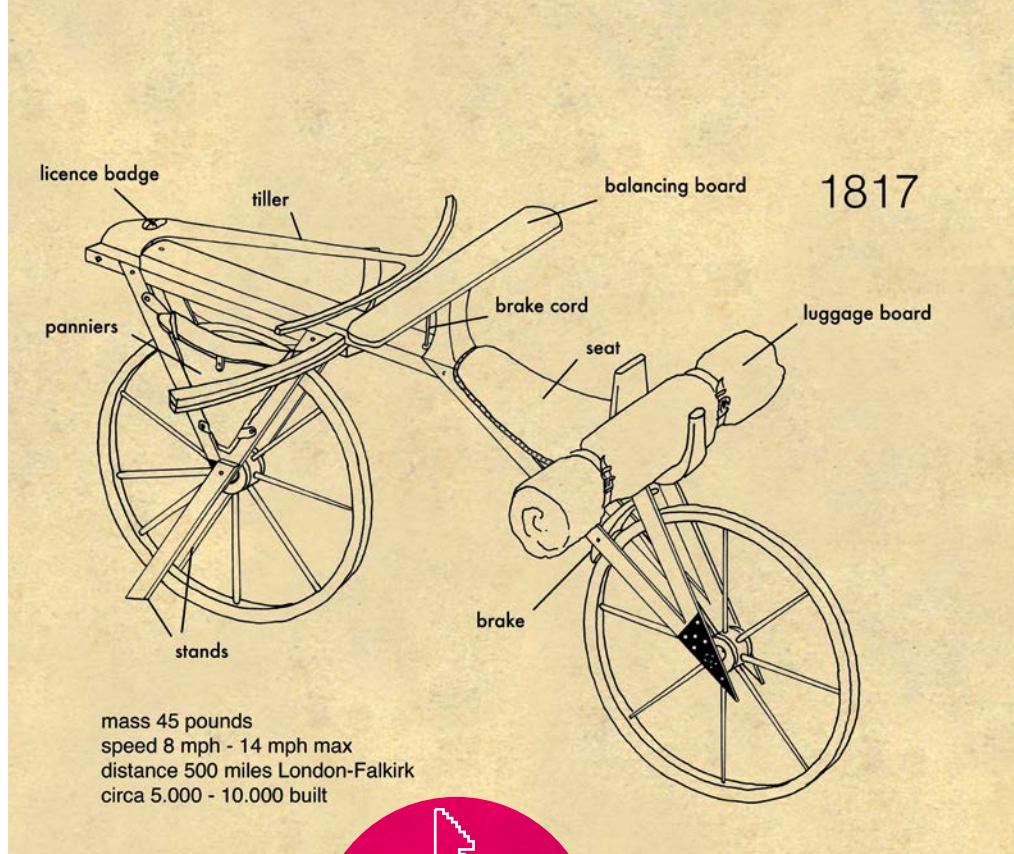
There is a tendency to describe the Draisine as merely a precursor of the 'first true bicycle', meaning one with pedal cranks. But in fact the Draisine demonstrated most of the features of the modern bicycle and therefore should be regarded as the archetypical bicycle.

Key features of the Draisine were:

- the basic two-wheeler principle
- both wheels of similar diameter to those of today
- hubs with brass bushings and oiling points
- self-righting of the front wheel via fork trail (castor effect)
- rear rim brake operated by a cord ending in a finger ring
- tiller, seat and armrest adjustable in height (option)
- parking stand to be swung down over the front wheel (option)
- panniers on both sides of front wheel (option)
- rear carrier for a saddle-bag (option)

While carriages were still decelerated by the horses' bodies or by a crude skid shoe under the wheel that ploughed up the road, Drais's innovative brake could be applied subtly and progressively to avoid losing balance. To prevent pirate copying of this brake Drais, hid it behind the rider's leg on his illustration plate and merely showed the cord to operate it. As a consequence, the hobby-horses produced by the English copyist Johnson didn't have a brake, nor the trail for self-righted steering. No wonder that unpleasant collisions with pedestrians occurred on London's side-paths, provoking a clampdown by the authorities.

In Germany, many machines were built by artisans throughout the duchies; there were five copiers in Dresden alone. Early adopters were princes and noblemen,



Draisine on display
 Visit the National Cycle Museum in Llandrindod Wells: cyclemuseum.org.uk

who could easily afford the machines plus eleven guilders for a licence badge. Three letters from users are extant: from another nobleman; from a postmaster in Düsseldorf; and from a lawyer who had won a Draisine in a lottery. The postmaster experimented with different dimensions, but concluded that Drais's were the optimum. Sources indicate that students were the main user group. In Austria, Anton Burg & Sohn, manufacturer of agricultural machinery, started building Draisines in 1818 and installed a riding school in Vienna, promising to teach riding within ten hours for a fee of ten guilders. In France, Drais's agent Jean Garcin rented out three-wheeled Draisines, with a lady's seat in front, by the hour at amusement parks like the Tivoli.

THE DRAISINE'S UPS AND DOWNS

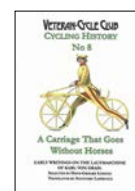
The earliest user in the UK was Bernhard Seine from Mannheim, who having arrived in Bath, had a Draisine built early in 1818. We know this from his acquaintance Thomas Stephens Davies, later a mathematics teacher at the Royal Military Academy in Woolwich, to whom we owe an interesting retrospective lecture 'On the velocipede', given in May 1837: 'I am acquainted with individuals who went with their velocipedes from twenty to thirty miles a day on excursions into the country, and many young men were in the habit of riding sixty miles or more in the course of a week.' Soon after, coach-maker Denis Johnson started manufacturing velocipedes, nicknamed hobby-horses and modelled after the French Draisiennes with their iron stays.

The Dandy subculture adopted the hobby-

horse as their emblem, just like the mods of the 1960s did with their motor-scooters. Sharing this fashion, caricaturist Robert Cruikshank (the younger) and his publisher James Sidebatham were riding their hobby-horses down Highgate Hill at full speed when they collided and were seriously injured. Sidebatham later died, and thereby Cruikshank lost both his friend and his publisher. He began to ridicule the dandies on their steeds with his droll sketches, to the point that it became positively unsafe to appear in public on a hobby-horse.

The end came with the introduction of fines for side-path riding. 'Why, the steam engine itself never could have stood against so powerful and united a body [watchmen, pedestrians, ministers], all in one mind too and with an unanimity truly wonderful!' stated Davies. More clampdowns happened in Milan, Philadelphia, New York and even Calcutta.

But Lewis Gompertz, co-founder of the Society for the Prevention of Cruelty to Animals, had the correct vision for the Draisines: 'The ridicule then with which they have been assailed by some of the idle and the caricaturists must yield to the advantages which they will bestow on the world.' □



READ MORE
 Hans-Erhard Lessing's 'A Carriage That Goes Without Horses', a translation of the writing's of Karl von Drais, is £5 plus £1.50 P&P from James Cooper, tel: 0117 969 7757, email jameshfcooper@gmail.com, www.v-cc.org.uk. Hans-

Erhard is also the author, with Tony Hadland, of *Bicycle Design*, an illustrated history of the bicycle. Tony assisted with this article.

Above: Joachim Lessing