Pedaling to Progress
Bicycles from 1800s-1920s

A Virtual Exhibition Experience from the
OWLS HEAD TRANSPORTATION MUSEUM
INTRODUCTION

The bicycle has played a significant role in Maine’s transportation history. Its evolution has been critical to transportation globally, as an important stepping stone from animal-drawn carts and coaches to self-propelled vehicles like motorcycles and cars.

For many countries around the world, like Denmark and China, the bicycle remains a major mode of transportation. It is a low-cost, efficient vehicle for people to commute to work or school, to shop or just ride for fun and exercise.

Whether in Maine or Malaysia, understanding the role of bicycles is important to understanding the past, present and future of transportation.
To Build a Better Horse
1817 - 1819

The bicycle has really been invented and re-invented numerous times in history.

Throughout the 1800s, inventors and tinkerers who wanted to make a better vehicle worked to overcome the many limitations of horses. Horses need lots of breaks to rest, they need to eat, they may not always obey instructions from humans. They poop all over the place and they die.

The best vehicle would be a machine that needed no additional fuel and would never disobey.
Karl von Drais, a German forester, was inspired to connect two wagon-spoked wheels in tandem with a curved horizontal bar. He then attached a tiller to the front wheel for steering and a saddle in the center of the bar to sit on. With this device, Drais used each step to propel the device along the ground, like a scooter.

The velocipede arrived on American shores in 1819 when artist Charles Wilson Peale found an illustration of one in a shop outside Philadelphia and he hired a blacksmith to make one from scrap iron. While hard to push uphill, riders could reach 9 miles per hour on flat land and go “like the very devil” on downhills.

Wealthy young men began building velocipedes and riding them instead of horses. The velocipede spread throughout the United States in 1819. Quick thinking entrepreneurs rented them in parks. Velocipedes could be found in Boston, Savannah, and even Cincinnati. Yet for as far as they reached, only about 1000 were ever built.

As quickly as riders hit the road with velocipedes, reports of them running over pedestrians. Cities banned velocipedes from sidewalks, which effectively outlawed the vehicle. Roads were either paved with bricks or cobblestones or were rutted dirt and gravel affairs. Velocipedes could not navigate those rough, uneven paths.
The bicycle in America lay dormant for decades until the summer of 1865. That July, French mechanic Pierre Lallement arrived in the U.S. with the parts to build an improved velocipede. He settled in Ansonia, CT and worked in a factory while he prepared his vehicle. The wheels and frame were very similar to the 1819 version, but Lallement had attached foot pedals to the front wheel. When the contraption was ready for testing, he embarked on a 4 ½-mile ride to a neighboring village.

The first half of his test was uphill, and the new pedals made climbing the hill much more tolerable. Going downhill, things went... well, downhill very fast when he realized he was about to hit a horse-drawn wagon and swerved into a culvert to avoid the crash. Although he had added pedals, there were still no brakes to slow Lallement’s vehicle.
On November 20, 1866, Lallement secured a patent for his improved velocipede. Despite the patent, Lallement couldn’t get his velocipede manufactured. He returned to France in 1868, only to find other making and selling velocipedes with pedals in Paris.

It was these two-wheeled vehicles that led someone to create the word “bicycle” using the Latin for “two” and the Greek for “circle.” Traveling performers began to tour with the new bicycles, business owners converted warehouses and ice-skating rinks into cycling schools, and wooden tracks were built around ball fields for races. By 1869, carriage makers were producing 1,000 bikes a week.

The major roadblock for bicycles that remained was the roads themselves. Cyclists regularly encountered rough stone avenues, dusty drives, mud and ruts, and more. Since the bicycles were still made with solid wood wheels, most outdoor surfaces were difficult for riding.

Cyclists and their critics even resorted to calling the machines “boneshakers” because of the rough rides. While the boneshaker was a far better bicycle than the 1819 velocipede, poor American roads prevented cycling from shifting from fad to success. Fortunately, European roads were much better, which supported innovations that led to literally bigger and better bicycles.
High Speed, Higher Risk

Revolutionizing the wheel was necessary for the bicycle to succeed. With pedals mounted directly to the front wheel, the only way a cyclist could go faster on a flat path was to pedal harder. Wheel makers knew that a bigger wheel would go farther with the same pedal rotation.

Unfortunately, at some point, a wooden wheel would get so big that it would be too heavy for a rider to pedal. Eugene Meyer, a French mechanic, exchanged the traditional wooden spokes for thin metal wires. Dramatically lighter but just as strong, the wire-spoked wheels could get much larger without getting heavier. To maximize speed, riders ordered wheels up to double the length of their legs. A person with 30-inch legs could ride a 60-inch wheel and reach speeds up to 17 miles per hour.
This new “high wheeler” was much faster than the velocipede, but it also brought new challenges for riders. The first was trying to get on. To mount a high wheeler, the rider needed to get the bike rolling before scrambling up the back, into the saddle, and getting feet on the moving pedals before it lost too much speed and fell over.

The next challenge came once in motion, when the rider’s center of gravity shifted very far to the front of the bicycle. This meant that small bumps in the road could send someone flying over the handlebars, and it was a long way to the ground.

High wheelers trickled into the United States throughout the early 1870s, but they did not become popular until after some British versions were exhibited at the 1876 Centennial International Exposition in Philadelphia, where the invention was seen by Massachusetts manufacturer Albert Pope.

At the time, he thought they were something only “trained gymnasts” could ride, but the following year, Pope had the chance to ride one belonging to a houseguest. When he mastered riding, Pope imported some British bicycles to sell in 1877. The next year, Pope began manufacturing under his own brand — Columbia Bicycles. Over the next decade, America’s production of high wheelers rose from 50 to almost 17,000.
“Father of Bicycling”

Frank A. Elwell was born in Portland, Maine in 1858, the same year as Rudolf Diesel, the German inventor of the diesel engine, and Chester Greenwood, the Mainer best known for inventing earmuffs in 1877.

While not as well known as Diesel or Greenwood, Elwell was part of a generation of inventors, tinkerers, and manufacturers who expanded the Industrial Revolution to reach the average person. Elwell did not design, invent, build, or modify transportation technology.

Elwell was one of those who took up the high wheeler fad, and what began as a hobby led him to become an internationally known figure in travel and transportation by expanding what the bicycle could do.
In July 1885, Elwell organized a bicycle tour of Maine from Moosehead Lake to Mount Desert Island. The participants included thirty-two cyclists from Maine, New Hampshire, Rhode Island, Massachusetts, Connecticut, and Canada. Elwell produced a 16-page book of verse and photographs documenting their experiences.

The ride through Maine inspired Elwell, and he spent the rest of the century organizing bicycle tours. He led a trip to Bermuda with 15 men and women hailing from Maine to Michigan, followed by a 10-day, 150-mile ride in Canada.

Throughout the 1890s, Elwell expanded his operation into Europe and America's Western states. However, Elwell did not just offer bicycle tours for Americans in search of recreation. He also used his experiences abroad to advocate for better roads in his home state and the rest of the country.

While Elwell traveled the world on his bicycle tours, he also brought back images and stories about high quality roads throughout Europe. Elwell gave public lectures courting farmers and other road users with the idea that better roads would help improve their lives.
A Tragic End to the Ride

Tragically, Elwell’s love of riding would also be his undoing.

On Oct. 26, 1902, Elwell was riding with the Alpha Motor Cycle Club on Long Island when he fell behind due to mechanical trouble. Later when he didn’t arrive at the hotel, the group retraced the route until they found him. Unfortunately, he was dead. The front forks and wheel of Elwell’s bike had broken, throwing him and breaking his neck.

Although he did not invent any bicycle components or create sprawling factories, Elwell was known in his time for being a major force who took a fad and rode it into the recreation and transportation fabric of America.
Making Bicycling Safer

As the high wheeler gained momentum in the 1880s, folks often referred to them as “ordinaries” despite the fact that few people could ride the oversized, awkward contraptions. Many saw the ordinary bicycle as dangerous and a menace to both riders and the public.

In fact, the link between bicycles and danger became so embedded in the public consciousness that when a new design debuted in the middle of the decade, it was marketed as a “safety” bicycle to differentiate it from the menacing ordinary. The first safety bike was built in England in 1885, but American bicycle makers did not see the benefit compared to high wheelers until 1887.
To modern observers, there is nothing remarkable about the safety bicycle. The form and function remain fundamental to the bicycles produced and used today. The major innovation in the 1880s was the addition of a chain drive — two gears with teeth connected by a chain — instead of attaching the pedals directly to the wheel. With the chain drive, the speed came from the gears rather than the wheels.

To this day, bike gears are still measured in terms of what size high wheeler it would mimic. This allowed the wheels of bicycles to shrink back to a size more manageable for the average person. Instead of pairing a 60-inch wheel with a 13-inch wheel, bicycles could have two 24-inch wheels.
Women on Wheels

For decades, the bicycle world was essentially a “no girls allowed” club. Very few American women rode because it was against the culture at the time. Societal norms were far stricter and more gendered than they are today. As long as society required women to wear long dresses, bicycles were difficult, if not deadly, for most women to ride.

The actual bicycle design barrier for women disappeared in 1888 when manufacturers introduced a drop-frame that lowered the top bar connecting the front fork to the seat. Since a woman’s vigorous pedaling could still send skirts flying up in the wind, some women cyclists put weights in their hems or lined the skirts with leather to keep decent while riding.
Bicycle riding also became one of the reasons why some women stopped wearing corsets. The stiff garments that provided women with the desired hourglass figure of the 1800s also squeezed their bodies to limit their ability to breathe deeply, crush internal organs, and prevented free movement of their torso.

In the 1870s, a garment known as the “emancipation waist” was introduced by George Frost & Co of Boston, Ma. The garment provided the same physical coverage as a corset but was less restricting, allowing the wearer to breathe and move more easily. Female cyclists became such well-known buyers that the garment also became known as a “bicycle waist.” Of course, just because a woman could physically ride a bicycle didn’t make it socially acceptable.

In almost all cases, a woman was not supposed to go out in public without a male chaperone. The bicycle changed all this since most are only for single riders. Some social commentators interpreted them more like horses, which women could ride unchaperoned. Since it was easier to afford a bicycle than a horse, this opened up independent riding to millions of women.

Some saw the bicycles as a danger rather than a boon to womanhood. Critics feared that the less restrictive clothing and unsupervised riding would result in physical and moral decay for women. Despite these concerns, an estimated 2 million Americans rode safety bikes by 1869, regardless of gender.
Good Roads

In the late 1800s, American roads were terrible. Most were dirt and the few that were paved were done so with stone or wooden blocks. In rural areas, dirt roads were maintained by residents. Instead of paying taxes to have professionally built and maintained roads, residents could provide labor in lieu of cash. These payments were calculated by time worked rather than quality, and most rural residents, primarily farmers, did not have the skills or interest to work on the roads. In urban areas, the pavers didn’t necessarily make for better roads.

When novelist Rudyard Kipling visited New York City in 1892, he described streets with “gullies, holes, cobblestones awry, [and] kerbstones rising two to six inches above the level of the slatternly pavement.” While these roads cost more than the rural dirt paths, they weren’t necessarily any better for bicyclists.
Bicyclists began courting farmers and other road users that better roads would help improve their lives. In 1896, postal officials launched rural free delivery (RFD) routes to provide home delivery of mail throughout the country. Before RFD, farmers had to trek to village post offices to retrieve their mail. However, postal officials would authorize home delivery only for communities that provided good roads that were passable in all weather.

In 1904, there were over 2 million miles of rural public roads in the United States, but less than 250,000 of those miles had any kind of surfacing. By 1935, the miles of paved roads had tripled in part thanks to the successful lobbying of enthusiastic bicyclists.
Bicycles made cars possible. When bicycle fanatics successfully lobbied for better roads, they also inspired people to seek independent means of travel. When bicycle manufacturers improved the quality of mass-produced parts and the methods of making them, they also laid the foundation for the automobile assembly line.

In the 1930s, Maine native and inventor Hiram Percy Maxim recalled that before the safety bicycle became popular in the 1890s, no one imagined “the possibilities of independent, long-distance travel over the ordinary highway.” For Americans like Maxim, following the route and rhythm of the rail seemed sufficient until the bicycle showed them what was possible.
In the 1890s, bicycles were the fastest growing form of transportation. Due to their modest cost and ease of maintenance, bicycles were putting a dent in both the horse market and streetcar ridership. At the same time, automobiles in the 1890s were still too expensive and unreliable for daily use.

In 1899, one writer even believed that even as the cars improved, they would not displace bikes. In 1900, there were only 8,000 automobiles registered in the United States, compared to the millions of safety bikes sold. In 1908, Ford debuted the Model T, a 20-horsepower, 4-cylinder car capable of going 45 mph, at a cost of $800.

By building a reliable, easily maintained car, Ford was able to lower costs through mass production and increase his customer pool by raising wages among his factory workers. By 1923, a Model T cost only $260 and they made up half of all cars on the planet.

By the time the country entered World War I in 1917, there were over 5 million vehicles on the road in a country of 100 million people. When Model T production ended a decade later in 1927, there were almost 24 million cars and trucks plying the road of a country numbering 117 million people. In a few short years, American changed from a country where 1 in 20 people had access to a car to 1 in 5.
From Cages to Cars

Pierce-Arrow, starting in 1865 making household products like birdcages and refrigerators. In 1890, the George N. Pierce Company made their first bicycles to take advantage of the fad. Starting in 1898, they added their Cushion Frame line of bicycles that included a shock absorber just behind the seat to provide cyclists relief from rough roads.

Two years later, they began selling the same bicycles powered by a crankshaft instead of a chain drive. The crankshaft was supposed to be easier to maintain, and it eliminated the risk of clothes getting caught in the moving chain.

Pierce began making motorettes in 1903. These small, 2-passenger, motorized vehicles were the company’s first foray into automobiles. It was so successful that the automobile business separated from the rest of the company in 1906 to become the Pierce-Arrow Motor Car Company.
Before 1900, most bicycles were made for adults. Within a few decades, the car overtook the bicycle, the horse, and the streetcar as the primary mode of moving Americans. By 1933, there were 17 cars for every bicycle in the United States. To stay in business, manufacturers shifted from selling bikes to adults to marketing them to families with kids.

Throughout the 1900s, the bicycle was a symbol of American childhood. It served as a toy, a mode of youthful independence in car-centric suburbs, and a training ground for future drivers. By 1941, 85% of all bicycles sold were made for children.
Biking for Fun

Even as children became the primary bicycle users, adults continued to ride throughout the 20th century. This 1934 Loop Frame bicycle illustrates the changes in the bicycle market that kept its appeal to cyclists of all ages.

By the 1930s, drop frame bicycles were also being used by men making deliveries or doing other jobs where the loop frame made it easier to mount the cycle. By this time, changes in societal norms meant that it was also more acceptable for women to be seen in public in pants, so women could choose to ride a more traditional diamond frame bicycle.

The Raleigh Bicycle Company began as a local bicycle workshop on Raleigh Street in Nottingham, England during the safety bicycle craze of the 1880s. It grew from three men producing three bikes a week in 1885 to 10,000 workers making 2 million bikes a year after World War II.
Although it was not a real motorcycle, designer George Lewis wanted kids riding his Speed-o-Byke to feel like they were. Patented in 1933 and produced by the Metal Specialties Company in Chicago, the Speed-o-Byke was a luxury toy coming out at the peak of the Great Depression.

In addition to a vibrant maroon-and-black color scheme, the bike had a coaster brake, adjustable spokes, and sealed roller bearings. The result was a $50 price tag when most children’s bicycles cost $10. The combination of high cost and poor market meant the Speed-o-Bike was produced for less than a decade.
Department Store Bikes

As bicycles became primarily a children’s toy in the 1920s, the production and sale of them shifted from bicycle manufacturers and specialty dealers to department stores. Companies like Sears, Roebuck & Company and Montgomery Ward partnered with suppliers like Goodyear and Firestone to become the major brands and sellers of children’s bicycles.

By making bulk contracts with parts manufacturers and assemblers, department stores were able to create inexpensive models for even larger markets. Elgin was the store brand for Sears before World War II. Like many children’s bicycles of this era, Elgin designs mimicked the lines of automobiles.

These bicycles were meant to give riders the sense of independence before they could be licensed to drive. This is the childhood bicycle of Leone Knowles, who grew up in Presque Isle in the 1940s. It still retains her 1947 City of Presque Isle license plate.
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