

# EARLY AMERICAN MOTORCYCLES



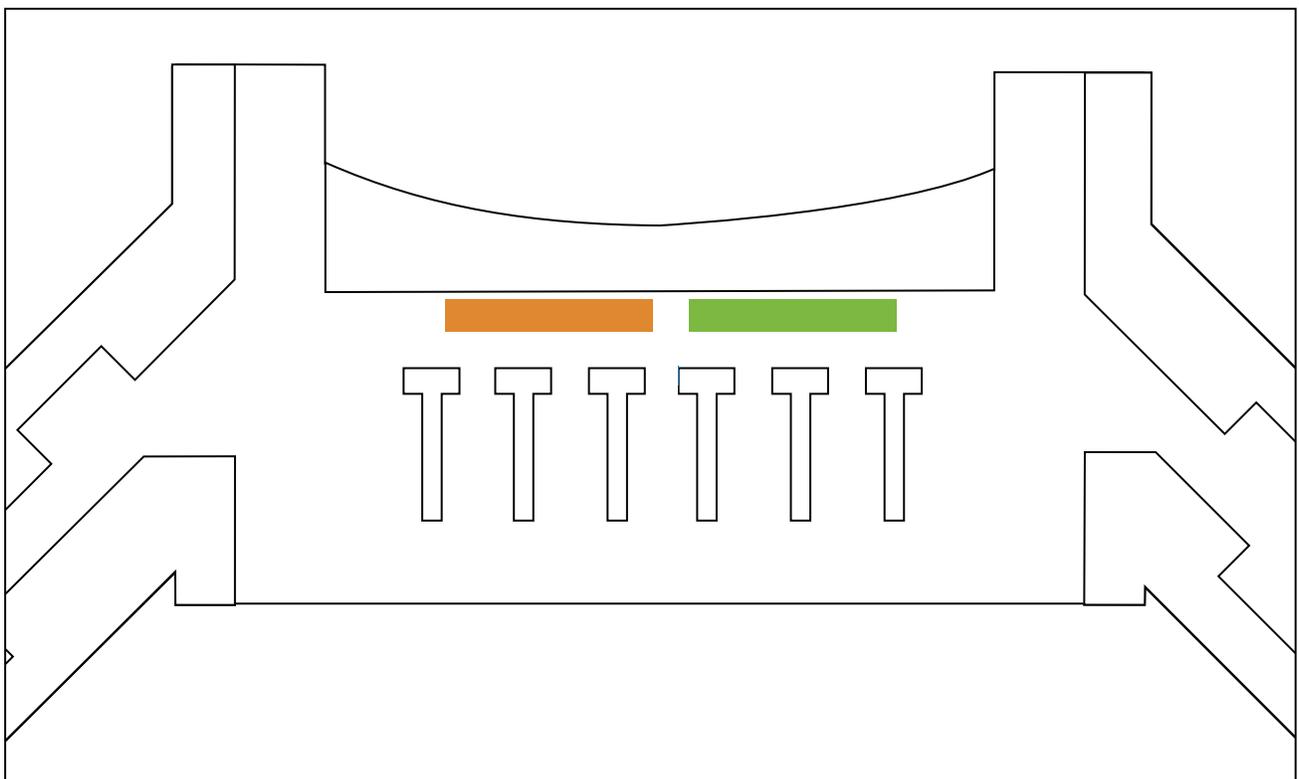
# EARLY AMERICAN MOTORCYCLES

## Self-Guided Tour and Supplemental Teaching Materials for K-12 Teachers

Thank you for visiting our exhibition, *Early American Motorcycles*.  
International Terminal, Galleries A1 and G1 | Level 3 Departures

This PDF provides parents and teachers with a self-guided tour of the exhibition and is comprised of three sections:

- **INTRODUCTION:** a brief background and summary of the exhibit. This is the large text panel that appears in each of the galleries at the start of the exhibit.
- **IT-A:** this is the long gallery located at the rear of the International Terminal Main Hall, adjacent to A-side departures and the Aviation Museum and Library (AML). The text for this section begins at the far right of the gallery and continues left towards the center of the terminal.
- **IT-G:** this is the long gallery located at the rear of the International Terminal Main Hall, adjacent to G-side departures and the BART station entrance. The text for this section begins at the far left of the gallery and continues right towards the center of the terminal.



## Introduction: Early American Motorcycles

Early American Motorcycles are mechanically creative vehicles that were made over 100 years ago. Motorcycles and automobiles were very new concepts in 1900 and used gasoline-powered engines, which were also new inventions at that time. As motorcycling became more popular, riding changed from an unusual activity to a hobby, sport, and reliable source of transportation. By the 1910s, there were almost 100 different motorcycle companies in the United States.

Motorcycle history begins with bicycles and the bicycling craze of the late 1800s. The earliest motorcycles were made by bicycle makers who placed small gasoline engines on bicycle frames. These early machines were known as “motor-bicycles” and often broke down and ruptured tires. Early engines consumed oil as well as fuel, and riders had to keep their oil tanks full to keep their motorcycles running. The first motorcycles did not have brakes on the front wheel, and bicycle-style brakes on the rear wheel made stopping difficult at high speeds.

By 1910, motorcycles had stronger frames and more powerful engines. They used leather belts or metal chains that drove the rear wheel. In the 1910s, transmissions like those used in cars and modern motorcycles increased the speed and climbing ability of motorcycles. Single- and

twin-cylinder engines became more reliable and required less maintenance. Even complicated and impressive four-cylinder engines were offered on more expensive machines.

Motorcycling in the early twentieth century was always an adventure. Road conditions were usually poor and hitting a pothole or other hazard on an early motorcycle could easily cause a crash. Early motorcycles demanded special characteristics of their owners. Riders had to be in good physical shape just to start and ride these machines. Motorcyclists had to be mechanically minded in order to adjust engine controls, maintain oil levels, and repair minor issues. Today, early American motorcycles are prized by collectors around the world who show their bikes on rides and at special events. This educational program includes twelve amazing motorcycles made before 1916 along with rare engines and photographs from the pioneering era of motorcycling.

*Thank you to Wes Allen, Chris Carter, Don Emde, Glenn H. Curtiss Museum, The George Wyman Memorial Project, Michael Lichter Photography, Lyman & Merrie Wood Museum of Springfield History, Nancy Mathews and family, Pierce-Arrow Museum, San Francisco Motorcycle Club, Dave Scoffone, Pat and Cris Simmons, and Smithsonian National Air and Space Museum for making this educational program possible.*



Mrs. Hap Alzina and Mrs. Walter Collins with daughter on an Indian Tri-Car 1908

Courtesy of San Francisco Motorcycle Club  
R2020.2306.025

### Discussion question #1

What do early motorcycles share in common with early automobiles?

- They both use gasoline-powered engines like modern vehicles, which were new inventions 120 years ago.

### Discussion question #2

What other form of transportation led to the first motorcycles?

- Bicycles: the first motorcycles were made by bicycle makers who attached gasoline engines to bicycle frames and wheels.

## Motor-Pacing and Early Engines

Bicycle racing was an important part of motorcycle history. Early bicycle racers pedaled at high speeds on banked wooden tracks known as “velodromes.” These racers could pedal with less effort in a “slipstream”—a pocket of air with less resistance that is created behind a moving object. Riding in the slipstream, the racer behind could use their extra energy to pass the rider in front. At first, the top bicycle racers hired pacers to ride in front of them. Eventually, racers found it difficult to find bicyclists who agreed not to win and were fast enough for the job.

Motorized pacing machines known as motor-pacers filled the need for bicycle pacers. These modified bicycles were powered by gasoline engines like the single-cylinder De Dion-Bouton engine made in France. In 1899, French cycling champion Henri Fournier (1871–1919) demonstrated a De Dion-Bouton-powered pacer on bicycle racing tracks in San Francisco. However, after riding the exciting-yet-strange new machine on local highways, Fournier was arrested and restricted to riding in the city—where he was also quickly banned.

Inspired by the new motor-pacers, bicycle maker and racer Oscar Hedstrom (1871–1960) constructed his own motorized pacer in New York the following year. George Hendee (1866–1943), a racer, promoter, and bicycle manufacturer from Massachusetts, was so impressed with Hedstrom’s motor-pacer that the two partnered and developed the Indian motorcycle in 1901.

### Discussion question #3

What is a slipstream, and how did bicycle racers use it?

- A slipstream is a pocket of air created by a moving object, like a bicyclist. Because there is less wind resistance behind a moving object, it takes less effort to ride in a slipstream, which made it easier for a bicycle racer to pass the person in front of them.

### Discussion question #4

What are motor-pacers, and how did they help bicycle racers?

- A motor-pacer is a motorized bicycle invented for bicycle racing. Bicyclists could ride faster in the slipstream behind a motor-pacer than they could by themselves.



Motor-pacer and cyclist at Six Days, Madison Square Garden, New York 1898

Courtesy of Don Emde  
R2020.2307.002

## George Wyman Rides Cross Country

George A. Wyman (1877–1959) was the first person to cross the United States by motorized vehicle. This was an amazing feat at the turn of the twentieth century. Gas stations had not been invented yet, which meant gasoline was not readily available. To make things worse, roads did not exist in many parts of the country. Wyman departed for his transcontinental journey atop a specially modified California motorcycle on May 16, 1903, from Lotta's Fountain at the corner of Market, Geary, and Kearny Streets in downtown San Francisco. His first major obstacle was deep snow on Donner Pass in the Sierra Nevada mountain range, where Wyman walked his motorcycle through the dark, damp, and freezing snowsheds and tunnels that were constructed for the transcontinental railway line.

Without good roads to follow, Wyman rode much of his journey along railroad tracks and the old Overland Trail created for wagon trains and stagecoaches. He encountered deep sand in the deserts and treacherous mud on the flatlands. Wyman often walked his motorcycle when conditions were bad, and he pedaled the bike when its engine overheated. Breakdowns and crashes were common on his journey. A broken handlebar at top speed caused

one crash, and Wyman steered his motorcycle with a hardwood stick tied across the handlebars for the next 400 miles until the bike was repaired. After replacing many spokes, tires, drive belts, and an engine crankshaft, the California motorcycle's 1 ¼-horsepower engine gave up outside of Albany, New York. George Wyman finally arrived in New York City on July 6 after pedaling the final 150 miles. The California Motor Bicycle shown here was discovered and restored in the 1970s and is very likely George Wyman's cross-country machine.

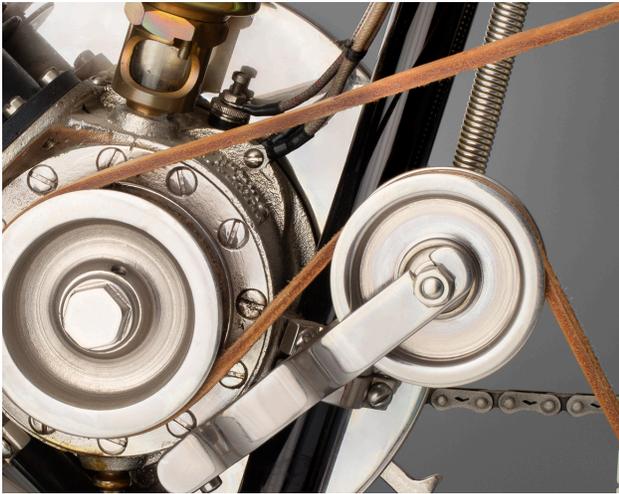
### Discussion question #5

What are some of the challenges George Wyman faced on his journey across the United States?

- There were no gas stations, Wyman had to buy gasoline at hardware stores and wherever he could find it. There were also very few roads in many parts of the country, so Wyman had to ride on trails and railroad tracks.
- Weather was a major challenge. Wyman had to walk his motorcycle through snow and mud.
- Mechanical breakdowns: Wyman also had to walk his motorcycle when it overheated or broke down.



**California Motor Bicycle 1902**  
California Motor Company, Inc.  
San Francisco  
Courtesy of Dave Scoffone  
L2020.2301.001



[details]  
**California Motor Bicycle 1902**  
California Motor Company, Inc.  
San Francisco  
Courtesy of Dave Scoffone  
L2020.2301.001



**George A. Wyman at the end of his transcontinental ride July 1903**  
*The Motorcycle Magazine* November 1903  
New York  
Courtesy of The George Wyman Memorial Project  
R2020.2308.001

## Indian Motorcycles

George M. Hendee (1866–1943) was a motorcycle pioneer who began his career as a bicycle racer. Hendee’s father immigrated from France to the United States where he met his mother, who was Native American. George Hendee started racing bicycles at age fifteen. He retired from racing in 1892 and founded a bicycle company in Springfield, Massachusetts. Hendee’s first bicycles used imported British parts and sold well. However, by 1897 close to 300 American bicycle companies flooded the market, and The Hendee Manufacturing Company reduced prices on its bikes to stay competitive. Hendee’s best-selling bicycle was the American Indian, named to celebrate the bike as American-made and Hendee’s Native American roots. Soon after, Hendee adopted Indian as his primary brand name.

Swedish-born Carl Oscar Hedstrom (1871–1960) was a bicycle racer who also built lightweight racing bikes in the 1890s. After he installed an engine on an Orient tandem

bicycle, Hedstrom built a De Dion-Bouton-powered tandem bicycle pacer in 1900. George Hendee, who was a partner in the Springfield Coliseum bicycle board track, invited Hedstrom to pace races. The two agreed to manufacture a single-seat motor-bicycle, and the new Indian “Motorcycle” debuted in early 1902. The Indian Motorcycle used a single-cylinder engine that was designed by Hedstrom. The simple Motorcycle was very reliable and featured a newly designed carburetor, which is a device that mixes fuel with air to power the engine.

### Discussion question #6

What did George Hendee and Carl Oscar Hedstrom have in common, and how did they contribute to motorcycling?

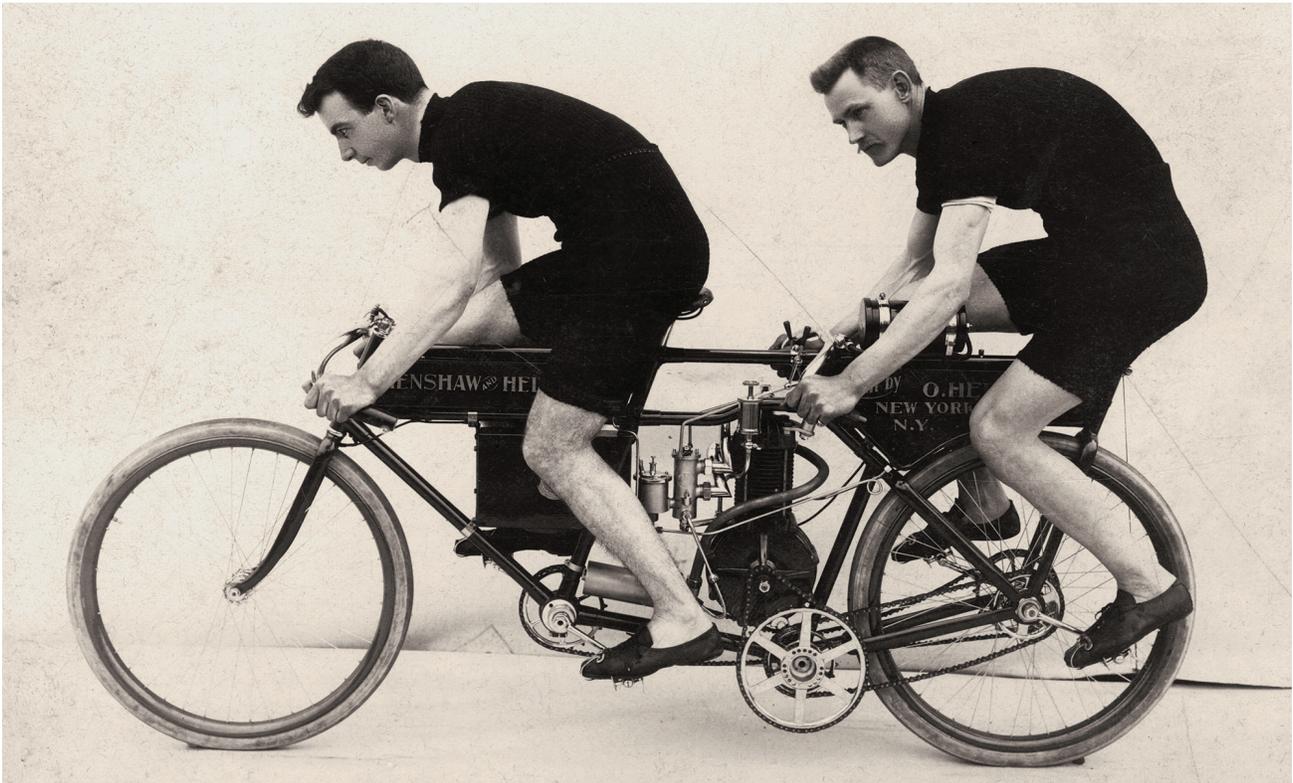
- Hendee and Hedstrom were both bicycle racers and bicycle makers who created the Indian Motorcycle, one of the first reliable motorcycles.



**Indian Motorcycle 1903**  
The Hendee Manufacturing Company  
Springfield, Massachusetts  
Courtesy of Dave Scoffone  
L2020.2301.002



[detail]  
**Indian Motorcycle 1903**  
The Hendee Manufacturing Company  
Springfield, Massachusetts  
Courtesy of Dave Scoffone  
L2020.2301.002



**Charles Henshaw and Oscar Hedstrom on a Hedstrom Motor-Pacer c. 1901**  
Courtesy of Lyman & Merrie Wood Museum of Springfield History  
R2020.2309.001

## Riding, Touring, and the Van Buren Sisters

Motorcycle technology and design progressed rapidly during the early 1900s. Manufacturers introduced an array of new models that resembled modern motorcycles more than the earlier motorized bicycles. As reliability and comfort improved, riders became more confident and relied on their machines for everyday transportation. However, road conditions remained poor in most areas of the United States, and only the most daring adventurers embarked on cross-country tours.

To promote women as military dispatch riders, sisters Augusta (1884–1959) and Adeline (1889–1949) Van Buren departed New York for San Francisco in 1916. Their route followed the new Lincoln Highway, which consisted of unimproved dirt roads in most sections west of the Mississippi River that were impassable in heavy rain. When the sisters diverted to Colorado and rode up the newly completed Pikes Peak road, they became the first women to reach the 14,115-foot summit on a motorized vehicle. The Van Buren sisters arrived in San Francisco after two harrowing months, and then continued south through

Los Angeles to Mexico for good measure before returning home—becoming the first women to ride across the United States solo on motorcycles. Other adventurous riders braved the dusty, rutted, and muddy dirt roads of America as well. Around 1915, the owner of the 1910 Yale shown here rode this motorcycle from the Midwest to the San Francisco Bay Area. This Yale Single is preserved in its original condition and is a remarkable survivor.

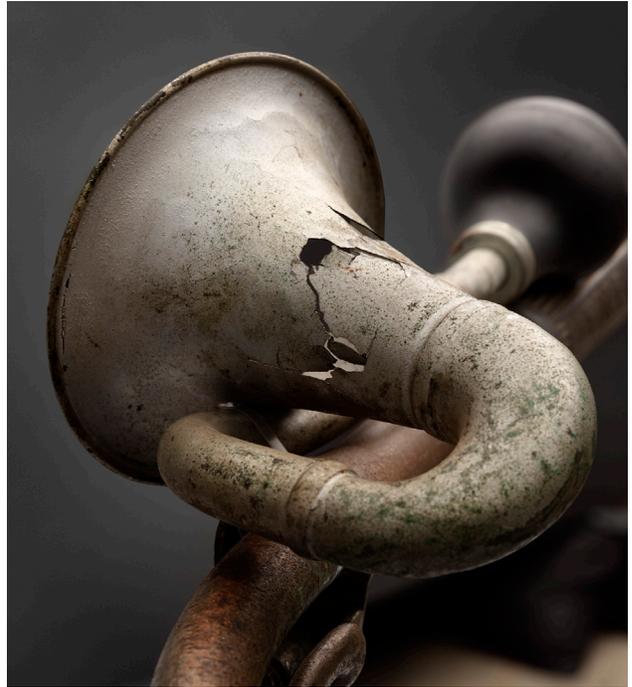
### Discussion question #7

What did sisters Augusta and Adeline Van Buren accomplish, and what are some of the obstacles they faced?

- In 1916, Augusta and Adeline Van Buren became the first women to ride across the United States solo on a motorcycle with no sidecar. They were also the first women to climb Pikes Peak on a motorized vehicle. Modern roads had not been constructed yet, and the Van Buren sisters faced thousands of miles of dirt and gravel roads, which were almost impossible to ride on in heavy rain and snow.



**Yale Single 1910**  
The Consolidated Manufacturing Company  
Toledo, Ohio  
Courtesy of Wes Allen  
L2020.2302.001



[details]  
**Yale Single 1910**  
The Consolidated Manufacturing Company  
Toledo, Ohio  
Courtesy of Wes Allen  
L2020.2302.001



**Augusta and Adeline Van Buren on Indian motorcycles in Tijuana, Mexico 1916**  
Courtesy of Bob and Rhonda Van Buren  
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## Curtiss Motorcycles

Glenn Hammond Curtiss (1878–1930) was one of the first manufacturers to design motorcycles that significantly improved on their bicycle heritage. Curtiss was a bicyclist and racer who ran a small manufacturing and retail shop in Hammondsport, New York, in the late 1890s. Sometime around 1901, Curtiss motorized two of his bicycles with engine kits made by the E.R. Thomas Company in nearby Buffalo, New York. However, Curtiss was disappointed with the performance of the Thomas engines and decided to design and manufacture his own.

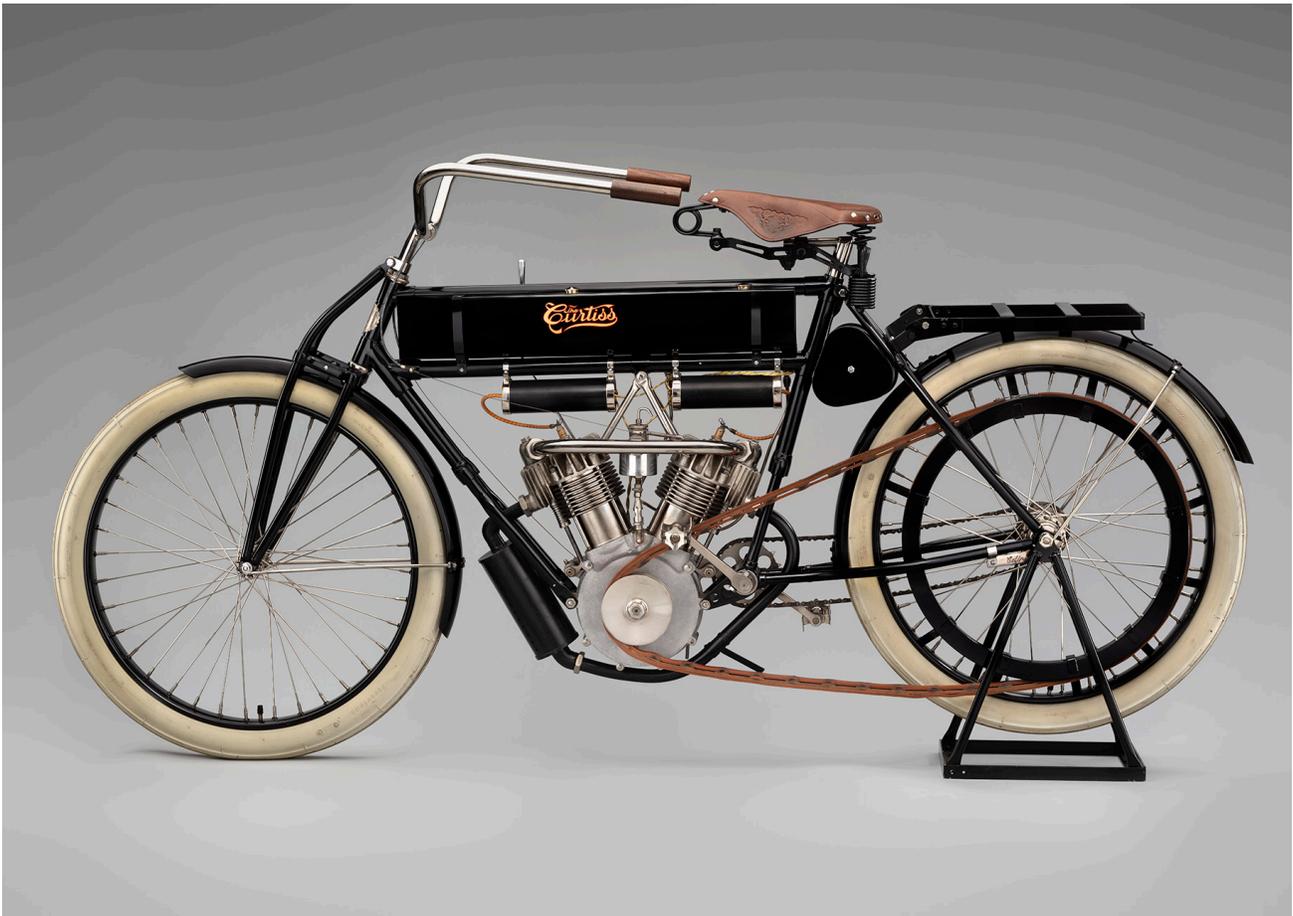
In 1902 Curtiss made single-cylinder motorcycles, engines, and casting kits, and the following year he was winning races on a powerful, new twin-cylinder machine. Curtiss introduced a normal twin-cylinder motorcycle in 1904 that was capable of an impressive five to fifty miles-per-hour. Two years later, Curtiss received orders for his first aircraft engine, a forty-horsepower, eight-cylinder powerplant

that weighed only 150 pounds. In 1907, Curtiss entered a specially modified racing motorcycle fitted with the new V-8 aircraft engine at the Winter Speed Carnival in Ormond Beach, Florida. Amazingly, he clocked 136 miles-per-hour—the fastest speed anyone had achieved on a motorized vehicle—on the hard-packed sand before the motorcycle's driveshaft broke while traveling over ninety miles-per-hour on the return run.

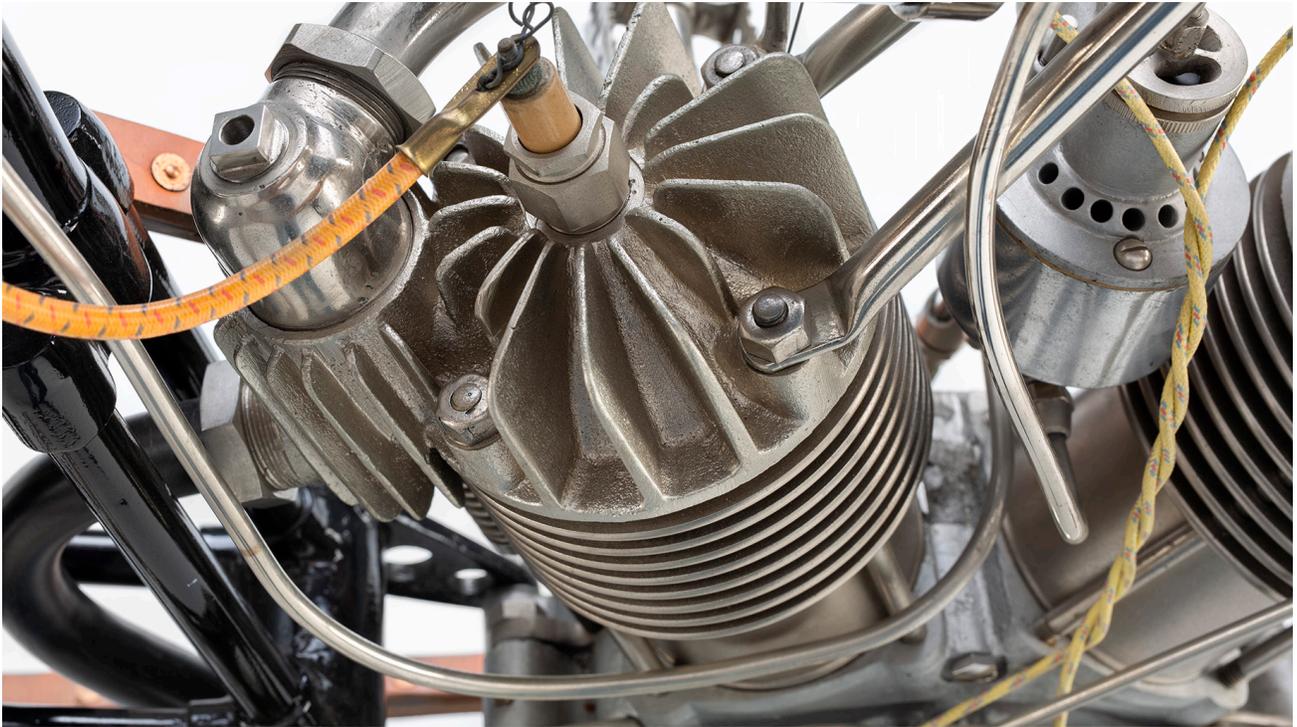
### Discussion question #8

What type of engine did Curtiss use in his racing motorcycle at Ormond Beach, Florida, in 1907, and how did this make him famous?

- Curtiss installed his powerful new V-8 aircraft engine in a specially built motorcycle and went 136 miles-per-hour—the fastest anyone had traveled on a motorized vehicle at that point. Amazingly, Curtiss reached this record speed on the sand!



**Curtiss Double Cylinder 1907**  
G.H. Curtiss Manufacturing Company  
Hammondsport, New York  
Courtesy of Wes Allen  
L2020.2302.002



[detail]  
**Curtiss Double Cylinder 1907**  
G.H. Curtiss Manufacturing Company  
Hammondsport, New York  
Courtesy of Wes Allen  
L2020.2302.002



**G.H. Curtiss, Hammondsport N.Y., Worlds Record Mile 26 3/5 sec. c. 1907**  
Courtesy of Smithsonian National Air and Space Museum  
R2020.2310.001

## Harley-Davidson

William S. Harley (1880–1943), along with the three brothers Arthur (1881–1950), Walter (1876–1942), and William (1870–1937) Davidson, constructed the first three Harley-Davidson motorcycles in 1903 in a small workshop located in the backyard of the Davidson family home in Milwaukee, Wisconsin. Although they built just three more of their simple, single-cylinder motorcycles the following year, Harley-Davidson moved to a new building on the company's current Juneau Avenue site and increased production to fifty motorcycles in 1906. Known as the "Silent Gray Fellow," the new model was quiet, reliable, and established Harley-Davidson as a major motorcycle manufacturer.

To keep up with demand, Harley-Davidson moved into a modern 9,520 square-foot production facility in 1910, and by 1913 they produced more than sixty motorcycles per day. Harley-Davidson survives as the only continuously operating motorcycle company of the approximately 100

manufacturers in the United States during the early twentieth century. The 1910 Harley-Davidson Model 6 shown here features an optional carbide headlamp, which is lit by flammable acetylene gas that is produced by a reaction between carbide pellets and water in the base of the lamp.

### Discussion question #9

Where did the Harley-Davidson company start?

- Harley-Davidson started in a small workshop located in the backyard of the Davidson family home in Milwaukee, Wisconsin.

### Discussion question #10

There were approximately 100 motorcycle companies in the early 1900s. How many are still in business today?

- One: Harley-Davidson is the only continuously operating motorcycle maker from the early 1900s.



**Harley-Davidson Model 6 1910**  
Harley-Davidson Motor Company  
Milwaukee, Wisconsin  
Courtesy of Dave Scoffone  
L2020.2301.003





Women on Harley-Davidson motorcycles in McPherson, Kansas c. 1910  
Courtesy of Pat and Cris Simmons  
R2020.2304.004

## Excelsior

Excelsior was one of the “Big Three” American motorcycle brands during the 1910s, along with rivals Harley-Davidson and Indian. Like many other motorcycle makers, Excelsior had roots in bicycling. Formed in 1876 to distribute sewing machines, The Excelsior Supply Company added bicycles, cycling parts, and accessories to their catalog in the 1890s. The Excelsior Motor Manufacturing and Supply Company started making motorcycles in 1907. While their first model used another company’s engine design built under license, Excelsior introduced the Auto-Cycle in 1908, a brand-new design made at their seven-story facility in Chicago. The 3 ¼-horsepower Auto-Cycle was a success and demand quickly surpassed supply.

Bicycle maker Ignaz Schwinn (1860–1948) purchased Excelsior in 1911 and gave the motorcycle company another boost. Under Schwinn’s leadership, Excelsior relocated to a new 200,000 square-foot factory and made single- and twin-cylinder models with belt- or chain-drive setups. A factory racing team promoted Excelsior’s road

bikes, and in 1912 at the Playa del Rey motordrome near Los Angeles, Lee Humiston (1889–1949) became the first racer—in an automobile or on a motorcycle—to exceed 100 miles-per-hour on a closed-course racetrack. Production of Excelsior motorcycles continued until 1931, when Schwinn refocused on lower-cost bicycles during the Great Depression.

### Discussion question #11

Who were the “Big Three” American motorcycle brands during the 1910s?

- Excelsior, Harley-Davidson, and Indian.

### Discussion question #12

What made Excelsior even more famous at the Playa del Rey racetrack in 1912?

- Riding an Excelsior racing motorcycle, Lee Humiston became the first racer—in an automobile or on a motorcycle—to exceed 100 miles-per-hour on a closed-course track.



**Excelsior Auto-Cycle Model 4B 1912**  
The Excelsior Motor Manufacturing and Supply Company  
Chicago  
Courtesy of Nancy Mathews and family  
L2020.2303.001



[detail]

**Excelsior Auto-Cycle Model 4B 1912**  
The Excelsior Motor Manufacturing and Supply Company  
Chicago  
Courtesy of Nancy Mathews and family  
L2020.2303.001



**Lee Humiston with his record-setting Excelsior racer 1912**  
Courtesy of Don Emde  
R2020.2307.004

## The Motorcycle Cannonball

The Motorcycle Cannonball is a cross country endurance race for antique motorcycles. The first Motorcycle Cannonball was a 3325-mile ride from Kitty Hawk, North Carolina, to Santa Monica, California, held from September 10–26, 2010. The ride was restricted to motorcycles made from 1916 and earlier and is named after pioneering racer Erwin “Cannonball” Baker (1882–1960), who broke the transcontinental record on a motorcycle in 1914 from San Diego, California, to New York in eleven days—an amazing nine days faster than the previous record. The Motorcycle Cannonball was created by motorcycle collector and restorer Lonnie Isam, Jr. (1969–2017) to celebrate the functionality of antique motorcycles. The Cannonball is the most difficult endurance race in the world for these vintage machines.

Author, antique motorcycle collector, and American Motorcyclist Association (AMA) Hall of Fame member Cristine “Cris” Sommer Simmons (b. 1957) has ridden the Cannonball three times on a 1915 Harley-Davidson 11-F. Sommer Simmons’ motorcycle is nicknamed “Effie” in honor of Effie (1889–1966) and Avis (1863–1958) Hotchkiss, the first women to ride across the United States on a motorcycle. On May 2, 1915, with mother Avis in the sidecar of their new Harley-Davidson 11-F, they departed Brooklyn, New York, for San Francisco to see the Panama-Pacific International Exposition. Effie and Avis Hotchkiss returned to New York

two months later after a remarkable 9,000-mile journey.

To safely complete the 2010 Cannonball in the required sixteen days, Sommer Simmons modified her 1915 Harley-Davidson with a larger fuel tank, 1930s VL-style seat, LED lighting, and modern wheels with a front brake. After finishing in 20th place in 2010, Sommer Simmons rode Effie from Atlantic City, New Jersey, to Carlsbad, California, in the 2016 event, and again in 2018 from Portland, Maine, to Portland, Oregon.

### Discussion question #13

What is the Motorcycle Cannonball?

- The Motorcycle Cannonball is a cross-country endurance race for antique motorcycles. This difficult event takes a different route across the United States each year.

### Discussion question #14

Cris Sommer Simmons has ridden the Motorcycle Cannonball three times on a 1915 Harley-Davidson nicknamed “Effie.” Why did Cris name her bike “Effie”?

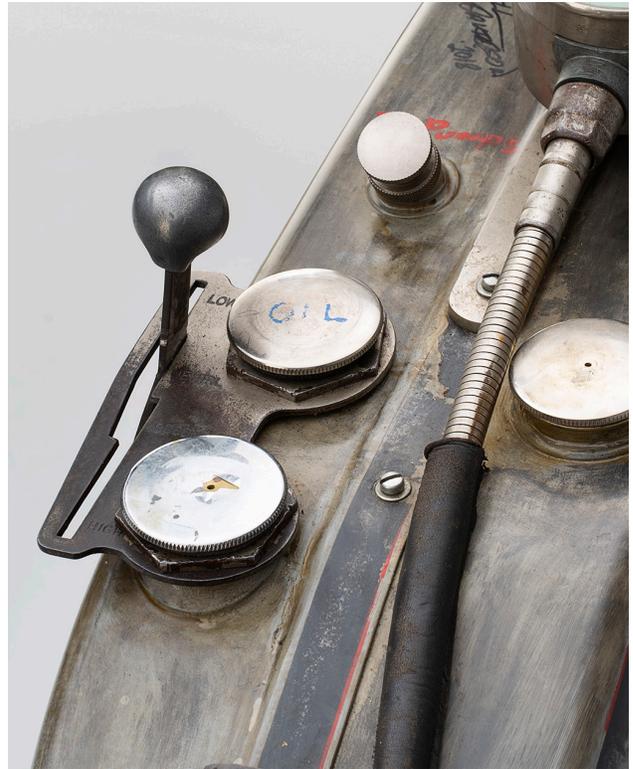
- Cris Sommer Simmons named her bike “Effie” in honor of Effie and Avis Hotchkiss, the first women to ride across the United States on a motorcycle. In 1915, the mother and daughter team rode the same model of Harley-Davidson as Cris’ bike from New York to San Francisco. Effie piloted the motorcycle, and her mother Avis rode in a sidecar attached to the bike.



Harley-Davidson Model 11-F, “Effie” 1915  
Harley-Davidson Motor Company  
Milwaukee, Wisconsin  
Courtesy of Pat and Cris Simmons  
L2020.2304.001



Cris Sommer Simmons riding "Effie" on the Motorcycle Cannonball September 20, 2010  
Michael Lichter (b. 1955)  
Courtesy of Michael Lichter Photography  
R2020.2311.001



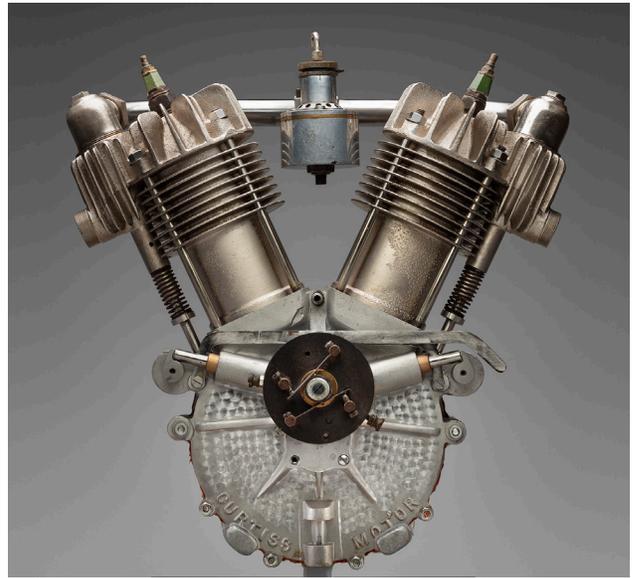
[detail]  
Harley-Davidson Model 11-F, "Effie" 1915  
Harley-Davidson Motor Company  
Milwaukee, Wisconsin  
Courtesy of Pat and Cris Simmons  
L2020.2304.001



Effie and Avis Hotchkiss on their 1915 Harley-Davidson with sidecar in Ossining, New York October 11, 1915  
Courtesy of Hotchkiss Estate  
R2020.2304.006

## The Curtiss Double Cylinder

Glenn Hammond Curtiss (1878–1930) designed a series of innovative engines for his pioneering motorcycles. In 1903, Curtiss introduced a powerful five-horsepower, V-Twin design that was one of the earliest two-cylinder motorcycle engines. This revolutionary Curtiss “Double Cylinder” engine had a greater power-to-weight ratio than a comparable single-cylinder engine. With constant improvements, Curtiss’ engines increased their power output and decreased in weight. Curtiss raced motorcycles to promote the company and achieved numerous records and wins. After the Curtiss Double Cylinder engine was used in airships known as dirigibles, he received an order in 1906 from the United States War Department, which stated the Curtiss engines developed “a greater amount of power to the pound than any other known source of energy.”



**Curtiss Double Cylinder 6 H.P. Motor 1907**  
G.H. Curtiss Manufacturing Company  
Hammondsport, New York  
Courtesy of Wes Allen  
L2020.2302.007a



**Glenn Curtiss on a twin-cylinder Curtiss racing motorcycle 1906**  
Courtesy of Glenn H. Curtiss Museum  
R2020.2312.001

## Motorcycle Racing

Motorcyclists began racing their machines almost as soon as motorcycles were introduced. The first organized motorcycle race was held on May 7, 1901, at Agriculture Park, a mile-long horse-racing track in Los Angeles that is now the site of the Los Angeles Coliseum. Four racers on Holley and Orient motor-bicycles entered the ten-lap race, won by Los Angeles motorcycle dealer and bicycle, motorcycle, and automobile racer Ralph Hamlin (1880–1974). The following year, the Alpha Motorcycle Club of Brooklyn, New York, hosted a 250-mile endurance event from New York to Boston. Of the thirty-one racers who took the green flag, only eleven finished the race.

In 1903, motorcycles participated in the Winter Speed Carnival on the hard-packed sand of Ormond Beach in Florida. Although the race was held to test the top speed of another new invention, the automobile, Oscar Hedstrom (1871–1960) set the fastest time of the weekend

by any vehicle on an Indian motorcycle—a record of one minute and three seconds at an average speed of 57.35 miles-per-hour over the mile-long course. Motorcycle races appeared across the country, including hill-climb competitions, straight-line speed trials, endurance runs, and closed-course races on flat, dirt tracks and banked, wooden ovals. Improvements to twin-cylinder engines, such as the overhead valves on the 1914 Jefferson racer shown here, allowed riders to exceed 100 miles-per-hour on the largest tracks.

### Discussion question #15

Where was the first organized motorcycle race held?

- The first organized motorcycle race was held in Los Angeles on May 7, 1901, at Agriculture Park, a mile-long track used for horse-racing.



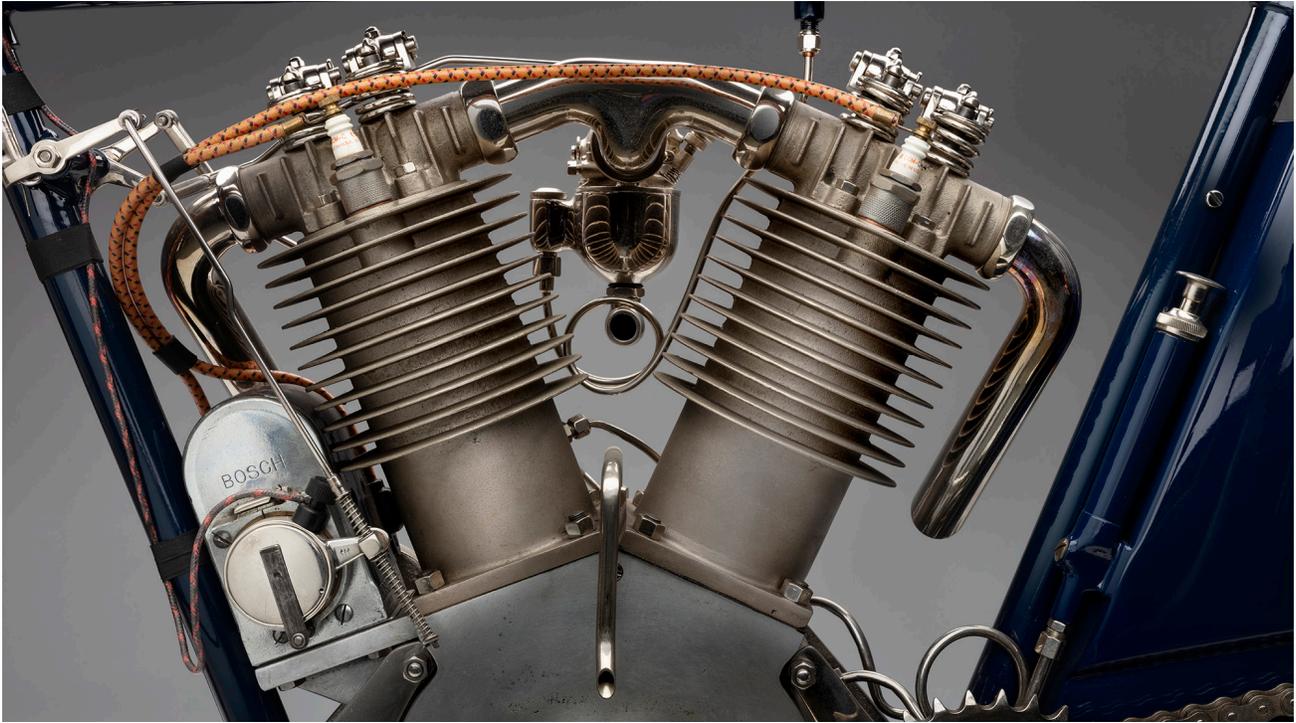
**Jefferson twin-cylinder racer 1914**

Waverly Manufacturing Company

Jefferson, Wisconsin

Courtesy of Chris Carter

L2020.2305.001



[detail]

**Jefferson twin-cylinder racer 1914**

Waverly Manufacturing Company

Jefferson, Wisconsin

Courtesy of Chris Carter

L2020.2305.001



**Racing at Tanforan Park, San Bruno, California July 4–5, 1908**

Courtesy of San Francisco Motorcycle Club

R2020.2306.017

## Board Track Racing

Board track racing provided exciting competition in the early years of motorcycling. Specialized board tracks known as “motordromes” developed from the banked, wooden bicycle racing tracks on which motorcycles also competed. Motordromes were larger and were designed specifically for the high speeds attained by motorcycles. Famed velodrome-builder John Shillington “Jack” Prince (1857–1927) built the first motorcycle board track in 1909. Located south of Agriculture Park, Prince’s Los Angeles Coliseum was a circular, oval track approximately three-tenths of a mile long, banked twenty degrees in the straightaways and up to forty-five degrees in the turns.

Racers at the Los Angeles Coliseum exceeded seventy-five miles-per-hour, yet Prince thought that a circular track with constant banking would increase speeds. With funding from Indian Motorcycles’ Hendee Manufacturing Company, Prince constructed a one-third mile-long track in Springfield, Massachusetts, that boasted speeds over

eighty-five miles-per-hour on opening day, July 31, 1909. The following year, Prince constructed a massive, mile-long motordrome at Playa del Rey in Los Angeles, using more than thirty tons of nails and two-million square-feet of lumber. Over the next two years, Prince completed motordromes in Salt Lake City, Chicago, and Oakland, California, while other builders constructed board tracks in cities all over the United States to keep up with the public’s demand for motorcycle racing.

### Discussion question #16

What is a motordrome?

- A motordrome is a large, circular track designed for motorcycle racing. Known as board tracks because they were made from wooden boards, motordromes were banked, almost like a bowl or funnel, which allowed motorcycles to race at very high speeds.



**Flying Merkel twin-cylinder racer 1912**

The Miami Cycle & Manufacturing Company  
Middletown, Ohio  
Courtesy of Dave Scoffone  
L2020.2301.005



Joe Wolters leads Jake DeRosier and Charles "Fearless" Balke at Los Angeles Stadium February 11, 1912

Courtesy of Don Emde  
R2020.2307.005



Margaret Gast on her Flying Merkel racer in Montreal, Canada c. 1910

Courtesy of Pat and Cris Simmons  
R2020.2304.007

## Racing and Motorcycle Development

In 1911, the popularity of motorcycle racing surged and motordromes drew thousands of spectators at each event. To boost motorcycle sales, manufacturers created racing teams and specialized machines that pushed the limits of riding and technology. Motorcycle racing was risky in the early years of the sport. As engines generated more power, motorcycles exceeded the speed limits of racing tires, and sudden blowouts were common on the track. Racing faster than ninety miles-per-hour without proper helmets and safety gear on machines with no brakes required skill and courage.

Great competition ensued between the factory-backed Excelsior and Indian teams with riders such as Jacob “Jake” DeRosier (1880–1913), Charles “Fearless” Balke (1891–1914), and William Edward “Eddie” Hasha (1891–1912). Indian introduced the most advanced motorcycle to date in 1911. Dubbed the “Big-Base 8-Valve,” the motorcycle featured a

revolutionary overhead valve arrangement of two intake and two exhaust valves per cylinder, which drastically increased performance. Designed strictly for racing, the Indian Big Base 8-Valve did not include brakes or even a working throttle — only an ignition cut-out switch and adjustable timing advance provided limited speed control. However, after a series of accidents in 1912–13, the great motordrome tracks faded into history.

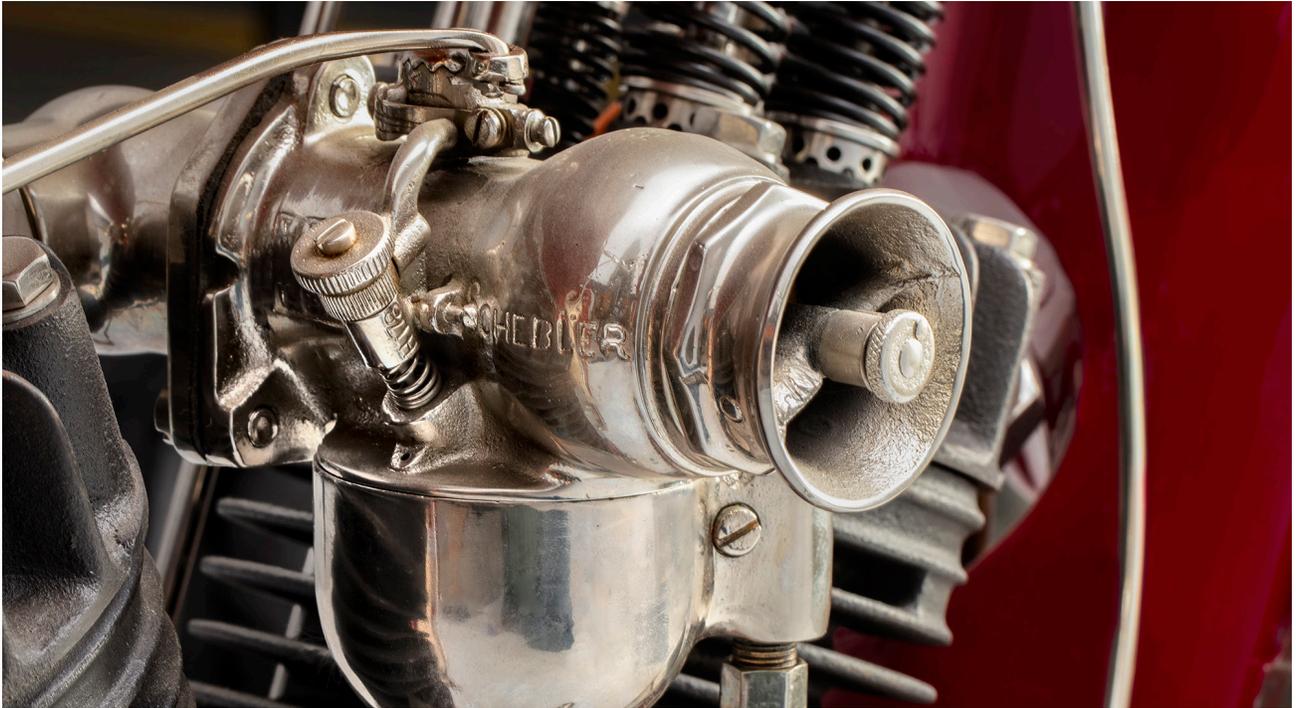
### Discussion question #17

Why was early motorcycle racing more dangerous than it is today?

- Early racing motorcycles did not have brakes to slow them down.
- Motorcycle tires could not stand the speed of racing and often ruptured, which could cause the rider to crash.
- Riders did not have the proper helmets and protective clothing worn by motorcycle racers today.



**Indian 8-Valve racer** 1912  
The Hendee Manufacturing Company  
Springfield, Massachusetts  
Courtesy of Dave Scoffone  
L2020.2301.004



[detail]

**Indian 8-Valve racer 1912**  
The Hendee Manufacturing Company  
Springfield, Massachusetts  
Courtesy of Dave Scoffone  
L2020.2301.004



**Eddie Hasha on his Indian Big-Base 8-Valve racer at Vailsburg Motordrome, Newark, New Jersey 1912**  
Courtesy of Don Emde  
R2020.2307.007

## The Flying Merkel

Joseph Frederic Merkel (1872–1958) road-tested his first motorcycle in 1900. Like many early manufacturers, Merkel attached a small engine to a bicycle-like frame with a simple belt-drive to the rear wheel. His new company, The Merkel Manufacturing Company of Milwaukee, Wisconsin, produced an improved model in 1902. Merkel introduced a stronger loop-type frame with an innovative rear suspension the following year. After he patented a telescoping-fork, spring-loaded front suspension, Merkel merged his company in 1908 with another motorcycle maker, the Light Manufacturing and Foundry Company of Pottstown, Pennsylvania.

The new Merkel-Light was also successful on the racetrack, and “The Flying Merkel” brand-name was given to their racing machines and all street-going motorcycles. Joseph Merkel continued as chief engineer and designer when Merkel-Light was purchased by The Miami Cycle & Manufacturing Company in 1911. Working from a new

three-story factory in Middletown, Ohio, the company manufactured a powerful twin-cylinder, chain-driven Flying Merkel in 1912. Five new models were available in 1913. They featured redesigned engines along with wider forks, larger tires, and rear mono-shock suspensions similar to those found on modern motorcycles. The 1914 Flying Merkel shown here is equipped with a seven-horsepower twin-cylinder engine, v-belt drive, and optional speedometer driven by the front wheel.

### Discussion question #18

What are some of the innovations Joseph Merkel made to his motorcycles?

- Merkel’s early motorcycles featured loop-type frames, which are stronger than diamond-shaped bicycle-like frames. Merkel also added front and rear suspensions to his motorcycles, which absorbed the bumps and ruts found on rough roads. These are all features of modern motorcycles.

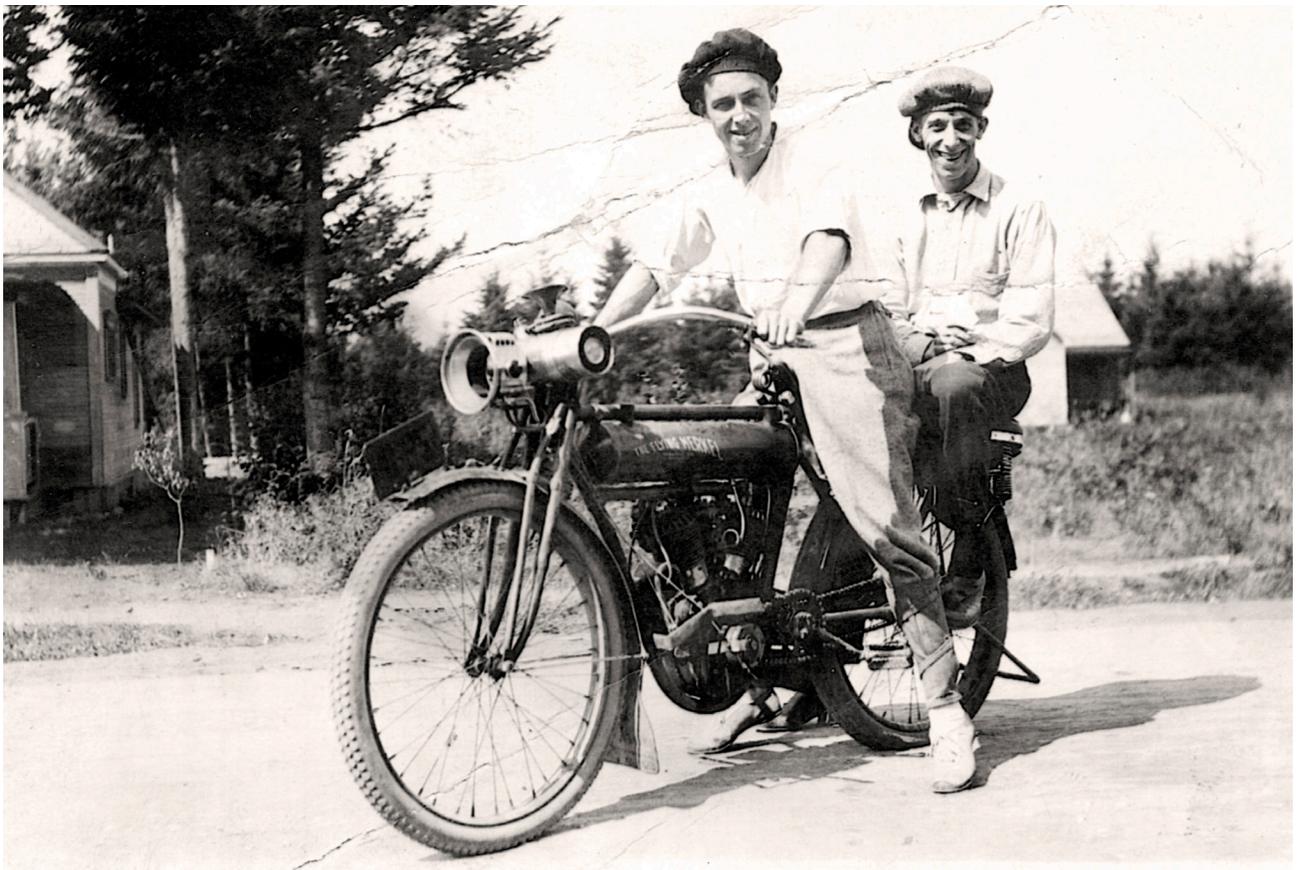


**The Flying Merkel Model 470 1914**  
The Miami Cycle & Manufacturing Company  
Middletown, Ohio  
Courtesy of Wes Allen  
L2020.2302.003



[details]

**The Flying Merkel Model 470 1914**  
The Miami Cycle & Manufacturing Company  
Middletown, Ohio  
Courtesy of Wes Allen  
L2020.2302.003



**Two riders on a Flying Merkel Twin c. 1911**  
anonymous lender  
R2020.2313.001

## The San Francisco Motorcycle Club

Motorcycle clubs organize rides, races, endurance runs, and other social events. The Alpha Motorcycle Club of Brooklyn, New York, formed in March 1902 as the first motorcycle club in the United States. Soon thereafter, the Pacific Coast Motor Bicycle Club organized in San Francisco as the first motorcycle club on the West Coast. In October 1904, the San Francisco Motorcycle Club (SFMC) was founded by bicycle racer and Indian motorcycle dealer C.C. "Daddy" Hopkins (1859–1948) and other members of the Pacific Coast club who decided to start their own organization.

The SFMC planned races, weekend tours, and on the evening of April 17th, 1906, they held a dance at their new meeting hall on Jefferson Square in downtown San Francisco. Early the next morning, the Great San Francisco Earthquake and ensuing fire devastated the city. The SFMC meeting hall was converted to a temporary hospital and members used their motorcycles to deliver supplies and messages throughout the Bay Area. The SFMC quickly reorganized, and in 1908 they hosted events that included a seventy-mile ride to Mount Hamilton and a weekend of racing at Tanforan Park in nearby San Bruno.

By 1911, the SFMC was the largest motorcycle club in the United States. That year, the SFMC partnered with the Oakland Motorcycle Club and hosted the largest gathering to date of motorcycles in the western United States. Approximately 1,100 bikes of all makes and models descended on the small town of Livermore, California, with an additional 1,000 spectators for an exciting day of riding and other festivities. The SFMC is the second oldest organization of its type and is still thriving, with more members in the American Motorcyclist Association (AMA) Hall of Fame than any other club, including racers Loris "Hap" Alzina (1894–1970), Loren "Hap" Jones (1905–89), and Dudley "Red" Perkins, Sr. (1893–1978), for whom the AMA's Lifetime Achievement Award is named.

### Discussion question #19

How did members of the San Francisco Motorcycle Club help their community after the Great San Francisco Earthquake in 1906?

- Their meeting hall was converted to a temporary hospital, and members used their motorcycles to deliver supplies and messages all around the Bay Area. Motorcycles were the perfect vehicles for maneuvering around debris and over damaged roads.



San Francisco Motorcycle Club group portrait, 234 Van Ness Avenue, San Francisco 1911

Courtesy of San Francisco Motorcycle Club  
R2020.2306.020

## The Pierce Four

Although motorcycle design progressed through the 1910s, engine technology was still in the early stages of development. Motorcycle engines generated vibration and noise, and riding was generally for the adventurous motorist. The smooth-running Pierce Four Cylinder was an exception. Advertised as “The Vibrationless Motorcycle,” the Pierce Four sold for \$325 in 1909, when most other motorcycles sold in the \$150 to \$250 range. The Pierce Four was made by the Pierce Cycle Company, a division of the Pierce Motor Car Company of Buffalo, New York, known for their luxury automobiles.

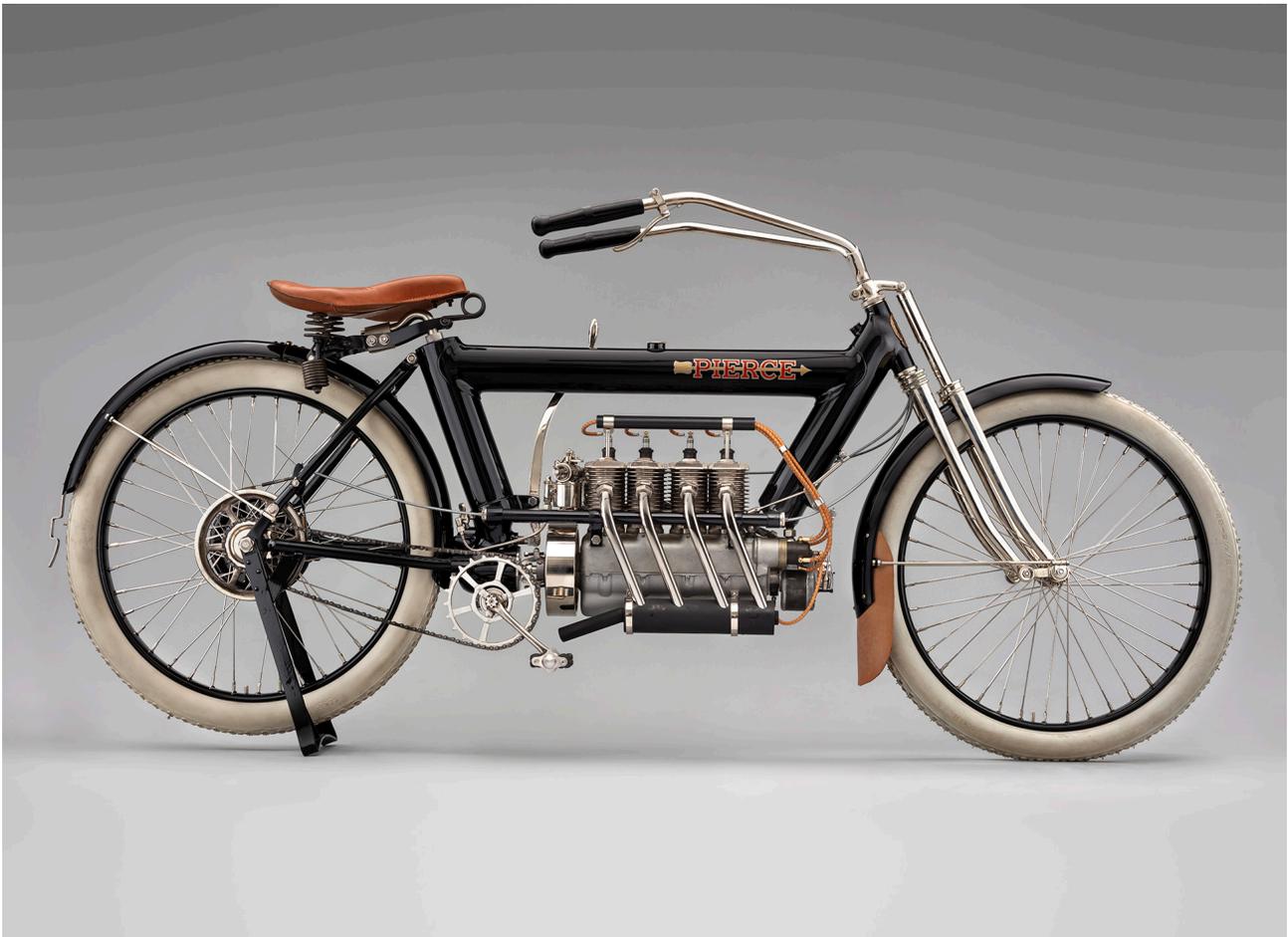
The Pierce Four was the first four-cylinder motorcycle made in America. It was powered by a six-horsepower, forty-two cubic-inch, dual-camshaft T-head engine similar to the Pierce-Arrow automobile engine. The Pierce motorcycle’s upper frame was constructed from large, 3 ½-inch tubing

with internal compartments for gasoline and oil, while the engine itself acted as the lower frame. Power was transferred to the rear wheel by a unique driveshaft rather than a belt or chain, with a revolutionary two-speed transmission and automatic clutch added in 1910. While the motorcycles sold well, production costs exceeded sales revenue and the Pierce Four was discontinued in 1914.

### Discussion question #20

How was the Pierce Four different from other early motorcycles?

- The Pierce Four used a four-cylinder engine, which was much smoother-running than the one- and two-cylinder engines used by other motorcycles. The Pierce Four also used a driveshaft instead of a belt or chain. These innovations made the Pierce Four quieter and more comfortable to ride.



**Pierce Four Cylinder 1911**  
The Pierce Cycle Company  
Buffalo, New York  
Courtesy of Wes Allen  
L2020.2302.005



[details]  
**Pierce Four Cylinder 1911**  
The Pierce Cycle Company  
Buffalo, New York  
Courtesy of Wes Allen  
L2020.2302.005



**Two women on a Pierce Four and sidecar c. 1910**  
Courtesy of Pierce-Arrow Museum  
R2020.2314.001

## Riding Early Motorcycles

Early motorcycles demand special characteristics of their owners and riders. One has to be strong enough to start the engine by pedaling or kick-starting, and to pedal-assist the motorcycle during mechanical troubles or after a breakdown. Riders must be mechanically minded in order to operate the different types of controls found on these early vehicles. While procedures vary between makes and models, to start an early motorcycle, the carburetor is primed with fuel, the ignition timing is adjusted, the throttle is set, and the compression is released by a lever to ease the force required to either pedal or kick-start the bike while on its stand.

Once a rider is underway, they must pay careful attention to road conditions, other vehicles, and pedestrians, as early motorcycles do not have front brakes and rear braking is not good. Early suspension systems, which absorb shocks from the road, are stiff with very little travel, which means an unseen pothole can easily throw the rider from the motorcycle. Tire technology was also in its early years, and the “clincher” wheels and tires that were originally used are prone to blowouts. Two- and three-speed transmissions on later models add complexity. Shifting is done by moving a lever mounted near the fuel tank along with a clutch—which means the rider

must move their hand from the handlebars to shift. Yet riding these early machines still captivates motorcyclists and collectors, just as it had more than a century ago.

### Discussion question #21

How is riding an early motorcycle different from riding a modern motorcycle?

- Riders have to be athletic: they must have the strength to lift an early motorcycle onto its stand and then pedal the motorcycle to start the engine.
- Riders must be mechanically minded: starting an early motorcycle involves more steps than a modern motorcycle and varies between models, so the rider must understand how the motorcycle works.
- Early motorcycles are very different to ride:
  - They do not have front brakes and are difficult to stop at higher speeds.
  - They also have much stiffer suspensions than modern motorcycles, which means bumps and potholes are more severe, especially when the rider is traveling fast.
  - If the motorcycle has a transmission, the rider must shift gears with a lever near the fuel tank, which means they need to take one hand off of the handlebars in order to shift.



Ruth Hopper Beal on an Indian Twin 1913

Courtesy of Pat and Cris Simmons  
R2020.2304.008